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# Innovationen in der ambulanten Grundversorgung durch vermehrten Einbezug nichtärztlicher Berufsleute

Literaturanhang – Abstracts verwendeter Artikel

Im Auftrag des
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## Einleitung

Dieser Bericht enthält die «Abstracts» wichtiger verwendeter Literaturstellen bzw. Journalartikel zur Studie «Innovationen in der ambulanten Grundversorgung durch vermehrten Einbezug nichtärztlicher Berufsleute - Literaturübersicht und Einschätzung von Berufsvertreter/innen».

Die Abstracts sind nach den einzelnen Berufsgruppen gegliedert. Innerhalb der Berufsgruppen erfolgt die Anordnung alphabetisch.

# 1 Überblicksstudien zur Frage des «Skill Mix»

**Buchan J, Dal Poz MR (2002): Skill mix in the health care workforce: reviewing the evidence, *Bull World Health Organ*, 80(7), 575-580**
This paper discusses the reasons for skill mix among health workers being important for health systems. It examines the evidence base (identifying its limitations), summarizes the main findings from a literature review, and highlights the evidence on skill mix that is available to inform health system managers, health professionals, health policy-makers and other stakeholders. Many published studies are merely descriptive accounts or have methodological weaknesses. With few exceptions, the published analytical studies were undertaken in the USA, and the findings may not be relevant to other health systems. The results from even the most rigorous of studies cannot necessarily be applied to a different setting. This reflects the basis on which skill mix should be examined--identifying the care needs of a specific patient population and using these to determine the required skills of staff. It is therefore not possible to prescribe in detail a "universal" ideal mix of health personnel. With these limitations in mind, the paper examines two main areas in which investigating current evidence can make a significant contribution to a better understanding of skill mix. For the mix of nursing staff, the evidence suggests that increased use of less qualified staff will not be effective in all situations, although in some cases increased use of care assistants has led to greater organizational effectiveness. Evidence on the doctor-nurse overlap indicates that there is unrealized scope in many systems for extending the use of nursing staff. The effectiveness of different skill mixes across other groups of health workers and professions, and the associated issue of developing new roles remain relatively unexplored.

**Sibbald B, Shen J, McBride A (2004): Changing the skill-mix of the health care workforce, *J Health Serv Res Policy*, 9(1), 28-38**
OBJECTIVE: Changing workforce skill-mix is one strategy for improving the effectiveness and efficiency of health care. Our aim was to summarise available research into the success or failure of skill-mix change in achieving planned outcomes. METHODS: A systematic search for existing reviews of research into skill-mix was conducted. Databases searched included: MEDLINE, CINAHL, PsychINFO, Cochrane Library, HMIC, Centre for Reviews and Dissemination, and Department of Health Research Findings Register. Search terms included keywords defining the type of publication, clinical area, type of health personnel and the focus of the article (role change, skill-mix, etc.). English language publications from 1990 onwards were included. Two reviewers independently identified relevant publications, graded the quality of reviews and extracted findings. In addition, the wider literature was scanned to identify which factors were associated with the success or failure of skill-mix change. RESULTS: A total of 9064 publications were identified, of which 24 met our inclusion criteria. There was a dearth of research, particularly for role changes involving workers other than doctors or nurses. Cost-effectiveness was generally not evaluated, nor was the wider impact of change on health care systems. The wider literature suggested that factors promoting success include: introducing 'treatments' of proven efficacy; appropriate staff education and training; removal of unhelpful boundary demarcations between staff or service sectors; appropriate pay and reward systems; and good strategic planning and human resource management. Unintended consequences sometimes occurred in respect of: staff morale and workload; coordination of care; continuity of care; and cost. CONCLUSIONS: In order to make informed choices, health care planners need good research evidence about the likely consequences of skill-mix change. The findings from existing research need to be made more accessible while the dearth of evidence makes new research necessary.

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# 2 Pflegefachleute, Nurse Practitioners

**Aigner MJ, Drew S, Phipps J (2004): A comparative study of nursing home resident outcomes between care provided by nurse practitioners/physicians versus physicians only, *J Am Med Dir Assoc*, 5(1), 16-23**
OBJECTIVES: The objective of this study was to determine if outcomes of care for nursing home residents differ between two groups of providers: nurse practitioners/physicians and physicians only. DESIGN: We conducted a retrospective chart review covering the 12-month period from September 1, 1997, until August 31, 1998. SETTING: We studied eight nursing homes in central Texas. PARTICIPANTS: Two hundred three residents were randomly selected who resided in one of the eight nursing homes during the specified time period. STATISTICAL ANALYSIS: We used chi-squared or Fisher exact test for comparisons of percent and Student t test for comparison of means; comparisons were made with both the FREQ procedure and the univariate procedure. RESULTS: Acute visits were significantly higher for the nurse practitioner/physician team (3.0 +/- 2.4) versus the physician-only group (1.2 +/- 1.5). The nurse practitioner/physician group treated significantly more eye, ear, nose, and throat and dermatologic diagnoses than the physician-only group. Emergency department visits, emergency department costs, hospitalizations, length of stay, hospital costs, performance of mandated progress visits, and performance of annual history and physicals did not show significant differences between the two groups. CONCLUSION: The level of care provided for patients by the two groups of providers was basically the same and of similar quality; however, the nurse practitioner/physician group patients were seen more often. Increased visits by nurse practitioners are assumed to result in time and cost savings for physicians and improved access to care for patients.

**Anderson DM, Hampton MB(1999): Physician assistants and nurse practitioners: rural-urban settings and reimbursement for services, *J Rural Health*, 2, 252-263**
Evidence based on productivity measures, salaries and costs of medical education indicates that physician assistants and nurse practitioners are cost-effective. Managed care suggests that health maintenance organizations (HMOs) would seek to utilize these professionals. Moreover, underserved rural areas would utilize physician assistants and nurse practitioners to provide access. This study examined the role of payment sources in the utilization of physician assistants and nurse practitioners using the 1994 National Hospital Ambulatory Medical Care Survey (NHAMCS) conducted by the National Center for Health Statistics, U.S. Centers for Disease Control and Prevention. Rural vs. urban results were compared. The study found that significant rural-urban differences exist in the relationships between payment sources and the utilization of physician assistants and nurse practitioners. The study also found that payment source affects varied for physicians, physician assistants and nurse practitioners who saw outpatients in hospital settings. Surprisingly, prepaid and HMO types of reimbursements are shown to have no relationship with physician assistant and nurse practitioner utilization, and this finding is the same for both rural and urban patient visits. After controlling for other influences, the study shows that physicians, physician assistants and nurse practitioners are each as likely as the other to be present at a rural managed care visit. However, physicians are much more likely than physician assistants and nurse practitioners to be present at an urban managed care visit.

**Aquilino ML, Damiano PC, Willard JC, Momany ET, Levy BT (1999): Primary care physician perceptions of the nurse practitioner in the 1990s, *Arch Fam Med*, 8(3), 224-227**
OBJECTIVE: To evaluate factors associated with primary care physician attitudes toward nurse practitioners (NPs) providing primary care. DESIGN: A mailed survey of primary care physicians in Iowa. SETTING AND PARTICIPANTS: Half (N = 616) of the non-institutional-based, full-time, primary care physicians in Iowa in spring 1994. Although 360 (58.4%) responded, only physicians with complete data on all items in the model were used in these analyses (n = 259 [42.0%]). MAIN OUTCOME MEASURES: There were 2 principal dependent measures: physician attitudes toward NPs providing primary care (an 11-item instrument) and physician experience with NPs in this role. Bivariate relationships between physician demographic and practice characteristics were evaluated by chi 2 tests, as were both dependent variables. Ordinary least-squares regression was used to determine factors related to physician attitudes toward NPs. RESULTS: In bivariate analyses, physicians were significantly more likely to have had experience with an NP providing primary care if they were in pediatrics or obstetrics-gynecology (78.3% and 70.0%, respectively; $P < .001$), had been in practice for fewer than 20 years ($P = .045$), or were in practices with 5 or more physicians. The ordinary least-squares regression indicated that physicians with previous experience working with NPs providing primary care ($P = .01$), physicians practicing in urban areas with populations greater than 20,000 but far from a metropolitan area ($P = .03$), and general practice physicians ($P = .04$) had significantly more favorable attitudes toward NPs than did other primary care physicians. CONCLUSIONS: The association between previous experience with a primary care NP and a more positive attitude toward NPs has important implications for the training of primary care physicians, particularly in community-based, multidisciplinary settings.

**Bailey P, Jones L, Way D (2006):Family physician/nurse practitioner: stories of collaboration, *J Adv Nurs*, 53(4), 381-391**
AIMS: This paper presents the experiences of nurse practitioners and family physicians working in collaborative practice at four Canadian rural primary care agencies. It focuses on the qualitative segment of a larger study examining the impact of an educational intervention on interprofessional practice. BACKGROUND: Growing awareness of the importance of health promotion and disease prevention, the increased complexity of community-based care, and the need to use scarce human healthcare resources, especially family physicians, far more efficiently and effectively, have resulted in increased emphasis on primary healthcare renewal in Canada. Key to primary healthcare renewal is care delivery through interdisciplinary teams that include nurse practitioners. METHODS: Narrative analysis, a form of interpretive analysis that respects the integrity of the stories told by participants, was chosen as the strategy to examine the narrative data gathered in two sets of interviews with the nurse practitioners and family physicians. The study was undertaken during 2000. RESULTS: Thirteen family physicians and five nurse practitioners with diverse educational backgrounds and varied experience with collaboration participated in the qualitative component of the study. A number of issues related to working in a shared practice were identified in nurse practitioner and family physician interviews across the research sites. The themes identified in participants' stories included issues related to the scope of practice, emphasizing the importance of role clarity and trust, the ideological difference regarding disease prevention and health promotion, differences in perceptions about the operation of collaborative practice, and the understanding that collaborative relationships evolve. CONCLUSIONS: The placement of nurse practitioners and family physicians in a common clinical practice without some form of orientation process does not produce collaborative practice. Educational strategies related to role expectations are necessary to facilitate the development of care delivery partnerships characterized by interdependent practice.

**Baldwin KA, Sisk RJ, Watts P, Mc Cubbin J, Brockschmidt B, Marion LN (1998): Acceptance of nurse practitioners and physician assistants in meeting the perceived needs of rural communities, *Public Health Nurs*, 6, 389-397**
Nurse practitioners and physician assistants have provided a partial solution to the shortage of primary care services in medically

underserved rural areas. This paper describes the results of a study exploring community acceptance of nurse practitioners and physician assistants in rural medically underserved areas. Community acceptance in the context of this study implies not only satisfaction with care received, but also willingness of the community to support NP/PA practice through its infrastructure and encourage members to initially seek and continue to receive care from an NP or PA. Five focus groups were conducted in each of five rural medically underserved communities. The two most pervasive findings were the lack of previous exposure to NPs and PAs and the general belief that NPs and PAs would be accepted in these communities if certain conditions could be met. The theme of conditional acceptance included both personal and system factors. Personal factors included friendliness, competence, willingness to enter into the life of the community, and the ability to keep information confidential. System factors considered critical for acceptance included service type, integration with the existing health care system, cost, geographic proximity, and availability. The results of this study offer insight into community attitudes and suggest marketing strategies for those who plan to introduce NP or PA services into rural communities.

**Barnes H, Crumble A, Carlisle C, Pilling D (2004-2005): Patients' perceptions of "uncertainty" in nurse practitioner consultations, *Br J Nurs*, 13(22), 1350-1354**
The aim of this qualitative study was to explore patients' perceptions of consulting with a nurse practitioner in situations of clinical uncertainty. Uncertainty in this context is defined as one where there is no obvious diagnosis, treatment or where the outcome of the consultation is not definite. Three general practice sites were recruited to participate. 43 patients who consulted with one of three nurse practitioners were interviewed using a semistructured schedule. The nurse practitioners identified uncertainty in 30 of these consultations; only two patients expressed any awareness of uncertainty with the consultation. The results showed that patients appear to accept that there will be a level of uncertainty in some consultations. Recognition of uncertainty within the consultation does not appear to have a negative effect on patients' perception of the nurse practitioner as they feel that the nurse will refer to a doctor if necessary.

**Batchelor GM, Spitzer WO, Comley AE und Anderson GD (1975): Nurse practitioners in primary care iv. Impact of an interdisciplinary team on attitudes of a rural population, *Can Med Assoc J*, 12, 1415-1420**
Attitudes toward the expanded role of nurse practitioners in primary care (family practice nurses) have been determined for persons from a semi rural area who chose as their principal source of care an interdisciplinary family medical centre (FMC) incorporating two nurse practitioners, and those for whom the FMC was not the usual source of care. Data were obtained using "before-and-after" structured interviews of a random sample of persons living in a southern Ontario township. Slowly evolving, non significant trends of greater acceptance were observed among patients who had dealt with family practice nurses. The greatest change observed was an increased acceptance of the nurse by FMC users as the person who would be contacted as a second choice if their first choice, usually a physician, could not be reached in specific worry-inducing situations. FMC users depended more on nurses to provide information. A conclusion of increased general acceptance of the family practice nurse by FMC users is supported by a 34 per cent higher use of nurses by FMC patients compared to other persons of comparable characteristics living in the same community.

**Bond S, Beck S, Derrick S (1999): Training nurse practitioners for general practice, the EROS Project Team, *Br J Gen Pract*, 49(444), 531-535**
BACKGROUND: For nurse practitioners (NPs) in general practice to substitute for general practitioners (GPs) in consultations, their educational needs require specification, and their effectiveness and acceptability to patients must be determined. There is limited evidence in the United Kingdom about training requirements or how NPs compare with GPs. AIM: To describe the education provided to trainee NPs (TNPs), describe their work, compare their practise with GPs, and determine their acceptability to patients. METHOD: Four TNPs were provided with a mainly practice-based education. After one year, TNP diagnoses and management decisions were compared with those of GPs for 586 patients. After being judged competent, TNPs conducted independent consultations. After two years, 400 independent consultations were analysed to describe TNPs' work and reasons for patients contacting the practice again. Opinions of a further 400 patients about their consultation with a TNP or GP, and willingness to consult a TNP in the future, were obtained. RESULTS: General practitioners and TNPs agreed on 94% of diagnoses and 96% of management decisions made. Early in training, TNPs transferred 38% of patients to the GP, of whom 34% were without a diagnosis and 40% without a management decision. In independent practice, 69% of patients consulting TNPs were female and fewer than 10% were aged over 65 years. TNPs were dealing with a wide range of diagnoses. Immediate referrals to GPs had decreased to 13%. In one-third of consultations, over-the-counter (OTC) medications were suggested and, in 63%, formulary medications were recommended, with prescriptions signed by GPs. Health education featured in 84% of consultations. After two weeks, 29% of patients had returned to the surgery, of whom 72% had been asked to return and 60% consulted about the original condition or its treatment. Eighty per cent of patients completed an opinion questionnaire. While 38% of TNP consulters would have preferred a GP consultation, they rated TNP consultations as good as or better than GPs' consultations. Patients with experience of previous TNP consultations gave the most positive ratings, were more likely to consult a TNP again, and about a wider range of conditions. TNPs' listening skills and explanations were particularly valued. CONCLUSIONS: Early in their training, TNPs made good diagnostic and treatment decisions, while their high level of patient transfers to GPs indicated residual uncertainty. In independent practice, their GP mentors judged them to be offering an effective service, with acceptable transfer and patient return rates. They were liked by patients and more so by patients with previous TNP experience. TNPs are a valuable substitute for GPs for patients wishing for a same-day consultation, and for younger and female patients who prefer a female TNP over a male GP. Limited authority to prescribe and refer to secondary care reduces NP efficiency.

**Branson C, Badger B, Dobbs F (2003): Patient satisfaction with skill mix in primary care: a review of the literature, *Primary Health Care Research and Development*, 4, 329-339**
This literature review focuses on patient satisfaction with skill mix in primary care. This is an important, rapidly changing, topic as the range of health professionals working alongside GPs increases and the roles of staff change. The review is intended to assist primary care organizations in developing skill mixes that meet patients' preferences and needs. A number of characteristics that influence the type of services that patients want were discovered. Older people and those from ethnic minorities want a 'traditional', GP-led service. Access is important to younger people and those in full-time work. Those from lower socio-economic groups value nurses, but have found the increasingly complex organization of services a problem. There are different levels of knowledge and expectations about health services and information on the skills and knowledge of professionals, what they do and the links between them, needs to be available. A number of aspects of care are important to patients. Patients liked nurses as they were good communicators, formed good therapeutic relationships, gave information on illnesses and spent more time. The location of services is important and patients liked services provided in the home or community. Continuity of care is key, but has been presented as old fashioned and reorganizations may have reduced continuity; skill mix could be viewed as forming a barrier between doctor and patient, but

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personal lists and teams where practices are divided into smaller units with shared support may help. The competence of health professionals is clearly vital and patients considered nurses competent, although they had concerns about nurses and pharmacists taking on some new roles. The literature focuses on patients' views about doctors and nurses, although they also want a wider range of services and professionals available in primary care: occupational therapy, link workers, CAB advisers, pharmacist advice and mental health workers. Despite being satisfied with nurses, some patients still wanted to see a doctor next time or felt that a doctor should be available. GPs can help build awareness and confidence in patients about the roles and contribution of the team.

**Breen A, Carr E, Mann E, Crossen-White H (2004): Acute back pain management in primary care: a qualitative pilot study of the feasibility of a nurse-led service in general practice, *J Nurs Manag*, 12(3), 201-209**
OBJECTIVES: (1) To determine the acceptability of the Royal College of General Practitioner Guidelines to small samples of nurses, General Practitioners and acute back pain patients, (2) to determine what additional roles for nurses in the management of acute back pain in primary care might be acceptable to these samples, (3) to evaluate the responses of General Practitioners, nurses and patients to a suggested service model based on the RCGP Guidelines, (4) to identify opportunities for and barriers to the further development of such models and to obtain the appraisal of the above by an external group of assessors. METHODOLOGY: Using a qualitative design the pilot study included Primary Care (General Practitioners, Practice Nurses and Patients) with the main outcome measures as: appraisal questionnaires (for RCGP Guideline), qualitative content analysis of focus group narratives, and appraisal of process and outcomes by an external panel. RESULTS: Attitudes towards the RCGP guidelines were positive, but professionals and patients alike did not think their recommendations could be implemented with the current service provision in primary care. There was criticism by professionals of the capacity for a nurse-led service within practices. Access to chiropractors, osteopaths and/or specialist physiotherapists in National Health Service primary care was raised as a need by both groups. All members of the Advisory Panel approved the processes for the recruitment of participants, focus group questions and analysis. DISCUSSION: Barriers to implementation of the RCGP Guideline and to a nurse-led acute back pain service in general practice, were illustrated. These mainly relate to grossly inadequate capacity to deal with multidimensional patient needs, allowing progression to chronic pain states and much higher health care costs. There was a strong desire to include a different group of professionals in primary care. We recommend a local needs assessment and consideration of a national strategy for the implementation of the RCGP Guideline in primary care.

**Bunn F, Byrne G, Kendall S (2004): Telephone consultation and triage: effects on health care use and patient satisfaction, *Cochrane Database Syst Rev*, 4, CD004180**
BACKGROUND: Telephone consultation is the process where calls are received, assessed and managed by giving advice or by referral to a more appropriate service. In recent years there has been a growth in telephone consultation developed, in part, as a response to increased demand for General Practitioner (GP) and Accident and Emergency (A&E) department care. OBJECTIVES: To assess the effects of telephone consultation on safety, service usage and patient satisfaction and to compare telephone consultation by different health care professionals. SEARCH STRATEGY: We searched the Cochrane Central Register of Controlled Trials, the specialised register of the Cochrane Effective Practice and Organisation of Care (EPOC) group, Pubmed, EMBASE, CINAHL, SIGLE, and the National Research Register. We checked reference lists of identified studies and review articles and contacted experts in the field. The search was not restricted by language or publication status. SELECTION CRITERIA: Randomised controlled trials (RCTs), controlled studies, controlled before/after studies (CBAs) and interrupted time series (ITSs) of telephone consultation or triage in a general health care setting. Disease specific phone lines were excluded. DATA COLLECTION AND ANALYSIS: Two reviewers independently screened studies for inclusion in the review, extracted data and assessed study quality. Data were collected on adverse events, service usage, cost and patient satisfaction. Due to heterogeneity we did not pool studies in a meta-analysis and instead present a narrative summary of the findings. MAIN RESULTS: Nine studies met our inclusion criteria, five RCTs, one CCT and three ITSs. Six studies compared telephone consultation versus normal care; four by a doctor, one by a nurse and one by a clinic clerk. Three studies compared telephone consultation by different types of health care workers; two compared nurses with doctors and one compared health assistants with doctors or nurses. Three of five studies found a decrease in visits to GP's but two found a significant increase in return consultations. In general at least 50% of calls were handled by telephone advice alone. Seven studies looked at accident and emergency department visits, six showed no difference between the groups and one, of nurse telephone consultation, found an increase in visits. Two studies reported deaths and found no difference between nurse telephone triage and normal care. REVIEWERS' CONCLUSIONS: Telephone consultation appears to reduce the number of surgery contacts and out-of-hours visits by general practitioners. However, questions remain about its affect on service use and further rigorous evaluation is needed with emphasis on service use, safety, cost and patient satisfaction.

**Burgess SE, Pruitt RH, Maybee P, Metz AE Jr, Leuner J (2003): Rural and urban physicians' perceptions regarding the role and practice of the nurse practitioner, physician assistant, and certified nurse midwife, *J Rural Health*, 19, 321-328**
CONTEXT: There is a dearth of literature citing the differences in rural and urban physicians' perceptions of the role and practice of nurse practitioners, physician assistants, and certified nurse midwives (nonphysician providers). PURPOSE: The purpose of this study was to investigate and compare differences, if any, between rural and urban primary care physicians' perceptions of the role and practice of nonphysician providers. RESULTS: Despite a 15.55% response rate using a mail-out survey in South Carolina, data from 681 rural and urban primary care physicians indicated that they perceived that nonphysician providers possess the necessary skills and knowledge to provide primary care to patients, are an asset to a physician's practice, free the physician's time to handle more critically ill patients, and increase revenue for the practice, but increase the risk of patient care mistakes and a physician's time in administrative duties. Urban physicians' mean scores were higher for perceiving that nonphysician providers are able to see as many patients in a given day as a physician but experience impediments in the delivery of patient care. CONCLUSIONS: Results will be used to clarify physicians' perceptions regarding the role and practice of nonphysician providers to reduce impediments to patient care access.

**Campbell JD, Mauksch HO, Neikirk HJ, Hosokawa MC (1990): Collaborative practice and provider styles of delivering health care, *Soc Sci Med*, 30(12), 1359-1365**
The delivery of primary health care involves complex interactive communication between the provider and patient. Describing the manner or style of this communication is important to more completely understand the delivery of primary health care. The purpose of this study was to examine provider's style of interaction with the patient and to compare the styles of nurse practitioners and physicians in joint practice. A total of 412 provider/patient clinic visits including 276 with physicians and 136 with nurse practitioners were videotaped and analyzed using a content-based interactive analysis system. Five provider style dimension indices were constructed including affiliation, control, somatic, psychosocial, and information indices. The results of this study show that the development of a content-based interactional analysis system which focuses on clinician activities can be useful in describing important

aspects of the provider/patient encounter. Overall, there was little difference between nurse practitioner and physician style of interaction. Nurse practitioners, however, exhibited significantly more concern with psychosocial issues than physicians. Type of visit and visit history were also factors associated with provider style. Using the style dimension indices constructed for this study a typology of provider styles was developed.

**Campbell NC, Ritchie LD, Thain J, Deans HG, Rawles JM, Squair JL (1998): Secondary prevention in coronary heart disease: a randomised trial of nurse led clinics in primary care, *Heart*, 80(5), 447-452**
OBJECTIVE: To evaluate whether nurse run clinics in general practice improve secondary prevention in patients with coronary heart disease. DESIGN: Randomised controlled trial. SETTING: A random sample of 19 general practices in northeast Scotland. PATIENTS: 1173 patients (685 men and 488 women) under 80 years with working diagnoses of coronary heart disease, but without terminal illness or dementia and not housebound. INTERVENTION: Nurse run clinics promoted medical and lifestyle aspects of secondary prevention and offered regular follow up. MAIN OUTCOME MEASURES: Components of secondary prevention assessed at baseline and one year were: aspirin use; blood pressure management; lipid management; physical activity; dietary fat; and smoking status. A cumulative score was generated by counting the number of appropriate components of secondary prevention for each patient. RESULTS: There were significant improvements in aspirin management (odds ratio 3.22, 95% confidence interval 2.15 to 4.80), blood pressure management (5.32, 3.01 to 9.41), lipid management (3.19, 2.39 to 4.26), physical activity (1.67, 1.23 to 2.26) and diet (1.47, 1.10 to 1.96). There was no effect on smoking cessation (0.78, 0.47 to 1.28). Of six possible components of secondary prevention, the baseline mean was 3.27. The adjusted mean improvement attributable to intervention was 0.55 of a component (0.44 to 0.67). Improvement was found regardless of practice baseline performance. CONCLUSIONS: Nurse run clinics proved practical to implement in general practice and effectively increased secondary prevention in coronary heart disease. Most patients gained at least one effective component of secondary prevention and, for them, future cardiovascular events and mortality could be reduced by up to a third.

**Carnwell R, Daly WM (2003): Advanced nursing practitioners in primary care settings: an exploration of the developing roles, *J Clin Nurs*, 12(5), 630-642**
Recent health care policies have resulted in patients having access to an integrated system of care that is quick and reliable. In concert with these changes, opportunities for professional development in nursing have increased, together with a reduction in the numbers of doctors. Advanced Nurse Practitioners (ANPs) have, therefore, developed to meet the complex demands of health care systems. This paper reports on a study that aimed to explore the current role of ANPs in primary care in the West Midlands region of the UK and how ANPs within three different nursing disciplines in primary care developed their roles over time. The study utilized a qualitative exploratory design incorporating a longitudinal element. Twenty-one ANPs were interviewed during phase one, 15 of whom were interviewed again during phase two, approximately 15 months later. Their managers (where appropriate) were also interviewed during phase one. The findings reveal that the nature and focus of practice varies between disciplines. At the extreme practice end of the practice-strategic continuum, Practice Nurse ANPs' expertise lies in their advanced practical assessment and diagnosis of individual patients, with little opportunity for strategic development. Health Visitor and District Nurse ANPs operate at the strategic end of the practice-strategic continuum, but operate differently at this level. Health Visitors, being community and public health focused are involved in multi-agency work, practice development and policy formulation. District Nurses work with individual patients/carers and the nursing team, thus their involvement in strategic developments tends to focus at the patient care level, such as protocol and practice developments, although their work also involves work in all three other domains. Overall, the findings reveal a unique role for all three with a potential career pathway for ANPs to become Nurse Consultants in the future.

**Carr J, Bethea J, Hancock B (2001): The attitudes of GPs towards the nurse-practitioner role, *Br J Community Nurs*, 6(9), 444-481**
In recent years, nursing and health-care policy have promoted the advanced role of the nurse -- that of nurse practitioner. But such a role has not been integrated widely into the primary health-care team. This study investigates the knowledge and attitudes of GPs who do not employ nurse practitioners to find out what prevents them doing so. Ten GPs who did not already employ a nurse practitioner took part in semi-structured interviews. Our findings show that GPs, although confused about the role, were generally supportive of advanced nursing practice. Skills identified with the role were prescribing, disease diagnosis and minor-illness management. GPs thought that protocols and guidelines should govern practice, which differs fundamentally from the Royal College of Nursing definition. None of the GPs had encountered the role in primary care, and the lack of professional regulation and role definition for practice nurses and nurse practitioners who work in primary care may have affected GPs' perceptions.

**Chalder M, Sharp D, Moore L, Salisbury C (2003): Impact of NHS walk-in centres on the workload of other local healthcare providers: time series analysis, *BMJ*, 326(7388), 532**
OBJECTIVES: To assess the impact of NHS walk-in centres on the workload of local accident and emergency departments, general practices, and out of hours services. DESIGN: Time series analysis in walk-in centre sites with no-treatment control series in matched sites. SETTING: Walk-in centres and matched control towns without walk-in centres in England. PARTICIPANTS: 20 accident and emergency departments, 40 general practices, and 14 out of hours services within 3 km of a walk-in centre or the centre of a control town. MAIN OUTCOME MEASURES: Mean number (accident and emergency departments) or rate (general practices and out of hours services) of consultations per month in the 12 month periods before and after an index date. RESULTS: A reduction in consultations at emergency departments (-175 (95% confidence interval -387 to 36) consultations per department per month) and general practices (-19.8 (-53.3 to 13.8) consultations per 1000 patients per month) close to walk-in centres became apparent, although these reductions were not statistically significant. Walk-in centres did not have any impact on consultations on out of hours services. CONCLUSION: It will be necessary to assess the impact of walk-in centres in a larger number of sites and over a prolonged period, to determine whether they reduce the demand on other local NHS providers.

**Chang E, Daly J, Hawkins A, McGirr Kerin Fielding J, Hemmings L, O'Donoghue A, Dennis M (1999): An evaluation of the nurse practitioner role in a major rural emergency department, *J Adv Nurs*, 1, 260-268**
The purpose of this pilot study was to investigate whether nurse practitioners are able to provide a level of primary health service applicable to remote/isolated settings in wound management and treatment of blunt limb trauma. It was hypothesized that there would be no significant difference in the quality of care, or the level of client satisfaction, provided by the medical officers and the nurse practitioners in the study. Two groups participated in the study, nurse practitioners and medical officers. The study used a randomized trial design. Data were collected using quantitative and qualitative methods. Two hundred and thirty-two clients participated in the study. Of this number 63 were supervised cases in the pilot trial. In the randomized trial participants were distributed between nurse practitioners and medical officers (n = 169), of which 91 were randomized to medical officers and 78 to nurse practi-

tioners. Telephone interviews were conducted to evaluate client satisfaction. The majority of study participants were surveyed for client satisfaction (n = 132). This represents approximately 78% of the randomized sample and multivariate analysis was carried out on the data. Study results indicate that there were no significant differences between the two groups in relation to client satisfaction. Very positive outcomes of treatment were consistent across groups in the study. The study also found that there was strong support for the role of the nurse practitioner in the rural emergency setting. Recommendations include further research to measure the efficacy of nurse practitioners utilizing the selected competencies in remote/isolated settings.

**Charlton I, Charlton G, Broomfield J, Mullee MA (1991): Audit of the effect of a nurse run asthma clinic on workload and patient morbidity in a general practice, *Br J Gen Pract*, 41(347), 227-231**
The aim of this study was to assess the effect of a nurse run asthma clinic on practice workload and the morbidity of patients in a four partner general practice. One hundred and fifteen asthmatic patients were studied and comparisons were made between the 12 months prior to the introduction of the clinic and the first 12 months after the clinic started. Morbidity was measured in terms of: the number of courses of oral steroids, the number of emergency salbutamol nebulizations, and the number of days lost from work or school. The number of consultations with the general practitioners were recorded. The repeat prescribing register was also monitored throughout the study to examine the effect of the clinic on prescribing in the practice. Consultations with general practitioners fell from a total of 818 to 414 during the study period (P less than 0.001). This was offset by 496 consultations with the nurse in the first 12 months of the clinic. As a result of attending the nurse clinic significant reductions (P less than 0.01) were found in the patients' requirements for courses of oral steroids, acute nebulizations and days lost from work or school. The results for the 46 children were similar to those for the 69 adults, confirming that the asthma clinic was effective for all ages. The clinic coincided with an increase in the number of patients receiving regular bronchodilator therapy and prophylactic medication. Eighty per cent of patients had their medication modified as a result of attending the clinic. The cost of prescribing remained remarkably stable.

**Chew CA, Wilkin D, Glendinning C (1994): Annual assessments of patients aged 75 years and over: views and experiences of elderly people, *Br J Gen Pract*, 44(389), 567-570**
BACKGROUND. The 1990 contract requires general practitioners to offer all their patients aged 75 years and over an annual health check. Increasing importance is being placed on consumers' views of service provision. AIM. A study was undertaken in June 1992 to investigate elderly patients' views and experiences of the annual health check, and to compare these with the previously reported views of general practitioners and practice nurses who had also been surveyed as part of the study. METHOD. Twenty family health services authorities wrote to a sample of 1500 elderly patients asking if the patient's name could be passed to researchers. Patients who agreed were then interviewed. RESULTS. A total of 664 elderly patients (44%) were interviewed. Only 64% of respondents were aware of their entitlement to a health check. Vulnerable patients, such as those in poor health or who lived alone, were less likely to know about the health checks than other patients. Only 31% of respondents thought they had had a health check. Of these, fewer than half recalled the doctor or nurse discussing the findings with them, although 80% of doctors reported that they always or mostly discussed results with patients. Elderly patients were more likely to recall the physical aspects of the health check rather than discussion about particular health aspects. However, doctors and nurses felt that routine checks were useful for giving advice rather than detecting medical problems. Of those who had had a health check, 82% reported no improvement in their health as a result, but 93% thought that they were a good idea. Only 7% of doctors thought they were of value, compared with the majority of nurses. CONCLUSION. It appeared that the inverse care law was operating, with those more in need of the service being less likely to have known about it. Discrepancies were found between general practitioners' and practice nurses' reports of service provision and those of elderly patients. Evidence about the cost-effectiveness of regular health checks may help the conflict between professional scepticism and consumer enthusiasm for these assessments.

**Christensen MB, Olesen F (1998): Out of hours service in Denmark: evaluation five years after reform, *BMJ*, 316(7143), 1502-1505**
OBJECTIVE: Five years after its introduction, to evaluate the 1992 reform in the out of hours service in Denmark. DESIGN: Comparison of data before and after reform. Data were collected from published reports, Danish national health statistics, and the Danish trade union for general practitioners. SETTING: Denmark. MAIN OUTCOME MEASURES: Number of out of hours services; workload of general practitioners; cost of the service; patient satisfaction. RESULTS: Five years after the reform, the percentage of telephone consultations had almost doubled, to 48%. Consultations in doctors' surgeries were relatively unchanged, but home visits were much reduced, to 18%. The percentage of doctors who worked 5 hours or more out of hours per week dropped from about 70% to about 50%. Overall patient satisfaction in 1995 was high (72%). CONCLUSION: The organisation of the out of hours service, with a fully trained general practitioner in a telephone triage function, is working satisfactorily. Many calls that previously would have required home visits are now dealt with by telephone or through consultations. The out of hours workload for general practitioners has decreased considerably.

**De Broe S, Christopher F, Waugh N (2001): The role of specialist nurses in multiple sclerosis: a rapid and systematic review, *Health Technol Assess*, 5(17), 1-47**
BACKGROUND: Multiple sclerosis (MS) is a disease of the central nervous system. The cause is unknown. There are about 80-160 people with MS per 100,000 population, with twice as many women affected as men. The management of individuals with MS includes treatment of acute relapses and chronic symptoms. The care of MS patients is provided by various healthcare professionals, such as general practitioners (GPs), neurologists, physiotherapists, occupational therapists and nurses. Some MS patients have access to an MS specialist nurse, although this provision varies geographically. OBJECTIVES: The aim of this report is to assess the effectiveness and relative cost-effectiveness of MS specialist nurses in improving care and outcomes for patients with MS. METHODS: A systematic review of the literature, involving a range of databases, was performed. Full details are described in the main report. RESULTS: Only one study was identified that tried to evaluate the benefit of MS specialist nurses. The study concluded that MS patients and their carers found the MS specialist nurse to be helpful, particularly in improving their knowledge of MS, ability to cope, mood and confidence about the future. GPs also reported finding the nurse to be helpful with their MS patients, and 40% of the GPs stated they would purchase the services of an MS specialist nurse if their practices became fundholding. However, there were considerable methodological weaknesses inherent in the study design, and it was unclear whether the results of the study could be extrapolated to other settings or to other MS patient groups. RESULTS - ONGOING RESEARCH: There are two ongoing research studies regarding MS specialist nurses. One of these studies involves the provision of MS nurses to several areas, but also has two control populations to allow evaluation of the health benefits of the nurses to MS patients and their carers. This study will help to fill the evidence gap. RESULTS - COSTS: The costs of providing MS specialist nurses consist of their yearly salary (usually NHS grade G), as well as additional costs for travelling, administration, computer and telephone use, a pension scheme, National Insurance and study leave. The MS Society of Great Britain and Northern Ireland allows a generous total yearly cost to the employer of 40,000

pounds. CONCLUSIONS: The present evidence does not make it possible to comment with any certainty on the value of specialist nurses in MS. The best evidence available to the authors is specialist opinion from neurologists and nurses, and comments from patients with MS; this opinion supports the provision of MS specialist nurses. CONCLUSIONS - RECOMMENDATIONS FOR RESEARCH: Further research is needed before it will be feasible to make firm recommendations on the value of MS specialist nurses relative to other possible uses of funds.

**Dickinson J, Hutton S, Atkin A, Jones K (1997): Reducing asthma morbidity in the community: the effect of a targeted nurse-run asthma clinic in an English general practice, *Respir Med*, 91(10), 634-640**
Although most primary health care teams in the U.K. now offer proactive care for patients with asthma, there is relatively little published evidence showing the effectiveness of such innovations. This may be due in part to lack of targeting of extra care towards those most in need. Therefore, to demonstrate the benefits of targeted nurse-run asthma clinic care in a seven-partner general practice in a mixed urban and rural area of North Lincolnshire in the east of England, a cohort of 173 patients, with asthma selected predominantly by having high morbidity in a postal survey, completed 12 months follow-up in a nurse-run asthma clinic. A longitudinal comparison was conducted in terms of: changes in morbidity index category, inhaler technique score, knowledge score, use of inhaled steroids, use of salmeterol, method of administration of beta(2)-agonist medication and frequent use of peak flow meters. The number with high morbidity fell from 123 (71.1%) at the initial consultation to 14 (8.1%) at the 12-month review. Those with full marks on inhaler technique rose from 28 (16.2%) to 142 (82.1%), and with full marks on asthma knowledge rose from 7 (4.0%) to 98 (56.6%). The numbers of patients using inhaled steroids and salmeterol rose from 127 (73.4%) to 171 (98.9%) and from 5 (2.9%) to 35 (20.2%), respectively. The preferred inhaler device for beta(2)-bronchodilator medication changed from metered dose aerosol to dry powder. Regular use of peak flow meters in 157 subjects aged 5 years and over rose from 43 (27.4%) to 116 (73.9%). These data clearly demonstrate the benefits of targeted proactive nurse-run asthma care in terms of reduced morbidity for patients. The authors recommend the morbidity index targeting concept to other primary health care teams.

**Fall M, Walters S, Read S, Deverill M, Lutman M, Milner P, Rodgers R (1997): An evaluation of a nurse-led ear care service in primary care: benefits and costs, *Br J Gen Pract*, 47(424), 699-703**
BACKGROUND: Nurses trained in ear care provide a new model for the provision of services in general practice, with the aim of cost-effective treatment of minor ear and hearing problems that affect well-being and quality of life. AIM: To compare a prospective observational cohort study measuring health outcomes and resource use for patients with ear or hearing problems treated by nurses trained in ear care with similar patients treated by standard practice. METHOD: A total of 438 Rotherham and 196 Barnsley patients aged 16 years or over received two self-completion questionnaires: questionnaire 1 (Q1) on the day of consultation and questionnaire 2 (Q2) after three weeks. Primary measured outcomes were changes in discomfort and pain; secondary outcomes included the effect on normal life, health status, patient satisfaction, and resources used. RESULTS: After adjusting for differences at Q1, by Q2 there was no statistical evidence of a difference in discomfort and pain reduction, or differential change in health status between areas. Satisfaction with treatment was significantly higher (P = 0.0001) in Rotherham (91%) than in Barnsley (82%). Average total general practitioner (GP) consultations were lower in Rotherham at 0.4 per patient with an average cost of 6.28 Pounds compared with Barnsley at 1.4 per patient and an average cost of 22.53 Pounds (P = 0.04). Barnsley GPs prescribed more drugs per case (6% of total costs compared with 1.5%) and used more systemic antibiotics (P = 0.001). CONCLUSIONS: Nurses trained in ear care reduce costs, GP workload, and the use of systemic antibiotics, while increasing patient satisfaction with care. With understanding and support from GPs, such nurses are an example of how expanded nursing roles bring benefits to general practice. Nurses trained in ear care reduce treatment costs, reduce the use of antibiotics, educate patients in ear care, increase patient satisfaction, and raise ear awareness.

**Gradwell C, Thomas KS, English JS, Williams HC (2002): A randomized controlled trial of nurse follow-up clinics: do they help patients and do they free up consultants' time?, *Br J Dermatol*, 147(3), 513-7**
BACKGROUND: Nurse follow-up clinics have become increasingly popular in recent years. Their impact on service delivery within dermatology may be useful in relation to chronic diseases, where education and treatment concordance are important factors in disease management. OBJECTIVE: To assess the impact of providing a nurse follow-up clinic in addition to the normal service provided by the dermatology outpatient department at Queen's Medical Centre, Nottingham, and to obtain pilot data with which to inform future study design. METHODS: Newly referred patients aged >/= 14 years and with a diagnosis of either eczema or psoriasis were identified. In a randomized, parallel-group study with a follow-up period of 6 weeks, participants were randomized either to normal care, or to receive an additional session with a dermatology nurse specialist immediately after their consultation with the dermatologist. The primary outcome measure was change in quality of life at 6 weeks, as assessed by the Dermatology Life Quality Index (DLQI). Secondary outcomes comprised a comparison of patient knowledge at 6 weeks and the number of consultations (in secondary and primary care) that occurred during the 6-week follow-up period. RESULTS: Both groups improved by approximately 3 points on the DLQI scale after 6 weeks. The between-group difference was 0.27 (95% confidence interval - 2.3 to 2.8, P = 0.83). Patients who had seen the nurse were more likely to know how long they should apply treatment (P = 0.05). There was also a marked difference in patients' understanding of how to obtain a repeat prescription (P = 0.01) and from whom they could receive further support (P < 0.001). Following the addition of this service, 33% of follow-up appointments with a doctor were cancelled in the nurse intervention group. CONCLUSIONS: Dermatology nurses can add to a dermatology consultation and provide effective patient education and support in managing a skin condition. With this added service nurses could help to free up dermatologists' time, thus allowing them to see more new patients. Cost-effectiveness studies are now needed.

**Griffiths C, Foster G, Barnes N, Eldridge S, Tate H, Begum S, Wiggins M, Dawson C, Livingstone AE, Chambers M, Coats T, Harris R, Feder GS (2004): Specialist nurse intervention to reduce unscheduled asthma care in a deprived multiethnic area: the east London randomised controlled trial for high risk asthma (ELECTRA), *BMJ*, 328(7432), 144**
OBJECTIVE: To determine whether asthma specialist nurses, using a liaison model of care, reduce unscheduled care in a deprived multiethnic area. DESIGN: Cluster randomised controlled trial. SETTING: 44 general practices in two boroughs in east London. PARTICIPANTS: 324 people aged 4-60 years admitted to or attending hospital or the general practitioner out of hours service with acute asthma; 164 (50%) were South Asian patients, 108 (34%) were white patients, and 52 (16%) were from other, largely African and Afro-Caribbean, ethnicities. INTERVENTION: Patient review in a nurse led clinic and liaison with general practitioners and practice nurses comprising educational outreach, promotion of guidelines for high risk asthma, and ongoing clinical support. Control practices received a visit promoting standard asthma guidelines; control patients were checked for inhaler technique. MAIN OUTCOME MEASURES: Percentage of participants receiving unscheduled care for acute asthma over one year and time to first unscheduled attendance. RESULTS: Primary outcome data were available for 319 of 324 (98%) participants. Intervention delayed time to first attendance with acute asthma (hazard ratio 0.73, 95% confidence interval 0.54 to 1.00; median 194 days for intervention and 126

days for control) and reduced the percentage of participants attending with acute asthma (58% (101/174) v 68% (99/145); odds ratio 0.62, 0.38 to 1.01). In analyses of prespecified subgroups the difference in effect on ethnic groups was not significant, but results were consistent with greater benefit for white patients than for South Asian patients or those from other ethnic groups. CONCLUSION: Asthma specialist nurses using a liaison model of care reduced unscheduled care for asthma in a deprived multiethnic health district. Ethnic groups may not benefit equally from specialist nurse intervention.

**Grumbach K, Gary HL, Mertz E, Coffman J, Palazzo L (2003): Who is caring for the underserved? A comparison of primary care physicians and nonphysician clinicians in California and Washington, *Ann Fam Med,* 2, 97-104**
PURPOSE: Little is known about whether different types of physician and nonphysician primary care clinicians vary in their propensity to care for underserved populations. The objective of this study was to compare the geographic distribution and patient populations of physician and nonphysician primary care clinicians. METHODS: This study was a cross-sectional analysis of 1998 administrative and survey data on primary care clinicians (family physicians, general internists, general pediatricians, nurse practitioners, physician assistants, and certified nurse-midwives) in California and Washington. For geographic analysis, main outcome measures were practice in a rural area, a vulnerable population area (communities with high proportions of minorities or low-income residents), or a health professions shortage area (HPSA). For patient population analysis, outcomes were the proportions of Medicaid, uninsured, and minority patients in the practice. RESULTS: Physician assistants ranked first or second in each state in the proportion of their members practicing in rural areas and HPSAs, and in California physician assistants also had the greatest proportion of their members working in vulnerable populations areas ($P < .001$). Compared with primary care physicians overall, nurse practitioners and certified nurse-midwives also tended to have a greater proportion of their members in rural areas and HPSAs ($P < .001$). Family physicians were much more likely than other primary care physicians to work in rural areas and HPSAs ($P < .001$). Compared with physicians, nonphysician clinicians in California had a substantially greater proportion of Medicaid, uninsured, and minority patients ($P < .001$). CONCLUSIONS: Nonphysician primary care clinicians and family physicians have a greater propensity to care for underserved populations than do primary care physicians in other specialties. Achieving a more equitable pattern of service to needy populations will require ongoing, active commitment by policy makers, educational institutions, and the professions to a mission of public service and to incentives that support and promote care to the underserved.

**Halcomb E, Davidson P, Daly J, Yallop J, Tofler G (2004): Australian nurses in general practice based heart failure management: implications for innovative collaborative practice, *Eur J Cardiovasc Nurs*, 3(2), 135-147**
BACKGROUND: The growing global burden of heart failure (HF) necessitates the investigation of alternative methods of providing co-ordinated, integrated and client-focused primary care. Currently, the models of nurse-coordinated care demonstrated to be effective in randomized controlled trials are only available to a relative minority of clients and their families with HF. This current gap in service provision could prove fertile ground for the expansion of practice nursing [The Nurse in Family Practice: Practice Nurses and Nurse Practitioners in primary health care. 1988, Scutari Press, London: Impact of rural living on the experience of chronic illness. Australian Journal of Rural Health, 2001. 9: 235-240]. AIM: This paper aims to review the published literature describing the current and potential role of the practice nurse in HF management in Australia. METHODS: Searches of electronic databases, the reference lists of published materials and the internet were conducted using key words including 'Australia', 'practice nurse', 'office nurse', 'nurs*', 'heart failure', 'cardiac' and 'chronic illness'. Inclusion criteria for this review were English language literature; nursing interventions for heart failure (HF) and the role of practice nurses in primary care. RESULTS: There is currently a paucity of data evaluating the potential role for practice nurses in a reconfigured, collaborative health care system. Those studies that were identified were, largely, of a descriptive nature. In addition to identifying the practice nurse as a largely unexplored resource, key themes that emerged from the review include: (1) current general practice services face significant barriers to the implementation of evidence-based HF practice; (2) there is considerable variation in the practice nurse role between general practices; (3) there are significant barriers to the expansion of the practice nurse role; (4) multidisciplinary interventions can effectively deliver secondary prevention strategies; (5) practice nurses can potentially facilitate these multidisciplinary interventions; and (6) practice nurses are favourably perceived by consumers although there is some confusion about the nature of their role. CONCLUSION: On the basis of this literature review, practice nurses represent a potentially useful adjunct to current models of service provision in HF management. Further research needs to comprehensively investigate the role of the practice nurse in the Australian context with a view to developing effective and sustainable frameworks for clinical practice. In particular, high-level evidence is required to evaluate the efficacy of the practice nurse role compared to current disease management strategies.

**Hanrahan NP, Sullivan-Marx EM (2005): Practice patterns and potential solutions to the shortage of providers of older adult mental health services, *Policy Polit Nurs Pract*, 6(3), 236-245**
Little is known about the contribution of advanced practice nurses (APNs) to the mental health care of older adults. This study describes mental health services to older adults by APNs compared with primary care physicians, psychiatrists, psychologists, and social workers. The study uses a retrospective, cross-sectional design with a 5% national sample of 1999 Medicare outpatient claims. Bivariate statistics and multinomial logit models were used to determine differences among these mental health providers. A small proportion of the nationally available providers (10.4%) submitted claims for mental health services rendered to older adults. APNs, psychiatrists, and primary care physicians care for a disproportionate number of rural and poor older adults with complex medical/psychiatric needs compared with psychiatrists, psychologists, and social workers. APNs seem to be an untapped resource for providing mental health services to older adults. Health policy reform is needed to remove barriers to meet mental health care needs.

**Hemani A, Rastegar DA, Hill C, al-Ibrahim MS (1999): A comparison of resource utilization in nurse practitioners and physicians, *Eff Clin Pract*, 2(6), 258-265**
CONTEXT: Nurse practitioners increasingly provide primary care in a variety of settings. Little is known about how resource utilization for patients assigned to nurse practitioners compares with that for patients assigned to physicians. OBJECTIVE: To compare health care resource utilization for adult patients assigned to a nurse practitioner with that for patients assigned to a resident or attending physician. DESIGN: Prospective, quasi-randomized study. SETTING: Primary care clinic at a Veterans Affairs medical center. PATIENTS: 450 new primary care patients: 150 were assigned to a nurse practitioner, 150 to a resident physician, and 150 to an attending physician. OUTCOME MEASURES: We collected data on laboratory and radiologic testing, specialty care, primary care, emergency or walk-in visits, and hospitalizations over a 1-year period. We also collected information on baseline chronic illnesses, blood pressure, and weight. RESULTS: Resource utilization for patients assigned to a nurse practitioner was higher than that for patients assigned to a resident in 14 of 17 utilization measures (3 were statistically significant) and higher in 10 of 17 measures when compared with patients assigned to an attending physician (3 were statistically significant). None of the utilization measures for patients in the nurse practitioner group was significantly lower than those for either physician group. CONCLUSIONS: In a primary care setting, nurse practitioners may utilize more health care resources than physicians.

**Hooker RS (2002): A cost analysis of physician assistants in primary care, *JAAPA*, 15(11), 39-42, 45, 48**
Acute medical conditions commonly seen by physician assistants (PAs) or physicians were assigned costs for all resources used to treat an episode of illness. Included in the analysis were data on the provider of record for the episode, patient characteristics, health status, diagnosis, treatment, referrals, medication, imaging, laboratory studies, and return visits. In every medical condition managed by PAs, the total episode cost was less than a similar episode managed by a physician, regardless of patient age, gender, health status, and department. Few differences emerged in the use of resources and the rate of return visits for a diagnosis between physicians and PAs. In this setting PAs appear to be cost-effective from an employment standpoint.

**Hooker RS, Mc Caig LF (2001): Use of physician assistants and nurse practitioners in primary care, 1995-1999, *Health Aff (Millwood)*, 4, 231-238**
Federal policies and state legislation encourage the use of physician assistants (PAs) and nurse practitioners (NPs) in primary care, although the nature of their work has not been fully analyzed. In this paper we analyze primary care physician office encounter data from the 1995-1999 National Ambulatory Medical Care Surveys. About one-quarter of primary care office-based physicians used PAs and/or NPs for an average of 11 percent of visits. The mean age of patients seen by physicians was greater than that for PAs or NPs. NPs provided counseling/education during a higher proportion of visits than did PAs or physicians. Overall, this study suggests that PAs and NPs are providing primary care in a way that is similar to physician care.

**Hopkins SC, Lenz ER, Pontes NM, Lin SX, Mundinger MO (2005): Context of care or provider training: the impact on preventive screening practices, *Prev Med*, 40(6), 718-724**
BACKGROUND: While MD adherence to U.S. Preventive Services Task Force guidelines has been found to be uneven, nurse practitioners (NPs) and their adherence to guidelines have not been closely examined. METHODS: A retrospective chart review of new patients (n = 1339) in an NP primary health care center, four MD primary health care centers, and one private NP practice. Screening and counseling were compared for NPs and MDs. RESULTS: When patient populations, resources, and administrative policies were similar in the NP and MD primary health care centers, NPs were more likely than MDs to perform primary prevention; however, MDs were more likely to document the delivery of secondary prevention screening. Private practice NPs' performance was more congruent with practice guidelines than either NP or MD primary health care center providers. Private practice NPs were more likely to perform screening, assessment, and counseling. CONCLUSIONS: When context, patient population, and productivity requirements were the same, NPs and MDs differed in their use of preventive measures, and not as expected. When NPs are not constrained by productivity requirements, and when their patient population has more resources and higher expectations, NPs perform better than their primary care center counterparts, particularly in secondary prevention and assessment and counseling.

**Horrocks S, Anderson E, Salisbury C (2002): Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors, *BMJ*, 324(7341), 819-823**
OBJECTIVE: To determine whether nurse practitioners can provide care at first point of contact equivalent to doctors in a primary care setting. DESIGN: Systematic review of randomised controlled trials and prospective observational studies. Data sources: Cochrane controlled trials register, specialist register of trials maintained by Cochrane Effective Practice and Organisation of Care Group, Medline, Embase, CINAHL, science citation index, database of abstracts of reviews of effectiveness, national research register, hand searches, and published bibliographies. Included studies: Randomised controlled trials and prospective observational studies comparing nurse practitioners and doctors providing care at first point of contact for patients with undifferentiated health problems in a primary care setting and providing data on one or more of the following outcomes: patient satisfaction, health status, costs, and process of care. RESULTS: 11 trials and 23 observational studies met all the inclusion criteria. Patients were more satisfied with care by a nurse practitioner (standardised mean difference 0.27, 95% confidence interval 0.07 to 0.47). No differences in health status were found. Nurse practitioners had longer consultations (weighted mean difference 3.67 minutes, 2.05 to 5.29) and made more investigations (odds ratio 1.22, 1.02 to 1.46) than did doctors. No differences were found in prescriptions, return consultations, or referrals. Quality of care was in some ways better for nurse practitioner consultations. CONCLUSION: Increasing availability of nurse practitioners in primary care is likely to lead to high levels of patient satisfaction and high quality care.

**Jenkins-Clarke S, Carr-Hill R (2001): Changes, challenges and choices for the primary health care workforce: looking to the future, *J Adv Nurs*, 34(6), 842-849**
AIMS: The main aim of this paper is to draw attention to problems facing the primary health care workforce in terms of demand for treatment of minor illness over the next two decades. These predictions have implications for the community nursing workforce in particular and the flexibility of primary health care teams in general. BACKGROUND: Care delivered in the primary care sector influences, and is influenced by, the characteristics of the health care workforce. These characteristics fall into two main groups: firstly, the shape of the present medical and nursing workforce and manpower trends; and secondly, the changes in doctors' and nurses' workloads. DESIGN: This paper draws on two studies, both commissioned by the Department of Health; the first study focusing on skill mix and delegation in primary health care teams and the second addressing the implications of skill mix for medical workforce scenarios in the changing policy environment. FINDINGS: From the first study, general practitioners across ten general practices were prepared to delegate at least one topic from over a third of 836 consultations and a further 17% of entire consultations. This potential delegation fell mainly to practice nurses and nurse practitioners. The second study used data extracted from the National Morbidity Surveys of 1981 and 1991 predicting that minor consultations are set to increase by 11 million from the 1990s to 2020--a minimal estimate. The authors argue that many of these extra predicted consultations will find their way onto practice nurses' and nurse practitioners' caseloads. CONCLUSIONS: Workforce issues and questions of professional roles and boundaries, in the context of the "greying" community nursing workforce, demand solutions if patient/client demand is to be met over the next two decades.

**Jenkins-Clarke S, Carr-Hill R, Dixon P (1998): Teams and seams: skill mix in primary care, *J Adv Nurs*, 28(5), 1120-1126**
The study described in this paper is set against a background of rapid changes in primary (community) care delivery in the United Kingdom (UK) and consequently the methodology of the study has been shaped by three broad issues - workforce changes, increase in workload and changing roles and boundaries. Ten 'ordinary' general practices (general practitioners (GPs) and the 'attached' community nurses) participated in the study and a large amount of data were collected over a 2-week observation period. Three study objectives are described, relating to workload, delegation and attitudes to delegation. The characteristics of the workload of the three main groups of community nurses (practice nurses, district nurses and health visitors) are described and compared. Thirty-nine per cent of all the GP consultations (836) had a delegatable element and 17% were deemed to be delegatable in their entirety. General practitioners most frequently referred to delegation to practice nurses in the current team and nurse practitioners in an enhanced team. The study identified the activities most amenable to delegation to these two groups of nurses. Attitudes to delega-

tion were sought through focus group discussions, with reservations being expressed by both doctors and community nurses. This study provides evidence that GPs are prepared to delegate a considerable proportion of their workload; this clearly has implications for the nursing profession.

**Jones KP, Mullee MA (1995): Proactive, nurse-run asthma care in general practice reduces asthma morbidity: scientific fact or medical assumption?, *Br J Gen Pract*, 45(398), 497-499**
Nurse-run asthma care in general practice in the United Kingdom has become extremely common, particularly since the introduction of the 1990 contract for general practitioners, but there have been few controlled trials of the clinical effectiveness of this approach to asthma care. A study attempted to compare the outcome of asthma care over three years in two similar practices when one practice provided proactive, nurse-run care and the second continued with a traditional (reactive) approach, and to examine the process of care when such changes were introduced. Despite the investment of considerable resources, statistically significant differences could not be shown between the two practices using a comprehensive variety of outcome measures. This could be interpreted as meaning that nurse-run asthma care may be ineffective, but the negative outcome is much more likely to reflect difficulties in the manner in which the intervention practice sought to develop its service and in the research process. There were extensive methodological problems leading to a potential type 2 error. A randomized controlled trial of nurse-run asthma care would now be difficult to conduct, and so it may be necessary to accept nurse-run asthma care without definitive proof of its clinical effectiveness.

**Kernick DP, Reinhold DM, Mitchell A (1999): How should patients consult? A study of the differences in viewpoint between doctors and patients, *Fam Pract*, 16(6), 562-565**
BACKGROUND: Increasing pressure on limited NHS resources has led to the introduction in primary care of a skill mix which seeks to match clinical presentation to an intervention based on skills and training. There has also been increasing emphasis on the use of telephone consultations. However, outcomes on the benefits of these different approaches may be difficult to obtain and process variables such as the views of patients may be important. OBJECTIVE: The objective of the study was to answer the following questions (i) how many existing GP consultations do doctors and patients assess as being suitable for consultation with a specially trained nurse or for telephone advice from a doctor?; (ii) do doctors and patients share similar views on the suitability of individual cases?; and (iii) do these assessments differ between acute, chronic and urgent cases? METHOD: A sample of 750 patients comprising of 150 patients attending for booked consultation with each of five doctors were interviewed prior to the consultation and asked whether they would be happy to see a specially trained practice nurse or if their problem could be dealt with by a doctor on the telephone. For each case the GP gave his response. A similar study was undertaken with 150 'extras' patients who needed to be seen urgently and who could not wait for an appointment the following day. The viewpoint of the GP was compared with that of the patient. RESULTS: GPs felt that 20% of all booked cases could be seen by a nurse compared with the patients' assessment of 29%. These figures were higher for acute booked cases (30 and 34%) and for urgent extras (44 and 58%). There was a poor agreement between the viewpoints of doctor and patient especially for chronic booked cases although this agreement increased with the more acute presentations. The number of cases that could be dealt with on the telephone ranged from 5 to 9% with poor agreement between doctor and patient. CONCLUSION: This study extends the findings of a number of others which indicate that patients can be seen satisfactorily by nurses, and that both doctors and patients see scope for increasing the number of consultations dealt with by nurses. Booked patients with chronic presentations and urgent extras are more likely than their doctors to think that they could be dealt with by the nurse. This may be due to a difference in perspective between doctors and patients about the outcome they hope to achieve in the consultation. Further qualitative work is needed to explore these differences and to clarify the best approach to this expanding area.

**Kinnersley P, Anderson E, Parry K, Clement J, Archard L, Turton P, Stainthorpe A, Fraser A, Butler CC, Rogers C (2000): Randomised controlled trial of nurse practitioner versus general practitioner care for patients requesting "same day" consultations in primary care, *BMJ*, 320(7241), 1043-1048**
OBJECTIVE: To ascertain any differences between care from nurse practitioners and that from general practitioners for patients seeking "same day" consultations in primary care. DESIGN: Randomised controlled trial with patients allocated by one of two randomisation schemes (by day or within day). SETTING: 10 general practices in south Wales and south west England. SUBJECTS: 1368 patients requesting same day consultations. MAIN OUTCOME MEASURES: Patient satisfaction, resolution of symptoms and concerns, care provided (prescriptions, investigations, referrals, recall, and length of consultation), information provided to patients, and patients' intentions for seeking care in the future. RESULTS: Generally patients consulting nurse practitioners were significantly more satisfied with their care, although for adults this difference was not observed in all practices. For children, the mean difference between general and nurse practitioner in percentage satisfaction score was -4.8 (95% confidence interval -6.8 to -2.8), and for adults the differences ranged from -8.8 (-13.6 to -3.9) to 3.8 (-3.3 to 10.8) across the practices. Resolution of symptoms and concerns did not differ between the two groups (odds ratio 1.2 (95% confidence interval 0.8 to 1.8) for symptoms and 1.03 (0.8 to 1.4) for concerns). The number of prescriptions issued, investigations ordered, referrals to secondary care, and reattendances were similar between the two groups. However, patients managed by nurse practitioners reported receiving significantly more information about their illnesses and, in all but one practice, their consultations were significantly longer. CONCLUSION: This study supports the wider acceptance of the role of nurse practitioners in providing care to patients requesting same day consultations.

**Krein SL. (1997): The employment and use of nurse practitioners and physician assistants by rural hospitals, *J Rural Health*, 1, 45-58**
Nurse practitioners and physician assistants are both important resources for the delivery of health care services in rural areas. Nevertheless, little is known about the demand for their services by rural employers. The purpose of this study was: (1) to describe and compare the employment and use of nurse practitioners and physician assistants by rural hospitals in an eight-state region in the northwestern United States (Minnesota, North Dakota, South Dakota, Iowa, Montana, Idaho, Oregon and Washington); and (2) to examine how different market and organizational factors influence the employment of nurse practitioners and physician assistants by rural hospitals. Data for the study were collected through telephone interviews of rural hospital administrators (N = 407) and analyzed using both descriptive tables and logistic regression. Study results show that rural hospitals are important employers of both nurse practitioners and physician assistants, although there is a greater demand for than supply of both types of practitioners. Moreover, there are several differences in the characteristics of hospitals that employ the different types of practitioners. Rural hospitals use nurse practitioners and physician assistants to enhance their delivery of outpatient services, and a major factor related to the employment of nurse practitioners and physician assistants by rural hospitals is the Rural Health Clinic program. The majority of hospitals that use nurse practitioners, as well as those that use physician assistants, indicate that nurse practitioners and physician assistants can prescribe medications and order lab tests and X-rays, but considerably fewer report that nurse practitioners and physician assistants have admitting or discharge privileges. Physician assistants appear to provide a more expanded scope of services in

rural hospitals. Nonetheless, rural hospitals seem to employ nurse practitioners and physician assistants for similar reasons: (1) to extend care, assist physicians, or increase access to primary care; (2) because physicians are unavailable or too difficult to recruit; (3) because nurse practitioners or physician assistants are considered cost-effective or more economical for rural areas; and, (4) for Rural Health Clinic certification.

**Langham S, Thorogood M, Normand C, Muir J, Jones L, Fowler G (1996): Costs and cost effectiveness of health checks conducted by nurses in primary care: the Oxcheck study, *BMJ*, 312(7041), 1265-1268**
OBJECTIVE--To measure the costs and cost effectiveness of the Oxcheck cardiovascular risk factor screening and intervention programme. DESIGN--Cost effectiveness analysis of a randomised controlled trial using clinical and economic data taken from the trial. SETTING--Five general practices in Luton and Dunstable, England. SUBJECTS--2205 patients who attended a health check in 1989-90 and were scheduled for re-examination in 1992-3 (intervention group); 1916 patients who attended their initial health check in 1992-3 (control group). Participants were men and women aged 35-64 years. INTERVENTION--Health check conducted by nurse, with health education and follow up according to degree of risk. MAIN OUTCOME MEASURES--Cost of health check programme; cost per 1% reduction in coronary risk. RESULTS--Health check and follow up cost 29.27 pounds per patient. Estimated programme cost per 1% reduction in coronary risk per participant was between 1.46 pounds and 2.25 pounds; it was nearly twice as much for men as women. CONCLUSIONS--The cost to the practice of implementing Oxcheck-style health checks in an average sized practice of 7500 patients would be 47,000 pounds, a proportion of which could be paid for through staff pay reimbursements and Band Three health promotion target payments. This study highlights the considerable difficulties faced when calculating the costs and benefits of a health promotion programme. Economic evaluations should be integrated into the protocols of randomised controlled trials to enable judgments to be made on the relative cost effectiveness of different prevention strategies.

**Larson EH, Palazzo L, Berkowitz B, Pirani MJ, Hart LG (2003): The Contribution of Nurse Practitioners and Physician Assistants to Generalist Care in Washington State, *Health Services Research*, 4, 1033-1050**
OBJECTIVE: To quantify the total contribution to generalist care made by nurse practitioners (NPs) and physician assistants (PAs) in Washington State. DATA SOURCES: State professional licensure renewal survey data from 1998-1999. STUDY DESIGN: Cross-sectional. Data on medical specialty, place of practice, and outpatient visits performed were used to estimate productivity of generalist physicians, NPs, and PAs. Provider head counts were adjusted for missing specialty and productivity data and converted into family physician full-time equivalents (FTEs) to facilitate estimation of total contribution to generalist care made by each provider type. PRINCIPAL FINDINGS: Nurse practitioners and physician assistants make up 23.4 percent of the generalist provider population and provide 21.0 percent of the generalist outpatient visits in Washington State. The NP/PA contribution to generalist care is higher in rural areas (24.7 percent of total visits compared to 20.1 percent in urban areas). The PAs and NPs provide 50.3 percent of generalist visits provided by women in rural areas, 36.5 percent in urban areas. When productivity data were converted into family physician FTEs, the productivity adjustments were large. A total of 4,189 generalist physicians produced only 2,760 family physician FTEs (1 FTE=105 outpatient visits per week). The NP and PA productivity adjustments were also quite large. CONCLUSIONS: Accurate estimates of available generalist care must take into account the contributions of NPs and PAs. Additionally, simple head counts of licensed providers are likely to result in substantial overestimates of available care. Actual productivity data or empirically derived adjustment factors must be used for accurate estimation of provider shortages.

**Latter S, Courtenay M (2004): Effectiveness of nurse prescribing: a review of the literature, *J Clin Nurs*, 13(1), 26-32**
BACKGROUND: In the UK, the number of nurses able to prescribe medicines is rapidly increasing in line with Government policy directives. Whilst a number of research studies have been conducted on nurse prescribing, review and synthesis of the findings from these studies had not been undertaken. AIMS AND OBJECTIVES: The literature review was conducted to identify key findings about the impact and effectiveness of nurse prescribing as well as under-researched issues, in order to inform future research, education and practice in this area. METHODS: A review of the literature on the first phase of nurse prescribing (1993-2002) in the UK was undertaken using electronic databases and specified search terms; some hand searching and identification of grey literature was also carried out. RESULTS: Eighteen research-based publications were included in the review. Findings indicate that patients are generally satisfied with district nurses' and health visitors' prescribing in the first phase of nurse prescribing. Nurses who prescribe are also generally satisfied with their role, although some concerns about the adequacy of their pharmacological knowledge have been raised. There is some variation in the prescribing patterns of district nurses', health visitors' and practice nurses, and the limitations of the original Nurse Prescribers' Formulary (NPF) have been highlighted. Some preconditions for good nurse prescribing practice have begun to be identified. Some nurse prescribing outcomes - e.g. its impact on the prescribing practices of doctors, and the perspectives of certain patient groups - remain un-evaluated. Research into the first phase of nurse prescribing is inevitably confined to those with a district nurse and/or health visitor qualification who were prescribing from the original NPF, thus limiting conclusions that can be drawn for the current policy context. CONCLUSIONS: The review highlights that nurse prescribing has generally been evaluated positively to date; however, there are both methodological weaknesses and under-researched issues that point to the need for further research into this important policy initiative. RELEVANCE TO CLINICAL PRACTICE: The review focuses on a clinical issue central to current and future forms of health care practice. Findings from the review highlight both the impact of nurse prescribing and the prerequisites that require consideration by those responsible for the development of nurse prescribing in clinical practice.

**Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, Smith H, Moore M, Bond H, Glasper A (1998): Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial, The South Wiltshire Out of Hours Project (SWOOP) Group, *BMJ*, 317(7165), 1054-1059**
OBJECTIVE: To determine the safety and effectiveness of nurse telephone consultation in out of hours primary care by investigating adverse events and the management of calls. DESIGN: Block randomised controlled trial over a year of 156 matched pairs of days and weekends in 26 blocks. One of each matched pair was randomised to receive the intervention. SETTING: One 55 member general practice cooperative serving 97 000 registered patients in Wiltshire. SUBJECTS: All patients contacting the out of hours service or about whom contact was made during specified times over the trial year. INTERVENTION: A nurse telephone consultation service integrated within a general practice cooperative. The out of hours period was 615 pm to 1115 pm from Monday to Friday, 1100 am to 1115 pm on Saturday, and 800 am to 1115 pm on Sunday. Experienced and specially trained nurses received, assessed, and managed calls from patients or their carers. Management options included telephone advice; referral to the general practitioner on duty (for telephone advice, an appointment at a primary care centre, or a home visit); referral to the emergency service or advice to attend accident and emergency. Calls were managed with the help of decision support software. MAIN OUTCOME MEASURES: Deaths within seven days of a contact with the out of hours service; emergency hospital admissions within 24 hours and within three days of contact; attendance at accident and emergency within three days of a contact; number and management of calls in each arm of the trial. RESULTS: 14 492 calls were received during the specified times in the trial year (7308 in the control arm and 7184 in

the intervention arm) concerning 10 134 patients (10.4% of the registered population). There were no substantial differences in the age and sex of patients in the intervention and control groups, though male patients were underrepresented overall. Reasons for calling the service were consistent with previous studies. Nurses managed 49.8% of calls during intervention periods without referral to a general practitioner. A 69% reduction in telephone advice from a general practitioner, together with a 38% reduction in patient attendance at primary care centres and a 23% reduction in home visits was observed during intervention periods. Statistical equivalence was observed in the number of deaths within seven days, in the number of emergency hospital admissions, and in the number of attendances at accident and emergency departments. Conclusions Nurse telephone consultation produced substantial changes in call management, reducing overall workload of general practitioners by 50% while allowing callers faster access to health information and advice. It was not associated with an increase in the number of adverse events. This model of out of hours primary care is safe and effective.

**Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B (2005): Substitution of doctors by nurses in primary care, *Cochrane Database Syst Rev*, 2, CD001271**
BACKGROUND: Demand for primary care services has increased in developed countries due to population ageing, rising patient expectations, and reforms that shift care from hospitals to the community. At the same time, the supply of physicians is constrained and there is increasing pressure to contain costs. Shifting care from physicians to nurses is one possible response to these challenges. The expectation is that nurse-doctor substitution will reduce cost and physician workload while maintaining quality of care. OBJECTIVES: Our aim was to evaluate the impact of doctor-nurse substitution in primary care on patient outcomes, process of care, and resource utilisation including cost. Patient outcomes included: morbidity; mortality; satisfaction; compliance; and preference. Process of care outcomes included: practitioner adherence to clinical guidelines; standards or quality of care; and practitioner health care activity (e.g. provision of advice). Resource utilisation was assessed by: frequency and length of consultations; return visits; prescriptions; tests and investigations; referral to other services; and direct or indirect costs. SEARCH STRATEGY: The following databases were searched for the period 1966 to 2002: Medline; Cinahl; Bids, Embase; Social Science Citation Index; British Nursing Index; HMIC; EPOC Register; and Cochrane Controlled Trial Register. Search terms specified the setting (primary care), professional (nurse), study design (randomised controlled trial, controlled before-and-after-study, interrupted time series), and subject (e.g. skill mix). SELECTION CRITERIA: Studies were included if nurses were compared to doctors providing a similar primary health care service (excluding accident and emergency services). Primary care doctors included: general practitioners, family physicians, paediatricians, general internists or geriatricians. Primary care nurses included: practice nurses, nurse practitioners, clinical nurse specialists, or advanced practice nurses. DATA COLLECTION AND ANALYSIS: Study selection and data extraction was conducted independently by two reviewers with differences resolved through discussion. Meta-analysis was applied to outcomes for which there was adequate reporting of intervention effects from at least three randomised controlled trials. Semi-quantitative methods were used to synthesize other outcomes. MAIN RESULTS: 4253 articles were screened of which 25 articles, relating to 16 studies, met our inclusion criteria. In seven studies the nurse assumed responsibility for first contact and ongoing care for all presenting patients. The outcomes investigated varied across studies so limiting the opportunity for data synthesis. In general, no appreciable differences were found between doctors and nurses in health outcomes for patients, process of care, resource utilisation or cost. In five studies the nurse assumed responsibility for first contact care for patients wanting urgent consultations during office hours or out-of-hours. Patient health outcomes were similar for nurses and doctors but patient satisfaction was higher with nurse-led care. Nurses tended to provide longer consultations, give more information to patients and recall patients more frequently than did doctors. The impact on physician workload and direct cost of care was variable. In four studies the nurse took responsibility for the ongoing management of patients with particular chronic conditions. The outcomes investigated varied across studies so limiting the opportunity for data synthesis. In general, no appreciable differences were found between doctors and nurses in health outcomes for patients, process of care, resource utilisation or cost. AUTHORS' CONCLUSIONS: The findings suggest that appropriately trained nurses can produce as high quality care as primary care doctors and achieve as good health outcomes for patients. However, this conclusion should be viewed with caution given that only one study was powered to assess equivalence of care, many studies had methodological limitations, and patient follow-up was generally 12 months or less. While doctor-nurse substitution has the potential to reduce doctors' workload and direct healthcare costs, achieving such reductions depends on the particular context of care. Doctors' workload may remain unchanged either because nurses are deployed to meet previously unmet patient need or because nurses generate demand for care where previously there was none. Savings in cost depend on the magnitude of the salary differential between doctors and nurses, and may be offset by the lower productivity of nurses compared to doctors.

**Laurant MG, Hermens RP, Braspenning JC, Sibbald B, Grol RP (2004): Impact of nurse practitioners on workload of general practitioners: randomised controlled trial, *BMJ*, 328(7445), 927**
OBJECTIVE: To examine the impact on general practitioners' workload of adding nurse practitioners to the general practice team. DESIGN: Randomised controlled trial with measurements before and after the introduction of nurse practitioners. SETTING: 34 general practices in a southern region of the Netherlands. PARTICIPANTS: 48 general practitioners. INTERVENTION: Five nurses were randomly allocated to general practitioners to undertake specific elements of care according to agreed guidelines. The control group received no nurse. MAIN OUTCOME MEASURES: Objective workload, derived from 28 day diaries, included the number of contacts per day for each of three conditions (chronic obstructive pulmonary disease or asthma, dementia, cancer), by type of consultation (in practice, telephone, home visit), and by time of day (surgery hours, out of hours). Subjective workload was measured by using a validated questionnaire. Outcomes were measured six months before and 18 months after the intervention. RESULTS: The number of contacts during surgery hours increased in the intervention group compared with the control group ($P < 0.06$), particularly for patients with chronic obstructive pulmonary disease or asthma ($P < 0.01$). The number of consultations out of hours declined slightly in the intervention group compared with the control group, but this difference did not reach significance. No significant changes became apparent in subjective workload. CONCLUSION: Adding nurse practitioners to general practice teams did not reduce the workload of general practitioners, at least in the short term. This implies that nurse practitioners are used as supplements, rather than substitutes, for care given by general practitioners.

**Lenz ER, O'Neil M, Mundinger M, Kane RL, Hopkins SC, Lin SX (2004): Primary care outcomes in patients treated by nurse practitioners or physicians: two-year follow-up, *Med Care Res Rev*, 3, 332-351**
This study reports results of the 2-year follow-up phase of a randomized study comparing outcomes of patients assigned to a nurse practitioner or a physician primary care practice. In the sample of 406 adults, no differences were found between the groups in health status, disease-specific physiologic measures, satisfaction or use of specialist, emergency room or inpatient services. Physician patients averaged more primary care visits than nurse practitioner patients. The results are consistent with the 6-month findings and with a growing body of evidence that the quality of primary care delivered by nurse practitioners is equivalent to that by physicians.

**Lewis-Evans A, Jester R (2004): Nurse prescribers' experiences of prescribing, *J Clin Nurs*, 13(7), 796-805**
BACKGROUND: Nurse prescribing has advanced rapidly over the previous decade and is clearly on the agenda for the future. Previous research considers nurse prescribing from the patient's perspective, the medical professions' stance and the legal and ethical implications. However, there is a paucity of literature that explores the experiences of nurse prescribers' within their current role. These experiences need investigating to ensure nurse prescribing is able to advance in ways that provide benefit to nurses and thus provides the impetus for the study. AIM: To explore and review nurse prescribers' experiences of prescribing. DESIGN METHODS: A purposeful sample of seven nurse prescribers currently prescribing within a West Midlands Community Trust underwent minimally structured interviews in this qualitative study. Transcribed interviews were analyzed using thematic analysis. FINDINGS: Four themes were generated from analysis of the interviews, 'patient centred care', 'benefits of nurse prescribing', 'support and role satisfaction' and finally 'prescribing difficulties'. CONCLUSIONS: Nurse prescribers' perceive prescribing as a predominantly positive experience, frequently asserting the advantages that prescribing saves the patient and nurse time, is more convenient for the patient and increases the nurses' autonomy and role satisfaction. However, negative experiences of restrictions to practice as a result of nurse prescribers' formulary limitations and duplication of documentation were also described. RELEVANCE TO CLINICAL PRACTICE: Nurse prescribing is a rapidly evolving area of practice with the potential to advance nursing roles. This research aims to provide an insight into the experiences of current nurse prescribers that may then be disseminated and applied to future practice.

**Mackay B (2003): General practitioners' perceptions of the nurse practitioner role: an exploratory study, *N Z Med J*, 116(1170), U356**
AIMS: To explore perceptions of general practitioners (GPs) in the Northland District Health Board (NDHB) regarding the nurse practitioner (NP) role, identifying their knowledge of and perceived problems with that role, and their experience of nurses in advanced practice. METHODS: A purposive sample of all 108 GPs in NDHB were surveyed. Fifty replied, representing a response rate of 46.3%. RESULTS: GPs favourably viewed NP functions traditionally associated with nursing, such as health teaching, home visiting, obtaining health histories, and taking part in evaluation of care, but less favourably viewed those functions associated with medicine, such as prescribing, ordering laboratory tests, and physical assessment. While expecting few problems with patient acceptance, the GPs felt that funding and doctors' acceptance would be problematic. Most GPs indicated they have knowledge of the NP role and have experienced working with a nurse in advanced practice, but some uncertainty and lack of knowledge about the NP role was evident. CONCLUSIONS: More education and discussion with Northland GPs is needed to ensure they are fully informed about the NP role and its potential positioning in primary healthcare, to reduce uncertainty, minimise role confusion and promote collaboration between GPs and NPs.

**Marklund B, Koritz P, Bjorkander E, Bengtsson C (1991): How well do nurse-run telephone consultations and consultations in the surgery agree? Experience in Swedish primary health care, *Br J Gen Pract*, 41(352), 462-465**
The telephone consultation service is an important part of Swedish primary health care. However, few studies have compared telephone consultations managed by nurses with surgery consultations managed by both doctors and nurses in terms of information obtained from the patient regarding his or her symptoms, and the management decisions made. In this study, the information obtained from a patient during a telephone consultation with a health centre nurse and the management decisions made, were compared with those obtained at a subsequent surgery consultation with the same nurse, and then with a doctor. Of 200 telephone consultations at a health centre (50 in each of the following four categories as defined by the management decision of the nurse: acute case, semi-acute case, referral case and self-care case), 193 patients were included in the study. The information given to the nurse during the telephone consultation was recorded. The patient was then asked to come for a surgery consultation on the same day, first with the same nurse and then with a general practitioner. A comparison was made between the information obtained and the decisions taken in these three situations. In 185 of the 193 cases (96%) the information led to the same management decision by the nurse, in both the telephone consultation and later in the surgery consultation. In all cases the same history was recorded by the nurse during the telephone and surgery consultations as by the general practitioner. This indicates that in most cases little or no information is missed in a telephone consultation with a nurse as compared with a surgery consultation with a nurse or doctor.

**Marsh GN, Dawes ML (1995): Establishing a minor illness nurse in a busy general practice, *BMJ*, 310(6982), 778-780**
OBJECTIVE--To study the feasibility of a practice nurse caring for patients with minor illnesses. DESIGN--Nurse given training in dealing with patients with minor illnesses. Patients requesting a same day appointment were offered a nurse consultation. SETTING--Group practice in Stockton on Tees. MAIN OUTCOME MEASURES--Number of consultations which required a doctor contact, treatment, and rate of reconsultation. RESULTS--Of 696 consultations in six months, 602 (86%) required no doctor contact. 549 (79%) patients did not reconsult about the episode of illness, and 343 (50%) patients were given advice on self care only. CONCLUSION--Trained nurses could diagnose and treat a large proportion of patients currently consulting general practitioners about minor illness provided that the nurse has immediate access to a doctor.

**Martin KE (2000): Nurse practitioners: a comparison of rural-urban practice patterns and willingness to serve in underserved areas, *J Am Acad Nurse Pract*, 12, 491-496**
PURPOSE: To determine nurse practitioners' (NPs) practice patterns and willingness to practice in underserved areas in both rural and urban settings in a largely rural state. DATA SOURCES: A census of all NPs holding a Pennsylvania license and providing addresses in Pennsylvania or one of the contiguous states was conducted in 1996. The ZIP codes of practice sites were matched with 1990 census data. CONCLUSIONS: Nurse practitioners in rural areas are more likely than their urban counterparts to provide primary care in primary care practice settings, they see more patients per week, and they are more likely to be the principal provider of care for a higher percentage of their patients. Experience with managed care contracts is greater for urban NPs as is their willingness to practice in urban underserved areas. Rural NPs were more willing to practice in rural underserved areas than their urban counterparts. IMPLICATIONS FOR PRACTICE: Access to primary care continues to be a concern in rural areas. The increasing market penetration of managed care and the deficit of primary care providers in rural environments may lead to increased opportunities for NPs in the rural health care delivery system.

**McManus RJ, Mant J, Meulendijks CF, Salter RA, Pattison HM, Roalfe AK, Hobbs FD (2002): Comparison of estimates and calculations of risk of coronary heart disease by doctors and nurses using different calculation tools in general practice: cross sectional study, *BMJ*, 324(7335), 459-464**
OBJECTIVE: To assess the effect of using different risk calculation tools on how general practitioners and practice nurses evaluate the risk of coronary heart disease with clinical data routinely available in patients' records. DESIGN: Subjective estimates of the risk of coronary heart disease and results of four different methods of calculation of risk were compared with each other and a reference standard that had been calculated with the Framingham equation; calculations were based on a sample of patients' records, ran-

domly selected from groups at risk of coronary heart disease. SETTING: General practices in central England. PARTICIPANTS: 18 general practitioners and 18 practice nurses. MAIN OUTCOME MEASURES: Agreement of results of risk estimation and risk calculation with reference calculation; agreement of general practitioners with practice nurses; sensitivity and specificity of the different methods of risk calculation to detect patients at high or low risk of coronary heart disease. RESULTS: Only a minority of patients' records contained all of the risk factors required for the formal calculation of the risk of coronary heart disease (concentrations of high density lipoprotein (HDL) cholesterol were present in only 21%). Agreement of risk calculations with the reference standard was moderate (kappa=0.33-0.65 for practice nurses and 0.33 to 0.65 for general practitioners, depending on calculation tool), showing a trend for underestimation of risk. Moderate agreement was seen between the risks calculated by general practitioners and practice nurses for the same patients (kappa=0.47 to 0.58). The British charts gave the most sensitive results for risk of coronary heart disease (practice nurses 79%, general practitioners 80%), and it also gave the most specific results for practice nurses (100%), whereas the Sheffield table was the most specific method for general practitioners (89%). CONCLUSIONS: Routine calculation of the risk of coronary heart disease in primary care is hampered by poor availability of data on risk factors. General practitioners and practice nurses are able to evaluate the risk of coronary heart disease with only moderate accuracy. Data about risk factors need to be collected systematically, to allow the use of the most appropriate calculation tools.

**Modin S, Furhoff AK (2002): Care by general practitioners and district nurses of patients receiving home nursing: a study from suburban Stockholm, *Scand J Prim Health Care*, 20(4), 208-212**
OBJECTIVES: To review the care by general practitioners (GPs), district nurses and assistant nurses of patients receiving home nursing. DESIGN: Retrospective data from questionnaires, records and official statistics. Statistical comparisons. SETTING: Primary health care from October 1995 to October 1996. SUBJECTS: One-third (158) of all patients receiving home nursing in a suburban area were sampled; 73% (116) participated. All patients of comparable age in one practice served as a control group. MAIN OUTCOME MEASURES: Number of and reasons for visits and other contacts. Nature of care. Relation between patient problems and care given. RESULTS: Most patients were seen by the nurses two to five times a month. They met their GPs less often than other patients. More measures were undertaken without direct contact between GP and patient. The most common measures concerned medication and the assessment of symptoms. Patients with cognitive problems seemed to get less active GP care. CONCLUSION: GPs played an active role in the care of patients receiving home nursing even though they seldom met them. Many patients were regularly assessed by the nurses, which might have diminished the need for doctor visits. The care of patients with cognitive problems needs further study.

**Moher M, Yudkin P, Wright L, Turner R, Fuller A, Schofield T, Mant D (2001): Cluster randomised controlled trial to compare three methods of promoting secondary prevention of coronary heart disease in primary care, *BMJ*, 322(7298), 1338**
OBJECTIVE: To assess the effectiveness of three different methods of promoting secondary prevention of coronary heart disease in primary care. DESIGN: Pragmatic, unblinded, cluster randomised controlled trial. SETTING: Warwickshire. SUBJECTS: 21 general practices received intervention; outcome measured in 1906 patients aged 55-75 years with established coronary heart disease. INTERVENTIONS: Audit of notes with summary feedback to primary health care team (audit group); assistance with setting up a disease register and systematic recall of patients to general practitioner (GP recall group); assistance with setting up a disease register and systematic recall of patients to a nurse led clinic (nurse recall group). MAIN OUTCOME MEASURES: At 18 months' follow up: adequate assessment (defined) of 3 risk factors (blood pressure, cholesterol, and smoking status); prescribing of hypotensive agents, lipid lowering drugs, and antiplatelet drugs; blood pressure, serum cholesterol level, and plasma cotinine levels. RESULTS: Adequate assessment of all 3 risk factors was much more common in the nurse and GP recall groups (85%, 76%) than the audit group (52%). The advantage in the nurse recall compared with the audit group was 33% (95% confidence interval 19% to 46%); in the GP recall group compared with the audit group 23% (10% to 36%), and in the nurse recall group compared with the GP recall group 9% (-3% to 22%). However, these differences in assessment were not reflected in clinical outcomes. Mean blood pressure (148/80, 147/81, 148/81 mm Hg), total cholesterol (5.4, 5.5, 5.5 mmol/l), and cotinine levels (% probable smokers 17%, 16%, 19%) varied little between the nurse recall, GP recall, and audit groups respectively, as did prescribing of hypotensive and lipid lowering agents. Prescribing of antiplatelet drugs was higher in the nurse recall group (85%) than the GP recall or audit groups (80%, 74%). After adjustment for baseline levels, the advantage in the nurse recall group compared with the audit group was 10% (3% to 17%), in the nurse recall group compared with the GP recall group 8% (1% to 15%) and in the GP recall group compared with the audit group 2% (-6% to 10%). CONCLUSIONS: Setting up a register and recall system improved patient assessment at 18 months' follow up but was not consistently better than audit alone in improving treatment or risk factor levels. Understanding the reasons for this is the key next step in improving the quality of care of patients with coronary heart disease.

**Moore S, Corner J, Haviland J, Wells M, Salmon E, Normand C, Brada M, O'Brien M, Smith I (2002): Nurse led follow up and conventional medical follow up in management of patients with lung cancer: randomised trial, *BMJ*, 325(7373), 1145**
OBJECTIVE: To assess the effectiveness of nurse led follow up in the management of patients with lung cancer. DESIGN: Randomised controlled trial. SETTING: Specialist cancer hospital and three cancer units in southeastern England. PARTICIPANTS: 203 patients with lung cancer who had completed their initial treatment and were expected to survive for at least 3 months. INTERVENTION: Nurse led follow up of outpatients compared with conventional medical follow up. Outcome measures: Quality of life, patients' satisfaction, general practitioners' satisfaction, survival, symptom-free survival, progression-free survival, use of resources, and comparison of costs. RESULTS: Patient acceptability of nurse led follow up was high: 75% (203/271) of eligible patients consented to participate. Patients who received the intervention had less severe dyspnoea at 3 months (P=0.03) and had better scores for emotional functioning (P=0.03) and less peripheral neuropathy (P=0.05) at 12 months. Intervention group patients scored significantly better in most satisfaction subscales at 3, 6, and 12 months (P<0.01 for all subscales at 3 months). No significant differences in general practitioners' overall satisfaction were seen between the two groups. No differences were seen in survival or rates of objective progression, although nurses recorded progression of symptoms sooner than doctors (P=0.01). Intervention patients were more likely to die at home rather than in a hospital or hospice (P=0.04), attended fewer consultations with a hospital doctor during the first 3 months (P=0.004), had fewer radiographs during the first 6 months (P=0.04), and had more radiotherapy within the first 3 months (P=0.01). No other differences were seen between the two groups in terms of the use of resources. CONCLUSION: Nurse led follow up was acceptable to lung cancer patients and general practitioners and led to positive outcomes.

**Mundinger MO, Kane RL, Lenz ER, Totten AM, Tsai WY, Cleary PD, Friedewald WT, Siu AL, Shelanski ML (2000): Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial, *JAMA*, 283(1), 59-68**
CONTEXT: Studies have suggested that the quality of primary care delivered by nurse practitioners is equal to that of physicians. However, these studies did not measure nurse practitioner practices that had the same degree of independence as the comparison

physician practices, nor did previous studies provide direct comparison of outcomes for patients with nurse practitioner or physician providers. OBJECTIVE: To compare outcomes for patients randomly assigned to nurse practitioners or physicians for primary care follow-up and ongoing care after an emergency department or urgent care visit. DESIGN: Randomized trial conducted between August 1995 and October 1997, with patient interviews at 6 months after initial appointment and health services utilization data recorded at 6 months and 1 year after initial appointment. SETTING: Four community-based primary care clinics (17 physicians) and 1 primary care clinic (7 nurse practitioners) at an urban academic medical center. PATIENTS: Of 3397 adults originally screened, 1316 patients (mean age, 45.9 years; 76.8% female; 90.3% Hispanic) who had no regular source of care and kept their initial primary care appointment were enrolled and randomized with either a nurse practitioner (n = 806) or physician (n = 510). MAIN OUTCOME MEASURES: Patient satisfaction after initial appointment (based on 15-item questionnaire); health status (Medical Outcomes Study Short-Form 36), satisfaction, and physiologic test results 6 months later; and service utilization (obtained from computer records) for 1 year after initial appointment, compared by type of provider. RESULTS: No significant differences were found in patients' health status (nurse practitioners vs physicians) at 6 months (P = .92). Physiologic test results for patients with diabetes (P = .82) or asthma (P = .77) were not different. For patients with hypertension, the diastolic value was statistically significantly lower for nurse practitioner patients (82 vs 85 mm Hg; P = .04). No significant differences were found in health services utilization after either 6 months or 1 year. There were no differences in satisfaction ratings following the initial appointment (P = .88 for overall satisfaction). Satisfaction ratings at 6 months differed for 1 of 4 dimensions measured (provider attributes), with physicians rated higher (4.2 vs 4.1 on a scale where 5 = excellent; P = .05). CONCLUSIONS: In an ambulatory care situation in which patients were randomly assigned to either nurse practitioners or physicians, and where nurse practitioners had the same authority, responsibilities, productivity and administrative requirements, and patient population as primary care physicians, patients' outcomes were comparable.

**Murchie P, Campbell NC, Ritchie LD, Simpson JA, Thain J (2003): Secondary prevention clinics for coronary heart disease: four year follow up of a randomised controlled trial in primary care, *BMJ*, 326(7380), 84**
OBJECTIVES: To evaluate the effects of nurse led clinics in primary care on secondary prevention, total mortality, and coronary event rates after four years. DESIGN: Follow up of a randomised controlled trial by postal questionnaires and review of case notes and national datasets. SETTING: Stratified, random sample of 19 general practices in north east Scotland. PARTICIPANTS: 1343 patients (673 intervention and 670 control) under 80 years with a working diagnosis of coronary heart disease but without terminal illness or dementia and not housebound. Intervention: Nurse led secondary prevention clinics promoted medical and lifestyle components of secondary prevention and offered regular follow up for one year. MAIN OUTCOME MEASURES: Components of secondary prevention (aspirin, blood pressure management, lipid management, healthy diet, exercise, non-smoking), total mortality, and coronary events (non-fatal myocardial infarctions and coronary deaths). RESULTS: Mean follow up was at 4.7 years. Significant improvements were shown in the intervention group in all components of secondary prevention except smoking at one year, and these were sustained after four years except for exercise. The control group, most of whom attended clinics after the initial year, caught up before final follow up, and differences between groups were no longer significant. At 4.7 years, 100 patients in the intervention group and 128 in the control group had died: cumulative death rates were 14.5% and 18.9%, respectively (P=0.038). 100 coronary events occurred in the intervention group and 125 in the control group: cumulative event rates were 14.2% and 18.2%, respectively (P=0.052). Adjusting for age, sex, general practice, and baseline secondary prevention, proportional hazard ratios were 0.75 for all deaths (95% confidence intervals 0.58 to 0.98; P=0.036) and 0.76 for coronary events (0.58 to 1.00; P=0.049) CONCLUSIONS: Nurse led secondary prevention improved medical and lifestyle components of secondary prevention and this seemed to lead to significantly fewer total deaths and probably fewer coronary events. Secondary prevention clinics should be started sooner rather than later.

**Murchie P, Campbell NC, Ritchie LD, Thain J (2005): Running nurse-led secondary prevention clinics for coronary heart disease in primary care: qualitative study of health professionals' perspectives, *Br J Gen Pract*, 55(516), 522-528**
BACKGROUND: A randomised trial of nurse-led secondary prevention clinics for coronary heart disease resulted in improved secondary prevention and significantly lowered all-cause mortality at 4-year follow-up. This qualitative trial was conducted to explore the experience of health professionals that had been involved in running the clinics. AIM: To identify the barriers and facilitators to establishing secondary prevention clinics for coronary heart disease within primary care. DESIGN OF STUDY: Semi-structured audiotaped telephone interviews with GPs and nurses involved in running clinics. SETTING: A stratified, random sample of 19 urban, suburban, and rural general practices in north-east Scotland. METHOD: Semi-structured telephone interviews with 19 GPs and 17 practice-based nurses involved in running nurse-led clinics for the secondary prevention of coronary heart disease. RESULTS: Eight practices had run clinics continuously and 11 had stopped, with eight subsequently restarting. Participants accounted for these patterns by referring to advantages and disadvantages of the clinics in four areas: patient care, development of nursing skills, team working, and infrastructure. Most practitioners perceived benefits for patients from attending secondary prevention clinics, but some, from small rural practices, thought they were unnecessary. The extended role for nurses was welcomed, but was dependent on motivated staff, appropriate training and support. Clinics relied on, and could enhance, team working, however, some doctors were wary of delegating. With regard to infrastructure, staff shortages (especially nurses) and accommodation were as problematic as lack of funds. CONCLUSIONS: Nurse-led secondary prevention clinics were viewed positively by most healthcare professionals that had been involved in running them, but barriers to their implementation had led most to stop running them at some point. Lack of space and staff shortages are likely to remain ongoing problems, but improvements in funding training and communication within practices could help clinics to be put into practice and sustained.

**Myers PC, Lenci B, Sheldon MG (1997): A nurse practitioner as the first point of contact for urgent medical problems in a general practice setting, *Fam Pract*, 14(6), 492-497**
OBJECTIVES: The aim of this study was to examine the suitability of nurse practitioners for assessing and managing urgent clinical problems presenting in primary care. METHODS: Patients registered at a suburban group practice presenting with acute medical problems were offered the choice of seeing a GP or a nurse practitioner. The outcomes of 1000 consultations were analysed by recording the repeat consultation rate, the prescription-issue rate and the rate of referral to secondary care, as well as investigating patient satisfaction and the number of dysfunctional consultations and misdiagnoses. RESULTS: Patients reported a high level of satisfaction with nurse practitioner consultations, and there were no recorded instances of medical sequelae due to poor diagnosis or mismanagement. Nurse and doctors saw patients with similar age and sex distributions, but the results suggested that there was a significant difference between the morbidity of problems seen. There was also a difference in the outcomes of repeat consultation rate and the prescription issue rate, although there was little difference in the rate of referral for secondary care. CONCLUSION: As patients expressed a high level of satisfaction with the nurse practitioner, this suggests that given the choice, patients in primary care can safely and effectively 'self triage' themselves between GPs and nurse practitioners.

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**Myles S, Wyke S, Ibbotson T, Macintyre S, McEwen J, Kelly M (1996): Costs and remuneration for cervical screening in general practice in the west of Scotland, *J Health Serv Res Policy*, 1(4), 217-223**
OBJECTIVES: To investigate associations between costs and remuneration for cervical screening in general practice in relation to skill mix, features of practice structure and deprivation levels in the local area; and, to identify efficient policies for organising cervical screening in general practice. METHOD: Questionnaire survey and interview study in 87 general practices in Greater Glasgow Health Board an area in the west of Scotland which covers a socio-economically varied population. The main outcome measures were remuneration to cost ratios (RCRs) for cervical screening and their natural logarithms (logRCRs). RESULTS: Both the costs of cervical screening and RCRs varied widely between the 87 practices taking part. RCRs ranged from 0.29 to 14.67 (mean 2.64, median 2.18, interquartile range 1.15-2.98). Twenty-one per cent (18) of practices earned less than they spent on the organisation of screening, whilst 9% (8) of practices had PCRs of more than 5:1. RCRs were significantly lower if medical staff were involved in either taking smears or dealing with results. RCRs did not vary by social deprivation score, despite uptake being lower in practices in more deprived areas. This was explained by nurses working in practices in deprived areas being more likely to take smears than nurses working in more affluent areas. Sensitivity analyses were undertaken, altering key time and cost assumptions. As a result, the absolute values of the RCRs changed, although the overall pattern of association did not, with the exception of doctor involvement in processing results which was no longer significant when average general practitioners' income was substituted for locum rates. CONCLUSIONS: Practices in deprived areas may be responding to greater pressure of work by making optimal use of skill mix within the primary health care team. A more graduated incentive payment scheme may more fairly reward practices in deprived areas which are less likely to achieve 80% uptake due to relatively intractable features of practice structure. Assuming that practice nurses provide an equivalent quality of service to that provided by general practitioners, results suggest that doctor-nurse substitution would be cost-effective for general practice based cervical screening. Resource savings (principally doctor's time) could be redeployed to other areas of primary health care.

**Oakley D, Murray ME, Murtland T, Hayashi R, Andersen HF, Mayes F, Rooks J (1996): Comparisons of outcomes of maternity care by obstetricians and certified nurse-midwives, *Obstet Gynecol*, 88(5), 823-829**
OBJECTIVE: To determine whether pregnancy outcomes differ by provider group when alternative explanations are taken into account. METHODS: Pregnancy outcomes were compared for 710 women cared for by private obstetricians and 471 cared for by certified nurse-midwives. At intake, all women qualified for nurse-midwifery care. They were retained in their original group for analysis, even if they were later referred to physicians. Infant and maternal mortality, 30 clinical indicators, satisfaction with care, and monetary charges were studied. The study site's history and philosophy of honoring consumer choice of provider precluded random assignment, but multivariate analyses minimized the effects of multiple confounding factors. The statistical power was adequate for the study design. RESULTS: Significant differences ($P < .05$) between the obstetrician and nurse-midwife groups were found for seven clinically important outcomes: infant abrasions (7 versus 4%), infant remaining with mother for the entire hospital stay (15 versus 27%), third- or fourth-degree perineal laceration (23 versus 7%), number of complications (0.7 versus 0.4), satisfaction with care, average hospital charges ($5427 versus $4296), and average professional fee charges ($3425 versus $3237). When maternal risk, selection bias, and the medical intensiveness of care were controlled, the provider group did not continue to have an independent effect on infant abrasions, hemorrhage, and professional fee charges; when women's preferences were added, the difference in hospital charges disappeared. However, the provider group continued to have significant independent effects on the other four outcomes. Interaction effects were not significant. CONCLUSION: Although most outcomes were equally good, important differences between obstetrician and nurse-midwife care remained after multivariate analysis.

**Perry C, Thurston M, Killey M, Miller J (2005): The nurse practitioner in primary care: alleviating problems of access?, *Br J Nurs*, 14(5), 255-259**
Improving access to primary care services is an essential component of the NHS modernization plan and the advent of independent nurse practitioners in primary care has focused attention on the extent to which this group of nurses can effectively substitute for GPs. This study was designed to explore the role of a nurse practitioner in primary care, particularly whether the provision of a nurse practitioner facilitated access to care that met the needs of patients. Semistructured interviews were conducted with 14 patients who had consulted with the nurse practitioner, 10 staff within the practice who had knowledge of the role, and the nurse practitioner herself. With the permission of interviewees, interviews were audiotaped, the tapes transcribed verbatim, and the data were coded by theme. It was perceived by both groups of interviewees that access to care had been improved in that there were more appointments available, appointments were longer than they had been previously and were available at different times of the day. However, some areas in which access was 'restricted' were articulated by staff interviewees, such as limitations to the nurse practitioner's prescribing and problems with referring patients to secondary care. Additionally, while access to a member of the primary healthcare team was improved for many patients, access to a specific member of the team, such as a GP, was not always improved. Concerns were also expressed about how the role of the nurse practitioner needed to be developed in the practice. It can be concluded from this study that, potentially, the role of nurse practitioner has much to offer in terms of addressing problems of access in primary care for some patients. However, this is not a straightforward solution and in order for the role to be effective several issues highlighted in this study require addressing.

**Pinnock H, McKenzie L, Price D, Sheikh A (2005): Cost-effectiveness of telephone or surgery asthma reviews: economic analysis of a randomised controlled trial, *Br J Gen Pract*, 55(511), 119-124**
BACKGROUND: Only about a third of people with asthma attend an annual review. Clinicians need to identify cost-effective ways to improve access and ensure regular review. AIM: To compare the cost-effectiveness of nurse-led telephone with face-to-face asthma reviews. DESIGN OF STUDY: Cost-effectiveness analysis based on a 3-month randomised controlled trial. SETTING: Four general practices in England. METHOD: Adults due an asthma review were randomised to telephone or face-to-face consultations. Trial nurses recorded proportion reviewed, duration of consultation, and abortive calls/missed appointments. Data on use of healthcare resources were extracted from GP records. Cost-effectiveness was assessed from the health service perspective; sensitivity analyses were based on proportion reviewed and duration of consultation. RESULTS: A total of 278 people with asthma were randomised to surgery ($n = 141$) or telephone ($n = 137$) review. Onehundred-and-one (74%) of those with asthma in the telephone group were reviewed versus 68 (48%) in the surgery group ($P <0.001$). Telephone consultations were significantly shorter (mean duration telephone = 11.19 minutes [standard deviation {SD} = 4.79] versus surgery = 21.87 minutes [SD = 6.85], $P <0.001$). Total respiratory healthcare costs per patient over 3 months were similar (telephone = pounds sterling 64.49 [SD = 73.33] versus surgery = pounds sterling 59.48 [SD = 66.02], $P = 0.55$). Total costs of providing 101 telephone versus 68 face-to-face asthma reviews were also similar (telephone = pounds sterling 725.84 versus surgery = pounds sterling 755.70), but mean cost per consultation achieved was lower in the telephone arm (telephone = pounds sterling 7.19 [SD = 2.49] versus surgery = pounds sterling 11.11 [SD = 3.50]; mean difference = - pounds sterling 3.92 [95% confidence interval = - pounds sterling 4.84 to pounds sterling 3.01], $P <0.001$). CONCLU-

SIONS: Telephone consultations enable a greater proportion of asthma patients to be reviewed at no additional cost to the health service. This mode of delivering care improves access and reduces cost per consultation achieved.

**Poulton BC (1996): Use of the consultation satisfaction questionnaire to examine patients' satisfaction with general practitioners and community nurses: reliability, replicability and discriminant validity, *Br J Gen Pract*, 46(402), 26-31**
BACKGROUND: Primary health care services are the most frequently used in the health care system. Consumer feedback on these services is important. Research in this area relates mainly to doctor-patient relationships which fails to reflect the multidisciplinary nature of primary health care. AIM: A pilot study aimed to examine the feasibility of using a patient satisfaction questionnaire designed for use with general practitioner consultations as an instrument for measuring patient satisfaction with community nurses. METHOD: The questionnaire measuring patient satisfaction with general practitioner consultations was adapted for measuring satisfaction with contacts with a nurse practitioner, district nurses, practice nurses and health visitors. A total of 1575 patients in three practices consulting general practitioners or community nurses were invited to complete a questionnaire. Data were subjected to principal components analysis and the dimensions identified were tested for internal reliability and replicability. To establish discriminant validity, patients' mean satisfaction scores for consultations with general practitioners, the nurse practitioner, health visitors and nurses (district and practice nurses) were compared. RESULTS: Questionnaires were returned relating to 400 general practitioner, 54 nurse practitioner, 191 district/practice nurse and 83 health visitor consultations (overall response rate 46%). Principal components analysis demonstrated a factor structure similar to that found in an earlier study of the consultation satisfaction questionnaire. Three dimensions of patient satisfaction were identified: professional care, depth of relationship and perceived time spent with the health professional. The dimensions were found to have acceptable levels of reliability. Factor structures obtained from data relating to general practitioner and community nurse consultations were found to correlate significantly. Comparison between health professionals showed that patients rated satisfaction with professional care significantly more highly for nurses than for general practitioners and health visitors. Patients' rating of satisfaction with the depth of relationships with health visitors was significantly lower than their ratings of this relationship with the other groups of health professionals. There were so significant differences between health professional groups regarding patients' ratings of satisfaction with the perceived amount of time spent with health professionals. CONCLUSION: The pilot study showed that it is possible to use the consultation satisfaction questionnaire for both general practitioners and community nurses. Comparison between health professional groups should be undertaken with caution as data were available for only a small number of consultations with some of the groups of health professionals studied.

**Price A, Williams A (2003): Primary care nurse practitioners and the interface with secondary care: a qualitative study of referral practice, *J Interprof Care*, 17(3), 239-250**
In the United Kingdom nurse practitioners are assuming responsibilities traditionally considered to be within the domain of general practitioners. Important amongst these is the referral of patients to medical consultants in secondary care, a responsibility commonly associated with the general practitioner's role as 'gatekeeper' to health care. This paper describes a study designed to identify issues raised by the challenge that a developing nursing role presents to interprofessional working at the interface between primary and secondary care. When invited to comment, study participants (nurse practitioners, nurse educators, medical consultants and general practice registrars) related nursing referrals to issues associated with professional boundary changes, namely: teamwork, regulation of practice, communication, professional conflict and professional relationships. This paper discusses the views of primary and secondary care practitioners about who should take responsibility for the referral of patients in the light of concerns raised about professional competence and accountability. Individual nurse practitioners and their colleagues have found pragmatic ways to manage their work however, although UK government policy supports development of advanced clinical nursing, there remains much work to be done to provide the professional and legal infrastructure to support the role.

**Pritchard A, Kendrick D (2001): Practice nurse and health visitor management of acute minor illness in a general practice, *J Adv Nurs*, 36(4), 556-562**
OBJECTIVE: To evaluate practice nurse (PN) and health visitor (HV) management of patients with acute minor illnesses, monitor the effect on general practitioner (GP) workload, and describe the range of conditions seen by nurses. DESIGN: Patients requesting 'urgent' appointments (within 24 hours) were offered consultations with a PN or HV trained in the management of acute minor illness. Comparative data were collected before and after the establishment of the acute minor illness service. SETTING: A general practice in Nottingham, England. MAIN OUTCOME MEASURES: Patient satisfaction, consultation rate, prescriptions, investigations, referrals and urgent re-consultations for the same condition within 2 weeks. RESULTS: About 2056 urgent consultations were recorded in the study period, of which 332 (16.1%) were seen by PNs and 46 (2.2%) by a HV. High levels of patient satisfaction were reported for all health professionals. Patients seeing the HV reported higher levels of satisfaction than those consulting GPs ($P=0.033$) and PNs ($P=0.010$). There was no difference by health professional for prescription rates ($P=0.76$), re-consultations ($P=0.14$), or referrals to secondary care ($P=0.07$). General practitioners were more likely to initiate further investigations than the PNs or HV ($P < 0.001$). CONCLUSION: With suitable training, PNs and HVs can successfully manage patients with a range of conditions. General practitioner workload can be reduced while maintaining high patient satisfaction levels.

**Ramsay JA, Mc Kenzie JK, Fish DG (1982): Physicians and nurse practitioners: do they provide equivalent health care?, *Am J Public Health*, 1, 55-57**
Data from 40 patients attending a hypertension clinic staffed by physicians were compared to data from 40 patients attending a hypertension clinic staffed by nurses over a period of 15 months. Nurses appeared to have more success in handling obesity and to achieve somewhat better control of hypertension. Attrition rate was 50 per cent, but particularly high in patients not receiving medication in the physician clinic. There were no differences in appointment keeping.

**Rees M, Kinnersley P (1996): Nurse-led management of minor illness in a GP surgery, *Nurs Times*, 92(6), 32-33**
This study reports on an intervention in which a practice nurse saw patients with acute minor illnesses presenting to one general practice. Three hundred and forty-three patients were seen, of whom 328 (96%) were managed by the nurse alone and 145 (42%) were given prescriptions. In a time of increasing pressure on all members of the primary health-care team, interventions such as this need careful consideration and require a review of the relative roles of nurses and general practitioners.

**Renders CM, Valk GD, Griffin SJ, Wagner EH, Eijk Van JT, Assendelft WJ (2001): Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review, *Diabetes Care*, 24(10), 1821-1833**
OBJECTIVE: To review the effectiveness of interventions targeted at health care professionals and/or the structure of care in order to improve the management of diabetes in primary care, outpatient, and community settings. RESEARCH DESIGN AND METHODS: A

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systematic review of controlled trials evaluating the effectiveness of interventions targeted at health care professionals and aimed at improving the process of care or patient outcomes for patients with diabetes was performed. Standard search methods of the Cochrane Effective Practice and Organization of Care Group were used. RESULTS: A total of 41 studies met the inclusion criteria. The studies identified were heterogeneous in terms of interventions, participants, settings, and reported outcomes. In all studies, the interventions were multifaceted. The interventions were targeted at health care professionals only in 12 studies, at the organization of care only in 9 studies, and at both in 20 studies. Complex professional interventions improved the process of care, but the effect on patient outcomes remained less clear because such outcomes were rarely assessed. Organizational interventions that facilitated the structured and regular review of patients also showed a favorable effect on process measures. Complex interventions in which patient education was added and/or the role of a nurse was enhanced led to improvements in patient outcomes as well as the process of care. CONCLUSIONS: Multifaceted professional interventions and organizational interventions that facilitate structured and regular review of patients were effective in improving the process of care. The addition of patient education to these interventions and the enhancement of the role of nurses in diabetes care led to improvements in patient outcomes and the process of care.

**Reveley S (1998): The role of the triage nurse practitioner in general medical practice: an analysis of the role, *J Adv Nurs*, 28(3), 584-591**
A 2-year pilot study was undertaken in a group general practice to evaluate the nurse practitioner triage role. The study was undertaken in several stages which included a patient satisfaction questionnaire survey, follow-up interviews with 30 patients from the questionnaire survey, and analysis of the nurse practitioner's work at different points over the 2-year study period. This paper describes the work of the nurse practitioner in comparison with that of seven general practitioners in a group general medical practice over a 5-day period in February 1996 and included patients' perceptions of their consultation. In this particular group medical practice, as in others throughout the country, many patients request same day appointments, often for self-limiting conditions, social advice and health education. This study demonstrates that the nurse practitioner can deal with such patients effectively and is undertaking an expanded and extended role in order to provide an holistic service to patients with which they are highly satisfied. It can be concluded that given the right kind of education and training and a supportive framework within the practice, the nurse practitioner undertaking a triage role can provide a highly effective service to patients and is a valuable member of the primary health care team.

**Richards DA, Godfrey L, Tawfik J, Ryan M, Meakins J, Dutton E, Miles J (2004): NHS Direct versus general practice based triage for same day appointments in primary care: cluster randomised controlled trial, *BMJ*, 329(7469), 774**
OBJECTIVE: To assess the relative effects on consultation workload and costs of off-site triage by NHS Direct for patients requesting same day appointments compared with usual on-site nurse telephone triage in general practice. DESIGN: Cluster randomised controlled trial. SETTING: Three primary care sites in York, England. PARTICIPANTS: 4703 patients: 2452 with practice based triage, 2251 with NHS Direct triage. All consecutive patients making requests for same day appointments during study weeks were eligible for the trial. MAIN OUTCOME MEASURES: Type of consultation after request for same day appointment (telephone, appointment, or visit); time taken for consultation; service use during the month after same day contact; costs of same day, follow up, and emergency care. RESULTS: Patients in the NHS Direct group were less likely to have their call resolved by a nurse and were more likely to have an appointment with a general practitioner. Mean total time per patient in the NHS Direct group was 7.62 minutes longer than in the practice based group. Costs were greater in the NHS Direct group--2.88 pounds sterling (0.88 pounds sterling to 4.87 pounds sterling) per patient triaged--as a result of the difference between the groups in proportions of patients at each final point contact after triage. CONCLUSIONS: External management of requests for same day appointments by nurse telephone triage through NHS Direct is possible but comes at a higher cost than practice nurse delivered triage in primary care. If NHS Direct could achieve the same proportions of consultation types as practice based triage, costs would be comparable.

**Richards DA, Meakins J, Godfrey L, Tawfik J, Dutton E (2004): Survey of the impact of nurse telephone triage on general practitioner activity, *Br J Gen Pract*, 54(500), 207-210**
BACKGROUND: Nurse management of minor illness is a common method of demand management in primary care. Delegation of minor illness management to nurses may result in a change in patients' presenting problems and the consequent consulting behaviours of general practitioners (GPs). AIMS: To assess the impact of nurse telephone triage in primary care on the consulting behaviours of GPs. DESIGN OF STUDY: Survey of patient records. SETTING: Three primary care practice sites in York. METHOD: During randomly selected weeks, 1 month before and 6 months after the implementation of nurse telephone triage, we measured the number of presenting problems per patient and the following four consulting behaviours of doctors: the number of consultations during the 4 weeks before and after the index consultation, the number of prescribed items, the number of outside referrals, and the number of investigations. RESULTS: During standard management 1102 index consultations were identified, and during triage 1080 were identified. Patients seen by doctors in the triage system had significantly more presenting problems and received more consultations, prescriptions, and investigations. Numbers of referrals to secondary care were not different. CONCLUSIONS: Delegating the management of patients with minor illness to nurses in a telephone triage system may result in an overall increase in the number of presenting problems per patient, as well as changing GPs' consulting behaviours. Appointment systems may have to be adjusted to ensure patients receive more GP time. Further work on developing measures of complexity and controlled studies of the impact of new working arrangements on workload in primary care are required.

**Richardson G, Maynard A, Cullum N, Kindig D (1998): Skill mix changes: substitution or service development?, *Health Policy*, 45(2), 119-132**
An extensive review of published studies where doctors were replaced by other health professions demonstrates considerable scope for alterations in skill mix. However, the studies reported are often dated and have design deficiencies. In health services world-wide there is a policy focus which emphasises the substitution of nurses in particular for doctors. However, this substitution may not be real and increased roles for non-physician personnel may result in service development/enhancement rather than labour substitution. Further study of skill mix changes and whether non-physician personnel are being used as substitutes or complements for doctors is required urgently.

**Ridsdale L, Robins D, Cryer C, Williams H (1997): Feasibility and effects of nurse run clinics for patients with epilepsy in general practice: randomised controlled trial, Epilepsy Care Evaluation Group, *BMJ*, 314(7074), 120-122**
OBJECTIVE: To test the feasibility and effect of nurse run epilepsy clinics in primary care. DESIGN: A randomised controlled trial of nurse run clinics versus "usual care." SETTING: Six general practices in the South Thames region. SUBJECTS: 251 patients aged over 15 years who were taking anti-epileptic drugs or had a diagnosis of epilepsy and an attack in the past two years who met specified inclusion criteria and had responded to a questionnaire. MAIN OUTCOME MEASURES: Questionnaire responses and recording of key variables extracted from the clinical records before and after the intervention. RESULTS: 127 patients were randomised to a nurse

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run clinic, of whom 106 (83%) attended. The nurse wrote 28 letters to the general practitioners suggesting changes in epilepsy management. For this intervention group compared with the usual care group there was a highly significant improvement in the level of advice recorded as having been given on drug compliance, adverse drug effects, driving, alcohol intake, and self help groups. CONCLUSIONS: Nurse run clinics for patients with epilepsy were feasible and well attended. Such clinics can significantly improve the level of advice and drug management recorded.

**Ritz LJ, Nissen MJ, Swenson KK, Farrell JB, Sperduto PW, Sladek ML, Lally RM, Schroeder LM (2000): Effects of advanced nursing care on quality of life and cost outcomes of women diagnosed with breast cancer, *Oncol Nurs Forum*, 27(6); 923-932**
PURPOSE/OBJECTIVES: To evaluate quality of life (QOL) and cost outcomes of advanced practice nurses' (APNs') interventions with women diagnosed with breast cancer. DESIGN: Randomized clinical trial. SETTING: Integrated healthcare system in a midwestern suburban community. SAMPLE: 210 women with newly diagnosed breast cancer with an age range of 30-85 years. METHODS: The control group (n = 104) received standard medical care. The intervention group (n = 106) received standard care plus APN interventions based on Brooten's cost-quality model and the Oncology Nursing Society's standards of advanced practice in oncology nursing QOL was measured using the Functional Assessment of Cancer Therapy, Mishel Uncertainty in Illness Scale and Profile of Mood States at seven intervals over two years. Information about costs (charges and reimbursement) was collected through billing systems. MAIN RESEARCH VARIABLES: Uncertainty, mood states, well-being, charges, and reimbursement. FINDINGS: Uncertainty decreased significantly more from baseline in the intervention versus control group at one, three, and six months after diagnosis (p = 0.001, 0.026, and 0.011, respectively), with the strongest effect on subscales of complexity, inconsistency, and unpredictability. Unmarried women and women with no family history of breast cancer benefited from nurse interventions in mood states and well-being. No significant cost differences were found. CONCLUSIONS: APN interventions improved some QOL indicators but did not raise or lower costs. IMPLICATIONS FOR NURSING PRACTICE: The first six months after breast cancer diagnosis is a critical time during which APN interventions can improve QOL outcomes. More research is necessary to define cost-effective interventions.

**Roblin DW, Becker ER, Adams EK, Howard DH, Roberts MH (2004): Patient Satisfaction With Primary Care: Does Type of Practitioner Matter?, *Med Care*, 6, 579-590**
OBJECTIVE: The objective of this study was to evaluate the association of patient satisfaction with type of practitioner attending visits in the primary care practice of a managed care organization (MCO). STUDY DESIGN: We conducted a retrospective observational study of 41,209 patient satisfaction surveys randomly sampled from visits provided by the pediatrics and adult medicine departments from 1997 to 2000. Logistic regression, with practitioner and practice fixed effects, of patient satisfaction versus dissatisfaction was estimated for each of 3 scales: practitioner interaction, care access, and overall experience. Models were estimated separately by department. Independent variables were type of practitioner attending the visit and other patient and visit characteristics. RESULTS: Adjusted for patient and visit characteristics, patients were significantly more likely to be satisfied with practitioner interaction on visits attended by physician assistant/nurse practitioners (PA/NPs) than visits attended by MDs in both the adult medicine and pediatrics practices. Patient satisfaction with care access or overall experience did not significantly differ by practitioner type. In adult medicine, patients were more satisfied on diabetes visits provided by MDs than by PA/NPs. Otherwise, patient satisfaction for the combined effects of practitioner type and specific presenting condition did not differ. CONCLUSIONS: Averaged over many primary care visits provided by many physicians and midlevel practitioners, patients in this MCO were as satisfied with care provided by PA/NPs as with care provided by MDs.

**Roblin DW., Howard DH, Becker ER, Adams EK, Roberts MH (2004): Use of midlevel practitioners to achieve labor cost savings in the primary care practice of an MCO, *Health Serv Res*, 3, 607-626**
OBJECTIVE: To estimate the savings in labor costs per primary care visit that might be realized from increased use of physician assistants (PAs) and nurse practitioners (NPs) in the primary care practices of a managed care organization (MCO). STUDY SETTING/DATA SOURCES: Twenty-six capitated primary care practices of a group model MCO. Data on approximately two million visits provided by 206 practitioners were extracted from computerized visit records for 1997-2000. Computerized payroll ledgers were the source of annual labor costs per practice from 1997 to 2000. STUDY DESIGN: Likelihood of a visit attended by a PA/NP versus MD was modeled using logistic regression, with practice fixed effects, by department (adult medicine, pediatrics) and year. Parameter estimates and practice fixed effects from these regressions were used to predict the proportion of PA/NP visits per practice per year given a standard case mix. Least squares regressions, with practice fixed effects, were used to estimate the association of this standardized predicted proportion of PA/NP visits with average annual practitioner and total labor costs per visit, controlling for other practice characteristics. RESULTS: On average, PAs/NPs attended one in three adult medicine visits and one in five pediatric medicine visits. Likelihood of a PA/NP visit was significantly higher than average among patients presenting with minor acute illness (e.g., acute pharyngitis). In adult medicine, likelihood of a PA/NP visit was lower than average among older patients. Practitioner labor costs per visit and total labor costs per visit were lower ($p<.01$ and $p=.08$, respectively) among practices with greater use of PAs/NPs, standardized for case mix. CONCLUSION: Primary care practices that used more PAs/NPs in care delivery realized lower practitioner labor costs per visit than practices that used less. Future research should investigate the cost savings and cost-effectiveness potential of delivery designs that change staffing mix and division of labor among clinical disciplines.

**Robson A, Copnell B, Johnston L, Harrison D, Wilson A, Ramudu L, Mulcahy C, McDonnell G, Best C (2002): Overseas experience of the neonatal nurse practitioner role: lessons for Australia, *Contemp Nurse*, 14(1), 9-23**
The Nurse Practitioner role is currently being implemented in most Australian states. This model of practice has existed overseas, predominantly in North America, for many years. The experiences of those countries can help inform the implementation of the role in Australia. This paper reviews the overseas literature concerning one practice context, that of the Neonatal Nurse Practitioner. The scope of the role, issues surrounding educational preparation, impact of the role on health outcomes, and factors identified as facilitating and constraining the role, are all discussed. The implications for the Australian context are highlighted.

**Robson J, Boomla K, Fitzpatrick S, Jewell AJ, Taylor J, Self J, Colyer M (1989): Using nurses for preventive activities with computer assisted follow up: a randomised controlled trial, *BMJ*, 298(6671), 433-436**
OBJECTIVE--To assess whether an organised programme of prevention including the use of a health promotion nurse noticeably improved recording and follow up of cardiovascular risk factors and cervical smears in a general practice that had access to computerised cell and recall. DESIGN--Randomised controlled trial. SETTING--General practice in inner London. PATIENTS--All 3206 men and women aged 30-64 registered with the practice. INTERVENTION--The intervention group had their risk factors ascertained and followed up by the health promotion nurse and the general practitioner, whereas those in the control group were managed by the general practitioner alone. END POINT--Recording and follow up of blood pressure and cervical smears after three years. Recording

of smoking, family history of ischaemic heart disease, and serum cholesterol concentrations were also examined. MEASUREMENTS and MAIN RESULTS--When the trial was stopped after two years the measurements of blood pressure in the preceding five years were 93% (1511/1620) v 73% (1160/1586) (95% confidence interval for difference 17.5 to 22.7%) for intervention and control groups respectively. For patients with hypertension the figures were 97% (104/107) v 69% (80/116) (18.2 to 38.2%). For women the proportion who had had a cervical smear in the preceding three years were 76% (606/799) v 49% (392/806) (22.5 to 31.9%). Recording of smoking, family history of ischaemic heart disease, and serum cholesterol concentrations was also higher in the intervention group compared with the control group. CONCLUSION--An organised programme, which includes a nurse with specific responsibility for adult prevention, is likely to make an important contribution to recording of risk factors and follow up of those patients with known risks.

**Roderick P, Ruddock V, Hunt P, Miller G (1997): A randomized trial to evaluate the effectiveness of dietary advice by practice nurses in lowering diet-related coronary heart disease risk, *Br J Gen Pract*, 47(414), 7-12**
BACKGROUND: Dietary factors are an important contribution to the high rates of coronary heart disease in the UK. One approach to achieving change is health-promoting advice in primary care. AIM: To compare the effectiveness of structured dietary advice by practice nurses with standard health education in changing serum cholesterol, weight and diet. METHOD: Randomized, controlled trial within eight general practices in England and Wales allocated within matched geographical pairs to 'dietary advice' or 'usual care'. Men and women aged 35-59 years, recruited opportunistically by their GPs, underwent health checks. In 'dietary advice' practices, subjects received dietary advice from specially trained nurses based on negotiated change principles, reinforced at follow up. In 'usual care' practices, subjects were only given standard health education materials. RESULTS: A total of 956 patients were recruited: 473 in 'dietary advice' practices and 483 in 'usual care' practices. Compliance with annual follow up was 80%. Compared with 'usual care' practices, there was a mean 0.20 mmol/l lower serum cholesterol (95% CI -0.38 to -0.03 at 1 year) in 'dietary advice' practices. There was a small fall in weight of 0.56 kg (95% CI -1.04 to -0.07) and reductions in total and saturated fat. Factor VII coagulant activity fell by a mean of 6.7% of the standard (95% CI -15.4 to +2.0). CONCLUSION: Provision of standard health education material alone as part of a health check had no effect on coronary heart disease risk factors. There were modest changes in diet and associated risk factors when a more intensive and individual approach to dietary advice was given by practice nurses. This is, however, probably an ineffective use of resources, except in those at high risk of coronary heart disease. Whole-population strategies to achieve dietary change are required.

**Rodysill K. J. (2003): Increasing physician productivity using a physician extender: a study in an outpatient group practice at the Mayo Clinic, *J Med Pract Manage*, 2, 110-114**
Physician extenders (PE) can perform some tasks usually performed by a physician. Time recouped by physicians using a PE may increase physician productivity and physician professional satisfaction. A prospective study was completed using a PE in an outpatient general medical group practice setting to reduce physician indirect patient care, such as responding to patient telephone calls, refilling prescriptions, triage, and order entry. Physicians using a PE had increased productivity relative to physicians who did not use a PE. Physician satisfaction with the PE model was excellent. A physician extender may improve physician productivity by performing indirect patient care usually performed by physicians.

**Rushforth H, Burge D, Mullee M, Jones S, McDonald H, Glasper EA (2006): Nurse-led paediatric pre operative assessment: an equivalence study, *Paediatr Nurs*, 18(3), 23-29**
AIM: to explore whether nurses can undertake the pre operative assessment of children prior to day case surgery as safely as senior house officers. DESIGN: a randomised controlled trial involving 595 children, using an equivalence methodology (a method which looks for similarity rather than a significant difference). Pre-operative assessment prior to day case surgery was randomised to either a nurse (experimental group) or a junior doctor (control group). Blinded expert verification of nurse/junior doctor performance was ascertained by an experienced anaesthetist (the 'gold standard'). RESULTS: there was equivalence between nurses and senior house officers in their ability to detect clinically significant abnormalities within the sample population. Subgroup analysis also demonstrated equivalence in respect of history taking abilities. The smaller number of clinically significant physical findings within the sample meant that equivalence in respect of physical examination remains uncertain. Although the study was limited to a single setting, the results demonstrate nurses' equivalence with junior doctors in a discrete paediatric context.

**Sackett DL, Spitzer WO, Gent M, Roberts RS (1974): The Burlington randomized trial of the nurse practitioner: health outcomes of patients, *Ann Intern Med*, 80(2), 137-142**
From July 1971, to July 1972, in a large suburban Ontario practice of two family physicians, a randomized controlled trial was conducted to assess the effects of substituting nurse practitioners for physicians in primary-care practice. Before and after the trial, the health status of patients who received conventional care from family physicians was compared with the status of those who received care mainly from nurse practitioners. Both groups of patients had a similar mortality experience, and no differences were found in in physical functional capacity, social function or emotional function. The quality of care rendered to the two groups seemed similar, as assessed by a quantitative "indicator-condition" approach. Satisfaction was high among both patients and professional personnel. Although cost effective from society's point of view, the new method of primary care was not financially profitable to doctors because of current restrictions on reimbursement for the nurse-practitioner services.

**Salisbury C, Chalder M, Scott TM, Pope C, Moore L (2002): What is the role of walk-in centres in the NHS?, *BMJ*, 324(7334), 399-402**
By September 2001 39 NHS walk-in centres had opened, providing health information and treatment for minor illness and injuries. The number of people visiting the centres is gradually increasing and includes a higher proportion of young adults than consult in general practice. NHS walk-in centres are highly variable in their premises, staffing, and service provision; location seems to be the most important factor determining their activities. Walk-in centres are led by nurses, supported by software for clinical assessment; the appropriate level of training of nurses for this role and the usefulness of this type of software for face to face consultations are not yet clear. Because consultations are relatively lengthy, provision of care in walk-in centres is not necessarily more economical than that in traditional settings.

**Seale C, Anderson E, Kinnersley P (2005): Comparison of GP and nurse practitioner consultations: an observational study, *Br J Gen Pract*, 55(521), 938-943**
BACKGROUND: Studies show that satisfaction with nurse practitioner care is high when compared with GPs. Clinical outcomes are similar. Nurse practitioners spend significantly longer on consultations. AIM: We aimed to discover what nurse practitioners do with the extra time, and how their consultations differ from those of GPs. DESIGN OF STUDY: Comparative content analysis of audiotape

transcriptions of 18 matched pairs of nurse practitioner and GP consultations. SETTING: Nine general practices in south Wales and south west England. METHOD: Consultations were taped and clinicians' utterances coded into categories developed inductively from the data, and deductively from the literature review. RESULTS: Nurse practitioners spent twice as long with their patients and both patients and clinicians spoke more in nurse consultations. Nurses talked significantly more than GPs about treatments and, within this, talked significantly more about how to apply or carry out treatments. Weaker evidence was found for differences in the direction of nurses being more likely to: discuss social and emotional aspects of patients' lives; discuss the likely course of the patient's condition and side effects of treatments; and to use humour. Some of the extra time was also spent in getting doctors to approve treatment plans and sign prescriptions. CONCLUSIONS: The provision of more information in the longer nurse consultations may explain differences in patient satisfaction found in other studies. Clinicians need to consider how much information it is appropriate to provide to particular patients.

**Seale C, Anderson E, Kinnersley P (2006): Treatment advice in primary care: a comparative study of nurse practitioners and general practitioners, *J Adv Nurs*, 54(5), 534-541**
Treatment advice in primary care: a comparative study of nurse practitioners and general practitioners Aim. This paper reports a study comparing the content of talk about treatments by nurse practitioners and general practitioners in order to understand how this might be related to satisfaction. Background. Studies show that satisfaction with nurse practitioner care is high when compared with that given by general practitioners. Clinical outcomes are similar. Nurse practitioners spend statistically significantly longer on consultations, and spend more time discussing treatments as well as social and emotional aspects of patients' lives. Methods. Based on transcripts of audiotaped consultations, clinicians' talk about treatment was compared across 18 matched pairs of nurse practitioner and general practitioner consultations where 'same day' appointments were sought. Case studies of six paired consultations were analysed in depth. The data were collected in 1998 in the United Kingdom. Results. A statistically significantly greater proportion of nurse practitioners' talk concerned treatments, with talk about how to use treatments and discussion of side effects contributing most to the difference. Nurse practitioners also recommended a greater number of treatments. Qualitative comparison of case study pairs suggested that nurse practitioners demonstrated greater concern with the acceptability and cost of treatments to patients. Conclusions. Nurses offered more holistic care to these patients and it is likely that this, and the greater provision of information, led to the higher levels of satisfaction found by other investigators. General practitioners are more focused on gathering information directly relevant to diagnosing and treating the immediate presenting complaint. Both types of practitioner may benefit from seeing the detailed illustrations of different approaches provided.

**Sheldrick JH, Sharp AJ (1994): Glaucoma screening clinic in general practice: prevalence of occult disease, and resource implications, *Br J Gen Pract*, 44(389), 561-565**
BACKGROUND. Previous studies have shown that for every known case of glaucoma there is another case of occult disease. Most cases of glaucoma are detected by optometrists. AIM. This study set out to determine the prevalence of occult glaucoma in a practice population and assess the likely resource implications of introducing a glaucoma screening programme into a general practice setting. METHOD. The 1153 patients registered with one practice in Leicester who were aged 55-69 years on 1 January 1992 and who were not known to have glaucoma prior to screening were invited to a screening clinic. Prior to screening there were 11 known cases of glaucoma in this age group. Screening was carried out by a practice nurse. Patients who failed the screening tests were referred according to the study protocol to the ophthalmology department of the Leicester Royal Infirmary and examined by one ophthalmologist. The number of cases of occult glaucoma and other eye disease detected, the cost per case screened and case detected, and the number of referrals generated were evaluated. RESULTS. Nine hundred and fifty people (82%) accepted the invitation and attended for glaucoma screening. Of those screened 115 (12%) were referred for ophthalmic assessment. Glaucoma was confirmed in 14 of the referred patients (12%) while a further 15 (13%) were found to have ocular hypertension. All but one of those people diagnosed as having glaucoma recalled having been examined by their optician within the last five years; for 50% the period was less than two years. Nineteen of the patients referred (17%) had other ocular pathology detected by the ophthalmologist and no abnormality was detected in 65 patients referred (57%). The estimated cost to the practice (excluding hospital outpatient costs) per case screened using the study protocol was 6 pounds and the cost per case detected was 408 pounds. CONCLUSION. Glaucoma screening may be successfully undertaken in a general practice setting by non-ophthalmically trained staff who have received tuition in the use of the equipment. It is well received by the population served but the capital cost of equipment is likely to be too high for most practices to afford. The reaffirmation of at least one occult case of glaucoma for every known case is particularly alarming in the absence of a national screening programme and the asymptomatic course of this treatable, blinding disease. Closer cooperation between general practitioners and optometrists will be the practical way ahead for most practices.

**Shum C, Humphreys A, Wheeler D, Cochrane MA, Skoda S, Clement S (2000): Nurse management of patients with minor illnesses in general practice: multicentre, randomised controlled trial, *BMJ*, 320(7241), 1038-1043**
OBJECTIVE: To assess the acceptability and safety of a minor illness service led by practice nurses in general practice. DESIGN: Multicentre, randomised controlled trial. SETTING: 5 general practices in south east London and Kent representing semi-rural, suburban, and urban settings. PARTICIPANTS: 1815 patients requesting and offered same day appointments by receptionists. INTERVENTION: Patients were assigned to treatment by either a specially trained nurse or a general practitioner. Patients seen by a nurse were referred to a general practitioner when appropriate. MAIN OUTCOME MEASURES: The general satisfaction of the patients as measured by the consultation satisfaction questionnaire. Other outcome measures included the length of the consultation, number of prescriptions written, rates of referral to general practitioners, patient's reported health status, patient's anticipated behaviour in seeking health care in future, and number of patients who returned to the surgery, visits to accident and emergency, and out of hours calls to doctors. RESULTS: Patients were very satisfied with both nurses and doctors, but they were significantly more satisfied with their consultations with nurses (mean (SD) score of satisfaction 78.6 (16. 0) of 100 points for nurses v 76.4 (17.8) for doctors; 95% confidence interval for difference between means -4.07 to -0.38). Consultations with nurses took about 10 minutes compared with about 8 minutes for consultations with doctors. Nurses and doctors wrote prescriptions for a similar proportion of patients (nurses 481/736 (65.4%) v doctors 518/816 (63.5%)). 577/790 (73%) patients seen by nurses were managed without any input from doctors. CONCLUSION: Practice nurses seem to offer an effective service for patients with minor illnesses who request same day appointments.

**Smith B, Appleton S, Adams R, Southcott A, Ruffin R (2001): Home care by outreach nursing for chronic obstructive pulmonary disease, *Cochrane Database Syst Rev*, 3, CD000994**
BACKGROUND: Chronic obstructive pulmonary disease (COPD) is characterised by progressive airflow obstruction, worsening exercise performance and deterioration in health. It is associated with significant morbidity, mortality and costs to health care systems. Care strategies, such as outreach nursing in the community, may reduce this burden. OBJECTIVES: To evaluate the effectiveness of

outreach respiratory health care worker programmes for patients with COPD in terms of improving lung function, exercise tolerance and health related quality of life (HRQL) of patient and carer, and reducing mortality and hospital service utilisation. SEARCH STRATEGY: A search was carried out using the Cochrane Airways Group database. Bibliographies of identified RCTs were searched for additional relevant RCTs. Authors of identified RCTS were contacted for other published and unpublished studies. SELECTION CRITERIA: Only randomised control trials of patients with COPD were included. The intervention was an outreach nurse visiting patients in their homes, providing support, education, monitoring patient status and providing liaison with physicians. Interventions that used nurse practitioners who provided therapeutic intervention were also included. Studies in which the therapeutic intervention under test was physical training were not included. DATA COLLECTION AND ANALYSIS: Data extraction and study quality assessment were performed independently by two reviewers. Where further or missing data was required, authors of studies were contacted. MAIN RESULTS: Four studies were found. Three assessed mortality following twelve months of care (n=96, 152 and 301), and one after seven months(n=75). Meta-analysis demonstrated that mortality was not significantly reduced by the intervention, Peto Odds Ratio 0.72; 95 % confidence interval 0.43, 1.21. Post hoc subgroup analysis suggested that mortality was reduced by the outreach nursing programme in patients with less severe disease. Significant improvements in health related quality of life were reported in one study in moderate COPD, but not in a study in patients with severe disease. No changes in lung function or exercise performance were found in the studies where data were available. Hospital admissions were reported in only one study in patients with severe disease and no benefit was observed. A further search was conducted in July 2000 did not yield any more studies for inclusion. REVIEWER'S CONCLUSIONS: Patients with moderate COPD may have mortality and health related quality of life gains from a nursing outreach programme, but there are no data about reductions in hospital utilisation. Patients with severe COPD do not appear to have benefit from such programmes and one large study found no reduction in hospital admissions in such patients.

**Smyth PE (2003): Advanced practice nurses leading the way: a rural perspective introduction, *SCI Nurs*, 20(4), 269-271**
It is estimated that greater than 40 million Americans are uninsured in the US, and this number is growing (Yoder-Wise, 2003). Often it is APNs and family practice physicians who partner and deliver care in modest clinics with limited resources in rural America. Basic health care needs, which include screening lab work and routine health procedures in annual physical exams, can be met by APNs practicing in rural America. Teaming with physician colleagues helps to provide greater coverage to many citizens who would not otherwise receive any health care. The importance of the direct care delivery that APNs provide to our citizens is invaluable. The numbers of APNs must grow to meet the complex health care needs of a growing number of our countrymen and countrywomen. Leadership in providing health promotion, disease prevention, and direct patient care is an important role that APNs will continue to provide. Regulatory agencies, physician partners, and state boards of nursing need to remain supportive of this important role and confirm their commitment to our citizenry in their support of the primary care provided by APNs in this country.

**Steyer TE, Johnson E, Mainous III AG (2004): Patients' perceptions of non-physician providers in primary care, *J S C Med Assoc*, 4, 103-106**
Patients in this study were most comfortable receiving primary care services from physicians trained in primary care specialties. There was, however, a racial difference in the comfort level of primary care being provided by non-physician providers with minority populations being more comfortable with non-physician providers. More research is needed to understand the role that non-physician providers play in the primary care delivery system in the United States.

**Strickland WJ, Strickland DL, Garretson C (1998): Rural and urban nonphysician providers in Georgia, *J Rural Health*, 2, 109-200**
Nonphysician providers make valuable contributions to health care in rural areas. This study examines provider and practice characteristics, location preference, and reasons for location preference among Georgia nurse practitioners (NPs), certified nurse midwives, and physician assistants (PAs) (N = 1,079). Data collected through a statewide survey revealed that providers were concentrated in urban areas. Rural providers tended to be older, less educated, possess fewer specialty credentials, and were employed longer than urban providers. NPs were significantly more likely to prefer smaller communities, and PAs were significantly more likely to prefer larger communities. Providers who preferred smaller communities were community dynamics, while providers who preferred larger communities were significantly more likely to mention professional context.

**Thommasen H, Lenci P, Brake I, Anderson G (1996): Cervical cancer screening performed by a nurse. Evaluation in family practice, *Can Fam Physician*, 42, 2179-2183**
OBJECTIVE: To determine whether a nurse practitioner could collect adequate Papanicolaou smear samples from the transformation zone of the cervix. DESIGN: A retrospective, descriptive study. SETTING: The Bella Coola Medical Clinic, a primary care facility located in the isolated, small village of Bella Coola, BC. PARTICIPANTS: All women who presented for Pap smears between July 1993 and June 1994. MAIN OUTCOME MEASURES: Endocervical or metaplastic cells in smear samples. RESULTS: All Pap smears performed in the Bella Coola Medical Clinic over 1 year by either the nurse or a member of the physician group (which includes family practice residents) were reviewed. Between July 1, 1993, and June 30, 1994, 149 Pap smears were done, 55 by the nurse and 94 by the physicians. All smears collected by the nurse practitioner showed endocervical or metaplastic cells. More than 90% of physician samples showed endocervical or metaplastic cells. CONCLUSIONS: A Canadian nurse practitioner can be trained to collect adequate Pap smears.

**Tremellen J (1992): Assessment of patients aged over 75 in general practice, *BMJ*, 305(6854), 621-624**
OBJECTIVES--To evaluate the assessment scheme for people aged 75, to establish doctors' and nurses' views on the value of the assessment scheme, and to seek patients' opinions on elderly assessments. DESIGN--Data on the assessment process were collected from individual practices. Questionnaires were sent to doctors and practice nurses undertaking assessments and to a sample of elderly patients. SUBJECTS--31,565 patients aged 75 and over and all doctors registered with Wiltshire Family Health Services Authority, as well as practice nurses assessing elderly patients. A 2% random sample of elderly patients was selected to answer questions on patient satisfaction. MAIN OUTCOME MEASURES--Numbers of patients accepting the invitation for assessment, who carried out the assessments and where, what unmet needs were identified, and by whom. RESULTS--20,192 patients (64%) accepted the assessment offer. Doctors carried out 8786 assessments and nurses 10,779. Although 12,317 (61%) were carried out in the home, nurses did most domiciliary assessments (7122/11,883). Nurses with extra qualifications identified the highest number of unmet needs (400/1000 visits). 155 of 228 (68%) doctors thought assessments unnecessary whereas 25 of 48 (52%) of nurses thought them important. 93% of patients found assessment useful. CONCLUSIONS--Doctors see no merit in the scheme; most undertake assessments opportunistically and pick up few new problems. Nurses who see it as important require further training to fit them to do home visits confidently. Patients who were assessed found it worth while. The case for developing a specialist community nurse for elderly people should be investigated.

**Turner C, Keyzer D (2002): Nurse practitioners: a contract for change and excellence in nursing, *Collegian*, 9(4), 18-23**
The role of the Nurse Practitioner has been in existence in a variety of contexts and within a broad range of the scope of their practice throughout the world for a number of years. Many nurses work at this advanced level of clinical practice without the acknowledgement f the very important and responsible role that they play within the healthcare setting. Although the United States and United Kingdom have recognised the role of the advanced Nurse Practitioner for a number of years, there still exists confusion and disagreement as to their scope of practice. There is uncertainty and anxiety as to where the role boundaries between nursing and medical and allied health professionals begin and end. The role of the Nurse Practitioner in Australia has not been without its problems in the developmental stage of its creation. New South Wales finally achieved recognition of the role this year after a decade of negotiation. This has culminated in the acceptance for the development of 40 Nurse Practitioner positions across the State. The first of these was accepted in the Far West Area Health Service in May 2001. The Far West Area Health Service created a five-year plan, which addresses the development of nurses preparing for authorisation, the creation of Nurse Practitioner positions in the remote communities, the creation of clinical guidelines to support advanced practice and the evaluation process for both the positions and the nurses. The objective of this approach is to ensure effective implementation of these advanced nursing positions in the remote communities of New South Wales. The Nurse Practitioner role needs to respond to the individual, the family and the community, utilising advanced clinical skills and remaining responsive to the changes in health care within a primary health care framework, which is essential for combating the complex health care issues in remote areas (NSW Health 2000).

**Turris S, Knoll S, Hayhoe B, Freeman T, Wilson M, Forster F, Hornack M (2005): Nurse practitioners in British Columbia, *Can Nurse*, 3, 20-24**
Every major health commission report or review of health services in the past decade has recommended an expanded scope of practice for nurses. Accordingly, every province and territory is developing and introducing legislation to formally support nurse practitioners (NPs) or has already done so. British Columbia is one of the last provinces/territories to pass legislation and fund education programs. In this article, the authors present the results of an environmental scan carried out at the British Columbia Institute of Technology. Specifically, they sought to analyse the supports and barriers to NP practice and education in British Columbia.

**Venning P, Durie A, Roland M, Roberts C, Leese B (2000): Randomised controlled trial comparing cost effectiveness of general practitioners and nurse practitioners in primary care, *BMJ*, 320(7241), 1048-1053**
OBJECTIVE: To compare the cost effectiveness of general practitioners and nurse practitioners as first point of contact in primary care. DESIGN: Multicentre randomised controlled trial of patients requesting an appointment the same day. SETTING: 20 general practices in England and Wales. PARTICIPANTS: 1716 patients were eligible for randomisation, of whom 1316 agreed to randomisation and 1303 subsequently attended the clinic. Data were available for analysis on 1292 patients (651 general practitioner consultations and 641 nurse practitioner consultations). MAIN OUTCOME MEASURES: Consultation process (length of consultation, examinations, prescriptions, referrals), patient satisfaction, health status, return clinic visits over two weeks, and costs. RESULTS: Nurse practitioner consultations were significantly longer than those of the general practitioners (11.57 v 7.28 min; adjusted difference 4. 20, 95% confidence interval 2.98 to 5.41), and nurses carried out more tests (8.7% v 5.6% of patients; odds ratio 1.66, 95% confidence interval 1.04 to 2.66) and asked patients to return more often (37. 2% v 24.8%; 1.93, 1.36 to 2.73). There was no significant difference in patterns of prescribing or health status outcome for the two groups. Patients were more satisfied with nurse practitioner consultations (mean score 4.40 v 4.24 for general practitioners; adjusted difference 0.18, 0.092 to 0.257). This difference remained after consultation length was controlled for. There was no significant difference in health service costs (nurse practitioner 18.ll pound sterling v general practitioner 20.70 pound sterling adjusted difference 2.33 pound sterling - 1.62 pound sterling to 6.28 pound sterling). CONCLUSIONS: The clinical care an health service costs of nurse practitioners and general practitioners were similar. If nurse practitioners were able to maintain the benefits while reducing their return consultation rate or shortening consultation times, they could be more cost effective than general practitioners.

**Way D, Jones L, Baskerville B, Busing N (2001): Primary health care services provided by nurse practitioners and family physicians in shared practice, *Can Med Assoc J*, 9, 1210-1214**
BACKGROUND: Collaborative practice involving nurse practitioners (NPs) and family physicians (FPs) is undergoing a renaissance in Canada. However, it is not understood what services are delivered by FPs and NPs working collaboratively. One objective of this study was to determine what primary health care services are provided to patients by NPs and FPs working in the same rural practice setting. METHODS: Baseline data from 2 rural Ontario primary care practices that participated in a pilot study of an outreach intervention to improve structured collaborative practice between NPs and FPs were analyzed to compare service provision by NPs and FPs. A total of 2 NPs and 4 FPs participated in data collection for 400 unique patient encounters over a 2-month period; the data included reasons for the visit, services provided during the visit and recommendations for further care. Indices of service delivery and descriptive statistics were generated to compare service provision by NPs and FPs. RESULTS: We analyzed data from a total of 122 encounters involving NPs and 278 involving FPs. The most frequent reason for visiting an NP was to undergo a periodic health examination (27% of reasons for visit), whereas the most frequent reason for visiting an FP was cardiovascular disease other than hypertension (8%). Delivery of health promotion services was similar for NPs and FPs (11.3 v. 10.0 instances per full-time equivalent [FTE]). Delivery of curative services was lower for NPs than for FPs (18.8 v. 29.3 instances per FTE), as was provision of rehabilitative services (15.0 v. 63.7 instances per FTE). In contrast, NPs provided more services related to disease prevention (78.8 v. 55.7 instances per FTE) and more supportive services (43.8 v. 33.7 instances per FTE) than FPs. Of the 173 referrals made during encounters with FPs, follow-up with an FP was recommended in 132 (76%) cases and with an NP in 3 (2%). Of the 79 referrals made during encounters with NPs, follow-up with an NP was recommended in 47 (59%) cases and with an FP in 13 (16%) ($p < 0.001$). INTERPRETATION: For the practices in this study NPs were underutilized with regard to curative and rehabilitative care. Referral patterns indicate little evidence of bidirectional referral (a measure of shared care). Explanations for the findings include medicolegal issues related to shared responsibility, lack of interdisciplinary education and lack of familiarity with the scope of NP practice.

**Wilhelmsson S, Ek AC, Akerlind I (2001): Opinions about district nurses prescribing, *Scand J Caring Sci*, 15(4), 326-330**
Opinions about district nurses prescribing The aim of this study was to investigate the opinions of district nurses (DNs) and general practitioners (GPs) about nurse prescribing in Sweden in order to elucidate similarities and differences, and relate different opinions to background and psychosocial working factors. In a questionnaire about psychosocial working conditions, seven statements about DNs prescribing were included. The questionnaire was sent to 554 DNs and 566 GPs with a participant rate of 83%. On all items as well as on the total score DNs rated more positively compared with GPs. Amongst the DNs a positive opinion was related to a traditional primary care organization, age < 50, good social support at work, and high workload. A positive opinion amongst GPs was associated with working in a traditional primary care organization, being male GP, and a good social support at work. In a multiple

regression analysis, occupation and organization were independently associated with the total score. The result shows a strong professional solidarity amongst GPs and seems to be based on concern about the profession rather than patient care.

**Wilhelmsson S, Foldevi M (2003): Exploring views on Swedish district nurses' prescribing – a focus group study in primary health care, *J Clin Nurs*, 12(5), 643-650**
Since 1994 district nurses (DNs) in Sweden have been permitted to prescribe drugs from a limited list. This reform has met severe resistance from doctors and the opinions of general practitioners (GPs) and DNs have differed in many aspects. The aim of this study was to gain deeper understanding of the different opinions about DNs' prescribing and to explore the impact of the reform on primary care. Six focus group interviews were conducted, four with DNs and two with GPs. Data analysis revealed six categories, which were condensed into two dimensions. The dimensions were individual prerequisites, with the categories responsibility and knowledge, and organizational prerequisites, with the categories distribution of work, climate of co-operation, resistance and economic considerations. District nurses were very positive towards prescribing and had gained new knowledge through the compulsory training course and via discussions with pharmacists. Because of the responsibility required for prescribing, some nurses had introduced systems for self-monitoring. Prescribing was seen as a natural part of the nursing process. All interviewees could describe periods of resistance against the reform, and the head of the health centre was a key person for attitudes at the workplace. The DNs found the nurse prescribing reform very positive. They experienced a strengthening of professionalism and also thought that the reform was a natural development. Negative attitudes and opinions offset the positive feelings. The resistance that had appeared in the beginning had now turned into silent acceptance.

**Wilson A, Pearson D, Hassey A (2002): Barriers to developing the nurse practitioner role in primary care-the GP perspective, *Fam Pract*, 19(6), 641-646**
BACKGROUND: Opportunities exist to develop an advanced nursing role in general practice and there is growing evidence that appropriately trained nurses can reduce cost and GP workload without compromising quality of care or patient satisfaction. Despite the shortfall of doctors entering British general practice and the difficulties doctors report in managing an increasing workload in primary care, few British practices have chosen to adopt this potential solution. An exploration of the barriers to the development of a nurse practitioner role is therefore timely. OBJECTIVE: To explore the views of British GPs regarding their attitudes towards developing an advanced nursing role in general practice. METHODS: A focus group study of GPs from four general practices in Yorkshire selected purposefully to represent a spectrum of experience in working with different nursing roles in general practice. Each focus group consisted of between 6 and 8 participants. A structured framework was used to elicit views, the group meetings were recorded and subjected to content analysis by two independent assessors. Inter-rater reliability was high (K = 0.921; 95% confidence limits 0.86-0.98). RESULTS: The study highlighted significant concerns by GPs with regard to the nurse practitioner role in general practice. Four themes were identified that may be impeding the development of advanced nursing roles in general practice. These are concerned with threats to GP status, including job and financial security, nursing capabilities, including training and scope of responsibility, and structural and organizational barriers. CONCLUSIONS: There is a need to acknowledge GP concerns and encourage a more widespread debate about the appropriate mix of skills required in primary care. Joint educational events and the development of GP preceptorship may help to develop a greater understanding of the potential value of advanced nursing roles in general practice.

**Wood D, Kinmonth A, Davies G (1994): Randomised controlled trial evaluating cardiovascular screening and intervention in general practice: principal results of British family heart study. Family Heart Study Group, *BMJ*, 308(6924), 313-320**
OBJECTIVE--To measure the change in cardiovascular risk factors achievable in families over one year by a cardiovascular screening and lifestyle intervention in general practice. DESIGN--Randomised controlled trial in 26 general practices in 13 towns in Britain. SUBJECTS--12,472 men aged 40-59 and their partners (7460 men and 5012 women) identified by household. INTERVENTION--Nurse led programme using a family centred approach with follow up according to degree of risk. MAIN OUTCOME MEASURES--After one year the pairs of practices were compared for differences in (a) total coronary (Dundee) risk score and (b) cigarette smoking, weight, blood pressure, and random blood cholesterol and glucose concentrations. RESULTS--In men the overall reduction in coronary risk score was 16% (95% confidence interval 11% to 21%) in the intervention practices at one year. This was partitioned between systolic pressure (7%), smoking (5%), and cholesterol concentration (4%). The reduction for women was similar. For both sexes reported cigarette smoking at one year was lower by about 4%, systolic pressure by 7 mm Hg, diastolic pressure by 3 mm Hg, weight by 1 kg, and cholesterol concentration by 0.1 mmol/l, but there was no shift in glucose concentration. Weight, blood pressure, and cholesterol concentration showed the greatest difference at the top of the distribution. If maintained long term the differences in risk factors achieved would mean only a 12% reduction in risk of coronary events. CONCLUSIONS--As most general practices are not using such an intensive programme the changes in coronary risk factors achieved by the voluntary health promotion package for primary care are likely to be even smaller. The government's screening policy cannot be justified by these results.

**Woodend K (2006): The role of community matrons in supporting patients with long-term conditions, *Nurs Stand*, 20(20), 51-54**
The new emphasis on patients with long-term conditions offers a vision of a primary health care service that will reduce the need for hospital admission. This article debates the implications of introducing the new advanced nursing role of community matron for patients with long-term conditions and the opportunities this may offer nursing.

BASS

# 3 Hebammen

**Ackermann-Liebrich U, Voegeli T, Gunter-Witt K, Kunz I, Zullig M, Schindler C, Maurer M (1996): Home versus hospital deliveries: follow up study of matched pairs for procedures and outcome, *BMJ*, 313(7068), 1313-1318**
OBJECTIVE: To assess procedures and outcomes in deliveries planned at home versus those planned in hospital among women choosing the place of delivery. DESIGN: Follow up study of matched pairs. SETTING: Antenatal clinics and reference hospitals in Zurich between 1989 and 1992. SUBJECTS: 489 women opting for home delivery and 385 opting for hospital delivery; the women comprised all those attending members of the study team for antenatal care and those attending the reference hospital for antenatal care who could be matched with the women planning home confinement. MAIN OUTCOME MEASURES: Need for medication and incidence of interventions during delivery (caesarean section, forceps, vacuum extraction, episiotomy), duration of labour, occurrence of severe perineal lesions, maternal blood loss, and perinatal morbidity and death. RESULTS: All women were followed up from their first antenatal visit till three months after delivery. Referrals during pregnancy (n = 37) and labour (70), changes of mind (15 home to hospital, eight hospital to home), and 17 miscarriages resulted in 369 births occurring at home and 486 in hospital. During delivery the home birth group needed significantly less medication and fewer interventions whereas no differences were found in durations of labour, occurrence of severe perineal lesions, and maternal blood loss. Perinatal death was recorded in one planned hospital delivery and one planned home delivery (overall perinatal mortality 2.3/1000). There was no difference between home and hospital delivered babies in birth weight, gestational age, or clinical condition. Apgar scores were slightly higher and umbilical cord pH lower in home births, but these differences may have been due to differences in clamping and the time of transportation. CONCLUSION: Healthy low risk women who wish to deliver at home have no increased risk either to themselves or to their babies.

**Andrews S (2002): Midwives as obstetric ultrasonographers, *RCM Midwives J*, 5(7), 216-218**
This paper examines the issue of expanding the sphere of professional practice in midwifery. In particular, it looks at the considerable advantages of midwives being trained in obstetric ultrasonography. The gains for the main stakeholders--clients, midwives and employers--are examined, together with anticipated problems.

**Baldwin LM, Hutchinson HL, Rosenblatt RA (1992): Professional relationships between midwives and physicians: collaboration or conflict?, *Am J Public Health*, 82(2), 262-264**
This study examines the professional relationships between midwives and physicians providing obstetrical care in Washington State. Four hundred ninety-six randomly sampled family physicians and obstetrician-gynecologists and 211 certified nurse, licensed, and lay midwives were surveyed to learn more about midwife/physician consulting relationships. Only certified nurse midwives have forged mutually satisfactory relationships with the physician community. Increased hospital-based training and practice opportunities are needed before licensed midwives can improve their professional relationships with physicians.

**Bodner-Adler B, Bodner K, Kimberger O, Lozanov P, Husslein P, Mayerhofer K (2004): Influence of the birth attendant on maternal and neonatal outcomes during normal vaginal delivery: a comparison between midwife and physician management, *Wien Klin Wochenschr*, 116(11-12), 379-384**
BACKGROUND: The purpose of this study was to compare the obstetric outcome of low-risk maternity patients attended by certified midwives with that of low-risk maternity patients attended by obstetricians. PATIENTS AND METHODS: Obstetric outcome of 1352 midwife patients was compared with that of 1352 age- and parity-matched physician patients with normal spontaneous vaginal delivery at the Department of Obstetrics and Gynecology of the University Hospital Vienna during the period from January 1997 to July 2002. Our analysis was restricted to a sample of low-risk pregnant women. Women with medical or obstetric risk factors were excluded. RESULTS: A significant decrease in the use of oxytocin ($p=0.0001$) was observed in women who selected a midwife as their primary birth attendant compared with women in the physician group. In both groups most women gave birth in a supine position; however, significantly more alternative birth positions were used by midwife patients ($p = 0.0001$). Concerning perineal trauma, a significantly lower rate of episiotomies ($p = 0.0001$) and perineal tears of all degrees ($p=0.006$) were found in midwife patients. When analyzing severe postpartum hemorrhage and postpartum infections, there were no significant differences between the two groups ($p > 0.05$). Concerning neonatal outcome, there were no significant differences in APGAR score < 7 at 5 minutes ($p > 0.05$). Our data clearly show the ability of certified midwives to successfully provide prenatal care and delivery to low-risk maternity patients, with neonatal outcomes comparable to those of physician patients. The use of certified midwives supervised by obstetricians may provide the optimum model for perinatal care, particularly for those women who are low-risk maternity patients, leaving physicians free to attend to the high-risk elements of care.

**Brooten D, Youngblut JM, Brown L, Finkler SA, Neff DF, Madigan E (2001): A randomized trial of nurse specialist home care for women with high-risk pregnancies: outcomes and costs, *Am J Manag Care*, 7(8), 793-803**
OBJECTIVE: To examine prenatal, maternal, and infant outcomes and costs through 1 year after delivery using a model of prenatal care for women at high risk of delivering low-birth-weight infants in which half of the prenatal care was provided in women's homes by nurse specialists with master's degrees. STUDY DESIGN: Randomized clinical trial. PATIENTS AND METHODS: A sample of 173 women (and 194 infants) with high-risk pregnancies (gestational or pregestational diabetes mellitus, chronic hypertension, preterm labor, or high risk of preterm labor) were randomly assigned to the intervention group (85 women and 94 infants) or the control group (88 women and 100 infants). Control women received usual prenatal care. Intervention women received half of their prenatal care in their homes, with teaching, counseling, telephone outreach, daily telephone availability, and a postpartum home visit by nurse specialists with physician backup. RESULTS: For the full sample, mean maternal age was 27 years; 85.5% of women were single mothers, 36.4% had less than a high school education, 93.6% were African American, and 93.6% had public health insurance, with no differences between groups on these variables. The intervention group had lower fetal/infant mortality vs the control group (2 vs 9), 11 fewer preterm infants, more twin pregnancies carried to term (77.7% vs 33.3%), fewer prenatal hospitalizations (41 vs 49), fewer infant rehospitalizations (18 vs 24), and a savings of more than 750 total hospital days and $2,496,145 [corrected]. CONCLUSION: This model of care provides a reasoned solution to improving pregnancy and infant outcomes while reducing healthcare costs.

**Brown SA, Grimes DE (1995): A meta-analysis of nurse practitioners and nurse midwives in primary care, *Nurs Res*, 44(6), 332-339**
This meta-analysis was an evaluation of patient outcomes of nurse practitioners (NPs) and nurse midwives (NMs), compared with those of physicians, in primary care. The sample included 38 NP and 15 NM studies. Thirty-three outcomes were analyzed. In studies

that employed randomization to provider, greater patient compliance with treatment recommendations was shown with NPs than with physicians. In studies that controlled for patient risk in ways other than randomization, patient satisfaction and resolution of pathological conditions were greater for NP patients. NPs were equivalent to MDs on most other variables in controlled studies. In studies that controlled for patient risk, NMs used less technology and analgesia than did physicians in intrapartum care of obstetric patients. NMs achieved neonatal outcomes equivalent to those of physicians. Limitations in data from primary studies precluded answering questions of why and under what conditions these outcomes apply and whether these services are cost-effective.

**Buescher PA, Roth MS, Williams D, Goforth CM (1991): An evaluation of the impact of maternity care coordination on Medicaid birth outcomes in North Carolina, *Am J Public Health*, 81(12), 1625-1629**
BACKGROUND. Care coordination is an important component of the enhanced prenatal care services provided under the recent expansions of the Medicaid program. The effect of maternity care coordination services on birth outcomes in North Carolina was assessed by comparing women on Medicaid who did and did not receive these services. METHODS. Health program data files, including Medicaid claims paid for maternity care coordination, were linked to 1988 and 1989 live birth certificates. Simple comparisons of percentages and rates were supplemented by a logistic regression analysis. RESULTS. Among women on Medicaid who did not receive maternity care coordination services, the low birth weight rate was 21% higher, the very low birth weight rate was 62% higher, and the infant mortality rate was 23% higher than among women on Medicaid who did receive such services. It was estimated that, for each $1.00 spent on maternity care coordination, Medicaid saved $2.02 in medical costs for newborns up to 60 days of age. Among the women who did receive maternity care coordination, those receiving it for 3 or more months had better outcomes than those receiving it for less than 3 months. CONCLUSIONS: These results suggest that maternity care coordination can be effective in reducing low birth weight, infant mortality, and newborn medical care costs among babies born to women in poverty.

**Buhler L, Glick N, Sheps SB (1988): Prenatal care: a comparative evaluation of nurse-midwives and family physicians, *CMAJ*, 139(5), 397-403**
We evaluated the prenatal care provided to 44 low-risk women by nurse-midwives (NMs) at a special clinic of a large obstetric referral hospital and a sample of 88 low-risk women attended by family physicians (FPs) in their offices. The women were matched on the basis of date of delivery, age, parity, number of previous miscarriages, gravidity, socioeconomic status and delivery after 32 weeks' gestation. The Burlington Randomized Controlled Trial criteria, which reflect community standards of care, were updated and used to assess the information, which was provided on standard provincial prenatal care forms. Scoring was carried out blindly, and interrater reliability was high. A highly significant difference was found in the proportions of NM and FP charts that were rated adequate, superior or inadequate: 77% v. 24%, 7% v. 16% and 16% v. 60% respectively. The rate at which procedures were omitted (leading to an inadequate score) in the categories of initial assessment, monitoring and management also varied between the two patient groups. These findings, even when considered in terms of several biases that may have resulted in the high proportion of NM charts rated at least adequate, suggest that NMs provide prenatal care to low-risk women that is comparable, if not superior, to the care provided by FPs.

**Butter I, Lapre R (1986): Obstetric care in the Netherlands: manpower substitution and differential costs, *Int J Health Plann Manage*, 1(2), 89-110**
Trends in the Netherlands show an expanded role for obstetricians in hospital-based prenatal and natal care, as well as a shift in postnatal care away from hospitals to domiciliary care. While general practitioners attend a steadily declining share of total births, midwives continue to play a central role in supporting over 40 per cent of all births and in attending nearly two thirds of all home births, which, in the Netherlands, is the preferred option for more than a third of childbearing women. As shown in the figures, shifts of births into hospitals and of postnatal care out of hospitals produce opposite effects on obstetric expenditures. Cost differences are primarily associated with variation in location of care, and only secondarily with variation in provider of care, underscoring the importance of contrasting styles of obstetric management and their influence on costs. In the context of these observed transitions, the increasing popularity of policlinical deliveries constitutes a pivotal force whose impact to date appears to have been neglected by planners and health care decision makers.

**Campbell R, Macfarlane A, Hempsall V, Hatchard K (1999): Evaluation of midwife-led care provided at the Royal Bournemouth Hospital, *Midwifery*, 15(3), 183-193**
OBJECTIVE: To compare the outcome of care given to women 'booking' for delivery in a midwife-led maternity unit with that for comparable women 'booking' for care in a consultant obstetric unit. DESIGN AND METHOD: Prospective cohort study with a quasi-experimental design and data extracted from case notes. SETTING: East Dorset, midwife-led maternity unit at Royal Bournemouth Hospital and consultant-led maternity unit at Poole General Hospital. SUBJECTS: Two cohorts of women who satisfied the criteria for 'booking' at the Royal Bournemouth Hospital. Of these 794 'booked' at Bournemouth from 1 November 1992 to 30 June 1993 and 705 'booked' at Poole over the same period. MAIN PROCESS AND OUTCOME MEASURES: Care given, morbidity in women and their babies, transfers during the antenatal period and in labour. FINDINGS: Of the women who initially 'booked' for Bournemouth, 62.3% actually delivered there, 27.1% transferred before labour and a further 9.2% transferred during labour. No differences were seen between those 'booked' for Bournemouth or Poole in the proportions of low birthweight babies, babies who were transferred to special care or babies who had congenital abnormality. Higher proportions of babies whose mothers 'booked' for delivery in Poole were resuscitated and had one minute Apgar scores below seven but there was no difference in the five minute scores. Similar proportions of women had perineal tears but fewer of the women 'booked' for delivery in Bournemouth had an episiotomy. 'Booking' for Poole was associated with higher rates of induction and augmentation of labour and greater use of anesthesia. 'Booking' for Bournemouth was associated with a shorter first stage and a longer third stage of labour. Women 'booked' for delivery in Bournemouth were no more likely to be delivered by a midwife than those 'booked' for Poole. CONCLUSIONS: There was very little difference between the groups of women who initially 'booked' for delivery at the two units. There were differences in the patterns of care received, but no major differences in the outcome for the women or their babies were detected.

**Chamberlain G, Wraight A, Crowley P (1999): Birth at home, *Pract Midwife*, 2(7), 35-39**
Recently the National Birthday Trust performed a confidential survey of home births in the United Kingdom. A good response rate was obtained from midwives, who recruited two groups of women prospectively; those planned and accepted as suitable for a home delivery at 37 weeks and a matched group of similar women who were booked for hospital by 37 weeks. Some 16% of such women were transferred to hospital in late pregnancy (4%) or in labour (12%). This figure rose to 40% among the primiparous women in the survey. The survey report presents an analysis of 4,500 home births and 3,300 hospital controls. Outcomes could therefore be presented by the woman's intent or by what actually happened. In essence it seems that a woman who is appropriately selected and screened for a home birth is putting herself and her baby at no greater risk than a mother of a similar low-risk profile

who is hospital booked and delivered. Home births will probably increase to 4-5% of all maternities in UK during the next decade and this needs preparatory planning.

**Cohen D, Guirguis-Blake J, Jack B, Chetty VK, Green LA, Fryer GE, Phillips RL (2003): Family physicians make a substantial contribution to maternity care: the case of the state of Maine, *Am Fam Physician*, 68(3), 405**
Family physicians provided nearly 20 percent of labor and delivery care in Maine in the year 2000. A substantial proportion of this care was provided to women insured by Medicaid and those delivering in smaller, rural hospitals and residency-affiliated hospitals. As family medicine explores its future scope, research identifying regional variations in the maternity care workforce may clarify the need for maternity care training in residency and labor and delivery services in practice.

**Davidson MR (2002): Outcomes of high-risk women cared for by certified nurse-midwives, *J Midwifery Womens Health*, 47(1), 46-49**
This study describes the incidence of specific high-risk factors of a population cared for by a group of certified nurse-midwives (CNMs) in a Mid-Atlantic, inner-city, nonprofit, hospital-based clinic. Outcomes were compared with all women who delivered in the United States in 1994. Univariate statistics, which consisted of descriptive statistics, frequencies, and percentage distribution, were used. This comparison suggests that CNMs can provide safe care to women with high-risk conditions. Outcomes for the midwifery sample were more favorable for vaginal births, vaginal deliveries after cesarean section, forceps- and vacuum-assisted deliveries, cesarean delivery, and 5-minute Apgar scores. The incidence of maternal fever and meconium stained amniotic fluid was higher. Implications and limitations of the study are discussed.

**DeVries R (2001): Midwifery in The Netherlands: vestige or vanguard?, *Med Anthropol*, 20(4), 277-311**
The midwifery system of the Netherlands, where nearly one-third of births occur at home, is widely admired by birth activists. Why has the Netherlands maintained this way of birthing babies when all other European countries have shifted to hospital-based maternity care? In this article, I examine the societal forces - both structural and cultural--that allowed the Dutch to hold on to a way of delivering maternity services that other modernizing nations discarded earlier in the first half of the 20th century.

**Harvey S, Jarrell J, Brant R, Stainton C, Rach D (1996): A randomized, controlled trial of nurse-midwifery care, *Birth*, 23(3), 128-135**
BACKGROUND: In 1990 a pilot nurse-midwifery program was implemented in a tertiary care hospital in a major western Canadian city. a randomized, controlled trial was conducted to determine if, when maternal and newborn patient outcomes were compared, the midwifery program was as effective as traditional, low-risk health care available in the city. METHODS: All low-risk women who requested and qualified for nurse-midwifery care were randomly assigned to an experimental or control group. RESULTS: One hundred one women received care from nurse-midwives and 93 received standard care from either an obstetrician or family physician. The rate of cesarean delivery in the nurse-midwife group was 4 percent compared with 15.1 percent in the physician group. The episiotomy rate, excluding cesarean deliveries, for the nurse-midwife group was 15.5 percent compared with 32.9 percent in the physician group. The rates of epidural anesthesia for pain relief in labor were 12.9 percent and 23.7 percent, respectively. Statistically significant differences were found ultrasound examinations, amniotomy, intravenous drug administration during labor, dietary supplements, length of hospital stay, and admission of infants to the neonatal intensive care unit. CONCLUSIONS: The results clearly support the effectiveness of the pilot nurse-midwifery program and suggest that more extensive participation of midwives in the Canadian health care system is an appropriate use of health care dollars.

**Harvey S, Rach D, Stainton MC, Jarrell J, Brant R (2002): Evaluation of satisfaction with midwifery care, *Midwifery*, 18(4), 260-267**
OBJECTIVE: to determine if there were differences in women's satisfaction with maternity care given by doctors and midwives. In addition a simple, six-question, satisfaction questionnaire was to be tested. DESIGN: a randomised controlled trial comparing two models of maternity care. SETTING: a tertiary referral centre in Alberta, Canada. PARTICIPANTS: one hundred and ninety four women with a low-risk pregnancy were randomly assigned to either the midwife care, experimental group (n = 101), or the doctor care, control group (n = 93). INTERVENTIONS: a pilot midwifery programme was introduced into a maternity services delivery system that did not have established midwifery. MEASUREMENTS: women's satisfaction was measured, at two weeks postpartum, with the Labour and Delivery Satisfaction Index (LADSI), general attitudes toward the birth experience, also at two weeks postpartum; with the Attitudes about Labour and Delivery Experience (ADLE) questionnaire. Fluctuations in satisfaction were measured with a Six Simple Questions (SSQ) questionnaire at 36 weeks gestation and 48 hours, two and six weeks postpartum. FINDINGS: women in the midwife group reported significantly greater satisfaction and a more positive attitude toward their childbirth experience than women in the doctor group ($p < 0.001$). The SSQ demonstrated scores similar to the LADSI. Satisfaction in both groups was lowest at 36 weeks gestation and highest immediately postpartum. KEY CONCLUSIONS: women experiencing low-risk pregnancies were more satisfied with care by midwives than with care provided by doctors. Satisfaction scores were high for both groups and may have been lower for women in the doctor group as a result of disappointment with caregiver assignment as all women had sought midwifery care. The SSQ measures similar dimensions to the LADSI but the agreement is not strong enough to recommend its use as a substitute at this time. IMPLICATIONS FOR PRACTICE: the significantly higher satisfaction of the women with the care provided by the midwives together with better clinical outcomes reported elsewhere suggest that the option of midwifery care should be accessible as an option for all women in Canada. Further research is suggested to determine the usefulness of the SSQ.

**Hayes J, Dave S, Rogers C, Quist-Therson E, Townsend J (2003): A national survey in England of the routine examination of the newborn baby, *Midwifery*, 19(4), 277-284**
OBJECTIVE: To identify current practices for the initial routine examination of healthy newborn babies, and determine the extent to which midwives are carrying out this examination. DESIGN AND PARTICIPANTS: Postal questionnaires were sent to consultant paediatricians and midwifery managers in all maternity units in England. Questionnaires were also sent to the 12 universities in England which run the N96 post-registration course in the examination of the newborn baby. FINDINGS: Questionnaires were returned from 197 (86%) maternity units. Senior house officers examined in 83% (160/193) a median of 92% of babies; 44% (74/167) had at least one midwife (median of two) with qualifications to carry out the examination and in 31% (51/167) some examinations were conducted by a midwife. However, a third of midwives with this qualification carried out no examinations, and nationally only about 2% of babies were examined by a midwife. Rates of referral by midwives and senior house officers were similar. Examinations were carried out between four and 48 hours from birth; most units considered six hours an acceptable minimum. An estimated 1% of babies were transferred home without routine examination; the GP was responsible for most (83-93%) of these babies' examinations; midwives for 10-23%; and senior house officers in hospital for 4-7%. Twelve per cent (23/194) of units carried out a second

examination prior to discharge. Most respondents were in favour of midwives carrying out the examinations provided they were adequately trained. CONCLUSIONS: Many of the consultant paediatricians and midwifery managers stated that suitably trained midwives could routinely examine the healthy newborn baby; however, many currently N96 trained midwives were examining few or no babies. An extension of training would be needed were midwife examination to become general policy.

**Hicks C, Spurgeon P, Barwell F (2003): Changing Childbirth: a pilot project, *J Adv Nurs*, 42(6), 617-28**
OBJECTIVE: To compare the outcomes of an adapted pilot Changing Childbirth initiative providing continuity of care by a group of known midwives with traditional maternity care. DESIGN: Between-groups trial to compare levels of satisfaction and clinical outcomes for two groups of women, cared for either under this Changing Childbirth scheme or the traditional model of care. METHOD: Of the 200 women who agreed to participate in the project, 100 were randomly allocated to the pilot scheme and 100 to the traditional care package. During the postpartum period, information was collected via a questionnaire about participants' levels of satisfaction with a variety of aspects of care provided during the antenatal, delivery and postpartum periods. Data about clinical outcomes for the two groups were also obtained. RESULTS: Women in the pilot group had significantly more continuity of care throughout each of the three periods, were generally more satisfied with their care, felt that they had more choice over a variety of aspects of care and experienced no compromise in clinical outcomes (P = 0.05 or less in each case). IMPLICATIONS FOR PRACTICE: Many previous attempts to introduce the Changing Childbirth initiative have revealed significant problems, particularly with regard to the continuity of carer requirement. Taking account of local health care needs and existing provision, the present study adapted this concept to continuity of care. This did not apparently affect any of the guiding principles contained in the original document, and yet enhanced satisfaction. It would appear that the Changing Childbirth agenda can be adapted and integrated with local health care situations without sacrificing any of the overarching principles.

**Hodnett ED, Downe S, Edwards N, Walsh D (2005): Home-like versus conventional institutional settings for birth, *Cochrane Database Syst Rev*, 1, CD000012**
BACKGROUND: Home-like birth settings have been established in or near conventional labour wards for the care of pregnant women who prefer and require little or no medical intervention during labour and birth. OBJECTIVES: Primary: to assess the effects of care in a home-like birth environment compared to care in a conventional labour ward. Secondary: to determine if the effects of birth settings are influenced by staffing or organizational models or geographical location of the birth centre. SEARCH STRATEGY: We searched the Cochrane Pregnancy and Childbirth Group trials register (18 May 2004) and handsearched eight journals and two published conference proceedings. SELECTION CRITERIA: All randomized or quasi-randomized controlled trials that compared the effects of a home-like institutional birth environment to conventional hospital care. DATA COLLECTION AND ANALYSIS: Standard methods of the Cochrane Collaboration Pregnancy and Childbirth Group were used. Two review authors evaluated methodological quality. Double data entry was performed. Results are presented using relative risks and 95% confidence intervals. MAIN RESULTS: Six trials involving 8677 women were included. No trials of freestanding birth centres were found. Between 29% and 67% of women allocated to home-like settings were transferred to standard care before or during labour. Allocation to a home-like setting significantly increased the likelihood of: no intrapartum analgesia/anaesthesia (four trials; n = 6703; relative risk (RR) 1.19, 95% confidence interval (CI) 1.01 to 1.40), spontaneous vaginal birth (five trials; n = 8529; RR 1.03, 95% CI 1.01 to 1.06), vaginal/perineal tears (four trials; n = 8415; RR 1.08, 95% CI 1.03 to 1.13), preference for the same setting the next time (one trial; n = 1230; RR 1.81, 95% CI 1.65 to 1.98), satisfaction with intrapartum care (one trial; n = 2844; RR 1.14, 95% CI 1.07 to 1.21), and breastfeeding initiation (two trials; n = 1431; RR 1.05, 95% CI 1.02 to 1.09) and continuation to six to eight weeks (two trials; n = 1431; RR 1.06, 95% CI 1.02 to 1.10). Allocation to a home-like setting decreased the likelihood of episiotomy (five trials; n = 8529; RR 0.85, 95% CI 0.74 to 0.99). There was a trend towards higher perinatal mortality in the home-like setting (five trials; n = 8529; RR 1.83, 95% CI 0.99 to 3.38). No firm conclusions could be drawn regarding the effects of staffing or organizational models. AUTHORS' CONCLUSIONS: When compared to conventional institutional settings, home-like settings for childbirth are associated with modest benefits, including reduced medical interventions and increased maternal satisfaction. Caregivers and clients should be vigilant for signs of complications.

**Hodnett ED, Lowe NK, Hannah ME, Willan AR, Stevens B, Weston JA, Ohlsson A, Gafni A, Muir HA, Myhr TL, Stremler R; Nursing Supportive Care in Labor Trial Group (2002): Effectiveness of nurses as providers of birth labor support in North American hospitals: a randomized controlled trial, *JAMA*, 288(11), 1373-1381**
CONTEXT: North American cesarean delivery rates have risen dramatically since the 1960s, without concomitant improvements in perinatal or maternal health. A Cochrane Review concluded that continuous caregiver support during labor has many benefits, including reduced likelihood of cesarean delivery. OBJECTIVE: To evaluate the effectiveness of nurses as providers of labor support in North American hospitals. DESIGN: Randomized controlled trial with prognostic stratification by center and parity. Women were enrolled during a 2-year period (May 1999 to May 2001) and followed up until 6 to 8 postpartum weeks. SETTING: Thirteen US and Canadian hospitals with annual cesarean delivery rates of at least 15%. PARTICIPANTS: A total of 6915 women who had a live singleton fetus or twins, were 34 weeks' gestation or more, and were in established labor at randomization. INTERVENTION: Patients were randomly assigned to receive usual care (n = 3461) or continuous labor support by a specially trained nurse (n = 3454) during labor. MAIN OUTCOME MEASURES: The primary outcome measure was cesarean delivery rate. Other outcomes included intrapartum events and indicators of maternal and neonatal morbidity, both immediately after birth and in the first 6 to 8 postpartum weeks. RESULTS: Data were received for all 6915 women and their infants (n = 6949). The rates of cesarean delivery were almost identical in the 2 groups (12.5% in the continuous labor support group and 12.6% in the usual care group; P =.44). There were no significant differences in other maternal or neonatal events during labor, delivery, or the hospital stay. There were no significant differences in women's perceived control during childbirth or in depression, measured at 6 to 8 postpartum weeks. All comparisons of women's likes and dislikes, and their future preference for amount of nursing support, favored the continuous labor support group. CONCLUSIONS: In hospitals characterized by high rates of routine intrapartum interventions, continuous labor support by nurses does not affect the likelihood of cesarean delivery or other medical or psychosocial outcomes of labor and birth.

**Homer CS, Davis GK, Brodie PM, Sheehan A, Barclay LM, Wills J, Chapman MG (2001): Collaboration in maternity care: a randomised controlled trial comparing community-based continuity of care with standard hospital care, *BJOG*, 108(1), 16-22**
OBJECTIVE: To test whether a new community-based model of continuity of care provided by midwives and obstetricians improved maternal clinical outcomes, in particular a reduced caesarean section rate. DESIGN: Randomised controlled trial. SETTING: A public teaching hospital in metropolitan Sydney, Australia. Sample 1089 women randomised to either the community-based model (n = 550) or standard hospital-based care (n = 539) prior to their first antenatal booking visit at an Australian metropolitan public hospital. MAIN OUTCOME MEASURES: Data were collected on onset and outcomes of labour, antenatal, intrapartum and postnatal

complications, antenatal admissions to hospital and neonatal mortality and morbidity. RESULTS: There was a significant difference in the caesarean section rate between the groups, 13.3% (73/550) in the community-based group and 17.8% in the control group (96/539). This difference was maintained after controlling for known contributing factors to caesarean section (OR = 0.6, 95% CI 0.4-0.9, P = 0.02). There were no other significant differences in the events during labour and birth. Eighty babies (14.5%) from the community-based group and 102 (18.9%) from the control group were admitted to the special care nursery, but this difference was not significant (OR 0.75, 95% CI 0.5-1.1, P = 0.12). Eight infants died during the perinatal period (four from each group), for an overall perinatal mortality rate of 7.3 per 1000 births. CONCLUSION: Community-based continuity of maternity care provided by midwives and obstetricians resulted in a significantly reduced caesarean section rate. There were no other differences in clinical outcomes.

**Homer CS, Davis GK, Cooke M, Barclay LM (2002): Women's experiences of continuity of midwifery care in a randomised controlled trial in Australia, *Midwifery*, 18(2), 102-112**
OBJECTIVE: to compare the experiences of women who received a new model of continuity of midwifery care with those who received standard hospital care during pregnancy, labour, birth and the postnatal period. DESIGN: a randomised controlled trial was conducted. One thousand and eighty-nine women were randomly allocated to either the new model of care, the St George Outreach Maternity Project (STOMP), or standard care. Women completed a postal questionnaire eight to ten weeks after the birth. PARTICIPANTS: women in the trial were of mixed obstetric risk status and more than half the sample were born in a non-English speaking country. FINDINGS: questionnaires were returned from 69% of consenting women. STOMP women were significantly more likely to have talked with their midwives and doctors about their personal preferences for childbirth and more likely to report that they knew enough about aspects of labour and birth, particularly induction of labour, pain relief and caesarean section. Almost 80% of women in the STOMP group experienced continuity of care, that is, one of their team midwives was present, during labour and birth. STOMP women reported a significantly higher 'sense of control during labour and birth'. Sixty-three per cent of STOMP women reported that they 'knew' the midwife who cared for them during labour compared with 21% of control women. In a secondary analysis, women who had a midwife during labour who they felt that they knew, had a significantly higher sense of 'control' and a more positive birth experience compared with women who reported an unknown midwife. Postnatal care elicited the greatest number of negative comments from women in both the STOMP and the control group. CONCLUSION: The reorganisation of maternity services to enable women to receive continuity of care has benefits for women. The benefits of a known labour midwife needs further research.

**Hueston WJ, Murry M (1992): A three-tier model for the delivery of rural obstetrical care using a nurse midwife and family physician copractice, *J Rural Health*, 8(4), 283-290**
To meet the needs of a large indigent rural population, a rural regional referral hospital in northeastern Kentucky developed a maternity program that utilizes nurse midwives and family physicians as the primary medical providers with support from obstetricians. After five years, the number of deliveries at the hospital has increased almost 30 percent, and the maternity center is now responsible for more than 70 percent of all deliveries at the medical center. Accounting for the large increase in the number of deliveries is an increasing number of women from surrounding areas who now utilize the maternity center and the hospital for their obstetric care. During the same time, there has been a corresponding decrease in deliveries to women with no prior prenatal care and a shift toward obtaining earlier prenatal care in the hospital service population. Results of the study suggest that combining the skills of nurse midwives and family physicians with surgical backup provided by a consulting obstetrician is an effective means of meeting the health care needs of an indigent, underserved rural population.

**Hueston WJ, Rudy M (1993): A comparison of labor and delivery management between nurse midwives and family physicians, *J Fam Pract*, 37(5), 449-454**
BACKGROUND. Practice associations between family physicians and nurse midwives have been suggested as a means to increase the availability of obstetric care in rural areas. No evidence exists, however, that family physicians and midwives have comparable practice styles or achieve similar outcomes in obstetric patients. METHODS. The study examines patients cared for by a co-practice of nurse midwives and family physicians at a rural hospital. Data were collected through a retrospective chart audit for all patients whose prenatal care, labor, or delivery was managed by members of the practice in 1990 and 1991. RESULTS. Few differences were noted between nurse midwives and family physicians in the management of labor or delivery. The only consistent finding was that family physicians were more likely than midwives to use an episiotomy for delivery (40% vs 30% in primiparous women, P = .02; and 20% vs 10% in multiparous women, P = .007). Despite seemingly similar management styles, primiparous women managed by family physicians were more likely to undergo cesarean section (14% vs 8%, P = .05) resulting from the diagnosis of dystocia. When practice specialty was included in a logistic regression model with parity and the number of preexisting risk factors, the effect of specialty on cesarean sections remained significant with a relative risk of 2.79 for cesarean section if patients had their labor managed by a family physician (P < .001). CONCLUSIONS. Family physicians and nurse midwives managed patients in labor similarly, but nurse midwives were more likely to achieve a vaginal delivery in primiparous women and do so without an episiotomy. Although the differences found would not interfere with a collaborative practice, subtle differences in patient management do exist. Further exploration of these differences may be helpful in understanding the impact of these differences on mixed-specialty practices.

**Hunter JK, Ventura MR, Kearns PA (1999): Cost analysis of a nursing center for the homeless, *Nurs Econ*, 17(1), 20-28**
Single women and children now make up a third of the vulnerable U.S. homeless population who tend to seek health care only when their symptoms can no longer be ignored. The school of nursing at SUNY was one of the programs funded by HHS Division of Nursing to develop and implement a nursing center that would provide primary health services to the homeless. The cost of providing nursing services to homeless clients in nurse-managed centers was compared to costs for alternatives in the community including emergency department visits or care at the county supported nurse-run outpatient clinics. The four sites that served the homeless donated space for the SUNY project nurses to see patients. This enhanced accessibility, earlier intervention in health care problems, and decreased client cost (and time) for transportation to other service providers. The potential for earlier and less costly interventions confirmed the value of this humanistic nurse-run service for the homeless.

**Jabaaij L, Meijer W (1996): Home births in The Netherlands: midwifery-related factors of influence, *Midwifery*, 12(3), 129-135**
OBJECTIVE: identification of midwifery-related factors influencing the varied percentage of home births in the practice of Dutch midwives. DESIGN: cross-sectional study. SETTING: independent midwifery practices in the Netherlands. PARTICIPANTS: 115 independent midwives. MEASUREMENTS: recordings of time spent on professional activities over three weeks. Questionnaires were completed on practice characteristics and opinion regarding the place and risks of birth. FINDINGS: attending home births is no more

time consuming for midwives than assisting at short-stay hospital births. The percentage of home births in a practice is not related to the average number of hours worked per week, nor to the size or type of practice. The percentage of home births is lowest in major cities. Midwives who think more positively about home births and do not consider these to involve greater risks assist at more home births. IMPLICATIONS FOR PRACTICE: the assumption that a heavy workload will interfere with the policy of de-medicalising birth is found to be false. The opinion of a midwife about the desirability and safety of home confinement has a slight positive effect on the percentage of home births in her practice. Those attempting to promote an increase in births at home must take these factors into account.

**Jackson DJ, Lang JM, Swartz WH, Ganiats TG, Fullerton J, Ecker J, Nguyen U (2003): Outcomes, safety, and resource utilization in a collaborative care birth center program compared with traditional physician-based perinatal care, *Am J Public Health*, 93(6), 999-1006**
OBJECTIVE: We compared outcomes, safety, and resource utilization in a collaborative management birth center model of perinatal care versus traditional physician-based care. METHODS: We studied 2957 low-risk, low-income women: 1808 receiving collaborative care and 1149 receiving traditional care. RESULTS: Major antepartum (adjusted risk difference [RD] = -0.5%; 95% confidence interval [CI] = -2.5, 1.5), intrapartum (adjusted RD = 0.8%; 95% CI = -2.4, 4.0), and neonatal (adjusted RD = -1.8%; 95% CI = -3.8, 0.1) complications were similar, as were neonatal intensive care unit admissions (adjusted RD = -1.3%; 95% CI = -3.8, 1.1). Collaborative care had a greater number of normal spontaneous vaginal deliveries (adjusted RD = 14.9%; 95% CI = 11.5, 18.3) and less use of epidural anesthesia (adjusted RD = -35.7%; 95% CI = -39.5, -31.8). CONCLUSIONS: For low-risk women, both scenarios result in safe outcomes for mothers and babies. However, fewer operative deliveries and medical resources were used in collaborative care.

**Janssen PA, Holt VL, Myers SJ (1994): Licensed midwife-attended, out-of-hospital births in Washington state: are they safe?, *Birth*, 21(3), 141-148**
The safety of out-of-hospital births attended by midwives who are licensed according to international standards has not been established in the United States. To address this issue, outcomes of births attended out of hospital by licensed midwives in Washington state were compared with those attended by physicians and certified nurse-midwives in hospital and certified nurse-midwives out of hospital between 1981 and 1990. Outcomes measured included low birthweight, low five-minute Apgar scores, and neonatal and postneonatal mortality. Associations between attendant and outcomes were measured using odds ratios to estimate relative risks. Multivariate analysis using logistic regression controlled for confounding variables. Overall, births attended by licensed midwives out of hospital had a significantly lower risk for low birthweight than those attended in hospital by certified nurse-midwives, but no significant differences were found between licensed midwives and any of the comparison groups on any other outcomes measured. When the analysis was limited to low-risk women, certified nurse-midwives were no more likely to deliver low-birthweight infants than were licensed midwives, but births attended by physicians had a higher risk of low birthweight. The results of this study indicate that in Washington state the practice of licensed nonnurse-midwives, whose training meets standards set by international professional organizations, may be as safe as that of physicians in hospital and certified nurse-midwives in and out of hospital.

**Janssen PA, Lee SK, Ryan EM, Etches DJ, Farquharson DF, Peacock D, Klein MC (2002): Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia, *CMAJ*, 166(3), 315-323**
BACKGROUND: The choice to give birth at home with a regulated midwife in attendance became available to expectant women in British Columbia in 1998. The purpose of this study was to evaluate the safety of home birth by comparing perinatal outcomes for planned home births attended by regulated midwives with those for planned hospital births. METHODS: We compared the outcomes of 862 planned home births attended by midwives with those of planned hospital births attended by either midwives (n = 571) or physicians (n = 743). Comparison subjects who were similar in their obstetric risk status were selected from hospitals in which the midwives who were conducting the home births had hospital privileges. Our study population included all home births that occurred between Jan. 1, 1998, and Dec. 31, 1999. RESULTS: Women who gave birth at home attended by a midwife had fewer procedures during labour compared with women who gave birth in hospital attended by a physician. After adjustment for maternal age, lone parent status, income quintile, use of any versus no substances and parity, women in the home birth group were less likely to have epidural analgesia (odds ratio 0.20, 95% confidence interval [CI] 0.14-0.27), be induced, have their labours augmented with oxytocin or prostaglandins, or have an episiotomy. Comparison of home births with hospital births attended by a midwife showed very similar and equally significant differences. The adjusted odds ratio for cesarean section in the home birth group compared with physician-attended hospital births was 0.3 (95% CI 0.22-0.43). Rates of perinatal mortality, 5-minute Apgar scores, meconium aspiration syndrome or need for transfer to a different hospital for specialized newborn care were very similar for the home birth group and for births in hospital attended by a physician. The adjusted odds ratio for Apgar scores lower than 7 at 5 minutes in the home birth group compared with physician-attended hospital births was 0.84 (95% CI 0.32-2.19). INTERPRETATION: There was no increased maternal or neonatal risk associated with planned home birth under the care of a regulated midwife. The rates of some adverse outcomes were too low for us to draw statistical comparisons, and ongoing evaluation of home birth is warranted.

**Janssen PA, Lee SK, Ryan ER, Saxell L (2003): An evaluation of process and protocols for planned home birth attended by regulated midwives in British Columbia, *J Midwifery Womens Health*, 48(2), 138-145**
Midwifery emerged as a self-regulated profession in British Columbia in the context of a 2-year demonstration project beginning in 1998. The project evaluated accountability among midwives, defined as the provision of safe and appropriate care and maintenance of standards of communication set by the College of Midwives of British Columbia. Adherence to protocols was measured by using documentation designed specifically for the Home Birth Demonstration Project. Hospital and transport records for selected clients were reviewed by an expert committee. Outcomes among Home Birth Demonstration Project clients were compared with outcomes among women eligible for home birth but planning to deliver in hospital. Adherence to clinical and communication protocols was 96% or higher. Planned home birth was not associated with an increase in risk but prevalence of adverse outcomes was too low to be studied with precision. Recommendations of an expert review committee have been implemented or are under review. Midwives have demonstrated a high degree of compliance with reporting requirements and protocols. Comparisons of birth outcomes of planned home versus hospital births, while supporting home birth as a choice for women, were limited in scope and require ongoing study. Integration of home birth has been a dynamic process with guidelines and policy continuing to evolve.

**Khan-Neelofur D, Gulmezoglu M, Villar J (1998): Who should provide routine antenatal care for low-risk women, and how often? A systematic review of randomised controlled trials, WHO Antenatal Care Trial Research Group, *Paediatr Perinat Epidemiol*, 12(2), 7-26**
Many activities, the timing and the frequency of visits of conventional antenatal care provided to low-risk pregnant women have

most often been introduced without proper scientific evaluation. Few trials, to date, have been conducted to evaluate the effectiveness of antenatal care programmes for low-risk women with varied number of antenatal visits and type of care providers. We have performed a systematic review of these randomised controlled trials. Five randomised controlled trials were identified in which the effectiveness of a schedule of reduced number of antenatal visits (n = 12,883) was compared with the existing practice (n = 9438). Four of these trials were carried out in developed countries. The difference in the number of visits between intervention and control arms of the trials was moderate. Only one trial achieved a reduction in the median number of visits, from six in the standard care to four in the intervention group, that could be considered to be of health-care relevance for the study population. No significant differences were observed in the two arms of the trials when low birthweight, small-for-gestational-age, Caesarean section, induction of labour, antepartum haemorrhage and postpartum haemorrhage were considered as outcome measures. However, there was a tendency towards an increased rate of preterm delivery in the intervention group in three of the trials. Conversely, the largest trial in Harare, Zimbabwe, demonstrated a statistically significant reduction in preterm delivery in the intervention group (relative risk [RR] 0.88; 95% confidence interval [CI] 0.80, 0.96). Neither the individual studies nor the review had the statistical power to evaluate mortality outcome variables. When perception of care was assessed, women participating in two trials expressed less satisfaction with frequency of visits in the experimental group. In the London, UK, trial, some women in the reduced number of visits group felt that their expectations were not completely fulfilled. However, an opposite trend was reflected when women were asked for their preference of the type of care for any future pregnancy. We also identified three trials that compared midwife/general practitioner-managed care vs. obstetrician/gynaecologist-led shared care. The results were indicative of similar clinical efficacy of the two groups. However, women's respo reduction if antenatal care was provided by staff other than the obstetrician/gynaecologist. The available data demonstrate no significant differences in selected perinatal outcomes for low-risk women receiving care according to a reduced frequency (approximately two visits fewer) of prenatal visits vs. those following the existing practice. However, there are differences in satisfaction with the prenatal care provider and the prenatal care system. There is evidence that a midwife's clinic for provision of antenatal care for low-risk pregnancies is feasible and therapy reduction in costs achievable.

**Langton PA (1994): Obstetricians' resistance to independent, private practice by nurse-midwives in Washington, D.C. hospitals, *Women Health*, 22(1), 27-48**
This paper examines obstetricians' explanations for the longstanding and current conflict between obstetricians and nurse-midwives in the District of Columbia over the struggle for independent practice for nurse-midwives. Based on extended interviews with obstetricians, this study shows they are reluctant to provide nurse-midwives with medical backup, a requirement of D.C. law for nurse-midwives to deliver babies in District hospitals. Obstetricians' concerns involve the boundaries of professional responsibility, and economic constraints. Obstetricians believe their more extensive training better qualifies them to handle difficult pregnancies, and they are concerned that nurse-midwives may not call for their help when it is needed. They argue that expanding the use of nurse-midwives will lead to a competition for healthy clients, a competition for paying clients, increased exposure to malpractice liability for obstetricians providing backup, and difficulty obtaining reimbursement from nurse-midwives for their services.

**MacArthur C, Winter HR, Bick DE, Lilford RJ, Lancashire RJ, Knowles H, Braunholtz DA, Henderson C, Belfield C, Gee H (2003): Redesigning postnatal care: a randomised controlled trial of protocol-based midwifery-led care focused on individual women's physical and psychological health needs*, Health Technol Assess*, 7(37), 1-98**
OBJECTIVES: To develop, implement and test the cost-effectiveness of redesigned postnatal care compared with current care on women's physical and psychological health. DESIGN: A cluster randomised controlled trial, with general practice as the unit of randomisation. Recruited women were followed up by postal questionnaire at 4 and 12 months postpartum and further data collected from midwife and general practice sources. SETTING: Thirty-six randomly selected general practice clusters in the West Midlands Health Region, UK. PARTICIPANTS: All women expected to be resident within recruited practices for postnatal care were eligible for inclusion. Attached midwives recruited 1087 women in the intervention and 977 in the control practice clusters. INTERVENTIONS: The systematic identification and management of women's health problems, led by midwives with general practitioner contact only when required. Symptom checklists and the Edinburgh Postnatal Depression Scale (EPDS) were used at various times to maximise the identification of problems, and individual care and visit plans based on needs. Evidence-based guidelines were used to manage needs. Care was delivered over a longer period. MAIN OUTCOME MEASURES: Women's health at 4 and 12 months, assessed by the Physical and Mental Component Scores (PCS and MCS) of the Short-Form 36 (SF-36) and the EPDS. Women's views about care, reported morbidity at 12 months, health service usage during the year, 'good practice' indicators and health professionals' views about care were secondary outcomes. RESULTS: At 4 and 12 months postpartum the mean MCS and EPDS scores were significantly better in the intervention group and the proportion of women with an EPDS score of 13+ (indicative of probable depression) was significantly lower relative to controls. The physical health score (PCS) did not differ. Health service usage was significantly less in the intervention group as well as reported psychological morbidity at 12 months. Women's views about care were either more positive or did not differ. Intervention midwives were more satisfied with redesigned care than control midwives were with standard care. Intervention care was cost-effective since outcomes were better and costs did not differ substantially. CONCLUSIONS: The redesigned community postnatal care led by midwives and delivered over a longer period, resulted in an improvement in women's mental health at 4 months postpartum, which persisted at 12 months and at equivalent overall cost. It is suggested that further research should focus on: the identification of postnatal depression through screening; whether fewer adverse longer term effects might be demonstrated among the children of the women who had the intervention care relative to the controls; testing interventions to reduce physical morbidity, including studies to validate measures of physical health in postpartum women. Further research is also required to investigate appropriate postnatal care for ethnic minority groups.

**McCloskey L, Kennedy HP, Declercq ER, Williams DR (2002): The practice of nurse-midwifery in the era of managed care: reports from the field, *Matern Child Health J*, 6(2), 127-136**
OBJECTIVE: The purpose of this paper is to describe the reports of certified nurse-midwives (CNMs) about how changes in the financing and organization of health care in the late 1990s influenced their ability to serve vulnerable populations and provide a woman-centered, prevention-oriented midwifery model of care. METHODS: A 13-page survey was mailed to all CNMs ever certified by the American College of Nurse-Midwives (N = 6365) in July 1998. The survey included closed- and open-ended questions. A total of 2405 CNMs responded: of these, 2089 were in clinical practice during the study period (1997-98) and 82% of the 2089 (N = 1704) wrote responses to the open-ended questions and were included in the qualitative database. We present responses to the closed-ended questions about seven domains of practice and elaborate on three major themes identified through content analysis of the qualitative data. RESULTS: The majority (57%) reported that the changes in the larger health care environment had influenced their practices during 1997-98. The effects most frequently reported were 1) increased client loads (31%); 2) altered style of practice (30%): 3) inability to serve the same populations; (20%); 4) decreased client loads (20%); and 5) increased administrative duties (17%). Three major themes were identified and elaborated upon in the qualitative data: 1) challenges to the style of midwifery

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practice related to the managed care environment; 2) the loss of socially and economically at-risk women from CNMs' client base; and 3) barriers to high quality and comprehensive services for women. CONCLUSIONS: During the late 1990s as managed care was expanding and health systems were merging, a significant number of CNMs in the field described threats to their ability to sustain economically viable practices and a style of care consistent with the woman-centered, prevention-oriented midwifery model.

**McKay S (1993): Models of midwifery care – Denmark, Sweden, and The Netherlands, *J Nurse Midwifery*, 38(2), 114-120**
The organization of maternity services in Denmark, Sweden, and the Netherlands was studied under the sponsorship of the World Health Organization European Headquarters Office of Maternal and Child Health. Midwifery care is highly respected and is a central feature of obstetric care in each of these countries. In Denmark and Sweden, almost all births are in the hospital, and autonomous midwives are employed by national health services. About three-quarters of Dutch midwives are in independent practice, and 34% of Dutch women give birth at home. In each country midwives provide "the first line" of care for normal pregnant women and are viewed as essential to the excellent perinatal outcomes these three countries enjoy.

**Murphy PA, Fullerton J (1998): Outcomes of intended home births in nurse-midwifery practice: a prospective descriptive study, *Obstet Gynecol*, 92(3), 461-470**
OBJECTIVE: To describe the outcomes of intended home birth in the practices of certified nurse-midwives. METHODS: Twenty-nine US nurse-midwifery practices were recruited for the study in 1994. Women presenting for intended home birth in these practices were enrolled in the study from late 1994 to late 1995. Outcomes for all enrolled women were ascertained. Validity and reliability of submitted data were established. RESULTS: Of 1404 enrolled women intending home births, 6% miscarried, terminated the pregnancy or changed plans. Another 7.4% became ineligible for home birth prior to the onset of labor at term due to the development of perinatal problems and were referred for planned hospital birth. Of those women beginning labor with the intention of delivering at home, 102 (8.3%) were transferred to the hospital during labor. Ten mothers (0.8%) were transferred to the hospital after delivery, and 14 infants (1.1%) were transferred after birth. Overall intrapartal fetal and neonatal mortality for women beginning labor with the intention of delivering at home was 2.5 per 1000. For women actually delivering at home, intrapartal fetal and neonatal mortality was 1.8 per 1000. CONCLUSION: Home birth can be accomplished with good outcomes under the care of qualified practitioners and within a system that facilitates transfer to hospital care when necessary. Intrapartal mortality during intended home birth is concentrated in postdates pregnancies with evidence of meconium passage.

**Oakley D, Murray ME, Murtland T, Hayashi R, Andersen HF, Mayes F, Rooks J (1996): Comparisons of outcomes of maternity care by obstetricians and certified nurse-midwives, *Obstet Gynecol*, 88(5), 823-829**
OBJECTIVE: To determine whether pregnancy outcomes differ by provider group when alternative explanations are taken into account. METHODS: Pregnancy outcomes were compared for 710 women cared for by private obstetricians and 471 cared for by certified nurse-midwives. At intake, all women qualified for nurse-midwifery care. They were retained in their original group for analysis, even if they were later referred to physicians. Infant and maternal mortality, 30 clinical indicators, satisfaction with care, and monetary charges were studied. The study site's history and philosophy of honoring consumer choice of provider precluded random assignment, but multivariate analyses minimized the effects of multiple confounding factors. The statistical power was adequate for the study design. RESULTS: Significant differences ($P < .05$) between the obstetrician and nurse-midwife groups were found for seven clinically important outcomes: infant abrasions (7 versus 4%), infant remaining with mother for the entire hospital stay (15 versus 27%), third- or fourth-degree perineal laceration (23 versus 7%), number of complications (0.7 versus 0.4), satisfaction with care, average hospital charges ($5427 versus $4296), and average professional fee charges ($3425 versus $3237). When maternal risk, selection bias, and the medical intensiveness of care were controlled, the provider group did not continue to have an independent effect on infant abrasions, hemorrhage, and professional fee charges; when women's preferences were added, the difference in hospital charges disappeared. However, the provider group continued to have significant independent effects on the other four outcomes. Interaction effects were not significant. CONCLUSION: Although most outcomes were equally good, important differences between obstetrician and nurse-midwife care remained after multivariate analysis.

**Page L, McCourt C, Beake S, Vail A, Hewison J (1999): Clinical interventions and outcomes of One-to-One midwifery practice, *J Public Health Med*, 21(3), 243-248**
BACKGROUND: Changing Childbirth became policy for the maternity services in England in 1994 and remains policy. One-to-One midwifery was implemented to achieve the targets set. It was the first time such a service had been implemented in the Health Service. An evaluation was undertaken to compare its performance with conventional maternity care. METHODS: This was a prospective comparative study of women receiving One-to-One care and women receiving the system of care that One-to-One replaced (conventional care) to compare achievement of continuity of carer and clinical outcomes. The evaluation took place in The Hammersmith Hospitals NHS Trust, the Queen Charlotte's and Hammersmith Hospitals. This was part of a larger study, which included the evaluation of women's responses, cost implications, and clinical standards and staff reactions. The participants were all those receiving One-to-One midwifery practice (728 women), which was confined to two postal districts, and all women receiving care in the system that One-to-One replaced, in two adjacent postal districts (675 women), and expecting to give birth between 15 August 1994 and 14 August 1995. Main outcome measures were achievement of continuity of care, rates of interventions in labour, length of labour, maternal and infant morbidity, and breastfeeding rates. RESULTS: A high degree of continuity was achieved through the whole process of maternity care. One-to-One women saw fewer staff at each stage of their care, knew more of the staff who they did see, and had a high level of constant support in labour. One-to-One practice was associated with a significant reduction in the use of epidural anaesthesia (odds ratio (OR) 95 per cent confidence interval (CI) = 0.59 (0.44, 0.80)), with lower rates of episiotomy and perineal lacerations (OR 95 per cent CI = 0.70 (0.50, 0.98)), and with shorter second stage labour (median 40 min vs 48 min). There were no statistically significant differences in operative and assisted delivery or breastfeeding rates. CONCLUSIONS: This study confirms that One-to-One midwifery practice can provide a high degree of continuity of carer, and is associated with a reduction in the rate of a number of interventions, without compromising safety of care. It should be extended locally and replicated in other services under continuing evaluation.

**Payne PA, King VJ (1998): A model of nurse-midwife and family physician collaborative care in a combined academic and community setting, *J Nurse Midwifery*, 43(1), 19-26**
Certified nurse-midwives and family physicians share a philosophy of family-centered maternity care. Collaboration between the two disciplines, however, has not been common. Collaboration can enhance the primary care and maternity care options available to clients of such collaborative practices. Advantages and barriers to collaboration for both types of practitioners, as well as suggestions for successful collaboration, are discussed.

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**Ray KL, Hodnett ED (2001): Caregiver support for postpartum depression, *Cochrane Database Syst Rev*, 3, CD000946**
BACKGROUND: Supportive relationships during the perinatal period may enhance a mother's feeling of wellbeing and control. Support to women during labour and after birth has shown benefits and this may also be the case for mothers with postpartum depression. OBJECTIVES: The objective of this review was to assess the effect of professional and/or social support interventions for the treatment of postpartum depression. SEARCH STRATEGY: We searched the Cochrane Pregnancy and Childbirth Group trials register. Date of last search: January 2001. SELECTION CRITERIA: Randomised and quasi-randomised trials comparing additional support from caregivers with usual forms of care in the postpartum period, in women who were clinically depressed in the six months after giving birth. DATA COLLECTION AND ANALYSIS: Trial quality was assessed and data were extracted by both reviewers. Study authors were contacted for additional information. MAIN RESULTS: Two studies involving 137 women were included. There is potential for bias in at least one study, due to large numbers of women refusing to take part in the trial as well as significant losses to follow-up during the trial. Treatment of postpartum depression with support was associated with a reduction in depression at 25 weeks after giving birth (odds ratio 0.34, 95% confidence intervals 0.17 to 0.69). REVIEWER'S CONCLUSIONS: There is some indication that professional and/or social support may help in the treatment of postpartum depression. The types of support should be investigated to assess which models are most effective.

**Reinharz D, Blais R, Fraser WD, Contandriopoulos AP (2000): Cost-effectiveness of midwifery services vs. medical services in Quebec. LEquipe dEvaluation des Projets-Pilotes Sages-Femmes, *Can J Public Health*, 91(1), 12-15**
This study compared the cost-effectiveness of midwife services provided in birth centres operating as pilot projects with current hospital-based medical services in the province of Quebec. One thousand midwives' clients were matched with 1,000 physicians' clients on the basis of socio-demographic characteristics and obstetrical risk. Direct costs for the prenatal, intrapartum and postpartum periods were estimated. Effectiveness was assessed on the basis of three clinical indicators and four indices related to the individualization of care as assessed by women. Results show that the costs of midwife services were barely lower than or equal to those of physician services, but cost-effectiveness ratios were to the advantage of the midwife group, except for one clinical indicator (neonatal ventilation). Overall, this study provides rational support for the process of legalizing midwifery in the province.

**Shields N, Turnbull D, Reid M, Holmes A, McGinley M, Smith LN (1998): Satisfaction with midwife-managed care in different time periods: a randomised controlled trial of 1299 women, *Midwifery*, 14(2), 85-93**
OBJECTIVE: To compare women's satisfaction with midwife-managed care with 'shared care' over three different time periods. DESIGN: Randomised controlled trial. SETTING: Glasgow Royal Maternity Hospital, Glasgow, UK. PARTICIPANTS: 1299 women experiencing normal pregnancy (consent rate: 82%). Six hundred and forty-eight women were randomised to midwife-managed care and 651 to 'shared care'. METHODS: Three self-report questionnaires were sent to women's homes. The questionnaires examined: satisfaction with antenatal care at 34-35 weeks' gestation, and satisfaction with intrapartum, hospital- and home-based postnatal care at seven weeks postnatally. The third questionnaire reviewed satisfaction with intrapartum care seven months after delivery. FINDINGS: Women in both groups were satisfied. However, women in the midwife-managed group were more highly satisfied in relation to the dimensions examined: relationships with staff, information transfer, choices and decisions, and social support. The differences between the two groups were evident for all time periods (i.e. antenatal, intrapartum and postnatal periods) and were sustained at seven-month follow-up. This is illustrated in the mean scores for relationships with staff, as measured at 34-35 weeks' gestation (possible range -2; very negative attitudes to 2; very positive attitudes). Women in the midwife-managed group scored a mean of 1.22 compared to 0.74 for the 'shared care' group (mean diff: 0.48; 95% CI: 0.42 to 0.55). While women in both groups were more likely to make positive rather than negative comments in open-ended questions, the midwife-managed group were more likely to make positive comments whereas the 'shared care' group were more likely to make negative comments. CONCLUSION: Midwife-managed care for healthy pregnant women which is integrated into existing services improves satisfaction with antenatal, intrapartum and postnatal care.

**Smith L (1996): Should general practitioners have any role in maternity care in the future?, *Br J Gen Pract*, 46(405), 243-247**
Maternity services in England are currently being reorganized. The success of the changes will be judged against the recommendations of the Changing Childbirth report. This paper describes the nature of maternity care and of general practice. It is argued that maternity care provision by general practitioners is a central and essential part of British general practice. Specifically, it is shown how general practitioners can help to achieve the objectives of the report, and thus, have a future role. It is suggested that all general practitioners who wish maternity care to remain an essential part of general practice need to argue the case with providers and purchasers. If they do not, then it is quite likely that general practitioners will be increasingly excluded as the commissioning and contracting mechanisms become more effective with midwives providing low-risk care and consultant obstetricians high-risk care.

**Smith L (1996): Views of pregnant women on the involvement of general practitioners in maternity care, *Br J Gen Pract*, 46(403), 101-104**
BACKGROUND: The reorganization of maternity services in England following the report Changing childbirth is likely to impinge upon general practitioners' contribution to maternity care. Professionals and managers are increasingly expected to take account of patients' views when reorganizing services. AIM: This study aimed to elicit women's views about the involvement of general practitioners in maternity care and to establish the extent of continuity provided by general practitioners. METHOD: A prospective cohort postal questionnaire survey was undertaken in the Bath health district to elicit the views of pregnant women about the general practitioner's role in maternity care, the continuity provided, patient satisfaction and the general practitioner-patient relationship. Responses were rated on five-point Likert scales. Women completed questionnaires at 24 and eight weeks before the birth and at two and eight weeks after the birth. RESULTS: Of 164 women entering the study (28 of whom were booked for home delivery and 136 for hospital delivery), 116 (71%) completed all four survey questionnaires. Of respondents 68% agreed that general practitioners play an important role in routine antenatal care and 53% that they have an important role in normal labour. These opinions appeared to be stable over time. Most women (73%) were cared for throughout their pregnancy by one general practitioner whom they knew well; such continuity was desired by nearly all the women in the study. Approximately three quarters of women were satisfied with the antenatal, postnatal and overall care provided by their general practitioner. Over half of respondents (56%) wished to get to know the doctor who would be present at the birth: the general practitioner was involved in 19 labours (16%), being present at the birth for only nine women. Women delivering at home were significantly more likely to agree with the statement that they knew the doctor present at the birth compared with those women delivering at hospital. Most women (91%) had their final six-week postnatal check with their general practitioner. CONCLUSION: Most women in this study believed that general practitioners are important in maternity care, providing continuity of antenatal and postnatal care but not of intrapartum care. These beliefs might be an indicator of the future situation in the United Kingdom when more women give birth at home and under non-

consultant care. The vocational training and continuing education of general practitioners should accommodate their possible future roles in maternity care.

**Spurgeon P, Hicks C, Barwell F (2001): Antenatal, delivery and postnatal comparisons of maternal satisfaction with two pilot Changing Childbirth schemes compared with a traditional model of care, *Midwifery*, 17(2), 123-132**
OBJECTIVE: to investigate maternal satisfaction with two pilot schemes based on the Changing Childbirth initiative (DoH 1993) and to compare this with a traditional model of care. In addition, a limited number of clinical outcome measures were also assessed. DESIGN: a retrospective between-group design was used. Questionnaire data were collected from three groups (two pilot and one control) about the antenatal, labour and postnatal periods to establish both satisfaction with key objectives of the Changing Childbirth initiative (DoH 1993), and basic clinical outcomes. SETTING: a large Trust (see definition in main article) in Central England, that covered a wide range of socio-economic strata. PARTICIPANTS: the two pilot groups comprised 112 and 103 women respectively and were randomly drawn from GP practices within the Trust's catchment area. The third group of 118 women (Control) was selected from the Trust's obstetric unit. Women at high obstetric risk were excluded from this study. MEASUREMENT: a five-part questionnaire was devised that covered: (1) preferences for type of care, health-care professional, venue etc; (2) details of antenatal care provision and the participants' satisfaction with this; (3) labour, including clinical outcomes, labour and birth details and satisfaction with care; (4) postnatal care information, including satisfaction scores; and (5) information and advice given throughout the ante, delivery and postnatal periods and satisfaction with this. The questionnaires were administered six weeks postnatally. FINDINGS: although the two pilot groups had been set up to follow a one-to-one midwifery care model, the second group naturally evolved into providing care from within a small group of midwives. This variation did not lead to any differences in any of the outcome measures. The women in the obstetrician-led group were not dissatisfied with the care, information and treatment they received, but they were significantly less satisfied than either of the two pilot groups. The pilot groups also rated more highly the information and choice that they had, and felt that the midwives acted as partners in the process. These findings applied to the antenatal, delivery and postnatal periods. No differences in clinical outcomes were observed between the groups. CONCLUSIONS: midwifery-led care was much preferred to obstetrician-led care and did not lead to any deficits in clinical outcomes. The pilot scheme that adapted the initiative into small-group provision showed no reduction in satisfaction levels or other outcome measures. Since burn-out and stress have been identified as features of one-to-one midwifery provision, this model might have potential for offsetting this problem, while still maintaining the spirit of the Changing Childbirth policy. From the perspective of maternal well-being, both physical and psychological, the initiative reported here appears to have been highly successful.

**Stuart D, Oshio S (2002): Primary care in nurse-midwifery practice: a national survey, *J Midwifery Womens Health*, 47(2), 104-109**
Providing primary health care is a relatively new addition to the scope of practice for certified nurse-midwives (CNMs)/certified midwives (CMs); thus, not much is known about how this component has been integrated into midwifery practice. The purpose of this descriptive study was to examine the type and extent of primary care education among CNMs/CMs and how various common health conditions are managed. In addition, perceptions of barriers to incorporating primary care into their practice were gathered. A small national survey was conducted among randomly selected members of the American College of Nurse-Midwives. No CMs participated. Although the sample size (n = 63) precludes generalizing the findings, 65% of CNMs reported lack of formal education in primary care. However, when asked about specific health conditions, more than 50% stated that they had some form of education in treating 30 of 37 common health problems. It is noteworthy that 54% of the CNM respondents indicated that they do not provide newborn care despite the fact that more than 85% of them received newborn education. Barriers such as lack of insurance reimbursement, institutional rules, and a lack of understanding of the CNM's scope of practice were cited by respondents as contributing factors. Unfamiliarity with primary care may be the most important factor in the reluctance of CNMs to incorporate primary care into practice.

**Tincello DG, Williams A, Fowler GE, Adams EJ, Richmond DH, Alfirevic Z (2003): Differences in episiotomy technique between midwives and doctors, *BJOG*, 110(12), 1041-1044**
OBJECTIVES: To examine the practice of making an episiotomy and to determine any differences in practice between professional groups. DESIGN: A prospective survey. SETTING: A large tertiary referral obstetric hospital and the obstetric department of a district general hospital. POPULATION: All staff routinely involved in the care of women in labour. METHODS: A novel validated pictorial questionnaire was designed, validated and distributed to the study population. Differences in outcome measures were compared by profession and by seniority. MAIN OUTCOME MEASURES: Measurements taken from the questionnaire: the length of episiotomy drawn; the distance from the sagittal plane at which the episiotomy was begun; and the angle of the episiotomy from the sagittal plane. RESULTS: Fifty doctors and 78 midwives completed the forms. Median distance of the episiotomy from the midline was 0 mm (-2 to 11). Episiotomies drawn by doctors were significantly longer and more angled than those drawn by midwives (P = 0.002 and P = 0.001). Sixteen percent of doctors and 1% of midwives drew an episiotomy longer than 20 mm (difference 15%, 95% CI 6 to 24). Twenty-three percent of midwives and 2% of doctors drew an episiotomy angled 30 degrees or less (difference 21%, 95% CI 9 to 34). CONCLUSIONS: This study has demonstrated differences in the reporting of episiotomy practice by doctors and midwives. Theoretically, the differences demonstrated could predispose to a greater risk of anal sphincter injuries. These data need to be confirmed by observational studies of actual practice and by studies to investigate the mechanics of sphincter injury during childbirth.

**Townsend J, Wolke D, Hayes J, Dave S, Rogers C, Bloomfield L, Quist-Therson E, Tomlin M, Messer D (2004): Routine examination of the newborn: the EMREN study. Evaluation of an extension of the midwife role including a randomised controlled trial of appropriately trained midwives and paediatric senior house officers, *Int J Technol Assess Health Care*, 8(14), iii-iv, ix-xi, 1-100**
OBJECTIVES: To assess the implications and cost-effectiveness of extending the role of midwives to include the routine (24-hour) examination of the healthy newborn usually carried out by junior doctors. DESIGN: The study included a prospective randomised controlled trial (RCT) with mother and baby dyads randomised to either senior house officer (SHO) or midwife for the routine examination of the newborn. Midwives and SHOs were also videoed while performing the examinations and the videos were rated by an independent consultant and senior midwife. In addition extensive interviews, surveys, consultations and assessments were carried out. SETTING: A District General Hospital (for the RCT), a London Teaching Hospital, general practices and mothers' homes (for interviews); questionnaires were sent to all maternity units in England (for the National Survey). PARTICIPANTS: A total of 826 mother and baby dyads in a District General Hospital in south-east England. Midwives and SHOs, as well as midwifery managers, paediatric consultants; general practitioners (GPs) and representatives of key organisations. INTERVENTIONS: A routine examination of a newborn baby was carried out at about 24 hours from birth and a further examination for half the babies in each group, at 10-days at home by the community midwife. MAIN OUTCOME MEASURES: Referrals assessed as appropriate and as major or minor by

three independent consultants. Problems identified during the first year of life assessed as identifiable at 24 hours. Quality assessment by video against an agreed written proforma. Maternal satisfaction. Opinion of professionals and mothers about aspects of the examination. RESULTS: There was no statistical difference between SHO and midwife examinations in appropriate referral rates to hospital or community or in inappropriate referral rates to hospital. Videoed assessments were assessed as carried out more appropriately by the midwives than by the SHOs. Overall maternal satisfaction was high and higher when a midwife rather than an SHO examined. Few new health problems were identified at the 10-day examination. From the National Survey, it was estimated that about 2% of babies in England are examined by a midwife. If midwives were to examine all babies where there were no complications of birth or antenatal history, there would be savings of about 2 pounds per baby born, equivalent to savings of 1.2 pounds million nationally. Were midwives to examine all babies on normal wards savings would increase to about 4.30 pounds per baby born or 2.5 million pounds nationally. Representatives of the professional bodies were of the opinion that having trained midwives carrying out the examination would be valuable. CONCLUSIONS: All component aspects of the study were consistent in showing benefits or at least no significant barriers to suitably qualified, trained midwives carrying out the examinations. Developing the role of the midwife to include examination of the newborn is likely to result in improved quality of examinations and higher satisfaction from mothers. It would slightly reduce overall health service costs, with some increased resources needed by midwifery departments, and some decrease in resource needs of paediatric departments. There is a need for further research into the value of the examination being carried out at home rather than in hospital; the overall unsatisfactory quality of the examination of the hips; and appropriate inclusion criteria for which babies' midwives should examine.

**Tracy SK, Hartz D, Nicholl M, McCann Y, Latta D (2005): An integrated service network in maternity--the implementation of a midwifery-led unit, *Aust Health Rev*, 29(3), 332-339**
Maternity services in Australia are in urgent need of change. During the last 10 years several reviews have highlighted the need to provide more continuity of care for women in conjunction with the rationalisation of services. One solution may lie in the development of new integrated systems of care where primary-level maternity units offer midwifery-led care and women are transferred into perinatal centres to access tertiary-level obstetric technology and staff when required. This case study outlines the introduction of caseload midwifery into an Area Health Service in metropolitan Sydney. Our objective is to explore the concept of caseload midwifery and the process of implementing the first midwifery-led unit in NSW within an integrated service network. The midwife-led unit is a small but growing phenomenon in many countries. However, the provision of "continuity" and "woman-centred" midwifery care involves radical changes to conventional hospital practice.

**Turnbull D, Holmes A, Shields N, Cheyne H, Twaddle S, Gilmour WH, McGinley M, Reid M, Johnstone I, Geer I, McIlwaine G, Lunan CB (1996): Randomised, controlled trial of efficacy of midwife-managed care, *Lancet*, 348(9022), 213-218**
BACKGROUND: Midwife-managed programmes of care are being widely implemented although there has been little investigation of their efficacy. We have compared midwife-managed care with shared care (ie, care divided among midwives, hospital doctors, and general practitioners) in terms of clinical efficacy and women's satisfaction. METHODS: We carried out a randomised controlled trial of 1299 pregnant women who had no adverse characteristics at booking (consent rate 81.9%). 648 women were assigned midwife-managed care and 651 shared care. The research hypothesis was that compared with shared care, midwife-managed care would produce fewer interventions, similar (or more favourable) outcomes, similar complications, and greater satisfaction with care. Data were collected by retrospective review of case records and self-report questionnaires. Analysis was by intention to treat. FINDINGS: Interventions were similar in the two groups or lower with midwife-managed care. For example, women in the midwife-managed group were less likely than women in shared care to have induction of labour (146 [23.9%] vs 199 [33.3%]; 95% CI for difference 4.4-14.5). Women in the midwife-managed group were more likely to have an intact perineum and less likely to have had an episiotomy (p = 0.02), with no significant difference in perineal tears. Complication rates were similar. Overall, 32.8% of women were permanently transferred from midwife-managed care (28.7% for clinical reasons, 3.7% for non-clinical reasons). Women in both groups reported satisfaction with their care but the midwife-managed group were significantly more satisfied with their antenatal (difference in mean scores 0.48 [95% CI 0.41-0.55]), intrapartum (0.28 [0.18-0.37]), hospital-based postnatal care (0.57 [0.45-0.70]), and home-based postnatal care (0.33 [0.25-0.42]). INTERPRETATION: We conclude that midwife-managed care for healthy women, integrated within existing services, is clinically effective and enhances women's satisfaction with maternity care.

**van Daalen R (1987): Dutch obstetric care: home or hospital, midwife or gynaecologist?, *Health Promot*, 2(3), 247-255**
The Dutch obstetric system is traditionally characterized by extensive primary health services, supported by more specialized care. Midwives and GPs are responsible for normal deliveries, obstetricians for the deliveries considered high risk. Home deliveries are fairly common. Over the last decade this relatively positive approach to reproduction has threatened to give place to methods that seem to oppose the goals of health promotion. The percentage of home deliveries has declined from 57% in 1970 to 35% in 1985. The distinction between normal and pathological pregnancies and deliveries has become more blurred. A growing number of women with a normal pregnancy are giving birth in hospital. In sparsely populated regions, primary health care is inadequate, but this explains only part of this development. As far as parents-to-be have a choice, little is known about their considerations and about the role of different professional groups in how they choose. Between the various medical professions, competition arises about the division of tasks and about the hierarchical relation to one another. The role of obstetricians has become more important, GPs are losing ground, while midwives retain their share in practising obstetric care. Rivalry between different professional groups has been stimulated by the decline in the birth rate and the increase in the number of professionals. The increased number of pregnant women whose pregnancy and delivery is defined as 'pathological' reflects the continuing process of medicalization. Different developments may explain this process: the increase in hospital births, progress in medical science, the older age of women having their first baby.

**Waldenstrom U (1998): Continuity of carer and satisfaction, *Midwifery*, 14(4), 207-213**
OBJECTIVE: To study the association between continuity of carer and satisfaction with antenatal, intrapartum and postpartum domiciliary care. DESIGN: A descriptive study comparing satisfaction measures between women cared for by a known or unknown midwife. Data on satisfaction were extracted from the intervention group of a birth centre trial, and the names of the individual carers from two clinical databases kept at the birth centre. SETTING: An in-hospital birth centre in Stockholm. SUBJECTS: 410 women who had been randomly allocated to birth centre care during pregnancy, and who had a normal vaginal delivery at the centre. Complete data, including the names of the caregivers and the women's satisfaction scores, were available in 175 cases (43%) during the antenatal episode, 404 cases (98%) during the intrapartum episode and in 254 cases (62%) during the episode of postpartum domiciliary care. MAIN OUTCOME MEASURES: Overall satisfaction with antenatal care, intrapartum care, labour and birth, and postpartum domiciliary care. FINDINGS: No statistical differences were observed in satisfaction with antenatal care between women who had seen only one, two, or more than two midwives at their check-ups during pregnancy; in satisfaction with intrapartum care

or the birth itself when comparing women who were delivered by a known or unknown midwife; or in satisfaction with domiciliary care when the midwife was known or unknown. CONCLUSION: The findings suggest that continuity of carer is less important in a birth centre. The high levels of satisfaction in women having birth centre care were probably more affected by the attitudes of the carers, the philosophy of care, and the nice and calm environment than by knowing the individual midwife well.

**Waldenstrom U, Nilsson CA (1997): A randomized controlled study of birth center care versus standard maternity care: effects on women's health, *Birth*, 24(1), 17-26**
BACKGROUND: The safety of birth center care for low-risk women is an important issue, but it has not yet been studied in randomized controlled trials. Our purpose was to evaluate the effect of birth center care on women's health during pregnancy, birth, and 2 months postpartum by comparing the outcomes with those of women experiencing standard maternity care in the greater Stockholm area. METHODS: Of 1860 women, 928 were randomly allocated to birth center care and 932 to standard antenatal, intrapartum, and postpartum care. Information about medical procedures and health outcomes was collected from clinical records, and a questionnaire was mailed to women 2 months after the birth. Analysis was by "intention to treat;" that is, all antenatal, intrapartum, and postpartum transfers were included in the birth center group. RESULTS: During pregnancy, birth center women made fewer visits to midwives and doctors, experienced fewer tests, and reported fewer health problems. No statistical difference occurred in hospital admissions (4.8%) compared with the control group (4.7%). During labor, birth center women used more alternative birth positions, had longer labors, and did not differ in perineal lacerations. In both groups 1.7 percent of women developed complications, requiring more than 7 days of hospital care after the birth. During the first 2 postpartum months, about 20 percent of women in both groups saw a doctor for similar types of health problems, and no statistical difference occurred in hospital readmissions, 1.4 and 0.8 percent in the birth center and control groups, respectively. CONCLUSION: The results suggest that birth center care is effective in identifying significant maternal complications and as safe for women as standard maternity care.

**Waldenstrom U, Turnbull D (1998): A systematic review comparing continuity of midwifery care with standard maternity services, *Br J Obstet Gynaecol*, 105(11), 1160-1170**
OBJECTIVE: To review randomised controlled trials of alternative maternity services characterised by continuity of midwifery care. METHODS: A systematic review of randomised controlled trials, analysed on an intention to treat basis, in which the study intervention was characterised by a midwife or small group of midwives providing care from early pregnancy to the postnatal period (defined as that provided on the postnatal ward); and the controls by standard maternity care as practised in the place where the trial was conducted. The seven trials identified included 9148 women. Main outcome measures were interventions during labour, maternal outcomes and infant outcomes. RESULTS: The alternative models with continuity of midwifery care were associated with less use of obstetric interventions during labour (eg, induction, augmentation of labour, electronic fetal monitoring, obstetric analgesia, instrumental vaginal delivery and episiotomy). However, the caesarean section rate did not differ statistically between the trial groups (OR 0.91; 95% CI 0.78 to 1.05). The lower episiotomy rate in the alternative models of care (OR 0.69; 95% CI 0.61 to 0.77) was associated with a significantly higher rate of perineal tears in the pooled alternative groups (OR 1.15; 95% CI 1.05 to 1.26). The percentage of intact perineums was very similar for the two groups (OR 1.11; 95% CI 1.00 to 1.24). There was no maternal death, and rates of maternal complications based on unpooled estimates did not show any statistically significant differences. The proportion of babies with an Apgar score < 7 at five minutes after the birth was approximately the same in the pooled alternative groups as in the control groups (OR 1.13 95% CI 0.69 to 1.84). Admission to intensive care or special care baby unit was similar (OR 0.86; 95% CI 0.71 to 1.04). The difference in perinatal deaths was bordering on statistical significance (OR 1.60; 95% CI 0.99 to 2.59). CONCLUSION: Continuity of midwifery care is associated with lower intervention rates than standard maternity care. No statistically significant differences were observed in maternal and infant outcomes. However, more research is necessary to make definite conclusions about safety, for the infant as well as for the mother. This review illustrates the variation in the different models of alternative and standard maternity care, and thus the problems associated with pooling data from different trials.

**Watts K, Fraser DM, Munir F (2003): The impact of the establishment of a midwife managed unit on women in a rural setting in England, *Midwifery*, 19(2), 106-112**
OBJECTIVE: to determine what impact the changes from consultant-led care to midwife-led care in a local maternity service have had on women using that service. DESIGN: case study, data were collected by postal questionnaire, semi-structured, tape-recorded interviews, observations and scrutiny of records. SETTING: a small town in rural England. PARTICIPANTS: all pregnant women eligible for a midwife-managed unit (MMU) birth in a small rural town in England. FINDINGS: the women using the MMU were satisfied with the care they received and the MMU style of care. Women giving birth at the MMU and at home required less pain relief and were more likely to have an intact perineum than a similar group of women giving birth in hospital. Continuity of carer did not appear to be an issue for women as long as they felt supported by a known team of midwives. Transfer for complications during the birthing process was a cause for anxiety and stress for women and their partners. Women, whilst satisfied with the MMU, would prefer the consultant-led maternity hospital to be re-established in the town. The home-birth rate rose by 28% when the consultant unit closed. IMPLICATIONS FOR PRACTICE: while the establishment of a midwife-managed unit has provided increased choice for a minority of women, the removal of the consultant unit in the town has disadvantaged the majority of pregnant women. While guidelines are needed when establishing these units the application of restrictive inclusion and exclusion criteria can sometimes force women to make less appropriate birth choices.

**Weaver EW, Clark KF, Vernon BA (2005): Obstetricians and midwives modus vivendi for current times. Obstetric services need to be women-centred and based on mutual respect and collaboration, *Med J Aust*, 182(9), 436-437**
[Ausschnitt] Provision of maternity services in Australia has also been made more difficult by workforce issues. The average age of obstetricians in Australia is 51 years and of midwives 41 years. The workforce survey carried out by the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) in 2003 revealed that a quarter of Australian Fellows were now aged 60 or more. The same workforce survey also highlighted the possibility of a major shortage of obstetricians in the next 10 years, due to retirements, new RANZCOG Fellows not wishing to practise obstetrics, increased feminisation of the obstetric workforce, and problems associated with safe working hours. There has also been a major decrease in GPs practising obstetrics, especially in rural areas, for lifestyle reasons and because of the cost of medical indemnity. The shortage of midwives is also a problem. The Australian Health Workforce Advisory Committee estimates a current national shortage of 1850 midwives, and this is expected to increase over the remainder of the decade. Problems with recruiting and retaining midwives seem to be related to midwives' perceptions of a lack of professional recognition, stress and workload issues, as well as limited opportunities for midwives to practise as primary carers and provide continuity of care to women.

**Wiegers TA (2003): General practitioners and their role in maternity care, *Health Policy*, 66(1), 51-59**
During the last century the perception of pregnancy and childbirth has changed from a normal, physiological life-event to a potentially dangerous condition. Maternity care has become more and more obstetrical care, focussed on pathology and complications. The involvement of general practitioners (GPs) in maternity care is strongly reduced and almost everywhere the same reasons are found: interference with lifestyle and interruption of office routine, fear of litigation and costs of malpractice insurance, insufficient training and insufficient numbers of cases to retain competency. In Canada, the USA, and to a lesser extent in Australia and New Zealand, GPs still providing intrapartum care are GP-obstetricians rather than maternity care providers. They provide low-risk as well as high-risk obstetrical care, especially in rural areas with few specialist obstetricians. In Europe, GPs do not provide high-risk obstetrical care. Instead they emphasize their role as generalist, and compete with midwives for a central role in maternity care for women with an uncomplicated pregnancy. The ongoing medicalization of childbirth and the changing attitudes towards the demands of maternity care practice have diminished the role of GPs or family physicians. If they want to stay involved in maternity care in the future they need to cooperate with midwives, preferably in shared care programs.

**Wiegers TA, Keirse MJ, van der Zee J, Berghs GA (1996): Outcome of planned home and planned hospital births in low risk pregnancies: prospective study in midwifery practices in The Netherlands, *BMJ*, 313(7068), 1309-1313**
OBJECTIVE: To investigate the relation between the intended place of birth (home or hospital) and perinatal outcome in women with low risk pregnancies after controlling for parity and social, medical, and obstetric background. DESIGN: Analysis of prospective data from midwives and their clients. SETTING: 54 midwifery practices in the province of Gelderland, Netherlands. SUBJECTS: 97 midwives and 1836 women with low risk pregnancies who had planned to give birth at home or in hospital. MAIN OUTCOME MEASURE: Perinatal outcome index based on "maximal result with minimal intervention" and incorporating 22 items on childbirth, 9 on the condition of the newborn, and 5 on the mother after the birth. RESULTS: There was no relation between the planned place of birth and perinatal outcome in primiparous women when controlling for a favourable or less favourable background. In multiparous women, perinatal outcome was significantly better for planned home births than for planned hospital births, with or without control for background variables. CONCLUSIONS: The outcome of planned home births is at least as good as that of planned hospital births in women at low risk receiving midwifery care in the Netherlands.

**Wiegers TA, van der Zee J, Keirse MJ (1998): Maternity care in The Netherlands: the changing home birth rate, *Birth*, 25(3), 190-197**
In 1965 two-thirds of all births in The Netherlands occurred at home. In the next 25 years, that situation became reversed with more than two-thirds of births occurring in hospital and fewer than one-third at home. Several factors have influenced that change, including the introduction of short-stay hospital birth, hospital facilities for independent midwives, increased referral rates from primary to secondary care, changes in the share of the different professionals involved in maternity care, medical technology, and demographic changes. After a decline up to 1978 and a period of relative stability between 1978 and 1988, the home birth rate started to decline further, to the extent that it might destabilize the Dutch maternity care system and the role of midwives in it. The Dutch maternity care system depends heavily on primary caregivers, midwives and general practitioners who are responsible for the care of women with low-risk pregnancies, and on obstetricians who provide care for high-risk pregnancies. Its preservation requires a high level of cooperation among the different caregivers, and a functional selection system to ensure that all women receive the type of care that is best suited to their needs. Preserving the home birth option in the Dutch maternity care system necessitates the maintenance of high training and postgraduate standards for midwives, the continued provision of maternity home care assistants, and giving women with uncomplicated pregnancies enough confidence in themselves and the system to feel safe in choosing a home birth.

**Wolleswinkel-van den Bosch JH, Vredevoogd CB, Borkent-Polet M, van Eyck J, Fetter WP, Lagro-Janssen TL, Rosink IH, Treffers PE, Wierenga H, Amelink M, Richardus JH, Verloove-Vanhorick P, Mackenbach JP (2002): Substandard factors in perinatal care in The Netherlands: a regional audit of perinatal deaths, *Acta Obstet Gynecol Scand*, 81(1), 17-24**
BACKGROUND: To determine: 1) whether substandard factors were present in cases of perinatal death, and to what extent another course of action might have resulted in a better outcome, and 2) whether there were differences in the frequency of substandard factors by level of care, particularly between midwives and gynecologists/obstetricians and between home and hospital births. METHODS: Population-based perinatal audit, with explicit evidence-based audit criteria. SETTING: The northern part of the province of South-Holland in The Netherlands. All levels of perinatal care (primary, secondary and tertiary care, and home and hospital births) were included. CASES: Three hundred and forty-two cases of perinatal mortality (24 weeks of pregnancy--28 days after birth). MAIN OUTCOME MEASURES: Scores by a Dutch and a European audit panel. Score 0: no substandard factors identified; score 1, 2 or 3: one or more substandard factors identified, which were unlikely (1), possibly (2) or probably (3) related to the perinatal death. RESULTS: In 25% of the perinatal deaths (95% Confidence Interval: 20-30%) a substandard factor was identified that according to the Dutch panel was possibly or probably related to the perinatal death. These were mainly maternal/social factors (10% of all perinatal deaths; most frequent substandard factor: smoking during pregnancy), and antenatal care factors (10% of all perinatal deaths; most frequent substandard factor: detection of intra-uterine growth retardation). We did not find statistically significant differences in scores between midwives and gynecologists/obstetricians or between home and hospital births. The European panel identified more substandard factors, but these were again equally distributed by level of care. CONCLUSIONS: Perinatal deaths might be partly preventable in The Netherlands. There is no evidence that the frequency of substandard factors is related to specific aspects of the perinatal care system in The Netherlands.

**Woods L (2006): Evaluating the clinical effectiveness of neonatal nurse practitioners: an exploratory study, *J Clin Nurs*, 15(1), 35-44**
AIM AND OBJECTIVES: The aim of the investigation was to establish if there was any preliminary evidence to indicate if the quality of care and clinical outcomes for premature birth babies are affected by the type of practitioner (i.e. nurse practitioner vs. medical practitioner) responsible for the initial assessment, treatment and management of neonates during the first 6-12 hours following admission to a neonatal intensive care unit. BACKGROUND: The United Kingdom (UK) has seen a proliferation in the number of nurse practitioners in the past decade. While there is a growing body of evidence to suggest that nurse practitioners in primary care settings are able to provide a high quality and effective level of clinical service comparable with many of their medical counterparts, there has been relatively little evaluation of the nurse practitioner role in acute or high dependency hospital settings. DESIGN AND METHODS: The study design used a mixed method approach combining a retrospective examination and quality assessment of nursing and medical records. A random sample of 61 sets of medical records, relating specifically to the initial management and treatment of neonates were criterion assessed by an experienced consultant neonatologist and a variety of patient outcome data collated and analysed. RESULTS: The analysis of the patient outcome data and quality assessment of nursing and medical records

revealed that there was no statistical difference in the standard and quality of care provided between nurse practitioners and medical staff in the vast majority of areas evaluated. However, trends in the data suggest that Advanced Neonatal Nurse Practitioners (ANNPs) did not perform as well as their medical counterparts in terms of the overall completeness or comprehensiveness of the standard care provided in a number of areas. CONCLUSION: Neonatal nurse practitioners provide an alternative model of service delivery in the initial admission and management of premature birth babies. While the results of the study suggest that ANNPs do not perform as well as medical staff, in the majority of cases, they still performed to an acceptable standard. Nonetheless, some deficits in the standard of care provided by both groups of practitioners were identified which in turn have implications for ongoing training and skills development. Relevance to clinical practice. The findings suggest that ANNPs are capable of taking on an advanced role in the assessment and management of neonates.

# 4 Physiotherapeut/innen

**Aakvik A, Holmas TH, Kjerstad E (2003): A low-key social insurance reform--effects of multidisciplinary outpatient treatment for back pain patients in Norway, *J Health Econ*, 22(5), 747-762**
This paper estimates treatment effects for back pain patients using observational data from a low-key social insurance reform in Norway. Using a latent variable model, we estimate the average treatment effect (ATE), the average effect of treatment on the treated (TT), and the distribution of treatment effects for multidisciplinary outpatient treatment at three different locations. To estimate these treatment effects, we use a discrete-choice model with unobservables generated by a factor structure model. Distance to the nearest hospital (in kilometres) is used as an instrument in estimating the different treatment effects. We find a positive effect of treatment of around 6 percentage points on the probability of leaving the sickness benefits scheme after allowing for selection effects and full heterogeneity in treatment effects. We also find that there are sound arguments for expanding the multidisciplinary outpatient programme for treating back pain patients.

**Bergman GJ, Winters JC, Groenier KH, Pool JJ, Meyboom-de Jong B, Postema K, van der Heijden GJ (2004): Manipulative therapy in addition to usual medical care for patients with shoulder dysfunction and pain: a randomized, controlled trial, *Ann Intern Med*, 141(6), 432-439**
BACKGROUND: Dysfunction of the cervicothoracic spine and the adjacent ribs (also called the shoulder girdle) is considered to predict occurrence and poor outcome of shoulder symptoms. It can be treated with manipulative therapy, but scientific evidence for the effectiveness of such therapy is lacking. OBJECTIVE: To study the effectiveness of manipulative therapy for the shoulder girdle in addition to usual medical care for relief of shoulder pain and dysfunction. DESIGN: Randomized, controlled trial. SETTING: General practices in Groningen, the Netherlands. PATIENTS: 150 patients with shoulder symptoms and dysfunction of the shoulder girdle. INTERVENTIONS: All patients received usual medical care from their general practitioners. Only the intervention group received additional manipulative therapy, up to 6 treatment sessions in a 12-week period. MEASUREMENTS: Patient-perceived recovery, severity of the main complaint, shoulder pain, shoulder disability, and general health. Data were collected during and at the end of the treatment period (at 6 and 12 weeks) and during the follow-up period (at 26 and 52 weeks). RESULTS: During treatment (6 weeks), no significant differences were found between study groups. After completion of treatment (12 weeks), 43% of the intervention group and 21% of the control group reported full recovery. After 52 weeks, approximately the same difference in recovery rate (17 percentage points) was seen between groups. During the intervention and follow-up periods, a consistent between-group difference in severity of the main complaint, shoulder pain and disability, and general health favored additional manipulative therapy. LIMITATIONS: The sample size was small, and assessment of end points was subjective. CONCLUSION: Manipulative therapy for the shoulder girdle in addition to usual medical care accelerates recovery of shoulder symptoms.

**Brealey S, Burton K, Coulton S, Farrin A, Garratt A, Harvey E, Letley L, Martin J, Klaber MJ, Russell I, Torgerson D, Underwood M, Vickers M, Whyte K, Williams M, UK Back pain Exercise And Manipulation (UK BEAM) Trial Team (2003): UK Back pain Exercise And Manipulation (UK BEAM) trial – national randomised trial of physical treatments for back pain in primary care: objectives, design and interventions, *BMC Health Serv Res*, 3(1), 16**
BACKGROUND: Low back pain has major health and social implications. Although there have been many randomised controlled trials of manipulation and exercise for the management of low back pain, the role of these two treatments in its routine management remains unclear. A previous trial comparing private chiropractic treatment with National Health Service (NHS) outpatient treatment, which found a benefit from chiropractic treatment, has been criticised because it did not take treatment location into account. There are data to suggest that general exercise programmes may have beneficial effects on low back pain. The UK Medical Research Council (MRC) has funded this major trial of physical treatments for back pain, based in primary care. It aims to establish if, when added to best care in general practice, a defined package of spinal manipulation and a defined programme of exercise classes (Back to Fitness) improve participant-assessed outcomes. Additionally the trial compares outcomes between participants receiving the spinal manipulation in NHS premises and in private premises. DESIGN: Randomised controlled trial using a 3 x 2 factorial design. METHODS: We sought to randomise 1350 participants with simple low back pain of at least one month's duration. These came from 14 locations across the UK, each with a cluster of 10-15 general practices that were members of the MRC General Practice Research Framework (GPRF). All practices were trained in the active management of low back pain. Participants were randomised to this form of general practice care only, or this general practice care plus manipulation, or this general practice care plus exercise, or this general practice care plus manipulation followed by exercise. Those randomised to manipulation were further randomised to receive treatment in either NHS or private premises. Follow up was by postal questionnaire one, three and 12 months after randomisation. The primary analysis will consider the main treatment effects before interactions between the two treatment packages. Economic analysis will estimate the cost per unit of health utility gained by adding either or both of the treatment packages to general practice care.

**Cherkin DC, Deyo RA, Battie M, Street J, Barlow W (1998): A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of patients with low back pain, *N Engl J Med*, 339(15), 1021-1029**
BACKGROUND AND METHODS: There are few data on the relative effectiveness and costs of treatments for low back pain. We randomly assigned 321 adults with low back pain that persisted for seven days after a primary care visit to the McKenzie method of physical therapy, chiropractic manipulation, or a minimal intervention (provision of an educational booklet). Patients with sciatica were excluded. Physical therapy or chiropractic manipulation was provided for one month (the number of visits was determined by the practitioner but was limited to a maximum of nine); patients were followed for a total of two years. The bothersomeness of symptoms was measured on an 11-point scale, and the level of dysfunction was measured on the 24-point Roland Disability Scale. RESULTS: After adjustment for base-line differences, the chiropractic group had less severe symptoms than the booklet group at four weeks (P=0.02), and there was a trend toward less severe symptoms in the physical therapy group (P=0.06). However, these differences were small and not significant after transformations of the data to adjust for their non-normal distribution. Differences in the extent of dysfunction among the groups were small and approached significance only at one year, with greater dysfunction in the booklet group than in the other two groups (P=0.05). For all outcomes, there were no significant differences between the physical-therapy and chiropractic groups and no significant differences among the groups in the numbers of days of reduced activity or missed work or in recurrences of back pain. About 75 percent of the subjects in the therapy groups rated their care as very good or excellent, as compared with about 30 percent of the subjects in the booklet group (P<0.001). Over a two-year period, the mean costs of care were $437 for the physical-therapy group, $429 for the chiropractic group, and $153 for the booklet group. CONCLUSIONS: For patients with low back pain, the McKenzie method of physical therapy and chiropractic manipulation had similar effects

and costs, and patients receiving these treatments had only marginally better outcomes than those receiving the minimal intervention of an educational booklet. Whether the limited benefits of these treatments are worth the additional costs is open to question.

**Daker-White G, Carr AJ, Harvey I, Woolhead G, Bannister G, Nelson I, Kammerling M (1999): A randomised controlled trial. Shifting boundaries of doctors and physiotherapists in orthopaedic outpatient departments, *J Epidemiol Community Health*, 53(10), 643-650**
OBJECTIVE: To evaluate the effectiveness and cost effectiveness of specially trained physiotherapists in the assessment and management of defined referrals to hospital orthopaedic departments. DESIGN: Randomised controlled trial. SETTING: Orthopaedic outpatient departments in two hospitals. SUBJECTS: 481 patients with musculoskeletal problems referred for specialist orthopaedic opinion. INTERVENTIONS: Initial assessment and management undertaken by post-Fellowship junior orthopaedic surgeons, or by specially trained physiotherapists working in an extended role (orthopaedic physiotherapy specialists). MAIN OUTCOME MEASURES: Patient centred measures of pain, functional disability and perceived handicap. RESULTS: A total of 654 patients were eligible to join the trial, 481 (73.6%) gave their consent to be randomised. The two arms (doctor n = 244, physiotherapist n = 237) were similar at baseline. Baseline and follow up questionnaires were completed by 383 patients (79.6%). The mean time to follow up was 5.6 months after randomisation, with similar distributions of intervals to follow up in both arms. The only outcome for which there was a statistically or clinically important difference between arms was in a measure of patient satisfaction, which favoured the physiotherapist arm. A cost minimisation analysis showed no significant differences in direct costs to the patient or NHS primary care costs. Direct hospital costs were lower (p < 0.00001) in the physiotherapist arm (mean cost per patient = 256 Pounds, n = 232), as they were less likely to order radiographs and to refer patients for orthopaedic surgery than were the junior doctors (mean cost per patient in arm = 498 Pounds, n = 238). CONCLUSIONS: On the basis of the patient centred outcomes measured in this randomised trial, orthopaedic physiotherapy specialists are as effective as post-Fellowship junior staff and clinical assistant orthopaedic surgeons in the initial assessment and management of new referrals to outpatient orthopaedic departments, and generate lower initial direct hospital costs.

**Geraets JJ, Goossens ME, de Bruijn CP, de Groot IJ, Koke AJ, Pelt RA, Van der Heijden G, Dinant GJ, van den Heuvel WJ (2006): Cost-effectiveness of a graded exercise therapy program for patients with chronic shoulder complaints, *Int J Technol Assess Health Care*, 22(1), 76-83**
OBJECTIVES: The present study evaluated the cost-effectiveness of a behavioral graded exercise therapy (GET) program compared with usual care (UC) in terms of the performance of daily activities by patients with chronic shoulder complaints in primary care. METHODS: A total of 176 patients were randomly assigned either to GET (n=87) or to UC (n=89). Clinical outcomes (main complaints, shoulder disability [SDQ] and generic health-related quality of life [EQ-5D], and costs [intervention costs, direct health care costs, direct non-health-related costs, and indirect costs]) were assessed during the 12-week treatment period and at 52 weeks of follow-up. RESULTS: Results showed that GET was more effective than UC in restoring daily activities as assessed by the main complaints instrument after the 12-week treatment period (p = .049; mean difference, 7.5; confidence interval [CI], 0.0-15.0). These effects lasted for at least 52 weeks (p = .025; mean difference 9.2; CI, 1.2-17.3). No statistically significant differences were found on the SDQ or EQ5D. GET significantly reduced direct health care costs (p = .000) and direct non-health care costs (p = .029). Nevertheless, total costs during the 1-year follow-up period were significantly higher (p = .001; GET = Euro 530 versus UC = Euro 377) due to the higher costs of the intervention. Incremental cost-effectiveness ratios for the main complaints (0-100), SDQ (0-100), and EQ-5D (-1.0-1.0) were Euro 7, Euro 74, and Euro 5278 per unit of improvement, respectively. CONCLUSIONS: GET proved to be more effective in the short- and long-term and reduces direct health care costs and direct non-health care costs but is associated with higher costs of the intervention itself.

**Hay EM, Mullis R, Lewis M, Vohora K, Main CJ, Watson P, Dziedzic KS, Sim J, Lowe CM, Croft PR (2005): Comparison of physical treatments versus a brief pain-management programme for back pain in primary care: a randomised clinical trial in physiotherapy practice, *Lancet*, 365(9476), 2024-2030**
BACKGROUND: Recommendations for the management of low back pain in primary care emphasise the importance of recognising and addressing psychosocial factors at an early stage. We compared the effectiveness of a brief pain-management programme with physiotherapy incorporating manual therapy for the reduction of disability at 12 months in patients consulting primary care with subacute low back pain. METHODS: For this pragmatic, multicentre, randomised clinical trial, eligible participants consulted primary care with non-specific low back pain of less than 12 weeks' duration. They were randomly assigned either a programme of pain management (n=201) or manual therapy (n=201). The primary outcome was change in the score on the Roland and Morris disability questionnaire at 12 months. Analysis was by intention to treat. FINDINGS: Of 544 patients assessed for eligibility, 402 were recruited (mean age 40.6 years) and 329 (82%) reached 12-month follow-up. Mean disability scores were 13.8 (SD 4.8) for the pain-management group and 13.3 (4.9) for the manual-therapy group. The mean decreases in disability scores were 8.8 (6.4) and 8.8 (6.1) at 12 months (difference 0 [95% CI -1.3 to 1.4], p=0.99), and median numbers of physiotherapy visits per patient were three (IQR one to five) and four (two to five), respectively (p=0.001). One adverse reaction (an exacerbation of pain after the initial assessment) was recorded. INTERPRETATION: Brief pain management techniques delivered by appropriately trained clinicians offer an alternative to physiotherapy incorporating manual therapy and could provide a more efficient first-line approach for management of non-specific subacute low back pain in primary care.

**Hendriks EJ, Kerssens JJ, Nelson RM, Oostendorp RA, van der Zee J (2003): One-time physical therapist consultation in primary health care, *Phys Ther*, 83(10), 918-931**
BACKGROUND AND PURPOSE: One-time physical therapist consultation, prior to possible referral for physical therapy intervention, may enhance the quality of patient care, particularly if the referring physician is uncertain as to whether intervention by a physical therapist will be beneficial. The purpose of this study was to describe the use of consultation by a group of primary care physicians (PCPs) who could refer patients for a one-time consultation. SUBJECTS AND METHODS: A 7-month observational study was conducted in the Netherlands with 59 pairs of randomly selected PCPs and physical therapists practicing in primary health care. Data were collected for the PCPs, the physical therapists, and the patients. Self-administered questionnaires (completed at the start and at the completion of the study), consultation request and report forms, and treatment referral records from health insurance agencies were used to obtain data. National reference data on patients referred by PCPs for intervention by a physical therapist were used to compare the data of patients referred by PCPs for a one-time consultation. The number and nature of consultation requests were determined as well as patient characteristics. The PCPs' satisfaction with the outcome and process of a one-time consultation and its impact on PCPs' management decisions also were described. RESULTS: The number of referrals for a one-time consultation was 352 (X=5.9 per PCP, SD=5.4, range=0-20), resulting in a mean referral rate of 4.7 per 1,000 patients (SD=4.6). Characteristics of patients referred for a one-time consultation differed from national reference data of patients referred by their PCP for intervention by a

physical therapist. DISCUSSION AND CONCLUSION: The results show that PCPs used the opportunity for a one-time physical therapist consultation and were satisfied with the outcome and process of consultation. The findings suggest that a one-time consultation is an appropriate and beneficial component of PCPs' patient management process.

**Hurwitz EL, Morgenstern H, Harber P, Kominski GF, Belin TR, Yu F, Adams AH; University of California-Los Angeles (2002): A randomized trial of medical care with and without physical therapy and chiropractic care with and without physical modalities for patients with low back pain: 6-month follow-up outcomes from the UCLA low back pain study, *Spine*, 27(20), 2193-2204**
STUDY DESIGN: A randomized clinical trial. OBJECTIVES: To compare the effectiveness of medical and chiropractic care for low back pain patients in managed care; to assess the effectiveness of physical therapy among medical patients; and to assess the effectiveness of physical modalities among chiropractic patients. SUMMARY OF BACKGROUND DATA: Despite the burden that low back pain places on patients, providers, and society, the relative effectiveness of common treatment strategies offered in managed care is unknown. METHODS: Low back pain patients presenting to a large managed care facility from October 30, 1995, through November 9, 1998, were randomly assigned in a balanced design to medical care with and without physical therapy and to chiropractic care with and without physical modalities. The primary outcome variables are average and most severe low back pain intensity in the past week, assessed with 0 to 10 numerical rating scales, and low back-related disability, assessed with the 24-item Roland-Morris Disability Questionnaire. RESULTS: Of 1,469 eligible patients, 681 were enrolled; 95.7% were followed through 6 months. The mean changes in low back pain intensity and disability of participants in the medical and chiropractic care-only groups were similar at each follow-up assessment (adjusted mean differences at 6 months for most severe pain, 0.27, 95% confidence interval, -0.32-0.86; average pain, 0.22, -0.25-0.69; and disability, 0.75, -0.29-1.79). Physical therapy yielded somewhat better 6-month disability outcomes than did medical care alone (1.26, 0.20-2.32). CONCLUSIONS: After 6 months of follow-up, chiropractic care and medical care for low back pain were comparable in their effectiveness. Physical therapy may be marginally more effective than medical care alone for reducing disability in some patients, but the possible benefit is small.

**Kominski GF, Heslin KC, Morgenstern H, Hurwitz EL, Harber PI (2005): Economic evaluation of four treatments for low-back pain: results from a randomized controlled trial, *Med Care*, 43(5), 428-435**
OBJECTIVE: We sought to compare total outpatient costs of 4 common treatments for low-back pain (LBP) at 18-months follow-up. METHODS: Our work reports on findings from a randomized controlled trial within a large medical group practice treating HMO patients. Patients (n = 681) were assigned to 1 of 4 treatment groups, ie, medical care only (MD), medical care with physical therapy (MDPt), chiropractic care only (DC), or chiropractic care with physical modalities (DCPm). Total outpatient costs, excluding pharmaceuticals, were measured at 18 months. We did not perform a cost-effectiveness analysis because previously published findings showed no clinically meaningful difference in outcomes among the 4 treatment groups. Thirty-seven participants were lost to follow-up at 18 months, leaving a final sample size of n = 654. RESULTS: Adjusting for covariates, DC was 51.9% more expensive than MD ($P < 0.001$), DCPm 3.2% more expensive than DC ($P = 0.76$), and MDPt 105.8% more expensive than MD ($P < 0.001$). The adjusted mean outpatient costs per treatment group were 369 US dollars for MD, 560 US dollars for DC, 579 US dollars for DCPm, and 760 US dollars for MDPt. CONCLUSIONS: This study is the first randomized trial to show higher costs for chiropractic care without producing better clinical outcomes, but our findings are likely to understate the costs of medical care with or without physical therapy because of the absence of pharmaceutical data. Physical therapy provided in combination with medical care and physical modalities provided in combination with chiropractic care do not appear to be cost-effective strategies for treatment of LBP; they produce higher costs without clinically significant improvements in outcome.

**Korthals-de Bos IB, Hoving JL, van Tulder MW, Rutten-van Molken MP, Ader HJ, de Vet HC, Koes BW, Vondeling H, Bouter LM (2003): Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation alongside a randomised controlled trial, *BMJ*, 326(7395), 911**
OBJECTIVE: To evaluate the cost effectiveness of physiotherapy, manual therapy, and care by a general practitioner for patients with neck pain. DESIGN: Economic evaluation alongside a randomised controlled trial. SETTING: Primary care. PARTICIPANTS: 183 patients with neck pain for at least two weeks recruited by 42 general practitioners and randomly allocated to manual therapy (n=60, spinal mobilisation), physiotherapy (n=59, mainly exercise), or general practitioner care (n=64, counselling, education, and drugs). MAIN OUTCOME MEASURES: Clinical outcomes were perceived recovery, intensity of pain, functional disability, and quality of life. Direct and indirect costs were measured by means of cost diaries that were kept by patients for one year. Differences in mean costs between groups, cost effectiveness, and cost utility ratios were evaluated by applying non-parametric bootstrapping techniques. RESULTS: The manual therapy group showed a faster improvement than the physiotherapy group and the general practitioner care group up to 26 weeks, but differences were negligible by follow up at 52 weeks. The total costs of manual therapy (447 euro; 273 pounds sterling; 402 dollars) were around one third of the costs of physiotherapy (1297 euro) and general practitioner care (1379 euro). These differences were significant: $P<0.01$ for manual therapy versus physiotherapy and manual therapy versus general practitioner care and $P=0.55$ for general practitioner care versus physiotherapy. The cost effectiveness ratios and the cost utility ratios showed that manual therapy was less costly and more effective than physiotherapy or general practitioner care. CONCLUSIONS: Manual therapy (spinal mobilisation) is more effective and less costly for treating neck pain than physiotherapy or care by a general practitioner.

**Lang E, Kastner S, Liebig K, Neundorfer B (2002): Verbesserung der ambulanten Versorgung von Patienten mit chronischen Rückenschmerzen: Wie effektiv sind Therapieempfehlungen an Vertragsärzte oder die Realisierung eines multimodalen Therapieprogramms durch Kooperation ambulanter Behandlungsstrukturen? *Schmerz*, 16(1), 22-33**
BACKGROUND: Treatment for chronic low back pain in primary care has a poor-quality outcome. There is evidence that multimodal therapy is the most successful approach to its management. We tried to evaluate whether giving primary care physicians evidence-based recommendations on therapy of chronic back pain or directly implementing a multimodal program would improve the outcome of patients with low back pain treated in primary care. METHODS: In the first phase, physicians were asked to document the course of patients suffering from low back pain of at least 4 weeks' duration with no decrease in intensity, noting pain intensity before and after 6 months of conventional, nonsurgical treatments. In the present, second, phase of the study, recommendations issued by the Medicines Committee of the German Medical Profession and the U.S. Agency for Health Care Policy and Research for the management of back pain were presented to doctors in printed form and at conferences. In parallel with this, a multimodal program for the treatment of chronic low back pain (4 h/day for 20 days: medical training therapy, cognitive-behavioral therapy, physiotherapy, and patient education) was organized in a private health-oriented sports center in cooperation with three private physiotherapy practices, and a psychologist and a pain specialist from the outpatient pain clinic at the University Hospital in Erlangen. We examined how physicians changed the therapy and how effective it was, the latter as reflected in the mean sum value of the

percent pre- to posttreatment changes in pain intensity, how much pain interfered with daily living, depressivity, and quality of life. Data after interventions were compared with baseline data from the first phase. RESULTS: Data relating to 36 patients following treatment by 14 primary care physicians who had been given information about therapy recommendations and to 51 patients who had participated in the multimodal therapy program were compared with baseline data recorded in 157 patients. Recommendations changed neither the therapy preferred by primary care physicians nor the quality of outcome of conventional treatment. In contrast, the multimodal program of therapy for chronic low back pain improved the outcome significantly more than conventional therapy (mean improvement in general outcome score 22 vs. 7%, respectively, compared with baseline data; P<0.001). CONCLUSIONS: Giving primary care physicians information on the therapy recommended for treatment of low back pain does not lead to any change in physicians' preferred therapy. Multimodal programs for treatment of chronic low back pain should be organized locally, with existing health care providers joining forces to improve the quality of outcome in chronic low back pain managed in primary care.

**Mannion AF, Muntener M, Taimela S, Dvorak J (1999): A randomized clinical trial of three active therapies for chronic low back pain, *Spine*, 24(23), 2435-2448**
STUDY DESIGN: A randomized clinical trial. OBJECTIVES: To examine the relative efficacy of three active therapies for chronic low back pain. SUMMARY OF BACKGROUND DATA: There is much evidence documenting the efficacy of exercise in the conservative management of chronic low back pain, but many questions remain regarding its exact prescription and method of application. The most successful method must be identified to enable refinement of future rehabilitation programs to target the specific needs of the patient with chronic low back pain and the budget of the healthcare provider. METHODS: One hundred forty-eight patients with chronic low back pain were randomized to one of the following treatments, which they attended twice a week for 3 months: 1) modern active physiotherapy, 2) muscle reconditioning on training devices, or 3) low-impact aerobics. Pretherapy and posttherapy, objective measurements of lumbar mobility were performed, and questionnaires were administered inquiring about self-rated pain and disability, and psychosocial factors. Similar questionnaires were administered 6 months after therapy. The data were analyzed using the intention-to-treat principle. RESULTS: Of the 148 patients, 16 (10.8%) dropped out of the therapy. One hundred thirty-seven questionnaires (93%) were available for analysis at all three time points. After therapy, significant reductions were observed in pain intensity, frequency, and disability; Fear-Avoidance Beliefs about physical activity (FABQactivity); and "praying/hoping," "catastrophizing," and "pain behavior" coping strategies--each with no group differences in the extent of the response. These effects were maintained over the subsequent 6 months, with the exception of disability and FABQactivity for the physiotherapy group. There were small but significant posttherapy increases in lumbar mobility, with aerobics and devices showing a greater response than physiotherapy. CONCLUSION: The general lack of treatment specificity suggests that the main effects of the therapies were educed not through the reversal of physical weaknesses targeted by the corresponding exercise modality, but rather through some "central" effect, perhaps involving an adjustment of perception in relation to pain and disability. The direct costs associated with administering physiotherapy were three times as great, and devices four times as great, as those for aerobics. Administration of aerobics as an efficacious therapy for chronic low back pain has the potential to relieve some of the huge financial burden associated with the condition.

**Moffett JK, Torgerson D, Bell-Syer S, Jackson D, Llewlyn-Phillips H, Farrin A, Barber J (1999): Randomised controlled trial of exercise for low back pain: clinical outcomes, costs, and preferences, *BMJ*, 319(7205), 279-283**
OBJECTIVE: To evaluate effectiveness of an exercise programme in a community setting for patients with low back pain to encourage a return to normal activities. DESIGN: Randomised controlled trial of progressive exercise programme compared with usual primary care management. Patients' preferences for type of management were elicited independently of randomisation. PARTICIPANTS: 187 patients aged 18-60 years with mechanical low back pain of 4 weeks to 6 months' duration. INTERVENTIONS: Exercise classes led by a physiotherapist that included strengthening exercises for all main muscle groups, stretching exercises, relaxation session, and brief education on back care. A cognitive-behavioural approach was used. MAIN OUTCOME MEASURES: Assessments of debilitating effects of back pain before and after intervention and at 6 months and 1 year later. Measures included Roland disability questionnaire, Aberdeen back pain scale, pain diaries, and use of healthcare services. RESULTS: At 6 weeks after randomisation, the intervention group improved marginally more than the control group on the disability questionnaire and reported less distressing pain. At 6 months and 1 year, the intervention group showed significantly greater improvement in the disability questionnaire score (mean difference in changes 1.35, 95% confidence interval 0.13 to 2.57). At 1 year, the intervention group also showed significantly greater improvement in the Aberdeen back pain scale (4.44, 1.01 to 7.87) and reported only 378 days off work compared with 607 in the control group. The intervention group used fewer healthcare resources. Outcome was not influenced by patients' preferences. CONCLUSIONS: The exercise class was more clinically effective than traditional general practitioner management, regardless of patient preference, and was cost effective.

**Niemisto L, Lahtinen-Suopanki T, Rissanen P, Lindgren KA, Sarna S, Hurri H (2003): A randomized trial of combined manipulation, stabilizing exercises, and physician consultation compared to physician consultation alone for chronic low back pain, *Spine*, 28(19), 2185-2191**
STUDY DESIGN: A prospective randomized controlled trial. OBJECTIVES: To examine the effectiveness of combined manipulative treatment, stabilizing exercises, and physician consultation compared with physician consultation alone for chronic low back pain. SUMMARY OF BACKGROUND DATA: Strong evidence exists that manual therapy provides more effective short-term pain relief than does placebo treatment in the management of chronic low back pain. The evidence for long-term effect is lacking. METHODS: Two hundred four chronic low back pain patients, whose Oswestry disability index was at least 16%, were randomly assigned to either a manipulative-treatment group or a consultation group. All were clinically examined, informed about their back pain, provided with an educational booklet, and were given specific instructions based on the clinical evaluation. The treatment included four sessions of manipulation and stabilizing exercises aiming to correct the lumbopelvic rhythm. Questionnaires inquired about pain intensity, self-rated disability, mental depression, health-related quality of life, health care costs, and production costs. RESULTS: At the baseline, the groups were comparable, except for the percentage of employees (P = 0.01). At the 5- and 12-month follow-ups, the manipulative-treatment group showed more significant reductions in pain intensity (P < 0.001) and in self-rated disability (P = 0.002) than the consultation group. However, we detected no significant difference between the groups in health-related quality of life or in costs. CONCLUSIONS: The manipulative treatment with stabilizing exercises was more effective in reducing pain intensity and disability than the physician consultation alone. The present study showed that short, specific treatment programs with proper patient information may alter the course of chronic low back pain.

**Richards S, Cristian A (2006): The role of the physical therapist in the care of the older adult, *Clin Geriatr Med*, 22(2), 269-79, viii**
Physical therapists play an important role in the care of older adults who have physical disabilities. Proper patient selection, a thor-

ough medical, social, and functional history, and a physical examination emphasizing the neuromusculoskeletal system are the cornerstones of the evaluation process. Treatment is individualized and goal driven, with appropriate precautions being followed. Gait training is an integral part of the treatment process for many older adults with disabilities, and various assistive devices may be used to ensure safe mobility.

**Scholten-Peeters GG, Neeleman-van der Steen CW, van der Windt DA, Hendriks EJ, Verhagen AP, Oostendorp RA (2006): Education by general practitioners or education and exercises by physiotherapists for patients with whiplash-associated disorders? A randomized clinical trial, *Spine*, 31(7), 723-731**
STUDY DESIGN: Randomized clinical trial. OBJECTIVE: To compare the effectiveness of education and advice given by general practitioners (GPs) with education, advice, and active exercise therapy given by physiotherapists (PTs) for patients with whiplash-associated disorders. SUMMARY OF BACKGROUND DATA: Available evidence from systematic reviews has indicated beneficial effects for active interventions in patients with whiplash-associated disorders. However, it remained unclear which kind of active treatment was most effective. METHODS: Whiplash patients with symptoms or disabilities at 2 weeks after accident were recruited in primary care. Eligible patients still having symptoms or disabilities at 4 weeks were randomly allocated to GP care or physiotherapy. GPs and PTs treated patients according to a dynamic multimodal treatment protocol primarily aimed to increase activities and influence unfavorable psychosocial factors for recovery. We trained all health care providers about the characteristics of the whiplash problem, available evidence regarding prognosis and treatment, and protocol of the interventions. The content of the information provided to patients during treatment depended on the treatment goals set by the GPs or PTs. Also, the type of exercises chosen by the PTs depended on the treatment goals, and it was not explicitly necessary that exercise therapy was provided in all patients. Primary outcome measures included neck pain intensity, headache intensity, and work activities. Furthermore, an independent blinded assessor measured functional recovery, cervical range of motion, disability, housekeeping and social activities, fear of movement, coping, and general health status. We assessed outcomes at 8, 12, 26, and 52 weeks after the accident. RESULTS: A total of 80 patients were randomized to either GP care (n = 42) or physiotherapy (n = 38). At 12 and 52 weeks, no significant differences were found concerning the primary outcome measures. At 12 weeks, physiotherapy was significantly more effective than GP care for improving 1 of the measures of cervical range of motion (adjusted mean difference 12.3 degrees ; 95% confidence interval [CI] 2.7-21.9). Long-term differences between the groups favored GP care but were statistically significant only for some secondary outcome measures, including functional recovery (adjusted relative risk 2.3; 95% CI 1.0-5.0), coping (adjusted mean difference 1.7 points; 95% CI 0.2-3.3), and physical functioning (adjusted mean difference 8.9 points; 95% CI 0.6-17.2). CONCLUSIONS: We found no significant differences for the primary outcome measures. Treatment by GPs and PTs were of similar effectiveness. The long-term effects of GP care seem to be better compared to physiotherapy for functional recovery, coping, and physical functioning. Physiotherapy seems to be more effective than GP care on cervical range of motion at short-term follow-up.

**Skouen JS, Grasdal AL, Haldorsen EM, Ursin H (2002): Relative cost-effectiveness of extensive and light multidisciplinary treatment programs versus treatment as usual for patients with chronic low back pain on long-term sick leave: randomized controlled study, *Spine*, 27(9), 901-910**
STUDY DESIGN: A subgroup of 195 patients with chronic low back pain, being part of a larger study of other musculoskeletal patients, were included in a randomized controlled prospective clinical study. OBJECTIVES: To evaluate the outcome in terms of return to work and cost-effectiveness of a light multidisciplinary treatment program with an extensive multidisciplinary program and treatment as usual initiated by their general practitioner. SUMMARY OF BACKGROUND DATA: Light multidisciplinary programs seem to reduce sick leave in patients with subacute low back pain. There are few, if any, previous studies of the effectiveness of light versus extensive multidisciplinary treatment on return to work in patients with chronic low back pain. METHODS: Patients with chronic low back pain (n = 195), on an average sick-listed for 3 months, were included. The patients were randomized to a light multidisciplinary treatment program, an extensive multidisciplinary program, or treatment as usual by their primary physician. Full return to work was used as outcome response, and follow-up was 26 months after the end of treatment. Cost-benefit was calculated for the treatment programs. RESULTS: In men significantly better results for full return to work were found for the light multidisciplinary treatment compared with treatment as usual, but no differences were found between extensive multidisciplinary treatment and treatment as usual. No significant differences between any of the two multidisciplinary treatment programs and the controls were found for women. Productivity gains for the society from light multidisciplinary treatment versus "treatment as usual" of 57 male patients with low back pain would during the first 2 years accumulate to U.S. $852.000. CONCLUSIONS: The light multidisciplinary treatment model is a cost-effective treatment for men with chronic low back pain.

**Snow BL, Shamus E, Hill C (2001): Physical therapy as primary health care: public perceptions, *J Allied Health*, 30(1), 35-38**
This study investigated the public's knowledge of direct access and the role of physical therapists, and whether the public would consider using a physical therapist for primary care. Persons living in South Florida were selected at random by dialing telephone numbers. Using three-digit telephone number prefixes, four-digit suffixes were generated by rolling dice. When consent was obtained, the respondents' answers were recorded on a self-generated questionnaire. No knowledge of direct access was reported by 67.3% of the sample. Additionally, 57.4% of the sample had never been to a physical therapist. A substantial number of respondents (73.4%) stated that they would go directly to a physical therapist. Thus, the public poorly understands direct access and the role of the physical therapist. The members of the public might use physical therapists as primary care practitioners if they were aware of this option.

**Torstensen TA, Ljunggren AE, Meen HD, Odland E, Mowinckel P, Geijerstam S (1998): Efficiency and costs of medical exercise therapy, conventional physiotherapy, and self-exercise in patients with chronic low back pain. A pragmatic, randomized, single-blinded, controlled trial with 1-year follow-up, *Spine*, 23(23), 2616-2624**
STUDY DESIGN: A multicenter, randomized, single-blinded controlled trial with 1-year follow-up. OBJECTIVES: To evaluate the efficiency of progressively graded medical exercise therapy, conventional physiotherapy, and self-exercise by walking in patients with chronic low back pain. SUMMARY AND BACKGROUND DATA: Varieties of medical exercise therapy and conventional physiotherapy are considered to reduce symptoms, improve function, and decrease sickness absence, but this opinion is controversial. METHODS: Patients with chronic low back pain or radicular pain sick-listed for more than 8 weeks and less than 52 weeks (Sickness Certificate II) were included. The treatment lasted 3 months (36 treatments). Pain intensity, functional ability, patient satisfaction, return to work, number of days on sick leave, and costs were recorded. RESULTS: Of the 208 patients included in this study, 71 were randomly assigned to medical exercise therapy, 67 to conventional physiotherapy, and 70 to self-exercise. Thirty-three (15.8%) patients dropped out during the treatment period. No difference was observed between the medical exercise therapy and conventional physiotherapy groups, but both were significantly better than self-exercise group. Patient satisfaction was highest for medical exer-

cise therapy. Return to work rates were equal for all 3 intervention groups at assessment 15 months after therapy was started, with 123 patients were back to work. In terms of costs for days on sick leave, the medical exercise therapy group saved 906,732 Norwegian Kroner (NOK) ($122,531.00), and the conventional physiotherapy group saved NOK 1,882,560 ($254,200.00), compared with the self-exercise group. CONCLUSIONS: The efficiency of medical exercise therapy and conventional physiotherapy is shown. Leaving patients with chronic low back pain untampered poses a risk of worsening the disability, resulting in longer periods of sick leave.

**UK BEAM Trial Team (2004): United Kingdom back pain exercise and manipulation (UK BEAM) randomised trial: effectiveness of physical treatments for back pain in primary care, *BMJ*, 329(7479), 1377**
OBJECTIVE: To estimate the effect of adding exercise classes, spinal manipulation delivered in NHS or private premises, or manipulation followed by exercise to "best care" in general practice for patients consulting with back pain. [See figure]. DESIGN: Pragmatic randomised trial with factorial design. SETTING: 181 general practices in Medical Research Council General Practice Research Framework; 63 community settings around 14 centres across the United Kingdom. PARTICIPANTS: 1334 patients consulting their general practices about low back pain. MAIN OUTCOME MEASURES: Scores on the Roland Morris disability questionnaire at three and 12 months, adjusted for centre and baseline scores. RESULTS: All groups improved over time. Exercise improved mean disability questionnaire scores at three months by 1.4 (95% confidence interval 0.6 to 2.1) more than "best care." For manipulation the additional improvement was 1.6 (0.8 to 2.3) at three months and 1.0 (0.2 to 1.8) at 12 months. For manipulation followed by exercise the additional improvement was 1.9 (1.2 to 2.6) at three months and 1.3 (0.5 to 2.1) at 12 months. No significant differences in outcome occurred between manipulation in NHS premises and in private premises. No serious adverse events occurred. CONCLUSIONS: Relative to "best care" in general practice, manipulation followed by exercise achieved a moderate benefit at three months and a small benefit at 12 months; spinal manipulation achieved a small to moderate benefit at three months and a small benefit at 12 months; and exercise achieved a small benefit at three months but not 12 months.

**van Baar ME, Dekker J, Oostendorp RA, Bijl D, Voorn TB, Lemmens JA, Bijlsma JW (1998): The effectiveness of exercise therapy in patients with osteoarthritis of the hip or knee: a randomized clinical trial, *J Rheumatol*, 25(12), 2432-2439**
OBJECTIVE: To determine the effectiveness of exercise therapy in patients with osteoarthritis (OA) of the hip or knee. METHODS: A randomized single blind, clinical trial was conducted in a primary care setting. Patients with hip or knee OA by American College of Rheumatology criteria were selected. Two intervention groups were compared. Both groups received treatment from the patients' general practitioner, including patient education and medication if necessary. The experimental group also received exercise therapy from a physiotherapist in primary care. The treatment period was 12 weeks. The main outcome measures were pain, medication use (nonsteroidal antiinflammatory drugs, NSAID) and observed disability. RESULTS: A total of 201 patients were randomized. Exercise therapy was associated with a reduction of pain in the past week (difference in change -17.0; 95% CI -23.6, -10.4) and observed disability (-0.19; 95% CI -0.38; -0.01). Effect sizes were medium (0.58) and small (0.28), respectively. No effect of exercise therapy was found for the use of NSAID. Additional beneficial effects (p = 0.05) were found for the use of paracetamol (effect size 0.33), global effect as perceived by the patient (effect size 0.68), and muscle strength of the hip (effect size 0.34). CONCLUSION: After 12 weeks, exercise therapy is effective in reducing pain and disability. The size of the effects is medium and small, respectively.

**von Korff M, Balderson BH, Saunders K, Miglioretti DL, Lin EH, Berry S, Moore JE, Turner JA (2005): A trial of an activating intervention for chronic back pain in primary care and physical therapy settings, *Pain*, 113(3), 323-330**
In primary care and physical therapy settings, we evaluated an intervention for chronic back pain patients which incorporated fear reducing and activating techniques. Primary care patients seen for back pain in primary care were screened to identify persons with significant activity limitations 8-10 weeks after their visit. Eligible and willing patients were randomized (N=240). A brief, individualized program to reduce fear and increase activity levels was delivered by a psychologist and physical therapists. Over a 2 year follow-up period, intervention patients reported greater reductions in pain-related fear (P<0.01), average pain (P<0.01) and activity limitations due to back pain (P<0.01) relative to control patients. The percent with greater than a one-third reduction in Roland Disability Questionnaire scores at 6 months was 42% among Intervention patients and 24% among control patients (P<0.01). Over the 2 year follow-up, fewer intervention patients reported 30 or more days unable to carry out usual activities in the prior 3 months (P<0.01). The adjusted mean difference in activity limitation days was 4.5 days at 6 months, 2.8 days at 12 months, and 6.9 days at 24 months. No differences were observed in the percent unemployed or the percent receiving worker's compensation or disability benefits, but these outcomes were relatively uncommon. We conclude that an intervention integrating fear reducing and activating interventions into care for chronic back pain patients produced sustained reductions in patient fears, common activity limitations related to back pain, and days missed from usual activities due to back pain.

**Williams NH, Edwards RT, Linck P, Muntz R, Hibbs R, Wilkinson C, Russell I, Russell D, Hounsome B (2004): Cost-utility analysis of osteopathy in primary care: results from a pragmatic randomized controlled trial, *Fam Pract*, 21(6), 643-650**
BACKGROUND: Spinal pain is common and costly to health services and society. Management guidelines have encouraged primary care referral for spinal manipulation, but the evidence base is weak. More economic evaluations alongside pragmatic trials have been recommended. OBJECTIVE: Our aim was to assess the cost-utility of a practice-based osteopathy clinic for subacute spinal pain. METHODS: A cost-utility analysis was performed alongside a pragmatic single-centre randomized controlled trial in a primary care osteopathy clinic accepting referrals from 14 neighbouring practices in North West Wales. Patients with back pain of 2-12 weeks duration were randomly allocated to treatment with osteopathy plus usual GP care or usual GP care alone. Costs were measured from a National Health Service (NHS) perspective. All primary and secondary health care interventions recorded in GP notes were collected for the study period. We calculated quality adjusted life year (QALY) gains based on EQ-5D responses from patients in the trial, and then cost per QALY ratios. Confidence intervals (CIs) were estimated using non-parametric bootstrapping. RESULTS: Osteopathy plus usual GP care was more effective but resulted in more health care costs than usual GP care alone. The point estimate of the incremental cost per QALY ratio was 3560 pounds (80% CI 542 pounds-77,100 pounds). Sensitivity analysis examining spine-related costs alone and total costs excluding outliers resulted in lower cost per QALY ratios. CONCLUSION: A primary care osteopathy clinic may be a cost-effective addition to usual GP care, but this conclusion was subject to considerable random error. Rigorous multi-centre studies are needed to assess the generalizability of this approach.

# 5 Ergotherapeut/innen

**Barodawala S, Kesavan S, Young J (2001): A survey of physiotherapy and occupational therapy provision in UK nursing homes, *Clin Rehabil*, 15(6), 607-610**
BACKGROUND: Nursing homes in the UK are increasingly regarded as potential rehabilitation facilities for disabled older people. OBJECTIVE: To determine the current physiotherapy and occupational therapy provision to UK nursing homes. SAMPLE: Four hundred private nursing homes in England, Scotland and Wales were selected by stratified proportional random sampling and surveyed by postal questionnaire. RESULTS: The response rate for the effective sample was 346/355 (97%). Only 10% of residents were in current receipt of physiotherapy, mostly through private physiotherapists employed by the nursing homes. Occupational therapy was being provided to only 3.3% of residents. CONCLUSION: Older people in nursing homes in the UK currently receive little physiotherapy and occupational therapy input and are particularly isolated from National Health Service (NHS) services.

**Conner-Kerr TA, Wittman P, Muzzarelli R (1998): Analysis of practice-role perceptions of physical therapy, occupational therapy, and speech-language therapy students, *J Allied Health*, 27(3), 128-131**
The purpose of this study was to determine whether physical therapy (PT), occupational therapy (OT), and speech-language therapy (SLP) students shared common perceptions of the practice roles of the three disciplines. The survey instrument used in this study contained 55 questions that addressed practice-role perceptions. The questions were based on a case study. A total of 172 undergraduate students (PT 71, OT 52, SLP 49) from a southeastern university participated. Chi-square test of association was used to analyze the data. Results showed that PT, OT, and SLP students shared common perceptions of administrative and educational practice roles but differed on their perceptions of assessment and physical/mental treatment roles. Practice-role confusion was particularly acute between OT and PT and between OT and SLP students in these areas.

**Cook C, Stickley L, Ramey K, Knotts VJ (2005): A variables associated with occupational and physical therapy stroke rehabilitation utilization and outcomes, *J Allied Health*, 34(1), 3-10**
Many studies have reported the benefits of a comprehensive stroke team including occupational therapy/physical therapy (OT/PT) services; however, factors associated with access to these services are less known. This study used a subsample of the Health and Retirement Study database, a cross-sectional survey of more than 11,126 Americans aged 65 to 106 years within the contiguous United States. The purposes of this study were to determine the associational factors that contribute to attending OT/PT and determine if attending OT/PT leads to a reduced report of stroke-related problems. The findings indicated that fewer than 10% of stroke survivors in a noninstitutionalized, community-based setting were currently accessing OT/PT. Additionally, access to OT/PT services was highly associated with report of having an attending physician, report of stroke-related weakness, higher monthly income, and older age. The increased odds of reported continued problems associated with a past stroke were associated with failure to access OT/PT services, lower monthly income, Hispanic culture, and age. OT/PT services were typically provided to patients who reported a higher level of physical dysfunction. Despite the greater degree of severity, OT/PT intervention led to reports of lower levels of disability and problems over time.

**Edwards M, Millard P, Praskac LA, Wisniewski PA (2003): Occupational therapy and early intervention: a family-centred approach, *Occup Ther Int*, 10(4), 239-252**
The purpose of this study was to identify factors that encourage or inhibit family-centred practice in the occupational therapy intervention process. A qualitative paradigm using grounded theory methodology was utilized to gather and analyse data. Participants included six families and four occupational therapists. Data analysis from the family interviews identified six categories: education, communication, relationship, parental roles, follow through, and scheduling. With further analysis two central themes of time and support were extracted from these categories. Analysis of the occupational therapists' interviews revealed six categories: education, communication, relationship, sibling/family participation, follow through, and empowerment. The central themes emerging from these categories are time and natural routine. The themes obtained from the families and occupational therapists were then compared and family individuality was identified as the core concept. Viewing families as a unique entity is necessary to assist occupational therapists in providing the most effective family-centred occupational therapy.

**Elms J, O'Hara R, Pickvance S, Fishwick D, Hazell M, Frank T, Henson M, Marlow P, Evans G, Bradshaw L, Harvey P, Curran A (2005): The perceptions of occupational health in primary care, *Occup Med*, 55(7), 523-527**
AIM: A random sample of general practitioners (GPs), practice nurses (PNs) and practice managers (PMs) in Sheffield and Manchester was recruited into a study to evaluate the perceptions of occupational health (OH) in primary care. METHODS: Qualitative data were collected using focus groups with three groups of primary care sector professionals. Quantitative data were collected nationally from 295 GPs using a postal questionnaire. RESULTS: GPs and PNs had minimal OH training, and 60% of GPs reported constraints in addressing OH matters with patients. The lack of referral routes (63 and 67%, respectively) was also seen as a barrier. OH was regarded as a speciality, and primary care professionals preferred to refer patients with OH problems to specialist centres because they perceived barriers to their dealing with the issues. A total of 74% of GPs surveyed thought that speedier access to secondary care would help them to address OH problems. CONCLUSIONS: This study has identified some of the problems associated with delivering OH through primary care. It also demonstrated a need for greater emphasis on OH education in medical and nurse training, and a need for better advice for GPs, PNs and PMs regarding support services for OH.

**Griffiths TL, Burr ML, Campbell IA, Lewis-Jenkins V, Mullins J, Shiels K, Turner-Lawlor PJ, Payne N, Newcombe RG, Ionescu AA, Thomas J, Tunbridge J (2000): Results at 1 year of outpatient multidisciplinary pulmonary rehabilitation: a randomised controlled trial, *Lancet*, 355(9201), 362-368**
BACKGROUND: Pulmonary rehabilitation seems to be an effective intervention in patients with chronic obstructive pulmonary disease. We undertook a randomised controlled trial to assess the effect of outpatient pulmonary rehabilitation on use of health care and patients' wellbeing over 1 year. METHODS: 200 patients with disabling chronic lung disease (the majority with chronic obstructive pulmonary disease) were randomly assigned a 6-week multidisciplinary rehabilitation programme (18 visits) or standard medical management. Use of health services was assessed from hospital and general-practice records. Analysis was by intention to treat. FINDINGS: There was no difference between the rehabilitation (n=99) and control (n=101) groups in the number of patients admitted to hospital (40 vs 41) but the number of days these patients spent in hospital differed significantly (mean 10.4 [SD 9.7] vs 21.0 [20.7], p=0.022). The rehabilitation group had more primary-care consultations at the general-practitioner's premises than did the control group (8.6 [6.8] vs 7.3 [8.3], p=0.033) but fewer primary-care home visits (1.5 [2.8] vs 2.8 [4.6], p=0.037). Compared with control, the rehabilitation group also showed greater improvements in walking ability and in general and disease-specific health

status. INTERPRETATION: For patients chronically disabled by obstructive pulmonary disease, an intensive, multidisciplinary, outpatient programme of rehabilitation is an effective intervention, in the short term and the long term, that decreases use of health services.

**Guzman J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C (2002): Multidisciplinary bio-psycho-social rehabilitation for chronic low back pain, *Cochrane Database Syst Rev*, 1, CD000963**
BACKGROUND: Chronic low back pain is, in many countries, the main cause of long term disability in middle age. Patients with chronic low back pain are often referred for multidisciplinary treatment. Previous published systematic reviews on this topic included no randomised controlled trials and pooled together controlled and non-controlled studies. OBJECTIVES: To assess the effect of multidisciplinary bio-psycho-social rehabilitation on pain, function, employment, quality of life and global assessment outcomes in subjects with chronic disabling low back pain. SEARCH STRATEGY: We searched MEDLINE, EMBASE, PsychLIT, CINAHL, Health STAR, and The Cochrane Library from the beginning of the database to June 1998 using the comprehensive search strategy recommended by the Back Review Group of the Cochrane Collaboration. Intervention specific key words for this review were: patient care team, patient care management, multidisciplinary, interdisciplinary, multiprofessional, multimodal, pain clinic and functional restoration. We also reviewed reference lists and consulted the editors of the Back Review Group of the Cochrane Collaboration. SELECTION CRITERIA: Design: randomised controlled trials comparing multidisciplinary bio-psycho-social rehabilitation with a non-multidisciplinary control intervention. Population: Adults with disabling low back pain of more than three months in duration. Intervention: Patients had to be assessed and treated by qualified professionals according to a plan that addresses physical and at least one of psychological, or social/occupational dimensions. Outcomes: Only trials which reported treatment effect in at least one of pain, function, employment status, quality of life or global improvement. Exclusion: Pure educational interventions (back schools) and pure physical interventions were excluded. DATA COLLECTION AND ANALYSIS: Selection, data extraction and quality grading of studies was done by two independent reviewers using pre-tested data forms. Study quality was assessed according to the scheme recommended by the Back Review Group of the Cochrane Collaboration. Trials with internal validity scores of five or more in a ten point scale were considered high quality. Discrepancies between reviewers were resolved by consensus or by a third reviewer. Given the marked heterogeneity in study settings, interventions and control groups we decided not to pool trial results in a meta-analysis. Instead, we summarized findings by strength of evidence and nature of intervention and control treatments. The evidence was judged to be strong when multiple high quality trials produced generally consistent findings. It was judged to be moderate when multiple low quality or one high quality and one or more low quality trials produced generally consistent findings. Evidence was considered to be limited when only one randomised trial existed or if findings of existing trials were inconsistent. MAIN RESULTS: Ten trials (12 randomised comparisons) were included. They randomised a total of 1964 patients with chronic low back pain. There was strong evidence that intensive multidisciplinary bio-psycho-social rehabilitation with a functional restoration approach improved function when compared with inpatient or outpatient non-multidisciplinary treatments. There was moderate evidence that intensive multidisciplinary bio-psycho-social rehabilitation with a functional restoration approach improved pain when compared with outpatient non-multidisciplinary rehabilitation or usual care. There was contradictory evidence regarding vocational outcomes of intensive multidisciplinary bio-psycho-social intervention. Some trials reported improvements in work readiness, but others showed no significant reduction in sickness leaves. Less intensive outpatient psycho-physical treatments did not improve pain, function or vocational outcomes when compared with non-multidisciplinary outpatient therapy or usual care. Few trials reported effects on quality of life or global assessments. REVIEWER'S CONCLUSIONS: The reviewed trials provide evidence that intensive multidisciplinary bio-psycho-social rehabilitation with a functional restoration approach improves pain and function. Less intensive interventions did not show improvements in clinically relevant outcomes.

**Hasselkus BR, Dickie VA, Gregory C (1997): Geriatric occupational therapy: the uncertain ideology of long-term care, *Am J Occup Ther*, 51(2), 132-139**
The search for the good life is used as a framework for understanding the meaning of geriatric practice to occupational therapists. Data consisted of a subset of phenomenological interviews drawn from a nationwide study of 148 occupational therapists in all areas of practice. Narratives of satisfying and dissatisfying experiences with older clients were analyzed to understand the uniqueness of therapists' lived experiences in geriatrics. The realities of practice with older clients--the settings, the meanings and symbols of continuity in old age, and the older client's uncertain future--merge to create an uncertain ideology in geriatric occupational therapy. We suggest that a fundamental task of occupational therapists in geriatrics, as they seek the good life for themselves and their older clients, is to reconcile the realities of practice with traditional rehabilitation ideologies by redefining themselves and their roles in practice.

**Hendriksen H, Harrison RA (2001): Occupational therapy in accident and emergency departments: a randomized controlled trial, *J Adv Nurs*, 36(6), 727-732**
BACKGROUND: The National Service Framework for Older People published in 2001 requires action to improve the discharge process of older people from hospital. Currently, many older people released from accident and emergency departments are unable to perform basic activities of daily living. This could delay recovery and increase demand for emergency primary care services. AIMS: To evaluate the potential for an occupational therapist in an accident and emergency department to reduce unmet functional needs after releasing patients aged 75 years or more with a primary diagnosis of limb, rib or back trauma. METHODS: A randomized controlled trial was employed, with the intervention group receiving an occupational therapy assessment and given, or arrangements made, for appropriate treatments and equipment before release. Controls received routine care. All patients were reassessed at home, 7 days later. RESULTS: Of 72 patients, 39 were recruited with 19 randomized to the intervention group and 20 to the control group. The median age was 81 years (75-92 years) and 31 (79%) were female. At baseline, 20 (51.2%) patients had problems in performing one or more of four basic activities assessed. At the follow-up assessment, in the intervention group the proportion of patients having no problems with these activities increased by 54% over and above the change in the control group, compared with that at baseline ($P < 0.001$). No effect on anxiety or demand for primary care was observed. CONCLUSIONS: In our local hospital, over 50% of older patients with limb, rib or back trauma would have left the accident and emergency department unable to perform basic activities of daily living. This might be overcome by employing occupational therapists to assess and meet the functional needs of these patients before sending them home. These results need confirming in a larger study.

**Lindh M, Lurie M, Sanne H (1997): A randomized prospective study of vocational outcome in rehabilitation of patients with non-specific musculoskeletal pain: a multidisciplinary approach to patients identified after 90 days of sick-leave, *Scand J Rehabil Med*, 29(2), 103-112**
This study was designed to evaluate the effectiveness of a multidisciplinary rehabilitation programme offered to a general population with 90 days of sick-leave due to non-specific musculoskeletal pain. The results concerning return to work and re-sick-listing during a

follow-up period of five years were evaluated for Swedes and immigrants separately. Compared to a control group, the rehabilitation offer resulted in improved work stability after work return among the Swedes. The immigrants, as a group, did not benefit from the programme compared to the controls in primary care.

**Lo Sasso AT, Rost K, Beck A (2006): Modeling the impact of enhanced depression treatment on workplace functioning and costs: a cost-benefit approach, *Med Care*, 44(4), 352-358**
BACKGROUND: The impact of depression on the workplace has been widely observed in studies examining absenteeism and reduced productivity during days at work. However, there is little scientific evidence about whether depression interventions are cost-beneficial to employers. OBJECTIVE: We construct a cost-benefit analysis of depression treatment under different workplace assumptions better reflecting the nature of employment. RESEARCH DESIGN: Data from a randomized controlled trial in which employed primary care patients with depression were treated in practices randomly assigned to an enhanced treatment intervention or usual care were used to construct a cost-benefit model from an employer perspective under different assumptions regarding employment. SUBJECTS: A national sample of 198 workers employed in a range of positions by companies was studied. MEASURES: Benefits included self-reported productivity and absenteeism; costs included intervention and treatment costs. Net benefit was calculated under different scenarios and return on investment (ROI) is derived. RESULTS: Enhanced depression treatment resulted in an average net benefit to the employer of Dollars 30 per participating worker in Year 1 of the intervention and Dollars 257 per participating worker in Year 2, for an estimated ROI during the 2-year period of 302%. ROI increased in firms that rely on team production, hire more costly substitute labor, or realize penalties for output shortfalls. ROI decreased in firms that have a large fraction of employees with dependent coverage and experience high turnover rates. Results also are sensitive to how subjectively reported productivity is valued. CONCLUSION: Many employers will receive a potentially significant ROI from depression treatment models that improve absenteeism and productivity at work.

**Logan PA, Gladman JR, Avery A, Walker MF, Dyas J, Groom L (2004): Randomised controlled trial of an occupational therapy intervention to increase outdoor mobility after stroke, *BMJ*, 329(7479), 1372-1375**
OBJECTIVE: To evaluate an occupational therapy intervention to improve outdoor mobility after stroke. DESIGN: Randomised controlled trial. SETTING: General practice registers, social services departments, a primary care rehabilitation service, and a geriatric day hospital. PARTICIPANTS: 168 community dwelling people with a clinical diagnosis of stroke in previous 36 months: 86 were allocated to the intervention group and 82 to the control group. INTERVENTIONS: Leaflets describing local transport services for disabled people (control group) and leaflets with assessment and up to seven intervention sessions by an occupational therapist (intervention group). MAIN OUTCOME MEASURES: Responses to postal questionnaires at four and 10 months: primary outcome measure was response to whether participant got out of the house as much as he or she would like, and secondary outcome measures were response to how many journeys outdoors had been made in the past month and scores on the Nottingham extended activities of daily living scale, Nottingham leisure questionnaire, and general health questionnaire. RESULTS: Participants in the treatment group were more likely to get out of the house as often as they wanted at both four months (relative risk 1.72, 95% confidence interval 1.25 to 2.37) and 10 months (1.74, 1.24 to 2.44). The treatment group reported more journeys outdoors in the month before assessment at both four months (median 37 in intervention group, 14 in control group: $P < 0.01$) and 10 months (median 42 in intervention group, 14 in control group: $P < 0.01$). At four months the mobility scores on the Nottingham extended activities of daily living scale were significantly higher in the intervention group, but there were no significant differences in the other secondary outcomes. No significant differences were observed in these measures at 10 months. CONCLUSION: A targeted occupational therapy intervention at home increases outdoor mobility in people after stroke.

**Oerlemans HM, Oostendorp RA, de Boo T, Goris RJ (1999): Pain and reduced mobility in complex regional pain syndrome I: outcome of a prospective randomised controlled clinical trial of adjuvant physical therapy versus occupational therapy, *Pain*, 83(1), 77-83**
There are no adequate comparative studies on physical therapy (PT) versus occupational therapy (OT) in patients with complex regional pain syndrome I (CRPS I). Therefore, we conducted a prospective randomised clinical trial to assess their effectiveness. The outcomes regarding reducing pain and normalising active range of motion (AROM) are discussed. Included in the study were 135 patients who had been suffering from CRPS I of one upper extremity for less than one year. They were randomly assigned to one of three groups: PT, OT, or control (social work, CT). Measurements were taken at base-line (t0), after 6 weeks, and after 3, 6 and 12 months (t1 to t4). Pain was measured on four visual analogue scales (VAS) and the McGill Pain Questionnaire, Dutch Language Version (MPQ-DLV). The AROM was recorded relative to the contralateral side. Explorative statistical evaluations were performed (Wilcoxon; alpha=0.05). PT and to a lesser extent OT, resulted in more rapid improvement in the VAS scores than CT, especially for the VAS during or after effort ($P<0.05$ at t1 to t3). PT was superior to CT and OT according to the MPQ-DLV particularly at t4. Improvement on the MPQ-DLV over the year was significantly greater for PT than for OT and CT ($P<0.05$). PT -and to a lesser degree OT- led to better results than CT for the AROM of the wrist, fingers and thumb at t1 to t3 (most-times $P<0.05$ for PT), but the improvements over the year were not significantly different. Our results indicated that PT, and to a lesser extent OT, were helpful for reducing pain and improving active mobility in patients with CRPS I of less than one year duration, localised in one upper extremity.

**Przybylski BR, Dumont ED, Watkins ME, Warren SA, Beaulne AP, Lier DA (1996): Outcomes of enhanced physical and occupational therapy service in a nursing home setting, *Arch Phys Med Rehabil*, 77(6), 554-561**
OBJECTIVE: The purpose of this study was to determine if 1.0 Full-time Equivalent (FTE) physical therapy (PT) and 1.0 FTE occupational therapy (OT) per 50 beds resulted in differences in functional status for nursing home residents when compared to 1.0 FTE PT and 1.0 FTE OT per 200 beds. DESIGN: Randomized control program evaluation, cost analysis. SETTING: Nursing home in the province of Alberta, Canada. PATIENTS: 115 residents assigned to 1 PT and 1 OT per 50 beds (enhanced group) versus 1 PT and 1 OT per 200 beds (control group) using stratified random allocation by severity of condition. INTERVENTIONS: Both groups received ongoing treatment, follow-up, and restorative interventions, but enhanced group received more hours of service. OUTCOME MEASURES: Functional Independence Measure (FIM), Functional Assessment Measures (FAM), and Clinical Outcome Variables Scale (COVS) recorded at 6-month intervals over a 2-year period. RESULTS: Mean score differences favored the enhanced group for the tests over the 2 years. Significance was observed on FIM Total at 6 and 12 months, FIM Self Care at 6 months, FIM Communication at 24 months, and FIM Psychosocial at 6, 12, 18, and 24 months; FAM Total at 6, 12, 18, and 24 months, FAM Self Care at 6 months, FAM Mobility at 12 months, FAM Communication at 6 and 24 months, FAM Psychosocial at 6, 12, 18, and 24 months, and FAM Cognition at 6 and 12 months; and COVS at 6, 12, 18, and 24 months. A cost analysis demonstrated that PT/OT offered at the 1:50 ratio would result in a cost savings in terms of nursing staff dollars for 30 long-term-care beds of $16,973 over the 2 years of the study compared to the 1:200 ratio. This equates to an annual cost savings of $283 per bed. CONCLUSIONS: Increasing the amount of PT/OT can have a positive effect on the functional status and cost of care of long-term care residents.

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**Severens JL, Oerlemans HM, Weegels AJ, van 't Hof MA, Oostendorp RA, Goris RJ (1999): Cost-effectiveness analysis of adjuvant physical or occupational therapy for patients with reflex sympathetic dystrophy, *Arch Phys Med Rehabil*, 80(9), 1038-1043**
OBJECTIVE: To study from a societal viewpoint the cost-effectiveness of adjuvant treatment for patients with reflex sympathetic dystrophy (RSD) of one upper extremity. DESIGN: A two-center randomized clinical trial comparing pairwise physical therapy (PT), occupational therapy (OT), and control treatment (CT). PATIENTS: One hundred thirty-five patients with RSD for less than 1 year participated. INTERVENTIONS: PT and OT were given according to protocols. For CT, services by social workers were offered. MAIN OUTCOME MEASURES: The Impairment-level Sum Score (ISS), the modified Greentest, and the Sickness Impact Profile (SIP) were used to determine effectiveness. Real medical costs, nonmedical costs, and productivity costs were distinguished and incremental cost-effectiveness ratios were calculated. Sensitivity analyses were performed on cost estimates. RESULTS: The ISS, but not the Greentest and SIP, showed a significant difference between PT versus OT and CT. The mean adjuvant treatment costs were significantly higher for PT (Netherlands Guilders [NLG] 1,726) and OT (NLG 2,089) compared with CT (NLG 903). The mean total medical costs were not significantly different for the groups (PT, NLG 8,692; OT, NLG 13,023; and CT, NLG 7,888) (intention-to-treat analysis). The sensitivity analyses showed a moderate influence of the cost estimates. CONCLUSIONS: PT results in clinically relevant improvement in RSD. Costs associated with adjuvant treatment are moderate compared to other medical costs. The incremental cost-effectiveness ratios of PT versus OT and CT were moderate or even dominant, thus PT was both more effective and less costly than its comparators.

**Stewart S, Harvey I, Poland F, Lloyd-Smith W, Mugford M, Flood C (2005): Are occupational therapists more effective than social workers when assessing frail older people? Results of CAMELOT, a randomised controlled trial, *Age Ageing*, 34(1), 41-46**
OBJECTIVES: To compare the effectiveness of occupational therapist-led assessments of older people on dependency and service costs with that of social worker-led assessments. DESIGN: Pragmatic community-based randomised controlled trial over 2 years 4 months. SETTING: Cambridgeshire, UK. PARTICIPANTS: 321 older people aged 65 and over living in their own homes and 113 carers. Intervention: participants were randomised to two groups, to receive either occupational therapist-led or social worker-led assessment. OUTCOME MEASURES: Primary outcome was dependency (Community Dependency Index). Secondary outcomes included quality of life scores (EQ-5D) and psychological outlook (Perceived Stress Scale (PSS)). Outcome measures for carers included Carer Assessment of Difficulty Index (CADI), PSS and EQ-5D, collected at baseline, 4 and 8 months. Resource use data were collected from professional practice records, participants and carers at final follow-up. RESULTS: 264 (82%) of the randomised participants completed the study. No between-group statistically significant differences were found, except that carers in the occupational therapist arm had significantly better EQ-5D scores at the 8 month follow-up (thermometer P = 0.03) and in the social worker arm better CADI scores on stress (P = 0.047) and amount of caring (P = 0.049). CONCLUSIONS: There was no clear difference in patient-centred effectiveness measures between occupational therapists and social workers in assessing frail older people and their carers in the community. More extensive use of primary care health services by occupational therapists may have contributed to the differences in EQ-5D scores for carers. Delays in making occupational therapy assessments and in completing recommended housing adaptations may have contributed to these negative findings.

**von Koch L, de Pedro-Cuesta J, Kostulas V, Almazan J, Widen Holmqvist L (2001): Randomized controlled trial of rehabilitation at home after stroke: one-year follow-up of patient outcome, resource use and cost, *Cerebrovasc Dis*, 12(2), 131-138**
BACKGROUND AND PURPOSE: This study sought to evaluate early supported discharge and continued rehabilitation at home after stroke, at a minimum of 6 months after the intervention, in terms of patient outcome, resource use and health care cost. METHODS: Eighty-three patients, moderately impaired 5-7 days after acute stroke, were included in a randomized controlled trial, 42 being allocated to the intervention and 41 to routine rehabilitation. One-year follow-up of patient outcome included mortality, motor capacity, dysphasia, activities of daily living, social activities, perceived dysfunction, and self-reported falls. Resource use over 12 months included inpatient hospital care, outpatient health care, use of health-related services, informal care, and cost of health care. RESULTS: On univariate analysis there was no difference in patient outcome. Multivariate regression analysis showed that intervention had a significant effect on independence in activities of daily living. A significant difference in inpatient hospital care, initial and recurrent, was observed, with a mean of 18 (intervention) versus 33 days (control) (p = 0.002). Further significant differences were that the control group registered more outpatient visits to hospital occupational therapists (p = 0.02), private physical therapists (p = 0.03) and day-hospital attendance (p = <0.001), while the intervention group registered more visits to nurses in primary care (p = 0.03) and home rehabilitation (p = <0.001). Other differences in outcomes or resource utilization were nonsignificant. CONCLUSION: In Sweden, early supported discharge with continued rehabilitation at home proved no less beneficial as a rehabilitation service, and provided care and rehabilitation for 5 moderately disabled stroke patients over 12 months after stroke onset for the cost of 4 in routine rehabilitation.

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# 6 Ernährungsberater/innen

**Barratt A, Reznik R, Irwig L, Cuff A, Simpson JM, Oldenburg B, Horvath J, Sullivan D (1994): Work-site cholesterol screening and dietary intervention: the Staff Healthy Heart Project. Steering Committee, *Am J Public Health*, 84(5), 779-782**
OBJECTIVES. The Staff Healthy Heart Project was established to run a work-site cholesterol screening project and a randomized controlled trial of dietary interventions. METHODS. Screening was offered to all staff at six Australian hospitals. Participants with blood cholesterol of 5.2 mmol/L (200 mg/dL) or above were randomly allocated to receive screening only (control group), a self-help package, or a nutrition course. Participants were seen 3 and 6 months after intervention to measure blood cholesterol and dietary changes. RESULTS. Eighty percent of available staff (n = 2638) were screened. Of those eligible, 67% (n = 683) entered the trial. Follow-up measures of blood cholesterol and dietary intake were obtained for 63% and 38% of trial participants, respectively. A reduction in reported dietary fat was found for all groups, but there were no significant differences between groups. Reported dietary fiber rose by 0.6 g/MJ/day for those in the nutrition course. There were no changes in total blood or high-density lipoprotein cholesterol. CONCLUSIONS. Cholesterol reduction was not demonstrated, but this result is difficult to interpret given the poor ongoing participation rates. Strategies to improve ongoing participation in work-site projects are needed to achieve adequate assessment of dietary interventions used in cholesterol screening.

**Bowerman S, Bellman M, Saltsman P, Garvey D, Pimstone K, Skootsky S, Wang HJ, Elashoff R, Heber D (2001): Implementation of a primary care physician network obesity management program, *Obes Res*, 9(4), S321-325**
Most primary care physicians do not treat obesity, citing lack of time, resources, insurance reimbursement, and knowledge of effective interventions as significant barriers. To address this need, a 10-minute intervention delivered by the primary care physician was coupled with individual dietary counseling sessions delivered by a registered dietitian via telephone with an automated calling system (House-Calls, Mobile, AL). Patients were seen for follow-up by their physician at weeks 4, 12, 24, 36 and 52. A total of 252 patients (202 women and 50 men) were referred by 18 primary care physicians to the program. The comorbid conditions reported for all patients at baseline included low back pain, 29% (n = 72); hypertension, 45% (n = 113); hypercholesterolemia, 41% (n = 104); type 2 diabetes, 10% (n = 26); and sleep apnea, 5% (n = 12). When offered a choice of meal plans based on foods or meal replacements, two-thirds of patients (n = 166) chose to use meal replacements (Ultra Slim-Fast; Slim-Fast Foods Co., West Palm Beach, FL) at least once daily. Baseline weights of subjects averaged 200 +/- 46 lb for women (n = 202) and 237 +/- 45 lb for men (n = 50). Patients completing 6 months in the program lost an average of 19.0 +/- 4.0 lb for women (n = 94) and 15.5 +/- 8.2 lb for men (n = 26). Physicians reported a high degree of satisfaction with the program, suggesting that a brief, effective physician-directed program with nutritionist support by telephone can be implemented in a busy primary care office.

**Bramlage P, Wittchen HU, Pittrow D, Kirch W, Krause P, Lehnert H, Unger T, Hofler M, Kupper B, Dahm S, Bohler S, Sharma AM (2004): Recognition and management of overweight and obesity in primary care in Germany, *Int J Obes*, 28(10), 1299-1308**
BACKGROUND: In contrast to the well-documented high prevalence of overweight and obesity in the general population, the prevalence, recognition rates and management by primary care physicians--as the core gatekeeper in the health care system--remains poorly studied. PURPOSE OF THE STUDY: To examine (1) the point prevalence of overweight (BMI 25.0-29.9 kg/m(2)) and obesity (BMI> or =30 kg/m(2)) in primary care patients, (2) prevalence patterns in patients with high-risk constellations (diabetes, hypertension, cardiovascular disease, etc.), (3) doctors' recognition and interventions, as well as patients' use and perceived effectiveness of weight-loss interventions and (4) factors associated with non-treatment. METHODS: Cross-sectional point prevalence study of 45 125 unselected consecutive primary care attendees recruited from a representative nationwide sample of 1912 primary care practices. Measures: (1) standardized clinical appraisal of each patient by the physician (diagnostic status and recognition, severity, comorbidity, current and past interventions). (2) Patient self-report questionnaire: height and weight, illness history, past and current treatments and their perceived effectiveness, health attitudes and behaviors. RESULTS: (1) In all, 37.9% of all primary care attendees were overweight, 19.4% obese. (2) Rates for overweight and obesity were highest in patients with diabetes (43.6 and 36.7%) and hypertension (46.1 and 31.3%), followed by patients with cardiovascular disorders. Rates of overweight/obesity increased steadily by the number of comorbid conditions. (3) Doctors' recognition of overweight (20-30%) and obesity (50-65%) was low, patients' actual use of weight control interventions even lower (past 12 months: 8-11%, lifetime: 32-39%). Patient success rates were quite limited. (4) Co- and multimorbidity in particular as well as other patient and illness variables were identified as predictors for recognition, but prediction of patients' actual use of weight loss interventions was limited. CONCLUSIONS: Primary care management of overweight and obesity is largely deficient, predominantly due to four interrelated factors: doctors' poor recognition of patients' weight status, doctors' inefficient efforts at intervention, patients' poor acceptance of such interventions and dissatisfaction with existing life-style modification strategies.

**Caggiula AW, Watson JE, Kuller LH, Olson MB, Milas NC, Berry M, Germanowski J (1996): Cholesterol-lowering intervention program. Effect of the step I diet in community office practices, *Arch Intern Med*, 156(11), 1205-1213**
BACKGROUND: A randomized study was conducted to test the feasibility of cholesterol lowering in physician office practices using the National Cholesterol Education Program Adult Treatment Panel 1 guidelines. METHODS: Twenty-two physician practices in phase 1 and 23 in phase 2 were recruited from communities in Western Pennsylvania and West Virginia. These physicians treated a total of 450 adults in phase 1 (190 men and 260 women) and 480 adults in phase 2 (184 men and 296 women) with hypercholesterolemia. Three models (Usual Care [phase 1], Office Assisted [phase 2], and Nutrition Center [phase 2]) for implementing the National Cholesterol Education Program Adult Treatment Panel 1 guidelines were tested over an 18-month period. The baseline serum cholesterol levels were as follows: 6.51 mmol/L (252 mg/dL) in the Usual Care Model; 6.80 mmol/L (262 mg/dL) in the Office Assisted Model; and 6.96 mmol/L (269 mg/dL) in the Nutrition Center Model. RESULTS: In the patients who were not taking lipid-lowering medication, the mean cholesterol response was significantly different between the 3 models (P < .01). Serum cholesterol levels declined by 0.14 mmol/L (5.4 mg/dL) in the Usual Care Model; by 0.31 mmol/L (12 mg/dL) in the Office Assisted Model; and by 0.54 mmol/L (20.9 mg/dL) in the Nutrition Center Model. Two factors-length of time to follow-up measurement and change in weight-were independently related to cholesterol response across all models. African Americans demonstrated a significantly smaller response than whites in the Usual Care Model, while men demonstrated greater declines in serum cholesterol levels than women in the Office Assisted Model. Patient satisfaction was very favorable in both enhanced conditions; however, those treated in the the Nutrition Center Model were more satisfied (P < .05) with program components. CONCLUSIONS: The impact of nutrition intervention delivered through physician practices on serum cholesterol levels is less than clinically desirable, and new approaches with more aggressive therapy should be tested and implemented.

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**Gosselin P, Verreault R, Gaudreault C, Guillemette J (1996): Dietary treatment of mild to moderate hypercholesterolemia. Effectiveness of different interventions (Artikel auf französisch), *Can Fam Physician*, 42, 2160-2167**
OBJECTIVE: To compare the efficacy of brief dietary intervention by family physicians in their daily practice and in group sessions to standard dietetic treatment in mild to moderate hypercholesterolemia. DESIGN: Randomised clinical trial. SETTING: Family practice clinic in a remote community. PARTICIPANTS: Between September 1, 1991 and September 30, 1992, 135 men and women between 20 and 60 years old with mild to moderate hypercholesterolemia were recruited and randomly assigned to three treatment groups to be taught the American Heart Association low fat diet. Each participant had an LDL-C reading higher than the desirable level set by the Canadian Consensus Conference on Cholesterol. INTERVENTIONS: The three treatment groups received different interventions: individual consultations with a family physician in his office (phase I); group sessions with a physician and a dietician (phase II); and individual consultations with a dietician (phase II). Participants were followed for 6 months with visits and blood tests every 2 months. MAIN OUTCOME MEASURES: Reduction in serum levels of total cholesterol, LDL-C, HDL-C, and triglycerides was measured after 2, 4, and 6 months of dietary treatment. Changes in risk factors (smoking, weight, level of physical activity) and patients' cholesterol/saturated fat index were also measured. RESULTS: Ninety-nine subjects completed the 6-month regimen. The mean reduction in serum LDL-C was 0.08 mmol/L (1.8%) in Group I, 0.07 mmol/L (1.6%) in Group II, and 0.28 mmol/L (6.3%) in Group III ($P = 0.94$). An LDL-C reduction of 10% or more relative to initial level was observed in 27% of participants in Group I and approximately 40% of subjects in the other two groups ($P = 0.41$). Counseling resulted in a decrease in body weight, smoking, and dietary fat consumption and an increase in physical activity. CONCLUSIONS: Treatment by a dietician achieved better results and should remain the standard. Physicians should focus on the detection and control of other heart disease risk factors.

**Heller RF, Elliott H, Bray AE, Alabaster M (1989): Reducing blood cholesterol levels in patients with peripheral vascular disease: dietitian or diet fact sheet?, *Med J Aust*, 151(10), 566-568**
A randomized trial was performed to test the hypothesis that, among patients with peripheral vascular disease, no difference is achieved in the magnitude of the reduction in blood cholesterol levels as a result of advice which is provided by a dietitian and that which is provided by a diet fact sheet. Fifty-nine patients were allocated at random either to a "dietitian" group ($n = 31$) or to a "diet fact sheet" group ($n = 28$). Dietary advice which was provided by a dietitian involved two personal interviews; the diet fact sheet was prepared by the NSW Department of Health. Twenty-two and 23 members of each group, respectively, returned for follow-up at three months. The mean cholesterol level fell by 8.5% among the "dietitian" group but only by 1.9% among the "diet fact sheet" group. The difference of 0.47 mmol/L in the total cholesterol level reduction between the two groups was statistically significant ($P = 0.02$; 95% confidence interval, -0.88 to -0.07 mmol/L). It appears that individual advice which is provided by a dietitian is more successful in leading to a reduction in blood cholesterol levels than is the administration of a diet fact sheet, even though this particular diet fact sheet appears to be excellent and is used widely. In view of the large numbers of patients and of persons in the population as a whole who would benefit from a reduction in blood cholesterol levels, and the expense of individual advice to be provided by a dietitian, explorations of cost-effective methods of providing dietary advice are needed.

**Laws R, Counterweight Project Team (2004): Current approaches to obesity management in UK Primary Care: the Counterweight Programme, *J Hum Nutr Diet*, 17(3), 183-190**
BACKGROUND/AIMS: Primary care is expected to develop strategies to manage obese patients as part of coronary heart disease and diabetes national service frameworks. Little is known about current management practices for obesity in this setting. The aim of this study is to examine current approaches to obesity management in UK primary care and to identify potential gaps in care. METHOD: A total of 141 general practitioners (GPs) and 66 practice nurses (PNs) from 40 primary care practices participated in structured interviews to examine clinician self-reported approaches to obesity management. Medical records were also reviewed for 100 randomly selected obese patients from each practice [body mass index (BMI) >/=30 kg m(-2), n = 4000] to review rates of diet counselling, dietetic or obesity centre referrals, and use of anti-obesity medication. Computerized medical records for the total practice population (n = 206 341, 18-75 years) were searched to examine the proportion of patients with a weight/BMI ever recorded. RESULTS: Eighty-three per cent of GPs and 97% of PNs reported that they would raise weight as an issue with obese patients ($P < 0.01$). Few GPs (15%) reported spending up to 10 min in a consultation discussing weight-related issues, compared with PNs (76%; $P < 0.001$). Over 18 months, practice-based diet counselling (20%), dietetic (4%) and obesity centre (1%) referrals, and any anti-obesity medication (2%) were recorded. BMI was recorded for 64.2% of patients and apparent prevalence of obesity was less than expected. CONCLUSION: Obesity is under-recognized in primary care even in these 40 practices with an interest in weight management. Weight management appears to be based on brief opportunistic intervention undertaken mainly by PNs. While clinicians report the use of external sources of support, few patients are referred, with practice-based counselling being the most common intervention.

**Neil HA, Roe L, Godlee RJ, Moore JW, Clark GM, Brown J, Thorogood M, Stratton IM, Lancaster T, Mant D, Fowler GH (1995): Randomised trial of lipid lowering dietary advice in general practice: the effects on serum lipids, lipoproteins, and antioxidants, *BMJ*, 310(6979), 569-573**
OBJECTIVE--To determine the relative efficacy in general practice of dietary advice given by a dietitian, a practice nurse, or a diet leaflet alone in reducing total and low density lipoprotein cholesterol concentration. DESIGN--Randomised six month parallel trial. SETTING--A general practice in Oxfordshire. SUBJECTS--2004 subjects aged 35-64 years were screened for hypercholesterolaemia; 163 men and 146 women with a repeat total cholesterol concentration of 6.0-8.5 mmol/l entered the trial. INTERVENTIONS--Individual advice provided by a dietitian using a diet history, a practice nurse using a structured food frequency questionnaire, or a detailed diet leaflet sent by post. All three groups were advised to limit the energy provided by fat to 30% or less and to increase carbohydrate and dietary fibre. MAIN OUTCOME MEASURES--Concentrations of total cholesterol and low density and high density lipoprotein cholesterol after six months; antioxidant concentration and body mass index. RESULTS--No significant differences were found at the end of the trial between groups in mean concentrations of lipids, lipoproteins, and antioxidants or body mass index. After data were pooled from the three groups, the mean total cholesterol concentration fell by 1.9% (0.13 mmol/l, 95% confidence interval 0.06 to 0.22, $P < 0.001$) to 7.00 mmol/l, and low density lipoprotein cholesterol also fell. The total carotenoid concentration increased by 53 nmol/l (95% confidence interval 3.0 to 103, $P = 0.039$). CONCLUSIONS--Dietary advice is equally effective when given by a dietitian, a practice nurse, or a diet leaflet alone but results in only a small reduction in total and low density lipoprotein cholesterol. To obtain a better response more intensive intervention than is normally available in primary care is probably necessary.

**Nicholas LG, Pond CD, Roberts DC (2003): Dietitian-general practitioner interface: a pilot study on what influences the provision of effective nutrition management, *Am J Clin Nutr*, 77(4), 1039-1042**
BACKGROUND: Effective patient nutrition management can both improve people's health and reduce the cost of health care. In Australia, general practitioners (GPs) and dietitians are in a position to provide this service. However, there is a lack of information

available on what influences the provision of the service. OBJECTIVE: The objective was to determine qualitative factors that influence nutrition management by GPs and dietitians. DESIGN: A convenience sample of GPs and dietitians was surveyed using a qualitative questionnaire. The questionnaire related to issues including influences on the GP's decision to initiate nutrition management, barriers to providing nutrition counseling, influences on the GP's decision to refer to a dietitian, and barriers to referral. RESULTS: Fourteen of 20 GPs and 15 of 30 dietitians responded with usable data. The primary influence on a GP's decision to initiate nutrition management (GPs' and dietitians' responses) was the presentation of a patient who required nutrition advice. Barriers to providing nutrition counseling were time and knowledge (GP response), whereas dietitians saw time and lack of patient interest as issues. The primary influence on the GP's decision to refer to a dietitian was a patient presenting with complicated nutrition requirements (GP response), whereas dietitians considered a patient seeking nutrition knowledge as the key influencer. GPs identified cost to the patient as the main barrier to referring to a dietitian, whereas dietitians saw lack of knowledge of where to refer as the key issue. CONCLUSIONS: The differing responses suggest that more research is required to understand what influences patient nutrition management by GPs and dietitians in Australia.

**Pavlovich WD, Waters H, Weller W, Bass EB (2004): Systematic review of literature on the cost-effectiveness of nutrition services, *J Am Diet Assoc*, 104(2), 226-232**
Employers and health plan directors would like to know whether it is cost-effective to include outpatient nutrition services as a covered benefit. The purpose of this systematic review was to examine the strength of evidence on the cost-effectiveness of outpatient nutrition services from an economic perspective. All randomized controlled trials published between January 1966 and September 2001 that reported on costs and effectiveness of outpatient nutrition services for any indicated condition were identified and reviewed. Paired reviewers abstracted data from and assessed the quality of each eligible randomized controlled trial; 13 studies met the eligibility criteria. Relatively consistent evidence exists to support the cost-effectiveness of nutrition services in the reduction of serum cholesterol levels (eg, 20 dollars to 1,268 dollars per mmol/L decrease in serum low-density lipoprotein level), weight loss (2.40 dollars to 10 dollars per pound lost), and blood glucose (5 dollars per mmol/L decrease), and for target populations with diabetes mellitus and hypercholesterolemia. However, the randomized controlled trials had important limitations and used different cost perspectives. Limited evidence of economic benefit exists to support coverage of outpatient nutrition services for selected indications. More randomized controlled trials of nutrition services should be conducted, taking into consideration all potential candidates for nutrition therapy and all potential costs to patients, providers, and payers.

**Pritchard DA, Hyndman J, Taba F (1999): Nutritional counselling in general practice: a cost effective analysis, *J Epidemiol Community Health*, 53(5), 311-316**
STUDY OBJECTIVE: To study the clinical and cost outcomes of providing nutritional counselling to patients with one or more of the following conditions: overweight, hypertension and type 2 diabetes. DESIGN: The study was designed as a random controlled trial. Consecutive patients were screened opportunistically for one or more of the above conditions and randomly allocated to one of two intervention groups (doctor/dietitian or dietitian) or a control group. Both intervention groups received six counselling sessions over 12 months from a dietitian. However, in the doctor/dietitian group it was the doctor and not the dietitian who invited the patient to join the study and the same doctor also reviewed progress at two of the six counselling sessions. SETTING: The study was conducted in a university group general practice set in a lower socioeconomic outer suburb of Perth, Western Australia. PATIENTS: Of the 273 patients randomly allocated to a study group, 198 were women. Age ranged from 25 to 65 years. Seventy eight per cent of patients resided in the lower two socioeconomic quartiles, 56 per cent described their occupation as home duties and 78 per cent were partnered. RESULTS: Both intervention groups reduced weight and blood pressure compared with the control group. Patients in the doctor/dietitian group were more likely to complete the 12 month programme than those in the dietitian group. Patients in the doctor/dietitian group lost an average of 6.7 kg at a cost of $A9.76 per kilogram, while the dietitian group lost 5.6 kg at a cost of $A7.30 per kilogram. CONCLUSION: General practitioners, in conjunction with a dietitian, can produce significant weight and blood pressure improvement by health promotion methods.

**Rodondi N, Humair JP, Ghali WA, Ruffieux C, Stoianov R, Seematter-Bagnoud L, Stalder H, Pecoud A, Cornuz J (2006): Counselling overweight and obese patients in primary care: a prospective cohort study, *Eur J Cardiovasc Prev Rehabil*, 13(2), 222-228**
BACKGROUND: Primary care physicians are well positioned to provide counselling for overweight and obese patients, but no prospective study has assessed the effectiveness of this counselling in primary care. We aimed to evaluate weight reduction counselling by primary care physicians, and its relationship with weight change and patients' behaviour to control weight. DESIGN: A prospective cohort study. METHODS: We enrolled 523 consecutive overweight and obese patients from two Swiss academic primary care clinics. Physicians and patients were blinded to the study aims. We assessed the use of 10 predefined counselling strategies for weight reduction, and weight change and behaviour to control weight after 1 year. RESULTS: Sixty-five per cent of patients received some form of weight reduction counselling whereas 35% received no counselling. A total of 407 patients completed the 1-year follow-up. Those who received counselling lost on average (SD) 1.0 (5.0) kg after 1 year, whereas those who were not advised gained 0.3 (5.0) kg ($P = 0.02$). In multivariate analysis, each additional counselling strategy was associated with a mean weight loss of 0.2 kg (95% confidence interval 0.03-0.4, $P = 0.02$). Patients counselled by their physician had more favourable behaviour to control weight than those not counselled, such as setting a target weight (56 versus 36%) or visiting a dietician (23 versus 10%, both $P < 0.001$). CONCLUSIONS: Weight reduction counselling by primary care physicians is associated with a modest weight loss and favourable behaviour to control weight. However, many obese and overweight patients receive no advice on weight loss during primary care visits.

**Thompson RL, Summerbell CD, Hooper L, Higgins JP, Little PS, Talbot D, Ebrahim S (2003): Relative efficacy of differential methods of dietary advice: a systematic review, *Am J Clin Nutr*, 77(4), 1052-1057**
BACKGROUND: Dietary advice to lower blood cholesterol may be given by a variety of means. The relative efficacy of the different methods is unknown. OBJECTIVE: The objective was to assess the effects of dietary advice given by dietitians compared with advice from other health professionals, or self-help resources, in reducing blood cholesterol in adults. DESIGN: We performed a systematic review, identifying potential studies by searching the electronic databases of the Cochrane Library, MEDLINE, EMBASE, CINAHL, Human Nutrition, Science Citation Index, and Social Sciences Citation Index. We also hand-searched relevant conference proceedings, reference lists in trial reports, and review articles. Finally, we contacted experts in the field. The selection criteria included randomized trials of dietary advice given by dietitians compared with advice given by other health professionals or self-help resources. The main outcome was difference in blood cholesterol between the dietitian group compared with other intervention groups. Inclusion decisions and data extraction were duplicated. RESULTS: Eleven studies with 12 comparisons met the inclusion criteria. Four studies compared dietitians with doctors, 7 with self-help resources, and 1 with nurses. Participants receiving advice from dietitians experienced a greater reduction in blood total cholesterol than those receiving advice from doctors (-0.25 mmol/L, 95% CI -0.37, -

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0.12 mmol/L). There was no statistically significant difference in change in blood cholesterol between dietitians and self-help resources (-0.10 mmol/L, 95% CI -0.22, 0.03 mmol/L). CONCLUSIONS: Dietitians appeared to be better than doctors at lowering blood cholesterol in the short to medium term, though the difference was small (about 4%), but there was no evidence that they were better than self-help resources or nurses.

**Willaing I, Ladelund S, Jorgensen T, Simonsen T, Nielsen LM (2004): Nutritional counselling in primary health care: a randomized comparison of an intervention by general practitioner or dietician, *Eur J Cardiovasc Prev Rehabil*, 11(6), 513-520**

AIMS: To compare health effects and risk reduction in two different strategies of nutritional counselling in primary health care for patients at high risk of ischaemic heart disease. METHODS: In a cluster-randomized trial 60 general practitioners (GPs) in the Copenhagen County were randomized to give nutritional counselling or to refer patients to a dietician. Patients were included after opportunistically screening (n=503 patients), and received nutritional counselling by GP or dietician over 12 months. Health effects were measured by changes in weight, waist circumference and blood lipids. Risk of cardiovascular disease was calculated by The Copenhagen Risk Score. Data on use of medicine and primary health care was obtained from central registers. RESULTS: Altogether 339 (67%) patients completed the intervention. Weight loss was larger in the dietician group (mean 4.5 kg vs. 2.4 kg), and increase of HDL-cholesterol was larger in the GP group (mean 0.13 mmol/l vs. 0.03 mmol/l). The reduction of the cardiovascular risk score was significantly larger in the GP group (P=0.0005). Other health outcomes were not significantly different. CONCLUSIONS: GPs were aware of substantial risk factors of cardiovascular disease and addressed these when counselling. The guidance from a GP was of significant importance for risk reduction in relation to IHD. However, a long-term lifestyle intervention by GP was difficult to implement. In the case of obesity it was effective to refer to long-term nutritional counselling by a dietician.