

The socioeconomic value of nursing and midwifery

A rapid systematic review of reviews

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Summary

This report presents the updated findings of a rapid systematic review of reviews which provide evidence of the benefits and costs of nursing and midwifery, both within the healthcare system and wider society. It includes research which evaluates role substitution options, where nurses or midwives take on responsibilities currently undertaken by other health professionals (and vice versa). Division of labour in the health professions is constantly shifting in all directions and it should be noted that role substitution is *not* simply a phenomenon whereby nurses substitute for doctors. The review also includes research evidence useful to the development of cost-benefit and cost-effectiveness analyses. Given the large volume of research on nursing and midwifery, the scope of the review was targeted to three areas: **mental health nursing**, **long-term conditions** and **role substitution**. The review has benefited from advice on its scope from Commissioners, expert advisers to the Commission, the Commission Support Office, and Department of Health policy advisors.

The findings are drawn from 32 systematic reviews conducted in OECD countries, 17 of which were undertaken in the UK. Most relate to care provided by nurses, with only two reviews looking solely at the role of midwives. This imbalance reflects the difficulty of determining the contribution of midwives working in multidisciplinary teams. Indeed it was sometimes difficult to identify nurses' contributions which were often concealed within multi-professional health care teams. Research evidence was included only where we could ascertain what was done and by whom, and to what other types of care it was compared. Particular types of nursing, e.g. paediatric nursing, or school nursing were unlikely to overlap with our three topic areas, and are therefore absent or under-represented.

The included reviews rarely provided **cost** or **cost-effectiveness** data. Whilst their authors had often intended to include such analyses, they were frequently limited in this endeavour due to a lack of data in a useable format in the primary studies they contain.

Despite these methodological barriers, this review found examples of the benefits of nursing and midwifery in **primary care** through **home visiting** interventions, **specialist nursing** and **general practice based nursing** including prevention and treatment. **Hospital at home** and **in-patient care** were also addressed in the included studies. There was evidence of the **benefits** of nursing and midwifery for a range of outcomes. This was accompanied by **no evidence of difference**¹ in impact between nurses and other providers across other outcomes. An important finding of this review was that nursing and midwifery care when compared with other types of care was not shown to produce **adverse outcomes**.

¹ The statement "no evidence of difference" does not indicate an absence of evidence nor does it indicate equivalence between comparison groups. Rather it indicates that statistical tests failed to demonstrate a significant difference between nurse/midwife-delivered interventions and those provided by others. Most studies attempt to demonstrate a difference between groups. Demonstrating equivalence, or no difference, is more difficult and relatively rare as this requires a much larger study.

Key findings

Long term conditions

- Interventions provided by **specialist nurses** or **led by nurses** were shown to have a beneficial impact on a range of outcomes for long term conditions when compared with usual care. Whilst there was little evidence of a difference in clinical benefit of such interventions, there was persuasive evidence that specialised cancer nursing produced benefits in terms of patients' ability to cope with their condition.
- **Enhanced nursing care** for respiratory conditions may result in fewer visits to accident and emergency departments, though there was little evidence of benefit for other outcomes. There may be costs savings associated with nurse-led hospital at home care.
- **General practice nurses** may have some benefit in reducing some of the risk factors for heart disease when compared with usual or no care. Whilst cost estimates were provided, overall cost-effectiveness was unclear.

Mental health

- **Targeted home visiting by nurses and midwives** appears to have a beneficial effect on postnatal depression when compared with routine care.
- No evidence of a difference in effect was found between **home visiting** and no home visiting for the amelioration of drug and alcohol abuse in new and pregnant mothers.
- **Mental health nurse-led** care compared with usual care does not appear to make a difference in overall readmission rates and psychological symptoms in patients without psychosis.

Role comparison

- **Midwife-led care for low-risk women** compared to doctor-led care appears to improve a range of maternal outcomes, to reduce the number of procedures in labour, and increase satisfaction with care. There was no evidence of a differential effect for many maternal, foetal or neonatal outcomes, nor was there evidence of any additional adverse outcomes associated with midwife-led care.
- There is no clear evidence of a differential effect on any outcomes between **nurses as first contact and providers of ongoing primary care**, and doctors, though patient satisfaction may be higher with nurse-led care.
- There is no clear evidence of a differential effect on health status, patient satisfaction, quality of care, or resource use between **nurses as first contact and providers of emergency care**, and doctors, though nurses appear to spend more time with patients.

- There is some evidence of benefit for **nurse-led inpatient units** compared with doctor-led units across some outcomes (functional status, psychological well-being, death or discharge to institutional care, re-admission rates).
- **Nurse-led cancer** care when compared with doctor-led care appears to be beneficial for physical, satisfaction, and organisational outcomes in some types of cancer. No evidence of a difference between providers was found in terms of survival, psychosocial or resource use related outcomes.
- **Nurse-led care for bronchiectasis patients** compared to doctor-led care: there was no evidence of a difference in outcomes (lung function, exercise capacity, infective exacerbations or health-related quality of life). There is some evidence to suggest that **hospital admissions** are higher in nurse-led care.
- **Specialist diabetes nurse care** compared with doctor-delivered care: there was no evidence of a difference in terms of overall glycaemic control though it may be beneficial for patients with poor diabetes control. Evidence about resource use and costs was unclear.
- **Specialist epilepsy nursing** care compared with doctor-led care: there was no evidence of a difference in terms of physical or psychosocial outcomes.
- Secondary prevention care for heart disease provided by **specialist cardiac nurses** and **general practice nurses** compared with general practitioners was found to improve **mortality rates, general health, diet** and levels of **exercise** and **angina symptoms**. Other comparative benefits include increased patient **follow-up rates** and reduced **hospital admissions**.

Cost Effectiveness

- Very little cost-effectiveness data was available for incorporation into this review. This was due to a) the relatively **small numbers of studies** addressing costs or cost-effectiveness, and b) **limitations in reporting** which prevent the use of such data in meta-analyses.

1 Introduction

This report presents the findings of a rapid systematic review of reviews commissioned by the Policy Research Programme at the Department of Health. The rapid review is to inform the work of the Prime Minister's Commission on the Future of Nursing and Midwifery which is due to report in March 2010. The purpose of the Commission, to support nurses and midwives to provide the most effective and efficient healthcare to service users families and communities (Prime Ministers Commission on the Future of Nursing and Midwifery 2010), has international resonance. In particular, it is echoed in the recently launched Initiative on the Future of Nursing (INF) set up in the US to address nursing shortages (Institute of Medicine of the National Academies 2010).

This review of research is intended to contribute to the work of the Commission on the socioeconomic value of nursing and midwifery. The brief was to identify systematic review level evidence of the benefits and costs of nursing and midwifery, both within the healthcare system and wider society. This encompasses research which evaluates role substitution options, where nurses or midwives might potentially take on responsibilities currently undertaken by other health professionals (and vice versa), and research evidence useful to the development of cost-benefit and cost-effectiveness analyses. Given the large volume of research on nursing and midwifery, and following discussion with policy advisors, the scope of the review was targeted to three areas: **mental health nursing, long-term conditions** and **role substitution**.

Mental health nursing is the area of nursing specifically concerned with poor mental health, which may include neuroses, psychoses, psychological and personality disorders. Interventions may be delivered in community health centres, hospitals, specialist units, or at home, and may be delivered in conjunction with general practitioners, psychologists, social workers, psychiatrists, occupational therapists, and healthcare assistants (NHS Careers 2010). A 2008 report for the King's Fund estimated that there are currently 8.65 million people with the mental health problems and projected this figure would increase by 14 per cent by 2026 (McCrone et al. 2008, p17). In 2006/7 NHS organisations budgeted to spend £8.4 billion on mental health services (for all age groups), which accounts for 12.4 per cent of all spending (McCrone et al. 2008, p2). We included studies only if the intervention was delivered by nurses or midwives. No age limitations were applied, with mental health nursing for young people, children and adults all included.

Long-term, or chronic conditions, can encompass a wide range of conditions. Two in five adults in the UK are believed to have a long-term condition (Carluccio 2009 et al. p5). As understood by the Department of Health, chronic illnesses include asthma, diabetes, cancer and cardiovascular disease amongst others (Carluccio 2009 et al. p47-48). Long-term conditions place a significant demand on NHS and private resources (around 80% of GP consultations and over 60% of hospital bed days (Department of Health 2004 p15)). In the UK, a large proportion of morbidity and mortality can be attributed to a relatively small

number of risk factors such as smoking, high-blood pressure, alcohol, high cholesterol and obesity. These factors overlap and will only grow as the population ages.

The final area on which this review focuses is 'role substitution'. This area of the report details the findings of reviews in which nurses or midwives explicitly expand their role into areas usually attended to by other health professionals (including related areas such as social care). Likewise, this area also includes reviews which explicitly investigated the performance of other staff carrying out tasks that were previously considered to be the responsibility of qualified nurses or midwives. Division of labour in the health professions is constantly shifting in all directions and it should be noted that role substitution is *not* simply a phenomenon whereby nurses substitute for doctors.

2 Methods

2.1 Review type

This review is a Systematic Rapid Evidence Assessment (SREA). It is a focused review of reviews with a limited search. The limited time scale of the project and the large body of research literature required that the scope of the review be limited in the following ways:

1. Only systematic reviews were considered for inclusion, making this a review of reviews or a 'meta-review'.
2. Following discussion with policy advisors, the research question was specifically focused on three particular areas: mental health nursing, long-term conditions and role substitution.
3. A specific, as opposed to a sensitive search strategy was developed which employed a limited rather than exhaustive range of search terms. The search for grey literature was restricted to a search of key websites.

Although this is not a comprehensive systematic review, EPPI-Centre tools and guidelines were used throughout the review in a transparent and systematic fashion in order to limit bias at all stages.

2.2 Review question

This rapid review of systematic reviews was conducted to answer the following question: –

What socioeconomic benefits can be attributed to nursing and midwifery with respect to: mental health nursing, long-term conditions, and role substitution?

The following definitions were employed:

2.2.1 Systematic review

A study was considered to be a systematic review if it presented a defined search strategy and explicit inclusion criteria.

2.2.2. Nursing and midwifery

While many studies refer to or include (as participants or intervention deliverers) nurses and midwives, this review was interested only in those which specifically measured benefits and outcomes of nursing and midwifery practice. Nursing and midwifery was defined as any paid employment undertaken by a person with a recognised statutory nursing or midwifery qualification, to deliver interventions not exclusively allocated to nursing, in any health care or home setting. Only studies which specifically investigated impacts of nursing or midwifery by comparing types of nursing/midwifery, or comparing nursing/midwifery with care by other health professionals were included. Nursing was deemed to include health visiting.

2.2.3 Mental health nursing/midwifery

Mental health nursing is the area of nursing specifically concerned with poor mental health, which may include neuroses, psychoses, psychological and personality disorders. Interventions may be delivered in community health centres, hospitals, specialist units, or at home, and may be delivered in conjunction with general practitioners, psychologists, social workers, psychiatrists, occupational therapists, and healthcare assistants (NHS Careers 2010). Reviews were only included if they contained research in which interventions were delivered by nurses or midwives. Only reviews with a specific focus on mental health nursing/midwifery were assigned to this section as it was not possible to include the large number of reviews which included incidental psychological outcomes.

2.2.4 Long-term conditions

Long-term, or chronic conditions, can encompass a wide range of conditions. For a full list, derived from the 2009 Long-term health conditions report from the DH, see Appendix 2 of Carluccio et al. (2009 p47-48).

2.2.5 Role substitution

In order to investigate the changing role of nurses and midwives, this review included reviews about nurses or midwives explicitly expanding their role into areas usually attended to by other health professionals (including related areas such as social care). Likewise, reviews which explicitly investigate the expansion of other staff into what are usually considered to be the responsibilities of qualified nurses or midwives were included. Division of labour in the health professions is constantly shifting in all directions and it should be noted that role substitution is *not* simply a phenomenon whereby nurses substitute for doctors.

Settings such as NHS Direct, where an entire service might be staffed by nurses (in effect a substitution for Accident and Emergency or GP surgeries) were also included. However, the review did not include research which focuses on job characteristics, job attitudes, opportunities for skill use, perceived role clarity, job satisfaction or professional identity. While interprofessional education (IPE) will clearly play a part in the future of role substitution, reviews examining IPE were not included.

2.2.6 Socioeconomic benefits

Reviews of research in which there were quantitative measures of the impact of task/practices/services provided by qualified nurses or midwives on social or clinical outcomes were included. In addition reviews examining the effect of nurses or midwives upon cost-effectiveness, cost-benefit, cost-utility, or other economic outcomes were also included. This included the clinical or social effectiveness of interventions where the benefit was due to the fact that the intervention was delivered by a nurse or midwife rather than another professional. It did not include effectiveness of individual clinical interventions, unless comparing types of nursing or midwifery practice.

2.3 User involvement

The review was developed in conjunction with Commissioners, expert advisers to the Commission, the Commission Support Office and Department of Health policy advisors.

2.4 Identifying relevant reviews

2.4.1 Criteria for considering reviews

To be considered for inclusion in this study, reviews had to:

- Describe a search strategy and criteria for including studies.
- Be published in the English language.
- Be conducted in an OECD country.
- Investigate the clinical or social impact of nursing or midwifery on patients and the public, in the areas of mental health nursing, long-term conditions or role substitution.
- Provide an appropriate comparator i.e. compare outcomes resulting from nursing and midwifery care with: i) other types of nursing or midwifery; ii) care provided by other health professionals, paraprofessionals or lay personnel; iii) usual care; iv) no care.

Inclusion criteria were initially applied to titles and abstracts identified through searching. Where no abstract was available from bibliographic database records, an attempt was made to retrieve the full paper. Studies included on title and abstract alone were subsequently re-screened using the full paper. Further exclusion criteria were applied at later stages in the review (see sections 2.5.1 and 2.5.2). A more detailed account of all exclusion criteria is presented in Appendix 1.

Due to time limitations a cut-off date for searching was established. A number of reviews were either irretrievable or arrived too late to be included in this report - these reviews are presented in Appendix 2.

2.4.2 Search sources

The following bibliographic databases were searched for pertinent systematic reviews:

- British Nursing Index (BNI)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- The Cochrane Library
- Database of Abstracts of Reviews of Effects (DARE)
- Database of promoting health effectiveness reviews (DoPHER)
- Health Management Information Consortium database (HMIC)
- Health Technology Assessment (HTA)
- Midwives Information and Resource Service (MIDIRS)
- National Health Service Economic Evaluation Database (NHS EED)
- Pubmed

These were supplemented with searches of the following websites:

- The Academy of Nursing, Midwifery and Health Visiting Research
www.researchacademy.co.uk
- Community Practitioners and Health Visitors Association
www.amicus-cphva.org/
- Department of Health
www.dh.gov.uk/
- Effective Public Health Practice Project
www.ehphp.ca/systematicreviews.html
- ESRC (Economic and Social Research Council) Society today
www.esrcsocietytoday.ac.uk
- Google Scholar
<http://scholar.google.co.uk/schhp?hl=en>
- Innovation Unit
www.innovation-unit.co.uk
- National Institute of Environmental Health Sciences
www.niehs.nih.gov
- National Nursing Research Unit
<http://publicationslist.org/php/groupPublications.php?g=1106>
- NHS SDO
www.sdo.nihr.ac.uk/
- Nursing and Midwifery Council
www.nmc-uk.org/
- Nursing Health Services Research Unit
www.nhsru.com
- Royal College of Midwives
www.rcm.org.uk
- Royal College of Nursing
www.rcn.org.uk
- Royal College of Nursing in Wales
www.rcn.org.uk/aboutus/wales
- US Center for Disease Control and Prevention: Publications 2004- 2005
www.cdc.gov/nccdphp/dnpa/publications

Citation checking

References from 56 relevant reviews or meta-reviews identified during searching were screened to identify further papers.

Requests to expert informants

Thirty-eight expert informants and authors working in the field of nursing and midwifery were contacted with a request for published and unpublished reviews. These experts were identified through subject-knowledge within our team and by locating key research teams via our searches.

2.4.3 Search strategy

Thesaurus terms were used to capture various concepts, which were combined in the following search string: (nursing OR midwifery) AND (role OR mental health OR chronic disease) AND (review). Where no thesaurus term existed for a concept, free text terms were used in the title and abstract field. Language and date restrictions were not employed. Searches were carried out between 26.08.09 and 30.09.09. Full details of the search strategies employed are shown in Appendix 3.

2.5 Quality assessment, data extraction and synthesis

2.5.1 Quality assessment

Only reviews meeting a minimum quality threshold were considered for data extraction. A quality assessment tool, adapted from that used by Elliot et al. (2001), was employed and incorporated the following parameters:

- Use of a comprehensive search strategy
- Use of explicit inclusion criteria
- Quality assessment of included studies
- Synthesis of findings

Appendix 1 provides full details of the criteria applied. Quality assessment was conducted separately by two reviewers who then met to compare findings. Disagreements were resolved through discussion and the arbitration of a third party where required.

2.5.2 Data extraction

A framework, developed specifically for this review, was used to extract and record information from each review regarding such items as the topic area, care providers, age of the review, country of origin and findings about clinical and social outcomes. Data extraction was conducted separately by two reviewers who then met to compare findings. Disagreements were resolved through discussion and the arbitration of a third party where required.

Since some reviews had scopes that were broader than this rapid review, not all findings were usable. Findings were considered usable when:

- they related to appropriate intervention comparisons (see inclusion criteria above)
- they came from studies that used a prospective controlled trial design
- (except for cost data) review authors reported either a finding of no significant effect, or, when a significant effect was reported, they reported the direction of that effect.

A number of studies were excluded at the data extraction stage due to the fact that data was not presented in a format that allowed us to use it - see Appendix 1 for further details.

2.5.3 Synthesis

The findings from reviews with similar topics were grouped and synthesised using a narrative approach. Where possible, these syntheses presented review authors' pooling of data. Often, authors had presented findings in a narrative form. The individual syntheses for this rapid review often needed to call upon findings from more than one review. As a result, this rapid review's syntheses are themselves narrative in form.

3 Findings

This review includes findings about the socioeconomic benefits of nursing and midwifery with respect to mental health nursing, long-term conditions and role substitution. The findings were contained within thirty-two systematic reviews which were found as a result of the extensive searching and explicit screening processes as described above. Initial searches identified almost two thousand research records, figure 3.1 below, illustrates how these records were sifted to identify those relevant to answer the review question(s).

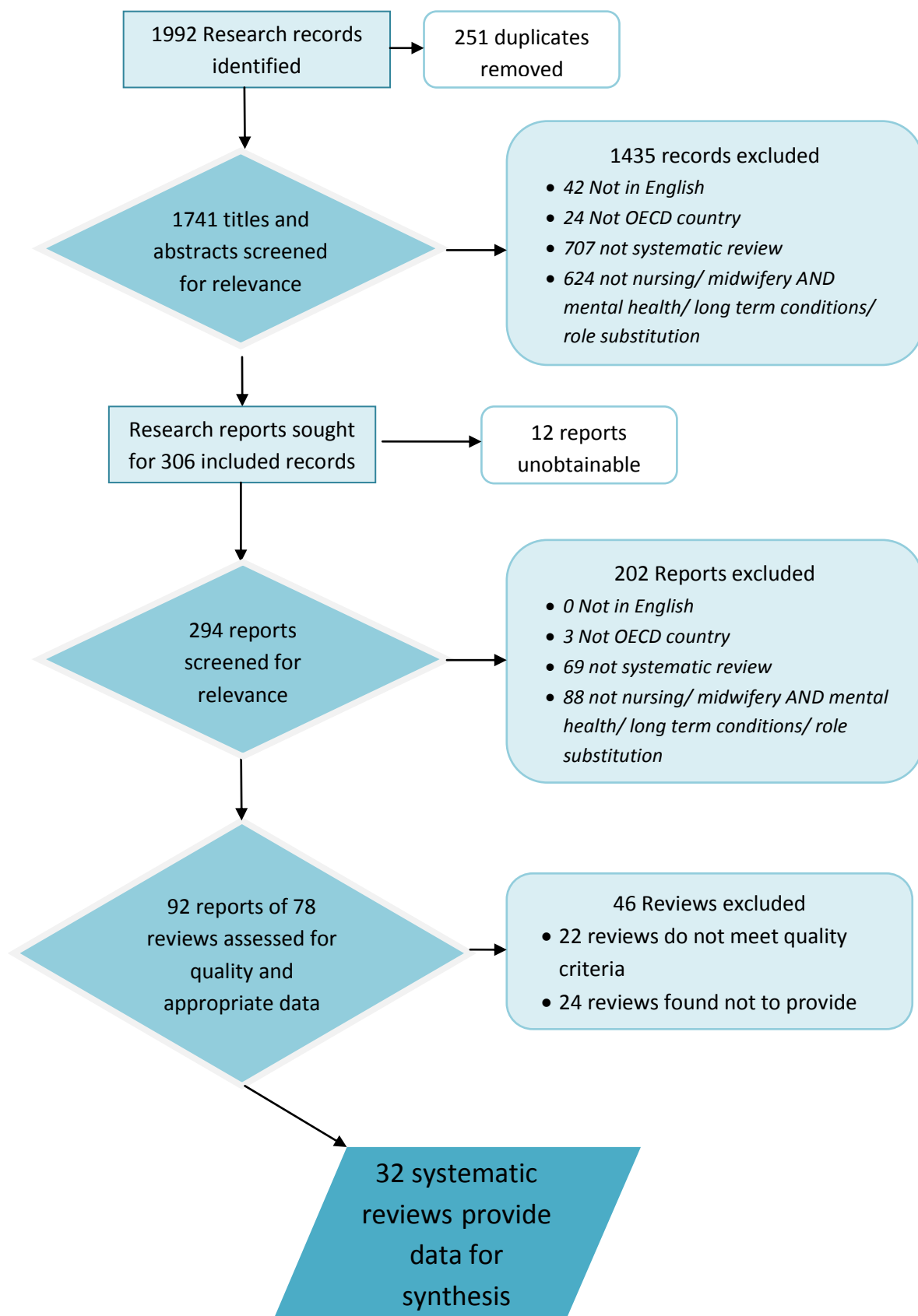
As can be seen from the contents page of this report, most included review's findings related to care provided by nurses and only two reviews looked solely at the role of midwives. Most of the reviews provided findings relevant to the role substitution of doctors by nurses or midwives (n=22) or to long-term conditions (n=18) (see table 3.1 and Appendix 4). Over one third of reviews (n=13) provided findings about role substitution in the care of long term conditions. Only five reviews included findings on the role of nurses or midwives in mental health. Review activity on nursing and midwifery provision is recent and appears to be on the increase. Only four of the reviews were published before the year 2000, and half were published within the last five years.

Table 3.1 Reviews providing findings in each area (N=32 reviews)

Review areas	Number of reviews providing findings
Long-term conditions	17
Mental health	5
Role- substitution	23

The following sections provide a detailed account of the findings within each of the three areas.

Figure 3.1 – Results of searching and screening



3.1 Long term conditions

In this section we present findings drawn from reviews about long-term conditions where nurse care is compared with other nurse delivered care, usual care or no care. The focus of these reviews includes breast cancer and lung cancer care, care for respiratory conditions including chronic obstructive pulmonary disease (COPD), preventive care for heart disease and care provided to patients described as having stable chronic conditions. Further findings related to these and other long term conditions are included in the role substitution section which focuses on research which evaluates whether there is a differential impact on long-term conditions according to health care provider (see section 3.3.6).

3.1.1 Summary of overall findings for long term conditions

When compared with usual nurse care, specialist nursing for cancer has been found to have a positive effect on **psychological** and **organisational** outcomes for breast cancer patients and on **patient experience of symptoms** in lung cancer. Included research found that enhanced nursing care for respiratory conditions may reduce trips to **accident and emergency** departments when compared with usual care, but found no evidence of a difference in effect in relation to **survival**, reducing **hospital re-admission** and improving health related **quality of life** or **psychological well-being**. General practice nurses providing health checks, lifestyle counselling and health education on risk factors for heart disease in a general community population were reported to have a greater beneficial impact than usual care in terms of improvements to **blood pressure**, and **dietary fat intake**. Impact on BMI, cholesterol levels, and smoking was less clear. The included research found no evidence that nurse care had a differential effect to no care on levels of patient reported **excessive alcohol intake** or **physical activity**. There was no evidence of a difference in effect between nurse-led case management and usual care on **functional status** or the number of **emergency department visits** for complex patients with multiple conditions. With respect to **readmissions, duration of hospital stay, quality of life** and **patient satisfaction**, the impact of nurse-led case management for multi-condition patients is unclear. Reported **cost-effectiveness** data were generally unclear though there is some evidence that nurse-led hospital at home care for acute exacerbations of COPD may result in cost savings when compared with in-patient care.

3.1.2 Nursing care for cancer

Comparison: Specialist nursing for cancer compared with non-specialist nursing for cancer.

Number of contributing reviews: 2

Summary of overall findings: Specialist nursing for breast cancer was more effective for psychological and organisational outcomes, when compared with non-specialist nursing. Whilst specialist nursing was sometimes shown to be more effective for social functioning, sometimes there was no evidence of a difference. There was no evidence of a difference in effect on physiological outcomes. Specialist nursing for lung cancer, when compared with non-specialist nursing care, was found to have a positive effect on patients' symptom experience.

Breast cancer

Eicher and colleagues' (2006) review of randomised controlled trials (RCTs) reported the findings of six studies which compared specialist nursing for breast cancer care with non-specialist nursing care. No evidence of a differential effect was found for **physical recovery**, or **pain** (2 studies). In terms of psychological outcomes, specialist nursing resulted in greater improvements than non-specialist care in relation to anxiety (2 studies), **depression** (3 studies) and **psychiatric morbidity** (2 studies). Studies of the effects on **social functioning** were mixed; with three finding that specialist nursing had a greater positive effect on outcomes such as **social reintegration** and **coping**, and one finding no evidence of a difference in effect for **coping**. In terms of organisation of care, specialist nursing was found to result in a higher rate of patients opting for **plastic reconstruction** (1 study), and improved **collaboration in multi-professional teams** (2 studies).

Lung cancer

Sola et al.'s (2004) review of RCTs found specialised nursing for lung cancer resulted in less **symptom distress** when compared with usual care (1 US study).

3.1.3 Nursing care for respiratory conditions

Comparison: Enhanced nursing care for chronic obstructive pulmonary disease, including hospital at home, compared with usual care (care provided in clinics, standard nursing or no care).

Number of contributing reviews: 3

Summary of overall findings: Enhanced nurse-delivered care for chronic obstructive pulmonary disease, when compared with usual care, was more beneficial in terms of fewer patient visits to accident and emergency departments. While there was some evidence that this care reduced days spent in hospital and GP visits, some studies found no evidence of this effect. There was no evidence of a difference for survival, pulmonary function, reducing hospital re-admission, improved health-related quality of life or psychological well-being. Limited evidence suggested that nurse-led hospital at home care resulted in cost savings.

Ram and colleagues included seven RCTs evaluating the efficacy of ‘hospital at home’ schemes compared with in-patient care for patients with acute exacerbations of COPD. Taylor et al.’s (2005) review synthesised a further nine RCTs that evaluated nurse case management interventions. These nine RCTs were divided into two groups, brief intervention after a hospital admission (2 studies, with interventions around one month in duration), and more intensive, or longer intervention (7 studies, with interventions of around a year in length).

Both reviews found no evidence for a difference in **survival rates** (12 RCTs) between enhanced and usual nursing care. When pooling findings for long-term interventions, Taylor and colleagues found no evidence for a difference between enhanced and usual nursing care for improved **pulmonary function** (5 RCTs). Neither review found a difference between enhanced and usual care in reducing **hospital readmissions** (9 RCTs). No evidence of a difference in effect was found for either health related **quality of life** or **psychological well-being**. Taylor et al. (2005) reported that enhanced care led to fewer **visits to accident and emergency** than usual care and that it sometimes, but not always, led to a greater reduction in the number of **days spent in hospital** and **visits to GPs**. Comparative **costs** were reported in the review by Ram and colleagues. However, while four trials reported cost analysis data indicating substantial savings associated with nurse-led hospital at home schemes, tests to establish the statistical significance of these results were not conducted. Consequently, we do not know how robust the observed findings are.

3.1.4 Nursing care for heart disease prevention

Comparison: Nurse-delivered care for treatment or prevention of heart disease compared with no care or usual care.

Number of contributing reviews: 1

Summary of overall findings: Evidence indicated that general practice nurses providing health checks, lifestyle counselling and health education on risk factors for heart disease in a general community population were more beneficial than usual or no care in terms of improvements to blood pressure and dietary fat intake. There appeared to be a beneficial effect on BMI and cholesterol levels, though this finding was less clear. Impact on smoking status was unclear. There was no evidence of a differential effect for patient reported levels of excessive alcohol intake or physical activity between nurse and GP led care. Costs per 1% reduction in coronary risk factor per person ranged from £1.46 - £5.78. What this means in terms of cost-effectiveness is unclear.

One systematic review (Halcomb et al. 2007) synthesised RCTS that examined the effectiveness of general practice nurse interventions in cardiac risk factor reduction amongst adults. Included studies were analysed according to whether they were interventions targeting multiple risk factors for heart disease, or whether they targeted a single risk factor. Three trials provided data relevant to this review, all of which were conducted in the UK. They evaluated nurse-delivered interventions for the prevention of heart disease within the general community in primary care. The interventions involved a range of individual health assessment, lifestyle counselling and health education on risk factors from a practice nurse. Two of the nurse-delivered interventions were compared with no intervention (delayed control groups), and one with usual care.

The results of two RCTs indicated that patients receiving nursing care demonstrated a greater improvement in **blood pressure** than did patients in a waiting list control group. A greater beneficial effect was found on **dietary fat intake** in patients receiving nurse delivered care. The greater reductions in **BMI** and **mean cholesterol levels** at one and four years demonstrated in one UK study, were also found in another study, however the authors of this study did not report whether this difference was statistically significant. The impact of **smoking status** was unclear as one study found a benefit for nursing, whilst the other found no evidence of a difference. There was no evidence of a difference between nurse intervention and no intervention in patient reported **excessive alcohol intake**, or in **vigorous physical activity** in the one study which reported these outcomes.

Two studies presented **cost-effectiveness** analyses based on estimating the cost per 1% reduction in coronary risk factor per person, with one estimating a cost of £1.46-£2.25 per person (cost being nearly twice as much for men) and the other a cost of £5.08 per man and £5.78 per woman.

3.1.5 Nursing care for patients with multiple conditions

Comparison: Nurse-led case management versus usual care.

Number of contributing reviews: 1

Summary of overall findings: With respect to readmissions, duration of hospital stay, quality of life and patient satisfaction, the effects of nurse-led care management for complex ambulatory patients are mixed. There was no evidence of a difference in effect on functional status. Nurse-led case management did not reduce the number of emergency department visits compared to usual care.

Latour et al. (2007) conducted a systematic review of eight RCTs and two controlled before and after studies examining the effect of nurse-led case management for ambulatory, complex patients (those with multiple conditions) in general healthcare. Of eight studies of variable quality which reported the effect of the intervention on **readmissions**, four demonstrated a positive result in favour of nurse-led case management and four found that **readmissions** were not better in this group than the usual care group. Of six studies of variable quality which examined the effect of nurse-led case management on **hospital days**, four reported a positive result in favour of nurse-led case management, whereas two reported no difference in comparison with usual care. One study reported a positive result in favour of nurse-led care management in terms of **quality of life**, whilst three studies showed no evidence of a difference in effect. With respect to **patient satisfaction**, two studies, demonstrated a positive result in favour of case management, whilst another found no difference between groups. A single study found no difference between groups in terms of **functional status**. **Emergency department visit** outcomes were reported in four studies: none of these studies reported a positive effect of nurse-led case-management on the number of visits.

3.2 Mental Healthcare

In this section we present findings drawn from reviews with a mental health focus. Results are presented in two separate sections: midwife care and nursing care. Further findings related to mental health outcomes in pregnancy and childbirth are included in section 3.3, which focuses on research that evaluates differential impact according to health care provider.

3.2.1 Summary of overall findings for mental health nursing

Included research on midwife-delivered social support during pregnancy, when compared with routine care, found no evidence of a difference in effect for **antenatal or postnatal depression**. However, targeted home visiting by nurses when compared with no home visiting, was found to have a beneficial effect on **postnatal depression**. No evidence of a difference in effect was found between home visiting and no home visiting for the amelioration of **drug and alcohol abuse** in new and pregnant mothers. No evidence of a

difference in effect was found on overall **readmission rates** and **psychological** symptoms in patients without psychosis, when mental health nurse delivered care was compared with usual care. There was some evidence that nurse therapists had a beneficial impact on **clinical outcomes** in patients without psychosis, when compared with standard GP care.

Studies examining the effectiveness of home visiting more readily provide a comparison group (usual/no care) than other mental health studies. Thus, we have a preponderance of such studies in this section.

3.2.2 Midwife care for mental health

Comparison: Midwife-delivered social support during pregnancy versus 'routine' care.

Number of contributing reviews: 1

Summary of overall findings: No evidence was found for an effect of midwife-delivered social support for antenatal or postnatal depression.

Hodnett et al. (2000) examined support during pregnancy from a range of providers for women at increased risk of low birthweight babies. Only one RCT (conducted in the UK) provided usable mental health findings. This study compared usual antenatal care plus social support from a research midwife with usual care. The social support consisted of home visits, telephone contacts and on-call support. The study found no evidence of an effect on either **antenatal or postnatal depression**.

3.2.3 Nursing care for mental health

Of the four reviews examining nursing care for mental health, three examined the effects of home visiting the pre- and post-natal period and one examined UK mental health nurse-delivered interventions.

Home visiting in the pre- and postnatal period

Comparison: Home visiting by nurses versus no home visiting.

Number of contributing reviews: 4

Summary of overall findings: Home visiting by nurses targeting postnatal depression, when compared with no home visiting, was beneficial for recovery and the reduction of depressive symptoms. There was no evidence of an effect of home visiting for the amelioration of drug and alcohol abuse in new and pregnant mothers. There was some evidence that nurse therapists had a beneficial impact on clinical outcomes in patients without psychosis, when compared with standard GP care.

Three reviews provided usable data about the effects on mental health outcomes of home visiting by health visitors (Ciliska et al. 2001, Elkan et al. 2000) or nurses (Doggett et al. 2005). The first two of these reviews examined outcomes for women considered at risk of depression, or for women in general. The third focused on women with a drug and alcohol problem.

Ciliska et al. (2001) reviewed home visiting during the pre- and postnatal period. One RCT provided usable data. This was conducted in the UK and compared a targeted counselling intervention by health visitors for women screening positive for post natal depression six weeks postpartum with routine care (not further described). It found that home visiting with counselling resulted in more women **recovering** and a greater reduction for counselled women on all measures of **depression**.

Elkan and colleagues (2000) identified a further two studies (both controlled trials conducted in the UK) which compared the effects of domiciliary health visitors in the postnatal period with routine care (not described further). These also found that health visiting resulted in greater improvements in **depression**.

Doggett et al. (2005) reviewed the effectiveness of home visits during pregnancy and after birth for women with an alcohol or drug problem. Two RCTs conducted in the USA provided usable data for this rapid review. One compared visits by community health nurses with no visits and found no evidence of a difference for **remaining drug free**. The same study also found no evidence of a difference in the reduction of child behavioural problems. The second study compared visits from paediatric nurse specialists with no visits and found no evidence of differential effect on **continued illicit drug use** and **continued alcohol use**.

UK mental health nurse-delivered interventions

Comparison: Mental health nurse-delivered care versus 'routine' care.

Number of contributing reviews: 1

Summary of overall findings: No evidence of a difference of effect between nurse-delivered care and 'routine' care for overall readmission rates and psychological symptoms in patients without psychosis.

Curran and Brooker (2006) reviewed interventions delivered by UK mental health nurses, finding three RCTs that provided usable data for this review. Two of these studies measured overall **readmission rates** and **psychological symptoms** and found no evidence of a difference between nurse-delivered care for non-psychotic patients and routine care.

3.3 Role substitution

In this section we present findings on role substitution drawn from reviews of midwife-led care, nurse-led interventions in primary care, nurse-led inpatient hospital care, and nurse-led interventions for long-term conditions.

3.3.1 Summary of overall findings for role substitution

Midwife-led care

The reviewed research found no evidence of a difference in midwife-led care for low-risk pregnancies when compared with doctor-led care for a range of infant outcomes including **foetal loss** and **neonatal death**. However, midwife-led care has been shown to improve a number of maternal outcomes including **pregnancy induced hypertension**, **spontaneous vaginal birth**, **breastfeeding initiation**, and is associated with fewer procedures during labour (**instrumental deliveries**, **episiotomies**, **use of analgesia** and **anaesthesia**). Midwife-led care also appears to be more effective for reducing **antenatal hospitalization** and **foetal monitoring in labour**, and for increasing women's **satisfaction** with their care. Midwife-led care does not appear to make a difference in relation to **caesarean section**, **malpresentation**, **perineal trauma**, **mean labour length**, **manual removal of the placenta**, **antepartum haemorrhage**, **postpartum haemorrhage**, **anaemia**, **postpartum depression**, **amniotomy**, **induction of labour**, **augmentation of labour**, or **use of intravenous fluids**.

Nurse-led interventions in primary care

Included research provides no clear evidence on the differential effectiveness of nurses as first contact and providers of ongoing primary care to undifferentiated patients, when compared with doctors in relation to patients' **health status**, **knowledge**, **quality of care** or **resource use**, however this research does indicate that **patient satisfaction** is higher for nurse-led care. A similar picture emerges when nurses are the first point of contact for patients seeking urgent care in emergency units or general practice. Whilst there appears to be better **communication** and **record keeping** with nurse-led care, the evidence is unclear in relation to **patient satisfaction** and **quality of care**. Research shows no evidence of a difference with regards to patient **health status** or **resource use**, though nurses appear to spend more **time with patients**. The research provides no evidence about economic **costs**.

Patients in nurse-led inpatient units appear to benefit from improved **functional status** and **psychological well-being**, and are less likely to be **discharged to institutional care** or be **re-admitted** when compared with doctor-led units. There was no evidence of a difference in **clinical symptoms** and **patient satisfaction** when nurse-led care supported by clinical guidelines is compared with doctor-led care.

Nurse-led interventions for long-term conditions

The reviewed research found that lung cancer follow-up care led by nurses as opposed to doctors is beneficial for **physical**, **satisfaction**, and **organisational outcomes**. However, the

evidence is unclear in relation to **organisational** and **satisfaction** outcomes in breast cancer, and for **psychosocial** outcomes in both types of cancer. No evidence was found to support a difference in **physical** outcomes or those related to **survival**, or **resource use**.

The research evidence does not suggest any difference in **lung function**, **exercise capacity**, **infective exacerbations** or **health-related quality of life** when care for bronchiectasis patients is led by nurses as opposed to doctors. However, there is some evidence to suggest that **hospital admissions** are higher in nurse-led care.

Included research showed that overall **patient satisfaction** with care was improved when specialist diabetes nurse care was compared with doctor delivered care. There was no evidence that overall **glycaemic control** improved at 12 months, though there was some evidence of improvement at six months and for patients with poor diabetes control. Evidence about **resource use** and **costs** was unclear. No clear evidence was found to support improvements in **patient satisfaction**, **knowledge** or **anxiety** when care by specialist epilepsy nurses was compared with doctor-led care. The included research did not show any comparative difference on other **physical** or **psychosocial** outcomes.

Specialist cardiac nurses and general practice nurses providing secondary prevention and treatment of heart disease when compared with general practitioner-led care have been seen to improve **mortality rates**, **general health**, **diet** and levels of **exercise** and **angina symptoms**. There are also comparative benefits in terms of applying secondary **preventive measures**, increased patient **follow-up rates** and fewer **hospital admissions**.

3.3.2 Role substitution: Midwife-led care

Comparison: Midwife-led care during pregnancy and after birth compared with doctor-led care.

Number of contributing reviews: 3

Summary of overall findings:

No evidence of a difference between providers was found for infant outcomes, including overall foetal loss and neonatal death.

Midwife-led care demonstrated better maternal outcomes than did doctor-led care with respect to pregnancy induced hypertension, spontaneous vaginal birth and breastfeeding initiation, and less intervention, in terms of instrumental deliveries, episiotomies, use of analgesia and anaesthesia. There was no evidence of a difference between providers with respect to some other maternal outcomes (malpresentation, perineal trauma, mean labour length, antepartum haemorrhage, postpartum haemorrhage, anaemia and postpartum depression) and interventions (caesarean section, amniotomy, induction of labour, augmentation of labour, manual removal of the placenta, use of intravenous fluids). Limited evidence suggests that midwife-led care was beneficial in terms of patient satisfaction and perception of care. Midwife-led care was more likely than doctor-led care to result in attendance at birth by a known midwife. Women receiving midwife-led care were less likely to experience antenatal hospitalization and likely to experience less foetal monitoring in labour. There was no evidence of a difference between providers in terms of mean number of antenatal visits and duration of postnatal stay.

Three meta-analytic reviews compared obstetric outcomes according to type of care provider, pooling results from trials with sufficiently similar outcomes. Brown and Grimes's (1995) meta-analysis included a comparison of nurse midwife (NM) and doctor-led care. Hatem et al. (2008) conducted a meta-analysis of midwife-led care versus other models of care for pregnant women. Villar et al. (2009) conducted a meta-analysis which reviewed patterns of care for pregnant women and found three randomised controlled trials (RCTs) that evaluated the type of care provider. It should be noted that the results from these reviews vary in their applicability to low-risk populations of pregnant women: five RCTS included a mixture of low and high risk obstetric patients and one RCT included high-risk patients only.

Neonatal and infant outcomes

There was no evidence of a difference between midwife-led care and doctor-led care for **infant mortality** and **neonatal death** (Hattem et al. (2008): 10 RCTs).

With respect to physiological outcomes, there was no evidence of a difference between provider in terms of: **admission to a neonatal intensive care unit** (Hattem et al. (2008): 10 RCTs), **preterm birth** (Hattem et al. (2008): 5 RCTs), **neonatal convulsions** (Hattem et al. (2008): 11 RCTs), **foetal distress** (Brown and Grimes (1995): 3 non-randomised controlled trials (CTs)) and **five minute Apgar score of seven or less** (Hattem et al. (2008): 5 RCTs). Evidence was mixed for **low birthweight**, with Hattem et al.'s (2008) meta-analysis of five RCTs finding no evidence for a difference, and Brown and Grimes' (1995) meta-analysis of three CTs finding women receiving midwife-led care gave birth to fewer low birthweight babies.

Maternal outcomes

In terms of **physiological outcomes**, **spontaneous vaginal birth** was more likely with midwife-led than doctor-led care (Hattem et al. (2008): 9 RCTs; Brown and Grimes (1995): 5 CTs). Also found to be better for midwife-led care were: avoidance of **vacuum extraction and/or forceps deliveries** (Hattem et al. (1998): 10 RCTs; Brown and Grimes (1995): 5 CTs), **episiotomies** (Hattem et al. (2008): 11 RCTs; Brown and Grimes (1995): 4 CTs) **regional analgesia/anaesthesia** (Hattem et al. (2008): 11 RCTs), **intrapartum analgesia/anaesthesia** (Hattem et al. (2008): 5RCTs), both **analgesia** and **anaesthesia** (Brown and Grimes (1995): 3 CTs) and **opiate analgesia** (Hattem et al. (2008): 9RCTs). Findings for **pregnancy induced hypertension**, use of **amniotomy** and **perineal injuries** were mixed. Of the two trials with an appropriate comparator within Villar et al. (2009), one small trial did not reach statistical significance. However, a much larger trial demonstrated a significant positive effect on pregnancy induced hypertension compared with standard care. For **amniotomy**, Brown and Grimes' (1995) meta-analysis of three CTs saw fewer amniotomies amongst women receiving midwife-led care, whilst Hattem et al.'s (2008) meta-analysis of three RCTs found no evidence of a difference between providers. **Perineal lacerations** were more likely in women receiving midwife-led care in Brown and Grimes's (1995) meta-analysis of three CTs. However, another two meta-analyses within Hattem et al. (2008) found no evidence of a difference between providers for **perineal laceration requiring suturing** (7 RCTs) and women with an **intact perineum** (8 RCTs). No evidence of a difference between providers was found for **caesarean section** (Hattem et al. (2008): 11 RCTs; Brown and Grimes (1995) 4 CTs), **anteartum haemorrhage** (Hattem et al. (2008): 4 RCTs), **postpartum haemorrhage** (Hattem et al. (2008): 7 RCTs), **induction of labour** (Hattem et al. (2008): 10 RCTs), **augmentation/oxytocin during labour** (Hattem et al. (2008): 10 RCTs), **mean length of labour** (Hattem et al. (2008): 2 RCTs), **manual removal of the placenta** (Brown and Grimes (1995): 3CTs), **use of intravenous fluids** (Brown and Grimes (1995): 3 CTs), **anaemia** (Villar et al. (2009): 1 RCT) and **malpresentation** (Villar et al. (2009): 1RCT).

In terms of **psychosocial outcomes**, women receiving midwife-led care were less likely to experience **antenatal hospitalisation** (Hatem et al. (2008): 5 RCTs). **Breastfeeding initiation** was more likely in women assigned to midwife-led groups (Hatem et al. (2008): 1 RCT) but there was no evidence of a difference between providers in terms of **postpartum depression** (Hatem et al. (2008): 1 RCT), **mean number of antenatal visits** (Hatem et al. (2008): 1 RCT), or **duration of postnatal stay** (Hatem et al. (2008): 2 RCTs).

In terms of **patient satisfaction**, Villar et al. (2009) found that women were more satisfied with their **experience of getting questions answered** (1 RCT) and had a **higher confidence** in midwife-led care (1 RCT). Hatem et al. (2008) found women receiving midwife-led care had a higher **perception of control during labour** (1 RCT).

In terms of **organisation and delivery of care**, women receiving midwife-led care had less **foetal monitoring** (Brown and Grimes (1995): 4CTs), and were more likely to experience **attendance at birth by a known midwife** (Hatem et al. (2008): 6 RCTs).

3.3.3 Role substitution: Nurse-led interventions in primary care – first point of contact for undifferentiated patients

Comparison: Nurse-led interventions compared with doctor-led interventions in primary care, when nurses were the first point of contact and were providers of ongoing care for undifferentiated patients.

Number of contributing reviews: 7

Summary of overall findings: Nurses as first contact and providers of ongoing care, when compared with doctors, were more effective, or not found to be different for patients' health status and knowledge. While there was generally no evidence of a difference in patient satisfaction between nurse-led and doctor-led care, patients were found in one study to be more satisfied with doctor-led care. Nurse-led intervention was in some studies found to result in an enhanced quality of care when compared with doctor-led care. Other studies found no evidence of this effect. While there was generally no evidence of a differential impact on resource use, there was some evidence that nurse-led care resulted in more tests and investigations. No evidence was found for a difference in direct costs.

Seven reviews (Carter and Chochinov 2007, Chapman, 2007, Horrocks et al. 2002, Laurant et al. 2005, Thomas et al. 1998, Van Ruth et al. 2008, Wilson et al. 2009) compared the effectiveness of nurse-led and doctor-led interventions in primary care and provided usable findings from a total of 15 controlled studies. These reviews covered two distinct roles for nurses: i) first contact and provider of ongoing care for undifferentiated patients; ii) first contact for patients wanting urgent attention, or with minor injuries. The second of these roles is addressed in section 3.3.4 of this report.

The Laurant et al. review had sought studies of nurses working as substitutes for primary care doctors and considered both of the above nurse roles. This review was the most recent and contained most, but not all, of the studies found by other reviews. Horrocks et al.'s review focused solely on nurses as first contact for patients with undifferentiated health problems. It found an additional five controlled studies. The Carter and Chochinov, Chapman, and Wilson et al. reviews also found controlled studies, but all of these studies were described in one or more of the other reviews. The findings from these reviews are described immediately below.

The findings of the other two reviews listed above (Thomas et al. 1998; Van Ruth et al. 2008) are presented in section 3.3.5('Nurse-led inpatient hospital care') and section 3.3.6.3('Nurse Specialist diabetes and epilepsy care'). One further review (Brown and Grimes 1995) contained many of the same studies covered above. This review's findings for primary care were not used, however, as it was not possible to determine the review's overlap with other reviews (see section 3.3.2 for this review's other findings, which related to midwife-led care).

25 different measures of patient **health status** in four studies were either found to be better with nurse-led care (2 measures), or provided no evidence of a difference (23 measures).

More than 15 different measures of **patient satisfaction** were used in four studies. One measure found patients to be more satisfied with doctor-led care, the remainder provided no evidence of a difference between doctor-led and nurse-led care. **Patient knowledge** was assessed in one study with three measures, one of which found knowledge to be better with nurse-led care, two of which found no evidence of a difference between providers.

Processes of care (including practitioner healthcare activity/adherence to guidelines and quality of care outcomes) were assessed with 12 measures in four studies. Two measures (in one study) showed nurses to be more likely than a doctor to provide **lifestyle advice**. The remaining measures provided no evidence of a difference between nurse-led and doctor-led care. No evidence was found for a difference in **patient compliance** (2 studies).

In terms of **resource utilization**, no evidence was found for a difference in **consultation rates** (2 studies). **Tests and investigations** were assessed using 22 measures in two studies. Four measures showed nurse-led care to result in more tests and investigations, the remainder provided no evidence of a difference. No evidence was found for a difference in direct **costs** (2 studies).

3.3.4 Role substitution: Nurse-led interventions in primary care – first point of contact for patients wanting urgent attention

Comparison: Nurse-led interventions compared with doctor-led interventions in general practice or emergency units, when nurses were the first point of contact for patients wanting urgent attention.

Number of contributing reviews: 5

Summary of overall findings: Nurses as first contact for urgent patients in general practice, when compared with doctors, led to greater patient satisfaction. While there was often no evidence of a difference in the quality of care, nurse-led care was sometimes found to result in patients being given more information. There was no evidence of a difference in patient health status. While there was generally no evidence of a difference in resource use, for example, in terms of referral rates, or in patients' prescriptions, nurses were more likely than doctors to recall patients for consultations, and nurse consultation lengths were longer than those of doctors. One study found a net reduction for nurse-led care; another found no evidence of a difference.

Nurses as first contact for urgent patients in emergency units, when compared with doctors, led to better record-keeping and communication. There was no evidence of a difference between nurses and doctors in terms of patient health status, patient satisfaction, or in terms of nurse or doctor accuracy in ordering and interpreting x-ray films.

The findings in this section come from many of the same reviews listed in the previous section (Carter and Chochinov, 2007; Chapman, 2004, Horrocks et al. 2002, Laurant et al. 2005, Wilson et al. 2009). As in section 3.3.3, these reviews provided findings about nurse provision of first contact care. However, this care was for patients wanting urgent attention, either from their general practice surgery (5 studies) or, because they had a minor injury, from an emergency unit (3 studies). One of the studies in general practice examined nurse telephone triage.

Urgent care in the general practice surgery

There was no evidence of difference in **health status** between nurse-led and doctor-led care in studies of general practice (4 studies). A meta-analysis showed that **patient satisfaction** was higher with nurses as their first contact, as compared with doctors as first contact (3 studies).

Three studies of nurse- and doctor-led care in general practice assessed a variety of processes, using eight measures. Six measures showed that nurses provided more

information to patients than did doctors. The remainder provided no evidence of a difference between providers.

In terms of resource utilization, meta-analyses of studies of general practice showed that nurses were more likely than doctors to **recall a patient for a consultation** (3 studies), and that there was no evidence of a difference between providers either in **prescribing** (3 studies); or in **referral rates** to hospital (3 studies). **Consultation lengths** were found to be longer (5 studies, one of which was of nurse telephone triage). Usable data on **tests and investigations** were provided by two studies, one of which showed a higher rate for nurses. **Doctors' workload** was found to be reduced by nurse telephone triage (1 study).

Costs were assessed in two studies. The study of nurse triage in general practice found a net reduction with nurse-led care. The other general practice-based study found no evidence for a difference between nurse- and doctor-led care.

Urgent care in the emergency unit

No evidence was found for a difference in **health status** between nurse-led and doctor-led care in an emergency unit (1 study). Three studies comparing **patient satisfaction** with nurse and doctor consultations in emergency units found no evidence of a difference.

In terms of care processes (practitioner healthcare activity/adherence to guidelines and quality of care outcomes), studies of emergency care assessed **record keeping, communication, the appropriateness of investigations, and the ability of providers to interpret x ray films**. Nurse practitioners were found to make more **complete records** and scored better on **communication** than did doctors (2 studies). There was no evidence of a difference in accuracy in **ordering and interpreting x ray films**.

3.3.5 Role substitution: Nurse-led inpatient hospital care

Comparisons:

- Nurse-led intermediate inpatient care compared to usual inpatient care.
- Nurse-led care with supportive protocols/guidelines versus doctor-led care.

Number of contributing reviews: 2

Summary of overall findings: Nurse-led inpatient units (NLU) were more effective than doctor-led care for improving functional status and psychological well-being. Patients in NLU were less likely to be discharged to institutional care and their odds of readmission were reduced. There was no evidence of a difference in survival rates.

There was no evidence found of a difference between nurse-led care supported by the use of clinical guidelines and doctor-led care, either for clinical symptoms or for patient satisfaction.

Two reviews provided findings about the comparative impact of nurse-led and doctor-led care in inpatient hospital settings. Griffiths and colleagues' (2007) review of RCTs and CTs compared nurse-led inpatient care (NLU) to usual care by doctors. Thomas et al. (1998) provided findings from five RCTs about the use of clinical guidelines by nurses who were substituting for doctors.

Griffiths and colleagues' conducted a meta-analytic review, pooling the results of studies with sufficiently similar outcomes. Many of these studies were conducted in the UK. The review examined the preparation of patients for discharge from hospital after an acute phase of illness.

Griffiths et al. (2007) found no evidence of a difference between **survival rates** in patients receiving NLU and usual inpatient care (7 studies). Patients in NLU had a better **functional status at discharge** (6 studies), better odds of **readmission** (5 studies), reduced odds of being **discharged to institutional care** (7 studies), and greater **psychological well-being** (3 studies). A combined outcome of '**death or discharge to institutional care**' was created to account for differences in the number of participants who died that may otherwise have been discharged to nursing homes. The results still indicated that patients receiving care in NLU were less likely to be **discharged to institutional care** (6 studies). When pooling the data from nine studies the results indicated that **length of stay to discharge from hospital** was higher for NLU patients. There was no evidence of a difference in patient satisfaction between NLU and usual care patients (3 studies). Six of the seven studies providing data on **cost** found that the daily expense of care was lower for patients in the NLU.

Thomas and colleagues included five RCTs of hospital settings. These compared usual care led by a doctor with case management and/or referrals by nurses who were supported by practice guidelines. The nurses were **managing dysuria** and **vaginal discharge, lower back pain, headaches, referral for x-ray examination** and **postoperative bleeding after cardiac surgery**. No evidence was found for a difference between providers in **nurse management of clinical symptoms** (5 studies) or **patient satisfaction**

3.3.6 Role substitution for long-term conditions

In this section we present findings drawn from reviews with a focus both on role substitution and long-term conditions. Results are presented in four separate sections covering cancer, respiratory conditions, diabetes/epilepsy, and heart care. Further findings related to long term conditions, where there is no additional focus on role substitution, can be found in section 3.1.

Role substitution: Nurse-led cancer care

Comparison: Nurse-led cancer care at diagnosis and/or follow-up compared with doctor-led cancer care

Number of contributing reviews: 4

Summary of overall findings: Nurse-led breast cancer care at diagnosis and/or follow-up, when compared with care led by a doctor, was sometimes found to be more effective for psychosocial, satisfaction, and organisational outcomes, but sometimes studies showed no evidence of a difference between providers for these outcomes. No evidence of a difference between providers was seen for survival, for physical outcomes or for resource use. Nurse-led lung cancer care at follow-up, when compared with care led by a doctor, was more effective for physical, satisfaction, and organisational outcomes. Sometimes nurse-led lung cancer care was found to be more effective for psychosocial outcomes, whilst other studies showed no evidence of a difference between providers. No evidence was found of a difference in rates of survival for lung cancer patients. No evidence was found that nurse-led prostate cancer care differed from care led by a doctor for either psychosocial or organisational outcomes.

Breast cancer

Nurse-led breast cancer care was compared with doctor-led care in three reviews (Eicher et al. 2006, Lewis et al. 2009, Montgomery et al. 2007). The first of these compared nurse-led care with doctor-led care when patients had a diagnosis of breast cancer. The other two reviews looked at contrasting methods of follow-up, covering breast, lung and prostate cancers (see below for a discussion of lung and prostate cancer).

Reviewers found no evidence of a difference in **survival** (1 study) or **arm functioning** after lymph node clearance (1 study) as a result of nurse-led care. In terms of psychosocial outcomes, one study found nurse-led breast cancer care reduced **levels of uncertainty** in newly diagnosed women and three found no evidence of differences in measures such as **anxiety** or **depression** and/or **quality of life**. Reviewers found either increased **patient satisfaction** with nurse-led breast cancer follow-up (2 studies) or no evidence of a difference in satisfaction between nurse follow-up and doctor follow-up (2 studies). Findings about **organisation of care** were mixed with one study finding that nurse-led breast cancer care resulted in women having more **confidence** of having a **voice in decision-making** and one finding no evidence of a difference between **the quality of nurses and doctor's specialised needle techniques**. The three studies which examined **resource use** found no difference between nurse-led and doctor-led approaches in terms of **number of clinical contacts** (1 study), **charges** and **reimbursements** (1 study) and one unspecified measure of cost (1 study).

Lung cancer

Nurse-led follow-up care of lung cancer patients was compared with doctor-led care in two narrative reviews (Lewis et al. 2009, Sola et al. 2004) using data from five RCTs.

No evidence was found of reduced **survival** as a result of nurse specialist follow-up (1 study). Nurse-led care resulted in better **symptom experiences**, such as reduced **dyspnoea**, less **peripheral neuropathy**, and **distress due to breathlessness** (5 studies). Psychosocial outcomes, such as **emotional functioning**, and **ability to undertake daily living** were found to be better for nurse-led care in three studies whilst another study found no evidence of a difference between providers. One study found greater patient **satisfaction** with nurse-led care compared with doctor-led care. In terms of **organisation of care**, one study found patients who received home-based nurse-led care were **hospitalised** less frequently, and **stayed in hospital** for less time overall, when compared with 'office-based' doctor-led care, although the mean length of any one stay was longer.

Prostate cancer

The review by Lewis and colleagues mentioned earlier in this section also reviewed one study of patients with prostate cancer. This study found no evidence of a difference between nurse-led and doctor-led care for **anxiety**, **depression**, or **time to symptom detection**.

Nurse-led respiratory care

Comparison: Nurse-led care compared with doctor-led care for bronchiectasis patients.

Number of contributing reviews: 1

Summary of overall findings: There was no evidence from the single study in this review to suggest that nurse-led care for bronchiectasis patients were different from doctor-led care in relation to lung function, exercise capacity, infective exacerbations or health-related quality of life. A higher level of hospital admission was seen in the nurse-led care group in this study.

One review aimed to assess whether care for bronchiectasis patients led and/or delivered by nurse specialists resulted in better outcomes for patients and whether this change in healthcare delivery was cost-effective (French et al. 2009). The review found one, cross-over RCT which compared nurse-led care with doctor-led care. The study found no evidence for a difference between nurse- and doctor-led care for **lung function**, **exercise capacity**, **infective exacerbations** or **health-related quality of life**. Patients in the nurse-led care group had higher **hospital admissions** over the trial period. The authors concluded that nurse-led care carries a higher **cost** per patient, however no data or significance tests were reported to support this finding, and methods for cost-effectiveness analysis were not reported.

Role substitution: Nurse-led/Nurse specialist diabetes and epilepsy care

Comparisons:

- Nurse specialist care for diabetes and nurse specialist care for epilepsy compared with doctor delivered care.
- Nurse-led versus doctor-led care for patients with diabetes mellitus.

Number of contributing reviews: 4

Summary of overall findings:

- Patient satisfaction with care was improved, and patients with poor diabetes control had better clinical outcomes from specialist diabetes nurse care, when compared with doctor delivered care. There was no evidence that care via diabetes nurse specialists led to poorer clinical outcomes. Evidence about resource use and costs was mixed.
- Research of a poor quality indicated that patient knowledge was greater amongst diabetes patients receiving nurse-led care, but found no evidence of a difference in change of medication between groups.
- Patient satisfaction with care from epilepsy nurse specialists was higher, or was not found to differ from doctor-led care. Evidence for differences in patient knowledge and anxiety was similarly mixed. No evidence was found of a difference between other physical or psychosocial outcomes.

Diabetes

Three reviews contained findings comparing nurse and doctor delivered care for diabetes. A Cochrane review by Loveman and colleagues (2003) reviewed clinical outcome data from five RCTs and one controlled clinical trial to assess the effectiveness of nurse specialists in managing type I and type II diabetes in adults and children as compared to routine care. A review conducted in the Netherlands by Van Ruth and colleagues (2008) on the effects of nurse prescribing included three further trials examining the effects of nurse specialists caring for people with diabetes. A review by Laurant et al. (2004) contained one further RCT comparing the effectiveness of nurse-led and doctor-led care for diabetes patients. .

Despite an improvement in **glycaemic control** (as measured by HbA1c) in the intervention groups of many of the trials, no between group differences were apparent at 12 months in eight of the nine studies. One study, which measured outcomes at six months, found greater reductions in HbA1c for nurse-led care when this was compared to the group receiving doctor-led care. Subgroup analyses within two of the included studies were able to show positive benefits of the use of a nurse specialist at 12 months. The first of these two studies

reported that at 12 months, patients with poorer baseline levels of HbA1c who received care from a specialist nurse had better **metabolic control** than those receiving routine care. The second study found the proportion of participants with a greater than 10% improvement in HbA1c was significantly higher in the intervention group. No between group differences were found for other outcomes, such as **hypoglycaemic or hyperglycaemic episodes**, or **diabetes-related symptoms** (as perceived by patients). **Patient satisfaction** was, however, greater for care provided by a prescribing nurse than for care by a doctor (2 studies). One study with methodological limitations indicated that patient knowledge was greater as a result of nurse-led care. While there was generally no evidence of difference between providers, one study indicated that the **quality of care** delivered by nurses was superior to that provided by doctors for most indicators and another found no evidence of a difference in changed medication.

Findings about resource utilization were mixed. No evidence was found of a difference between nurse specialist and doctor-led care in terms of **emergency room visits or hospitalisations** (2 studies), however a separate study found that the number of **consultations** delivered by nurses was higher and that the independent treatment of patients by a prescribing nurse reduced **GP workload** by a total of about 47 hours over a 14 month period. Findings regarding the impact of prescribing nurses on **consultation times** were mixed, with one study indicating that nurse delivered consultations were longer and another finding no evidence of difference between providers. Evidence about **costs** was also mixed. Costs incurred for personnel, for laboratory tests and for cholesterol lowering medication were lower for the group of patients being treated and prescribed for by the specialist nurse but costs incurred for glucose medication and blood pressure medication were the same in both groups (1 study).

Epilepsy

A Cochrane review of RCTs by Bradley and Lindsay (2008) examined the effectiveness of any specialised or dedicated intervention for the care of adults with epilepsy, as compared with usual care. Findings were available from five studies of nurse specialists. An earlier review (Meads et al. 2001) drew on the same pool of studies and arrived at the same conclusions review, and so is not discussed further.

No evidence of a difference was found between nurse specialist and doctor-led care for **frequency of seizures** (2 studies), **other measures of health status** (2 studies) **self-management outcomes** (1 study) or **health related quality of life** (2 studies). Three studies measured **anxiety**, finding no evidence of a difference between providers. However, subgroup analysis in one study revealed that those participants in the nurse-led group who had not had a seizure in the previous six months had a reduced risk of **depression** compared to those in the doctor-led group. Only one of three studies measuring **patient knowledge** found improvements in the specialist nursing group compared to the doctor-led care group. In the other two studies there was no evidence of a difference. Two of three studies measuring **patient satisfaction** found greater satisfaction in the nurse-led group, the other two studies found no evidence of a difference.

Role substitution: Nurse-led heart care

Comparisons:

- Specialist cardiac nurses or general practice nurse-led secondary prevention and treatment of heart disease compared with general practitioner (GP) led care.
- Nurse-delivered smoking cessation interventions versus those provided by general practitioners and other providers.
- Nurse-delivered dietary advice versus dietician-delivered dietary advice.

Number of contributing reviews: 5

Summary of overall findings: When compared with general practitioner-led care, specialist cardiac nurses and general practice nurses providing secondary prevention and treatment of heart disease improved mortality rates, general health, diet and levels of exercise and angina symptoms. Comparatively, they were also better at applying secondary preventive measures, had greater patient follow-up rates and their patients had lower numbers of hospital admissions.

No evidence was found for a difference between nurse-led and GP-led care in blood pressure or cholesterol levels or prescribing rates

There was no evidence of a difference, in terms of patient smoking status, between nurses and other providers undertaking smoking cessation interventions.

There was no evidence of a difference of effect between nurse-delivered and dietician-delivered dietary advice.

Five reviews synthesised RCTS examining the effectiveness of nurse provided care compared with other providers on outcomes related to cardiovascular health (Halcomb et al. 2007, Mojica et al. 2004, Page et al. 2005, Laurant et al. 2004, Thompson et al. 2003). Three RCTs within Halcomb et al. and Page et al. (all conducted in the UK) examined impacts on multiple coronary heart disease (CHD) risk factors. Mojica and colleagues' review (of RCTs from a variety of countries) evaluated the effectiveness of smoking cessation interventions amongst different providers. The review by Laurant et al. (2004) contained one further RCT which examined prescriptions for patients with CHD. The review by Thompson et al. (2003) provided one RCT comparing cholesterol levels in nurse and dietician-advised patients.

All of the three RCTs studying multiple risk factors compared nurse-led care with usual care by a general practitioner. Two studies examined nurse-led secondary prevention of coronary heart disease (CHD) in patients with established heart disease, and the other examined

specialist cardiac nurse-run hypertension clinics for people with angina or a recent myocardial infarction.

These studies of CHD patients found patients in the nurse-led care group had a lower **cumulative death rate** (1 study), had a better overall **general health** status including physical and social functioning, emotional and physical role, and pain management (1 study), had fewer **angina symptoms** (1 study), and better **diet** and **levels of exercise** (1 study) than did those in a GP-led care group. No evidence was found of a difference between provider for **systolic and diastolic blood pressure** at 12 months, or for **cholesterol levels**.

Two studies which measured smoking status in patients with CHD found no evidence of a difference in **smoking status** between patients who received nurse-led care compared with patients whose care was led by doctors. This finding was similar to that of Mojica and colleagues' review of smoking cessation by type of provider. This found that smoking cessation interventions without nicotine replacement therapy were effective in reducing **smoking prevalence**, whether they were delivered by psychologists, doctors or nurses, with no evidence of a difference between providers.

There was no evidence of difference between the nursing and GP groups in relation to **anxiety or depression**, and levels of **untreated hypertension** in one study. The same study found that patients in the nursing group were statistically more likely to attend **follow-up** sessions at both four months and one year.

Also in terms of the quality of care, two studies found that patients in nurse-led care groups were less likely to be **admitted to hospital** at four and twelve month follow-up, however it was unclear in one study whether this was statistically significant. Two studies assessed the **adequacy of cardiac risk factor assessment**. There was no evidence of a difference between nurses and doctors in the adequacy of assessment of blood pressure, cholesterol and smoking status. There was some evidence in these studies that nurses were more likely than doctors to record pulse rate, weight and conduct urinalysis. One study found that all but one specific target for the **appropriate application of secondary prevention** including administration of aspirin, evaluation and management of blood pressure, lipids, exercise and diet improved more at one year in the nurse-led group when compared to those whose care was led by GPs. One further study found no evidence of a difference between providers with respect to the **prescribing rates** of antihypertensives, lipid lowering drugs or antiplatelet drugs.

In a meta-analytic review of 12 RCTs examining dietary advice given by a dietician versus other health professional or self-help resources to reduce blood cholesterol, Thompson et al. (2003) included one RCT which contained a subgroup analysis comparing dieticians and nurses. This RCT found no evidence of a difference between nurse and dietician-advised patients with high cholesterol in terms of blood cholesterol level at six month follow-up.

Role substitution: Nurse-led care for patients with stable chronic conditions

Comparison: Nurse-led care versus doctor-led care for patients with stable chronic conditions

Number of contributing reviews: 1

Summary of overall findings: Patient satisfaction was found to be significantly higher in the patients receiving nurse-led care as opposed to doctor-led care. There was no evidence of a difference between nurse-led and doctor-led care with respect to patient compliance and direct cost of care.

Laurant et al. (2004) conducted a review of substitution of doctors by nurses in primary care which contained one small RCT comparing care for patients with stable chronic conditions. There was no evidence of a difference between groups with respect to **patient compliance** or **direct cost of care**. **Patient satisfaction** was found to be significantly higher in the patients receiving nurse-led care.

4 Discussion and Conclusions

4.1 Key findings

4.1.1 Long term conditions

- Interventions provided by **specialist nurses** or **led by nurses** were shown to have a beneficial impact on a range of outcomes for long term conditions when compared with usual care. Whilst there was little evidence of a difference in the clinical benefit of such interventions, there was persuasive evidence that specialised cancer nursing produced benefits in terms of patients' ability to cope with their condition.
- **Enhanced nursing care** for respiratory conditions may result in fewer visits to accident and emergency departments, though there was little evidence of benefit for other outcomes. There may be costs savings associated with nurse-led hospital at home care.
- **General practice nurses** may have some benefit in reducing some of the risk factors for heart disease when compared with usual or no care. Whilst cost estimates were provided, overall cost-effectiveness was unclear.

4.1.2 Mental health

- **Targeted home visiting by nurses and midwives** appears to have a beneficial effect on postnatal depression.
- No evidence of an effect was found for **home visiting** for the amelioration of drug and alcohol abuse in new and pregnant mothers.
- **Mental health nurse-led** care compared with usual care does not appear to make a difference in overall readmission rates and psychological symptoms in patients without psychosis.

4.1.3 Role substitution

- **Midwife-led care for low-risk women** compared to doctor-led care appears to improve a range of maternal outcomes, to reduce the number of procedures in labour, and increase satisfaction with care. There was no evidence of a differential effect for many maternal, foetal or neonatal outcomes, nor evidence of any additional adverse outcomes associated with midwife-led care.
- There is no clear evidence of a differential effect on any outcomes between **nurses as first contact and providers of ongoing primary care**, and doctors, though patient satisfaction may be higher with nurse-led care.
- There is no clear evidence of a differential effect on health status, patient satisfaction, quality of care, or resource use between **nurses as first contact and providers of emergency care**, and doctors, though nurses appear to spend more time with patients.
- There is some evidence of benefit for **nurse-led inpatient units** compared with doctor-led units across some outcomes (functional status, psychological well-being, death or discharge to institutional care, re-admission rates).

- **Nurse-led cancer** care compared with doctor-led care appears to be beneficial for physical, satisfaction, and organisational outcomes in some types of cancer. No evidence of a difference was found in terms of survival, psychosocial or resource use related outcomes.
- **Nurse-led care for bronchiectasis patients** compared to doctor-led care does not appear to result in different outcomes (lung function, exercise capacity, infective exacerbations or health-related quality of life). There is some evidence to suggest that **hospital admissions** are higher in nurse-led care.
- **Specialist diabetes nurse care** compared with doctor-delivered care: no evidence of a differential impact on overall glycaemic control though it may be beneficial for patients with poor diabetes control. Evidence about resource use and costs was unclear.
- **Specialist epilepsy nursing** care compared with doctor-led care: no evidence of a differential impact upon physical or psychosocial outcomes.
- Secondary prevention care for heart disease provided by **specialist cardiac nurses** and **general practice nurses** compared with general practitioners was found to improve mortality rates, general health, diet and levels of exercise and angina symptoms. Other comparative benefits include increased patient follow-up rates and reduced hospital admissions.

Cost Effectiveness

- Very little cost-effectiveness data was available for incorporation into this review. This was due to a) the relatively **small numbers of studies** addressing costs or cost-effectiveness, and b) **limitations in reporting** which prevent the use of such data in meta-analyses.

4.2 Strengths and limitations

The strength of this rapid systematic review lies in the fact that it has been conducted in accordance with key systematic review principles to ensure that it is transparent, replicable and updateable. The explicit reporting of methods and storage of extracted data online ensures that it can also be subject to critical appraisal.

All included systematic reviews were critically appraised independently by two reviewers with a final judgement being agreed through mutual discussion. Only reviews which met all quality criteria were included, therefore we are confident that findings of this review are based on sound evidence (see *Chapter 2: Methods* for more details).

One of the challenges lay in the varied and overlapping scopes of our set of systematic reviews. Many of the reviews had included studies that were also found in one or more of the other reviews. In order to avoid bias from double counting of findings we checked for overlap between reviews and tried to ensure that each study's findings were only represented at one point in the review.

Nevertheless, there are limitations to this review, some of which reflect the limits of any review of reviews, and others which are specific to this rapid systematic review of reviews.

Given that the nursing and midwifery literature was extensive, it was necessary to limit the scope of the review. This review focuses on three specific topics: mental health nursing, long term conditions and role substitution: it does not examine the socioeconomic value of nursing and midwifery in its entirety. Particular types of nursing e.g. paediatric nursing, which are unlikely to overlap with the above topics are therefore absent or under-represented. Because old age was not considered to be a long term condition, geriatric nursing is also largely absent from the review.

A limitation of the review lay in our having to impose our conceptual framework (effectiveness of providers) onto reviews which were often concerned primarily with the effectiveness of interventions. We needed to know not only what was being done in intervention and control groups but by whom. Reporting in relation to provider of care was understandably sparse in reviews where it was not the focus of the original paper and we were, as a result, unable to include these reviews.

Although authors of primary studies often report costs or cost-effectiveness, it is rarely the case that they provide data in a format which can be used within systematic reviews. Therefore, the presence of reliable cost-effectiveness data within reviews of reviews, including this one, is rare. Both Brown and Grimes (1995) and Dierick-van Daele et al. (2008) have discussed the challenges in obtaining cost-effectiveness data for systematic review. The latter of these studies gives a comprehensive description of the difficulties experienced in obtaining data for a review of economic evaluations of substitution of skills between health professionals.

In order to determine the effectiveness of nurses it was necessary to have a comparison group. Multidisciplinary interventions, where nurses play a key role, are under-represented in this review. We could only include reviews describing multidisciplinary interventions where the contribution of nursing or midwifery staff in both intervention and control groups was clearly delineated. This was rarely the case.

Conducting a review of reviews has enabled us to cover a broader scope than would otherwise be possible in the limited time-frame. However the act of synthesising evidence from published systematic reviews means that we will have missed studies which have yet to be reviewed. This is likely to include recently published primary studies and studies on topics that may not be amenable to review methodology.

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Appendix 1: Screening stages

Stage	Criterion	Rationale
Stage 1 – Screen reviews for relevance	Reviews must:-	
	Describe a search strategy and criteria for including studies	To ensure included reviews have taken reasonable steps to minimise bias
	Be published in English	The short timescale of this rapid review of evidence did not allow for translation of studies published in other languages.
	Be conducted in and include studies conducted in OECD countries	As the purpose of this review is to inform UK practice this criterion ensures a reasonable level of comparability with the modern and well funded health system in the UK.
	Investigate the clinical, social or economic impact of nursing or midwifery, in the areas of mental health nursing, long-term conditions or role substitution	To ensure that reviews focus on the topic(s) of interest.
	Provide an appropriate comparator i.e. compare outcomes resulting from nursing and midwifery care with: i) other types of nursing or midwifery; ii) care provided by other health professionals, paraprofessionals or lay personnel; iii) usual care; iv) no care	To ensure that included studies demonstrate how nursing/midwifery care compares to alternatives, including no care.
Stage 2 – Screen reviews for quality	Use a comprehensive search strategy involving two or more appropriate electronic databases	To ensure inclusion of comprehensive reviews.
	Explicitly describe the inclusion criteria applied to studies in the review	To ensure that reviews are systematic rather than selective i.e. to remove any ambiguity about the scope of included reviews so it is clear what evidence they contribute to this rapid evidence assessment.
	Describe either a formal quality assessment of studies in the review or apply quality inclusion criteria (i.e. restricting to RCTs only)	To ensure the evidence reported in included reviews is reasonably trustworthy.

	Group together the results of two or more studies and report the direction of the findings from this pooled group	Reviews are not used as a source of individual primary studies: in the time available it is not possible to synthesize or meta-analyse the findings from individual studies within reviews. However, reviews containing only one primary study are not excluded.
Stage 3 – Screen reviews for usable data	Provide details of the providers and comparisons for individual studies and allows determination that outcomes are directly attributable to nurses.	To enable the identification of evidence which is clearly about the impact of nursing and midwifery.
	Provide details of the direction of effect and statistical significance of data.	To enable reviewers to interpret evidence about the impact of nursing and midwifery.
	Not be a review of reviews.	The reporting of such research makes it impossible to interpret relevance of findings for our review.

Appendix 2: Reviews sourced after the cut-off date/not retrieved.

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Appendix 3: Search strategies

1. BNI (BRITISH NURSING INDEX AND ARCHIVE)

Searched on 26.08.09

Search #	Terms	Hits
FINAL SEARCH	#20 DEDUPLICATED	(58)
#20	18 and 19 and 17	(62)
#19	8 or 6 or 4 or 3 or 7 or 14 or 5 (25001)	(25001)
#18	11 or 13 or 10 or 9 or 12 or 15	(1356)
#17	1 or 16 or 2	(91728)
#16	(nurse or nursing or midwife or midwifery).ti,ab.	(56462)
#15	"synthesis".ti,ab.	(143)
#14	("patient* outcome*" or "patient* satisfaction" or "mental health" or "chronic disease" or "chronic illness" or "role exten*" or "role substitution" or "quality of care" or "quality assurance").ti,ab.	(10587)
#13	(meta-analysis or meta-analysis).ti,ab.	(252)
#12	(meta-analysis or meta-analysis).ti,ab.	(252)
#11	"evidence review".ti,ab.	(9)
#10	"systematic* search* ".ti,ab.	(5)
#9	"systematic* review* ".ab,ti.	(1042)
#8	("quality of nursing practice" or "quality of nursing" or quality assurance in health services or quality assurance or "quality of patient care" or quality assurance in nursing).sh.	(3279)
#7	(patient welfare or patients empowerment or patient outcomes or patients welfare or patient satisfaction or "patients attitudes and perceptions").sh.	(7034)
#6	"cost effectiveness".sh.	(5)
#5	"role of the nurse".sh. or role.hw.	(4186)
#4	(chronically sick people or chronic disease or chronic illness or chronically sick children).sh. (1082)	
#3	(mental health services or mental health nursing or mental health or mental illness or mentally ill people or mental health community care).sh.	(4267)

#2	midwifery education.sh. or midwifery.hw. or midwifery health services.sh. or midwives.sh. or midwifery profession.sh. or midwife tutors.sh. or midwifery standards.sh. or midwife patient relations.sh. or midwifery.sh. or midwife.hw. or midwives.hw. or midwifery role.sh. or midwifery models.sh. or midwifery community.sh.	(5349)
#1	nursing.hw. or nurse practitioner.sh. or nursing care.sh. or nurse managers.sh. or nurse staffing.sh. or nurse educators.sh. or nurse doctor relationship.sh. or nurse supply.sh. or nurse.hw. or nurse prescribing.sh. or "nursing care and practice s f".sh. or nurse led clinics.sh. or nurse leaders.sh. or nursing.sh. or nurse patient relations.sh. or nurse practitioners.sh. or nurse specialist.sh. or "nursing care standards and evaluation".sh. or nursing care delivery systems.sh. or "nursing assessment and diagnosis".sh. or nurse patient relationship.sh. or "nursing care and practice".sh.	(69536)

2. CINAHL (Cumulative Index to Nursing and Allied Health Literature)

Searched on 26.08.09

Search #	Terms	Hits
FINAL SEARCH	~8 AND #12 AND #26	270
#26	#13/OR#25	281075
#25	(TI "patient W1 outcomes") or (AB "patient W1 outcomes") or (TI "patient satisfaction") or (AB "patient W1 satisfaction")	1567
#24	(MM "Costs and Cost Analysis+") or (MM "Cost Benefit Analysis") or (MM "Health Care Costs+")	13309
#23	(MH "patient satisfaction") or (MH "quality of life")	43816
#22	MH health care delivery	16801
#21	(MH "quality assurance") or (MH "quality of care research")	10200
#20	MH organizational efficiency+	13394
#19	MH "professional competence"	6295
#18	(MH "nursing role")	28284
#17	(MM "Outcomes (Health Care)")	6057

#16	(MM "Nursing Care+")	140982
#15	(MM "Nursing Outcomes")	999
#14	(MH "chronic disease")	20571
#13	(MH "mental health") OR (MH "community mental health nursing")	9724
#12	#9/OR #11	11912
#11	MH "systematic review"	5104
#10	AB systematic W1 review	4199
#9	TI systematic W1 review	5702
#8	#1/OR#7	309270
#7	MH nursing role	28284
#6	MH nursing practice+	29772
#5	TI (midwif* OR nurs*)	221338
#4	MH midwives+	4737
#3	MH Faculty, nursing	8325
#2	MH nursing manpower+	127434
#1	MH nurse+	115469

3. A) Cochrane Library of Systematic reviews

B) NHS EED (Economic evaluation Database)

C) DARE (Database of promoting health effectiveness reviews)

D) HTA (Health Technology Assessment)

Searched on 21.08.09

Search #	Search	Hits
		N=346
FINAL SEARCH	#35 with additional 'review' filter (index term) for NHS EED	HTA N=46 Cochrane N=108 DARE N=175 NHS EED N=17
#35	#34 de-duplicated (internally)	N=831 HTA N=46 Cochrane N=108 DARE N=175 NHS EED N=502
#34	(#32 AND #33)	N=867 HTA N=46 Cochrane N=144 DARE N=175 NHS EED N=502
#33	(#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31)	33672
#32	(#3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #22)	1034

#31	"quality of life"	22170
#30	"patient satisfaction"	8437
#29	quality of life	26159
#28	MeSH descriptor Quality of Life explode all trees	9736
#27	MeSH descriptor Patient Satisfaction explode all trees	5973
#26	MeSH descriptor Quality Assurance, Health Care explode all trees	3251
#25	MeSH descriptor Professional Practice explode all trees	3092
#24	MeSH descriptor Personnel Management explode all trees	1487
#23	MeSH descriptor Models, Organizational explode all trees	195
#22	MeSH descriptor Nursing explode all trees	2400
#21	MeSH descriptor Efficiency, Organizational, this term only	261
#20	MeSH descriptor Decision Making, Organizational, this term only	134
#19	MeSH descriptor Delivery of Health Care explode all trees	32697
#19	MeSH descriptor Delivery of Health Care explode all trees	32697
#18	MeSH descriptor Costs and Cost Analysis explode all trees	28312
#17	MeSH descriptor Professional Competence explode all trees	1211
#16	MeSH descriptor Role explode all trees	847
#15	MeSH descriptor Clinical Governance explode all trees	0
#14	MeSH descriptor Models, Nursing explode all trees	159
#13	MeSH descriptor Leadership explode all trees	79
#12	MeSH descriptor Chronic Disease explode all trees	8798
#11	MeSH descriptor Mental Disorders explode all trees	32032
#10	MeSH descriptor Mental Health explode all trees	366

#9	MeSH descriptor Nurses' Aides explode all trees	41
#8	MeSH descriptor Faculty, Nursing explode all trees	9
#7	MeSH descriptor Health Manpower explode all trees	16
#6	MeSH descriptor Allied Health Personnel explode all trees	446
#5	MeSH descriptor Nursing Staff explode all trees	445
#4	MeSH descriptor Nurses explode all trees	758
#3	(#1 OR #2)	361
#2	midwi* in Cochrane Reviews, Other Reviews, Technology Assessments and Economic Evaluations	361
#1	midwife* in Cochrane Reviews, Other Reviews, Technology Assessments and Economic Evaluations	287

4. DoPHER (Database of promoting health effectiveness reviews)

Searched on 26.08.09 N=174

Free text terms: (nurse OR nurses OR nursing OR midwife OR midwives OR midwifery).

5. HMIC (Health Management Information Consortium)

Searched on 02.09.09

Search	Terms	Hits
FINAL SEARCH	4 and 3	(89)
#4	systematic reviews.sh.	(1794)
#3	1 or 2	(37359)
#2	midwives.hw. or midwifery.sh. or midwife.hw. or midwives.sh. or midwifery.hw. or midwifery services.sh.	(3566)
#1	nurses.hw. or nursing.sh. or nursing.hw. or nurse practitioners.sh. or nurse led services.sh. or nurse prescribing.sh. or nurse consultants.sh. or nursing economics.sh. or nurse therapists.sh. or nurse relative relations.sh. or nurse doctor patient relations.sh. or nurse.hw. or nurse managers.sh. or nurse professional relations.sh.	(35676)

6. MIDIRS (Midwives Information and Resource Service)

Searched 30.09.09. N = 119.

(mental or psychological or psychiatric or chronic or longterm or long-term or role or roles or personnel or profession or professional or organization or organizational or organisation or organisational or model or models or substitution or expansion or expanding) and (cost or costs or outcome or outcomes or quality or patient satisfaction or assessment or impact or effect or effectiveness or evaluation or evaluating) and (meta-analysis or systematic review) and (nurse or nurses or nursing or midwife or midwives or midwifery or allied)

7. PubMed

Searched on 26.08.09 N = 726.

Search	Terms	Hits
FINAL SEARCH	Search #24 AND #25	726
#26	Search (#23 AND (#21 or #19)) AND #25	134
#25	Search "Review"[Publication Type] OR "meta-analysis"[tw] OR "review"[Publication Type] OR "systematic review"[tw] OR "evidence review"[tw] OR "systematic overview"[tw] OR "systematic*" [All Fields] OR "systematic synthesis"[tw]	1548293
#24	Search #23 AND #22	5453
#23	Search #1 or #2 or #3 or #4 or #5 or #6	294220
#22	Search #21 or #20	1832539
#21	Search #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18	1731054
#20	Search "Costs and Cost Analysis"[Mesh]	143169
#19	Search "Health Care Costs"[Mesh]	33063
#18	Search "Outcome Assessment (Health Care)"[Mesh]	427457
#17	Search "Quality of Life"[Mesh]	75783
#16	Search "Patient Satisfaction"[Mesh]	40175
#15	Search "Personnel Management"[Mesh]	102924
#14	Search "Professional Practice"[Mesh]	188000

#13	Search "Decision Making, Organizational"[Mesh]	9430
#12	Search "Professional Competence"[Mesh]	60579
#11	Search "Role"[Mesh]	71846
#10	Search "Models, Nursing"[Mesh]	9322
#9	Search "Chronic Disease"[Mesh]	183759
#8	Search "Mental Disorders"[Mesh]	738503
#7	Search "Mental Health"[Mesh]	14651
#6	Search "Allied Health Personnel"[Mesh]	35317
#5	Search "Nursing Staff"[Mesh]	45995
#4	Search "Nursing"[Mesh]	191874
#3	Search "Nurses"[Mesh]	59133
#2	Search "Nurse Midwives"[Mesh]	5362
#1	Search "Midwifery"[Mesh]	11524

Appendix 4: Characteristics of included studies

Paper	Review aims	Reviewer base	Intervention	Comparison	Areas
Bradley and Lindsay (2008)	<i>To compare the effectiveness of any specialised or dedicated intervention for the care of adults with epilepsy to the effectiveness of usual care.</i>	UK	Epilepsy Nurse Specialists	Usual care	Role substitution (Long-term conditions)
Brown and Grimes (1995)	<i>To compare effects of nurse-provided care with those of physician-provided care for equivalent clients in similar settings.</i>	USA	Nurse-led primary care Midwife-led obstetrical care	Physician primary care Physician obstetrical care	Role substitution (Midwife-led care)
Carter and Chochinov (2007)	<i>To determine the impact of nurse practitioners on cost, quality of care, satisfaction and wait times in the emergency department.</i>	Canada/USA	Nurse- delivered care in emergency departments	Physician-led care in emergency departments	Role substitution (Primary care)
Chapman (2004)	<i>To review the evidence of seven recent innovations in service provision to improve access or equity in access to primary care</i>	UK	Nurse-led triage and telephone consultations in general practice Nurse practitioner-led care in general practice	GP provided primary care	Role substitution (Primary care)

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Ciliska et al. (2001)	<i>To answer the question: What is the effectiveness of public health nursing interventions for prenatal and postnatal clients offered through the strategy of home visiting?</i>	Canada	Home visiting in the pre- and post-natal period	Usual care	Mental Health
Curran and Brooker (2006)	<i>What is the contribution of UK mental health nurses to the literature on effective psychological interventions that have been evaluated in randomised controlled trials?</i>	UK	Mental health nurse-led care	Usual care	Mental Health
Doggett et al. (2005)	<i>To determine the effects of home visits both during pregnancy and after birth for women with an alcohol or other drug problem.</i>	Australia	Home visiting in the pre- and post-natal period	Usual care	Mental Health
Eicher et al. (2006)	<i>To examine the effectiveness of specialised nursing in breast cancer care.</i>	Germany/ Switzerland	Specialised nursing for breast cancer	Usual nursing/Physician- led care	Long-term conditions Role substitution (Long term conditions)
Elkan et al. (2000)	<i>To conduct a systematic review of the effectiveness and cost-effectiveness of domiciliary health visiting.</i>	UK	Home visiting in the pre- and post-natal period	Usual care	Mental Health
French et al. (2003)	<i>'Does care [for bronchiectasis patients] led and/or delivered by nurse specialists result in better outcomes for patients? Is this change in health care delivery a cost effective one?'</i>	UK	Nurse specialist- led care	Doctor-led care	Role substitution (Long-term conditions)
Griffiths et al. (2007)	<i>To determine whether nursing-led inpatient units are effective in preparing patients for discharge from hospital compared to usual inpatient care.</i>	UK	Nurse-led inpatient units (NLU)	Usual inpatient care	Role substitution (Hospital care)

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Halcomb et al. (2007)	<i>To determine the effectiveness of interventions to reduce cardiovascular risk factors delivered by the general practice nurse (adult patients with CVD, patients with known cardiac risk factors and general population).</i>	Australia	Nurse-led care	Usual care/physician-led care	Long-term conditions Role substitution (Long-term conditions)
Hatem et al. (2008)	<i>To compare midwife-led models of care with other models of care for childbearing women and their infants.</i>	UK	Midwife-led care	Other models of care	Role substitution (Midwife-led care)
Hodnett and Fredericks (2003)	<i>To assess the effects of programs offering additional social support for pregnant women who are believed to be at risk for giving birth to preterm or low birthweight babies.</i>	Canada	Home visiting in the pre- and post-natal period	Usual care	Mental Health
Horrocks et al. (2002)	<i>To determine whether nurse practitioners can provide care at first point of contact equivalent to doctors in a primary care setting.</i>	UK	Nurse-led care	Doctor-led care	Role substitution (Primary care)
Latour et al. (2007)	<i>To summarize the available literature on the effectiveness of ambulatory nurse-led case management for complex patients in general health care.</i>	Netherlands	Nurse-led case management	Usual care	Long –term conditions (Primary care)
Laurant et al. (2004)	<i>To evaluate the impact of doctor-nurse substitution in primary care on patient outcomes, process of care, and resource utilisation including cost.</i>	UK / Netherlands	Nurse-led care	Doctor-led care	Role substitution (Primary care)

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Lewis et al. (2009)	<i>To compare the effectiveness and cost-effectiveness of nurse-led follow-up of patients with cancer with conventional physician-led follow-up.</i>	UK	Nurse-led follow-up	Doctor-led follow-up	Role substitution (Long-term conditions)
Loveman et al. (2003)	<i>To assess the effects of diabetes specialist nurses/nurse case managers on diabetes in patients with diabetes mellitus.</i>	UK	Diabetes nurse specialists care	Care delivered by doctor	Role substitution (Long-term conditions)
Meades et al. (2001)	<i>To assess the relative clinical effectiveness and cost-effectiveness of specialist epilepsy nurses in inpatient, outpatient or GP care compared to 'usual care' without a specialist epilepsy nurse</i>	UK	Specialist epilepsy nurses	'Usual care without an epilepsy nurse'	Role substitution (Long-term conditions)
Mojica et al. (2004)	<i>Synthesize the evidence on the effectiveness of smoking-cessation interventions by type of provider.</i>	USA	Nurse-delivered care	Usual care/placebo	Role substitution (Long-term conditions)
Montgomery et al. (2007)	<i>To identify any alternative methods of follow-up [of breast cancer patients], which has been proposed and subjected to randomised trial.</i>	UK	Nurse-led care	Doctor-led care	Role substitution (Long-term conditions)
Page et al. (2005)	<i>To determine the effectiveness of nurse-led cardiac clinics in adult patients with a diagnosis of CHD.</i>	Australia	Nurse-led care	GP-led care	Role substitution (Long-term conditions)
Ram et al. (2004)	<i>To evaluate the efficacy of hospital at home schemes compared with inpatient care in patients with acute exacerbations of chronic obstructive pulmonary disease.</i>	UK	"Hospital-at-home"	Inpatient care	Long-term conditions
Smith et al. (2001)	<i>To evaluate the effectiveness of outreach respiratory health care worker programmes for patients with COPD.</i>	Australia	Nurse-led care	Other models of care	Long-term conditions

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Sola et al. (2004)	<i>To assess the effectiveness of non-invasive interventions delivered by healthcare professionals in improving symptoms, psychological functioning and quality of life in patients with lung cancer.</i>	Spain	Specialist nurses	Usual care	Long-term conditions Role substitution (Long-term conditions)
Taylor et al. (2005)	<i>To determine the effectiveness of innovations in the management of chronic disease involving nurses for patients with COPD.</i>	UK/ Netherlands	Nurse-led care	Usual care	Long-term conditions
Thomas et al. (1998)	<i>To systematically review evaluations of clinical guidelines in nursing, midwifery, and professions allied to medicine.</i>	UK	Nurse-led care	Usual care	Role substitution (Hospital care)
Thompson et al. (2003)	<i>In adults, what is the relative efficacy of dietary advice given by a dietitian compared with another health professional, or using self-help resources in reducing blood cholesterol?</i>	UK	Nurse-delivered advice	Dietician-delivered advice	Role substitution (Primary care)
Van Ruth et al. (2008)	<i>To determine the effects of nurse prescribing compared to physician prescribing.</i>	Netherlands	Nurse-led care	Physician-led care	Role substitution (primary care) Role substitution (Long-term conditions)
Villar et al. (2001)	<i>To compare programmes of antenatal care led by care providers other than obstetrician/gynaecologist with obstetrician/gynaecologist led shared care.</i>	Switzerland	Midwife-led care	Physician-led care	Role substitution (Midwife-led care)
Wilson et al. (2009)	<i>To examine the best available evidence to determine the clinical effectiveness of emergency department nurse practitioners in the assessment, treatment and management of minor injuries in adults.</i>	Australia	Nurse-led care	Physician-led care	Role substitution (Primary care)

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