What is the impact of advanced primary care nursing roles on patients, nurses and their colleagues? A literature review

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Abstract

Objectives: To review and draw together the existing research evidence to assess the impact of advanced primary care nursing roles, particularly first contact nursing roles, for patients, nurses themselves and their colleagues in order to highlight salient issues for policy, practice and research.

Background: Internationally, nurses' roles continue to expand in response to doctor shortages and policy drives to provide effective and efficient health services. A body of research exists from which to evaluate the impact of advanced nursing roles on various dimensions of healthcare delivery and organisation.

Design and data sources: Medline, CINAHL, Applied Social Sciences Index and Abstracts, British Nursing Index, Cochrane Library, EMBASE, National Research Register, and PsycINFO databases were searched, including relevant websites. Studies were included if published in English and relevant to the primary/community care setting. Of a total of 211 papers identified, 88 were of relevance and included in the review.

Results: Nurses working in many advanced primary care roles such as acute/minor illness, minor injury and long-term conditions provide safe and effective care, and patient satisfaction is generally high. Many factors influence patient satisfaction with, and access to, such services but are little understood. Evidence on cost-effectiveness, efficiency and impact on other health care professionals is inconclusive though research suggests the introduction of extended roles can create uncertainty and intra-/inter-professional tensions.

Conclusions: Evidence is of variable quality, often ignoring potentially important effect mediators such as the experience and educational level of advanced nurses, the effect of service 'maturation', organisational characteristics and differing patient preferences. The complex range of factors that influence patient satisfaction, access and outcomes of care need further investigation. Recent UK developments in nurse prescribing and the introduction of a national post-registration competency framework may improve working relations and patient understanding and experience of advanced nursing roles in primary care.

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What is already known about the topic?

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- The expansion of nursing roles in primary care appears set to continue as policy makers juggle cost containment and work force shortages along side the need to improve the quality of health services.

- Nurses substituting for, or complementing, some areas of work traditionally undertaken by family physicians, including first contact care, provide care comparable to that of doctors and patient satisfaction is consistently high.
- Some nurses working in advanced primary care nursing roles experience difficulties with establishing and/or progressing within these new roles. Reasons for this include role uncertainty, lack of role clarity and limited support from colleagues.

What this paper adds

- Evidence on the cost-effectiveness of advanced primary care nursing services is inconclusive and complex factors such as patient satisfaction, different dimensions of access, and workload require further exploration.
- Potential effect mediators such as the organisational characteristics and practice culture, experience and educational level of advanced nurses and service 'maturation' are often ignored in the research evidence.
- The introduction of a national UK post-registration competency framework may go some way to alleviating intra-professional and inter-professional barriers and reducing widespread confusion among patients, nurses and their colleagues.

1. Introduction

Advanced practice roles in nursing originated in USA in late 1960s as a response to doctor shortages (Wilson, 2003). More recently such roles have expanded rapidly in the UK and other Western countries (Pearson and Peels, 2002b), either in the form of substitution (i.e. nurses may replace those undertaking some areas of practice) or complementing activity to enhance the work of others (Lankshear et al., 2005).

The UK, USA, Canada, Australia and New Zealand share similar reasons for extending the scope of nursing practice (Pearson and Peels, 2002a). Redeployment can begin to address the need to contain costs, the difficulties in recruiting family doctors to work in deprived areas (Richardson and Maynard, 1995), and the shortfall that will arise as many existing family doctors are due to retire. In the UK for example, policies have been introduced to transfer some acute services to the community (Department of Health, 2006), to improve access to services (Department of Health, 1997, 2000, 2003) and more recently, national quality standards and targets have been defined through the new General Medical Services contract. Furthermore, the introduction of new contracts has enabled greater flexibility in

local service provision and offered greater opportunities for nurses to work in new ways (Department of Health, 2004b). For example, under practice-based commissioning, GP practices are given their own 'notional' budgets with which to 'buy' health services for their patients and the budget reflects any NHS services their patients receive, including attendances at accident and emergency departments, all referrals to hospital for outpatient and inpatient treatments, and drugs (Kings Fund, 2006). Furthermore, Personal Medical Services (PMS) contracts were introduced in 1998 as an alternative to the national UK General Medical Services contract and allow greater flexibility in the use of staff skills to address the needs of patients—for example, developing more nurses to safely carry out procedures once only performed by the doctor. PMS was also introduced to address recruitment and retention problems in areas where there had traditionally been doctor shortages.

As part of a study on first contact nursing in UK primary care, a comprehensive review of the literature was undertaken to collate research evidence on the impact of advanced primary care nursing (APCN) developments for a wide range of outcomes to highlight salient issues for policy, practice, and research.

In this paper we use the term Advanced Primary Care Nursing (APCN) as an umbrella term to refer to all advanced nursing practice roles in primary care (or the international equivalent) (e.g. nurse clinician, nurse practitioners, or advanced nurse practitioners), working in family (general) practice or other primary care locations such as walk-in-centres (WiCs) (services open to the public where no appointment is required). There has been limited professional consensus on the term 'advanced practice' (Daly and Carnwell, 2003) and a number of definitions exist (Pearson and Peels, 2002a) but in essence a practitioner working at an advanced level refers to a highly experienced and educated member of the care team who is able to diagnose and treat health care needs or make specialist referrals (Nursing and Midwifery Council, 2005).

The scope of APCN may include 'first contact care' (receiving patients with undifferentiated problems and managing their episodes of care by diagnosing, treating or referring, such as minor illness, care of long-term conditions and health promotion/preventative care, Bradbury, 2003). Nurse-led first contact care delivered, for example, in minor illness clinics or a WiC, is a fairly recent development in UK primary care. The review, therefore, includes the available evidence associated with these new developments as well as other advanced nursing roles in primary care. Literature on community matrons and other case management roles is excluded.

Current evidence on the impact of APCN roles is presented in relation to: clinical outcomes, patients' perspectives and experiences, accessibility to services,

costs, workload (efficiency, impact on other professionals' workloads) and workforce issues (autonomy, career progression and retention, and professional identity). The implications of the findings are discussed in the context of international policy for the delivery of high quality, responsive and accessible primary care services.

2. Aim and methods

The aim of the review was to identify and collate the research evidence from the international literature to provide an overview of the impact of nurse-led first contact care and other APCN services in primary care for a range of outcomes.

The search strategy included studies on the effectiveness of APCN services, including dimensions of accessibility and acceptability to patients, safety, costs, workload impact, recruitment, retention and related workforce issues. Electronic databases, websites and reference lists were searched for potentially relevant studies. The time spans searched for each database were selected to capture recent studies while working within the constraints of limited time (Fig. 1).

The combination of search terms used is outlined in Fig. 2. All items within each section were combined with OR and then each section was combined with AND for different combinations of sections that produced the highest yield (Fig. 2).

Studies were selected for inclusion if they were based in a primary or community care setting, if focused on first contact care (as defined earlier) and if that care was provided by a nurse. Qualitative, quantitative and mixed methods studies were included if published in the English language. Titles and abstracts were screened by one reviewer and full papers obtained for studies assessed as potentially relevant.

The initial searches produced 211 hits, of which 192 potentially relevant papers were identified after initial screening of titles and abstracts. Following reading of the full text of papers by one researcher, a total of 88 were included in the review and stored on an Endnote database (Fig. 3).

On second reading, papers were analysed for broad themes. Regular meetings were held with a second researcher to discuss and agree interpretations and to clarify any inconsistencies in the evidence.

3. Results and discussion

Although the aim was to provide a comprehensive overview of the evidence, not a systematic review, we used established methods (Centre for Reviews and Dissemination, 2001) to ensure the process was systema-

Electronic databases:
Applied Social Sciences Index and Abstracts (1987-2006) British Nursing Index (1985-2006) CINAHL (1982-2006) EMBASE (1980-2006) MEDLINE (1966-2006) PsycINFO (1985-2006) National Research Register (1999-2006) Cochrane Library (1800-2006)

Grey literature sources:
• Websites NHS Modernisation Agency King's Fund National Institute of Clinical Excellence Royal College of Nursing Department of Health Conference Papers Index NHSU Transforming Learning National Collaborating Centre for Primary Care Centre for Innovation in Primary Care HAZnet National Primary Care Development Team Practice Nursing Community NatPaCT • Reference lists

Fig. 1. Literature search information sources.

tic and transparent. Our search strategy was inclusive and we are confident that most relevant studies were located; however, we cannot claim to have identified all the research in the field. It was not our aim to provide an evidence synthesis given the broad scope of the review and the range of outcomes that were included. Instead we have collated the evidence within broad themes and presented it as a critical narrative. This approach is useful for summarising diverse literature and is not dissimilar to the approach adopted by the UK Social Care Institute for Excellence in undertaking knowledge reviews in the field of social care (Pawson et al., 2003). It was decided a priori, given the heterogeneity and variable quality of included studies that a minimum cut off for methodological quality would not be specified in advance. Study quality is discussed in the results.

The results are presented and discussed under subheadings as follows: accessibility, clinical effectiveness outcomes, patients' perspectives and experiences, workload, costs, and workforce issues. A proportion of papers reviewed cross cut more than one sub-heading listed below.

3.1. Accessibility

A total of 15 papers were identified in this section (two reviews, Salisbury et al., 2002a, Freeman and Hjortdahl, 1997;

Set 1: Delivery of Service
First contact care/ Care at first point of contact/ First contact nursing/
Nurse-led care/ Nurse-run care/ Nurse-led initiative*/ Nurse-
practitioner* / Specialist practitioner*/ Nurse clinician*/ Extended role*/
New role*/ PMS –nurse led/ Out of hours

Set 2: Practitioner
Nurse*/ Practice nurse*/ District Nurse*/ Community nurse*/ Nurse
practitioner* / Specialist practitioner*/ Nurse clinician*/ Health Visitor*/
Public health nurse*/ Specialist Public health nurse*/ Nursing team*/
Nursing specialist*/ Advanced practice nurs*/ Community matron*

Set 3: Setting
Primary care/ Primary health care/ Primary medical care/ Community
care/ Community health care/ Community health nursing

Set 4: Services
Health promotion/ Preventative care (Wellwoman/ man/ Young people
health)/ Sexual health / Family planning centre/clinic/ Diabetes/ Heart
disease/ Coronary/ Walk-in centre, WIC, Walk-in-centre, Walk in service
/ Out of hours/ Out of hours centres/ after hours /Consultation / Minor
injury unit*/ AandE department/ Emergency care/ Healthy living
centres/ NHS Direct/ Gatekeeping/ COPD/ Respiratory disease/ Asthma/
Minor illness/ Mental health

Set 6: topics
Nurses role*/ Extended/expanded role*/ New/changed role*/
Substitution/ Autonomy/ Delegation
Breaking traditional boundaries/ Shifting boundaries/ Access / Advanced
access / Appointment system*
Waiting time*/ list*/ Health improvement*/ Quality/ Choice/ Patient-
centred/centered or User centred/ Patient referral*/ Scheduling /
Public/ Patient involvement / Continuity of patient care/ Health
inequalities/ Public health/ Health status/ Nurse-patient relation*

Fig. 2. Search terms used to identify relevant papers.

one systematic review, Chapman et al., 2004; four qualitative interview studies, Chapple et al., 2000, Rosen et al., 2001, Perry et al., 2005, Redsell et al., 2005; one mixed methods study, Jenkins-Clarke et al., 1997; two population surveys, Paxton and Heaney, 1997, Salisbury et al., 2002b; two case studies, Ross and Tisser, 1997, Killey et al., 2003; two trials Lattimer et al., 1998, Richards et al., 2002; and an analysis of telephone call log data with surveys Munro et al., 2000).

The impact of APCN services on accessibility has been explored in a variety of primary care settings. Postal questionnaire and interview based studies of patients and health professionals suggest that nurse-led first contact services in WiCs (Salisbury et al., 2002a,b), PMS pilots (Robinson, 2001), family practices (Redsell et al., 2005; Perry et al., 2005), and self-contained minor illness units (Paxton and Heaney, 1997) as well as APCN services for long term conditions (Killey et al., 2003;
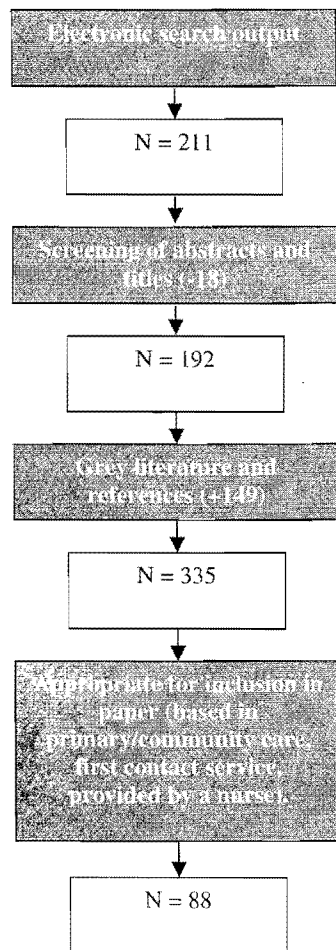
Fig. 3. Flow chart depicting process for inclusion of papers in review.

than decreasing inequalities in access (Chapman et al., 2004). A systematic review of innovations to improve primary care access found that while PMS pilots, overall, had improved access in previously underserved or under populated areas, there was insufficient evidence to determine whether *nurse*-led PMS services have improved access (Chapman et al., 2004).

Efforts to explore access patterns suggest that numerous factors are influential (cultural, educational, temporal and linguistic, for example) (Rosen et al., 2001) and so 'improved access' may mean different things to different people. For example, there is evidence that continuity of care is particularly valued by older people, females, those from disadvantaged communities, and those with long standing health problems (Chapple et al., 2000; Jenkins-Clarke et al., 1997; Ross and Tisser, 1997; Freeman and Hjortdahl, 1997). This preference for continuity may explain why people belonging to some minority ethnic groups prefer to visit their family practice and are less likely to attend WiCs (Salisbury et al., 2002a) and why older people, some minority ethnic groups and other disadvantaged groups are under-using NHS Direct (George, 2002).

Understanding more fully what constitutes 'improved access' from the perspective of the user will enable providers to design services appropriate for specific target groups. For example, among patients who experience improved access to WiCs, it seems to be their availability and convenience, rather than the provision of extended hours that are the valued dimensions of access (Salisbury et al., 2002a). Furthermore, a nursing service that complements rather than substitutes the activities of doctors will not necessarily lead to increased availability of doctor appointments in circumstances where this is the patient's preferred option.

In summary, research to date suggests that while access has improved for some patient groups for a range of APCN services, access may not have improved for some sectors of the population with the greatest health need. Investigation of the relative importance of different elements of access for diverse population groups will assist in better defining what and how primary care services should be delivered to meet the varied needs of those who require them.

3.2. Clinical effectiveness outcomes

A total of 26 papers were identified in this section (five systematic reviews, Brown and Grimes, 1995; Renders et al., 2001; Horrocks et al., 2002; Sibbald et al., 2004; Laurant et al., 2005; two reviews, Office of Technology Assessment, 1986; Branson et al., 2003; one mixed methods study, Jenkins-Clarke et al., 1997; five qualitative interview-based studies, Baldwin et al., 1998; Mills et al., 2002; Williams et al., 2003; Redsell et al., 2005;

Perry et al., 2005) have led to improved patient access. Furthermore, there is evidence that the introduction of nurse-led triage and telephone consultation services, such as NHS Direct, has led to a reduction in the demand for doctor appointments (Richards et al., 2002; Munro et al., 2000; Lattimer et al., 1998) thus increasing accessibility for those who need to see their family doctor.

Although many nurse-led first contact services appear to have improved patient access overall, improvements vary across different patient groups. For example, a national evaluation of WiCs in which nurses conducted 83% of the consultations found that access improved most significantly among young men (Salisbury et al., 2002a); a group who traditionally under use family practices (Airey et al., 1999). However, the evidence suggests that WiCs may only improve access for people with few health needs (Salisbury et al., 2002b) and thus, paradoxically, such services may be increasing rather

Williams and Jones, 2006; five randomised controlled trials, Lattimer et al., 1998; Shum et al., 2000; Kinnersley et al., 2000; Venning et al., 2000; Denver et al., 2003; one randomised trial, Mundinger et al., 2000; and one quasi-experimental study, Mills et al., 1999; three observational studies of nurse/doctor consultations, Salisbury et al., 2002a; Collins et al., 2003; Seale et al., 2005; two population surveys, Caldow et al., 2001; Miles et al., 2003; one case study, Barratt, 2005).

Over 20 years ago, a review of 10 studies in the USA concluded that nurses working in advanced roles had the knowledge and skills to meet the health needs of up to 90% of the ambulatory patient population (Office of Technology Assessment, 1986). More recently, several systematic reviews of the international evidence assessing the effectiveness of APCN, including nurse-led first contact care, in which nurses substitute for doctor-provided care, have concluded that health status, morbidity and mortality outcomes are comparable to those of doctors (Horrocks et al., 2002; Sibbald et al., 2004; Laurant et al., 2005). Furthermore, patients tend to adhere more readily with treatment recommendations from nurses than from doctors (Horrocks et al., 2002; Laurant et al., 2005; Brown and Grimes, 1995; Sibbald et al., 2004).

A national evaluation of nurse-led WiCs found them to be clinically safe and effective (Salisbury et al., 2002a) and one study showed that for a range of similar conditions using simulated patients, nurses in WiCs performed significantly better than doctors based in family practices (Grant et al., 2002). A randomised controlled trial evaluating nurse-led telephone consultation services demonstrated that nurses can safely manage half of all patient referrals without the help of a doctor, without an increase in the number of adverse events (Lattimer et al., 1998). For long-term conditions such as diabetes and coronary heart disease, nurses substituting for doctors resulted in outcomes comparable to doctor-led care (Laurant et al., 2005) while nursing services complementing standard doctor-led diabetes care were associated with improved glycaemic control (Renders et al., 2001).

In summary, the research suggests that the impact of APCN roles for minor illness and some long-term conditions are similar to those of family doctors though little is known about the long-term outcomes, for example, nurses failing to diagnose serious conditions (Horrocks et al., 2002). Overall, the quality of evidence is variable, often derived from small studies with questionable generalisability (Lankshear et al., 2005). Many studies provide inadequate details on the level of prior education and experience of nurses in their samples (Denver et al., 2003; Mundinger et al., 2000) masking the extent to which such variables are related to reported outcomes. Additionally, the different education and training requirements for APCN roles internationally limits the transferability of findings.

3.3. Patients' perspectives and experience

A total of 20 papers were identified in this section (three systematic reviews, Brown and Grimes, 1995; Horrocks et al., 2002; Laurent et al., 2005 and one review, Branson et al., 2003; one mixed methods study, Jenkins-Clarke et al., 1997; five qualitative interview studies, Baldwin et al., 1998, Schreiber et al., 2003; Williams et al., 2003; Redsell et al., 2005; Williams and Jones, 2006; four questionnaire surveys, Airey et al., 1999; Caldow, 2000; Salisbury et al., 2002b; Miles et al., 2003; two RCTs, Shum et al., 2000; Venning et al., 2000; and a quasi-experimental study, Mills et al., 1999; two observational studies of nurse/doctor consultations, Collins et al., 2003, Seale et al., 2005; and a case study, Barratt, 2005).

Acceptance and satisfaction with the process of care are also important dimensions of the quality of APCN services. For example, patients consulting an epilepsy nurse specialist in primary care highly valued an improvement in communication during the consultation (Mills et al., 2002), although no improvement in clinical outcomes was reported (Mills et al., 1999).

The majority of studies evaluating APCN services have reported that patients are at least as satisfied with the outcome, in comparison with equivalent doctor-led care (Horrocks et al., 2002; Branson et al., 2003). Some studies have demonstrated that APCN care (Shum et al., 2000; Miles et al., 2003; Williams et al., 2003; Salisbury et al., 2002b) including nurse-led first contact care (Horrocks et al., 2002; Laurant et al., 2005) is associated with higher rates of patient satisfaction than care provided by doctors. A meta-analysis of published and unpublished research in the USA on the impact of primary care nurse practitioners has reported similar findings (Brown and Grimes, 1995). Although nurse consultations tend to be longer (Williams and Jones, 2006; Caldow, 2000), higher levels of patient satisfaction have been reported even after controlling for length of consultation (Venning et al., 2000; Shum et al., 2000).

There is evidence that patients regard nurses as more communicative during the consultation (Redsell et al., 2005; Williams and Jones 2006), they are made to feel more at ease (Redsell et al., 2005) and nurses provide more information than doctors (Seale et al., 2005). Research in the USA suggests that 'personal factors' such as friendliness and competence of the nurse as well as geographic proximity and availability are key issues (Baldwin et al., 1998).

Research investigating how nurses interact and communicate with patients in the consultation is limited but seems to suggest that consultation styles differ from those of doctors. Nurse practitioners in WiCs were found to be flexible in modifying their communication strategies, helping to resolve the tensions existing between patients' reasons for attendance and their

clinically assessed needs for treatment (Barratt, 2005). Furthermore, nurses in primary care diabetes clinics used more explanations, were more inclusive of patient opinions, delivering holistic care where patients and nurses appeared on a more 'equal footing' than during patient–doctor consultations (Collins et al., 2003). Similar patient perceptions that nurse practitioner care was more holistic than that of physicians have been noted elsewhere e.g. at a Canadian rural primary care clinic (Schreiber et al., 2003).

Patient characteristics such as age, health status and socio-economic profile also influence reported satisfaction with APCN services (Branson et al., 2003). For example, there is evidence that older people may value more 'traditional' services (Jenkins-Clarke et al., 1997) while younger people place most value on access (Airey et al., 1999). However, evidence relating to the role of gender and ethnicity in relation to satisfaction with APCN services is inconclusive (Branson et al., 2003).

Overall, the evidence suggests that patient satisfaction with APCN services is high but our understanding of the factors that influence satisfaction with outcome within nursing consultations remains limited. Further understanding of these factors is needed if services are to better meet the needs of diverse patient groups and to support them to use services appropriately.

3.4. Workload issues

There were 16 papers in this section (four systematic reviews, Horrocks et al., 2002; Sibbald et al., 2004; Laurant et al., 2005; Chapman et al., 2004; one review, Tarrant et al., 2005; four RCTs, Lattimer et al., 1998; Venning et al., 2000; Lock et al., 2003; Leese, 2004 and one multiple time series trial, Richards et al., 2002; one before and after study, Hsu et al., 2003, one prospective cohort study, Sakr et al., 2003, one interview based study, Walsh et al., 2003, one survey, Caldow, 2000; one study analysing telephone call log data, Munro et al., 2001; and one study involving an analysis of databases, Centre for Innovations in Primary care, 1999).

3.4.1. Efficiency

Whether the introduction of APCN services increase the efficiency of the health service is unclear (Richards et al., 2002; 2004a; Leese, 2004). The efficiency of health services is measured in a variety of ways, for example, waiting times, throughput, and re-consultation rates.

Although the waiting times for access to nursing services may be shorter, nurse consultations tend to be longer (Caldow, 2000; Venning et al., 2000) and nurses may initiate more investigations and recall patients at a higher rate (Sibbald et al., 2004; Horrocks et al., 2002) or make more referrals (Salisbury et al., 2002a), outweighing the advantages of shorter waiting times in terms of cost and use of time.

"Through put" (the number of patients nurses see within a given period) is another indicator of efficiency. Evidence suggests that doctors see more patients than nurses within an equivalent time period but this may be partially explained by the fact that nurses consultations are more likely to place greater emphasis on health promotion and patient education (Centre for Innovation in Primary Care, 1999).

To what extent issues such as nurses' prescribing rights, level of experience or maturity of the APCN service impinge on the length and quality of consultations is also unclear from current evidence.

3.4.2. Effect on GP workload/impact on other professionals

Whether nurse-led consultation and triage systems services reduce (Lattimer et al., 1998; Richards et al., 2002) or moderate (Munro et al., 2001) the workload of family doctors is unclear, with some studies reporting overall reductions of 29 to 44% (Richards et al., 2002) or 50% (Lattimer et al., 1998). National evaluations with control sites (Salisbury et al., 2002a) and observations (Hsu et al., 2003) of WiCs suggest they have no impact on doctor workload. Similar results have been found in randomised controlled trials of nurse practitioner services in the UK (Leese, 2004) and the Netherlands (Laurant et al., 2004). The workload of accident and emergency and other out-of-hours services also appears to be unaffected by nurse-led telephone consultation (Munro et al., 2001) and WiCs (Salisbury et al., 2002a).

However, workload measurement is not only concerned with the volume of patients that may change for other professionals as a result of introducing changes to service delivery (e.g. substitution) but also whether the nature of the workload changes. For example, there is evidence that family doctors are now more likely to see patients with more serious or complex conditions (Richards et al., 2004a; Walsh et al., 2003). Additionally, doctors' workloads may remain unchanged if APCN services create further demand or nurses are deployed to meet previously unmet patient need. Re-consultation rates are a useful indication of whether APCN roles are substituting or supplementing existing services but a recent systematic review concluded that findings are inconclusive (Chapman et al., 2004).

3.5. Costs

Concerns regarding liability and adverse changes to physician income were identified in a recent review as an inhibiting factor to supporting advanced nursing roles among physicians' in Canada, United States and New Zealand (Tarrant et al., 2005). In the UK, it has been reported that for family practice based services and nurse-led first contact services (nurses substituting for

doctors) (Centre for Innovation in Primary Care, 1999; Lock et al., 2003), and for nurse-led minor injuries unit and an accident and emergency doctor (Sakr et al., 2003), costs are neutral. The similarity in costs is explained by the fact that although nurses cost less, their slower patient 'throughput' evens out the costs in comparison with doctors (Centre for Innovation in Primary Care, 1999). Early evaluations of NHS Direct concluded it represented an additional cost to the NHS (Munro et al., 2001).

However, interpretation of cost data is currently limited by small samples (Lock et al., 2003), single sites (Sakr et al., 2003), or specific services (Lock et al., 2003; Centre for Innovation in Primary Care, 1999) and does not necessarily take into account training costs (Lankshear et al., 2005).

Different approaches have been taken to measuring cost of introducing APCN services; cost to the practice (Centre for Innovation in Primary Care, 1999), the NHS as a whole (Lock et al., 2003; Sakr et al., 2003; Lattimer et al., 2000; Munro et al., 2001) and patient-bourne costs (Lock et al., 2003). Where costs incurred by referrals to other health professionals are included, the national evaluation of WiCs concluded that nurse-led care may be more expensive than care provided by doctors (Salisbury et al., 2002a). Costs also reduce with time due to staff efficiency increasing with experience (Salisbury et al., 2002a). Future cost effectiveness studies evaluating the impact of a range of APCN roles needs to take account of the effect of maturation (i.e. whether services become more efficient with time) and whether the service is intended to substitute or complement existing provision. Furthermore, potential cost savings that may accrue in the longer term from nurse-led consultations addressing health promotion, patient education and self management should also be considered.

Although there is evidence that nurses can substitute effectively for doctors in some areas, current research on the cost-effectiveness of APCN services is inconclusive.

3.6. Workforce issues

There were 27 papers in this section (five reviews, Ormande-Walshe and Newham, 2001; Pearson and Peels, 2002a; Bryant-Lukosius et al., 2004; Furlong and Smith, 2005; Tarrant et al., 2005; 13 qualitative interview studies, Williams and Sibbald, 1999; Reveley, 2001, Rosen and Mountford, 2002; Chapple et al., 2000; Purvis and Cropley, 2003; Roe et al., 2001; Walsh et al., 2003; Austin, 2004; Wilson et al., 2002; Marsden and Street, 2004; Carr et al., 2005; Bailey et al., 2006; four questionnaire surveys, Karasek, 1979; Kendrick et al., 2000; Caldow et al., 2001; Ball, 2005; two observational studies of nurse/doctor consultations, Richards et al., 2004a,b; Charles-Jones et al., 2003; an electronic Delphi

survey, Daly and Carnwell, 2003; policy analysis and interviews, Gardner et al., 2006; and a comparative case study; Buchan and Calman, 2004).

3.6.1. Autonomy

The ability to practice autonomously is a defining characteristic of APCN roles (Marsden et al., 2003; Brush and Capezuti, 1997). Autonomy within work roles is associated with job satisfaction (IBM Business Consulting Service, 2005; Stillwaggon, 1989; Purvis and Cropley, 2003) and has been identified by nurses as a motivating factor to take up advanced roles in family practice (Caldow et al., 2001) and WiCs (Rosen and Mountford, 2002). However, nurses have reported that increasing requirements to use protocols to support new areas of practice (Walsh et al., 2003), colleagues' reluctance to acknowledge nurses' changing roles (Austin, 2004; Ball, 2005) and refusal to act upon nurse referrals or orders for investigation (Ball, 2005) limits their autonomy. Barriers to developing APCN roles include doctors' perceptions of threats to their status, and concerns about nurses' capabilities, including training and scope of responsibility, according to focus group discussions with family doctors in England (Wilson et al., 2002) and a study of nurse practitioners and family doctors in Canada (Bailey et al., 2006).

Inter-professional differences in perceptions of the scope of APCN services have been noted. For example, although triage nurses and family doctors agreed upon the identification of problems presented by patients, they disagreed upon what constitutes the appropriate level of information to be sought in consultations and the appropriateness of triage outcomes (Richards et al., 2004b). At best, these differing viewpoints appear to be causing disagreements and at worst, limiting the potential impact of APCN services.

3.6.2. Nurse career progression and retention

Global shortages in the nursing workforce (Lankshear et al., 2005; Kingma, 2001) combined with the impact of numerous policy-driven changes in primary care (Buchan and Calman, 2004) have important workforce implications in terms of job satisfaction, career development, recruitment and retention. However, the impact of role changes on the recruitment, retention and career development of APCN nurses has received limited attention.

A study assessing health visitors' attitudes towards APCN in acute childhood illness found that participants were highly receptive to taking on new dimensions to their role (Kendrick et al., 2000). Increased autonomy is associated with improved retention (Purvis and Cropley, 2003; Stillwaggon, 1989) and increased responsibility without increased control over workload or support from colleagues is associated with work place stress (Karasek, 1979) but as discussed above, the autonomy

of some APCN nurses and the support they receive is limited.

Some practice nurses perceive academic requirements and challenges, and difficulties finding locum cover for study leave as barriers to becoming a nurse practitioner (Carr et al., 2005) and nurses at PMS pilot sites perceived a range of inhibiting factors including resistance and hostility from family doctors locally, regulatory limitations including authority to prescribe, liability status and inadequate training opportunities as barriers to taking on a leadership role (Walsh et al., 2003; Roe et al., 2001).

Similarly, a recent questionnaire survey identified occupational stress, lack of clarity of roles, little consensus on core competencies, need for further training and constraints on time and resources as the most common frustrations associated with undertaking APCN roles and some nurses have expressed uncertainty about the ability to progress in their career (Ball, 2005). However, interestingly, only 1% of respondents intended to return to generalist practice (Ball, 2005).

Relatively little is known about what motivates nurses to take up APCN roles, the extent to which they feel pressurised to extend their role, and whether such developments meet their expectations and influences their likelihood of remaining in this role. In the UK, *Agenda for Change* (Department of Health, 2004a), a national framework for pay for nurses and allied health professionals, may go some way to recognising the skills and experience of nurses working in advanced roles, but the optional nature of implementing the new pay scale in family practices may dissuade some nurses from taking up these opportunities.

Surprisingly, despite consistent UK policy to increase the number of nurses working in advanced roles in primary care, we found no research addressing skill mix issues to meet current and future work force demands.

3.6.3. Nurse identity

Competency standards for nurse practitioners have been introduced in Australia, USA and Canada, and between countries efforts have been made to standardise nurse practitioner competencies (Gardner et al., 2006). However within those countries in which competencies have been established, requirements can differ from state to state (Tarrant et al., 2005). For many years UK nurses working in different capacities have been using APCN titles in the absence of any nationally agreed educational level and standards of competence although the UK Nursing and Midwifery Council has now begun to address this issue (Nursing and Midwifery Council, 2005). Consequently a proliferation of professional titles and roles (Woods, 1999; Ormande-Walshe and Newham, 2001; Daly and Carnwell, 2003; Marsden et al., 2003; Furlong and Smith 2005; Pearson and Peels, 2002a) and terminology (Bryant-Lukosius et al., 2004)

has evolved. This has resulted in considerable confusion for patients, nurses, and other health professionals regarding the functions, scope and expectations of such roles (Roe et al., 2001).

Respondents to a survey of nurses in APCN roles believed their nursing skills were important (Ball, 2005) but elsewhere concern has been expressed that by introducing APCN roles in the delivery of an ever greater range of services, nurses may lose sight of the 'essence' of nursing, diminishing the core nursing workforce (Scott, 2000; Castledine, 2000; While, 2005). Charles-Jones et al. (2003) suggest that advanced nursing roles have led to an extended hierarchy in family practice in which person-centred values are diminished as work is redistributed between doctors, nurses and unqualified staff (Charles-Jones et al., 2003).

There is evidence to show that there is some role overlap between nurses working in advanced roles and doctors (Walsh et al., 2003). This a particularly salient issue for nurse-led first contact care with nurses working in a diagnostic capacity once considered to be the sole 'territory' of doctors. Indeed, research suggests that many patients are unclear about the scope of the role of an experienced nurse practitioner in contrast to the doctor (Reveley, 2001). In terms of role overlap with other nurses, practice nurses report that the differences between their own role and that of the nurse practitioner are unclear (Carr et al., 2005). Conversely, other research suggests that role demarcations are clear to practice nurses, nurse practitioners and patients (Reveley, 2001), suggesting that it is the nature of the individual role and skill mix in the practice that influences the extent to which confusion arises.

Lack of clarity concerning the roles and tasks expected of nurses working in advanced roles may lead to increased work-related stress (Rosen and Mountford, 2002) resulting in poor performance (Williams and Sibbald, 1999). It can also cause family doctors (Marsden and Street, 2004) and nurses themselves to feel less certain about the extent of their responsibility, reduce the likelihood of doctors choosing to employ nurse practitioners (Carr et al. 2001), and as research from Canada suggests, limit integration (IBM Business Consulting Services, 2005) and inter-professional collaboration (Bailey et al., 2006).

However, studies in PMS pilot sites suggest that role overlap can be acceptable to doctors and nurses provided they communicate regularly (Walsh et al., 2003) and that patients tend to be more concerned with professional competence than whether they consult a nurse or a doctor (Chapple et al., 2000).

In summary, the evidence suggests that confusion about the scope and nature of APCN roles may have serious implications for nurses' job satisfaction, performance, and development of the role. While the type of health care provider may be less important to patients

than the quality of care, patients should be able to make informed choices about which primary care provider they prefer to see.

4. Conclusion

This review provides an overview of the impact of APCN roles in primary/community care for a range of outcomes. Given the broad nature of this research area, a 'systematic review' of the literature was not undertaken. However, failure to identify studies is unlikely as a systematic and transparent approach was used.

The expansion of nursing roles in primary care appears set to continue as policy makers juggle cost containment and work force shortages along side the need to improve the quality of health services. Although broadly welcomed by professional bodies, radical changes to how a growing number of nurses work now and in the future has profound implications for individuals and families as well as the public at large, nurses, doctors and other members of the primary care team. In the literature, most attention has understandably focused on determining whether nurses working in APCN roles are safe and effective and by and large in the areas of minor illness, for some long-term conditions and preventative care/health promotion the evidence is persuasive. However, the quality of evidence is variable, subject to sampling bias and potentially important effect mediators such as the organisational characteristics and practice culture, composition of the primary care teams, experience and educational level of advanced nurses and the effect of service 'maturation' often ignored. While the recent extension of UK nurse prescribing rights will go some way to addressing many of the anomalies experienced by nurse prescribers in the past, its impact on service effectiveness (and efficiency) needs assessing.

However, there remain a number of important knowledge gaps. The evidence on the cost-effectiveness, efficiency and impact on the work of other health professionals (e.g. volume and nature of workload) of APCN roles is inconclusive and well designed studies are urgently needed to better inform future policy directions.

Although government targets to improve service access have generated a range of first contact services, our understanding of how different nurse-led service configurations address different dimensions of access (e.g. relative access, continuity of access) and benefit or disadvantage different sections of the population is limited. Furthermore, increased patient choice is not an automatic outcome of introducing nurse-led first contact provision where a doctor's appointment is the patient's preferred option. Further investigation of the relative importance of different elements of access for diverse population groups is needed to better define what and how APCN services should be delivered to meet the varied needs of those who require them.

Although high rates of patient 'satisfaction' with APCN services have been consistently reported, indepth investigation of the nature of nurses' communication behavior in the consultation has only recently begun to be investigated. The limited evidence offers some valuable insights into how nurses' consultation behavior may differ from family doctors' interactions with patients. Further research is needed if we are to understand more fully the complex factors influencing patient satisfaction with nurses' consultations and the relationship with other outcomes of care.

Finally, there is evidence that the adoption of APCN services can create intra-professional and inter-professional tensions and uncertainty within primary care teams while a range of long standing organisational and regulatory barriers have hindered their effective implementation or prevented some nurses from taking up such roles. If these new forms of service are to be sustainable, these barriers must be addressed. The implementation of an agreed UK based competency framework that clarifies the levels of nursing practice and role differentiation (and relevant programmes of preparation) will go some way to alleviating some barriers, reducing widespread confusion among patients, nurses and their colleagues, employers and educationalists.

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