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Skill-Mix and Policy Change in the Health Workforce: Nurses in Advanced Roles

James Buchan,

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SUMMARY

2. An important potential contribution to the efficient use of the health workforce, is the possibility of 'skill mix' changes. 'Skill mix' is a relatively broad term which can refer to the mix of staff in the workforce or the demarcation of roles and activities among different categories of staff. Most of the policy attention on using skill-mix changes to improve health system performance has been on the mix between physicians and nurses.

3. Skill-mix changes may involve a variety of developments including enhancement of skills among a particular group of staff, substitution[1] between different groups, delegation up and down a uni-discipliniary ladder, and innovation in roles. Such changes may be driven by a variety of motives including service innovation, shortages of particular categories of worker (especially in inner cities or rural areas), quality improvement, and a desire to improve the cost- effectiveness of service delivery.

4. There are large differences in reported physician/nurse ratios across OECD countries and evidence of significant changes over time in some countries. This raises the issue of the direction of change and its desirability.

5. This report, which was commissioned by the OECD, examines skill-mix changes between physicians and nurses both in primary care and in the hospital setting

6. The report has three components:- a literature review; an assessment of country returns to an OECD survey; and two more detailed country case studies, on England and the United States.

Literature Review

7. The literature review reports on the use of nurses in 'advanced practice roles' in terms of effectiveness, cost-effectiveness and other types of evaluation of these roles. Most of the evidence relates to the work of *advanced practice nurses, specialist nurses or nurse practitioners.* The majority of data has emerged from a relatively small number of countries – mainly in North America, with some also from the UK and Australia. However, definitions of these roles are not clear-cut.

8. The literature review was constrained by: variations in organisational and country contexts, and the different types of skill mix changes which had been evaluated; the relatively modest number of studies which met the selection criteria; and a particular shortage of cost effectiveness studies. Most of the studies reported in the literature relate to substitution of nurses for doctors.

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1. 'Substitution' generally involves changing the ratio of one kind of worker to another kind of worker within the workforce in the interests of improving efficiency. Such changes may well be marginal. Also, at a time of expanding activity, substitution of one kind of worker for another kind of worker can coincide with increasing the employment of both types of worker.

9. A number of previous literature reviews of the role of advanced practice nurses (APNs) in primary care settings have suggested that nurses can provide care which is equivalent to that provided by doctors in these settings. Patients were generally more satisfied with nurse consultations than with doctor consultations. Nurses ordered more tests than doctors and had longer consultations with patients. A previous review of studies of the use of nurse practitioners in hospital emergency departments suggested that nurse practitioners were neither better nor worse than house officers in treating minor injuries.

10. These findings were supported by the available limited number of published randomised controlled trials (RCTs) , reviewed in this paper. RCTs of pre-operative assessment of patients by nurses, of nurse management of Parkinson's disease, of midwife-managed deliveries for low-risk women and of nurse-led secondary prevention of coronary heart disease, all suggested that care provided by nurses can be equivalent to or even superior to that provided by physicians.

11. A randomised controlled trial of an innovative, nurse telephone consultation service in out-of-hours primary care suggested that the service would pay for itself in terms of reduced emergency admissions to hospitals. In contrast, an assessment of early experience with 'NHS Direct' – the national nurse telephone consultation service introduced throughout England in 2000 – suggests that it was offsetting only about half its cost by more appropriate use of NHS services – although patient satisfaction with the service was high.

12. Meanwhile a review of six cost effectiveness studies of the role of APNs came up with mixed results. Implementation of nurse-led services in various settings were variously cost neutral, higher cost and lower cost than doctor-led services.

13. Many of the studies reported in the literature relate to substitution of nurses for doctors when the diagnosis of the patient has been established. However, a number of questions remain to be answered if the diagnosis is unknown - including the extent to which nurses, when working with patients with undifferentiated diagnoses, are proficient in identifying rare illnesses and the side effects of treatments.

OECD Survey

14. The literature review was supplemented by data obtained from the policy questionnaire survey administered under the OECD project on Human Resources in Health Care. The survey covered all OECD countries, and examined, among other issues, current policies on substitution between physicians and nurses, and the capacity of nurses to prescribe, refer patients to specialists and to be reimbursed for their services. The responses to the relevant questions provide an overview of the situation relating to the current level of use of nurse practitioners in a wider range of countries than was identified through the literature review. Sixteen countries responded to the question on substitution, of which eight reported some current level of use of nurses in advanced practice roles, and a further three reported that piloting is underway or is being considered. The remaining countries reported no current developments in this area. In relation to the capacity to prescribe, eight countries reported that nurses had been given limited authority to prescribe and one other country reported piloting such a role for nurses. Six countries reported that nurses in some advanced or specific roles had been granted capacity to bill patients for their services. Seven countries reported that nurses in advanced roles could refer patients to specialists in a gatekeeper system and one country said that the matter was under investigation.

Case Studies

15. The two national case studies of drivers, facilitators and constraints for the use of APNs were based on interviews with key respondents in the United States and England,. Some of the leading drivers identified by the key informants in these two countries were commonto both countries – including staff shortages and substitution. However, in the US, the pursuit of value-for-money was seen as a leading driver and the spread of APNs was led by nurses. In the UK, the development of new services was seen as a leading driver and the spread of APNs was led by government policy and with more positive support from the medical profession than was reported in the US. The major facilitators of change in increase the use of APNs included the attitude of nurses in the US and government support in the UK. The major constraints included the opposition of some representatives of the medical profession in the US and lack of funding and shortages of nurses with appropriate training in the UK. One of the most striking differences between the two countries was the attitude of the medical profession – relatively hostile to the extended role of nurses in the US, and supportive in the UK. That might be caused partly by the predominance of fee-for-service payment of doctors in the US (which puts doctors potentially in competition with nurses for patients) and the predominance of capitation and salary payment of doctors in the UK (which encourages delegation by doctors and team working). However, it is also interesting to note that the reported ratio of nurses to physicians was 3.0 in the US against 4.4 in the UK in 2000.

16. A key issue is the extent to which advanced practice roles for nurses have been defined and institutionalised by, for example, being recognised under legislation, provided for in educational and training programmes, given access to direct reimbursement and specified in career ladders. In the US, Federal and State government policy and legislation from the late 1960s onwards have been seen as helpful to the development of advanced practice roles for nurses. In contrast such roles have not yet been defined under legislation in the UK, although the Royal College of Nursing has to some extent filled the gap by spelling out certain educational qualifications and competences for ‘nurse practitioners’. Opinion seems to be somewhat divided in the UK on the value of further regulating and defining advanced professional roles for nurses, rather than allowing “advanced practitioner” roles to evolve locally, which are less defined by uni-professional groupings.

RESUME

17. Il existe un moyen susceptible de contribuer de manière importante à l'utilisation rationnelle des personnels de santé, à savoir la modification de « l'éventail des qualifications ». « L'éventail des qualifications » est un concept relativement vaste qui renvoie soit à l'éventail des personnels qualifiés, soit à la séparation des rôles et des activités réservés aux différentes catégories de personnel. Parmi les pistes envisagées dans l'utilisation des modifications de l'éventail des qualifications pour améliorer les performances des systèmes de santé, c'est la substitution du personnel infirmier aux médecins qui a le plus retenu l'attention.

18. Les modifications de l'éventail des qualifications peuvent se traduire par des résultats divers, tels que le relèvement des qualifications au sein d'un groupe professionnel donné, une substitution[2] entre différents groupes, une délégation des actes vers le haut et vers le haut au sein de la hiérarchie d'une même discipline ou des innovations au niveau des fonctions exercées. Les facteurs qui motivent ces changements peuvent être très divers, notamment la volonté d'innover dans la prestation des services, des pénuries de certaines catégories de personnels (en particulier dans les centres villes ou les zones rurales), l'amélioration de la qualité et le désir d'améliorer l'efficacité de la prestation de services par rapport à son coût.

19. Il existe des différences importantes dans les ratios médecins/personnel infirmier relevés dans l'ensemble des pays de l'OCDE et on observe les signes de profondes évolutions en longue période dans certains de ces pays. Tout cela amène à s'interroger sur l'orientation des changements et leur opportunité.

20. Ce rapport, qui a été établi à la demande de l'OCDE, examine les changements intervenus dans l'éventail des qualifications des médecins et des infirmiers/infirmières aussi bien en soins primaires qu'en milieu hospitalier.

21. Le rapport se compose de trois parties : une revue de littérature ; une évaluation des réponses des pays à une enquête de l'OCDE et deux études de cas nationales plus détaillées, portant sur l'Angleterre et les Etats-Unis.

Revue de littérature

22. Les travaux publiés traitent de l'utilisation du personnel infirmier à un « niveau de pratique avancée » considérée en termes d'efficacité et de rentabilité et au regard d'autres paramètres d'évaluation. Le gros des observations porte sur les *infirmiers/infirmières exerçant à un niveau avancé*, les *infirmier/infirmières spécialisés* et les *infirmier/infirmières praticiens*. Les données proviennent pour l'essentiel d'un nombre relativement limité de pays – principalement d'Amérique du Nord, et aussi en

2. Une substitution implique généralement le remplacement d'un pourcentage d'un type de travailleur par un autre type de travailleur au sein des effectifs dans un souci d'améliorer l'efficacité. De tels changements peuvent très bien être marginaux. De plus dans une période d'activité grandissante, une substitution d'un type de travailleur pour un autre peut coïncider avec une augmentation de l'emploi des deux types de travailleurs.

partie du Royaume-Uni et de l'Australie. Les définitions de ces fonctions ne sont cependant pas bien tranchées.

23. Les facteurs qui ont entravé l'examen de la littérature sont : des variations dans les contextes organisationnels et nationaux ainsi que les différents types de changements dans l'éventail des qualifications qui avaient été évalués ; le nombre relativement modeste d'études qui répondaient aux critères de sélection ; et le manque particulièrement marqué d'études sur l'efficacité par rapport au coût. La plupart des études prises en compte dans l'examen traitent de la substitution du personnel infirmier aux médecins.

24. Plusieurs examens antérieurs des travaux portant sur le rôle des infirmiers/infirmières exerçant à un niveau avancé dans le champ des soins primaires tendaient à montrer que ceux-ci peuvent dispenser des soins équivalents à ceux dispensés par les médecins dans ce même champ. Les patients étaient généralement plus satisfaits des consultations infirmières que des consultations médicales. Le personnel infirmier faisait réaliser un plus grand nombre d'examens et accordait plus de temps aux patients en consultation. Un précédent examen des études portant sur l'utilisation du personnel infirmier praticien dans les services d'urgence des hôpitaux laissait entendre que ce dernier ne soignait ni mieux ni plus mal que les médecins d'établissement les blessures légères.

25. Ces conclusions étaient corroborées par le nombre limité d'essais contrôlés aléatoires qui étaient disponibles, lesquels sont examinés dans ce document. Tous les essais contrôlés aléatoires du bilan préopératoire des patients par le personnel infirmier, de la gestion de la maladie de Parkinson par le personnel infirmier, des accouchements des femmes à faibles risques par les sages-femmes et de la prévention secondaire de la coronaropathie par le personnel infirmier ont démontré que les soins dispensés par le personnel infirmier peuvent être équivalents, voire supérieurs à ceux dispensés par les médecins.

26. Un essai contrôlé aléatoire d'un service novateur de consultation infirmière par téléphone en soins primaires en dehors des heures ouvrées a montré que le coût de ce service serait amorti grâce à la réduction du nombre d'admissions en urgence à l'hôpital. En revanche, une évaluation des premiers résultats d'exploitation de « NHS Direct » - le service national de consultation infirmière par téléphone mis en place à travers toute l'Angleterre en 2002 – semble indiquer que son coût n'était compensé que pour moitié environ par une meilleure utilisation des services de santé nationaux – les patients étaient néanmoins très satisfaits du service.

27. Parallèlement, l'analyse de six études de rentabilité du rôle des infirmiers exerçant à un niveau avancé a abouti à des conclusions contrastées. En pratique, les services assurés par un personnel infirmier dans divers milieux étaient soit d'un coût équivalent, soit plus coûteux, soit moins coûteux que les services assurés par des médecins.

28. Nombre des études recensées dans la littérature traitent de la substitution des infirmiers/infirmières aux médecins une fois que le diagnostic du patient a été établi. Il faut cependant encore répondre à un certain nombre de questions si le diagnostic n'est pas connu – notamment la mesure dans laquelle le personnel infirmier, lorsqu'il s'occupe de patients dont le diagnostic est incertain, est compétent pour déceler les maladies rares et les effets secondaires des traitements.

Enquête de l'OCDE

29. L'examen de la documentation a été complété par des données obtenues à l'aide du questionnaire utilisé dans l'enquête sur les politiques menée dans le cadre du projet de l'OCDE sur les ressources humaines pour les soins de santé. Cette enquête couvrait tous les pays de l' OCDE et elle examinait, entre autres, les politiques actuellement suivies en matière de substitution de personnel infirmier aux médecins

ainsi que la capacité du personnel infirmier à prescrire, à orienter les patients vers des spécialistes et à obtenir le remboursement des services infirmiers. Les réponses aux questions sur ces points permettent de se faire une idée d'ensemble de la façon dont sont utilisés aujourd'hui les infirmiers/infirmières praticiens dans un plus large éventail de pays qu'il n'a été possible de le faire dans l'examen de la documentation. Seize pays ont répondu à la question sur la substitution, huit d'entre eux ayant indiqué que le personnel infirmier était parfois utilisé aujourd'hui à un « niveau de pratique avancée » et trois autres que des expériences pilotes sont en cours ou sont envisagées. Les autres pays n'ont signalé aucune évolution nouvelle dans ce domaine. S'agissant de la capacité à prescrire, huit pays ont indiqué que le personnel infirmier s'était vu accorder une compétence limitée à prescrire et un autre pays a indiqué que l'attribution de ce rôle au personnel infirmier faisait l'objet d'une expérience pilote. Six pays ont signalé que le personnel infirmier exerçant certaines fonctions avancées ou spécifiques s'était vu accorder le droit de facturer ses services aux patients. Sept pays ont répondu que le personnel infirmier exerçant des fonctions avancées pouvait orienter les patients vers un spécialiste dans le cadre d'un système de filtrage et un pays a déclaré que la question était à l'étude.

Etudes de cas

30. Les deux études de cas nationales sur les facteurs qui stimulent, facilitent ou entravent l'utilisation du personnel infirmier exerçant à un niveau avancé avaient été réalisées sur la base d'entretiens avec des responsables de haut niveau aux Etats-Unis et au Royaume-Uni. Certains des principaux facteurs de stimulation identifiés par les responsables interrogés dans ces deux pays leur étaient communs – notamment les pénuries de personnel et la substitution. Toutefois, aux Etats-Unis la recherche du profit était considérée comme un élément moteur et la généralisation de l'exercice de fonctions avancées se faisait sous l'impulsion du personnel infirmier lui-même. Au Royaume-Uni, le développement des nouveaux services était considéré comme un élément moteur et la généralisation de l'exercice de fonctions avancées par le personnel infirmier était voulue par les pouvoirs publics et bénéficiait d'un plus grand soutien de la profession médicale que ce n'était apparemment le cas aux Etats-Unis. Les principaux facteurs qui facilitaient le recours croissant à un personnel infirmier exerçant à un niveau de pratique avancée étaient entre autres l'attitude des infirmiers/infirmières aux Etats-Unis et le soutien des pouvoirs publics au Royaume-Uni. Les principaux obstacles étaient notamment l'opposition de certains représentants de la profession médicale aux Etats-Unis et l'insuffisance du financement et les pénuries d'infirmières ayant la formation voulue au Royaume-Uni. L'une des différences les plus frappantes entre les deux pays était l'attitude de la profession médicale – relativement hostile à l'élargissement du rôle du personnel infirmier aux Etats-Unis et favorable au Royaume-Uni. Il se peut que cela soit dû en partie à la prédominance de la rémunération à l'acte des médecins aux Etats-Unis (ce qui met potentiellement les médecins en concurrence avec la profession infirmière pour s'assurer la clientèle des patients) et la prédominance du paiement à la capitation et du salariat des médecins au Royaume-Uni (qui encourage la délégation des actes par les médecins et le travail d'équipe). Toutefois, il est également intéressant de noter que selon les chiffres communiqués le ratio personnel infirmier/médecins était de 3.0 aux Etats-Unis et de 4.4 au Royaume-Uni en 2000.

31. Un aspect fondamental est la mesure dans laquelle l'exercice de fonctions de niveau avancé par le personnel infirmier a été défini et institutionnalisé, par exemple en étant reconnu dans la législation, inclus dans les programmes d'éducation et de formation, reconnu comme donnant lieu à un remboursement direct et considéré comme une étape spécifique dans le déroulement de carrière. Aux Etats-Unis, les politiques menées et la législation adoptée par les administrations au niveau fédéral et à celui des Etats à partir de la fin des années 60 ont été jugées comme ayant favorisé la généralisation de l'exercice de fonctions de niveau avancé par le personnel infirmier. Par contre, aucun texte législatif n'a encore défini ces fonctions au Royaume-Uni, bien que le Royal College of Nursing ait dans une certaine mesure comblé cette lacune en spécifiant certaines des qualifications et compétences du « personnel infirmier praticien ». Les opinions semblent diverger quelque peu au Royaume-Uni quant à l'intérêt de continuer à réglementer

et définir les fonctions professionnelles avancées du personnel infirmier au lieu de laisser évoluer d'elles-mêmes les fonctions exercées « à un niveau de pratique avancée » au niveau local, où les groupements professionnels pèsent moins sur les définitions.

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1. Introduction

32. This report was commissioned by OECD to examine the evidence on role change and delegation from physicians to advanced practice nurses (APN)- nurse practitioners and nurses in other advanced roles in the hospital setting and primary care. The report has three components:- a literature review, an assessment of country responses to a questionnaire sent out by the OECD, and two more detailed country case studies, on England and US.

33. The review of current evidence reports on the use of advanced nursing practice roles in terms of costs and benefits, cost-effectiveness and other outcomes reported in evaluations of this role.

34. This review is supplemented by data from the OECD HRHC project. This data is drawn from the section of the OECD questionnaire which investigated policies on skill-mix arrangements and their effectiveness, and which elicited information about capacity of nurses to prescribe, refer patients to specialists and to be reimbursed for their services.

35. The contextual factors that influence the development of new advanced roles for nurses, and associated skill-mix initiatives, are examined by focusing on two country case studies from the USA and UK. This highlights some of the key facilitators and constraints on introducing or extending the use of such advanced roles, in relation to skill-mix between doctors and nurses.

2. Discussion of key terms

36. Skill-mix is a broad term that can refer to:

> "the mix of posts in the establishment; the mix of employees in a post; the combination of skills available at a specific time; or the combinations of activities that comprise each role, rather than the combination of different job titles" (Buchan *et al.* 2001:233).

37. Keyzer (1997) identifies, from an analysis of the literature, four models for doctor/nurse skill-mix, the surrogate doctor, the doctor's assistant, the complementary practitioner and the needs-led practitioner. The surrogate doctor and the doctor's assistant do not necessarily equate to advanced practice for nurses. The focus is on tasks and roles are defined in terms of medical practice, rather than by the expertise of the nurse to provide appropriate care to the patient.

38. The complementary practitioner and the needs-led practitioner illustrate an expanded nursing role and provide a distinct difference in the philosophy of care, which focuses on user need rather than being service-led. The focus of the nursing service from this perspective is on the needs of the community, rather than on the services that can be provided.

39. Sibbald *et al.* (2004) provide a useful framework for looking at nurse/doctor skill-mix, which includes:

- Enhancement - extending the roles or skills of a particular group of workers;
- Substitution- working across professional divides or exchanging one type of worker for another;
- Delegation – moving a task up or down a uni-disciplinary ladder; and

– Innovation – creating new jobs by introducing a new type of worker.

40. Most of the evidence presented in this review relates to the work of advanced practice nurses, specialist nurses or nurse practitioners. Definitions of these roles are not clear-cut. The International Council of Nurses (ICN) defines the role of the advanced practice nurse as:

> "A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A Masters degree is recommended for entry level." (International Council of Nurses 2002)

41. The advanced practice nurse is an umbrella term that that covers a number of nursing roles, such as nurse practitioner and nurse specialist (Busing 2003). The nurse practitioner will have a broad education usually at master's level (in the USA at least) across a wide spectrum of medical conditions and will have an emphasis on prevention and patient education. Nurse practitioners work both in primary and hospital care. The nurse specialist role is usually focused on one speciality such as oncology or mental health. Roles and responsibilities of the nurse specialist may be similar to that of the nurse practitioner and it is not always clear where the distinction lies between them. Indeed, the terms "advanced", "specialist" and "practitioner nurses" are often used interchangeably in the literature (Cooper 2001; Ormand-Walshe and Newham 2001; Daly and Carnwell 2003). Appropriately trained nurse (ATN) may also be used to describe a nurse who has been trained to carry out a particular procedure or task that they would not normally undertake (Kinley *et al*.2001).

42. These definitions are further confused by the lack of parity internationally of how these varying roles are regulated. Advanced-practice roles are registerable in New Zealand, Australia and the USA.

43. In the UK, some states in the Pacific, Taiwan, West Africa and Canada (Buchan and Edwards 2000; World Health Organisation 2001; Chen 2001; Madubuko 2001; Busing 2003), the advanced practice nurse is not a registerable role, although the titles of nurse specialist/practitioner or advanced practice nurse are used. This makes it difficult to compare the roles, level of education or competency of nurses with these title either within these countries or internationally (Busing 2003). The application and interpretation of research and evidence on the effectiveness of the nursing roles is also limited by this inconsistency.

3. Policy drivers for new roles and skill-mix

44. There is no common starting point for different countries, sectors and health systems when it comes to examining the inter-related issues of health professional roles and skill-mix. Resource availability, regulatory environments, culture, custom and practice will all play a part in determining the "typical" or "normal" roles and mix of staff in a health system. To the extent that these factors vary, so will the typical mix. There are marked variations between countries and regions in terms of the mix between different health-care occupations, which will be illustrated later in this paper by an analysis of OECD data on nurses and physicians. Table 1 highlights some of the key issues, which explain why examining the issues of roles and skill-mix of health professionals is an important issue in many health systems.

45. These driving forces are not mutually exclusive; in many cases, more than one driver will be acting on a health system, some of the main policy drivers for skill-mix are summarised in Table 1. It should also be noted that introducing a new role, or changing skill-mix is not the only potential intervention or solution to these challenges. In terms of a policy response, organisations and systems could

also seek to review other options, including improving utilisation of hospital beds, capital equipment and other resources; improving staffing patterns in relation to day-to-day fluctuations in workload and patient dependency; and reviewing and altering resource allocation and distribution (*e.g.* between tertiary, secondary and primary care).

Table 1: New roles and skill-mix: drivers, issues and possible interventions

Driver	Issue	Possible interventions
Skill shortages	Respond to shortages of staff in particular occupations or professions	Skill substitution; improve utilisation of available skills, develop new role
Cost-containment	Improve management of organisational costs, specifically labour costs	Reduce unit labour costs or improve productivity by altering staff mix or level
Quality improvement	Improve quality of care	Improve utilisation and deployment of skills of staff through achieving best mix of staff and roles
Technological innovation; new medical interventions	Achieve cost effective use of new medical technology and interventions	Re-training of staff; new skills; different mix or new type of role or worker introduced.
New health sector programmes or initiatives	Maximise the health benefits of the implementation of the programme through having appropriately skilled workers in place	Assess cost effective mix of staff required; skill enhancement of current staff; introduction of new roles
Health sector reform	Achieve cost-containment, improvements in quality of care and performance and responsiveness of health sector organisations	Re-profiling, "re-engineering"; labour adjustment; new roles; new workers.
Changes in legislative/ regulatory environment (Note, can also be a possible intervention)	Scope for changes in (or constraints on) roles of different occupations, professions. Changes in legislative environment. *E.g.* Increase in medical indemnity costs	Role change or enhancement; new skills required; introduction of new workers

Source: adapted from Buchan and Dal Poz, 2002

46. The policy focus on cost-containment in health care and increased public demand for new and sometimes more expensive treatments, and high quality care have required health professionals and policy makers to look at managing resources more effectively. The cost of staffing in health care can reach over 75% of health-care costs (Buchan *et al.* 2001) and one solution to managing cost is to identify the most effective mix of staff within the resources available. Attempts, for example in Canada, were made to assess and demonstrate the potential for nurse practitioners to replace physicians as early as the 1980s (Denton *et al.* 1983; Lomas and Stoddart 1985). Cost-containment is not the only motivation for developing new roles and a more effective skill-mix. Workforce shortages, in particular shortages of qualified medical staff in various countries, have lead to the re-examination to the role of non-physician clinicians (Richardson *et al.* 1998; Cooper 2001; Hooker 2003).

47. New services and technologies that have potential to reduce health costs, such as protocol based telephone based consultation, have also been a policy driver for the introduction of new roles. Changes in regulations and legislative reform can also be a driver to investigate or initiate new roles. Two examples are legislation to enable nurses to prescribe (Buchan and Calman 2000) and the impact of the European Working Time Directive on the hours of work of junior doctors.

4. The evidence base on skill-mix and new roles

48. There is a growing body of evidence that examines the effectiveness of nurses developing their scope of practice to include roles and tasks traditionally performed by physicians. It should be noted that the vast majority of this data has emerged from a relatively small number of countries – mainly in North

America, with some also from the UK and Australia. This current paper focuses on English language publications, but it should be noted that a recent French language review of roles and competencies in primary health care (Midy 2003) drew almost exclusively from English language publications, and noted that the introduction of new nursing roles in primary care was primarily a phenomenon of "Anglo-Saxon" countries (although it should also be noted that there have been similar developments in other countries such as Korea).

49. This review focuses primarily on identifying evidence for the development of policy in this area. Strongest evidence comes from meta-analysis or systematic review of empirical data; this evidence will be summarised in the section below. However, there are also a number of general points to note about evaluating skill-mix changes or the introduction of new roles. Firstly, it should be noted that the different reviews reported below used different inclusion or exclusion criteria which means that conclusions may be drawn from different evidence bases.

50. Secondly, the indicator(s) used for "staffing" in different studies vary and can include actual staffing numbers, the number of funded staffing posts, staffing hours, staffing costs (either average or actual) and staff mix (as defined and differentiated variously by occupation, grade or by qualification level). There are different methods of "measuring" staffing (*e.g.* the use of staff time, staff numbers etc). Choice of indicator can in turn lead to different assessments of staffing costs and different results - see for example the study of general practitioners costs in England (Graham and McGregor 1997).

51. Thirdly, the current level of data availability and information system infrastructure in health systems (and its potential to generate additional data at an acceptable cost) will also be factors in determining which indicators, and which overall approach to evaluating and 'costing' roles, could be used.

52. Fourth, some indicators, particularly clinical indicators, are only likely to be routinely reported in health systems with a relatively sophisticated information infrastructure. Attempting to generate such data for a "one-off" evaluation exercise would be potentially costly and time consuming. The majority of care outcome indicators are derived from secondary care, rather than primary care environments. This means that the current scope for evidence based evaluation of staffing, skill-mix and outcomes in primary care is less well advanced than in secondary care. This in part reflects the relative difficulty in delineating the focus of evaluation in community based care.

53. The fifth point to note is that there is some evidence that not all the staffing related outcome specific indicators are universally applicable to all care environments. There is a need to examine if the outcome indicators being used are reliable and valid for the purposes to which they are being put (Irvine *et al*. 2000). The large scale study of nurse staffing and outcomes in the US (Needleman *et al*. 2002) considered and rejected some indicators and reported that some outcomes indicators are more sensitive than others in particular areas of care delivery.

54. A sixth point is the time period of the review. Some published reviews cover decades of research. It is likely that over the period the policy context will have changed significantly, so the results from "early" studies may be less relevant to a current policy audience than the results of studies recently completed.

55. The structure of this review is based on levels of evidence rather than categorising papers by the models discussed above. A review of evidence has already been published using this format (Sibbald *et al.*2004). The difficulty in slotting research findings into one of these categories, often without sufficient clarification of whether the research focuses on, for example, substitution or innovation in the papers themselves, and the overlap between categories, merits the evidence being summarised thus; section 4.1

reports on systematic reviews and meta-analysis, 4.2 on randomized controlled trials, 4.3 on economic evaluation, 4.4 on evaluation studies and 4.5 provides a summary of evidence.

4.1 Systematic Reviews and Meta-Analysis

56. A systematic review of current evidence relating to skill-mix in the UK is reported in Sibbald (2003) and Sibbald *et al.* (2004). Although this review looked more broadly at skill-mix than doctor/nurse roles, it reported that there was little evidence available from other professional groups. Their findings indicate that there is a lack of good evidence to support the effectiveness and efficiency of skill-mix in the UK - a point that has also been highlighted in previous reviews. Clinical databases were searched from 1990 to 2002 but only 24 papers, from the 9064 initially identified, met the inclusion criteria. The studies included in the review utilised a systematic search strategy; were based on experimental research or were qualitative meta-analysis or qualitative synthesis of data (Sibbald 2003).

57. The papers were classified according to the framework as described above (see section2). The authors reported some difficulty in clarifying these classifications; for example, in the case of advanced practice nurses there was debate about whether new roles were innovation or enhancement. Discussion of the decision making process is included in the paper (Sibbald *et al.* 2004). Six reviews (five focusing on nursing and one on pharmacists) were identified which related to enhancement. Thirteen reviews were considered to relate to substitution; these primarily related to doctor/ nurse substitution. One review dealt with the delegation of tasks, but findings were not deemed to be robust . No systematic reviews on innovation were identified other than those relating to the US physician assistant. The review also included reviews focused on changes in skill-mix brought about by changing the interface (by transfer, relocation and liaison) between services.

58. The findings of the examination of the 24 papers reveal that not all anticipated benefits of the introduction of skill-mix (efficiency, effectiveness and quality of care) are met and cost-effectiveness is rarely evaluated. Some unforeseen and negative outcomes were identified such as impact on staff workload and morale, increased difficulty in ensuring continuity of care and coordinating care in larger teams (Sibbald 2003; Sibbald *et al.* 2004). This systematic review included the two meta analysis (Brown and Grimes 1995; Horrocks *et al*. 2002) which are discussed below.

59. Centre de Recherche d'etude et de Documentation en Economie de la Sante (CREDES) in France report a literature review of the efficacy and efficiency of the sharing of competencies in the primary care sector 1970 –2002 (Midy 2003). The review is almost exclusively based on texts in English language from the UK and North America and therefore reflects the development of primary care services in these countries (the fact that the review could not identify French language publications itself is interesting). The CREDES review indicates that the method of financing primary care was seen to play a specific role in the acceptability of transfer of competencies for one profession to another, specifically whether health-care staff are reimbursed for a contract or per head or for a particular intervention. The willingness of professions to either accept or delegate some of its activities was also an important factor. It was reported that some nurses did not feel equipped to take on diagnosing patients and associated prescribing competencies. The review concludes that current literature, although offering an opportunity to reflect on issues of skill-mix, currently does not present any solutions to the current shortages of health-care personnel.

60. Horrocks *et al*. (2002) report a systematic review and meta-analysis (of 34 studies that fulfilled inclusion criteria) examining whether nurse practitioners working in primary care can provide equivalent care to doctors. This review does provide some evidence to indicate that nurses can provide care that, in comparison to that given by doctors, leads to at least equivalent outcomes and increased patient satisfaction

(Similar findings were reported in a Finnish based systematic review- Vallimies-Patomäki *et al*, 2003). Not all data from the studies reported could be reported as meta-analysis, but meta-analysis data did confirm that patients were more satisfied with consultations with nurses than with doctors. Of interest is that nurses ordered significantly more investigations than doctors and had longer consultations with patients. However, the authors report that the studies reviewed did not have robust enough economic analysis to draw any firm conclusions about cost-effectiveness, and quality of life and health status and quality outcomes could not be analysed because of the heterogeneity of measures utilised in different studies.

61. Dealy (2001) reports a systematic review, of nine papers that met inclusion criteria, examining the effectiveness of emergency nurse practitioners. The conclusion of this review is that emergency nurse practitioners are no better or worse than House Officers[3] in seeing treating and discharging patients from minor injuries units in accident and emergency departments. One study in the review reported that the cost of treatment and investigations were similar in both groups but did not compare cost of employing a nurse practitioner and a junior doctor. Dealy (2001) recommends that in light of reduced access to junior doctors and long waiting time in accident and emergency it would be worth exploring the use of emergency nurse practitioners.

62. A meta-analysis of nurse practitioners and nurse midwives in primary care in the US was reported by Brown and Grimes (1995). The value of this analysis is limited as only one third of the studies included involved research designs that were randomised and cost-effectiveness was not addressed (Brown and Grimes 1995). The analysis revealed that, in randomised studies, greater patient compliance (*e.g.* compliance in taking medications, keeping appointments, and following recommended behavioural changes) was apparent with nurse practitioners in comparison to doctors. In other, non-randomized, studies which were included, satisfaction and resolution of illness was higher for patients of nurse practitioners. The outcomes of other variables, quality of care, prescription of drugs, functional status, number of visits per patient and use of the emergency room, were comparable between nurses and doctors. Nurse midwives also achieved outcomes that were comparable to doctors and used less technology and analgesia in interpartum care.

63. Richardson *et al.* (1998) report a review of skill-mix changes, but the current value of this review may be limited as many of the reported studies were conducted in the 1970s and 1980s. The authors report that although individual studies may identify positive outcomes of the substitution of nurses for doctors, many of these studies are methodologically weak such as small sample size and inadequate measures of outcome or cost, and generalisability of findings were deemed near negligible. However, they do highlight some pertinent findings about cost-effectiveness from individual studies in their review indicating that substitution can be cost effective as long as the salaries of the substitute clinicians remain below half of the physician salary (Schneider and Foley 1977).

64. Wilson-Barnett and Beech (1994) review the evidence evaluating the clinical nurse specialist. Although this review is now 10 years old is does provide evidence specifically about the impact of the clinical nurse specialist. This review highlights different methodological approaches to evaluating role. Structure and process evaluation studies, such as those examining patient and professional perceptions of the role and analysis of role, are primarily descriptive and utilise qualitative data. Outcome studies employed quantitative approached including cost analysis. Synthesising these studies allowed a

3. A house officer is a doctor who is undertaking the two to three year period of internship immediately after the period of basic medical education

comprehensive evaluation of the role. The authors suggest that despite methodological weaknesses of the studies there are significant benefits for patients, including increased accessibility of the nurse for patients and patient satisfaction, improvement in patient's knowledge of their condition, and reduction in cost for service providers.

65. There have been relatively few systematic reviews of skill-mix and doctor-nurse substitution. Those that have been conducted have often highlighted the methodological limitations of many of the available research studies, and have therefore cautioned against general summaries and over simplistic conclusions. Whilst there does appear to be some evidence that the substitution of advanced nurses for doctors can be effective, most commentators have characterised the current evidence base as limited, if developing.

66. Some (*e.g.* Richardson *et al.* (1998); Buchan and Dal Poz (2002)) have also argued for the need to support standardised research and evaluation to build up an evidence base that has a broader relevance. They argue that skill-mix issues are a key policy driver in health care, and that there would be considerable benefit to developing a more consistent approach to evaluation of skill-mix and skill-mix changes. One approach would be to support a range of co-ordinated studies using a similar methodology; another would be to use a standard protocol.

67. The Cochrane Effective Practice and Organisation of Care (EPOC) group has developed a protocol for a systematic review on the subject of 'substitution of doctors by nurses in primary care'. The purpose of the protocol would be to structure a review to determine the effects of substituting nurses for doctors in primary care. The following hypotheses would be tested:- "Doctor-nurse substitution in primary care has no impact on:

68. Patient health outcomes (*e.g.* morbidity, mortality, patient satisfaction, quality of life);

1. The process of care (*e.g.* patient compliance, standards of care); and,

2. Health-care resource utilisation (*e.g.* frequency and length of consultations, number of return visits, prescriptions, tests and investigations ordered, referrals, use of emergency and other health services)" (Laurant *et al.* 1998).

4.2 Randomised controlled trials

69. The reviews reported above have highlighted a growing evidence base on doctor- nurse substitution, but that there is little parity between studies in outcome measures evaluated and relatively few robust economic evaluations. Some individual studies reviewed are methodologically weak or are non randomised studies and there are complications in comparing nursing roles internationally. Due to these difficulties in synthesising data into systematic reviews or meta-analysis, currently any generalised, universal or "international" statement about evidence for nurses substituting for doctors is of limited value.

70. However, it is possible to identify a number of randomised controlled trials that individually may provide more narrowly based evidence for the effectiveness of nurses substituting for doctors in defined clinical areas. A number of recent randomised controlled trials (RCT) from the UK and US are shown in Table 2 below.

Table 2: Randomised Controlled Trials reporting nurse substitution for doctors

AUTHOR	CLINICAL AREA	FINDINGS AND CONCLUSIONS
Kinley *et al.* 2001	Routine pre-operative assessment UK	Pre-operative assessments carried out by nurses were essentially equivalent to those carried out by PRHOs PRHOs ordered significantly more tests than nurses but the trial was cost neutral – it is suggested that savings could be made by training lower grade nurses to do assessments but this raises questions of quality of care The qualitative study showed patients were satisfied with care One in eight chance of PRHO missing something that may effect peri-operative management one in ten chance of nurses doing the same – neither nurses nor PRHOs performed well CONCLUSION – there seems no reason to inhibit the development of nurse-led pre-op assessment
Shum *et al.* 2000	Nurse management of minor illness in general practice UK	Patients were satisfied with care from doctors and nurses but were significantly more satisfied with care from nurses and most were willing to see a nurse rather than a doctor Consultations with nurses took longer A similar number of prescriptions were written by doctors and nurses 73% of patients were managed by without any input from doctors. Some uncertainty about whether any rare conditions were missed – safety of the service could not be assumed No economic evaluation CONCLUSION – practice nurses offer an effective service for patients with minor illness who request same day appointments
Venning *et al.* 2000	Cost-effectiveness of general practitioners and nurse practitioners in primary care UK	Nurse consultations were significantly longer, requested more tests and asked patient to return more often No significant difference in prescribing or health outcome for the two groups Patients were more satisfied with nurse consultations – even when length of consultation was controlled for No significant difference in cost was reported CONCLUSION – Outcomes of care and cost were similar between the two groups – if nurses could reduce consultation time and return rate they could become more cost effective
Kinnersley *et al.* 2000	Nurse management of minor illness in general practice – same day consultations UK	Patients consulting with nurse practitioners were significantly more satisfied – though this was not the case in all practices Resolution of symptoms, number of prescriptions issued, referrals to secondary care, investigations and re-attendances did not differ between the two groups Patients seen by nurse practitioners reported receiving significantly more information about their illnesses and consultations tended to be longer No economic evaluation CONCLUSION – study supports the wider acceptance of the role of nurse practitioners to patients requesting same day consultations

Lattimer *et al.* 2000	Cost analysis of nurse telephone consultation in out of hours primary care UK	The nurse telephone consultation service cost GBP 82 237 per year Reduced emergency admission to hospital for both adults and children with a cost reduction to the NHS reported as GBP 98 422 and GBP 16 928 was also saved due to reduced travel to visit patients at home Neither patient satisfaction with the service or clinical outcome was measured CONCLUSION – Nurse telephone consultation may reduce NHS costs, but GPs bear most of the cost and benefit least from savings
Reynolds *et al.* 2000	Nurse management of Parkinson's disease V's care of a Consultant Neurologist UK	In comparison only 2 out of 22 health dimensions measured were significantly different between the groups these were physical functioning and general health. Both were improved under the care of the Consultant. The role of the specialist nurse could not be recommended on grounds of economic evaluation alone as nurses were providing additional services and care CONCLUSION - Few overall differences were found between the two groups. Complimentary roles rather than substitution was thought to be the way of the future.
Mundunger *et al.* 2000	Primary care outcomes in patients treated by nurse practitioners of physicians US	Outcome measures for the study were: patient satisfaction and health status after the initial appointment and 6 months later and service utilisation over the period of a year. No significant differences were found in patient's health status, satisfaction or service utilisation in the two comparison groups. CONCLUSION - Nurse-led care was comparable to doctors care, no economic evaluation was undertaken.
Law and Lam 1999	Comparison between midwife managed care and obstetrician managed care for women assessed to be at low risk US	Outcomes measures included interventions at the 1st stage of labour, outcomes of labour, outcomes of baby and complications at 3rd stage. CONCLUSION - Midwife managed care is as safe as obstetrician managed care for women who were assessed to be low risk at intrapartum period. Routine care by obstetrician in not necessary and midwives can detect complications in labour and alert the obstetrician.
Campbell *et al.*1998	Secondly prevention of coronary heart disease in nurse-led clinics in primary care V's regular medical follow up UK	Outcome measures for the study were: aspirin management, blood pressure management, lipid management, physical activity, dietary fat and smoking status. In the nurse-led clinics there was significant improvement in all measures except smoking cessation, where there was no difference. Most patients gained at least one effective component of secondary prevention and this could reduce cardiovascular events and mortality by up to one third. CONCLUSION - Nurse-led clinics were possible to implement in primary care and they led to increased secondary prevention in coronary heart disease.

4.3 Economic evaluations

71. The importance, and limitations, of economic approaches in the evaluation of doctor/nurse skill-mix and advanced-practice roles have been reported (Kernick and Scott 2002) and frameworks within which this could be assessed have been published (Carroll and Fay 1997; Vincent 2002; Kernick and Scott 2002). A model to estimate the costs of under utilisation of advanced practice nurses has also been proposed (Nichols 1992). Economic evaluation of advanced-practice roles have been reported from the 1980s in the US (McGrath 1990) and a number of recent of economic evaluations have been undertaken to examine the cost-effectiveness of specific nurse-led services. The results of these studies are mixed and the implementation of nurse-led services are reported variously as cost neutral, higher cost, or lower cost (see Table 3).

72. Taylor *et al.* (1997) in their evaluation looked at costs and effectiveness of a specialist nurse anticoagulant service compared to conventional consultant led care. The conclusion of this study was that nurses were no more expensive than consultants for out-patient care, and that there were added benefits such as provision of care to patient in their own home and less drug interactions reported in new patients. The service was reported as acceptable to both patients and their GPs. In a study of the effects of advanced nursing care on quality of life and cost outcomes of women diagnosed with breast cancer (Ritz *et al.* 2000) cost was identified as neutral, but measures of quality of care were deemed improved compared with other systems of delivering the same type of service.

73. An examination of a nurse-led ear care service in primary care reported by Fall *et al.* (1997) concluded that there were reduced costs compared to GP care, fewer systemic antibiotics were prescribed and that patients were satisfied with the service. Neonatal nurse practitioners were identified as cost effective with savings made when care was compared to junior doctors in a small study from the US (Bissinger *et al.* 1997). A nursing centre for the homeless was found to be more cost effective compared to other community services (Hunter *et al.* 1999).

74. Sakr *et al* (2003) report on a clinical and cost-effectiveness study in an emergency care setting in the UK. They report that costs of a nurse-led minor injuries unit are greater than a “traditional” unit and there is an increased use of out-patient services. However, waiting times were reduced and the service was found to be safe and effective in the treatment of minor injury. In this case the increase in cost may be attributable to increased rates of follow up, but it is unclear whether this would in turn lead to a reduction in more expensive unplanned follow up.

4.4 Evaluation studies

75. The review of the literature identified a number of studies that evaluate particular services without the use of a randomised trial or economic evaluation (*e.g.* Dolan *et al.* 1997; Greenberg 2000; Kerekes *et al.* 1996; Oakley *et al.* 1996 ; Price 2002; Prichard and Kendrick 2001; Vrijhoef *et al.* 2001). Although these evaluations may be of use to local policy makers or those trying to develop similar services, it would be difficult to draw conclusions from these various studies because of differences in contextual factors.

Table 3: Summary of Economic evaluations

STUDY	FOCUS	COST OF NURSE	OTHER MEASURES/OUTCOMES
Taylor *et al*. (1997)	Specialist anticoagulant nurse service vs. consultant led service	No more expensive than the consultant led service	Care provided in patients home with nursing service New patients under specialist nurse care experienced fewer drug interactions
Ritz *et al.* (2000)	Advanced practice nurses in breast caner care	Cost neutral compared with other services	Quality of care from APNs perceived to be improved compared with other services
Fall *et al.* (1997)	Nurse-led ear care in primary care	Reduced costs compared to GP care	Fewer antibiotics prescribed by nurses Patients were satisfied with the nursing service
Bissinger *et al.* (1997)	Neonatal nurse practitioners compared to junior doctors	Reduced cost compared to junior doctor care	
Hunter *et al.* (1999)	Nursing centre for the homeless compared to other community services	Nursing centre was found to be more cost effective than other services	
Sakr *et al.* (2003)	Nurse-led minor injuries unit vs. traditional unit	Costs of nurse-led unit were greater	Increased use of out-patient service by patients attending nurse-led service Waiting times were better with the nurse-led service Nurses found to be safe and effective in the treatment of minor injury

4.5 Summary of evidence

76. In an ideal world, for change in the roles and mix of health professionals to be both effective and sustainable there is a need for the change to be proven to be cost effective, safe, and satisfactory to both users and providers of health care. Some reports suggest that the current research is flawed because it does not take account of all of these facets or the effect that they have on each other (Jarvis 2001; Spilsbury and Meyer 2001). In some cases this has been used as an argument not to progress with changes. Other commentators (*e.g.* Buchan and Dal Poz 2002) argue that the technical aspects of skill-mix change or the introduction of new roles tend to be overemphasised, and that attention also is required to the broader issues of organisational change and human resource management that inevitably form part of such changes.

77. Although individual studies do contribute to evidence about the effectiveness of skill-mix between doctors and nurses, the most robust evidence is in the form of systematic reviews and meta-analysis, of which there are relatively few examples. Thus, it is difficult to make firm generalisable or internationally based conclusions from the literature. It is clear, however, that single randomised studies, in specific areas of practice, do support the view that nurses can provide care at least equivalent to doctors, although the full cost/benefit implications of this are not clear with the evidence currently available. It should also be noted that in some cases the outcome measures utilised for these studies are short term and it is not clear what the long term benefits or dis-benefits are. Kitzman & Groth (2003) report research studies that include long term outcomes of advanced practice nursing. These studies indicate that long term outcomes of care from advanced practice nurses compared to traditional services, when the diagnosis is already established, are at least equally good to traditional services. Long term follow-up studies would have to be commissioned to assess issues such as the extent to which the different alternative staff, when

working with patients with undifferentiated diagnosis, were equally proficient at identifying rare illness and side effects of treatment, or that one type of staff do not have a significantly higher error rate than another. The results of economic evaluations are mixed and again the impact of nurse-led services over the longer term has not been evaluated.

5. Contextual factors that influence the pace of change in developing new roles

78. There are broader contextual factors that have influenced the development of advanced practice nursing roles. One factor in some countries has been the increasing educational level of nurses and the complex technical care that they give (Horrocks *et al.* 2002). In some countries advanced practice nurses are seen to be key professionals in facilitating the implementation of new government policy on health-care provision. For example, in New Zealand the government plan is that nurse practitioners will play a increased role in primary care and Maori health (Hughes and Carryer 2002). However the changing role of nurses to take on tasks that were formally performed by medical staff has raised issues about professional boundaries - when does a nurse stop being a nurse - or "become" a doctor? (DeAngelis 1994). Will advanced practice nursing aid the professionalisation of nurses, or will the focus on technology and tasks lead to a situation where the essence of caring in nursing will be lost?

79. Uncertainty can be created when professional roles change, this uncertainty can affect relationships both between occupational groups and within them. Kinley *et al*. (2001) highlight the potential for problematic relationships between members of the multidisciplinary team when changes are seen to be implemented for negative reasons for example because of policy requirements, economic reasons, shortages in workforce or because there is work that doctors no longer want. Williams and Sibbald (1999) describe the sense of loss and insecurity felt when GPs and nurses roles changed.

80. Nurses in advanced-practice roles express concern about their place in the hierarchy and report difficult relationships with other nurses (Marshall and Luffingham, 1998). A recent survey by the Ontario Medical Association and the Registered Nurses Association of Ontario (2003) suggests that nurse practitioners and physicians did have good working relationships when new ways of collaborative working is introduced. However, the report also noted that dissatisfaction was expressed where new working relationships were introduced in a 'haphazard' way. In the US, Phillips *et al* (2002) have advocated the need for physicians and nurse practitioners to work more collaboratively.

81. It is clear within the literature that there are also mixed opinions about some of the factors which are driving the use of advanced practice nursing roles. In many instances, such as in the UK where primary care services are under the financial control of GPs, the doctor still has control over defining the division of labour, and the feeling that medical staff are having a say in defining new nursing roles may lead to resentment (Williams and Sibbald 1999; Charles-Jones *et al*. 2003). In a British Medical Journal editorial Zwarenstein and Reeves (2000) highlighted poor working relationships between doctors and nurses and present some limited evidence to suggest that poor collaboration leads to poor patient outcome.

82. Dowling *et al.* (1996) suggest that delegating roles from doctors to nurses have raised issues of accountability for both nurses and doctors, although there is no evidence to indicate that nurses will make more mistakes than doctors undertaking the same work. These accountability issues may be limited by inclusive planning for these roles with each professional group aware of the different demands placed on each profession with regard to professional regulation, accountability and scope of practice (Dowling *et al.* 1996).

83. One factor that may slow the development of advanced nursing roles in some countries is the method (s) of payment or reimbursement of services. The review of OECD country responses reported

later in this paper suggest that there are currently few countries other than the US where nurses may be reimbursed directly for services. The laws governing reimbursement in the US are complex, and advanced practice titles have to be recognised by states in order for nurses to receive direct reimbursement (Tashakkori and Aghajanian 2000). Camp-Sorrell and Spencer-Cisek (1995) suggest that lack of awareness of the role and value of advanced practice nurses results in lack of recognition by policy makers and the public and, that this has hindered changes in reimbursement policy to allow nurses to access funds. The International Council of Nurses has recently highlighted the scope for nurses to work in "entrepreneurial" roles , and has re-stated the need for reimbursement methods to be supportive of this approach (Sanders and Kingma, 2003).

84. Concern is also sometimes highlighted about the continued survival of nurse run services where these have developed to fill a vacuum left by withdrawal or non-establishment of "traditional" physician led services- if there is a financial reason for the non-establishment of traditional services, the nurse-led service may face similar financial difficulties.

85. Increasing the scope of practice of nurses to include roles traditionally held by doctors also has implications for workforce planning. Where there is a shortage of registered nurses the utilisation of nurses in advanced-practice roles may only be shifting the problem further down the line with nurses offloading tasks to unqualified staff. A recent review commissioned by the Commonwealth Steering Committee for Nursing and Midwifery (Wold *et al.* 2003) highlights the evidence base for the effectiveness of nursing and midwifery interventions and highlights the contribution of registered nurses make to the health and quality of life of populations. Workforce planning needs to be integrated across all disciplines in order to take account of how new roles will affect the broader context.

86. Staff will require to be educated appropriately to take on extended roles. This requires there to be standards set and clinical competencies agreed that are suitable for assessment (Sibbald 2003; Levenson and Vaughan 1999). Effectiveness of clinical skills and competencies should be measured before other groups of staff are required to take in the skill. Education and training can be a major cost in setting up of a new service and maintenance of competence is highlighted as an issue for ongoing effectiveness of a service (Kinley *et al.* 2001).

6. Responses to the OECD Survey

87. OECD has reported on the ratio of physicians to nurses in OECD countries, based on the data returns from the country questionnaires. The current ratio may give some indication of scope for substitution, whilst trends in the ratio may indicate if some level of substitution has already occurred (other factors may also account for these trends). The picture presented by the OECD data is extremely mixed, with some countries reporting very high ratios of physicians to nurses, and others reporting much lower ratios. There are also significant differences in how these ratios have been changing over time.

Table 4: The number of practising physicians per 1 000 practising nurses, 1960-2001

COUNTRIES	YEARS*										
	1960	1970	1980	1990	1995	1996	1997	1998	1999	2000	2001
Australia*			183	186	228	229	231	233	241	228	233
Austria		768	726	728	660	657	654	664	646	651	
Belgium					323	336					
Canada		208	188	190	198	201	203	209	211	211	
Denmark			317	362	359	357	356	359	360	359	356
France				557	543	542	528	522	505	488	477
Germany							338	338	338	339	340
Greece		1,123	1,249	993	1,075	1,070	1,070	1,093	1,121		
Ireland					176	170	165	167	166	159	161
Italy					750	783	761	773	808		
Japan	517	414	305	274		249		242			
Korea										431	431
Mexico			703	546	560	565	590	585	576	581	
Netherlands								119	125	128	129
New Zealand			254	203	211	210	242	231	234	233	228
Norway										113	117
Portugal			873		875	866	832	824	847	867	841
Slovak Republic					407	371	362		484	493	494
Spain				793	861	828	849	905	866	883	
Sweden	309	303	314	313	329	334	339	339	341	344	
Switzerland										327	
United Kingdom				187	222	224	234	230	223	228	
US										289	

* Data in 1980 for Australia refer to 1981.

Source: OECD Health project.

88. The data collated by OECD shows both that there is significant variation between OECD countries in the ratio of physicians to nurses, and that these ratios have been changing in countries over time (see Table 4). In 2001, the lowest reported ratio was in Norway, where there were 117 physicians per 1000 nurses; the highest was in Portugal, where there were reported to be 841 physicians per 1000 nurses. In some countries, such as Australia, there appears to have been an increase in the ratio of physicians to nurses, whilst in some others , such as France, the ratio appears to have been decreasing- in 1990 there were 557 physicians per 1000 nurses,; by 2001 that had reduced to 477 per 1000 nurses. Other countries (*e.g.* Canada, Ireland) appear to report little change in the ratio in recent years.

89. The OECD questionnaire included two 'bundles' of questions which attempted to provide country specific information on skill-mix:

> ***Q370*** *"Describe recent policies (in the last five years) aimed to improve skill-mix and provide available evidence regarding their effectiveness:*
>
> *a) substitution between physicians and nurses*
>
> *b) substitution between GPs and specialist physicians*
>
> *c) other types of substitutions*
>
> ***Q375/376***

> *"Describe changes in the ratio of GPs per nurses during the last ten years. Indicate and comment on the capacity of nurses to perform the following types of care: a) prescribing, b) billing, c) refer to specialist in gatekeeper system"*.

90. The country responses to these questions varied markedly. Some countries responded to most of the questions but most countries gave only an incomplete response or responded with little detail or did not respond. In the following sections the key responses are reported and assessed.

6.1 "Improving Skill-mix"

Substitution between Physicians and Nurses

91. Fifteen countries responded to this question, but three (New Zealand, Slovakia and the United States) did not give details. Table 5 gives summary details.

92. Australia, Canada, England and South Korea all reported on the introduction or extension of the use of nurses in advanced roles to improve efficiency, as a response to physician shortages and/or to improve services in rural and remote areas (New Zealand also reported the use of nurse practitioners; the United States reported the use of "physician extenders" in both acute and primary care).

93. Canada and England reported some level of evaluation of this substitution, with results reported in terms of improvements in patient satisfaction. Australia, England, Greece, Ireland, Netherlands and Slovakia all reported that there was pilot working underway in this area, or that the introduction of nurse practitioners was relatively recent and therefore no evaluation results were available.

6.2 Other Substitution

94. Canada, England, Ireland and Netherlands all reported on developments in the use of care assistants to support nurses and other health professionals. Australia, New Zealand and the United States noted that recent developments in new and advanced roles were linked to developing workforce flexibility, individual competence and multidisciplinary teams rather than to the actual substitution of one type of worker by another.

6.3 "Skill-mix between Physicians and Nurses in Primary Care"

95. Only three countries (England, Greece and Mexico) could provide information on changes in the ratios of GPs per nurse during the last ten years and the information given was not comparable. England reported on a decline in the ratio of GPs to practice nurses (qualified nurses working as employees of the GP); Greece reported an estimation that "about 10%" of nursing staff is working in primary care settings; and Mexico reported on the overall ratio of doctors to nurses. All other countries indicated that they did not have the relevant data (Australia, Austria, Canada, Germany, Slovakia, Spain and Switzerland) or did not respond to the question.

96. More countries provided information about specific aspects of advanced roles for nurses. These are summarised in Table 6.

Table 5: Summary of country responses to OECD survey questions on skill-mix

	370: Describe recent policies (in the last 5 years) aimed to improve skill-mix and provide available evidence regarding their effectiveness:		
	370.a: Substitution between physicians and nurses:	**370.b: Substitution between GPs and specialists physicians:**	**370.c: Other type of substitution (specify):**
Australia	Role introduced, being developed	-	-
Austria	GuK act restricts developments		
Canada	Some Provinces have regulated.	Some limited opportunities	Substitution within nursing, between levels.
England	CWP pilots of new roles NHS Direct- nurse based telephone support Limited nurse prescribing Nurse consultant roles	Investigating use of GP's with additional skills in *e.g.* diabetes care.	CWP: technicians for some aspects of hospital nurse role; paramedics for nurses in A and E; technicians for some aspects of clinical scientist role.
Germany	Planning for "stronger emphasis on interdisciplinary co-operation"	Legal constraints	Piloting GP role.
Greece	Policies "applied" but as yet no evidence.	In last two years "some thousands" of nurses employed, to fill gaps and to "substitute some physicians".	Strengthened role for family doctor under new law.
Ireland	New skill-mix policies set out for implementation; too early to assess effectiveness.		
Japan	-	-	-
Korea	Community Health Practitioners, in rural areas. Certified nurse specialists/practitioners in public health, anaesthesia, home nursing and mental health; to be extended.		
Mexico	No explicit policy to modify historical trends.		
Netherlands	Pilot studies underway	Pilot studies underway	Paramedics/ nurses; ophthalmologists/ opticians; GP's/ nurses; gynaecologists/ midwives
New Zealand	Nurse practitioners	GPs in rural areas work in Accident and Emergency.	New legislation intended to develop a more flexible workforce
Norway	--	-	-
Slovak Republic	In process	In process	In process
Spain	-	-	-
Sweden	Increased competence for nurses in specified areas	*e.g.* anaesthesia, diabetes, asthma	
Switzerland	-	-	-
US	None at federal level. State level variations. Non physician clinicians(nurse practitioners, physicians assistants) working in various settings (including rural/remote).		

Table 6: Summary of country responses to OECD questions on nurses in advanced roles

	376: Indicate and comment on the capacity of nurses to perform the following types of care:			
	375: Describe changes in the ratio of GPs per nurses during the last ten years:	**376.a: Prescribing:**	**376.b: Billing:**	**376.c: Refer to specialist care in a gatekeeper system:**
Australia	.NA	Limited rights, varying by State	NPs and independent midwives have limited access to billing items under Medicare	NP s have limited referral rights; vary by State
Austria	NA	Does not apply	Does not apply	Does not apply
Canada	NA	RNs with advanced training have limited right in some Provinces	No	In isolated and rural areas
England	GP: practice nurse ratio fell from 2.86 in 1991 to 2.32 in 2001	Limited; restricted range of drugs	No	No, except NHS Direct-telephone advice
Germany	NA	No	Only in exceptional cases	No
Greece	NA	No	Nurses in private practice only	No
Ireland	-	Pilots being developed	No	Nurse-led clinics
Japan	-	-	-	-
Korea	-	CHPs- limited.	CHPs use same billing as GPs	CHPs can refer to specialists
Mexico	-	Not allowed	Not allowed	Not allowed
Netherlands	-	Prohibited	No	Being investigated
New Zealand		NPs are regulated	-	Yes, NPs
Norway	-	-	-	-
Slovak Republic	In process	None	None	None
Spain	NA	Yes	Yes	Yes
Sweden	-	Nurses with special competences; limited range.	-	-
Switzerland	NA	None	None	None
US	-	Limited, regulated at State level	Advanced practice nurses may be able to bill, depends on third party payer	As before

6.4 Prescribing

97. Australia, Canada, England, Korea, New Zealand, Spain, Sweden and the US all reported that nurses in advanced roles had some level of (limited) prescriptive authority. (In Australia, Canada and the US it was reported that this authority was determined at State/Province level). Ireland reported that pilot projects examining scope for prescribing were currently being developed. Austria, Germany, Greece, Mexico, the Netherlands, the Slovak Republic and Switzerland reported that nurses did **not** have any prescriptive authority.

6.5 Billing

98. Australia, Germany, Greece, South Korea, Spain and the US reported that nurses had some scope for billing/reimbursement but in most cases this was highlighted as being restricted, either to those nurses working in private practice or in "exceptional circumstances" (Germany).

6.6 Referral to Specialist Care/"Gatekeepers"

99. Australia, Canada (mainly in rural/remote areas, England (NHS Direct- telephone advice only), Ireland (recent introduction of nurse-led clinics), Korea, New Zealand, Spain (no details) and United States (limited) reported that advanced nurses/nurse practitioners had some restricted responsibility for direct referral of patients. In all cases there were reported limitations or constraints on the level of responsibility and autonomy in relation to referral. The Netherlands also reported that responsibility for referral by some nurses was being investigated. Australia provided details on the legal/regulatory framework in which referral could take place.

100. Austria, Germany, Greece, Mexico, the Slovak Republic, Sweden and Switzerland reported that nurses did not have any powers to refer patients. Germany noted that there was a legal barrier and Mexico reported that referral was "not allowed".

6.7 Summary OF OECD SURVEY RESULTS

101. The responses to the OECD survey provide a partial overview of the situation relating to the current level of use of nurse practitioners, as well as highlighting likely future developments in some OECD countries.

102. Sixteen countries provided information. Eight of these countries (Australia, Canada, England, Korea, New Zealand, Spain [no details given], Sweden and the US) report some current level of use of nurses in advanced-practice roles. Three other countries – Ireland, the Netherlands and the Slovak Republic – report that piloting is underway or is being considered. The remaining countries reported little or no use of nurses in advanced-practice roles.

103. Six countries (Australia, Canada, England, Korea, New Zealand and the US) reported specifically on the existence and deployment of nurse practitioners – often within specified geographical and care environment areas.

104. Eight countries (Australia, Canada, England, Korea, New Zealand, Spain, Sweden and the US) reported that nurses had (limited) prescriptive authority. In some this was a relatively recent development. Ireland reported that the issue was under consideration for piloting.

105. Six countries (Australia, Germany, Greece, Korea, Spain, and the US) reported that nurses had some scope for direct billing/reimbursement (although in only limited/"exceptional" circumstances). Eight countries (Australia, Canada, England, Ireland, Korea, New Zealand, Spain, and the US) reported some scope for nurses to directly refer patients, but this was usually in clearly defined and extremely limited circumstances).

7. The policy context: the US and England

106. In order to supplement the basic information available from the OECD survey, two country case studies were conducted, to examine the policy context, and drivers, constraints and facilitators for the use of APNs in more detail. The two country case studies were conducted in the US and England. Key informants in each country were interviewed in the period between December 15th 2003 and February 7th 2004. Given time and resource constraints interviews were a mix of face to face and telephone based. In each country, a range of informants were identified, including government representatives, professional associations, educators, employers and policy analysts. In the US 13 interviews were conducted (respondents were based in California, Georgia, Hawaii, Montana, New York, Pennsylvania, Washington State and Washington DC) and in the UK 13 interviews were conducted. Interviewees were assured anonymity. Interviews were also conducted with two international organisations with a remit in this area. The interviews were based on a structured discussion guide (see Annex 2).

107. Full details of the two country case studies are in Annex 1. This section of the report focuses on the key policy messages from the case studies, examining the factors which have influenced the extent of use of APNs in the US and England (the "drivers", facilitators and constraints) in order to identify issues that other countries may wish to consider as they examine the potential for introducing APNs.

7.1 Drivers, facilitators and constraints

108. Figure 1. shows the responses of US and England interviewees to the question of the importance of different factors as "drivers", for introducing or extending the use of APNs.

109. The pattern of responses from the two countries is similar for some drivers, but varies for others. Generally respondents in both countries identified skill shortages and substitution as being main current drivers in increasing the use of nurses in advanced-practice roles. Value for money, and nurse-led initiatives were more often identified as major drivers in the US than in England. Conversely, respondents in England were more likely to identify "establishing a new type of service", or national/state government policy initiatives as being main drivers. Respondents in England were also more likely to identify medical profession support as a driver for increasing the use of APNs; in contrast, US respondents were unlikely to identify the medical profession as a driver. [NOTE: The British Medical Association has broadly been supportive of the use of nurses in defined advanced roles, primarily because of concerns about shortages of medical staff, and heavy workload for general practitioners- see BMA Health Policy and Economic Research Unit, 2002]

110. Differences in types of reimbursement for medical practitioners may also explain variations in the attitude of doctors to skill substitution. Those paid under a fee for service regime are likely to have a different perspective than those receiving a salary.

111. Respondents in the two countries were also asked to consider a list of possible "constraints/facilitators" to the use of APNs . The factors identified as major constraints, or major facilitators are highlighted in Table 7 below.

Figure 1: "drivers" for introducing or extending the use of APNs in the US and England

(NOTE: 0=not important; 3= very important)

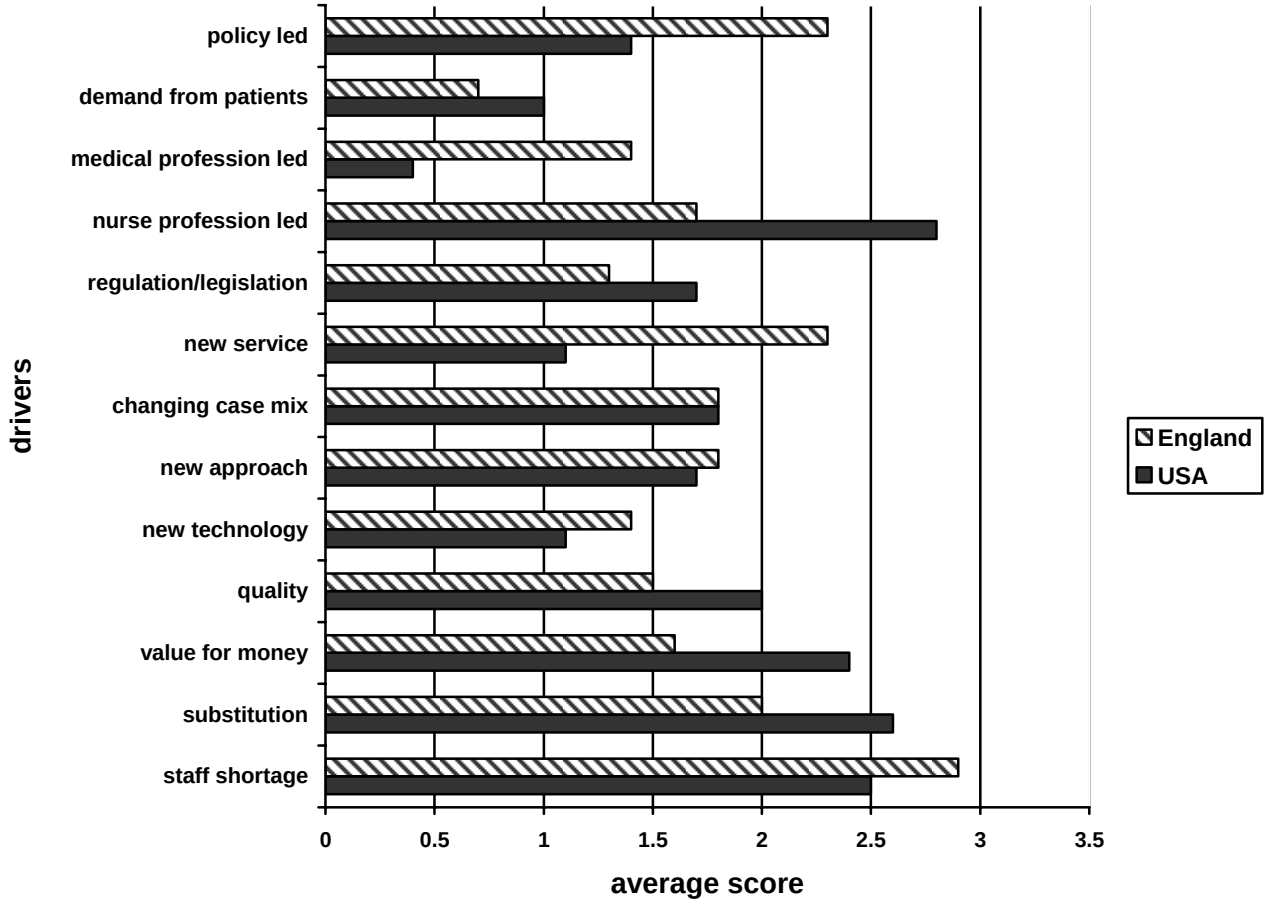


Table 7: Major constraints and major facilitators in introducing/ expanding use of APNs, US and England

	Factors most commonly regarded as a:	
	Major Facilitator	**Major constraint**
US	Attitudes of nurses (11) Nursing profession led changes (10) Nursing professional regulation (9)	Role/ impact of medical profession (6) Attitudes of doctors (4) Legislation (2)
England	Governmental/ political support for use of new roles (6) Attitudes of patients (5) General legislation for changes (5)	Health sector funding: (6) [Lack of] Number of appropriately qualified applicants (5) [Lack of] Supply of appropriately skilled/qualified advanced nursing staff (5)

Source: key informants (number in brackets is number of responses)

112. In general, the response from the US highlighted a situation where the major facilitators were identified as coming from within the nursing profession itself. This was related to the lobbying role of representative organisations for APNs, and to the attitudes of nurses who were keen to move into the clearly defined APN roles that were available in almost all states. A number of US commentators noted that APN roles were attractive to nurses primarily because of the autonomy and potential for career development; whilst pay for APNs in some states was higher than for clinical nurses, the differential was not always significant. The main constraints in the US were related to the attitude of the medical profession, which was identified by many respondents as continuing to be a block on increased use of APNs. This issue of control over practice , role overlap and protection of "turf" is discussed in more detail in the US section- it should be noted that several respondents drew a distinction between the organised opposition of the American Medical Association, and the more supportive stance of some medical specialities and individual physicians (see also Phillips *et al*, 2002).

113. Arguably, the US is at a more "advanced" or "mature" stage of the implementation of nurses in advanced roles than is England- or at the least APNs have been a significant feature in the US for a longer timescale. Pulcini and Wagner (undated) have identified five "historical periods" in the development of nurse practitioner roles in the US:

- Precursor Period 1965-70: First NPs introduced, mainly rural/ inner city urban areas; first educational programmes established, with federal funding support.
- Role Definition and Legitimization 1971-74: New NP specialties established; legislative initiatives at state level to change laws and nurse practice acts; Council of Primary Care Nurse Practitioners established
- Maturation and Consolidation 1975-80: Moves to standardize curriculum, and to provide nationally recognised certification; continuing education for NPs now also on offer.
- *Maintenance Period 1981-90: Continued federal funding for educational programmes; shift from postgraduate certificate to Masters programmes. NONPF begins to "thrive".*
- New Expansion Period 1991-2000: "Unprecedented growth" in the NP role; legislative "victories", acquisition of third party reimbursement and prescriptive authority are contributory factors.

Source: Pulcini and Wagner, undated.

114. This chronology highlights the significance in the US of federal funding as "pump priming" in the 1960s and 1970s, and the ongoing process of gaining legislative support at state level through the 1970s, 1980s and 1990s.

115. Different countries will have different timetables and drivers; for example it is clear from the responses of interviewees in England that national level policy is currently a major facilitator for introducing new advanced roles in that country. Much of this policy led activity in England is related to two issues which are discussed in more detail later in the report. These two policy priorities in England are the need to develop new nursing roles to "cover" for the reduction in provision of working hours by junior doctors, and the broader need to develop advanced roles for nurses and other practitioners to support the "modernisation" agenda in the National Health Service.

116. The "top down" initiatives in England are different from that which has occurred in the US, but this is not surprising, given the federated structure in the US, and the absence of any national health system in that country. However it is notable that the US federal government was involved in intervening to support APN development through the provision of funding for educational programmes.

117. In England the approach is more directive, involving support for the "piloting" of new advanced roles in the NHS- many of which are not related only to nursing. Again, this is a reflection of the policy stance in England, where the overall focus is on multidisciplinarity and on developing new roles which may not be profession specific. Combined with the lack of any clearly defined regulation of advanced-practice roles for nurses in England, this has led to a much more varied, and arguably "blurred" picture developing in that country, of many different roles and job titles. There are a range of different advanced-practice roles being piloted or introduced; some of which can be seen as "traditional" advanced practice for nurses, as they build on current nursing roles, whereas others are hybrid, crossing current professional boundaries.

118. Some commentators in England expressed some concern that the broad range of current initiatives to support the development of new roles, combined with the absence of clarity relating to the regulation of advanced roles could lead to confusion. They contrasted what was happening in England with the situation in New Zealand, where the nurse practitioner role has a defined national scope of practice and competences, which were identified prior to the introduction of the role, and which is registerable at national level (Hughes and Carryer, 2002). New Zealand and Australia are now exploring the development of joint national competency standards for nurse practitioners, and guidelines for accreditation of training courses (Australian Nursing Council, 2003).

119. The main constraints to extended the use of APNs identified in England related to funding and to concerns that there may be insufficient applicants for APN type training. Commentators linked this, in part, to the lack of clear career structures for APNs and to the current variation in local pay rates for nurses moving into APN roles. Several suggested that the new NHS pay system currently being introduced ("Agenda for Change")(Department of Health, 2003 b) may have the potential to provide a better incentive for nurses to consider moving into these roles. A linked concern expressed by some commentators was that there may not be the capacity within the current educational and training infrastructure to "scale up" to train a significantly higher number of APNs.

7.2 Advice to other countries

120. Respondents in the two countries were asked to suggest what were the key issues for any other country that was considering implementing advanced roles for nurses. The key responses are highlighted in the Table 8 below.

121. The responses in Table 8 identify a number of key issues which any country would have to consider in identifying the scope for introducing APNs. These can be summarised as follows:

- **Firstly**, as a number of respondents highlighted, there is a need for stakeholders to agree on the need for APNs. Key stakeholders will include representatives of the nursing and medical professions, ministries of health and education, employers and regulators. Several commentators noted the need to base this approach on mutual respect, and on developing a collaborative model of health-care delivery (see also *e.g.* Phillips 2002)

- **Secondly**, where principles of need have been agreed, there is then a requirement to ensure that the advanced role(s) have been defined, and the associated educational requirements have been identified.

- **Thirdly**, issues of certification and regulation have to be determined. It is notable that many US respondents were supportive of a single national level approach to certification and licensure- this reflects their own experiences of having to try to secure licensure in over different 50 States, which

has been time consuming and resource intensive and can lead to anomalies and variations in different parts of the country.

- **Fourthly,** the career structure and payment system for APNs has to be established (if they are employees), or reimbursement methods agreed.

Table 8: Advice to other countries considering introducing APNs

"Initiate discussion between nursing and physicians-decide if there is a need, and then how to define the role, with common licensure"(US)
"1) uniform educational standards; 2) national certification; 3) independent practice; 4) direct reimbursement" (US)
"The objective should be one single unified role, certified nationally" (US)
"unified standards: one role, one title" (US)
"Have clarity about what the need is, and what the role is; link government funding to development and education of role"(US)
"Define entry level, define role, decide licensing/certification, decide how they will be paid"(US)
"Achieving prescriptive authority is a pre-requisite" (US)
"concentrate on team development" (UK)
"Assess national staffing, do we have enough nurses to take on these positions?" (UK)
"Map new positions to the patient journey" (UK)
"develop legislation and regulatory framework to provide clarity in the use of the role"(UK)
"don't introduce nurse practitioners without looking at what is available already" (UK)
"regulate the role" (UK)
"develop national educational standards" (UK)

122. Whilst it is not always possible to generalise from country specific responses, the "advice" from respondents in England and the US summarised in Table 8 has a universal resonance. It should also be noted that respondents in the two countries did not question the principle of using nurses in advanced roles. Despite the current limitations of research in this area, which were summarised earlier in this paper, it is clear that policy makers in both countries are persuaded of the need to support further use of APNs, and their advice tended to focus on practical aspects of supporting the introduction of APNs, and extending their use in health care.

ANNEX 1: COUNTRY CASE STUDIES

A1.1 US Case Study

Role/Scope of Practice

123. Four different APN roles are well established in the US – nurse practitioner (NP), Clinical Nurse Specialist (CNS), Clinical Nurse Midwife (CNM) and Certified Registered Nurse Anaesthetist (CRNA).

124. NP's were introduced in the late 1960s, as a response to shortages of primary care providers in rural and inner city urban areas (Pulcini and Wagner, undated); federal funding to support the increase in primary care provider was one facilitator (Geolet, 1990). About 85% of NPs work in primary care (Hooker, 2003). Licensure for NPs is available in every state, but legal authority and scope of practice varies state by state. In 2003, 26 states had nurse practitioner title protection, the board of nursing had sole authority in scope of practice, with no statutory or regulatory requirement for physician collaboration or supervision; in the other 25 states there was some level of requirement for physician collaboration, supervision or authorisation (Pearson, 2003).

125. CNS traditionally have worked in designated specialities in hospital based care. CNS normally receive masters level training in a single specialty – mainly in medical/ surgical specialties and a psychiatric and mental-health care (Cooper, 2001).

126. CNMs concentrate on obstetric and gynaecological care, family planning and patient education. In all US states they have the authority to care for normal pregnancies and birth; however most states require that the CNM maintain a collaborative relationship with an obstetrician (Cooper, 2001). CRNAs receive formal training beyond basic nurse training in anaesthesia. Most are nationally certified (National Centre for Health Workforce Analysis,2002).

127. There are various definition and role descriptions of advanced practice nursing set out by different stakeholders and professional associations in the US. The American Academy of Nurse Practitioners, in its role position statement, provides the following role definition:

128. "The term advanced practice nurse is a descriptor that includes nurse practitioners (NP), certified nurse-midwives (CNM), nurse anaesthetists (CRNA) and clinical nurse specialists (CNS).

129. Advanced practice nurses make independent and collaborative health-care decisions. They are expert clinicians engaged in active clinical practice. The advanced practice nurse demonstrates leadership as a consultant, educator, administrator and researcher. An important leadership function of all advanced practice nurses is participation in legislative and professional activities to promote professional advancement and health related social policies.

130. The nurse practitioner is a unique health-care provider within the constellation of advanced practice nurses. Nurse practitioners engage in advanced practice in a variety of specialty areas, such as family, adult, paediatric, gerontologic, women's health, school health, occupational health, emergency, neonatal and acute care.

131. Nurse practitioners assess and manage both medical and nursing problems. Their practice emphasises health promotion and maintenance, disease prevention and the diagnosis and management of acute and chronic diseases. This includes taking histories, conducting physical examinations, ordering, supervising, performing and interpreting appropriate diagnostic and laboratory tests, prescription of

pharmacological agents, treatments and non-pharmacological therapies for the management of the conditions they diagnose. The nurse practitioner serves as a primary care or specialty care provider and as a consultant for individuals, families and communities in a variety of ambulatory and in-patient settings". (AANP 2003).

Trends in Numbers

132. The seventh national sample survey of registered nurses in the US (National Centre for Health Workforce Analysis, 2002) reported an estimated 196 279 registered nurses (RN) were prepared to practice in at least one advanced practice role in 2000. This represented 7.3% of the total RN population. Estimates for the different types of APN are shown in Table 9 below. Nurse practitioners comprised the largest group. There were 88 186 of whom approximately 50 000 were estimated to be working "with position title" (*i.e.* in jobs titled as nurse practitioners). There were also approximately 15 000 nurses who were both nurse practitioners and clinical nurse specialists. The national sample survey is conducted every four years; there had been 45% increase in the number of RNs educated as NPs and a 12% increase in the number of CNS between 1996 and 2000.

Table 9: Distribution of Advanced Practice Nurses, US, 2000

Clinical nurse specialists		**%**	**Estimated growth 1996-2000**
Total	54,374	100	12 %
Employed in nursing	47,225	87	
-with position title	11,309	21	
-without position title	35,916	66	
Nurse practitioners			
Total	88,186	100	44.8%
Employed in nursing	77,584	88	
-with position title	49,876	57	
-without position title	27,708	31	
Clinical nurse specialists/ nurse practitioners			
Total	14,643	100	
Employed in nursing	14,007	96	
-with position title	9,367	64	
-without position title	4,639	32	
Nurse anaesthetists			
Total	29,844	100	
Employed in nursing	25,575	86	
-with position title	22,794	76	
-without position title	2,781	9	
Clinical nurse midwives			
Total	9,232	100	
Employed in nursing	7,914	86	
-with position title	4,733	52	
-without position title	3,142	34	

SOURCE: National Centre for Health Workforce Analysis, 2002

133. Another source of data on trends in numbers of APNs is the annual survey conducted by the "Nurse Practitioner" Journal (see *e.g.* Pearson, 1993; Pearson 2003). This aggregates state level licensure data, so there is potential for some double counting and it reports on the licensed population rather than those prepared to practice, or in practice. The 2003 survey reported a total of 165 692 APNs, including 105 817 NPs, 14 158 CNS, 8 638 CNM and 35 710 CRNA (includes some duplicate licenses). There had been a reported 12% growth in the NP population since 2002.

134. The AANP, in its membership survey in spring of 2003, reported that 61% of its nurse practitioner membership was practising in family health, and a further 19% in adult health. Most were working for private physician practices, or in community rural health. Only 4% reported working in private NP practice (AANP, 2003).

135. The extent to which the **licensed** population may be an overestimate of the actual numbers in active practice was illustrated in a survey of NPs in New York State (later for Health Workforce Studies, 2002). Of 9 019 NPs certified in the state; the survey identified 6 949 who actually were working as an NP in New York State *i.e.* approximately 70% of individual NPs certified as NPs is New York State were active as NPs in the State.

136. These national level surveys also point to growth in the total APN population in the US, particularly in the NP workforce. Analysis of recent trends (Cooper, 2001, Hooker, 2003) have highlighted rapid increases in enrolment to APN education programmes in the 1990s and continual growth in the APN workforce over the next few years. Cooper (2001) suggested that by 2005 the number of NPs in practice will exceed the number of family physicians.

Educational Preparation

137. The 2000 census survey (National Centre for Health Workforce Analysis, 2002) estimated that 62% of NPs completed a Masters Degree programme and that 74% had national nurse practitioner certification. 19 864 out of the 54 374 RNs identified as CNS had national certification.

138. There were estimated to be 337 educational institutions offering NP programmes in 2002, with 19 000 students enrolled and almost 7 000 graduating. Most students are part time and the majority (88%) graduate with a Masters degree (Hooker, 2003).

Earnings

139. The 2002 salary survey conducted by ACNP reported that the average salary of a full time NP was USD 66 125. Interviewees confirmed that an average of USD 65-70 000 would be accurate for the US, but highlighted significant variations between States and practice settings (*e.g.* it was reported that the salary for a full time NP in New York State would be approximately USD 81 000).

Drivers

140. Several commentators (*e.g.* Hooker, 2003) have pinpointed Federal government policy and legislation in the 1960-90s as playing a significant role in creating a more conducive environment for APNs to be introduced, both in providing support for education programmes and in establishing reimbursement methods to encourage use of APNs (for Medicare and Medicaid patients APNs are normally reimbursed at 85% of the "customary fee" for physicians). Several interviewees echoed this- "the federal government paved the way" [educator]; "the federal government supported the creation and expansion of the first programmes" [policy analyst].

141. However, in the view of most key informants interviewed for this report the two main current drivers relate to skills shortages of physicians, and the nursing profession itself advocating greater use of

APNs. The former was linked specifically to reductions in the hours being worked by hospital based medical residents, combined with continued difficulties in recruiting and retaining physicians in some rural and inner city urban locales; other related factors include the increase in medical liability insurance for some clinical specialities, and the types of reimbursement mechanisms for medical practitioners which were in place.

Constraints and Facilitators

142. The major constraint on greater use of APNs identified by key informants was opposition from the organised medical associations. Several informants were explicit that many individual physicians and groups were supportive of greater use of APNs, it was the American Medical Association that was singled out as the main "opponent". Several respondents emphasised the need for advocates of APNs to work with medical associations to overcome any unfounded concerns: "we are trying to work jointly with the [State] Medical Association where possible, emphasising team practice"[educationalist]; "we have done a lot of work with the Medical Association to let them see that collaboration is not a takeover, but it's sometimes been a bitter battle" [employer].

143. Another constraint identified by several interviewees was the multiplicity of State level regulations and definitions it's an alphabet soup"[employer]), which could confuse the public, and act as block on mobility of nurses between States ("I'd love to see a national licensure for APNs- they could then travel more easily- it can take months to get licensed" [employer])

144. Major facilitators identified included by most interviewees were nursing profession led changes, numbers of applicants for APN programmes, and the attitude of individual nurses. No respondents indicated any current concern with the level or quality of applicants to APN educational programmes, and several highlighted the central role being played by the specialist professional associations representing APNs (*e.g.* American Academy of Nurse Practitioners; American College of Nurse Practitioners) as being a key facilitator at state and federal level- in advocating for supportive legislation and in developing political support for regulatory change, where required.[NOTE this is one feature which distinguished the US from England- there are no comparable organisations to AANP, ACNP etc. in England. In England the profession is represented by a "generalist" professional association, the Royal College of Nursing- the nearest US equivalent being the American Nurses Association]

Evaluation

145. Interviewees reported a range of evaluation studies; these were all published documents which had been identified in the literature review summarised elsewhere in this report.

Future Prospects

146. Most respondents identified future growth in the use of APNs, particularly in the use of NPs in care of the chronically ill and in developments in the use of CNs and NP in various hospital based care environments – taking on more case management roles and substituting for physicians. "Major growth will be in care of chronic patients with three or four diagnoses- the frail elderly" [employer]. "The importance of the clinical specialist is re-emerging- we will see more masters prepared nurses working in large hospital systems"[policy analyst]. "More use in high-tech ambulatory care centres" [prof. association]

147. Another trend identified by some respondents was a "blurring" of the roles between CNS and NP, with more NPs taking on roles that included case management across the primary/secondary/tertiary care boundaries.- "I hope for a blending of NP and CNS roles to create a single type of APN"[employer].

A1.2 England[4] Case Study

Role/Scope of Practice

148. Although in general terms advanced nursing roles can be broadly defined in the UK, it is difficult to identify universally accepted definitions. Advanced-practice roles are not legislated for in the UK, and "clinical nurse specialist" and "nurse practitioner" and other titles that be applied to many different roles without a clear definition. Midwives have a separate path of education and registration in the UK and are not considered advanced nurses; therefore, midwives will not be discussed in the UK context.

149. This lack of clarity in the definition and role of advanced practice nurses was highlighted by nearly all respondents and made focused discussion about advanced practice nurses in the UK a difficult task. Respondents most commonly identified the competences for nurse practitioners developed by the Royal College of Nursing (RCN) as the closest that the UK has to common understanding of the role of the nurse practitioner (RCN 2002) although this is not recognised in any legislation or regulation. The RCN is the only professional association/union for nurses in the UK; it also provides and accredits post basic nurse education. The RCN define the role as 'a registered nurse who has undertaken a specific course of study to at least first degree (honours) level' (RCN 2002 p2). The definition goes on to include such features as being professionally autonomous, dealing with patients with an undifferentiated diagnosis, ordering investigations, using skills not usually exercised by nurses such as physical examination, admitting and discharging patients, providing a leadership function and working collaboratively with other health-care professionals.

150. Nurses can undertake specialist practitioner education, which involves post-basic education to enable nurses to exercise higher levels of decision making and discretion in patient care. This professional qualification can only be awarded if the nurse has undertaken a course approved by the NMC and the qualification is recordable on the Professional Register. This qualification does not give the nurse a protected title.

Issues of regulation of advanced practice nurses and protection of the pubic were highlighted by interviewees who considered this a key issue that needed to be resolved without delay. The Government via a task force chaired by the Chief Nursing Officer of the Department of Health in England is reviewing the role of advanced practice nurses and the NMC are developing a framework to protect the titles of some advanced and specialist practice roles; both of these reviews will be reported in 2004.

151. In England the role of the nurse practitioner was initially developed in primary care, but has now been introduced into areas of secondary care, most notably in Accident and Emergency, or other first contact or assessment units, and in critical care. Interviewees indicated that the current role of nurse practitioners has an emphasis on independent management of whole care episodes, from patient presentation with undifferentiated diagnosis, then planning and administering care and treatment, through to discharge, these diagnostic and clinical decision making roles are traditionally seen as the domain of medical staff. Nurses were also identified as contributing in areas of the health-care system where there are current gaps in provision such as with the homeless and asylum seekers. A growing role of the nurse practitioner was identified as being with patients with chronic or enduring health problems. Protocol-based care, where nurses follow algorithms or clinical guidelines have been advocated for these new ways of

4. This section focuses on developments in England: however there is some common policy regulation across the four UK countries in particular health professional regulation is undertaken at the UK level. There is a single UK wide regulation of the nursing profession by the Nursing and Midwifery Council.

working in the health-care team (Modernisation Agency 2002). The areas in which nurse practitioners were seen as least effective (although not ineffective) by some respondents was in highly specialised areas of secondary care where it was questioned if nurses would need the wide knowledge base of a nurse practitioner. There was reported concern that professional boundaries may be more fixed in the hospital setting and that "tribalism amongst professions would not support new developments" [professional association]. An example of where nurses and other allied health professional have got together to look at 'busting the myths' of role boundaries is in emergency care with the publication of a resource document for professionals by DOH and RCN which examines the provision of emergency care in the UK and looks at how patient care may improved by breaking with traditional professional boundaries (DOH, RCN 2003).

152. Within the current constraints of regulation and legislation in the UK, it is unclear if nurses can ever be fully autonomous in, for example, diagnosis and prescribing. Even nurses working with patients with chronic and stable conditions will need to work as parts of teams; many patients may also have to see a doctor at some point during their care. Bond *et al.* (1998) report an evaluation of nurse practitioners in General Practice in the north east of England their study indicated that 13% of patients, first seen by nurse practitioners, had to be referred to GP's because of uncertainty of diagnosis and treatment. Nurses were considered able to substitute for GP's in the surgery as long as there was a doctor available for consultation and to sign prescriptions. Another UK study found that in a high percentage of cases only part of the GP consultation could be delegated to other staff potentially leading to duplication of workload (Jenkins-Clark and Carr-Hill 2001; Jenkins-Clark *et al.* 1997; Jenkins-Clark *et al.* 1998).

Nurse Consultants/"Modern Matron"

153. Nurse consultant posts were introduced in England in 1997. The four core functions of these roles, irrespective of practice setting or type of service, are:

- an expert practice function;
- a professional leadership and consultancy function;
- and education, training and development function; and
- a practice and service development, research and evaluation function

Source: Department of Health 1999: 6

154. The Department of Health emphasised that although nurses will usually hold a Masters degree, no single course or qualification will qualify an individual for a nurse consultant post and there are no plans to commission or approve a particular course for preparation for nurse consultant posts (Department of Health 1999). Nurse consultants will have to show evidence of career long learning, clinical experience and research experience, including a record of publication. The title of nurse consultant is not regulated by the Nursing and Midwifery Council; the definition of role has been specified by the Department of Health and the actual job content is developed locally. It is still not clear how this level fits with or develops the role of the advanced practice nurse.

155. The NHS in England reported recently that 840 nurse consultant posts had been "approved" by February 2003 (NHS Modernisation Board 2003). The target is for the establishment of 1 000 such posts by 2004 (Department of Health 2003a). Guest *et al.* (2001) report a preliminary evaluation of the establishment of nurse, midwife and health visitor consultants, a range of common problems (such as:- role ambiguity, overload, difficulty with identifying role boundaries and concern over role credibility) and achievements (which included gaining confidence, developing networks and relationships, and developing good practice). There was widespread criticism of the way in which the new posts were introduced but the majority of nurse consultants regard their role positively.

156. Since the role was re-introduced in 2001 about 3000 modern matron positions have been established in England. Matrons are usually senior clinical nurses (sisters or charge nurses) and their role is to improve patient experience by providing strong clinical leadership. A recent evaluation of the role of the Matron highlighted public confusion over the role because of the multiple titles and lack of clarity of the role (Duffin 2004).

Trends in Numbers

157. In the NHS in England nurses in a range of grades and educational backgrounds may be working in jobs which are titled nurse practitioner or clinical nurse specialist. There is a common UK wide grading system for NHS nurses. Interviewees indicated that some nurses from Grade D (nursing grade on registration) to Grade I (senior clinical grade) identify themselves as nurse practitioners. The fact that titles are not protected, and therefore not recorded on the NMC register, makes it difficult to determine exact numbers of advanced practice nurses.

158. In 1999, the summary report from the Exploring New Roles in Practice (ENRIP) project estimated that there were at least 3000 new nursing roles in the UK many of which carried the title of clinical nurse specialist or nurse practitioner (Read *et al*.1999). McGee *et al.* (1999) surveyed 490 trusts in the UK and found around 3500 nurses with the title clinical nurse specialist or advanced practice nurse being employed most of whom were employed in specialist areas. Data is not available for the numbers of nurses working in the community under these titles, as there is no register, but as a whole these nurses make up a small proportion of the nursing workforce. It was estimated by one of the respondents that around 3000 nurses have graduated from the RCN accredited nurse practitioner course in the UK, but it is not known how many of these graduates are now working in nurse practitioner roles.

Educational Preparation

159. The Specialist Practitioner Qualification is only education programme at advanced level recognised by the NMC. The programmes are broad and must comprise 50% theory and 50% practice and concentrate on 4 areas

- Clinical nursing
- Care and programme management
- Clinical practice development
- Clinical practice leadership

160. The Academic Award is at a minimum of first degree level and the professional qualification is recordable on the Professional Register. These are the only programmes leading to Specialist Practitioner qualification. Prescribing, if appropriate to the practice area, may be an element of these courses.

161. There are currently ten RCN accredited courses for nurse practitioner education in the UK and these courses are at Bachelors and Masters level. There are a number of institutions providing nurse practitioner courses that are not accredited by the RCN; these may have an educational level from diploma to taught doctorate. It is interesting to note that the content of RCN approved courses have at their foundation the nurse practitioner competencies published by the US National Organisation of Nurse Practitioner Faculties (NONPF) which have been adapted for UK use. The RCN facilitate the UK NONPF group.

162. Respondents indicated that a proportion of nurses may not receive formal education from an academic institution to practice as a nurse practitioner. This informal ‘on the job’ training tends to be driven by local need or by a doctor who has an interest in teaching specific skills to nurses. Respondents

highlighted that this type of education was not the ideal as it does not give a formal qualification to nurses, does not prepare individuals for broader aspects of the nurse practitioner role beyond a specific task, and that the emphasis on local need means that the role cannot be coordinated nationally as one hospital trust may allow nurse to take on a particular task and another may not.

Earnings

163. In the UK, nurses in the NHS are paid on a standard national pay rate. However, it is reported that there is variation in salaries of nurse practitioners. For example, a survey of emergency nurse practitioners in the UK reported salaries at a number of levels, from the lowest registered nurse grade (D - Grade), through to senior clinical grades (H – Grade) (Cooper *et al*. 2001). [The RCN recommends that graduates of their accredited courses should be paid at the minimum of an H grade.] This variation was also highlighted by interviewees who noted that nurse practitioner positions are being advertised with salaries varying from less than GBP 20 000 to over GBP 50 000. The variation in is partly a reflection of labour market difficulties, with staffing shortages particularly evident in the south-east of England. The NHS is currently introducing a new pay system "Agenda for Change" (which excludes medicine and dentistry and the most senior managers who have separately renegotiated pay) (Department of Health 2003b). The proposed level of salary for the nurse practitioner on the Agenda for Change structure is level 7 (GBP 24 000 - GBP 32 000) or above, but respondents questioned whether employers would be prepared to pay that sum to all practitioners as it may not make these positions a cheaper option that junior doctors. The twelve Agenda for Change early implementer sites proceeded with the new pay structure in July 2003 it is anticipated all areas of the NHS will have implemented Agenda for Change by October 2004.

164. Within the UK freedom for nurses to set up own clinics and services is questionable, most nurses in primary care are employed by GPs who determine work and role. Specialist nurses in the UK have been urged to market their skills to managers and purchasers in order to increase their role in the development of new services (Notter 1995).

Drivers

165. The three drivers that were highlighted as most significant by respondents were; staff and skill shortages, national "policy led" initiatives and the establishment of a new type of services. These will be discussed in turn.

Staff and Skill Shortages

166. The most significant driver for the development of the role of the nurse practitioner was identified by respondents as the shortfall of family doctors in primary care in the UK (White 2001) coupled with a reduced supply of junior doctors resulting from reform of junior doctors training (Calman 1993) and hours of work (NHS Management Executive 1991), including the effect of the European Working Time Directive. For example neonatal nurse practitioners in a Sunderland NHS Trust worked 358.5 hours on the Junior Doctors Rota in December 2003 and are running out-patients clinics that were previously run by senior house officers (Modernisation Agency 2004).

167. It could also be argued that nursing workforce shortages (Buchan and Edwards 2000; Crisp 2001) are also driving the move towards the development of advanced-practice roles. The extension of career structures and the development of new advanced role may have a positive effect on nursing workforce recruitment and retention, by providing more advanced roles with commensurate increases in pay and status. Their development may create a clinical career pathway for nurses and lead to greater satisfaction of the workforce and retention of nurses (Buchan 1999; Collins *et al.* 2000). However, the increased pressure for nurses to develop new competencies and reach higher educational standards may also be counter productive if it de-motivates some nurses who believe they are having to take on additional workload without any commensurate support (Buchan and Edwards 2000).

168. As such, the assessment of the scope for substitution of nurse practitioners for physicians must also take account of the availability of staff to 'cover' the work and tasks which nurses have to delegate if they move into advanced practice. In the UK the review of future NHS funding and services suggested that nurse practitioners could take on about 20% of work currently undertaken by general practitioner physicians and junior doctors, whilst health-care assistants could cover about 12.5% of nurses' current workload (Wanless 2002). These estimates included an assumption about the 'transformation rate', that 1.5 nurse practitioners would be required to notionally 'replace' a GP. This would mean an additional increase of 10% in nurse staffing and this could be achieved through increased use of health-care assistants, again with the 'transformation rate' of 1.5 HCA's per 'replaced' nurse (Wanless 2002).

169. McGee *et al.* (1996) report, in their survey of advanced-practice roles in the UK, indicate that most of these roles are in areas that are highly technical, where physical care is the priority and where there are particular demands on doctors and where they are in short supply. These issues are both simultaneously driving and hindering the process of change in skill-mix. To reduce aspects of health care to tasks that can be reallocated to another occupational group has been considered 'dangerously simplistic' by one author, who argues that this has resulted in the deskilling and lowering morale amongst nurses (Jarvis 2001 p8)

Governmental "Policy Led" Initiatives in England

170. A second driver that was highlighted by respondents was the role of government policy in the development of the role of the nurse practitioner. In recent years the Department of Health in England has published a number of policy documents that have directed changes in workforce planning and development. The NHS Plan published in 2000 (Department of Health 2000) is the most significant of these and aimed to develop the new NHS around the needs of the patient. Central to this is reform of the NHS workforce and the development of new ways of working between traditional professional boundaries. Linked to the NHS Plan the Chief Nursing Officer of England identified 'Ten key roles for nurses" these roles include admitting and discharging patients, prescribing medication and undertaking surgery and other technical care, many of the nurses who are working with these roles could be identified as advanced practice nurses (Marsden *et al* 2003).

171. The NHS Modernisation Agency was established to support putting the NHS plan into action; this includes the Changing Workforce Programme (CWP) which was established to 'improve patient care, maximise use of staff skills, tackle staff shortages and increase job satisfaction' (Modernisation Agency 2003 p3). This move to reform health-care workforce deployment is using pilot sites, and involves medicine, nursing and allied health professionals, in four main types of change:

1. moving a task up or down a traditional uni-disciplinary ladder
2. expanding the breadth of a job
3. increasing the depth of a job
4. introducing new jobs that cross professional or agency boundaries.

Source: Modernisation Agency 2003

172. There were thirteen initial CWP pilot sites, which reportedly have established over 150 innovative new roles at local level, many of which can be categorised as advanced-practice roles. However, calls have now been made to develop a national framework for advanced practice to bring parity across the UK (Workforce Development Confederation 2003). In June 2003 the Standing Conference of the Workforce Development Confederations' put forward a proposal for discussion to develop a national framework for both assistant and advanced practitioners (Workforce Development Confederation 2003). A number of options for the regulation of these practitioners are proposed in this document. The Changing

Workforce Programme has developed a database, The Working Differently Roles Database, which holds the details of over 500 new and redesigned roles. This data base can be found at www.modern.nhs.uk/cwp.

173. One example of a DOH supported initiative to support new ways of working is the Evercare Programme which seeks to promote collaborative working between doctors and specialist nurses in the care of elderly patients (Evercare 2003). This programme, developed in the US, will utilise existing staffing resources in new ways. A tailored educational package allows nurses to develop advanced competencies in assessment and care of elderly patients in the community in collaboration with doctors. Early reports from the 10 primary care pilot sites in the England indicate that patients are satisfied with the service and the quality of care has been enhanced (Lewis 2004).

174. It is anticipated that Agenda for Change will bring the benefits of, jobs designed around patient and staff needs rather than around clinical grading or professional boundaries, definition of the core skills and knowledge needed for each job via the Knowledge and Skills Framework (Department of Health 2003c), offering a career path (through life long learning and the skills escalator) and allowing employers to pay staff extra in areas where there are difficulties in recruitment and retention.

175. Respondents indicated that these policy developments are a significant driver in the move towards advanced-practice roles in the UK, as opposed to the drive for new roles by the profession itself. It is important to note that within the policy documents, modernisation of the workforce involves all health professionals. Respondents did however suggest that it is nurses who have been 'plugging the gap' of workforce shortages in the last few years and that nursing will be significantly affected by policy changes. It was indicated by respondents that although nurses are taking on advanced-practice roles "particularly in secondary care, some developments are not always best done by nurses such as, technical work, clerking in patients and administration" [professional association] suggesting that just because nurses can take on advanced and technical roles it does not mean it is appropriate to do so.

Establishment a new type of service

176. The third significant driver identified by respondents was the development of new services. An example of this in the UK is NHS Direct - a 24 hour a day, seven days a week, 365 days a year service providing health information and advice to members of the public calling through a single national telephone number. The national telephone health-care advice service is staffed by nurses, and has been fully available throughout England and Wales since November 2000. Callers to NHS Direct seeking medical advice are assessed by the nurses, who use decision support software to provide consistent clinical criteria. There is also an associated on-line service - a website providing health-care information and a guide to common symptoms.

177. The National Audit Office (NAO) in the UK estimates that NHS Direct cost GBP 22 million in start up costs (National Audit Office 2002). In 2000-2001 it cost GBP 78 million to run. Projected running costs for 2001-2002 were GBP 99 million, and usage was projected to double in the same time period. According to NAO estimates, NHS Direct was off-setting around half of its running costs by encouraging more appropriate use of NHS services. There were also benefits in reducing out-of-hours working where services were integrated with NHS Direct.

178. Initial evaluation of the service suggests that NHS Direct has not reduced the pressure on the NHS to the extent that was hoped, although it may have some effect, specifically on the demand for GP out of hours services (Munro *et al.* 2000). Patient satisfaction with the service is high (O'Cathain *et al.* 2000), but one study (Rosen and Pearce 2000) reported that the rapid introduction of NHS direct created hostility amongst doctors, who were concerned about losing their central role in primary care and as gatekeepers to specialist services.

179. Another important development, initiated by government policy that has facilitated the role of advanced practice nurses is the introduction of nurse prescribing. Nurse prescribing in the UK came onto the national policy agenda in 1986 initially for community nurses (Buchan and Calman 2000). By 2001 over 23 000 community nurses had been trained to prescribe from the Formulary for District Nurses and Health Visitors. In 2002, extended independent nurse prescribing was introduced to enable nurses in all clinical areas to prescribe, from a formulary, a wider range of medicines in four broad areas: minor ailments, minor injuries, health promotion and palliative care. Supplementary prescribing was introduced on 2003, allowing nurses (and other health professionals), after initial assessment of a patient by a doctor, to prescribe for that patient in accordance with a clinical management plan.

180. Training/ education for prescribing was provided initially to qualified community nurses who completed a short course, of around two days, supported by open/distance learning. Extended and supplementary prescribing courses have now been integrated into university courses for community nurses or integrated into specialist practitioner qualification or advanced practice courses. A nurse who is qualified to prescribe from the extended formulary or is qualified as a supplementary prescriber has this recorded against their name on the Nursing and Midwifery Council register. These developments have enabled nurses to become more independent in their practice, as nurses can now manage whole care episodes rather than referring a patient to a doctor for a prescription.

Constraints and Facilitators

181. There was less consistency amongst the interviewees about the main facilitators and constraints to the current use of nurses in advanced roles in England than was the case with US interviews. The most commonly identified constraints were health sector lack of funding, issues relating to nursing regulation, the lack of appropriately qualified applicants “there is a crisis in recruiting nurses to specialist posts to take over the work of junior doctors” [medical professional association], and the current pay system. As such, these identified constraints are very different from those reported in the US. The constraints reported in England relate primarily to the continued lack of regulatory clarity in the nursing profession, and to resource and capacity issues with the health service.

182. Government/political support was most often identified as a key facilitator in England. This reflects the current government led drive to “modernise” the NHS, including the introduction of new roles and changed skill-mix. Again this contrasts with the US, where the federal government was seen as facilitating the early introduction pf APNs, but was not currently regarded as a major factor.

183. A recent small scale Delphi study undertaken in the UK (Marsden *et al.* 2003) did reach some consensus about constraints to the development of the role. The hierarchical nature and rigid structures of the NHS (including the pay system) was considered to be a major constraint this lack of flexibility hindered new innovative roles, even when policy initiatives supported these developments. The decentralised management of the NHS was also reported to have an impact on the development of roles, which were developed locally rather as a strategic and integrated workforce plan.

184. The lack of consensus about the definition of the nurse practitioner and fact that the title is not legislated for was regarded as a constraint on development. A number of interviewees highlighted the lack of leadership in these matters by the NMC (formally the UKCC) as being a significant feature in the confusion over roles. The RCN was identified by many respondents as a positive force in the development of these roles through developing educational preparation and 'lobbying and promotion in the media' [educator].

Evaluation

185. Interviewees indicated that there was a body of evidence that evaluated the role of the advanced practice nurse and identified a number of policy documents and evaluation studies. Published evidence was included in the review above.

Future Prospects

186. Respondents saw the development of advanced practice nursing roles as being only one feature in a range of changes in the delivery of services. In particular, interviewees in NHS policy and management positions tended to express a broader, "integrated" view of workforce deployment, with emphasis on the competences of individuals from a range of medicine, nursing and allied health professionals, rather than on the further development of specific uni-professional roles "there is a drive to do things smarter, more staff, but not more of the same" [senior policy manager] "an enabling career framework will be developed this will offer choice and opportunity and will not be defined around professional grouping" [senior policy manager]. This can be regarded as the current orthodoxy within the Department of Health, reflecting government policy.

187. There was a general consensus amongst respondents that the future seems to hold a rise in the numbers of nurse practitioners "to achieve a critical mass" [professional association], and that this is likely to be across all clinical and geographical areas. However, alongside this, the regulation of advanced-practice roles was seen as essential for both patient safety and the development of the role "advanced roles will be defined and educational levels will be attached to titles" [senior policy manager]. Respondents highlighted New Zealand as a useful 'model' for the development of the role of the nurse practitioner, because regulation and definition of the role (including educational requirements) had been developed before the title was used in the country.

ANNEX 2: CASE STUDY QUESTIONNAIRE

COUNTRY CASE STUDIES OF NURSES IN ADVANCED ROLES (AP) / NURSE PRACTITIONERS (NP)

Please note: this questionnaire is being used in interviews with a broad range of stakeholders. As such, not all questions will be appropriate for all interviewees. Section B, which asks for opinions and views, IS intended for all respondents.

Some interviews are being conducted by phone, others face-to-face. In either case, it would be helpful if you have read through the questionnaire prior to the interview, and have identified any supporting references, "grey" literature etc

A. Nurse practitioners and nurses working in other advanced roles

A1) Is there a commonly accepted definition of 'nurse practitioner' in your state/ country?

Is there a commonly accepted definition of other types of nurse working in advanced roles in your state/country?

If yes, please provide details of the main types.

A2) What are the main current features of (a) NP and (b) other advanced-practice roles for nurses-

i.e. scope,

geographical/ care location ,

working relationships with other staff?

A3)What are the formal requirements to become an NP / AP-in terms of specified training, qualifications, experience, certification/registration etc

-has the formal requirement changed since introduction of the role, either in content or level?

-are there also ad-hoc/local methods of nurses being trained "on the job" to acquire specific skills which will lead to them being employed in advanced roles? [If so, give details]

A4)What are the main incentives for nurses to become a NP/AP?

A5)What is the average annual pay level/ reimbursement for a nurse practitioner? How does this compare to average pay/reimbursement for a primary care physician/ general practitioner?

A6)What have been recent trends in numbers/ roles/ locations of NPs and APs over the last five years?[Please provide data, references and reports if available]

[Approximately what proportion or number of NPs are self-employed?]

A7)Have patient/user groups requested a nurse practitioner service or expressed a wish to choose advanced practice nurses for specific types of care and treatment rather than a doctor?

B. The main current drivers for introducing/ extending use of nurses in advanced roles and nurse practitioners.

B1)What are the main current drivers for introducing/ extending use of nurses in advanced roles and nurse practitioners in your state/country?. How important is each? (PLEASE TICK ONE BOX IN EACH LINE 0=not important; 3= very important)

How important is each factor as a driver in introducing, or extending the use of, nurses in advanced roles/ nurse practitioners?	**0**	**1**	**2**	**3**
• 1. Staff/skill shortages – finding alternative staffing				
• 2. Substitution – wanting to improve effectiveness- continuity of care, make service more accessible etc.				
• 3. Value for money/ cost-containment – need to do more for less or same budget				
• 4. Responding to quality/outcomes of care problems				
• 5. New technology introduced; requires new staffing/skills				
• 6. New approach/ ideology to care *e.g.* introducing Patient Focused Care etc. , requires re-think on skill-mix/ staff mix				
• 7. Changing case mix/dependency/patient needs				

• 8. Establishing a new type of service				
• 9. Regulation/ legislation led: changes in, or new, regulations/legislation create need for new staff				
• 10. Nurse profession led- the profession is lobbying for/advocating for this to happen				
• 11. Medical profession led- the medical profession is lobbying for/advocating for this to happen				
• 12. Demand from patients/ clients: for nurses in advanced roles				
• 13. National/ state governmental - "policy led" initiatives				

B2)Who (*e.g.* which organisations/ stakeholders) are primarily responsible for the drive to introduce/extend the use of nurse practitioners and advanced role nurses? How are they doing this? What are their main objectives in doing this?

B3) What do you regard as the main facilitators and constraints to the current level of use of nurses in advanced roles and nurse practitioners in your country/state? [PLEASE TICK ONE BOX IN EACH LINE]

Current Factor:	*NOT RELEVANT*	*A MAJOR constraint*	*A MINOR constraint*	*Exists, but no effect/ neutral impact*	*A MINOR facilitator*	*A MAJOR facilitator*
Nursing profession led changes in role/ competencies/ entry requirements						
Nursing professional regulation/ certification requirements						
Number of appropriately qualified applicants to undertake advanced role preparation/ education						
Supply of appropriately skilled/qualified advanced nursing staff from training/education						
Capacity of education providers to develop appropriate curriculum and train for competencies of advanced nursing roles						
Attitude/ perceptions of health sector employers/providers						
Role/ impact of medical profession representatives						

Current pay/ reimbursement- pay structures/ differentials between advanced role nurses and other health professionals						
National/ Regional Staffing Norms or Ratios						
Health sector funding: current levels allocated to staffing budget						
General legislation for changes in roles of health professionals						
Flexibility of the nursing hierarchy to allow the creation of innovative roles and job descriptions						
Attitudes of nurses to moving into advanced roles						
Attitudes of doctors to nurses moving into advanced roles						
Attitudes of other health professionals/ workers to nurses moving into advanced roles						
Attitudes of patients/ clients to receiving care from advanced role nurse rather than doctor						

Governmental/ political support for use of new roles						
General labour market factors (relative pay, demographics, recruitment problems etc. choice of alternative jobs)						

B4) In relation to any major constraints identified in the table above, please report on any national/ local initiatives which are being used to try to overcome them-

C. Evaluation of nurse practitioners and other advanced roles

C1) i) In which practice locations are NPs most and least effective? Why?

ii) in which current roles are NPs most and least effective? Why?

What evaluation/ evidence base is their to support this view? [if possible please provide references and./ or copies of reports/ grey literature etc]

C2) i) In which practice locations are other types of advanced nurses (specify) most and least effective? Why?

ii) in which current roles are APs most and least effective? Why?

What evaluation/ evidence base is their to support this view? [if possible please provide references and./ or copies of reports/ grey literature etc]

C3) In your view what are the main costs and benefits of using NPs rather than doctors?

C4) apart from NPs and nurses in advanced roles, are there other options when considering the substitution of health-care providers for physicians? If so, who are these health-care providers/staff ? Is there any evidence to support decisions on which type of health-care provider is most effective in specific care environments?.

C5) What evaluation/ evidence base is their to support this view? [if possible please provide references and./ or copies of reports/ grey literature etc]

C6) What are the likely key future developments in use of NP/AP – what are the main indicators of change you would refer to, to support this view?

C7) If you were asked to advise another country on the feasibility of introducing NPs, or specific types of AP what would your main advice be?

THANK YOU FOR PARTICIPATING IN THE STUDY

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