

Inaugural lecture: Doing Away With Doctors? Workforce research and the future of nursing

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Abstract

This paper, based on Professor Griffiths inaugural lecture, discusses nursing workforce research, focussing on skill mix and substitution, and considers how optimistic readings of research may ultimately be self-defeating for the professions, as well as dangerous for patients. Two core examples are used to illustrate these 'optimistic' readings. Research on nursing-led in-patient units – initially heralded as 'proof' of the independent therapeutic contribution of nursing – ultimately led to a less optimistic conclusion for the profession when early results were not confirmed. Research exploring associations of the link between nurse staffing and patient outcomes has been used to advance policies such as mandatory nurse to patient ratios even though stronger associations are shown between patient outcomes and the working environment. The implications of research showing associations between number of medical staff and patient outcomes have not been considered. Future developments in the nursing workforce are underpinned by assumptions about the potential cost effectiveness of substituting assistant practitioners with lower qualifications for registered nurses. Little evidence supports this and it is important that changes are regarded as experiments in need of careful evaluation. The evidence on the impact of workforce characteristics on outcomes presents a complex picture. The 'easy' answer is usually not the 'right' answer. While it may be that nurses are more threatened as a professional group than doctors, both professions need to adapt to future demands. It is clear that we simply don't yet know what the best or right skill mix is. Nurses (and midwives) can substitute for doctors under some circumstances but "cheaper" staff does not necessarily equal cheaper care. We don't know if assistant practitioners can safely substitute for nurses or whether such substitution is cost effective. The answer is likely to depend on exactly what substitution occurs and where.

- *The first principle is that you must not fool yourself and you are the easiest person to fool.* (Richard Feynman)

This paper discusses research evidence about changes in the size and composition of the health care workforce. Much of it concerns "skill mix" – a term often used to describe the mix of posts, grades or occupations in an organization or the combinations of activities or skills needed for each "job" within the organization (Buchan and Dal Puz 2002). It is, on the face of it, a dry subject: remote from the day to day concerns and drama of clinical care. A rarefied pursuit and, perhaps, an example of researchers preoccupied with research that has little application 'to

practice'. On the other hand, workforce research is a surprisingly emotive subject because it raises questions about the fundamental value of what people -health care workers- actually do, how they spend their working lives and, ultimately, their ability to make a living. For users of health services it raises questions about the quality of the care they receive and, ultimately, of life and death.

This is a large topic and not all of it can be covered in this paper. This paper will focus on questions that address propositions such as:

- "can midwives safely manage most 'low risk' deliveries at lower cost than medical staff and deliver a better quality experience?"
- "can nurses take on many of the roles currently undertaken by doctors , delivering equal or improved quality of care at a lower cost....?"
- "can much of the work currently undertaken by registered nurses be undertaken by less qualified unregistered professionals?"

These questions all address the possibility and consequences of change in 'skill mix' and substitution between different professional groups. The answers to

questions such as these are core for workforce research and planning for the future of health service delivery. Presumptions about the answers underlie much current health service policy relating to the future workforce. This paper will present a personal assessment based on a "whistle stop tour" of the sort of evidence that has been used to answer questions such as these in order to consider some possibilities for the future of nursing. It will consider whether professional groups, in this case nursing, have sometimes preferred "easy reads" of a complex evidence base, accepting simple conclusions when it is professionally advantageous and using this evidence to advance the cause of the profession. This should come as no surprise: it would be a happier world if everyone could have such belief in the value of what they do, and we should all be concerned for our future employment prospects. But problems arise when the interests of patients and the professions do not coincide and when the stakes are higher on one side (life, death) than the other (professional status, opportunity). Over recent years an optimistic reading of evidence may have been useful in advancing the status of non-medical health care professions leading to an

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expansion of support services. Certainly nursing has seen the development of many 'advanced' roles. But now health services in many countries are in much more challenging times and these specialist nurses are faced by pressures from politicians and service managers who are looking to make cuts. In times where resources are scarce there may be rather more searching questions asked of the evidence in order to demonstrate a tangible clinical and economic benefit from investment in new roles and indeed the core professional nursing workforce. The intention here is not to single out the nursing profession for criticism. They are by no means alone in protecting professional interests. Indeed, there is no reason why they should not do so, provided that first and foremost it is always remembered that ultimately there is only one legitimate purpose of professional advancement – that is to deliver better health and better health care – in the case of the NHS in the United Kingdom and other publically funded health services, this is a mission to deliver excellent health care to all the people of the country.

Changes in the NHS workforce

The NHS is often cited as being Europe's largest employer and despite recent changes, whereby some NHS care is delivered by non NHS providers, it retains a vast employed workforce. In September 2011, the NHS and NHS funded general practice employed 1,350,000 people in England representing the equivalent of 1,149,000 full time jobs (whole time equivalent). This is a slight decline from the previous year but this represents a large increase over the figures from 2001 when the NHS employed approximately 911,000 (Figure 1). Going back beyond the years on this graph in 1995 the NHS employed 842,000. These simple figures illustrate that the delivery of health care is, typically, a labour intensive process. The number of jobs tells a very partial story though.

Health care involves contributions, directly or indirectly, from a range of 'workers' with varying roles, levels and types of training and qualification. The current NHS workforce comprises only 52% professionally qualified clinical staff. As an aside to those who condemn the rise in managerialism in the NHS, it is worth noting that the equivalent figure in

1996 was 51%. It is also worth noting that of the 50% of staff that are not clinically qualified over half are classified as 'support to clinical staff' (25% of all staff), again a figure that is largely unchanged over the years. However, there has been some change. In 1996 the ratio of Nurses to Doctors was 3.7 – that is 3.7 nurses for every doctor. By 2011 it was 2.4. So the growth in the number of medical practitioners has been much greater than the growth in the number of nurses.

International variation

Variation of the composition of the professionally qualified workforce (predominantly doctors and nurses) is reflected in different configurations internationally. Figure 2 shows the number of nurses per 1000 population against the number of doctors (physicians) for OECD countries. It illustrates a number of points. Firstly there can be huge variations in how the health care workforce is configured, even between countries with quite similar economies. There is a large variation in the absolute provision of each professional group. The issue is not simply one of resources. If it was you would expect that countries with more doctors would also simply have more nurses. But the correlation between the numbers of nurses and the number of doctors is low ($r=.23$ on the most recent OECD data) and the correlation between the number of doctors and GDP is even lower ($r=.15$). In EU countries there is a small negative correlation between the number of doctors and the number of nurses: ($-.33$) All this suggests that, in some contexts at least, similar care can be provided by very different workforce configurations.

In the years since the 1990s changes in the work of both doctors and nurses in the UK can be used to illustrate this. Reductions in junior doctors working hours (which reduced the capacity of the existing medical workforce if not their numbers) led to a shift of work from doctors to nurses and were in part responsible for enabling an expansion of nursing roles including many more advanced and specialist practitioners with considerably more autonomy and responsibility for patient care than had been the case previously.

Doing away with doctors?

Earlier in the paper comparisons were made between the years 1996 and 2011 for no better reason than this is the span of detailed information readily available from the Health and Social Care Information Centre web site. But coincidentally it also takes us back to near the start of my career as a nurse and as a researcher into the health care workforce. The 'sub title of this paper,' "Doing away with Doctors" is based on a headline from a report in the Guardian Newspaper in 1995 (Brindle 1995) about some of the research that formed part of my PhD (published as Griffiths and Evans 1995). It reflects an extreme version of a view, rarely articulated in such blunt terms, that nurses can replace doctors in many areas of practice.

A more moderate version of the view is quite widely held. Over recent years there has been a steady increase in both the number of nurses employed in general practice and the proportion of consultations that are undertaken by them (Hippisley-Cox, Fenty et al. 2007; The Information Centre 2008). Some, have argued that there is considerable scope to further increase the amount of primary care delivered by nurses so that primary care becomes essentially a nurse-led specialty (Sibbald 2008; Sibbald 2008) although the potential extent and desirability of substitution remains hotly contested (Knight 2008).

Although harder to track in workforce data, we have also seen increases in the number of advanced practice nursing roles where nurses take on aspects of care management for patient care. But far from nurses "doing away with doctors", we might now reasonably ask if nursing itself is being 'done away with'. As we have seen, despite the expansion of nursing roles the size of the nursing workforce in the UK relative to that of doctors has actually decreased. Advanced practice and specialist nursing posts are vulnerable to cuts in these difficult economic times and there is some evidence that posts are now being lost (Royal College of Nursing 2010). After reaching a peak in 2007, the number of nurses in general practice is no longer expanding and indeed may even be contracting, as practices employ more 'non-professional' support staff, including health care assistants. Further, while a move to an all degree level nursing workforce in England and an expansion in the numbers of midwives and health

visitors in training might seem to signal a strong endorsement of professional nursing, this is far from clear. The move to an all degree workforce seems to be accompanied by a dramatic drop in the number of nurse training places commissioned, even though projections suggest that the UK, in common with many countries, faces future shortages (Buchan and Seecombe 2011). A key strategy for closing the gap and making 'efficiency savings' over coming years for the NHS seems to be "skill mix review" (McKenna 1995)- the use of a more efficient skill mix which is, in simple terms, seen as one which includes fewer registered nurses and more support workers including assistant practitioners, just below the level of a newly qualified nurse (band 4 using NHS agenda for change grades).

If anyone was in any doubt about the threat to professional nursing as it is currently constituted they need only look to the media. Wait a few days and no doubt a new headline will emerge in which nurses are lambasted variations on the hackneyed themes – 'too posh to wash' 'too clever to care'. While this view of nursing can sometimes seem to be a uniquely British preoccupation it seems clear from debate in international journals that it is not (Brearley 2008; Corbin 2008; Ehlers 2008; Griffiths 2008; Maben 2008).

Historical Perspective

These challenges are not however, new. McKenna's 1995 paper about skill mix which was cited earlier highlighted a number of concerns about skill mix review – these included a 22% cut in training places for qualified nurses. A concern that "...in financially hard pressed trusts, skill substitution through skill mix review is an attractive management option...."(p452) and a report that "....skill mix reviews are causing consternation among the profession and fuelling the belief...that skill mix reviews are merely excuses for the substitution of unqualified staff for registered nurses."(p453) (McKenna 1995)

Although McKenna's paper was published in 1995 and was probably written initially in 1993, these 20 year old quotes could have been written today. It is also worth remembering that the 'angelic' image of nursing that seemed prevalent for much of the 20th century was a relatively

recent phenomenon in historical terms. Positive images of nursing are often linked to Florence Nightingale, portrayed as embodying the virtue of the dedicated, professional nurse. But this was not the predominant image of the nurse in Nightingale's time.

The mid to late Victorian image of nursing might well be better represented by Sarah Gamp, nurse, midwife and enthusiastic layer out of corpses in the Charles Dickens novel *Martin Chuzzlewit* written in 1844. It is instructive of an alternative perspective on the image of nursing that predates Nightingale's era. She may be fictional but Dickens was an astute social commentator and although his portrayal might be exaggerated he was no doubt capturing something of how 'nursing' was perceived at the time. The appropriate adjectives for Sarah Gamp might be lazy, grubby, promiscuous, drunk. While the image of the caring nurse lingers in the novel, it is primarily manifested in Gamp's deluded view of her own virtues. The adjectives above aren't those of Charles Dickens – rather they were attributed to a British "peer of the realm" in 2008, commenting on his experiences in hospital (Britten and Savill 2008).

Another quotation illustrates how enduring these issues can be

"... there is a danger underlying the actual position of a trained Nurse, which we should do well to bear in mind – the risk, that is, of scientific knowledge covering up and putting out of sight the value of homely detail, and small matters connected with a patient's comfort and well-being " (Pincoffs 1893) Quoted in (Fealy and McNamara 2007) p 1190

The language might betray its age but the sentiment could have been found in any number of articles in the British press of the past few years: "Too posh to wash", "too clever to care..."

Quality of health care

Although surely these are important issues this paper is not going to focus on the moral character of nurses or indeed their specific skills and abilities. The ultimate issues at hand here is about the quality of health care that is being delivered to people. This should be the preoccupation of workforce researchers and planners, although sometimes it is hard to disentangle a passionate belief that a profession is important because it

makes a vital contribution to that quality from an advancement of the profession as being important in its own right.

Many years ago Donabedian offered a now classic formulation of aspects of health care quality, dividing it into "structure", "process" and "outcomes" (Donabedian 1966) (Table 1). There are many arguments about the relative importance of each aspect of quality – and certainly the relative importance and value of measuring each in order to demonstrate and assure quality is hotly contested. But the distinction between advancing a profession in its own right and advancing it because its contribution to care can be simply illustrated in these terms.

A quality workforce might be assessed by the structural characteristics: for example more and more highly qualified nurses. More and more highly qualified nurses is good – but not if they are indeed 'too posh to wash'. Therefore we need to consider what these nurses actually do: the processes of care and adherence to recognised standards. But adherence to the standard of care is no good if the standard of care is wrong – as was often the case in the 'good old days' when (if the British press is to be believed) nurses were not too posh to wash nor were they too clever – so they followed doctors order to give bed baths to patients who were restricted to their beds for extended periods after an acute episode of illness while administering their own remedies such as egg white and oxygen and sodium hypochlorite (Ford and Walsh 1989).

Sodium hypochlorite, also known as eusol or clorox, is still frequently used as a disinfectant or a bleaching agent. But it used to have a role in cleaning wounds, particularly those that appeared to be 'dirty' or 'infected' or simply 'sloughy' (especially pressure ulcers and leg ulcers). It was eventually recognised that not only did it 'clean the wound', but it also caused significant damage to healthy tissue and delayed recovery. For some time use of this agent would have been regarded as a marker of a high standard of care. Like structural measures, process measures can be important (and hugely advantageous) if, but only if, we know that there is a proven link to outcomes.

Another example, bedrest, was (and in some settings continues to be) prescribed as a treatment for a large number of medical conditions. In 1999 a systematic review by Allen and colleagues found

39 trials of bed rest for 15 different conditions (total patients 5777)(Allen, Glasziou et al. 1999). In all of these trials investigating bed rest, no outcome was shown to be significantly improved in any condition. There was some evidence that outcomes were significantly worse in some conditions including

- bed rest after cardiac catheterization
- acute low back pain
- myocardial infarction

So it is important that research on workforce focuses on links between the 'structural' characteristics of the workforce, and outcomes. There is a crucial intermediate stage – clinical research identifying the correct processes – but the issue at hand is who we can and should get to do it. Without a focus on the outcomes of care, there is a danger that we forget that there is no intrinsic value (or harm) in substitution of nurses for doctors, care assistants for nurses unless it is of value, or is at least neutral, for patients.

A personal journey in workforce research- the example of nursing-led inpatient units

My own research career began at a heady time for nursing in the UK - the early to mid 1990s. The so called project 2000 programme (UKCC 1986) to move nursing education into universities and to ensure that all nurses had an academic education was being implemented and it seemed that moves to make nursing a fully recognised profession were bearing fruit.. Research active academic nursing departments offering degree courses to relatively small 'elites' had become more common through the 1980s (for example the University of Southampton started its degree course in nursing in 1982 with 20 students) and such departments were beginning to gain recognition amongst their academic peers. At the centre of this (to me at least, as a nursing student in 1988) was the 'New Nursing Movement', which characterised nursing as an independent, problem solving profession, and a number of 'Nursing Development Units' – initially in Oxford, where innovative practice was being developed and researched (Salvage 1990; Salvage and Wright 1995). Patient centred care was at the fore and for the proponents of new nursing

at least there seemed to be no logical contradiction between 'science' and 'humanity' in providing care. One of the key studies was an evaluation of what was then called 'nursing beds' – essentially hospital beds (a ward or unit) which were controlled by nurses in the sense that decisions to admit and discharge patients was exclusively a nursing responsibility. The aim of the unit was to provide post-acute care to patients recovering from events such as stroke. The intent was to provide a therapeutic and rehabilitative style of nursing in an environment where acute care was not the priority (Ersser 1988).

The model has perhaps superseded by attempts to push more and more recovery 'into the community' and reduce hospital stay per se, but much of the model has been adopted as routine in acute rehabilitation services and intermediate care. But at the time there was one element that was crucial – that in this model it was the nurse who was truly 'in charge' – the authority of the consultant and day to day care management functions undertaken by junior doctors were passed to nurses – nurses had, in effect, been substituted for doctors.

Alan Pearson's evaluations of this study were being published just as I embarked on my career (Pearson, Durant et al. 1988; Pearson, Durant et al. 1989; Pearson, Punton et al. 1992). 157 patients identified as suitable for the service were randomly allocated to continue to be care for in an acute ward or to be transferred to the nursing-led unit. A range of outcomes but for the moment two are worthy of particular attention.:

Of patients in the control group (usual care) 21% died (15/73). In the treatment group (nursing-led unit) 7% died (6/86) This difference was statistically significant Those transferred to the nursing-led unit had a longer average total stay in NHS care of 47.2 days compared to the control group, which had a mean stay of 42.9 days, but this difference was not statistically significant. The findings were widely publicised and the cause of much excitement – it was argued that the potential therapeutic value of nursing, on its own and without the aid of medicine was demonstrated (Pearson, Punton et al. 1992), although the precise role of doctors in this service was not clearly articulated – patients had some access to medical practitioners but it was not clear

how much this was used.

My first study was an attempt to replicate this – developing a similar service and evaluating it by means of a RCT. Indeed this is what I spent much of the 1990s doing – a pilot then a full study in one centre and then a further study with an improved methodology in another. This culminated in a systematic review on intermediate care in nursing led inpatient units (Griffiths, Edwards et al. 2005; Griffiths, Edwards et al. 2007)

Figure 3 shows the results of the Meta-analysis from this systematic review. In total seven studies involving 953 patients reported mortality. Other than Pearson's widely publicised study, no other study has found a benefit in terms of inpatient mortality and the overall pooled estimate suggests no effect whatsoever. For length of stay (Figure 4) the pattern was different in that there were 2 studies with significant differences – one in favour of the NLU and one against – they are both my studies.

The first of these – published in 1995 (Griffiths and Evans 1995), is the one that led to the 'doing away with doctors' headline in the guardian. It showed a statistically significant reduction in stay for the nursing led unit .It is classified as one of the 'weaker' studies in this review because of limitations in method – largely due to the approach taken to randomisation. The second study (Griffiths, Wilson-Barnett et al. 2000) received no similar headlines. This second study showed a statistically significant increase in length of stay with nursing led unit patients staying in hospital on average nearly 18 days longer than controls. The pooled results of the methodologically stronger studies (at the top) confirms the significant increase in stay is confirmed. Overall results (including the weaker studies) are less conclusive, but point strongly in one direction – nursing led intermediate care may lead to longer hospital stays and it certainly doesn't decrease them. Associated with this finding was evidence that consequently, care in NLUs cost more.

The picture was not all negative. The meta-analysis showed that at discharge patients from the nursing led unit were less dependent. But the importance of this finding is hard to judge, because it may simply be a product of 'natural recovery' over time – people were more independent because they were

discharged later. While there are some positive messages to be derived from the overall findings, the early promise of a clear benefit was not realised.

Wishful thinking

Around about the time my first “adverse” result was published in 2000, I sat in a meeting where members of the profession dismissed the finding, saying that several other studies proved the benefit of NLUs. The implication was that the benefit was established and no further research was required. The systematic review had not been undertaken at the time but an unbiased reading of the available evidence could not have led to such an emphatic conclusion. At that time, two studies, both methodologically flawed, showed some evidence of benefit. Now a third and stronger study had not found it. From the systematic review, the overall the results became increasingly equivocal. These are less ‘interesting’ findings – not headline grabbing, and not so flattering to the profession, but certainly no less important. What the research does is establish the possibility for these units – it can be done, and there could be some benefits – but it raises a question on the cost effectiveness of doing so – the benefits were unclear, whereas the increased costs were. The opportunity costs are also uncertain – it may indeed be that that benefit arises elsewhere in the system by freeing up doctors to do work that only they can do. But this has not been quantified.

The nursing-led inpatient unit model has not proliferated although some aspects continue and certainly the UK policy on intermediate care was informed by some of the thinking behind the model (Department of Health 2001; Department of Health 2002). These results were disappointing to me but knowing this meant that I could stop advocating a model of care that was not necessarily benefiting patients as had been hoped. Interestingly, while the results were rejected by the nursing profession they were widely cited by medical researchers.

The nursing workforce and patient safety

Behind the nursing led unit studies was recognition that acute hospitals are dangerous places... bad things happen to people – people are admitted to

hospital because they are ill. While in hospital they are subject to a range of interventions which put them at risk – including being restricted to a bed either through the deliberate acts of health care professionals or simply because they are dependent on others to move. They also rely on professionals to identify if a complication occurs and for those professionals to act appropriately, identify complications or deterioration and act accordingly, when it does. This is a core nursing function in acute wards.

If the impact of research is measured by citations, then some of the most influential research about the nursing workforce is that of Linda Aiken and her colleagues who have studied associations between nurse staffing and patient safety in acute hospitals. Her paper “Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction.” Published in JAMA in 2002 (Aiken, Clarke et al. 2002). Is widely cited – more than 2,500 times on google scholar .

The reason why is clear – the key headline finding was that there was a 7% increase in the odds of dying within 30 days of admission and a 7% increase in the odds of failure-to-rescue in hospitals with the lowest nurse to patient ratio when compared to the best. This has inspired a large number of subsequent studies, most recently a major study replicating this across Europe – RN4CAST (Sermeus, Aiken et al. 2011).

RN4CAST surveyed nearly 34,000 nurses and 11 318 patients in 486 European hospitals. The study gathered patient outcome data for about 7 million hospital stays. The early findings of this study – widely reported – give a clear ‘headline’: where staffing is worse nurses report poorer quality of care (Aiken, Sermeus et al. 2012).

The effect of staffing is seen in a range of nurse reported outcomes including

- Perceived quality of care
- Perceived safety of care
- Nurse burnout job satisfaction and intent to leave Figure 5

Research such as this has been hugely influential and is widely quoted to support the importance of maintaining a large registered nurse workforce. It has been used to advocate for the implementation of mandatory nurse patient ratios in some jurisdictions. However, there are two notes of ‘caution’ over our current

reading of the literature.

Complexity

A consistent finding in RN4CAST, as elsewhere is that the ‘practice’ environment has a stronger effect than staffing per se. Practice environment is a constellation of aspects including leadership, collegial relations and support for staff development (Lake 2002). Figure 5 illustrates this for data from RN4CAST – the effects of practice environment (the dark green bars) are far greater than the effects of staffing (light green). Similar results have been shown in acute care in the USA (Aiken, Clarke et al. 2008) and also for the relative contribution of organisational factors and nurse staffing to quality of chronic disease care in English general practice (Griffiths, Maben et al. 2011). The message that emerges here is that if we assume the relationships we observe are causal then education, leadership and management of staff may be a higher priority, with more potential benefit, than increasing numbers of staff. A limitation of most existing research is that it considered only a single staff group – nurses. In a recent study we explored associations between failure to rescue – death among surgical patients with treatable complications, and different staff groups, including numbers of doctors (Jones, Griffiths et al. 2011; Griffiths, Jones et al. 2013). In a simple correlational analysis lower rates of failure to rescue were association not just with higher numbers of nursing staff, but also higher numbers of medical staff. Hospitals with higher numbers of support staff had higher rates of failure to rescue. But such a simple analysis is insufficient. Unfortunately the number of nurses and doctors are so highly correlated with each other that it is not possible to estimate the associations in a multivariable model simultaneously due to linearity. Instead we considered the total number of clinically qualified staff (essentially doctors + nurses) and included the ratio of nurses to doctor in the model. From this analysis a rather different picture emerged. The overall beneficial effect of the total number of clinical staff per bed remained significant – more clinical staff less failure to rescue. But now it appeared that the composition of the workforce mattered – the higher proportion of nurses in that workforce the more failure to rescue.

From this we might conclude that the beneficial effect of high nurse staffing that has previously been observed is actually an effect arising from high staffing by doctors who have been largely omitted from the previous research, although it is interesting to note that an association between numbers of doctors and mortality has been demonstrated before in both the UK and USA (Bond, Raehl et al. 1999; Jarman, Gault et al. 1999). The implications of these findings for the nursing workforce are rarely considered and while a simple conclusion about staffing by medical doctors is not warranted, such conclusions are as valid as the simple suggestion that increasing the number of registered nurses is the key answer to patient safety.

"I want to believe"

The noble prize winning Physicist Richard Feynman is quoted as saying *"When we do scientific research, when we publish our results, we should try to think of every possible way we could be wrong."*

When we first published results from RN4CAST we were greeted with howls of derision because what we were trying to do was seen, by members of the profession, as obvious, a reiteration of well-known facts. But these findings mean nothing unless we can understand them properly and translate them into actionable health policies. The truth is that in this respect we do yet know enough, although the evidence points toward a more complex and less comfortable strategy for the professions than has hitherto been advocated..

Our conclusions will mean nothing if we choose the easy interpretation and we do not question the gaps in the evidence or the true implications. What has been presented here is by no means a complete overview of the field. There are some areas where evidence is relatively strong. For example the recent publication from the birthplace study gives strong support for the safety, and some suggestions of superior outcomes, from midwifery led care (Birthplace in England Collaborative Group 2011). Needleman's study in the New England Journal of Medicine last year (Needleman, Buerhaus et al. 2011) is one of the first to demonstrate a prospective effect with sub optimal nurse staffing being associated with increased mortality, which does give a clearer indication of cause.

There are other areas of vital importance where policy seems to be proceeding with a far from adequate research base. For example the policy of a move to an all graduate nursing workforce in England finds some support in the evidence – broadly a move to a richer skill mix in the registered nursing workforce is consistent with the limited evidence on cost effectiveness (Goryakin, Griffiths et al. 2011). However the wide spread use of band 4 associate practitioners to substitute for registered nurses, which is an implied policy for the future NHS workforce, is not well researched. Evidence from the UK and elsewhere suggests that there is a real potential to do this (Spilsbury, Stuttard et al. 2009) but some of the evidence on cost effectiveness of licensed practical nurses from the US should at least give pause for thought (Hendrix and Foreman 2001; Needleman, Buerhaus et al. 2006). These studies tend to suggest providing a richer skill mix in the qualified nursing team (higher proportion of RNs) may provide a better return on investment (in terms of costs and outcomes) than increasing team size using lower qualified staff.

While it is far from clear if such evidence would apply to more highly qualified but unregistered practitioners (the scenario envisioned for the UK) it is clear that we do not yet have an evidence base. Just as the economic case for nurse for doctor substitution is fragile – highly sensitive to the size of wage differentials and opportunity costs (Goryakin, Griffiths et al. 2011), it is likely that the same applies to band 4 practitioners in the UK.

Conclusion

It is vital that hospital managers are able to innovate. But whole scale change in the workforce is an experiment. I would not discourage such experimentation – but it is crucial to recognise that there are risks. It is important that managers and professionals do not act as if we already know the answers because of our beliefs in the value of a particular profession, the economic benefits of a particular strategy or our 'optimistic' reading of evidence. In the coming months the public enquiry into events at the Mid Staffordshire NHS foundation Trust is due to report. It was estimated that through a series of failings there may have been somewhere between 400 and 1200 deaths more than expected in this trust over a 4 year period

from 2005,...

The initial enquiry report discussed reconfigurations and changes in staffing at the trust. It is worth quoting a length, as it provides a salutary lesson on the consequences of experimenting with staffing:

"Staff perceived [a]... scheme, to reconfigure the wards onto three floors, one surgical and two medical, as a means to reduce costs and staff....The minutes of the Board suggest that finance was a crucial factor. It was acknowledged by all concerned that the success of the scheme was dependent on achieving the correct levels of staffing.

There does not appear to have been an evidence base for the changes that were made. The attraction of the advantages – the financial savings – discouraged proper attention being paid to the disadvantages.the changes of nursing skill mix, which resulted in a predominance of healthcare assistants over qualified nurses, are not recorded in any Board minute seen by the Inquiry...

....evidence strongly suggests that the whole clinical floors project was planned and implemented without due regard to staff's legitimate concerns and without monitoring by the Board of the effectiveness of the scheme once implemented." (Francis 2010) (p 17-18)

In this paper I have focussed squarely on the importance that the nursing profession takes a critical view of research evidence and avoids selective reading to advance only that which suits them. Ultimately such a strategy will be self-defeating because arguments based on such selective evidence are easily undermined and ultimately the credibility of the source is reduced. The medical profession is also guilty of the same selective reading but we must recognise that the position of that profession in society is far more secure, in the short term at least. But the dangers of optimistic reading of evidence in defence of particular positions apply to all professions and to health managers.

The title of this paper posed the question - should we do away with doctors? The answer seems clear – yes, if the profession does not meet society's needs. The same applies to nurses. Should any of us be too concerned about the particular professional allegiance of any health care professional? The answer to this is "probably not" at least not for the professions own sake.

On the other hand, before moving to abolish the existing professions it is worth remembering that despite all their failings, the existing professions have, in the main, served us well. These professions need to continue to evolve and adapt to meet the needs of society and the health service, but the identification of individuals with their professions may help, as well as hinder. Whether we have doctors or nurses as we currently know them, we will still need medicine, surgery and care. Whatever changes technology may bring it is hard to imagine a situation where the delivery of healthcare is not, in the main, done by people.

We do need to be assured that those people are well trained and deliver excellent care. Things will change but as they do so we need to regard change as experimentation – subject to the same constraints and requirements for evaluation as other changes in health care. And when we read such evaluations we need to be critical and appreciate what the evidence as a whole says, not simply seek evidence to support our own professional tribe.

The evidence on the impact of workforce

characteristics on outcomes presents a complex picture. The ‘easy’ answer is usually not the ‘right’ answer. It is important to beware of selective quotations of the evidence and it is clear that we simply don’t yet know what the best or right skill mix is. Nurses (and midwives) can substitute for doctors under some circumstances but “cheaper staff does not necessarily equal cheaper care. We don’t know if assistant practitioners can safely substitute for nurses or whether such substitution is

cost effective. The answer is likely to depend on exactly what substitution occurs and where.

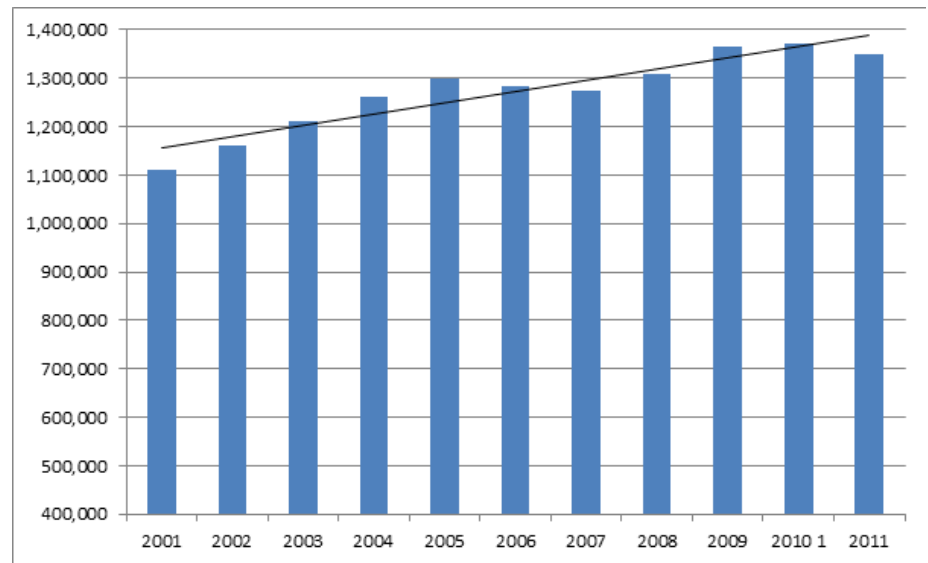


Figure 1 NHS staff 2001 to 2011 (data from the Information Centre for Health and Social Care June 2012)

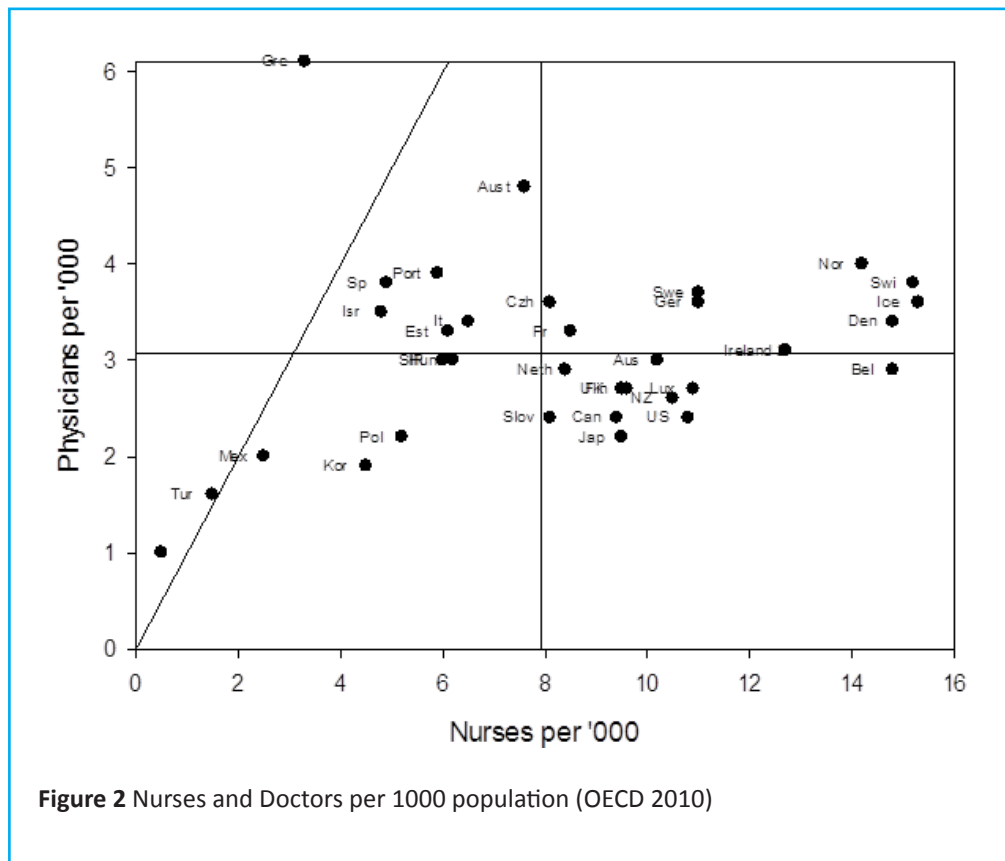


Figure 2 Nurses and Doctors per 1000 population (OECD 2010)

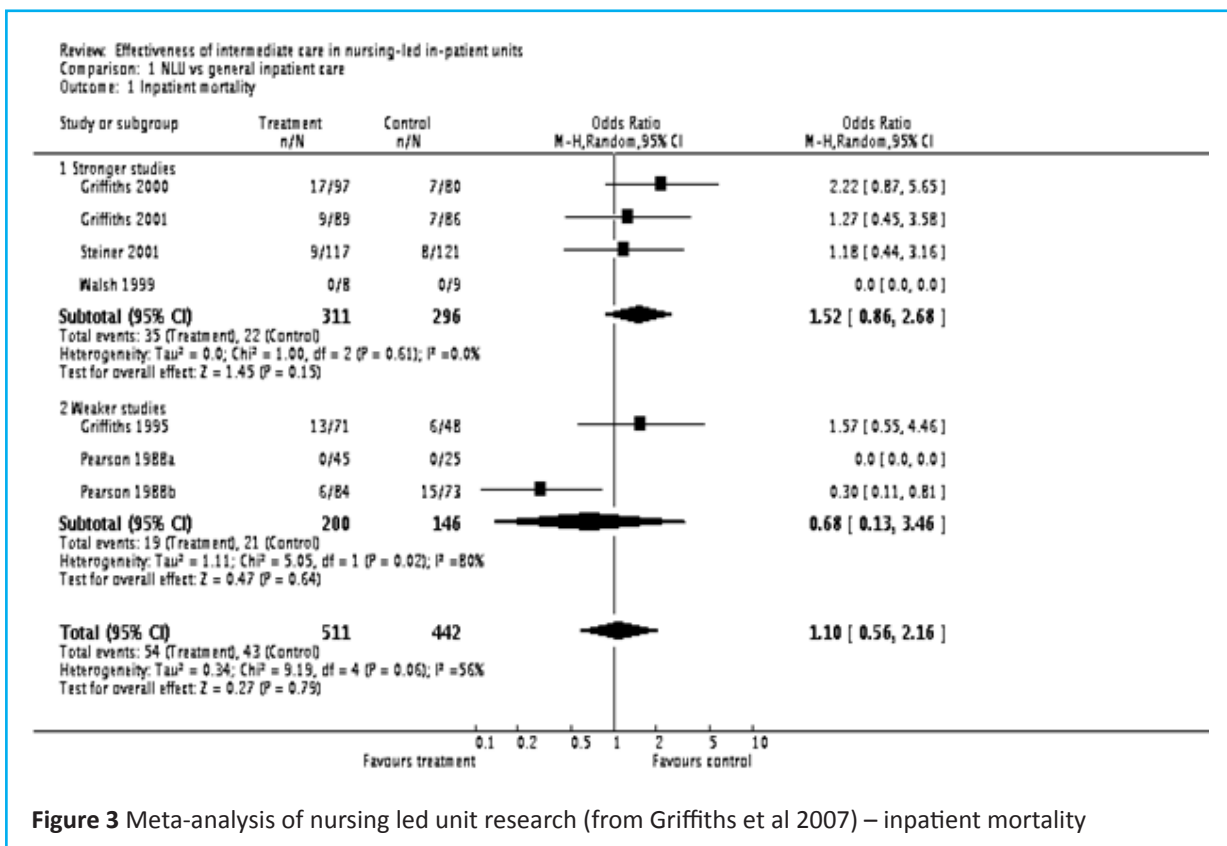


Figure 3 Meta-analysis of nursing led unit research (from Griffiths et al 2007) – inpatient mortality

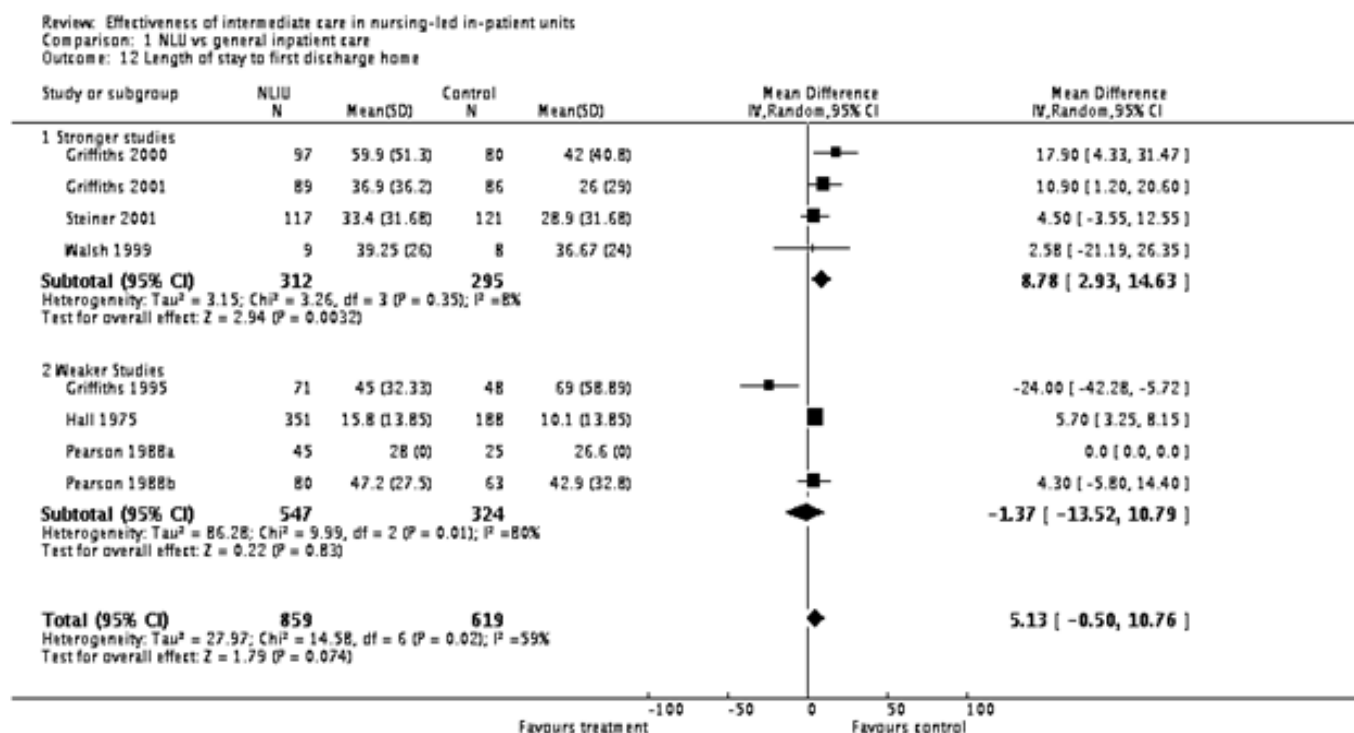


Figure 4 Meta-analysis of nursing led unit research (from Griffiths et al 2007) – length of stay

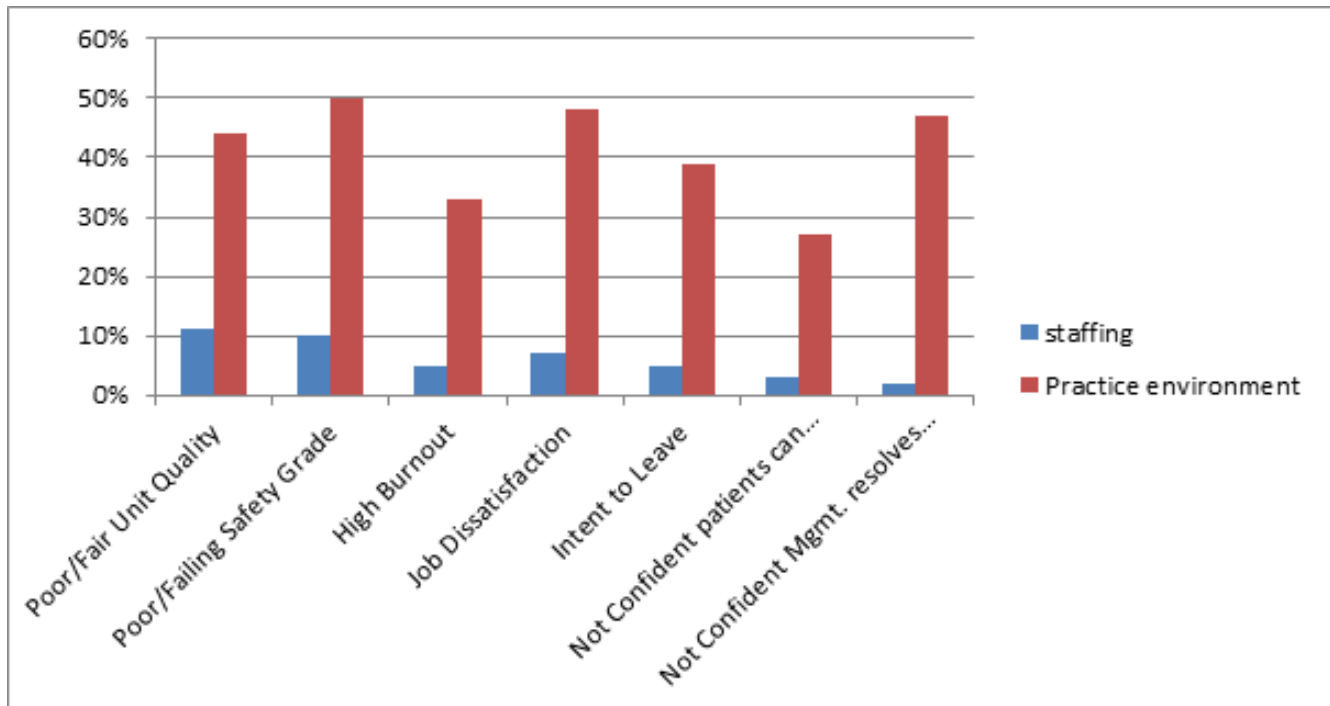


Figure 5 Reduction in odds of nurse reported adverse outcomes associated with better staffing and better practice environment (data from Aiken et al 2012)

Table 1 Components of health care quality – Donabedian 1966

- Structure
 - *The settings, resources and organisation of services*
- Process
 - *The care that is delivered: tests, treatments & interactions*
- Outcome
 - *The end 'product' – health, illness, recovery and well-being.*

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