I was invited to give an overview of nurse staffing research at the recent Nursing Times Workforce Summit and Awards under the title: ‘Safe and effective staffing: more than just a number?’. The phrase ‘just a number’ comes up a lot when I am invited to speak and something about it bothers me. This article summarises the speech I gave at that event.

Safe and effective staffing requires staff to be properly trained and have the necessary skills. It also requires them to be properly managed and deployed, and to be supported both practically – by being given the resources they need to do their job – and emotionally. Safe and effective staffing requires good leadership at every level. However, none of this should obscure the fact that numbers do matter.

Covid-19 and burnout

I am writing this as we move past the second peak of the coronavirus pandemic in the UK. This has placed an extraordinary strain on many in the health and social care workforce. In late October 2020, it was estimated that over 20,000 healthcare workers had died from Covid-19 during the pandemic worldwide (International Council of Nurses, 2020); far from being just numbers, these people were friends, family members and colleagues.

Even before the pandemic, nurses in the UK and elsewhere were reporting high levels of burnout. Burnout is associated with negative consequences, including:
- Intention to leave the job;
- Increased sickness;
- Lower quality of care delivery;
- Potentially lower productivity (Dall’Ora et al, 2020).

The factor most consistently studied, and shown to increase burnout, is a high workload.

Safety and effective staffing is more than just a number

Citation Griffiths P (2021) Why safe and nurse effective staffing is more than just a number. Nursing Times [online]; 117: 3, 26-28.
implication that burnout occurs due to a lack of personal resilience, which can be ‘cured’ by focusing on thinking patterns. It is, therefore, worth revisiting the underlying mechanisms of burnout, such as:

- Excessive job demands leading to exhaustion;
- Insufficient job resources leading to disengagement.

Perhaps the support that staff need is simple: give people the resources they need to do their job and ensure the workload is not excessive. This must also include careful attention to the factors that cause strain or erode psychological resources, such as team dynamics and inter-professional relationships.

**Nurse staffing and patient outcomes**

Burnout damages staff wellbeing, undermines staff effectiveness and exacerbates staff shortages. We also know a lot about the likely consequences of low nurse staffing on patient outcomes, most notably the risk of patients dying in hospital.

Our recent study found that, for every additional hour of nurse care available during the first five days of their hospital stay, a patient’s risk of death was reduced by 3% (Griffiths et al, 2019). To put that number in context, in 2019 there were about 9.5 million admissions included in the NHS mortality indicator return – which accounts for most adult acute general hospital admissions – and there were 292,530 deaths within 30 days of admission (NHS Digital, 2020).

We carried out this study on a single site, and cause and effect should not be assumed, but the finding is consistent with other research (Griffiths et al, 2016). If you use the result of our 2019 study to estimate the effect of giving an additional hour of nurse care to each patient in 2019, the 3% reduction in the risk of death would mean 8,776 fewer deaths. This is more than 10 times the average annual number of deaths from flu in England (Bit.ly/NomisMortality).

Giving each of 9.5 million admissions one additional hour of nurse care would be expensive: it would cost about £360m if training costs are factored in. That seems a huge sum and constitutes about £4,100 per life saved. However, if each life benefited from just four additional quality-adjusted life years, that would be judged as highly cost effective.

Reduced mortality is not the only benefit of increasing nurse staffing. In addition to impacts on non-fatal outcomes, large-scale observational studies have shown that hospitals with more nurses have lower levels of staff burnout and improved outcomes, including patient satisfaction (Aiken et al, 2012). In our study, the interactions we observed between staff and patients were nearly three times more likely to be characterised as negative when each nurse cared for eight or more patients. Interactions rated as negative were those that were rushed, task-orientated and, in some cases, incon siderate, disrespectful or rude.

Of particular relevance in a pandemic, a recent US study showed that, when patients were exposed to low staffing levels, the risk of a subsequent healthcare-associated infection increased by up to 15% (Shang et al, 2019).

Skill mix

This all amounts to a compelling case for more registered nurses (RNs), but we know they are in short supply, leading many to ask if we can address the nurse shortage by changing the skill mix and employing lower-grade staff to substitute for nurses. Recent research has established the importance of having sufficient healthcare assistants (HCAs) on the ward, with evidence of increased risk and omissions in care when HCA staffing is low (Griffiths et al, 2019; Redfern et al, 2019). However, a large body of evidence shows that reducing the proportion of RNs on the nursing team is associated with adverse outcomes (Aiken et al, 2017) and that having a high number of HCAs is also associated with increased risk of death (Griffiths et al, 2019).

There is no evidence to suggest HCAs can safely substitute for RNs, especially in safety-critical acute care areas; this includes care for older people, where there are higher rates of mortality and readmissions when they are exposed to higher levels of HCA staffing (Fogg et al, 2020). An economic model using data from one hospital in England found that increasing the number of RNs delivered better outcomes with a net decrease in cost, because of reduced hospital stays (Griffiths et al, 2018).

There is a lot of discussion about what all this means for the new nursing associates (NAs). In simple terms, we cannot be sure because we do not yet have sufficient evidence, but that which exists indicates that replacing nurses with NAs could be risky. It seems likely that nurses’ ability to properly delegate and their capacity to supervise NAs will be crucial; recent qualitative research from the Policy Research Unit in Health and Social Care Workforce suggests many nurses are still struggling with delegation (Kessler et al, 2020).

We need to wait to see how this works out, but if NAs replace RNs – thereby, diluting the skill mix – it is possible that outcomes will be worse and costs will increase. In workforce policy terms, it is vital to reinforce an increased supply of RNs as a desirable end point but, for now, we need to concentrate on managing the workforce we have as cost effectively as possible.

How many nurses do we need?

Even in times of plenty, we cannot keep asking for more; we need to know when enough is enough – although it is worth noting that typical staffing levels in UK hospitals are often lower than the minimum levels set by legislation or other norms in other countries (Buchan et al, 2017).

Most hospitals in England are now using some variation of the Safer Nursing Care Tool (SNCT) as a patient-classification system to help guide staffing decisions (Ball, 2020); similar systems are used in other countries in the UK. Despite a vast amount of literature about tools of this type, the evidence about the benefits and effects of using them is limited.

Tools are increasingly being used to guide not just ward-establishment setting but daily deployment, using real-time systems to monitor and match staffing level to demand. This introduces the possibility that staffing can be deployed much more...
responsively and efficiently to meet patient need. Our simulation study found that using the SNCT to guide the flexible use of staff – including deploying bank and agency staff to meet peaks in demand – could help improve patient safety and reduce the risk of patients experiencing understaffing. However, this did not mean baseline staff requirements were reduced.

When we modelled a supposedly flexible approach with a low baseline staff level, we found that cost savings arose simply due to the ward often being understaffed; this was because there were not enough overstapped wards from which to borrow staff, and the availability of temporary staff at short notice is limited (Griffiths et al., 2020). Fig 1 shows the impacts of this approach.

The most flexible approach of all appeared to be when we trialled using a higher baseline staffing level than the average that is usually used with the SNCT. This approach meant staff were generally able to meet any peaks in demand – if a ward experienced an unanticipated peak, it was more likely that staff were available from another ward to provide extra cover. This more-resilient approach was potentially cost effective, with a cost per life saved well below £10,000 – this is easily cost effective by most standards. While tools like the SNCT can be used to guide staffing deployment, it is vital to use them properly to set an adequate establishment.

Finally, I would like to turn again to Covid-19. For a long time, health services have operated with an almost ideological commitment to a certain model of economic efficiency: unused capacity is waste, so having staff work to the top of their skill level is efficient and lower-skilled tasks are allocated to lesser-trained and lower-paid staff. The experience of Covid-19 should remind us of some important truths. We have heard a lot about ‘surge capacity’ (how to deal with peaks of demand) and it is essential to have some excess capacity. Highly skilled staff are more able to step into new roles and can fulfil a range of functions, while less-skilled staff can only work up to the top of their skill level.

The Nightingale hospitals stood largely unused, but were prepared in case the worst happened. However, for too long our health system and decision making surrounding it have treated the risk of having too many nursing staff as equivalent to the risk of having too few. It is not equivalent. Having too few nurses puts patients’ lives at risk, whereas having extra staff on wards adds to the quality of care and means they are potentially available to help when there is a shortfall elsewhere or a need to cope with a spike in demand. This is flexible staffing, not reducing the core staff to a minimum.

If routine demands are more manageable, staff are more able to adapt to, and cope with, extreme pressures. Working at the limit is just not sustainable in the long term. We should not let health workers’ extraordinary achievements over the last year fool us into thinking these working practices can, or should, become the new normal. Safe and effective staffing is more than ‘just a number’, but the numbers certainly do matter. NT

References
Fogg C et al (2020) The association between ward staffing levels, mortality and hospital readmission in older hospitalised adults, according to presence of cognitive impairment: a retrospective cohort study. Age and Ageing; saf133.
International Council of Nurses (2020) ICN Confirms 1,500 Nurses have Died from Covid-19 in 44 Countries and Estimates That Healthcare Worker Covid-19 Fatalities Worldwide could be More than 20,000. inchu; 28 October.

Fig 1. Simulation of the effect of using flexible staffing with a low baseline

<table>
<thead>
<tr>
<th>Staffing was &gt;15% below requirement 65% of the time</th>
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<tr>
<td>Average length of hospital stay was 2.4% higher</td>
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<tr>
<td>Death rate increased by 8.3%</td>
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<td>1 extra death for every 361 patients</td>
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Source: Griffiths et al (2020)