

Scotland's Unsustainable Health Service

Modelling NHS demand to 2040

Our Scottish Future Health Commission

Our
Scottish Future

Summary

Scotland currently has around 13,300 beds available for patients, equating to 1 bed for every 412 citizens. In 2015, we had a larger capacity – 1 bed for every 389 people. Between financial years 2014/15 and 2019/20, Scotland saw a reduction in staffed hospital bed capacity by 810 beds, around 5.8% of its total capacity.

If the rates of older adults being treated as emergency admissions continue and reductions in hospital length of stay does not reduce, we estimate the NHS will require a further 3,500 beds by 2040.

This amounts to a new 450 bed hospital (average sized general hospital) being constructed every 2.5 years for the next 20 years.

Looking towards the projected increase in hospital activity by 2040, if adequate community care is not in place, we estimate that an extra 2,300 hospital doctors and 17,000 hospital nurses would be required to maintain current staff to patient ratios. This would be excess requirements over and above current recruitment.

Background

As has been well-documented, the population of Scotland is ageing – fast. The National Records office estimates that the number of people aged 65 and over will grow by nearly a third in the years running up to 2045¹. At the same time the number of children is projected to fall by nearly a fifth. While the number of people aged 25-44 will fall from 1.4 million to 1.3 million by 2045, the number of people aged over 75 will rise from 469,000 in 2021 to 774,000 in 2045². In short, there will be fewer working age people supporting more the elderly and the sick.

More people will, therefore, require acute medical support in hospital. Those aged over 75 are around twice as likely to require outpatient or inpatient care compared to those aged in their mid 20s. In 2021, older adults with complex needs and greater risk of falls or complications, accounted for 58% of individuals with multiple emergencies, with adults aged 85+ accounting for 10%. The older the patient, the greater the probability of spending longer in hospital compared to younger patients. Patients aged 85+ spent on average an extra 10 days in hospital compared with those aged 18-64.

Scotland needs to prepare for a marked increase in the amount of medical support it provides to in acute settings. But how much? This short paper sets out to model the scale of the challenge ahead.



Methodology

We have set out estimate how many extra hospital beds will be needed by 2040, and how many extra doctors and nurses will be required to staff them. Our figures are modelled on the basis that emergency admissions of elderly patients continue to increase at current rates and that the length of hospital stay does not fall. In other words, we base our findings on the assumption that the system continues as it is today.

For hospital beds, using National Records population estimates, we calculated the number of bed days that will be required by each age cohort in each local health board area in Scotland. We used this to provide an estimate for the total number of occupied bed days that will be required in every year leading up to 2040. Using 2019's hospital performance as a benchmark, we then calculated how many more hospital beds will be needed to meet the extra demand.

Our figure is based on Scotland's hospitals operating at 90% capacity, consistent with recent years.

For doctors and nurses, we simply took the current ratio of doctors and nurses per bed (0.61 and 4.5 respectively) and calculated how many would be required to staff the extra number of beds.

Results

There will be a vast increase in the number of bed days taken up by the elderly over the coming twenty years. In 2019, people aged 80-89 spent a cumulative 1,163,778 days in a hospital bed in Scotland. By 2040, we estimate that figure will have risen to 1,803,720. For people aged 70-79, the figure will rise from 1,048,495 to 1,433,058. The biggest increase of all will be among those 90 and over: from 380,544 bed days to 692,235: a rise of 81%. In total, the number of days Scots will spend in a hospital bed will increase from 4.3 million in 2019 to 5.6 million in 2040.

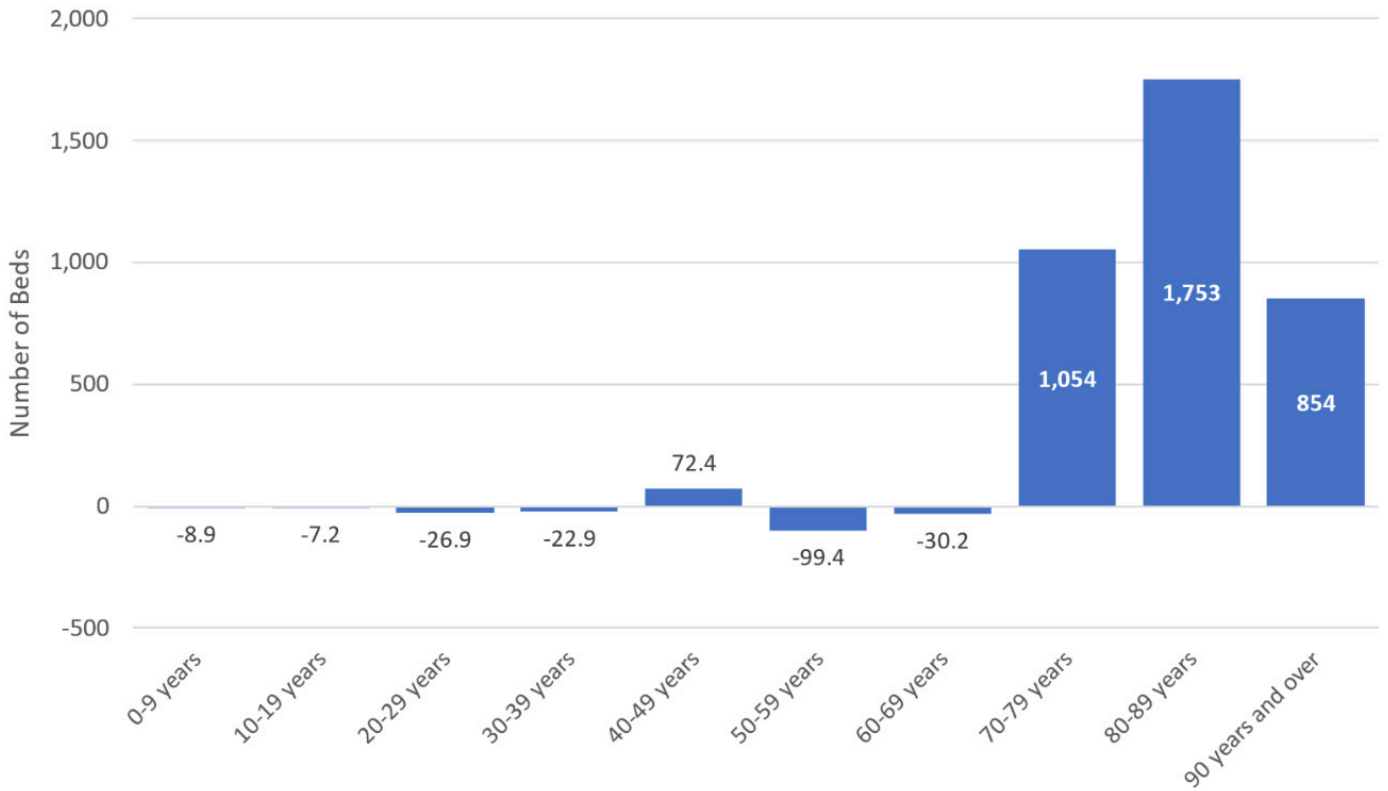
Row Labels	Sum of 2019 Bed days	Sum of 2040 Bed days
0-9 years	30738	27502.22972
10-19 years	41775	39150.05578
20-29 years	100663	90842.90501
30-39 years	148631	140268.494
40-49 years	230546	256985.0748
50-59 years	444553	408265.1643
60-69 years	691775	680757.1375
70-79 years	1048495	1433058.266
80-89 years	1163778	1803720.563
90 years and over	380544	692234.4645
Grand Total	4281498	5572784.355

Translating this into the number of extra beds required, we assume a continuing increase in the number of elderly people being treated as emergency admissions and the same performance on hospital stays as 2019 levels (when, pre-Covid, the NHS was at its most productive). We also assume that hospitals seek to provide 90% of total capacity required, consistent with current levels.

Using these assumptions, we estimate the NHS will require a further 3,568 beds by 2040. This amounts to a new 450 bed hospital (average sized general hospital) being constructed every 2.5 years for the next 20 years.

The figure is broken down by age group below: unsurprisingly, the extra bed days are almost exclusively needed for the greater numbers of older people who will require medical support.

Difference in Bed Requirements between 2019 and 2040



Meanwhile, to maintain the same ratio of medical staff per hospital bed as at present, we find that such a rise in beds would require an extra 2,293 doctors and 16,920 more nurses by 2040 than we do at present.

Conclusion

There are currently plans to construct 10 national treatment centres (NTCs) covering various elective treatments. Whilst these new hospitals are needed, they will not tackle the surge in demand we have described in this paper. The only option is to reform the way care is delivered, with shorter stays in hospital from efficiencies in treatment and therapies, and increased provision in community services, including enhanced primary care and adequate social care, to avoid admissions in the first place.

Analysis shows that home care provision can reduce the length of time a patient stays in hospital. For example, in one study by Public Health Scotland, a cohort of individuals, aged 65+ and in receipt of a more intensive home care package (receiving more than 10 hours of home care each week), were tracked through the system. Comparing their hospital activity one year before and one year after starting the home care package, a 15% reduction in unplanned bed-days was observed. This totalled a saving of 14,955 beddays in one year – reducing capacity by 41 beds each day.

Whilst this is strong evidence that social care reduces hospital demand, the same study found a 19% increase in hospital admissions over the same period. This suggests that individuals attend hospital more frequently, possibly due to increased frailty one year later, but are spending less time in hospital.

But, as things stand, the lack of provision in community services, namely social care, is causing a bottleneck in many patients' journey, leaving thousands stuck in hospital, and registered as "delayed discharge". Prior to Covid-19, around 9% of all beddays in hospital were the result of patients who were "bed blocking". These are patients who were medically fit to leave hospital, but due to other factors, such as waiting for a care plan to be put in place, were unable to return home. As the pandemic began to seriously impact the health service in March 2020, delayed discharges dropped considerably as places in care homes or other social care settings were found. As that priority has now waned, we are beginning to see delays increase. This bottleneck leads to fewer hospital beds available for new patients. Delayed discharges in NHS Scotland monthly (Public Health Scotland) As well as having an impact on hospital capacity, delayed patients are at greater risk of contracting a hospital acquired infection (HAI). A study by Glasgow Caledonian University found around 1% of patients in Scottish hospitals develop a HAI. This figure is below the European average of 3%, but still costs the NHS more than £46 million each year.

To cope with rising demand over the next 20 years, NHS and social care leaders need urgently to create extra hospital capacity but also to reduce demand on the acute sector. Otherwise, Scotland's NHS risks collapse.

Given these challenges affect every part of the United Kingdom, Our Scottish Future believes that all the UK NHS services need to carry out a 'National Conversation' on the future of health and social care to share best practice and agree a shared path forward to save Britain's most cherished public institution.

Notes: The paper was written by OSF director Eddie Barnes. It is based on updated modelling carried out data scientist Andrew Mooney for Our Scottish Future's "A Fractured Service", published last year.

Endnotes

1 <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2020-based>

2 <https://scotland.shinyapps.io/nrs-population-projection-variants-scotland-uk/>

Our Scottish Future believes that good government in Scotland and across the United Kingdom has to be based on the values of cooperation, empathy, solidarity and reciprocity.

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