

Local NHS equity trends and their wider determinants

Pilot study of data on emergency admissions

Health inequalities cost the NHS at least £12.5 billion a year, due to the excess burden of illness and use of hospital and primary care services in socially disadvantaged populations.

People living in more deprived neighbourhoods are more likely to have an emergency stay in hospital that could potentially have been avoided had high-quality care outside the emergency hospital setting been available.

In response to this, since 2016, NHS England has produced local health and care equity improvement indicators based on deprivation-related inequality in these potentially avoidable emergency admissions.

While this is valuable first step, these indicators have yet to be used systematically to identify local equity trends and to learn lessons for health and care system quality improvement. In addition, it is not known how far these indicators are affected by changes in local public expenditure and local economic conditions that are outside the control of local NHS and social care managers.

This pilot study was established to investigate these issues.

Main findings

Our analysis found:

- Nine percent of local authorities showed consistent improvement or deterioration in equity between 2012 and 2016. Five percent were identified as consistently improving and four percent as consistently deteriorating in terms of health and care equity.
- Improving trends were found in three clusters:
 - Yorkshire, Greater Manchester and Greater London.
- Two areas with worsening trends were adjacent to improving areas.
- A small but robust association between short-term changes in total local expenditure and short-term changes in all-cause and avoidable emergency admissions. Specifically:

- A £1 increase in per capita total expenditure was associated with 0.4 fewer avoidable and two fewer all-cause emergency admissions per 100,000 inhabitants.
- Reducing one emergency admission would cost £81,224 in additional expenditure for a local authority with an average total expenditure and an average population in 2010
- A 1% rise in total expenditure relative to need results in ten fewer avoidable admissions and 47 fewer emergency admissions per 100,000 inhabitants.

- Short-term changes in services expenditure, social care expenditure and NHS allocations were not associated with short-term changes in avoidable emergency admissions.

What we did

- Identified local authority districts (LADs) showing sustained improvement and deterioration on inequality in avoidable and all-cause emergency admissions from 2012 to 2016.
- Analysed whether LAD emergency admission inequality trends were associated with trends in local expenditure and economic conditions from 2009 to 2018.
- Produced local data packs describing trends in deprivation-related inequality in avoidable and all-cause emergency admissions from 2009 to 2018, for all local authority districts (LADs) and clinical commissioning groups (CCGs).

How we did it

We used rates of avoidable and all-cause emergency admissions for each neighbourhood within the 324 local authority districts in England. Then, using regression techniques, we calculated how many more admissions came from the most deprived neighbourhood compared to those coming from the least deprived one. We call this measure the absolute gradient of inequalities and we used it to track changes in inequalities over time.

Local authorities were deemed as improving or deteriorating based on three criteria:

- Three out of four periods moved in the same direction between 2012 and 2016
- The change was consistent for avoidable and all-cause admissions
- This change was not due to pure chance

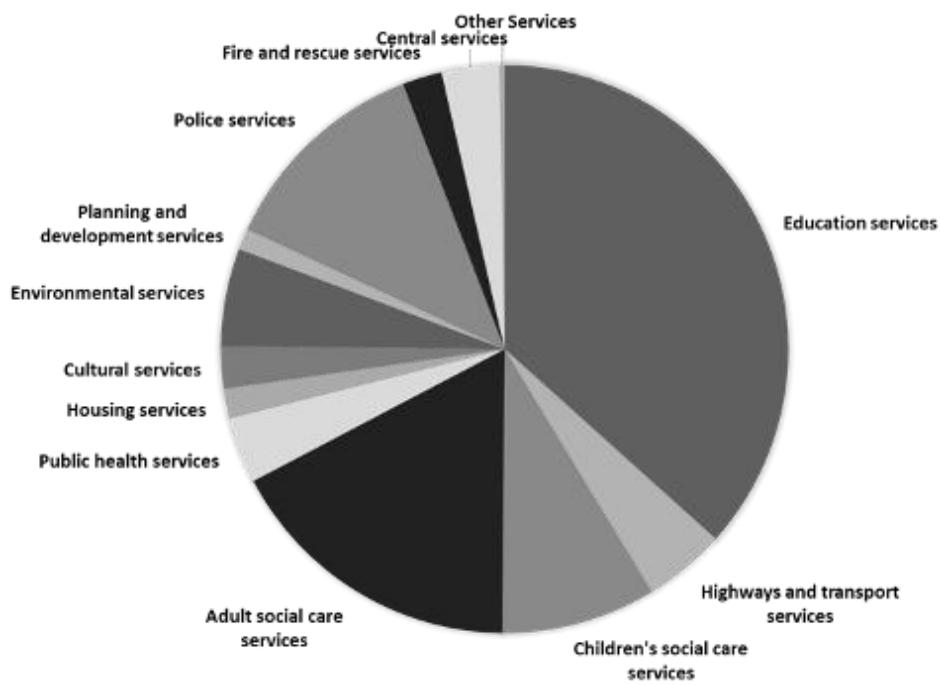
Also, we extracted local government expenditure at local authority district level (2007 to 2018) from the revenue outturn service expenditure summaries from the Ministry of Housing, Communities and Local Government.

Three measures of expenditure were used: total, services and social care expenditure:

- **Total expenditure:** the sum of all services except police and fire services because these services have a different commissioning structure.
- **Services expenditure:** excludes education and public health services because responsibility for their commissioning changed during the study.
- **Social care expenditure:** includes both adult and children's social care.

An indication of the proportion of local government expenditure in each category is given in Figure 1.

Figure 1: Local government expenditure breakdown



What we found at local authority level

- We identified 173 (53%) local authorities that met at least one of the criteria for a change in their inequalities trend.
- We observed a consistent improvement with a significant change between 2012 and 2016 for any avoidable admissions in 28 local authorities; while 16 showed that pattern for all-cause emergency admissions.
- Nineteen districts (5.9%) showed consistent worsening with a significant change between 2012 and 2016 for avoidable admissions, and 18 local authority districts (5.5%) had a deteriorating trend for emergency admissions.
- Overall, 16 (5%) local authorities met the three criteria for improvement and 13 (4%) met these criteria for worsening inequalities

Areas with improving trends were mainly located in three clusters:

- Leeds, Wakefield and Doncaster in Yorkshire
- Oldham, Bury and Rochdale in Greater Manchester
- Brent, Hammersmith, Kensington and Westminster in Greater London.

Most areas with deteriorating trends were small geographical areas spread across the country such as Dudley, Southend-on-Sea, Walsall, Stevenage, Reading, Torbay and Plymouth.

- Two areas with worsening trends were neighbours with improving trends: Haringey and Hounslow

Improving local authorities were:

Local Authority	Difference 2012-2016 in AGI for avoidable admissions	95% confidence interval	
Brent	2,446.9	1,386.5	3,507.4
Bromley	896	302.5	1,489.5
Bury	1,238.4	610.5	1,866.2
Doncaster	794.1	187.5	1,400.6
Fareham	887.5	179.9	1,595.1
Hammersmith and Fulham	3,551	2,558.1	4,543.9
Kensington and Chelsea	3,290.6	2,411.9	4,169.3
Leeds	443.8	20.7	866.8
Oldham	1,124.4	552	1,696.8
Pendle	1,224.5	170.1	2,278.9
Rochdale	1,348.9	693.3	2,004.5
Telford and Wrekin	967.6	286.5	1,648.7
Tower Hamlets	1,109.2	675.5	1,542.9
Wakefield	614.8	67.2	1,162.4
Waltham Forest	1,678.5	593.5	2,763.6
Westminster	3,213.7	2,105.2	4,322.2

Worsening local authorities were:

Local Authority	Difference 2012-2016 in AGI for avoidable admissions	95% confidence interval	
Cherwell	-1,674.3	-2,569.3	-779.4
Cheshire West and Chester	-768.7	-1,285.7	-251.6
Dudley	-980.4	-1,577.5	-383.4
Haringey	-989.3	-1,661.2	-317.3
Hounslow	-1,668.4	-2,986.5	-350.2
North Somerset	-1,334.9	-1,777.8	-892.1
Plymouth	-1,957.6	-2,388.9	-1,526.2
Reading	-1,099.7	-1,794.2	-405.3
Southend-on-Sea	-890.9	-1,594.5	-187.4
Stevenage	-1,946.4	-3,520.5	-372.4
Test Valley	-1,264.7	-2,064.6	-464.8
Torbay	-2,253.7	-2,919.2	-1,588.2
Walsall	-631.3	-1,132.9	-129.6

What we found looking at the bigger picture

Our analysis also looked at the wider determinants of equity trends based on a longer time series from 2009 to 2018. We included 323 local authorities whose expenditure per capita in 2016 varied

substantially among local authorities ranging from £875 in Hinckley and Bosworth to £2,293 in Tower Hamlets.

When we compared the most deprived quintile group with the remaining least deprived 80%, we found a small effect of changes in total, services and social care expenditure at local authority district level on avoidable emergency admissions. This means that:

- An increase in expenditure was associated with increases in rates of avoidable admissions in the 20% most deprived local authorities
- In the case of all-cause emergency admissions, increases in social care and services expenditure were associated with increases in the rates of admissions.

When we estimated the effect of changes in expenditure per decile group of deprivation (where 1 is the least deprived and 10 is the most deprived), we found a very small association between changes in total, services and social care expenditure and NHS allocations at local authority district level and emergency admissions. This means that an increase in expenditure is associated with increases in rates of avoidable and all-cause admissions in the most deprived local authorities.

Recommendations

This study shows that disentangling the effects of individual, local government, and health services factors on the supply and demand for emergency admissions will require more detailed data and more sophisticated analysis of long-term trends and the interaction among these factors.

Exploring the following issues further could provide a deeper understanding of the local NHS inequality landscape:

- **Wider determinants of change in emergency admission rates:** these are hard to disentangle, with differential magnitudes and time lags for different age groups and conditions. Various factors that are difficult to measure can mediate changes in emergency admissions including local social and economic conditions, lifestyle behaviours and population health.
- **Supply constraints:** with limited bed space and workforce capacity available in a hospital, physicians in the emergency department have to tighten admission criteria in the face of increasing demand (i.e. increasing arrivals at accident and emergency departments) to match activity to supply.
- **Expenditure and admissions influence each other:** worsening local population health causes increases in local expenditure on health and social care services as well as increased demand for emergency admissions.
- **Expenditure on social care:** this may have larger effects on length of stay in hospital than on admission rates.

A deeper understanding of this landscape would help identify and measure more clearly the wider social determinants of health beyond the control of the health and care system, which, in turn, will help local policy makers develop a more coordinated approach to health and well-being in their communities.

To read the full report, please go to:

https://www.york.ac.uk/media/healthsciences/documents/research/Local_NHS_Equity_Trends.pdf

And to see the local authority and CCG data packs for 2009 to 2018, please go to

<https://www.york.ac.uk/che/research/equity/monitoring/>