Improvement Analytics Unit

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The long-term impacts of new care models on hospital use: an evaluation of the Fylde Coast Vanguard programme

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Key points

- This report presents the findings of an evaluation of the long-term impacts of the Fylde Coast Vanguard integrated care programme over 4.5 years from its launch in July 2015 until February 2020. The programme comprised a range of initiatives, including two different types of community-based multidisciplinary teams (MDTs) targeted at individuals with complex health care needs and those at an increased risk of needing acute care.
- Our evaluation looked at the impact of these initiatives on the emergency hospital use of people aged 65 years and older in the two clinical commissioning groups (CCGs) that coordinate health services for the Fylde Coast population – NHS Blackpool CCG and NHS Fylde and Wyre CCG. We compared the hospital use of the two Fylde Coast populations with carefully constructed comparison areas made up of similar GP practices drawn from other areas in England. The comparisons areas served as counterfactuals, allowing us to compare what happened in the two Fylde Coast CCGs with 'what would have happened' in the absence of the vanguard programme.
- Across both Blackpool CCG and Fylde and Wyre CCG we found no clear association between the vanguard initiatives and reductions in hospital activity. There were tentative signs of a drop (relative to the comparison area) in A&E attendances and overall emergency admissions in the fourth and fifth years after the start of the vanguard, although this was more evident in Blackpool than in Fylde & Wyre. There was only a statistically significant difference for A&E attendances in year 4 in Blackpool (-11.1%, 95% confidence interval (CI): -18.4% to -0.3%) relative to its comparison area. This is equivalent to 34 fewer A&E attendances per 10,000 people per month.
- We found no statistically significant long-term association between the vanguard programme and changes in overnight emergency admissions or average length of hospital stay for overnight emergency admissions.
- The evidence from this study and other recent studies of the long-term effect of vanguard programmes suggests that integrated care programmes are unlikely to reduce emergency hospital use in the short term.[1] Over a longer period, these programmes may have the potential to reduce some aspects of emergency hospital care, but this is likely to require several years at least. Therefore, while acknowledging that there may be other possible benefits to patients and staff from these programmes, they should not be considered as a means to reduce hospital resources, especially in the short term.

Background

Integrated care aims to improve patient care and experience by 'joining up' care more closely between GPs, hospitals, community services and social care.[2] One of the aims of integrating health and social care has been to reduce hospital resource use, particularly for patients with complex and long-term conditions.[3,4] Evaluations of the impacts of integrated care initiatives over the past 10 or more years have produced mixed results.[5,6,7,8,9] However, many of those evaluations did not examine the long-term impacts of integrated care, and it is unclear from these evaluations whether reductions in hospital use might begin to materialise over a longer period. A long-term study of the effect of an integrated care transformation programme in Mid-Nottinghamshire showed a delayed effect on hospital use with reductions seen in A&E attendances and emergency admissions, but not until 5–6 years after the start of the programme.[10]

This report presents the findings of an evaluation of the long-term impacts on hospital activity of the Fylde Coast Vanguard integrated care programme over 4.5 years from its launch in July 2015 to February 2020.

The Fylde Coast is the collective name for Blackpool and the boroughs of Fylde and Wyre. Health services for the area are coordinated by two clinical commissioning groups (CCGs) that work closely together – NHS Blackpool CCG and NHS Fylde and Wyre CCG – collectively serving a resident population of approximately 333,000. In July 2015, Blackpool CCG comprised 24 member GP practices and there were 21 GP practices affiliated to Fylde & Wyre CCG.

The Fylde Coast population is diverse. The city area of Blackpool experiences significant levels of deprivation, health inequalities, and low life expectancy that rank among the worst in the country. The suburban and rural towns and villages of Fylde and Wyre have a similar socio-economic profile to English national averages, but have a growing proportion of older people and increasing numbers of people living with multiple long-term conditions. The Blackpool Victoria Hospital is the main acute hospital that serves both communities.

Your Care, Our Priority Fylde Coast vanguard

In March 2015, the Fylde Coast area was selected as a 'vanguard' site for the NHS England new care models programme announced in the 2014 *Five year forward view*.[11]

Vanguard funding allowed partner organisations to introduce three new models of care: Extensive Care Service (ECS), Enhanced Primary Care (EPC), and Episodic Care, which were implemented under the banner Your Care, Our Priority. Collectively, they aimed to use a proactive, care-planning approach that supports people in Fylde Coast to better manage their long-term conditions thereby reducing pressure on hospitals, GP practices and emergency care. These services continued after the end of the vanguard period, but have evolved over time.*

* Information around the initiatives implemented in Fylde Coast was based on information provided by the local team in Fylde Coast, unless otherwise referenced.

Extensive Care Service (ECS)

This service was based on the CareMore model, an integrated health plan and care delivery system developed in the United States.[12] Under the ECS model, care is delivered by a dedicated multidisciplinary team (MDT) led by a medical doctor specialised in the care of older people and providing bespoke specialist care in peoples' homes. A staged roll-out of ECS hubs started in July 2015 and by October 2016 there were six local hubs covering the entire vanguard area. The service was targeted at older patients with complex long-term health needs. Originally, once patients were referred to their local ECS hub, the hub-based team assumed full clinical responsibility for their care and temporarily replaced the patient's GP for their primary care needs. However, since 2019 the patient's GP has retained clinical responsibility. Patients were expected to remain with the service for around 6 months before being discharged. At the start of the programme, the majority of patients were referred by their GP, with the view to proactively identify patients for whom care could be optimised. However, over time referral patterns have shifted and by 2019 an estimated 70% of patients were referred through hospitals, with a large proportion of patients referred following an emergency admission. As a result, the enrolled patient population has increased in health and social complexities, as well as frailty over time.

Enhanced Primary Care (EPC)

Under the EPC model, a local community-based MDT worked with GPs and other practice staff to provide wrap-around support to patients with multiple long-term conditions. The service was open to all patients of 16 years and older, and GPs were free to refer any patient they believed could benefit from the service. The service was launched in November 2016 and by February 2017 eight neighbourhood-based EPC teams covered the whole vanguard area. Patients were expected to be supported for around 3 months before being discharged.

Episodic Care and other initiatives

A major part of the additional funding associated with the vanguard programme was directed toward ECS and EPC, but a range of smaller-scale initiatives were also introduced. The Episodic Care model comprised a range of projects aimed at releasing capacity within primary care by targeting individuals with a short-term illness or health concern. These interventions included Pharmacy Plus, where individuals could seek health care advice from: one of 26 pharmacies without making an appointment first; a local Directory of Services to help link people to third sector or voluntary support; and the High Intensity User programme to support frequent users of secondary care services, such as emergency telephone numbers supporting frequent 999 callers.

Intended impact of interventions

These interventions were intended to kick-start a move toward a more population-based model of care that promoted closer integration of primary, community and social care services. Material reductions in the numbers of hospital admissions, bed-days, and A&E attendances were identified as desired outcomes.

About this evaluation

This evaluation was conducted by the Improvement Analytics Unit (IAU) – a partnership between the Health Foundation and NHS England and NHS Improvement that evaluates complex local initiatives in health care to support learning and improvement.

The scope of this evaluation is limited to the impact of the vanguard programme on hospital resource use, including A&E attendances, emergency admissions and average length of stay.

We adopted a population-based approach to obtain an overall picture of the effect of the vanguard programme on hospital use by the local population of those aged 65 years and older. Our study population included individuals registered with a GP in the Fylde Coast area, irrespective of whether – or where – they received hospital care.

Our primary focus was hospital use of older adults (those aged 65 years and older) as this group best reflected the age profile of patients treated by ECS and EPC, the two highest-profile vanguard initiatives.[13] However, because adults younger than 65 years could be referred to ECS or EPC, and to understand the effect of other initiatives and wider changes linked to the vanguard, we also examined hospital use among the wider adult population (those aged 18 years and older).

Because of the contrasting characteristics of the two CCG areas and their local populations, we conducted two independent analyses and report the effect of the vanguard on the hospital use of the Blackpool CCG and Fylde and Wyre CCG populations separately. The same methods were used for both CCGs, but our findings capture the independent effect of the vanguard on their respective local populations.

For both Fylde Coast CCGs (the 'treated' areas), we compared emergency hospital use among their registered populations with that of a similar population in a carefully constructed control area. The control areas were designed to provide estimates of the hospital use that would have been expected in the treated areas in the absence of the vanguard. This enabled us to see whether the effect of the vanguard changed over time and to test the hypothesis that it may take several years for integrated care initiatives of this sort to result in reductions in hospital activity.

The coronavirus (COVID-19) pandemic and its distorting effect on all types of hospital activity limited our ability to extend the study follow-up period beyond February 2020.

Methods

A full description of the methods used is outlined in the statistical analysis protocol for this evaluation.[14]

Sources of data

Data relating to the characteristics of CCGs and GP practices (eg population size, age distribution and deprivation levels) were collected from publicly available sources. Hospital activity data were obtained from the Secondary Uses Service, a national,

person-level database that is closely related to the widely used Hospital Episode Statistics database. These data were collected for all patients aged 18 years and older in England. Hospital activity data were pseudonymised and aggregated across patients by GP practice. Both publicly available practice data and hospital data were structured to provide monthly series of activity data for all GP practices in England between April 2013 and February 2020. These data were used to:

- define variables for comparing CCGs and GP practices
- define impact metrics capturing hospital use by patients registered with each GP practice in England
- risk adjust our impact metrics.

Selecting the control group

For both Fylde Coast CCGs, we selected the 200 GP practices in England that were most similar to the practices in their area (the treated practices) in the 24 months leading up to the vanguard launch in July 2015. We did this in two stages.

1. After excluding CCGs in London and other vanguard CCGs that were participating in the new care models programme, we identified GP practices belonging to the 50 CCGs that were most similar to the Fylde Coast CCGs.
2. From the pool of GP practices obtained in the previous step, we selected the 200 GP practices most similar to the treated practices.

Impact metrics

We used a range of impact metrics to test for an effect of the vanguard initiatives on emergency hospital use:

- A&E attendances to type-1 emergency departments* (rate)
- all emergency admissions (rate)
- overnight emergency admissions (rate)
- admissions for chronic ambulatory care sensitive conditions (ACSCs, rate)
- admissions for urgent care sensitive conditions (UCSCs, rate)
- average length of stay for overnight emergency admissions (days).

Admissions for chronic ACSCs and UCSCs are considered potentially avoidable with timely and effective community care. All impact metrics were analysed separately for patients aged 65 years and older, and patients aged 18 years and older. Please refer to the Annex for further details on the choice of impact metrics.

* Type-1 emergency departments are consultant-led 24-hour services with full resuscitation facilities.

Estimating the impact of the vanguard

We used the Generalised Synthetic Control (GSC) method to estimate the impact of the vanguard initiatives on emergency hospital use.[15] This method imputes synthetic controls (or counterfactuals) for each treated unit (GP practice) by combining information from a control group of similar units in a regression model.

For each treated GP practice, the impact of the vanguard on a given outcome was estimated by the difference between its observed values in the follow-up period and the concurrent synthetic control values generated by the GSC model. CCG-level estimates of the impact of the vanguard were obtained by averaging the differences across all GP practices belonging to each CCG. Estimates of the impact of the vanguard in each financial year were calculated by averaging the estimates derived across all months in the financial year.

Risk adjustment

We applied model-based risk adjustment to account for time-varying differences in the (observed) characteristics of GP practice populations and patients admitted to hospital. We used different sets of variables for risk adjustment, depending on the impact metric. The GSC method offers some protection against bias from unobserved time-varying factors. Where such factors were identified by the models, we checked their plausibility.

Sensitivity analyses

When designing this evaluation, we made certain choices, for example: the length of the pre-intervention period (2 years); what variables to include in the risk adjustment; and the number of GP practices to use in the control group. We performed sensitivity analyses to check the robustness of our findings with regard to these choices.

Sensitivity analyses confirmed that our findings were robust to changes in the duration of the pre-intervention period, the timing of the intervention start date, the composition and size of the control groups used to create the synthetic controls, and the use of risk adjustment.

Results

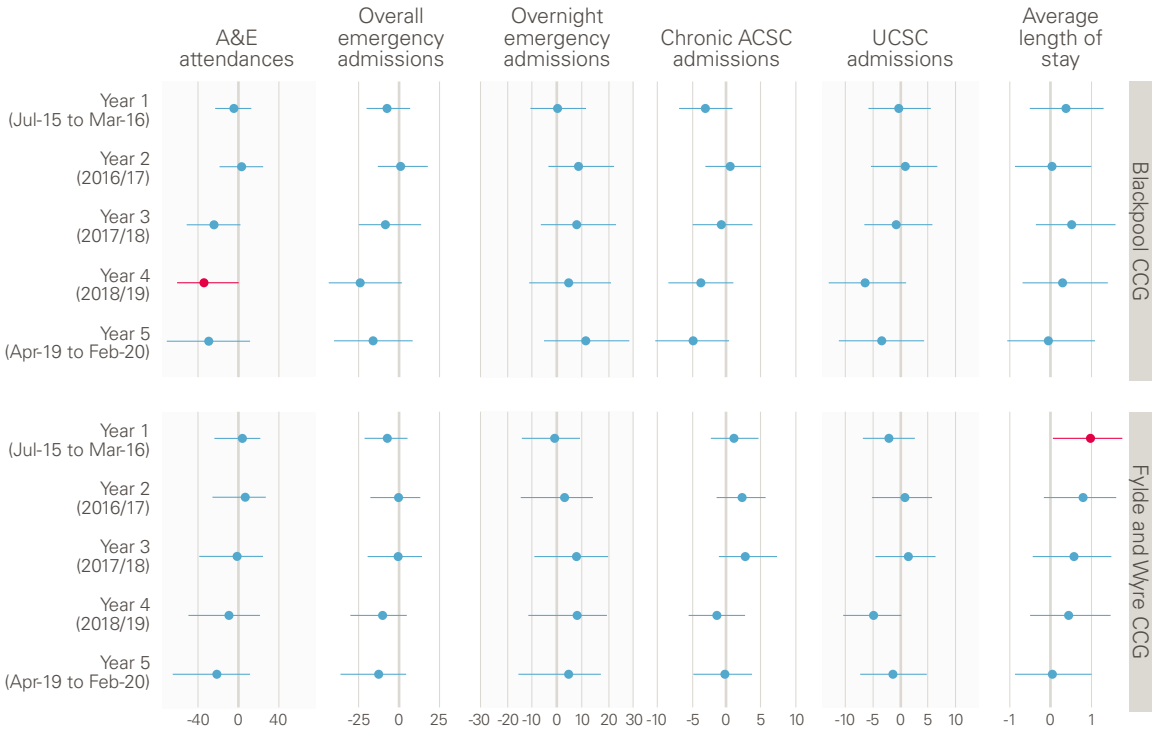
Figure 1 shows the estimated impact of the vanguard on emergency hospital use by the populations of Blackpool CCG and Fylde and Wyre CCG in each year of the follow-up period. This 'forest plot' shows a point estimate (marker) and 95% CI (horizontal line) for the difference between the treated CCG and its synthetic control for each of the impact metrics. If the marker is to the left of the vertical grey line at zero, then hospital use in the treated CCG population was lower than in the synthetic control area and vice versa. These estimates are reported numerically in Tables 1 and 2.

Figures 2–13 show trends in emergency hospital use for the two Fylde Coast CCGs (red lines) and corresponding synthetic control areas (blue lines). The two lines should ideally follow a similar path in the pre-intervention period (to the left of the grey vertical line), as we aimed to build synthetic control areas that tracked the hospital use of the Fylde Coast

population over this period. We checked that this was the case statistically, and all metrics passed the test. The difference between the two lines in the follow-up period (to the right of the grey vertical line) provides an estimate of the impact of the vanguard.

When reviewing the time-series charts, it is important to remember that the synthetic control line is an estimate generated from a statistical model. For reasons of readability, CIs are not shown in the charts, but this means we must be careful not to attach too much significance to small differences between values in the treated area and the synthetic control area. Trends for treated CCGs will typically appear more volatile than those for their synthetic control, because there are only around 20 GP practices in each treated CCG, but 200 GP practices in the control groups.

Figure 1: Risk-adjusted estimated impact of the vanguard on emergency hospital use in the populations aged 65 years and older of Blackpool CCG and Fylde and Wyre CCG, July 2015 to February 2020. A&E attendances and admissions metrics are rates per 10,000 persons per month; length of stay is days*

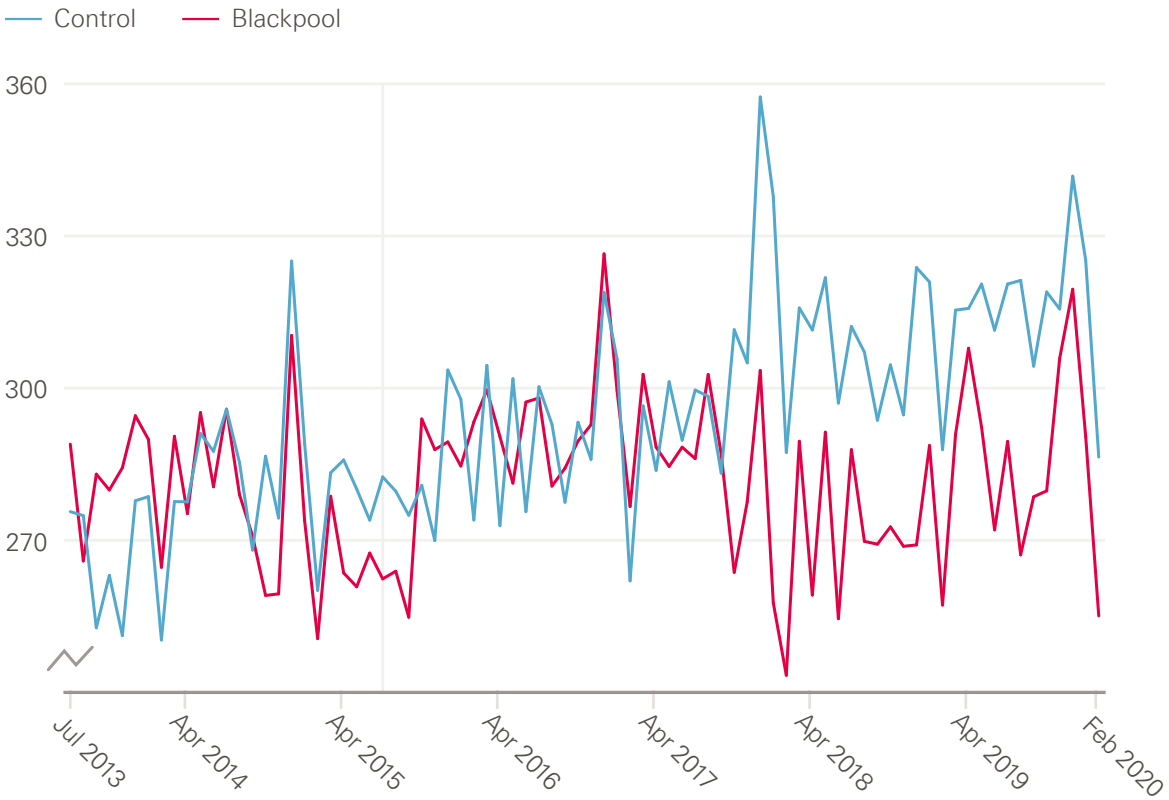


* Statistically significant results (p-value<0.05) are shown in red.

Blackpool CCG

Figure 2 shows that among people aged 65 years and older, the rate of A&E attendances in Blackpool changed relatively little in the years after the vanguard initiatives were implemented. In contrast, the rate of A&E attendances in the synthetic control area gradually trended upward. About 2 years after the start of the vanguard, a gap starts to appear and from the third year of the follow-up period the difference exceeds – or approaches – statistical significance (Table1).* For example, in year 4 there were on average 34 fewer A&E attendances per 10,000 people per month than in the control group, which is equivalent to 11.1% fewer (95% CI: -18.4% to -0.3%) (Table 1).

Figure 2: A&E attendances in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)



From the third year of the follow-up period overall emergency admissions were lower in Blackpool compared with the control area (Figure 3), although these differences were not statistically significant (Table 1). There was no indication, however, of a decrease in overnight emergency admissions in Blackpool compared with the control area (Figure 4).

For both subsets of potentially avoidable admissions (chronic ACSCs and UCSCs) the difference between rates in Blackpool and those in the control area were greatest in the fourth and fifth years of the study (Figures 5 and 6), although again these differences were not statistically significant.

* The CIs in Table 1 show some of the uncertainty in the results. If the CI does not include 0 (ie no difference between the groups) then we say that the result is statistically significant and that we have a high level of confidence that there is an underlying difference.

Figure 3: Overall emergency admissions in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)

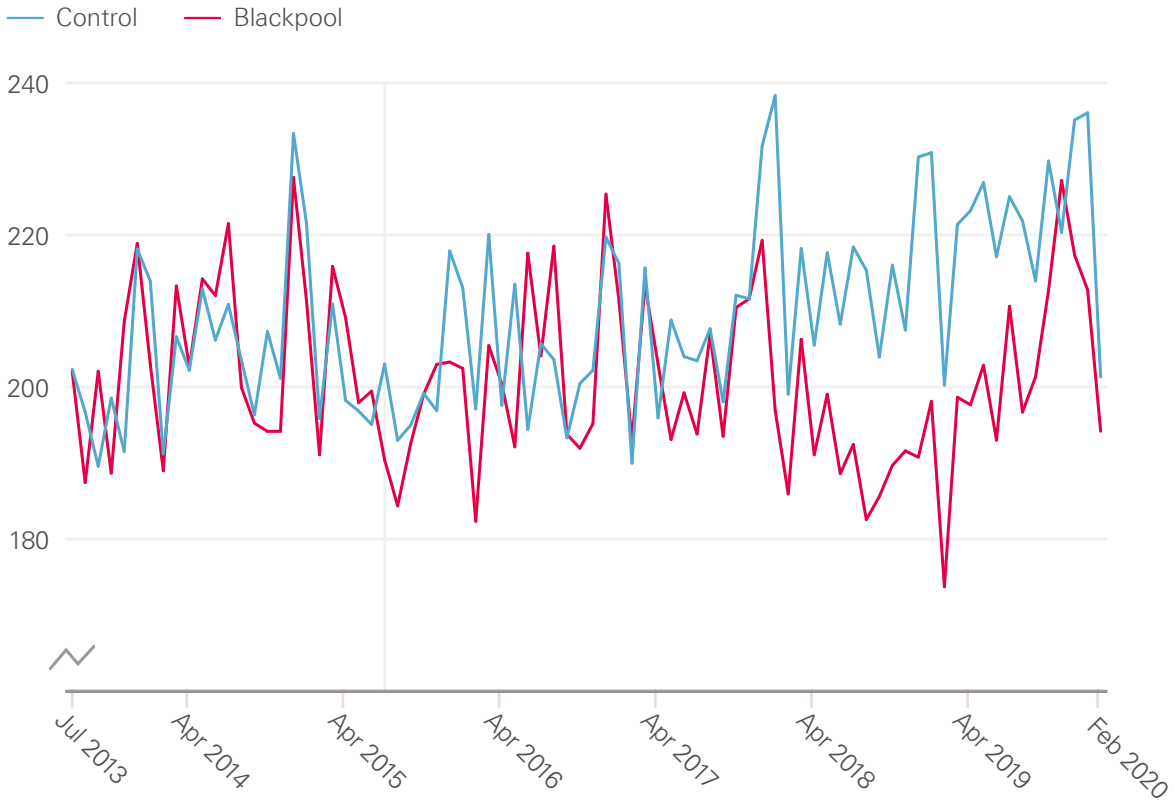


Figure 4: Overnight emergency admissions in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)

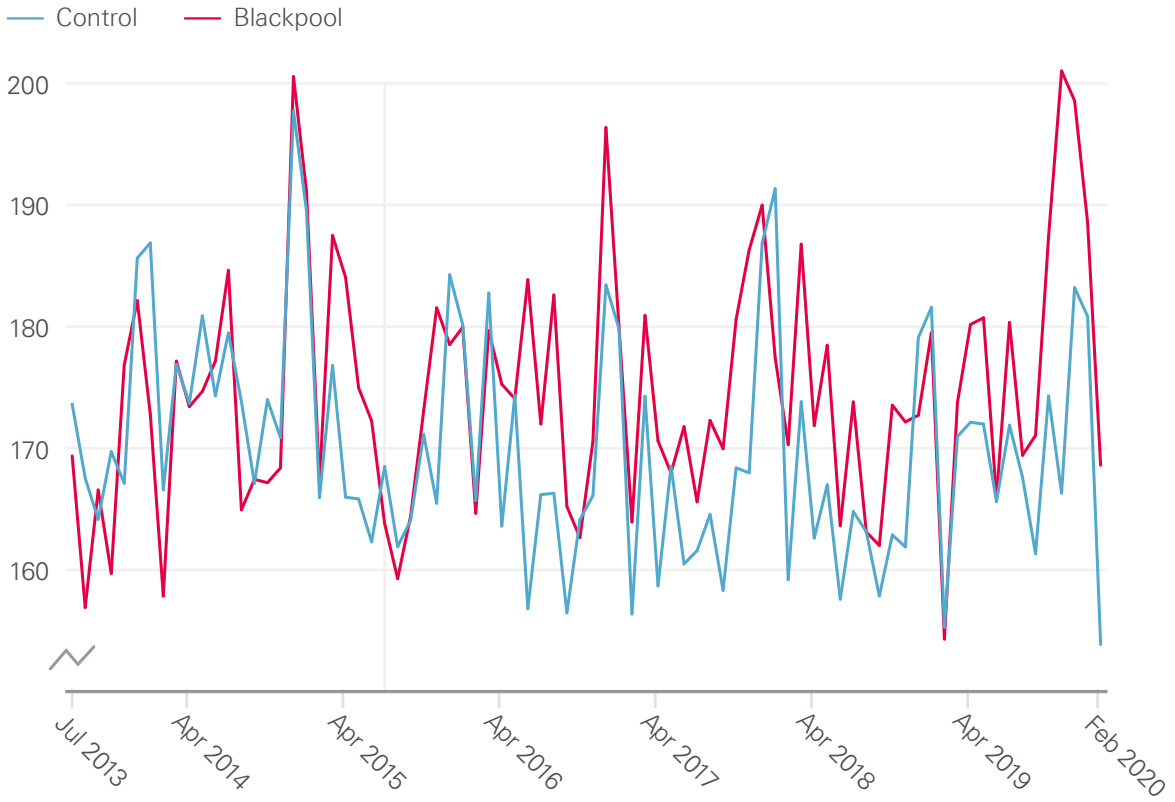


Figure 5: Admissions for chronic ACSCs in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)

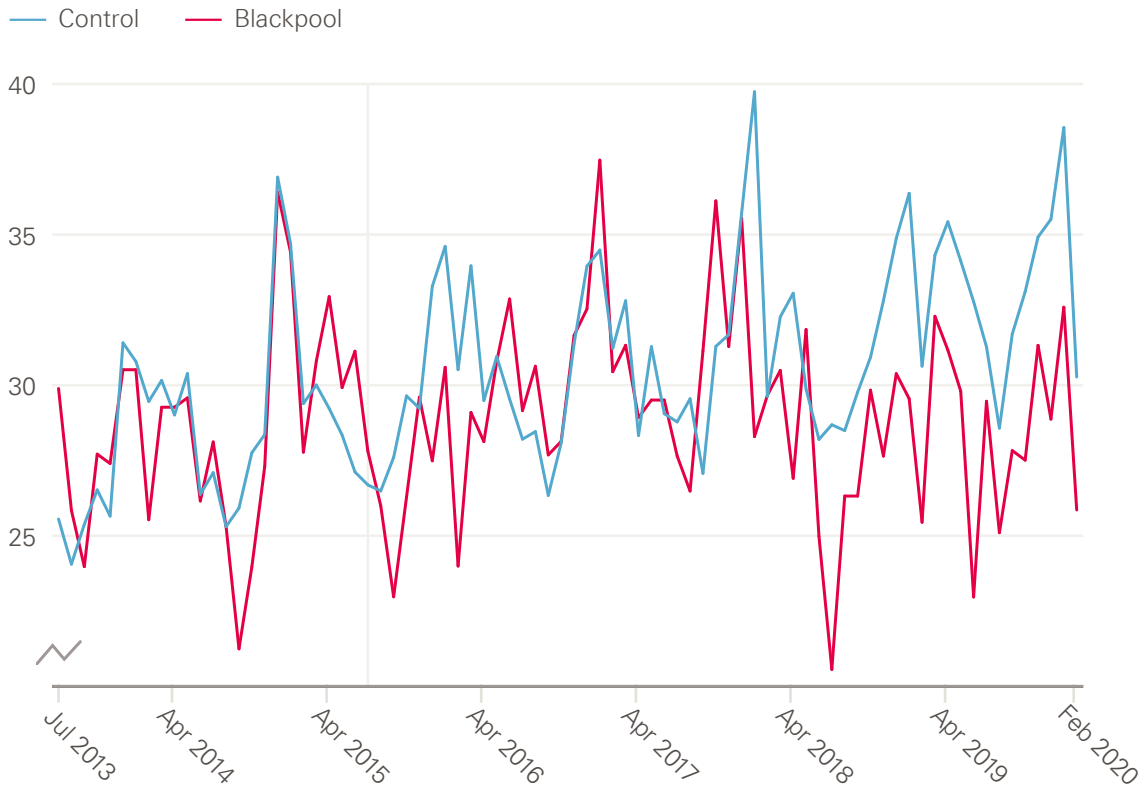


Figure 6: Admissions for UCSCs in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)

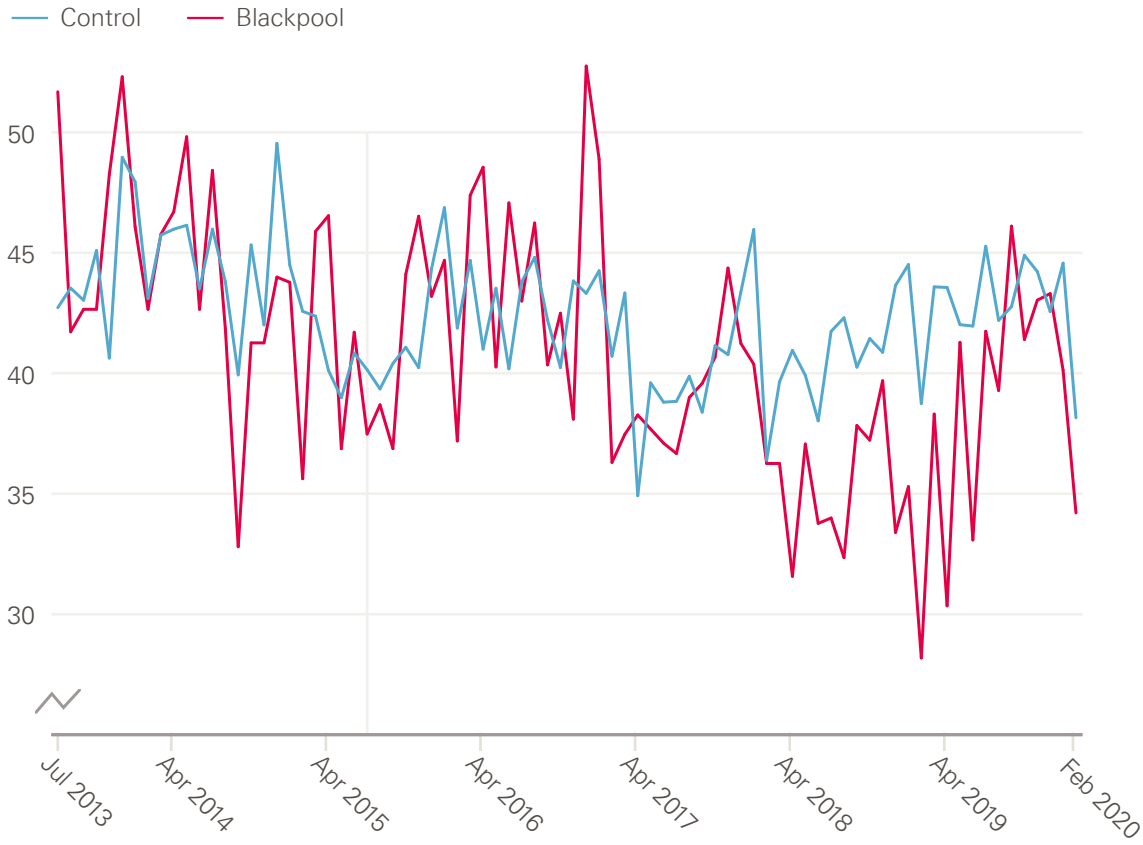
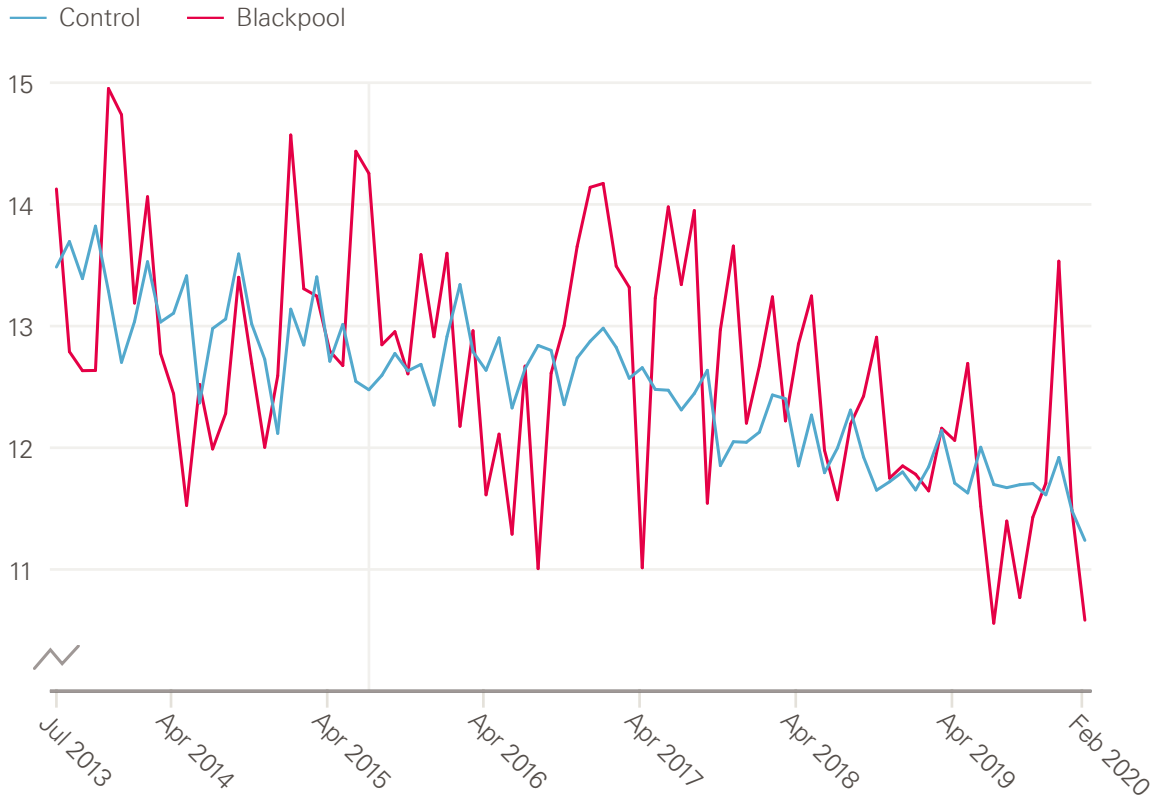


Figure 7 shows that in the 4.5 years after the launch of the vanguard programme, average length of stay for overnight emergency admissions in Blackpool followed a downward trend that was similar to the control area.

Figure 7: Average length of stay for overnight emergency admissions in the Blackpool population aged 65 years and older (rates per 10,000 persons per month)



As a secondary analysis, we examined hospital use among the population aged 18 years and older. In general, the signs and trends seen in effect estimates for this population were consistent with those of the 65 years and older cohort. Given that the overlap between the two groups is not insignificant, this was perhaps to be expected. In the fourth year after the vanguard launch, both overall and UCSC-only emergency admission rates for people aged 18 years and older were significantly lower in Blackpool than in the control area by -14.1% (95% CI: -21.1% to -3.6%) and -16.8% (95% CI: -27.3% to -3.1%), respectively. A table showing the results for the 18 years and older cohort is included in the Annex.

Table 1: Risk-adjusted estimated impact of the vanguard on emergency hospital use in the Blackpool CCG population aged 65 years and older, July 2015 to February 2020. Rates are per 10,000 persons per month*

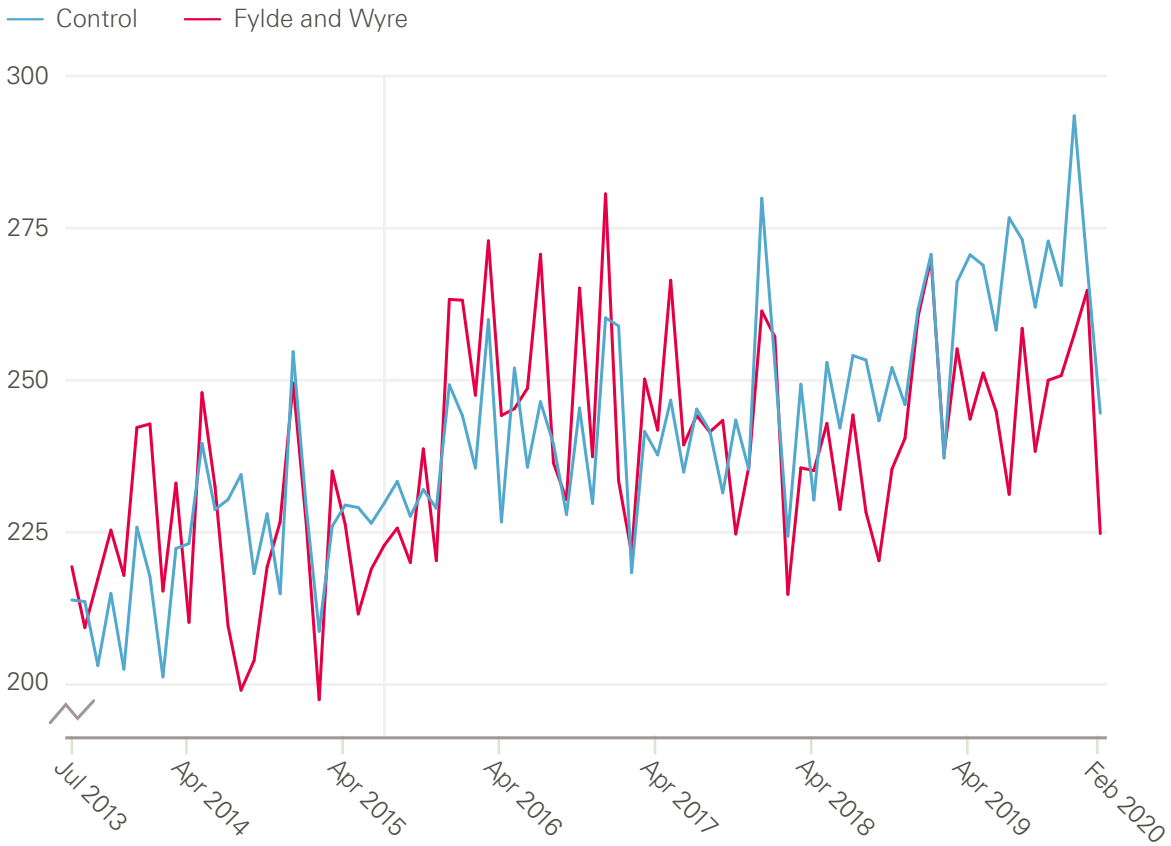
Impact metric	Year 1 Jul-15 to Mar-16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 Apr-19 to Feb-20
A&E attendances (rate)					
Difference	-4.2 (-23.4 to 12.6)	3.0 (-19.0 to 24.6)	-24.9 (-51.9 to 1.7)	**-34.3** **(-61.4 to -0.8)**	-29.4 (-71.3 to 11.6)
Relative difference (%)	-1.5 (-7.7 to 4.7)	1.0 (-6.1 to 9.1)	-8.1 (-15.6 to 0.6)	**-11.1** **(-18.4 to -0.3)**	-9.3 (-19.9 to 4.2)
All emergency admissions (rate)					
Difference	-8.0 (-20.7 to 6.3)	0.4 (-14.0 to 17.2)	-9.1 (-25.6 to 13.0)	-24.5 (-44.4 to 1.2)	-16.7 (-40.7 to 7.8)
Relative difference (%)	-3.9 (-9.6 to 3.3)	0.2 (-6.4 to 9.1)	-4.3 (-11.3 to 6.9)	-11.4 (-18.9 to 0.6)	-7.5 (-16.5 to 4.0)
Overnight emergency admissions (rate)					
Difference	0.1 (-10.8 to 11.3)	8.3 (-3.6 to 22.7)	7.5 (-6.6 to 23.1)	4.5 (-11.1 to 21.2)	11.2 (-5.2 to 28.3)
Relative difference (%)	0.1 (-5.9 to 7.0)	5.0 (-2.0 to 14.8)	4.4 (-3.6 to 15.2)	2.7 (-6.1 to 14.2)	6.6 (-2.8 to 18.5)
Chronic ACSC admissions (rate)					
Difference	-3.1 (-7.0 to 0.8)	0.5 (-3.2 to 4.9)	-0.8 (-5.0 to 3.6)	-3.8 (-8.5 to 0.9)	-4.9 (-10.4 to 0.3)
Relative difference (%)	-10.4 (-20.5 to 2.9)	1.6 (-9.4 to 18.8)	-2.6 (-14.1 to 13.6)	-12.1 (-23.5 to 3.4)	-14.7 (-26.7 to 1.0)
UCSC admissions (rate)					
Difference	-0.3 (-5.8 to 5.4)	0.9 (-5.4 to 6.7)	-0.9 (-6.6 to 5.7)	-6.4 (-13.0 to 1.0)	-3.5 (-11.3 to 4.2)
Relative difference (%)	-0.8 (-12.2 to 15.0)	2.0 (-11.1 to 18.1)	-2.1 (-14.5 to 17.3)	-15.6 (-27.1 to 3.0)	-8.1 (-22.3 to 12.0)
Average length of stay of overnight emergency admissions (days)					
Difference	0.4 (-0.5 to 1.3)	0.0 (-0.9 to 1.0)	0.5 (-0.4 to 1.6)	0.3 (-0.7 to 1.4)	-0.1 (-1.0 to 1.1)
Relative difference (%)	2.9 (-3.7 to 10.7)	0.4 (-6.3 to 8.3)	4.1 (-2.7 to 13.8)	2.4 (-5.3 to 12.7)	-0.5 (-8.2 to 10.1)

* Statistically significant results (p-value<0.05) are shown in bold.

Fylde and Wyre CCG

Figure 8 shows that 4 years after the vanguard launch, the rate of A&E attendances in Fylde and Wyre appeared to fall below that of the synthetic control area, but the difference was not statistically significant (see Table 2).

Figure 8: A&E attendances in the Fylde and Wyre population aged 65 years and older (rates per 10,000 persons per month)



From 3 years after the start of the Vanguard, overall emergency admissions were lower in Fylde and Wyre compared with its control area (Figure 9), however these differences were not statistically significant. There was no indication of a decrease in overnight emergency admissions in Fylde and Wyre compared with the control area (Figure 10).

Apart from a temporary drop in admissions for UCSCs in year 4, which did not reach statistical significance, trends in both subsets of potentially avoidable admissions (chronic ACSCs and UCSCs) followed a similar path to the control area (Figures 11 and 12, Table 2).

Figure 9: Overall emergency admissions in the Fylde and Wyre population aged 65 years and older (rates per 10,000 persons per month)

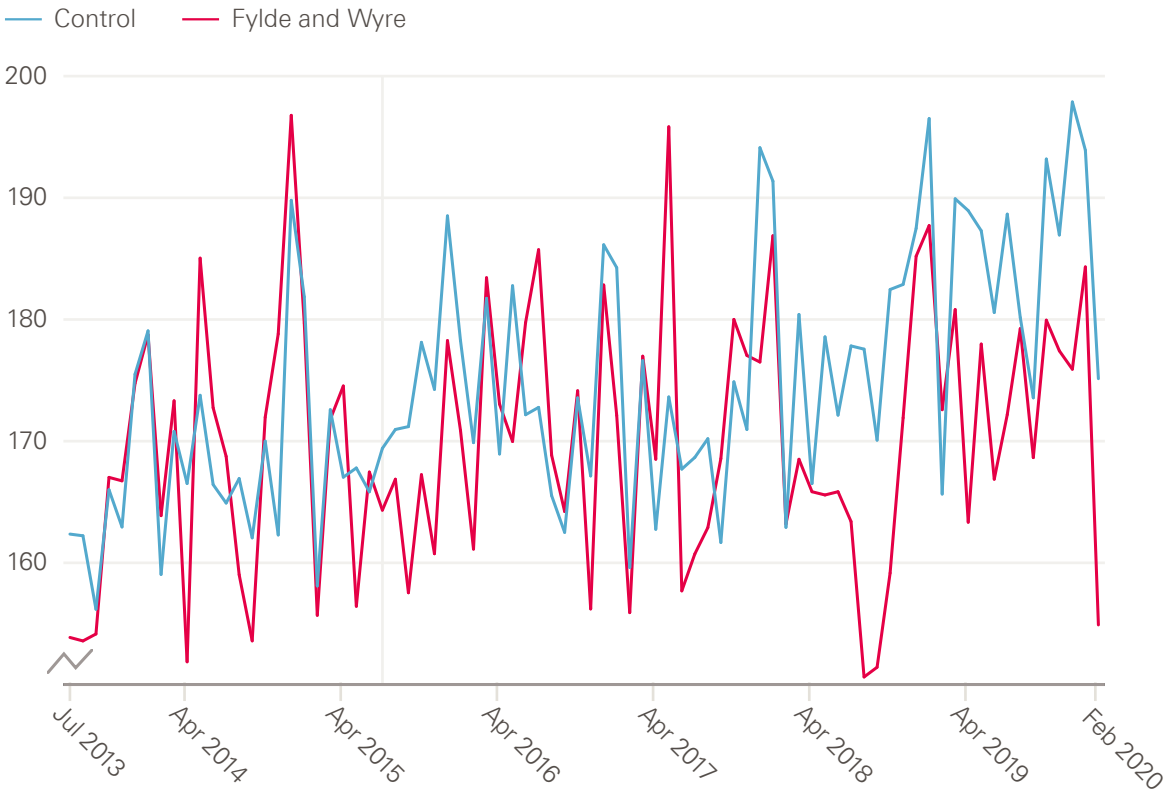


Figure 10: Overnight emergency admissions in the Fylde and Wyre population aged 65 years and older (rates per 10,000 persons per month)

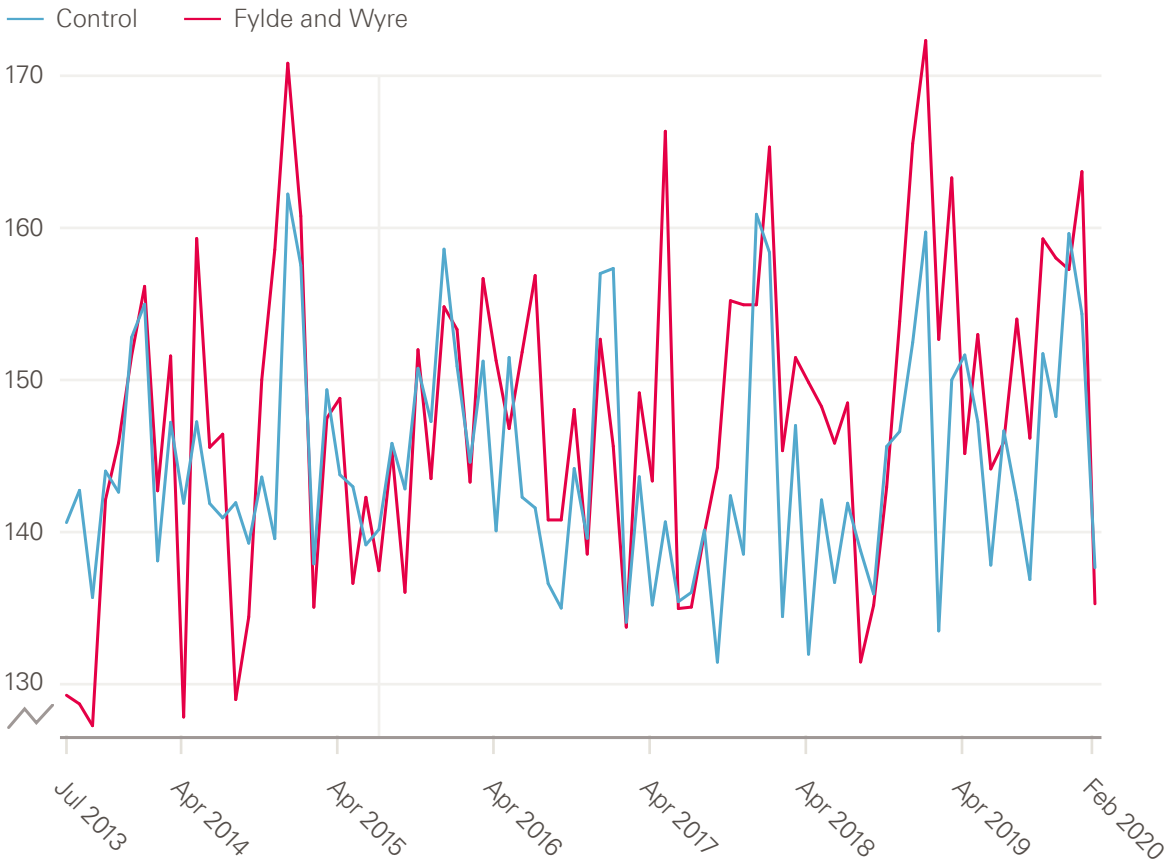


Figure 11: Admissions for chronic ACSCs in the Fylde and Wyre population aged 65 years and older (rates per 10,000 persons per month)

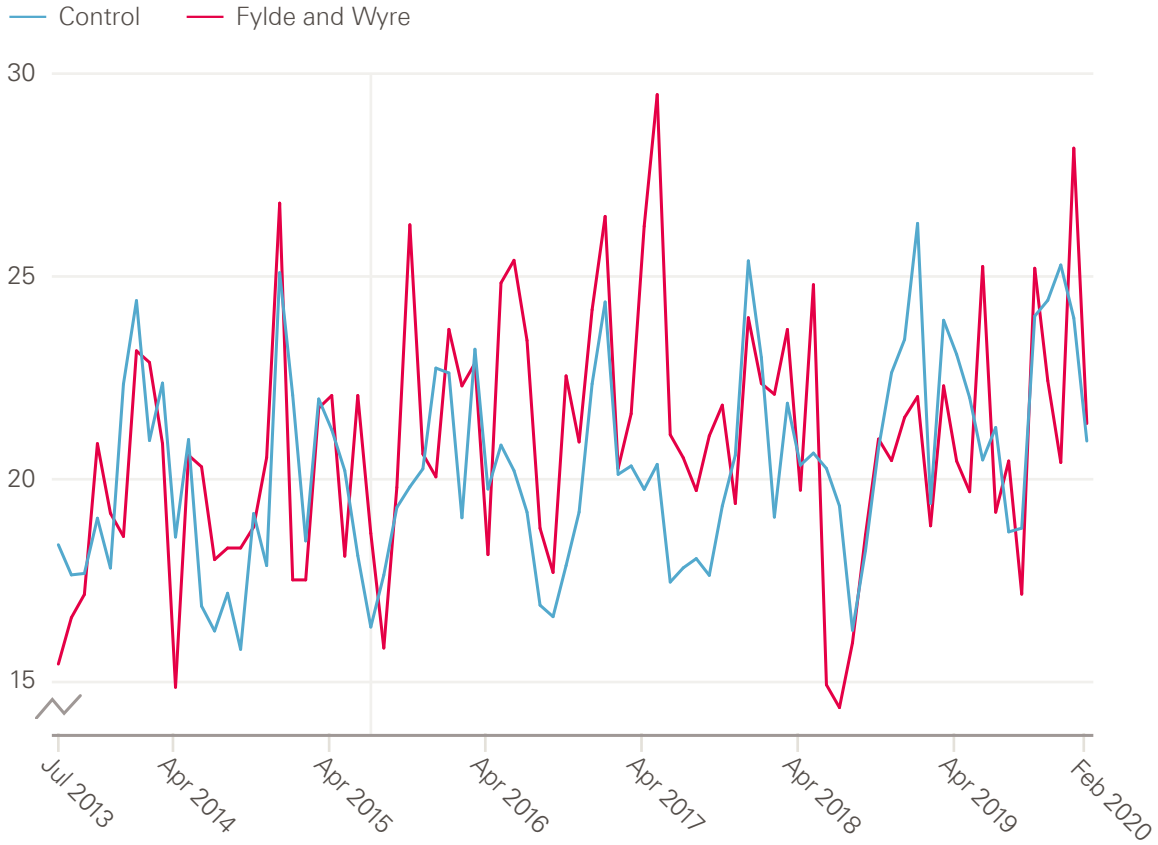
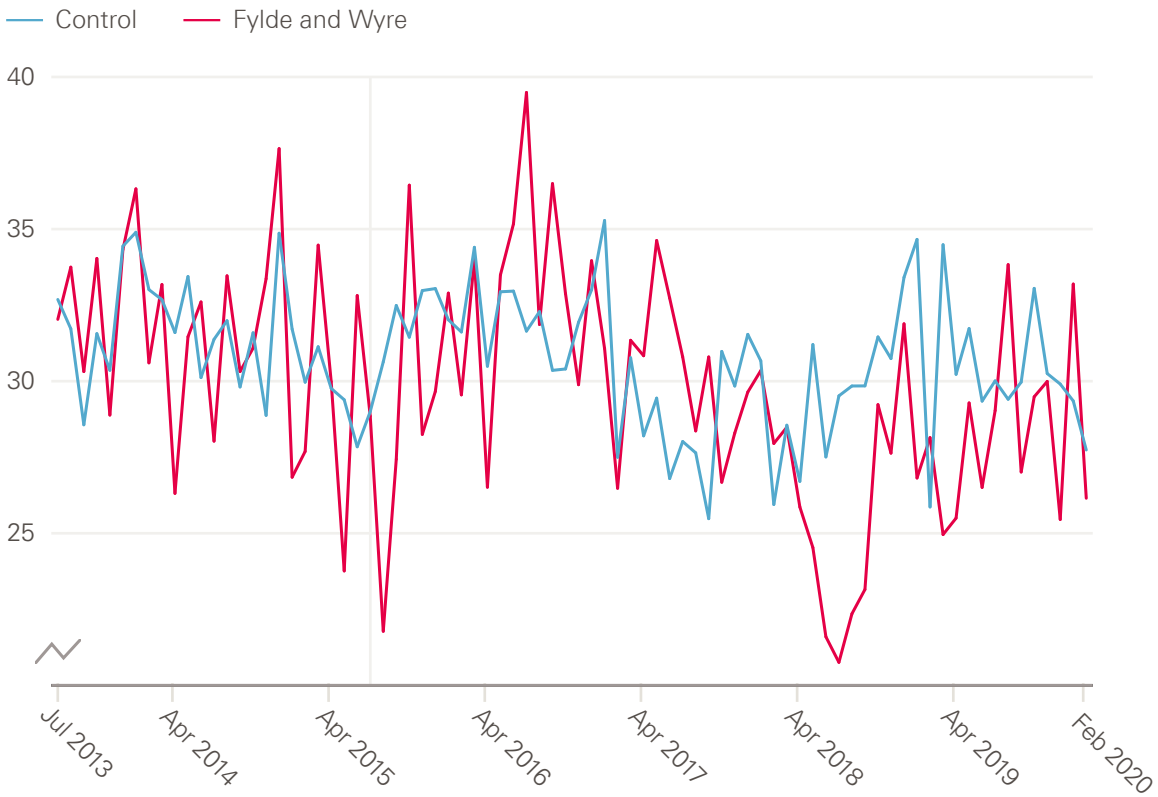
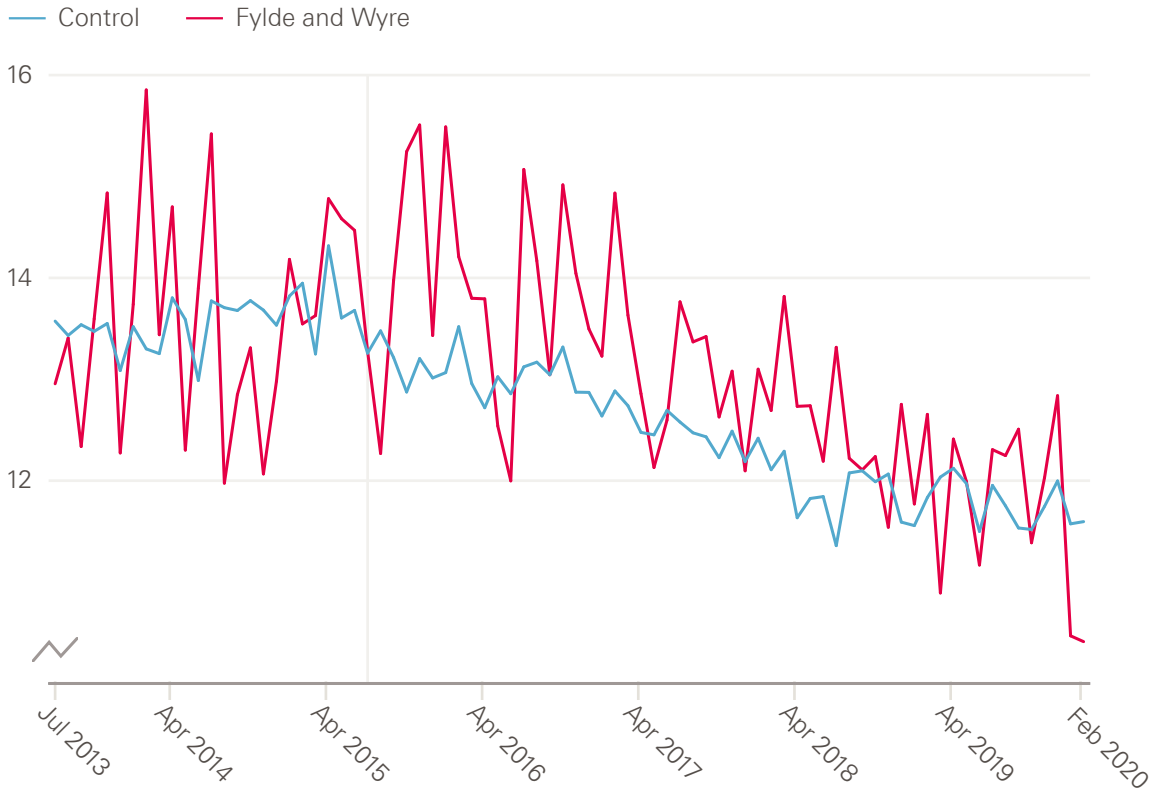


Figure 12: Admissions for UCSCs in the Fylde and Wyre population aged 65 years and older (rates per 10,000 persons per month)



Average length of stay for overnight emergency admissions in Fylde and Wyre was higher than in the control area in the first year* following the vanguard launch by 1 day (95% CI: 0.0 to 1.7), but over the next 4 years the gap narrowed. By the end of the follow-up period, length of stay was similar in both areas (Figure 13, Table 2).

Figure 13: Average length of stay for overnight emergency admissions in the Fylde and Wyre population aged 65 years and older (days)



As a secondary analysis, we examined hospital use among the 18 years and older population. In general, the signs and trends seen in effect estimates for this population were consistent with those of the 65 years and older cohort. In the fifth year after the vanguard launch, A&E attendance rates for people aged 18 years and older were lower, ie -12.4% (95% CI: -22.5% to -0.1%), in Fylde and Wyre than in the control area. Table A1 in the Annex shows the results for the 18 years and older cohort.

* Year 1 of the follow-up period refers to the 9 months from July 2015 to March 2016, inclusive.

Table 2: Risk-adjusted estimated impact of the vanguard on emergency hospital use in the Fylde and Wyre CCG population aged 65 years and older, July 2015 to February 2020. Rates are per 10,000 persons per month*

Impact metric	Year 1 Jul-15 to Mar-16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 Apr-19 to Feb-20
A&E attendances (rate)					
Difference	3.8 (-24.2 to 21.5)	6.8 (-26.1 to 27.2)	-1.4 (-39.1 to 24.4)	-9.2 (-50.0 to 21.3)	-21.7 (-65.4 to 11.5)
Relative difference (%)	1.6 (-9.1 to 9.8)	2.8 (-9.5 to 12.4)	-0.6 (-13.9 to 11.2)	-3.7 (-17.2 to 9.7)	-8.1 (-20.9 to 4.9)
All emergency admissions (rate)					
Difference	-8.0 (-22.0 to 4.8)	-1.0 (-18.7 to 12.9)	-1.1 (-20.0 to 13.6)	-10.6 (-30.7 to 4.1)	-13.2 (-36.9 to 3.7)
Relative difference (%)	-4.5 (-11.6 to 2.9)	-0.6 (-9.8 to 8.1)	-0.6 (-10.4 to 8.6)	-5.9 (-15.4 to 2.5)	-7.1 (-17.6 to 2.2)
Overnight emergency admissions (rate)					
Difference	-1.1 (-14.2 to 8.9)	2.8 (-14.4 to 13.9)	7.6 (-9.3 to 20.0)	7.9 (-11.5 to 19.5)	4.4 (-15.5 to 17.2)
Relative difference (%)	-0.7 (-8.8 to 6.5)	1.9 (-9.0 to 10.5)	5.3 (-5.9 to 15.5)	5.5 (-7.1 to 14.9)	3.0 (-9.3 to 12.8)
Chronic ACSCs admissions (rate)					
Difference	1.0 (-2.4 to 4.5)	2.2 (-1.5 to 5.5)	2.6 (-1.2 to 7.2)	-1.4 (-5.6 to 2.6)	-0.3 (-4.9 to 3.7)
Relative difference (%)	5.0 (-10.1 to 27.1)	11.2 (-6.5 to 33.5)	13.0 (-5.1 to 46.6)	-6.8 (-22.1 to 15.2)	-1.3 (-18.4 to 20.1)
UCSCs admissions (rate)					
Difference	-2.1 (-6.9 to 2.6)	0.8 (-5.2 to 5.7)	1.4 (-4.6 to 6.3)	-4.9 (-10.4 to 0.2)	-1.4 (-7.3 to 4.7)
Relative difference (%)	-6.5 (-18.7 to 9.5)	2.4 (-13.8 to 21.3)	4.8 (-13.2 to 26.6)	-16.0 (-29.0 to 0.6)	-4.7 (-20.4 to 19.7)
Average length of stay of overnight emergency admissions (days)					
Difference	**1.0 (0.0 to 1.7)**	0.8 (-0.2 to 1.6)	0.6 (-0.4 to 1.5)	0.4 (-0.5 to 1.4)	0.0 (-0.9 to 1.0)
Relative difference (%)	**7.3 (0.4 to 13.9)**	6.1 (-1.1 to 12.9)	4.5 (-3.3 to 12.7)	3.7 (-3.8 to 13.3)	0.4 (-6.8 to 9.1)

* Statistically significant results (p-value<0.05) are shown in bold.

Interpretation of findings

Across both Blackpool CCG and Fylde and Wyre CCG we found no clear association between the set of integrated care initiatives and reductions in hospital activity. There were tentative signs of a fall (relative to the control area) in A&E attendances and overall emergency admissions in the fourth and fifth years after the start of the vanguard, although this was more obvious in Blackpool than in Fylde and Wyre. The only statistically significant difference of -11.1% (95% confidence interval: -18.4% to -0.3%) was for A&E attendances between Blackpool CCG and its control area in year 4.

We found no long-term association between the vanguard programme and changes in overnight emergency admissions or average length of stay for overnight emergency admissions.

Previous IAU studies have evaluated the effect on the hospital use of patients cared for by ECS and EPC, respectively, within Fylde Coast in the first few years of vanguard implementation.[13] These studies found that patients treated by both services experienced more A&E attendances and emergency admissions than their comparison groups, possibly as a result of the services identifying previously unmet need.

Since the end of the vanguard period, the proportion of referrals to ECS from hospitals has grown and, by the last 12 months of the study, the local team estimated that 70% of patients were referred to the service by the hospital, often following an emergency admission. Anecdotally, this patient group was frailer and with more complex conditions than those the ECS was originally intended to serve. For these patients, the service may provide much needed bespoke, specialist care, including care planning and support, but there may be less scope to provide early proactive, anticipatory care, and to therefore avoid further emergency hospital care in the future.

From the third year of the vanguard launch A&E attendance rates in Blackpool appeared to fall, compared with the control area. Rates in Fylde and Wyre, however, displayed no clear trend. A possible factor in this difference may have been the contrasting starting positions of the two areas: A&E attendance rates before the vanguard were about 25% higher in Blackpool than in Fylde and Wyre.

We identified tentative signs of lower (relative to the control area) overall emergency admissions in the fourth and fifth years for both CCGs following the launch of the vanguard. This finding was not mirrored in overnight emergency admissions. Given that overnight emergency admissions make up approximately 75% of all admissions, it follows that same day emergency admission rates were falling in the two Fylde Coast CCGs, relative to the control areas. Same day emergency care (SDEC), or ambulatory emergency care as it is also known, has been an area of considerable policy focus in recent years. The NHS Long Term Plan included an ambition to implement SDEC 7 days a week, 12 hours a day in every major hospital.[16]

The average length of stay in hospital for overnight emergency admissions followed a similar downward trend in both CCGs. In general, it appeared that vanguard investment in strengthening primary and community care was more focussed on preventing admission to hospital, rather than facilitating faster discharge from hospital.

As a secondary analysis, we examined hospital use among the 18 years and older population. In general, the signs and trends seen in effect estimates for this population were consistent with those for the 65 years and older cohort.

A recent study has looked at the effect of new models of integrated care on hospital use across 23 vanguard sites, including the Fylde Coast.[9] The study reported a significant reduction in emergency admission rates in year 3 of the vanguard implementation, but found no change in total hospital bed-days over a 3-year follow-up period. A long-term study of the effect of an integrated care transformation programme in Mid-Nottinghamshire showed a delayed effect on hospital use, with reductions seen in A&E attendances and emergency admissions, but not until 5–6 years after the start of the programme.[10]

Strengths and limitations

This is an observational study and, as such, cannot provide proof of causation. Nonetheless, robust statistical methods were used to estimate a causal effect. We used the GSC method to create the counterfactual that has been shown to perform favourably on routine health data.[17] The GSC method allows the researcher to adjust for observed factors, while also offering some protection against bias from time-varying unobserved factors. We performed standard model checks and conducted a range of sensitivity analyses. Further technical details can be found in the statistical analysis protocol for this evaluation.[14]

We used administrative data to carefully construct an artificial comparison area (our counterfactual) to contrast what happened in the Fylde Coast CCGs with 'what would have happened' in the absence of the vanguard programme. Only GP practices with similar characteristics to those in the Fylde Coast CCGs contributed to the comparison area.

Control practices were selected from all over England, which limited the impact that a major event or 'shock' specific to any one area could have on our findings. However, the possibility that an event (or series of events) impacted treated and control practices differently in the follow-up period cannot be ruled out. Furthermore, as this is an observational study, we cannot completely rule out the possibility that our findings were affected by unobserved differences between the Fylde Coast population and the control areas.

We performed multiple statistical tests using the same dataset on combinations of treated CCGs, outcomes and time. As the number of comparisons increases, the likelihood of observing at least one significant result increases, even in the absence of an underlying difference.

The study follow-up period was artificially curtailed due to the COVID-19 pandemic and its distorting effect on hospital activity. It is not clear what, if anything, we might have learnt from a longer follow-up period.

We used data sourced from a national, individual-level database and constructed our impact metrics to fit, as far as possible, with activity groups where we were confident in the consistency of recording. However, we know that some types of activity, such as same day emergency care, are not always recorded consistently.

The scope of this evaluation is limited to the impact of the vanguard programme on hospital use. Therefore, we are unable to report on the possible effects of the vanguard programme on other important aspects of patient care (eg quality of clinical care, patient satisfaction or quality of life), as these metrics are not routinely recorded, or health service performance (eg cost-effectiveness).

This study was based in a single health economy that introduced a specific set of initiatives over several years. As such, the findings are not readily generalisable to other areas in England.

Conclusion

This evaluation looked at the impact of a set of integrated care initiatives on emergency hospital use by patients living in the Fylde Coast area between July 2015 and February 2020. This extended follow-up period allowed us to track impacts that may have taken several years to materialise.

Despite tentative signs of a fall (relative to the control area) in A&E attendances and overnight emergency admissions in the fourth and fifth years after the start of the vanguard, we found no clear association between the integrated care initiatives and reductions in hospital activity.

The main initiatives implemented in Fylde Coast were MDTs targeting both complex and high-risk patients. This (and other research) shows that it may be difficult for these MDTs to reduce emergency hospital use. This may be the case in ECS particularly, since the referral pattern changed to being more reactive and predominately from the hospital. However, other research has indicated that similar initiatives have a positive effect on access, patient satisfaction and perceived quality of care.[18]

The evidence from this study (and other recent studies) on the long-term impact of vanguard programmes in different areas of England[9,10,19] suggests that such programmes are unlikely to reduce emergency hospital use in the short term.[1] Over a longer period, they may have the potential to reduce some aspects of emergency hospital care, but this is likely to require several years at least. Therefore, while acknowledging there may be other possible benefits to patients and staff from these programmes, they should not be considered as a means to reduce hospital resources, especially in the short term.

Annex

Specification of impact metrics

The statistical analysis protocol for this evaluation was completed before the analyses were conducted. During the analysis phase, we deviated from the protocol by altering the specification for some of the impact metrics. All decisions were made before viewing the results for the revised metrics.

1. The A&E attendance outcome was limited to include only visits to type-1 emergency departments.
2. Overnight emergency admissions were added as a new impact metric alongside overall emergency admissions.
3. The average length of hospital stay metric was limited to only overnight emergency admissions.

Our decision to alter the A&E attendances metric arose from a concern relating to the consistency of recording of urgent treatment centre (UTC) activity, following the discovery that significant volumes of UTC activity in the Fylde Coast were missing from national datasets. UTCs, also known as type-3 emergency departments, treat minor injuries and illness requiring urgent treatment, and are an alternative to type-1 emergency departments that treat major injuries and illnesses.

The decision to look at overnight emergency admissions, as well as overall emergency admissions, arose from concerns relating to the recording of SDEC information. In recent years, SDEC admissions have increased substantially across England. However, in some instances, this very short-stay activity is not always coded as an admission, and therefore may not appear in the admitted patient care dataset used for this study. For both Fylde Coast CCGs, levels of same day emergency admissions were very low compared with other CCGs in England. These same concerns also led us to limit the average length of hospital stay indicator to only overnight emergency admissions.

Results: 18 years and older population

Table A1: Risk-adjusted estimated impact of the vanguard on emergency hospital use in the Blackpool CCG 18 years and older population, July 2015 to February 2020 (rates are per 10,000 persons per month)[*,†]

Impact metric	Year 1 Jul-15 to Mar-16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 Apr-19 to Feb-20
A&E attendances (rate)					
Difference					
Relative difference (%)					
All emergency admissions (rate)					
Difference	-3.2 (-9.6 to 2.3)	-1.6 (-9.4 to 5.8)	-6.6 (-15.2 to 3.7)	**-17.6 (-28.5 to -4.0)**	-11.4 (-23.2 to 2.7)
Relative difference (%)	-2.8 (-8.0 to 2.2)	-1.4 (-7.7 to 5.4)	-5.6 (-12.0 to 3.4)	**-14.1 (-21.1 to -3.6)**	-8.9 (-16.7 to 2.3)
Overnight emergency admissions (rate)					
Difference	1.4 (-2.2 to 5.5)	3.2 (-1.0 to 7.9)	3.4 (-1.0 to 8.9)	1.0 (-4.1 to 6.9)	4.9 (-1.1 to 10.5)
Relative difference (%)	1.7 (-2.5 to 6.6)	3.7 (-1.1 to 9.8)	4.0 (-1.1 to 11.1)	1.2 (-4.5 to 8.6)	5.7 (-1.2 to 13.1)
Chronic ACSCs admissions (rate)					
Difference	-0.4 (-1.7 to 0.9)	0.9 (-0.1 to 2.1)	0.4 (-0.9 to 1.9)	-0.6 (-2.1 to 1.5)	-0.6 (-2.3 to 1.6)
Relative difference (%)	-3.2 (-12.0 to 7.6)	7.1 (-0.7 to 18.5)	3.3 (-6.5 to 17.0)	-4.2 (-14.5 to 13.5)	-4.6 (-15.1 to 14.1)
UCSCs admissions (rate)					
Difference	-1.7 (-4.2 to 0.5)	0.1 (-2.4 to 2.5)	-0.6 (-4.0 to 2.0)	**-4.6 (-8.5 to -0.7)**	-1.5 (-5.5 to 2.3)
Relative difference (%)	-6.4 (-14.4 to 2.2)	0.5 (-8.4 to 10.5)	-2.3 (-13.8 to 8.6)	**-16.8 (-27.3 to -3.1)**	-5.5 (-17.4 to 9.5)
Average length of stay of overnight emergency admissions (days)					
Difference	0.0 (-0.6 to 0.6)	0.0 (-0.5 to 0.7)	0.6 (-0.1 to 1.3)	**0.6 (0.0 to 1.4)**	0.3 (-0.3 to 1.0)
Relative difference (%)	0.0 (-5.7 to 6.9)	0.0 (-5.1 to 7.9)	5.8 (-1.1 to 14.3)	**6.9 (0.1 to 16.5)**	2.8 (-3.1 to 12.1)

* Results for A&E attendances in Blackpool have been omitted because of concerns over the validity of the model-generated synthetic control.

† Statistically significant results (p-value<0.05) are shown in bold.

Table A2: Risk-adjusted estimated impact of the vanguard on emergency hospital use in the Fylde and Wyre CCG 18 years and older population, July 2015 to February 2020 (rates are per 10,000 persons per month)*

Impact metric	Year 1 Jul-15 to Mar-16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 Apr-19 to Feb-20
A&E attendances (rate)					
Difference	2.8 (-11.3 to 13.3)	1.2 (-16.5 to 14.5)	-7.7 (-26.9 to 9.6)	-17.3 (-38.3 to 6.0)	**-23.5 (-48.1 to -0.2)**
Relative difference (%)	1.6 (-5.9 to 8.0)	0.7 (-8.5 to 8.9)	-4.4 (-13.8 to 6.1)	-9.5 (-18.9 to 3.8)	**-12.4 (-22.5 to -0.1)**
All emergency admissions (rate)					
Difference	-4.2 (-10.6 to 1.3)	-1.2 (-9.0 to 6.5)	-1.7 (-9.4 to 6.7)	-7.1 (-15.6 to 2.0)	-5.7 (-14.7 to 4.5)
Relative difference (%)	-4.5 (-10.6 to 1.4)	-1.3 (-8.9 to 7.6)	-1.8 (-9.2 to 7.9)	-7.2 (-14.5 to 2.3)	-5.6 (-13.3 to 4.9)
Overnight emergency admissions (rate)					
Difference	-0.2 (-4.9 to 3.9)	1.4 (-4.2 to 6.6)	3.9 (-1.5 to 9.2)	3.0 (-2.3 to 8.5)	3.5 (-3.5 to 9.3)
Relative difference (%)	-0.2 (-6.3 to 5.6)	2.0 (-5.4 to 9.9)	5.5 (-1.9 to 13.9)	4.2 (-3.0 to 12.5)	4.8 (-4.3 to 13.6)
Chronic ACSCs admissions (rate)					
Difference	0.4 (-0.5 to 1.7)	**1.6 (0.4 to 2.8)**	1.3 (-0.1 to 2.7)	0.1 (-1.5 to 1.6)	0.9 (-0.6 to 2.6)
Relative difference (%)	4.4 (-5.3 to 21.6)	**18.1 (4.1 to 38.2)**	14.9 (-1.0 to 36.4)	0.8 (-13.4 to 20.3)	9.7 (-4.9 to 32.1)
UCSCs admissions (rate)					
Difference	-1.1 (-3.0 to 1.0)	0.3 (-2.2 to 3.3)	0.4 (-2.4 to 2.7)	-2.5 (-5.5 to 0.3)	-0.4 (-3.5 to 2.3)
Relative difference (%)	-5.7 (-14.7 to 5.9)	1.7 (-10.7 to 21.5)	2.2 (-11.8 to 18.3)	-13.6 (-25.5 to 1.6)	-2.1 (-16.5 to 14.4)
Average length of stay of overnight emergency admissions (days)					
Difference	**0.8 (0.1 to 1.4)**	0.3 (-0.4 to 0.9)	0.3 (-0.4 to 1.0)	0.4 (-0.3 to 1.1)	-0.2 (-1.0 to 0.4)
Relative difference (%)	**6.8 (1.0 to 13.5)**	2.5 (-3.8 to 8.8)	3.1 (-3.9 to 10.3)	4.2 (-3.0 to 12.1)	-2.1 (-9.4 to 4.8)

* Statistically significant results (p-value<0.05) are shown in bold.

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