

The Effect of General Practice Mergers on Quality in England

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Motivation

- Primary care services provide the first point of contact in the healthcare system, acting as the 'front door'. However, to build a high-quality primary care system is not easy.
- **Promoting competition** has been a popular tool.
 - Research evidence is mixed (Gaynor and Town, 2011).
- There is a **long-term trend of provider concentration** in the markets.
 - Around 17.2% of physicians worked in practices with at least 50 physicians in 2020, compared to 14.7% in 2018 (AMA, 2022).
 - *"In the future, there will be greater opportunities for practices to work collaboratively in larger groupings for the benefit of more sizeable populations.* -NHS England's General Practice Forward View 2016
- **The concentrated market: is it the right solution?**

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 - *"In the future, there will be greater opportunities for practices to work collaboratively in larger groupings for the benefit of more sizeable populations. -NHS England's General Practice Forward View 2016*
- **The concentrated market: is it the right solution?**
- **This paper adds to this debate by empirically examining the effect of provider mergers in the primary care market.**

This paper

- **Theoretically**, the effects of mergers on quality in the primary care market is **ambiguous**.
 - On one hand, mergers can **achieve** economies of scale and scope and lead to **better outcomes** (Asker and Nocke 2021; Eliason et al. 2020).
 - On the other hand, mergers can **decrease** incentives for high-quality care through **increased market power** (Gaynor, 2004).
- The English primary care market serves as a **suitable setting** for my study.
 - free at the point of use, excluding price influence
 - rich data for various quality measures
 - sufficient sample size of mergers

Research Agenda

- Do general practice mergers affect quality and if so how?
 - **objective quality**: official clinical quality data
 - **subjective quality**: patient experience from patient survey data
 - **other outcomes**: financial performance
- Is the effect heterogenous across different pre-merger practice sizes?
 - small practices merge
 - small and large practices merge
 - large practices merge
- Why mergers lead to changes in quality?
 - exploration of the channel: **change in market power**

Challenges

- **Lack** of existing **data** to identify merger events
- **Endogeneity** concerns
- **Variations in treatment timing**: standard two-way fixed effect (TWFE) difference-in-differences (DiD) estimators **potentially biased**

Our approach

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 - Mergers may **potentially be random**: no consistent observable factors in predicting practice mergers
 - **incorporate** practice- and local-level **covariates**; **practice fixed effect**
 - **PSM method** (propensity score matching) to select the **comparison group**
 - **robustness** check: **Timing** of mergers is **random**, therefore using future mergers as controls.
- **Variations in treatment timing**: standard two-way fixed effect (TWFE) difference-in-differences (DiD) estimators **potentially biased**

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- **Variations in treatment timing**: standard two-way fixed effect (TWFE) difference-in-differences (DiD) estimators **potentially biased**
 - use a **Stacked DiD regression approach** (Deshpande and Li, 2019; Cengiz et al., 2019)
 - **robustness** check: new developed DiD estimator, e.g.: Callaway and Sant'Anna (2021)

Outline

- 1 Introduction
- 2 Setting and Data**
- 3 Empirical Methodology
- 4 Results
- 5 Some Discussion
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Primary Care in England

- In England, **primary care** is provided by the **general practices market**.
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- Healthcare services: **Free** at point of use.
- Therefore, **quality becomes a salient feature** when assessing the primary care system in England.

GP practice merger data

- **yearly** level
- 787 mergers identified between 2014-2018.

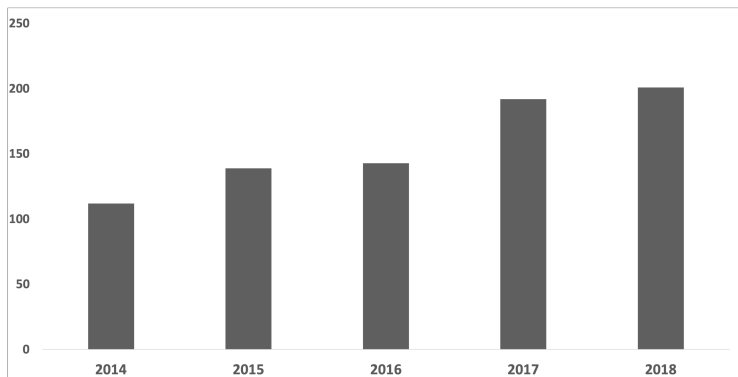


Figure: The number of mergers by year

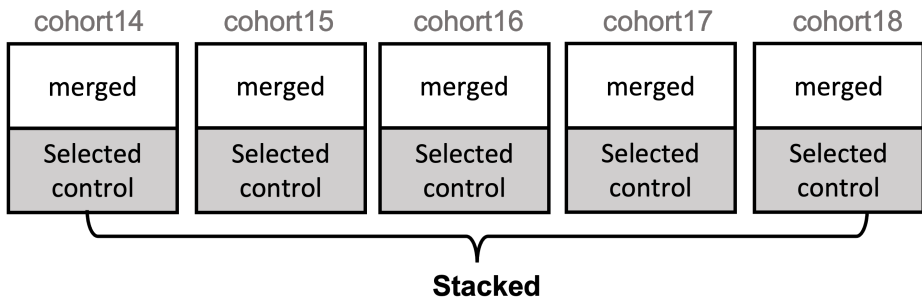
Outcomes data

- objective clinical quality (the Quality and Outcome Framework data): *qofOutcome*; *PA*
- subjective quality (patient survey data)
 - Overall satisfaction measures: *OverallSat*, *Recommend*
 - **More** measures, such as patient satisfaction with *continuity of care*, *access to care*, *waiting time*, *opening hours*, etc
- Other outcomes
 - Financial performance: payment per patient; payment per Full-time equivalent (FTE) GP

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Stacked DiD Regression



- with cohort-specific practice and year F.E.

Regression equation

$$y_{it} = \gamma_{ic} + \gamma_{tc} + \beta(\text{Treated}_{ic} \times \text{Post}_{ct}) + X_{it}\delta + \varepsilon_{ict}$$

where

- y_{it} denotes the outcome for practice i in year t
- $\text{Treated}_{ic}=1$ for merged practices of cohort c
- $\text{Post}_{ct}=1$ for post-merger years, specified separately for each cohort
- γ_{ic} and γ_{tc} : cohort-specific unit fixed effect, and cohort-specific year fixed effect respectively
- X_{it} : a vector of controls
- Standard errors are clustered at the cohort-specific unit level
- drop the year of merger all together
- β : coefficient of interest

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Results: clinical quality

	(1)	(2)
Variable	qofOutcome	PA
Treat \times Post	0.865*** (0.310)	0.054 (0.161)
Additional Controls	YES	YES
Practice FE	YES	YES
year FE	YES	YES
Observations	18,144	18,144

- **qof performance: minimal effect**
- **True performance (PA): no change**

Results: patient experience-main

Variable	(1) OverallSat	(2) Recommend
Treat × Post	-2.725*** (0.414)	-2.730*** (0.631)
Additional Controls	YES	YES
Practice FE	YES	YES
year FE	YES	YES
Observations	18,144	15,536

- **overall satisfaction rate declines**
- Column (1): equates to about a 4% decrease on an average satisfaction rate of around 85%

Results: patient experience-more

	(1)	(2)	(3)	(4)
Variable	Continuity	AppointSat	WaitSat	OpenHrsSat
Treat × Post	-3.425***	-4.120***	-2.547***	-1.961***
	(0.656)	(0.579)	(0.692)	(0.515)
Additional Controls	YES	YES	YES	YES
Practice FE	YES	YES	YES	YES
year FE	YES	YES	YES	YES
Observations	18,144	18,144	15,536	15,536

- **less likely to see preferred GPs:** corresponds to a substantial 10% drop from the mean
- **access to care:** corresponds to to a 5% drop from the mean
- **longer waiting times:** corresponds to to a 4% drop from the mean

Results: financial performance

Variable	(1) ln(RevPerPatient)	(2) ln(RevPerGP)
Treat × Post	0.026 (0.016)	0.215*** (0.028)
Additional Controls	YES	YES
Practice FE	YES	YES
year FE	YES	YES
Observations	18,144	18,144

- increased revenue per FTE GP: rises by 24%, about £75,108 extra revenue for merged practices.
- Merged practices achieve potential financial gains.**

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Heterogeneous effects: pre-merger practice sizes

	(1)	(2)	(3)	(4)
Size of Merging Parties	qofOutcome	PA	OverallSat	Recommend
Small Practices Merge	3.324*** (0.712)	1.085*** (0.377)	-2.410*** (0.755)	-2.421** (1.078)
Small and Large Merge	1.833*** (0.640)	0.253 (0.324)	-2.574*** (0.902)	-3.514*** (1.280)
Large Practices Merge	0.246 (1.116)	0.102 (0.663)	-6.355*** (2.192)	-6.904** (2.963)
Observations	6,634	6,634	6,634	5,679

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- clinical quality: **some heterogeneity**
- **Small practice mergers:** potential for enhancing clinical quality

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- patient experience: **consistent negative impact**
- **large practice mergers:** more detrimental effect on patient experience

Machanism: market power

- Whether the increase in market power following mergers explains the drop in quality.
 - compare merged entities located in highly competitive markets with those in low competitive markets

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	(1)	(2)	(3)	(4)
Competition Level	qofOutcome	PA	OverallSat	Recommend
Low comp	0.243 (0.550)	-0.255 (0.255)	-3.222*** (0.698)	-4.526*** (1.124)
High comp	0.875* (0.488)	0.142 (0.267)	-2.977*** (0.635)	-3.650*** (0.983)
Additional Controls	YES	YES	YES	YES
Practice FE	YES	YES	YES	YES
year FE	YES	YES	YES	YES
Observations	10,242	10,242	10,242	8,760

- **Market concentration changes are not the primary driving force behind quality change.**

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Conclusion

- Do general practice mergers affect quality and if so how?
 - The financial improvement is not matched by maintaining the same level of patient outcomes: **minimal effect** on clinical quality; **declined** patient experience
- Is the effect heterogenous?
 - clinical quality: **some heterogeneity observed**; Small practice mergers show improvement.
 - patient satisfaction: **consistent negative effect**; Large practice mergers show the most detrimental effect.
- Why mergers lead to changes in quality?
 - Changes in **market concentration** are **not** the main driving force.

Implications

- The government take into account the negative effects of general practice mergers on patients before approving further mergers.
- Mergers can have negative effects regardless of market concentration.
- Caution needed for large practice mergers; potential benefits in mergers between small practices

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Quality data: objective quality

- yearly, 2013-2019
- Clinical quality: Quality and Outcome Framework (QOF) data
- *QOF points*: % total available points that the practice achieved
 - Achievement point for each indicator: $100 \times A / (T - E)$
 - *E*: # of exception reported patients
- construct a second measure: *PA*, which represents population achievement
 - Achievement calculated as: $100 \times A / T$
 - using only indicators that were consistently defined between 2013 and 2019

Quality data: subjective quality

- yearly, 2013-2019
- Patient experience: General Practice Patient Survey (GPPS) data.
- Two main measures:
 - ① *OverallSat*: % satisfied with their practice on an overall level
 - ② *Recommend*: % who would definitely or probably recommend their surgery to someone who has just moved to their local area (available from 2013-2017)
- More measures, such as:
 - ① *Continuity*: % who had a preferred General Practitioner (GP) and could always or almost always see their preferred GP
 - ② *WaitSat*: % who reported that their waiting time at surgery is normally not too long (available from 2013-2017)
 - ③ satisfaction with opening hours, making appointment, etc.

Additional data

- Practice level characteristics: the number of registered patients; practice prevalences; the Full Time Equivalent (FTE) of GPs, nurses and administrative staff; dispensing status; the number of competing GP surgeries within its 2km radius
- local area characteristics (LSOA level): index of Multiple Deprivation (IMD); rural or urban classification

logit: what factors predict the likelihood of mergers

Variables	Cohorts2014	Cohorts2015	Cohorts2016	Cohorts2017	Cohorts2018
NumComp	0.012 (0.021)	0.008 (0.017)	-0.020 (0.017)	0.004 (0.014)	0.004 (0.015)
NumPatient	8.31e-06 (5.98e-05)	-0.000155*** (5.61e-05)	2.31e-05 (3.32e-05)	0.000112*** (2.49e-05)	4.51e-05 (3.25e-05)
IMD	1.03e-05 (1.59e-05)	5.02e-06 (1.42e-05)	-2.60e-05* (1.35e-05)	-1.45e-05 (1.13e-05)	-1.53e-06 (1.14e-05)
GpFTE	0.114** (0.056)	0.039 (0.054)	0.081* (0.044)	-0.046 (0.043)	-0.086* (0.044)
NurseFTE	0.016 (0.100)	0.083 (0.073)	0.070 (0.067)	0.042 (0.061)	0.105** (0.052)
AdminFTE	-0.026 (0.041)	0.118*** (0.037)	-0.018 (0.024)	-0.041* (0.024)	0.023 (0.024)
Urban	0.525 (0.450)	-0.145 (0.348)	0.373 (0.388)	0.108 (0.309)	-0.044 (0.274)
Dispensing	-1.051** (0.514)	-1.159** (0.454)	-0.442 (0.399)	-0.276 (0.320)	0.170 (0.267)
Observations	6,390	6,483	6,500	6,525	6,285

- Coefficients of most prevalence rates are insignificant and thus ignored to save space.

logit: what factors predict the timing of mergers conditional on mergers

Variables	cohort14	cohort15	cohort16	cohort17
NumComp	-0.003 (0.012)	0.0003 (0.010)	-0.003 (0.008)	-0.0002 (0.006)
NumPatient	4.01e-05 (3.33e-05)	6.84e-05** (2.99e-05)	1.25e-05 (1.33e-05)	-7.26e-06 (6.56e-06)
IMD	-3.98e-06 (8.74e-06)	-1.85e-07 (7.85e-06)	4.06e-06 (5.83e-06)	4.45e-06 (4.58e-06)
GpFTE	-0.076** (0.035)	-0.049 (0.031)	-0.057*** (0.021)	-0.033** (0.016)
NurseFTE	-0.007 (0.051)	-0.012 (0.041)	-0.018 (0.030)	0.007 (0.021)
AdminFTE	0.003 (0.020)	-0.032* (0.017)	0.010 (0.010)	0.017* (0.009)
Urban	-0.206 (0.221)	0.073 (0.190)	-0.065 (0.152)	-0.042 (0.110)
Dispensing	0.932*** (0.263)	0.715*** (0.228)	0.228 (0.177)	0.154 (0.126)
Observations	740	641	528	392

- Coefficients of most prevalence rates are insignificant and thus ignored to save space.

Robustness check

Our results are robust to:

- alternative estimators: Callaway and Sant'Anna (2021)
- the matching procedure:
 - 1 the closest 1/5/7 never-merged practices by PSM
 - 2 using all never-merged practices
 - 3 select matches from only outside-markets practices, with markets defined as the 2km radius surrounding each practice
- subsample: drop practices that received poor quality ratings from the CQC prior merger
- Using future mergers as the counterfactual group, as the timing of merger is random