Prescribing trends over time by non-medical independent prescribers (NMIPs) in primary care settings across Wales (2011-2018): a secondary database analysis

Supplementary material

Health board trends in dispensed prescriptions by non-medical prescribers across health boards in Wales

Table S1: Health Board-specific parameter estimates from the interrupted time series analysis examining the change in level and slope of dispensed prescriptions in primary care by NMIPs following the implementation of primary care clusters in October 2015 (N = 84 months) *

Health board	Variable	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Aneurin Bevan University Health Board	Intercept	4639.4	4019.8	5259.0	<0.001
	Pre-intervention slope	109.9	89.7	130.1	<0.001
	Level change	-27.5	-1321.8	1266.8	0.966
	Post-intervention slope	144.7	40.9	248.5	0.007
Abertawe Bro Morgannwg University Health Board (lag 3)	Intercept	3268.9	2833.5	3704.3	<0.001
	Pre-intervention slope	65.4	47.2	83.6	<0.001
	Level change	1954.3	534.6	3374.0	0.008
	Post-intervention slope	28.6	-52.4	109.7	0.484
Betsi Cadwaladr University Health Board	Intercept	8480.1	7791.3	9168.9	<0.001
	Pre-intervention slope	239.7	208.3	271.1	<0.001
	Level change	2634.6	3.1	5266.0	0.050
	Post-intervention slope	195.4	2.7	388.1	0.047
Cardiff and Vale University Health Board (lag 8)	Intercept	7976.3	7458.2	8494.4	<0.001
	Pre-intervention slope	6.1	-6.6	18.9	0.342
	Level change	-266.1	-876.5	344.4	0.388
	Post-intervention slope	65.4	12.6	118.1	0.016
Cwm Taf University Health Board (lag 4)	Intercept	2998.4	2689.6	3307.0	<0.001
	Pre-intervention slope	22.7	13.1	32.3	<0.001
	Level change	1104.3	-310.2	2518.7	0.124
	Post-intervention slope	16.6	-75.0	108.2	0.720

*Models fitted with a lag of order 1 unless otherwise specified. Note that linear modelling assumptions were not fulfilled for Hywel Dda and Powys Health Boards and Findings are illustrated graphically in Figures S6 and S7.

Table S2: Comparison between actual and counterfactual dispensed prescriptions in primary care by NMIPs*

Health board	Estimate	Coefficient	Lower 95% CI	Upper 95% CI
All Wales	Absolute difference at March 2018	44415.5	34086.8	54744.1
	Relative difference at March 2018	60.5	45.6	75.3
Aneurin Bevan University Health Board	Absolute difference at March 2018	4313.3	1924.1	6702.5
	Relative difference at March 2018	31.1	12.7	49.5
Abertawe Bro Morgannwg University Health Board	Absolute difference at March 2018	2813.2	751.1	4875.4
	Relative difference at March 2018	32.1	6.1	58.1
Betsi Cadwaladr University Health Board	Absolute difference at March 2018	8496.7	4136.1	12857.3
	Relative difference at March 2018	29.7	13.5	45.9
Cardiff and Vale University Health Board	Absolute difference at March 2018	1694.8	332.9	3056.7
	Relative difference at March 2018	20.0	3.4	36.5
Cwm Taf University Health Board	Absolute difference at March 2018	1601.9	-78.1	3281.9
	Relative difference at March 2018	32.7	-2.9	68.2

*The counterfactual represents predicted values and trends in the absence of the implementation of primary care clusters in October 2015 (i.e. making the assumption that pre-implementation trends would have continued in the same way).
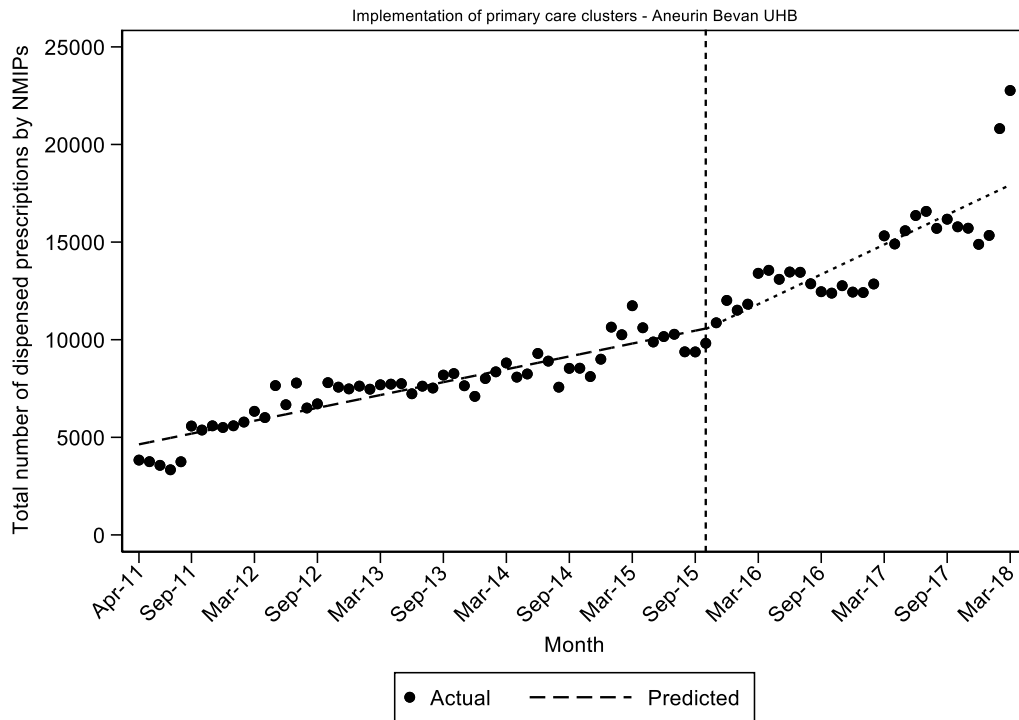
Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

BMJ Open

Figure S1: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Aneurin Bevan University Health Board)
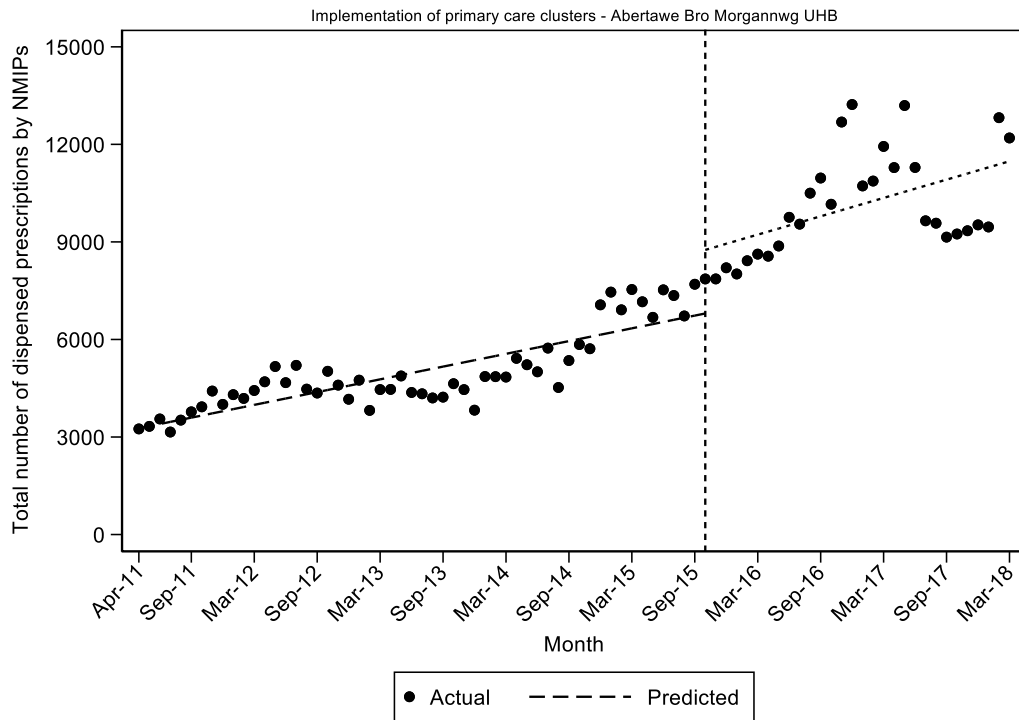
3

Figure S2: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Abertawe Bro Morgannwg University Health Board)
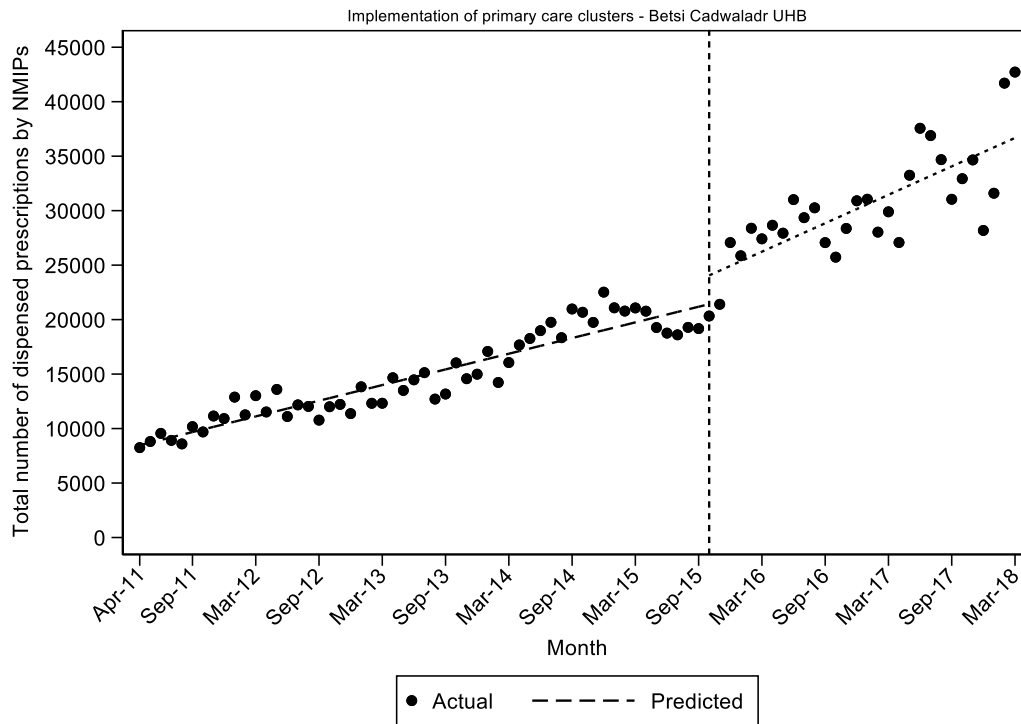
Figure S3: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Betsi Cadwaladr University Health Board)
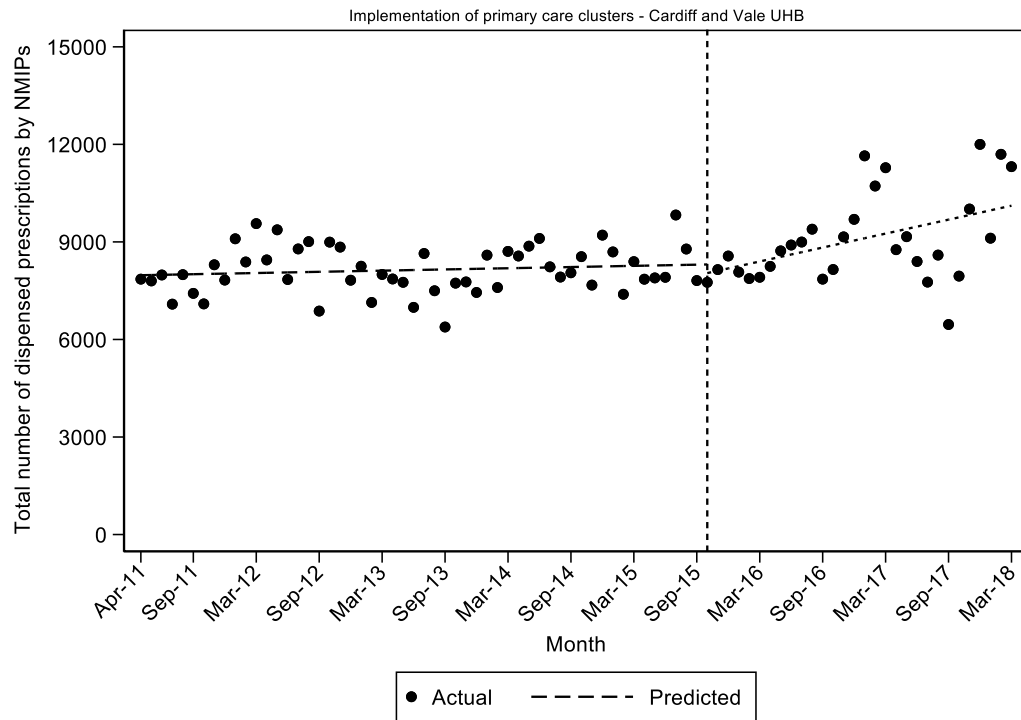
Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance
placed on this supplemental material which has been supplied by the author(s)

BMJ Open

Figure S4: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Cardiff and Vale University Health Board)
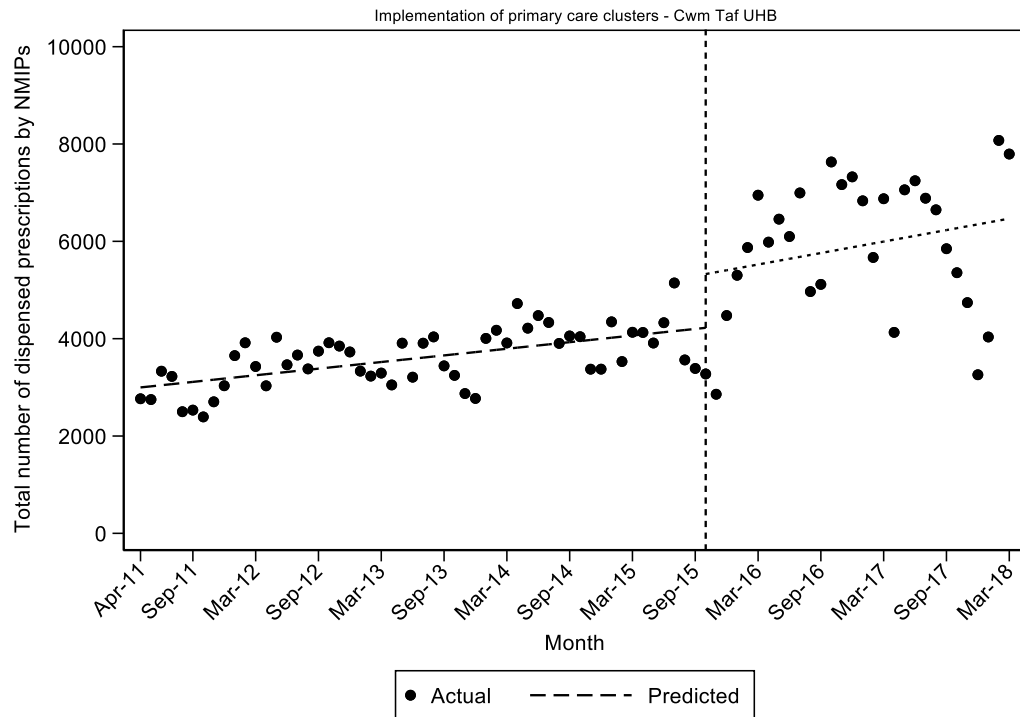
Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

BMJ Open

Figure S5: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Cwm Taf University Health Board)
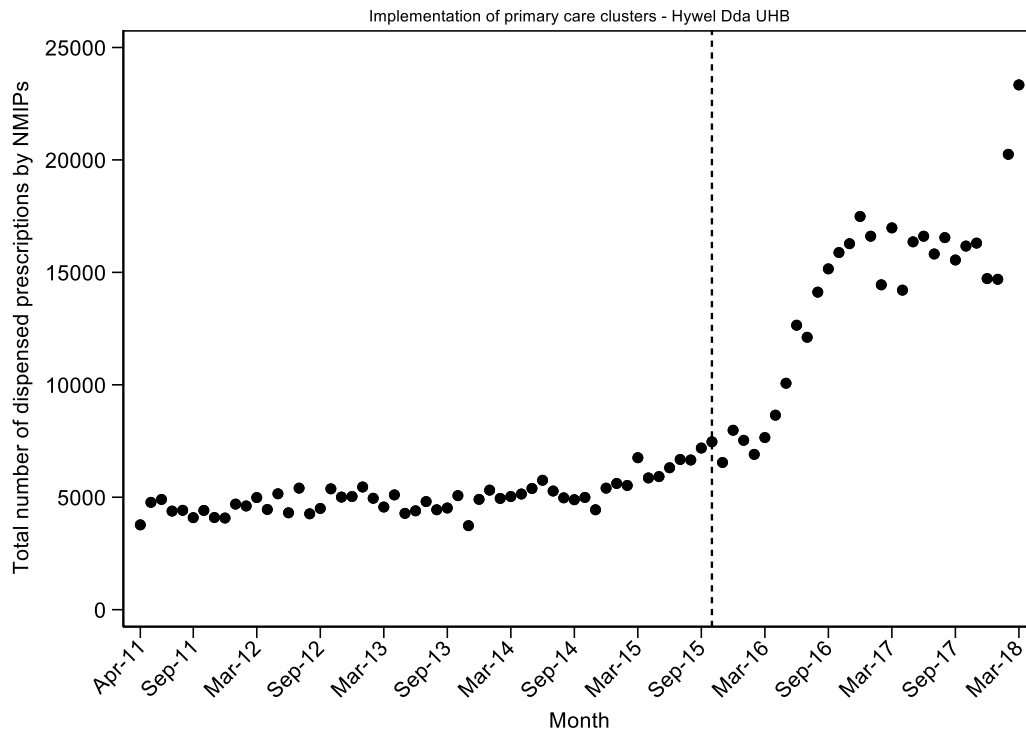
Figure S6: Observed dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Hywel Dda University Health Board)
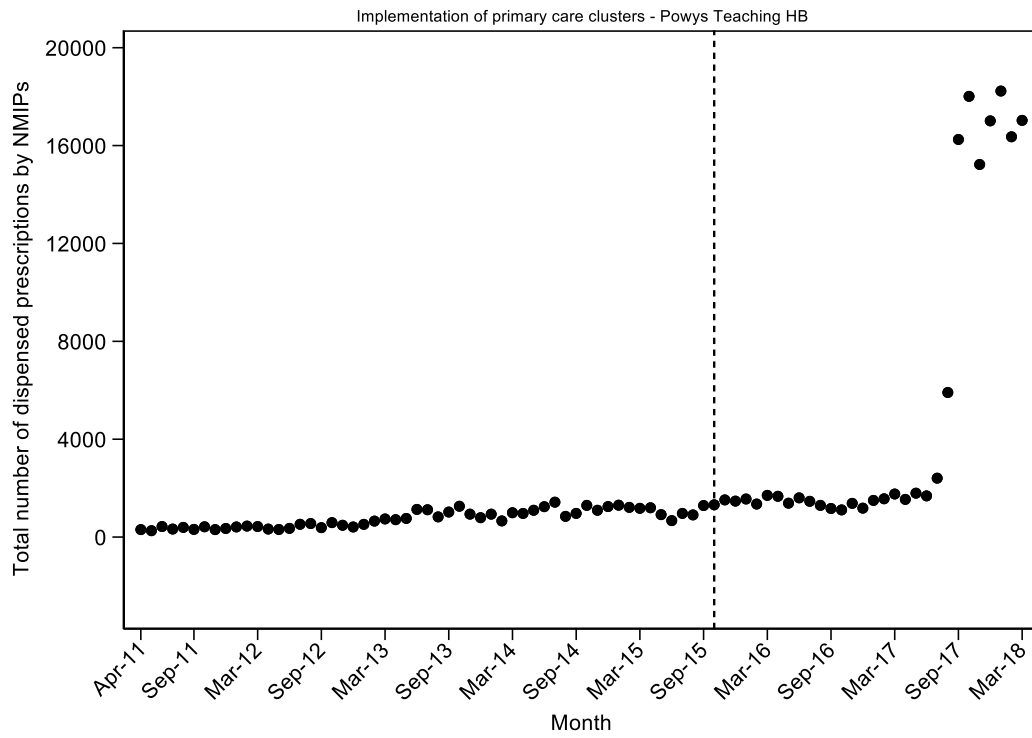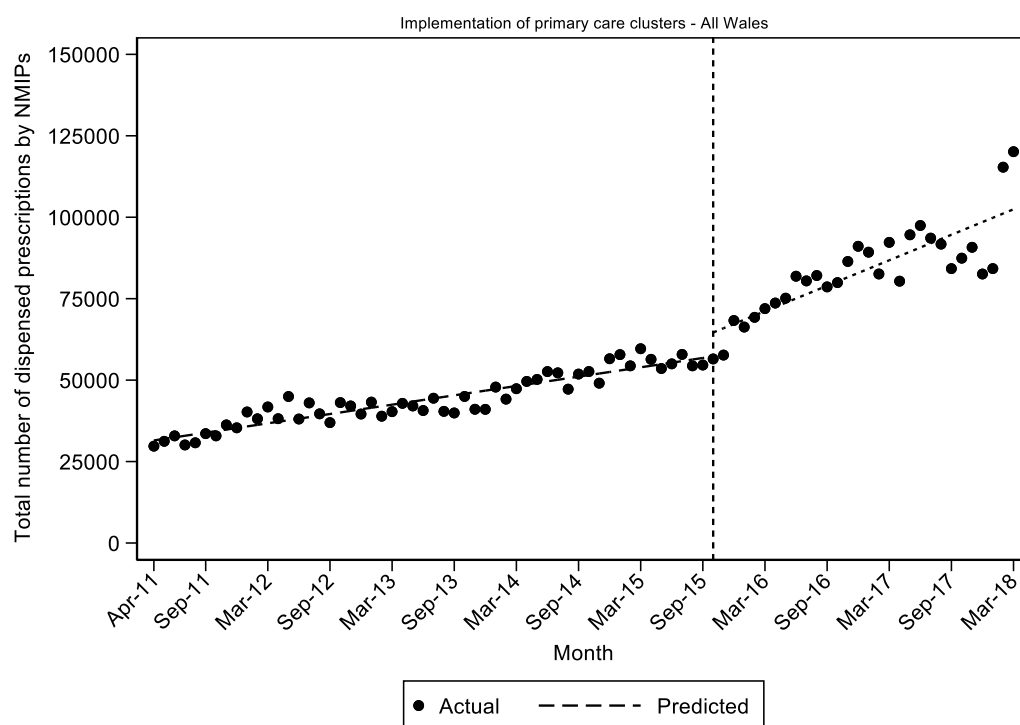
8

Figure S7: Observed dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (Powys Teaching Health Board)

Sensitivity analysis 1: Excluding Powys teaching health board from the All Wales analysis

Table S3: All Wales analysis excluding Powys Teaching Health Board

Variable	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Intercept	31490.9	29914.3	33067.5	<0.001
Pre-intervention slope	477.5	426.4	528.5	<0.001
Level change	7353.0	1450.0	13255.9	0.015
Post-intervention slope	826.4	314.7	1338.1	0.002

Figure S8: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (All Wales, excluding Powys Teaching Health Board)

10

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

BMJ Open

Sensitivity analysis 2: Excluding Powys teaching health board and the final two months of data points from the All Wales analysis

Table S4: All Wales analysis excluding Powys Teaching Health Board and the final two months of observations

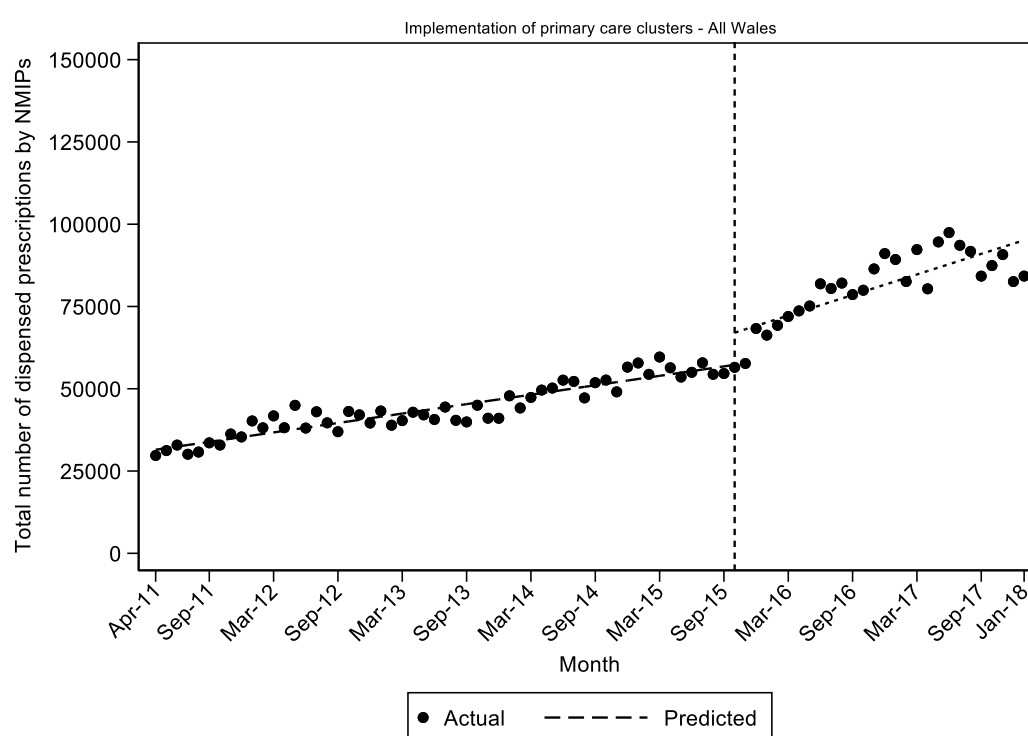| Variable	Coefficient	Lower 95% CI	Upper 95% CI	p-value
Intercept	31490.9	29489.3	33492.6	<0.001
Pre-intervention slope	477.5	416.1	538.8	<0.001
Level change	9762.5	2570.3	16954.6	0.008
Post-intervention slope	563.5	44.0	1083.1	0.034

Figure S9: Observed and predicted dispensed prescriptions in primary care by NMIPs prior to and following the implementation of primary care clusters in October 2015 (All Wales, excluding Powys Teaching Health Board and the final two months of observations)

Findings were robust to the two sensitivity analyses 1: excluding PTHB (Table S3 and Figure S8) and 2: excluding PTHB and the final two months of observations (Table S4 and Figure S9) as presented above.