Supplementary Table 1: Mapping of Clinical Commissioning Groups to Acute Hospital Trusts

Mapping	Archetype	Rules	Example
Single AHT to single CCG	City or county region with one AHT and one CCG	CCG and AHT share similar name and geography	NHS Sheffield Teaching Hospitals Foundation Trust; NHS Sheffield CCG
AHT with multiple CCGs	City or region with one AHT and two or more CCGs	CCGs and AHT share related names OR have adjacent / overlapping catchment areas and CCG / AHT website indicates that major contractual relationship exists[1]	NHS Leeds Teaching Hospitals NHS Trust: NHS Leeds North, West and South & East CCGs
Multiple AHTs with multiple CCGs	Major city with geographically close AHTs & CCGs	CCG and AHTs have overlapping catchment areas and CCG / AHT website indicates that major contractual relationship exists	Central London
Multiple AHTs with single CCG	City or region where CCG covers combined catchments of two AHTs	CCG and AHTs have overlapping catchment areas	Newcastle & Gateshead CCG: Newcastle Hospitals NHS Foundation Trust, Gateshead Hospitals NHS Trust

AHT: Acute Hospital Trust, CCG: Clinical Commissioning Group.

1. Major contractual relationship inferred by the CCG referring to the AHT as a partner, or by the AHT providing information for GPs from the specific CCG or by CCG commissioning reports indicating that the largest share of budget goes to that AHT.

Supplementary table 2 Attributed variation within multilevel models of practices nested within CCGs within Acute Hospital Trusts – after exclusion of CCGs / Trusts with multiple relationships.

Outcome variable	Covariates	Total R2	Intraclass correlation coefficient				AIC
			Total	CCG	Acute	% acute	
Multilevel Linear Regression							
Standardised 2WWRR	None	0.212	0.209	0.081	0.131	63%	31993
Multilevel Poisson Regression (primary analysis)							
Detection Rate	None	0.405	0.424	0.153	0.271	64%	20706
Detection Rate	a	0.487	0.381	0.129	0.252	66%	20163
Detection Rate	a+b	0.502	0.353	0.122	0.231	65%	20078
Multilevel Poisson Regression (secondary analysis)							
Detection Rate	c	0.483	0.390	0.134	0.256	66%	20347
Detection Rate	c+d	0.483	0.386	0.131	0.255	66%	20268
Detection Rate	c+d+e+f	0.488	0.368	0.110	0.258	70%	20136

Covariates: a = standardised 2WWRR; b= (standardised 2WWRR)^2 ; c= specificity; d = (specificity)^2;e = proportion patients aged 65+ and index of multiple deprivation.

CCG: Clinical Commissioning Group; ICC: Intraclass correlation coefficient; 2WWRR: two week wait referral rate AIC: Aikake Information Criterion

Supplementary Table 3. Replication of main analysis with different inclusion thresholds for number of cancer diagnoses per practice.

Outcome variable	Practices	R-squared			ICC
		Total	Fixed[2]	Random[3]	
5 Cancer diagnoses over 5 years	7013				
Standardised 2WWRR		0.191	-	0.191	0.191
Detection Rate (unadjusted)		0.427	-	0.427	0.406
Detection Rate (adjusted[1])		0.511	0.221	0.289	0.352
50 Cancer diagnoses over 5 years	6379				
Standardised 2WWRR		0.209	-	0.209	0.209
Detection Rate (unadjusted)		0.435	-	0.435	0.421
Detection Rate (adjusted[1])		0.492	0.178	0.314	0.369
100 Cancer diagnoses over 5 years	4803				
Standardised 2WWRR		0.255	-	0.255	0.255
Detection Rate (unadjusted)		0.457	-	0.457	0.451
Detection Rate (adjusted[1])		0.491	0.136	0.355	0.405

ICC, Intra-class correlation coefficient; 2WWRR, 2 week referral rate.

1 Adjusted for standardised 2WWRR as quadratic term

2 Fixed refers to variance explained by practice & population characteristics

3 Random refers to variance explained by clustering at CCG level.