

## Supplementary Table and Figures

It should be noted that among the children identified as having a tracer condition through their GP records, who then completed a Children and Young People's Health Partnership (CYPHP) Healthcheck, 96% (4,546/4,719) reported having a condition.

Sensitivity analyses

**Table S1: Bivariate, Multivariable analyses investigating Step 2, engagement with proactive identification of unmet need (completing CYPHP Healthcheck) sensitivity analyses**

	Excluding Lambeth N=9,078	Missing category N=19,773	Complete data analysis N=13,596	Bivariate N=19,773
	OR 95%CI	OR 95%CI	OR 95%CI	OR 95%CI
Age at start of study	1.03 (1.00 to 1.05)	1.04 (1.03 to 1.06)	1.05 (1.03 to 1.07)	1.19 (1.16 to 1.22)
Age squared*	0.99 (0.99 to 1.00)	0.99 (0.99 to 0.99)	0.99 (0.99 to 0.99)	0.98 (0.98 to 0.99)
Sex	NS	NS	NS	0.96 (1.26 to 0.74)
Most vs Least	0.66 (0.52 to 0.82)	0.70 (0.59 to 0.83)	0.69 (0.56 to 0.84)	0.67 (0.57 to 0.80)
Ethnicity				
White	Reference	Reference	Reference	Reference
Asian	0.68 (0.56 to 0.83)	0.72 (0.62 to 0.84)	0.71 (0.61 to 0.83)	0.76 (0.65 to 0.88)
Black	0.70 (0.61 to 0.80)	0.70 (0.64 to 0.78)	0.69 (0.62 to 0.76)	0.75 (0.68 to 0.82)
Mixed	0.89 (0.74 to 1.06)	0.89 (0.79 to 1.02)	0.89 (0.78 to 1.01)	0.93 (0.82 to 1.06)
Other ethnicity	0.62 (0.50 to 0.78)	0.64 (0.52 to 0.78)	0.63 (0.52 to 0.77)	0.63 (0.52 to 0.77)
(Missing Category)	N/A	0.72 (0.65 to 0.79)	N/A	N/A
Condition				
Constipation	Reference	Reference	Reference	Reference
Eczema	2.18 (1.89 to 2.51)	2.23 (1.99 to 2.49)	2.38 (2.08 to 2.72)	2.08 (1.87 to 2.33)
Asthma	1.84 (1.60 to 2.11)	2.35 (2.12 to 2.62)	2.41 (2.12 to 2.74)	1.95 (1.77 to 2.15)
2+ Conditions	3.84 (3.26 to 4.52)	4.15 (3.67 to 4.70)	4.18 (3.61 to 4.84)	3.82 (3.39 to 4.31)
Federation				
Southwark North	Reference	Reference		
Southwark South	1.16 (1.02 to 1.31)	1.14 (0.94 to 1.38)	1.10 (0.89 to 1.35)	1.19 (0.97 to 1.45)
Lambeth	(Excluded)	0.49 (0.41 to 0.58)	0.48 (0.40 to 0.58)	0.54 (0.45 to 0.64)

CYPHP – Children and Young People's Health Partnership. \*Age is not linearly associated with Healthcheck uptake, a quadratic variable is added to the model to improve fit. Random effects multivariable models with multiple imputed ethnicity to account for missing data, clustered by GP practice.

Children registered with a GP in Lambeth were less likely to complete a Healthcheck than those from Southwark OR: 0.49 (0.42 to 0.58), when comparing to Southwark North.

**Table S2: Multivariable analyses investigating engagement with proactive identification of unmet need (CYPHP Healthcheck) for individual conditions (Asthma, constipation and eczema)**

	Asthma N=10,564	Constipation N=5,785	Eczema N=5,904
	OR 95%CI	OR 95%CI	OR 95%CI
Age at start of study	1.01 (0.99 to 1.03)	1.08 (1.04 to 1.12)	1.05 (1.02 to 1.08)
Age squared*	0.99 (0.99 to 0.99)	0.99 (0.99 to 0.99)	0.99 (0.99 to 1.00)
Most vs Least	0.77 (0.62 to 0.97)	0.67 (0.49 to 0.92)	0.76 (0.56 to 1.03)
Ethnicity			
White	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Asian	0.70 (0.57 to 0.87)	0.83 (0.62 to 1.12)	0.69 (0.53 to 0.88)
Black	0.79 (0.70 to 0.90)	0.87 (0.72 to 1.05)	0.60 (0.50 to 0.72)
Mixed	0.93 (0.79 to 1.10)	1.09 (0.85 to 1.38)	0.82 (0.65 to 1.02)
Other ethnicity	0.63 (0.49 to 0.81)	0.68 (0.48 to 0.97)	0.55 (0.39 to 0.78)
GP Federation			
SN	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Lambeth	0.60 (0.50 to 0.71)	0.43 (0.36 to 0.53)	0.40 (0.31 to 0.50)
SS	1.16 (0.95 to 1.42)	1.23 (0.99 to 1.52)	0.93 (0.71 to 1.21)

CYPHP – Children and Young People’s Health Partnership. \*Age is not linearly associated with Healthcheck uptake, a quadratic variable is added to the model to improve fit. Random effects multivariable models with multiple imputed ethnicity to account for missing data, clustered by GP practice.

**Table S3: Descriptive statistics of unmet need among children who engaged with Children and Young Person Health Partnership, Population Health Management model**

	Population 2	Population 3		
	Engaged with PHM* N=4719	Children with unmet needs** N=2,749		
	Number	Number	Column %	Row %
<b>Asthma</b>	2124	886	32.2%	41.7%
<b>Constipation</b>	661	564	20.5%	85.3%
<b>Eczema</b>	1061	690	25.1%	65.0%
<b>More than 1 condition</b>	873	654	23.8%	74.9%
<b>Age</b>				
<b>&lt;1 year</b>	341	232	8.4%	68.0%
<b>1-&lt;2 years</b>	306	227	8.3%	74.2%
<b>2-&lt;5 years</b>	1099	714	26.0%	65.0%
<b>5-&lt;8 years</b>	969	575	20.9%	59.3%
<b>8-&lt;13</b>	1570	830	30.2%	52.9%
<b>13-&lt;16 years</b>	434	216	7.9%	49.8%
<b>Sex</b>				
<b>Female</b>	2181	1,363	49.6%	62.5%
<b>Male</b>	2538	1431	52.1%	56.4%
<b>Ethnicity</b>				
<b>Asian</b>	284	174	6.3%	61.3%
<b>Black</b>	1,116	715	26.0%	64.1%
<b>Mixed</b>	478	271	9.9%	56.7%
<b>Other</b>	161	98	3.6%	60.9%
<b>White</b>	1,282	692	25.2%	54.0%
<b>Missing data</b>	1,398	844	30.7%	60.4%
<b>Deprivation***</b>				
<b>1: (Most deprived)</b>	1,988	1,261	45.9%	63.4%
<b>2</b>	1,652	977	35.5%	59.1%
<b>3</b>	786	407	14.8%	51.8%
<b>4</b>	259	128	4.7%	49.4%
<b>5(Least deprived)</b>	33	20	0.7%	60.6%
<b>Missing data</b>	1	1		

\*Children who engaged with Children and Young Person Health Partnership, Population Health Management (CYPHP) model by completing the CYPHP Healthcheck, \*\* Children identified with unmet needs as those who met the threshold for care in the CYPHP Healthcheck. Deprivation levels determined from English Indices of Multiple Deprivation (2019) score quintiles

**Table S4: Multivariable analyses investigating engaged children receiving service for individual conditions (Asthma, constipation and eczema)**

	<b>Asthma</b>	<b>Constipation</b>	<b>Eczema</b>
	<b>N=1,697</b>	<b>N=665</b>	<b>N=1,031</b>
	OR (95%CI)	OR (95%CI)	OR (95%CI)
Most vs Least	1.83 (1.09 to 3.08)	1.07 (0.47 to 2.45)	1.49 (0.79 to 2.81)
Ethnicity			
White	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Asian	1.02 (0.62 to 1.65)	0.93 (0.50 to 1.73)	0.94 (0.57 to 1.56)
Black	1.70 (1.29 to 2.23)	1.39 (0.87 to 2.20)	1.05 (0.74 to 1.49)
Mixed	1.03 (0.71 to 1.48)	0.90 (0.53 to 1.54)	0.74 (0.47 to 1.17)
Other ethnicity	0.98 (0.51 to 1.89)	1.04 (0.34 to 3.22)	0.60 (0.24 to 1.49)

OR - odds ratio and 95% confidence interval of receiving specialist care with Children and Young Person Health Partnership, among children who completed the CYPHP Healthcheck, with 95% Confidence interval. For each individual tracer condition

**Table S5: Multivariable analyses investigating children with a tracer condition receiving service for all and individual conditions (Asthma, constipation and eczema)**

	<b>All tracer conditions</b>	<b>Asthma</b>	<b>Constipation</b>	<b>Eczema</b>
	<b>N=12,823</b>	<b>N=6,803</b>	<b>N=3,892</b>	<b>N=3,859</b>
	OR 95%CI	OR 95%CI	OR 95%CI	OR 95%CI
Most vs Least	0.89 (0.65 to 1.22)	0.96 (0.62 to 1.48)	0.80 (0.47 to 1.35)	1.00 (0.62 to 1.62)
Ethnicity				
White	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Asian	0.81 (0.62 to 1.06)	0.72 (0.49 to 1.06)	0.98 (0.63 to 1.50)	0.73 (0.50 to 1.07)
Black	1.00 (0.84 to 1.19)	1.13 (0.90 to 1.41)	1.12 (0.83 to 1.51)	0.69 (0.53 to 0.92)
Mixed	1.00 (0.80 to 1.25)	1.01 (0.74 to 1.37)	1.05 (0.72 to 1.53)	0.76 (0.53 to 1.09)
Other ethnicity	0.65 (0.43 to 0.98)	0.70 (0.41 to 1.20)	0.60 (0.29 to 1.27)	0.47 (0.22 to 1.00)

OR - odds ratio and 95% confidence interval of received specialist service with Children and Young Person Health Partnership, among all children identified with a tracer condition and registered with GP practices offering Children and Young Person Health Partnership specialist care.

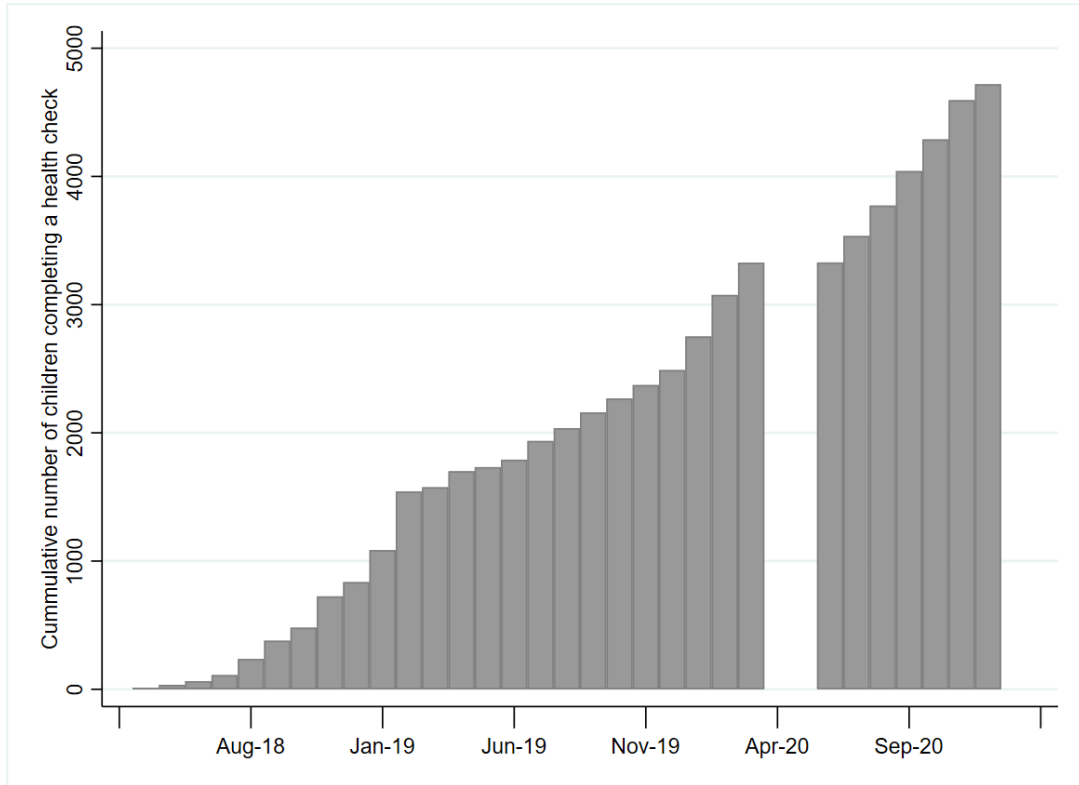


Figure S1: Cumulative number of children completing a CYPHP Healthcheck by month