

## Modelling the potential impact of new out-of-hospital models of care: Appendix

Appendix Table 1. Total Emergency Department registrations and included sample for <18 year olds during the study period and hours by site together with UCC and PAU/PASSU presence by site

	Site characteristics				Study characteristics by site				
	A&E Attendance rate for 1-4 yo for local borough	Borough deprivation: % of children living in income deprived families**	Paediatric Acute Assessment Unit (PAU/PASSU) on site	Urgent Care Centre (UCC) on site that sees CYP	Number (%) of shifts covered (out of total 14)	Total CYP ED registrations in the study period/hours	Likely ED registrations during study shifts*	Included sample	Included sample as % of ED registrations during study shifts
Site A	681.7	15.9%	Yes	No	14 (100%)	897	897	532	59.3%
Site B	671.5	39.3%	No	Yes	12 (86%)	1194	1023	476	45.5%
Site C	537.7	27.0%	No	Yes	11 (79%)	798	627	348	55.5%
Site D	752.8	28.8%	No	Yes	14 (100%)	1406	1406	497	35.3%
Site E	576.6	20.7%	Yes	No	14 (100%)	1172	1172	740	63.1%
Site F	627.9	12.3%	Yes	No	10 (71%)	920	657	427	65.0%
<i>Total</i>			-	-	<i>75/84 (89%)</i>	<i>6387</i>	<i>5782</i>	<i>3020</i>	<i>52.2%</i>
<i>England average</i>	587.9								

\*As we could only include patients who attended during shifts manned by a study clinician in each site, we have estimated the likely total ED registrations for each site by multiplying the Total ED registrations by the proportion of shifts covered. This is an estimate as we do not have data on registrations by day per site and cannot take account of variations by day.

\*\*The proportion of children living in income deprived families (average score for Income Deprivation Affecting Children (IDACI)) in local authorities in England ranges from 1.3% to 39%: Source: English indices of deprivation, Department for Communities and Local Government, 2015: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>; accessed 28 March 2017.

Data on A&E Attendance rate for 0-4 year olds are taken from the Child Health Overview, Public Health England Fingertips tool, <https://fingertips.phe.org.uk/child-health-overview>; Accessed 8-3-2017.(16)

Appendix Table 2: Questionnaire used to collect data

<b>1. Time of Registration at ED</b> in 24hr format		__:__	<b>2. Patient DOB</b> (xx/xx/xx)	__/__/__
<b>3. Patient Segmentation (tick the most appropriate)</b>				
i.	Generally well CYP, with a transient acute illness	<input type="checkbox"/>	<input type="checkbox"/>	} If you answered (i-iii) go to question 4
ii.	Exacerbation of a long term condition (please specify what condition)	<input type="checkbox"/>	<input type="checkbox"/>	
iii.	Complex long-term condition/disability	<input type="checkbox"/>	<input type="checkbox"/>	
iv.	Injury/trauma/poisoning/foreign body	<input type="checkbox"/>	<input type="checkbox"/>	} If you answered (iv-vii) go to question 8
v.	Non-trauma surgical presentation	<input type="checkbox"/>	<input type="checkbox"/>	
vi.	Mental illness presentation	<input type="checkbox"/>	<input type="checkbox"/>	
vii.	Safeguarding presentation	<input type="checkbox"/>	<input type="checkbox"/>	
<b>4. What is the suspected/likely/confirmed diagnosis category? (please tick the most appropriate- tick ONE ONLY please)</b>				
<b>Breathing difficulty</b>	Bronchiolitis	<input type="checkbox"/>	<input type="checkbox"/>	
	Viral-induced wheeze	<input type="checkbox"/>	<input type="checkbox"/>	
	Asthma	<input type="checkbox"/>	<input type="checkbox"/>	
	Allergy/ anaphylaxis	<input type="checkbox"/>	<input type="checkbox"/>	
	Croup	<input type="checkbox"/>	<input type="checkbox"/>	
	Inhalation of a foreign body	<input type="checkbox"/>	<input type="checkbox"/>	
	Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Febrile illness</b>	Viral upper respiratory tract infection	<input type="checkbox"/>	<input type="checkbox"/>	
	Tonsillitis only	<input type="checkbox"/>	<input type="checkbox"/>	
	Conjunctivitis only	<input type="checkbox"/>	<input type="checkbox"/>	
	General viral illness	<input type="checkbox"/>	<input type="checkbox"/>	
	Pneumonia/Lower respiratory tract infection	<input type="checkbox"/>	<input type="checkbox"/>	
	Otitis media	<input type="checkbox"/>	<input type="checkbox"/>	
	Cellulitis	<input type="checkbox"/>	<input type="checkbox"/>	
	Abscess	<input type="checkbox"/>	<input type="checkbox"/>	
	Urinary Tract Infection	<input type="checkbox"/>	<input type="checkbox"/>	
	Sepsis	<input type="checkbox"/>	<input type="checkbox"/>	
	Meningitis	<input type="checkbox"/>	<input type="checkbox"/>	
Pyrexia of Unknown Origin	<input type="checkbox"/>	<input type="checkbox"/>		
Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>		
<b>Diarrhoea and/or vomiting</b>				
<b>Abdominal pain</b>	Viral illness associated with mesenteric adenitis	<input type="checkbox"/>	<input type="checkbox"/>	
	Constipation	<input type="checkbox"/>	<input type="checkbox"/>	
	Non-specific non-surgical	<input type="checkbox"/>	<input type="checkbox"/>	
	Surgical	<input type="checkbox"/>	<input type="checkbox"/>	
	Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Seizure</b>	Febrile convulsion(s)	<input type="checkbox"/>	<input type="checkbox"/>	
	Afebrile seizure(s)	<input type="checkbox"/>	<input type="checkbox"/>	
	Seizure(s) in context of chronic seizures or diagnosis of epilepsy	<input type="checkbox"/>	<input type="checkbox"/>	
	Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Rash</b>	Eczema, non-infected	<input type="checkbox"/>	<input type="checkbox"/>	
	Eczema, infected	<input type="checkbox"/>	<input type="checkbox"/>	
	Other dermatitis	<input type="checkbox"/>	<input type="checkbox"/>	
	Fungal skin infection	<input type="checkbox"/>	<input type="checkbox"/>	
	Chicken pox	<input type="checkbox"/>	<input type="checkbox"/>	
	Viral rash	<input type="checkbox"/>	<input type="checkbox"/>	
	Unknown diagnosis	<input type="checkbox"/>	<input type="checkbox"/>	
Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>		
<b>Neonatal issue</b>	Feeding difficulty/ weight loss	<input type="checkbox"/>	<input type="checkbox"/>	
	Physiological jaundice	<input type="checkbox"/>	<input type="checkbox"/>	
	Haemolytic jaundice	<input type="checkbox"/>	<input type="checkbox"/>	
	Jaundice for other reason (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	
	Combination of feeding difficulty/weight loss/ jaundice	<input type="checkbox"/>	<input type="checkbox"/>	
	Other – please specify with free text	<input type="checkbox"/>	<input type="checkbox"/>	

<b>Other – please specify:</b>				
<b>7. Please indicate POPS score (based on initial observations and initial clinician assessment):</b>				
<b>8. What was the final patient outcome? (tick ONE only please)</b>				
Left before being seen by a clinician				
Went home with no planned follow up				
Admission to a short-stay unit/ paediatric assessment unit				
Admission to an in-patient ward				
Home and Ambulatory Care/follow-up arranged (please specify with whom)	By Emergency Department			
	By Paediatric ward			
	By clinic (please specify which)			
	By short-stay unit/ Paediatric assessment unit			
	By GP			
	By hospital-based nursing team in the home			
	By community-based nursing team in the home			
<b>9. Were there any specialists involved in the ED assessment (include telephone advice):</b>				
	<b>Level of Seniority of specialist involved</b>			
	<b>SHO</b>	<b>Reg</b>	<b>Consultant</b>	
Paediatrics				
Orthopaedics				
Plastics				
Maxfax				
General surgical				
Paediatric surgical				
Ophthalmology				
ENT				
Other – please specify with free text				
<b>10. What were the specific needs of this patient and their family?</b>				
<b>(i) Level of Severity (tick ONE only please)</b>				
The CYP is not ill				
The CYP is mildly ill/injured				
The CYP is moderately ill/injured				
The CYP is severely ill/injured				
The CYP has a life-threatening illness/injury				
<b>(i) Expertise and Access. Please specify need and time-scale (tick ONE only please)</b>		<b>Within 4 hrs</b>	<b>Within 12 hrs</b>	<b>Within 48 hrs</b>
They needed to have access to a pharmacist only				
They needed to have access to a clinician who is competent in assessing an acutely unwell CYP, and has immediate telephone or face-to-face access to a Paediatric consultant if required				
They needed to have access to a specialist clinician to manage their condition Please indicate which specialty?				
They needed to have access to a clinician who is competent in assessing an acute injury				
<b>(ii) Investigations. Please specify need and time-scale (tick ALL that apply)</b>				
They did not require any specific investigations				
They required pulse oximetry				
They needed a chest xray				
They needed an abdominal xray				
They needed a limb xray				
They needed laboratory blood tests				
They needed a urine dipstick				
They needed urine microscopy (+/- culture)				
They needed a throat swab				
They needed a stool culture				
They needed a blood culture				

They needed a lumbar puncture			
They needed specialist imaging (USS, CT, MRI etc)			
<b>(iii) Management (tick ALL that apply)</b>			
They needed reassurance only with safety-net advice			
They needed some health education			
They needed oral fluid rehydration (and education regarding this)			
They needed NG fluid rehydration			
They needed IV fluid rehydration			
They needed a prescription of oral antibiotics			
They needed intravenous antibiotics			
They needed anti-pyretics (and education regarding this)			
They needed pain relief (and education regarding this)			
They needed oxygen therapy			
They needed bronchodilator inhaler therapy			
They needed bronchodilator nebuliser therapy			
They needed oral steroids			
They needed intravenous steroids			
They needed another drug therapy as an out-patient prescription			
They needed another drug therapy as an in-patient			
They needed acute resuscitation with resuscitation facilities			
They needed wound closure with steri-strips			
They needed wound closure with glue			
They needed wound closure with stitches			
They needed a dressing			
They needed a plaster cast			
They needed a splint/sling support			
<b>(iv) Outcome (tick ALL that apply)</b>			
They could have continued management at home if their family was confident in self-management			
They could have continued management at home if their family can have phone access to clinical advice if necessary (does not include 111)			
They could have continued management at home with their family if they were visited at least daily by a nurse to monitor their acute illness and/or administer daily therapy			
They could have continued management at home with their family, with daily attendance to a clinic/ED for review and/or administration of daily therapy			
They needed a period of observation by clinicians trained in managing sick children for <6 hours			
They needed a period of observation by clinicians trained in managing sick children (6-12 hours)			
They needed to be managed as an in-patient for > 12 hours			
They needed to be in an environment with resuscitation facilities (if required)			
<b>(v) CYP/Family Self-management (please tick if you AGREE)</b>			
The ED presentation might not have been necessary if the family had received prior education in self-management of illness			

Appendix Table 3. Intraclass correlation coefficients (ICCs) for site and observer obtained from multilevel models for the likelihood of being appropriate for each OOH model, adjusted for age

<b>Model &amp; site</b>	<b>Site ICC %</b>	<b>Observer ICC %</b>
Community pharmacy	0%	43%
Standard General Practice	0%	4.8%
Enhanced GP practice	1.0%	7.5%
GP Federation CYP service	0%	6.6%
Nurse-led Acute Illness Team for CYP	1.2%	2.0%
Walk-in Nurse-led Centre for Illness in CYP	5.2%	6.0%
Multi-speciality Community Provider for CYP	0%	3.3%
Walk-in Centre for Illness & Injury in CYP	0.8%	2.1%
PACS Acute Health Centre for CYP	0%	2.8%