

# Do digital interventions for parents of acutely ill children improve treatment-seeking behaviour? A systematic review

Donovan E<sup>1</sup>, Wilcox CR<sup>1,2</sup>, Patel S<sup>3</sup>, Hay AD<sup>4</sup>, Little P<sup>1</sup>, Willcox ML<sup>1</sup>

1: Department of Primary Care and Population Sciences, Aldermoor Health Centre, University of Southampton, Southampton, UK 2: NIHR Clinical Research Facility, University Hospital Southampton NHS Foundation Trust, Southampton, UK 3: University Hospital Southampton, Tremona Road, Southampton, UK 4: Centre for Academic Primary Care, Bristol Medical School: Population Health Sciences, University of Bristol, Bristol, UK

## The problem

Acute illnesses in children are a common reason for seeking urgent care. The rate of acute admissions with self-limiting infections for young children has been increasing since 1999. With a stretched healthcare system, access for children with illnesses that do warrant urgent attention is delayed by patients that don't need urgent attention and could be managed better elsewhere or with advice and reassurance alone.

## A solution?

The rise of digital and mobile technology presents an opportunity to support decision-making of parents/carers about accessing healthcare for their children.

## Aim

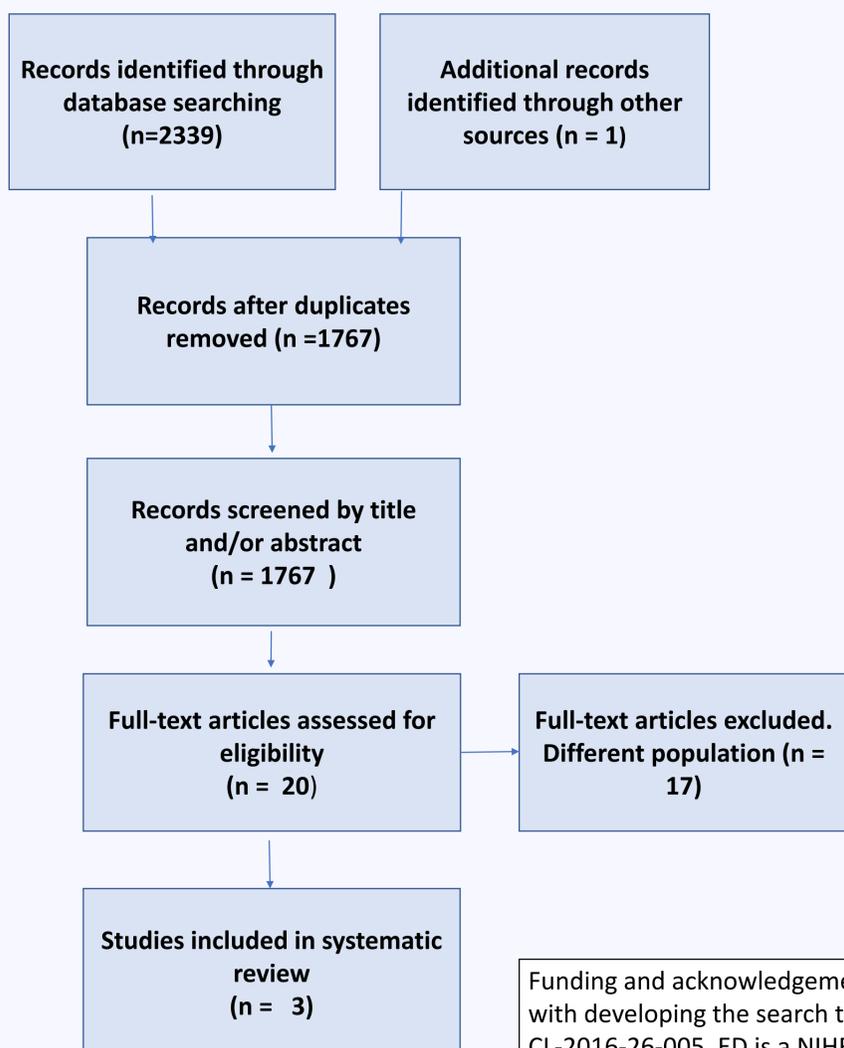
To evaluate the evidence for using digital interventions as a support tool for parents/carers to improve health seeking behaviour for acute illnesses in children.

## Methods

MEDLINE and EMBASE searched from inception to January 2019 for studies assessing digital interventions for parents of children with acute illnesses.

## Results

Three studies involving 4838 participants were included. They assessed 'Children's On Call' (US advice-only app), 'Should I see a doctor?' (Dutch self-triage app for any acute illness) and 'SORT for Kids' (US self-triage website for influenza-like illness).



## Outcome 1: Does intervention reduce consultations?

Intervention	Outcome	Group	Results
'Children's on call' app (n=25 per group)	ED reattendance (Incidence Rate Ratio, 95% CI)	App vs control:	<b>1.14</b> (0.6 -2.3)
		book vs control:	<b>0.78</b> (0.3–1.7)
		book and app vs control:	<b>0.60</b> (0.3–1.4)
"Should I see a doctor?" (n=4456)	Intention to follow app's advice (%)	See own GP in hours (16%)	<b>75%</b> intended to follow app's advice
		See OOH GP (42%)	<b>61%</b> ""
		Self-care (34%)	<b>67%</b> ""
		Wait-and-see (8%)	<b>56%</b> ""

## Outcome 2: Accuracy of triage

Intervention	Comparator	Sensitivity (% , 95% CI)	Specificity (% , 95% CI)
"SORT for kids" algorithm	Evidence that child received 1 or more of 5 ED-specific interventions (n=100)	<b>93%</b> (68-100%)	<b>13%</b> (9-18%)
"Should I see a doctor?" app	Nurse triage call outcome (n=126)	<b>84%</b> (74 – 91%)	<b>74%</b> (58-86%)

## Outcome 3: Uptake, acceptability and satisfaction with the intervention

Intervention	Downloads of the app	Clarity	Usefulness / satisfaction
'Children's on call'	57% (only 35% used the app)	<b>46%</b>	<b>37%</b> found app useful
"SORT for kids"	NA (website)	<b>98%</b>	<b>91%</b> found app "easy to use"
"Should I see a doctor?" app	200 000 downloads (denominator unknown)	<b>64%</b>	<b>56%</b> "satisfied"/"very satisfied" with app

## Conclusions

Based on current evidence, we are unable to recommend any digital interventions as a support tool for parents/guardians to improve health seeking behaviour for acute illnesses in children.

Future interventions should be developed in collaboration with their target audience in order to improve usability and satisfaction, and more specific algorithms should be developed to avoid unnecessary use of urgent care services, while maintaining sensitivity to correctly identifying children with serious illnesses.

Funding and acknowledgements: We would like to thank Paula Sands from the University Hospital Southampton for her assistance with developing the search terms. The salary of MLW was funded by the National Institute of Health Research (NIHR), under grant CL-2016-26-005. ED is a NIHR funded Academic Clinical Fellow.