

Documentation of paediatric observations in an urgent care setting; a Quality Improvement Project

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Received: November 2021; Accepted: December 2021; Published: January 1, 2022.

Citation: Rahma Yusuf Ali. Documentation of paediatric observations in an urgent care setting; a Quality Improvement Project. World Family Medicine. 2022; 20(1): 71-77 DOI: 10.5742/MEWFM.2022.95210

Abstract

Background: Children with seriously life-threatening illnesses in are rare in primary care and fever is one of the most common symptoms they present with. The NICE 2013 guideline on the management of a feverish child intended to improve outcomes. This study sought to identify the frequency of clinicians documenting paediatric observations

Methodology: Patients under 5 years presenting to an urgent care centre for face to face appointments were audited for a 7 day period looking to see which of the parameters from the NICE guideline were documented. Information regarding the NICE feverish child guideline was shared with colleagues and a re-audit was done after 3 months.

Results: Excluding circulation and temperature, the vital signs outlined in the NICE feverish child guidelines were infrequently measured by clinicians. A good improvement of measurements across the board was noted on re-audit 3 months later following educational information being shared in written format and informally circulated.

Conclusion: This quality improvement study supports existing research suggesting that GPs seldom rely on vital signs, particularly when assessing children who they do not think have a serious infection

Key words: NICE feverish child guideline, vital signs, paediatric observations

Introduction

Serious or life threatening illness in children in a primary care setting is thankfully rare. It has been reported that the prevalence of serious illness is 0.8% in primary care and 7.2% in secondary care (1). Early recognition and treatment of febrile children with serious infections improves prognosis, however, early detection can be difficult.

Fever is one of the most common symptoms among children presenting to primary care. Most of these children will have self-limiting viral infections and only a small number will have a serious illness (2). Thus it is important that guidance is available to help clinicians distinguish the many who have minor short-lived conditions from the occasional child with a serious or even life threatening infection.

The National Institute for Health and Clinical Excellence (NICE) 2013 guideline for the management of children with feverish illness is intended to give a guidance on the correct assessment and management of children and applies to a primary care setting (3).

The traffic light system developed only applies to feverish children under the age of 5. It includes to score a child on clinical features and signs that have already been extensively researched and are in use for the unwell child (4). The indication to refer children for more in depth investigation and further intense management is based on those who score 'red' on such features. The scoring is split into categories - 'colour', 'activity', 'respiratory', 'circulation and hydration' and 'temperature'.

There is a clear need for this quality improvement project in identifying how often each of these parameters are measured in a child presenting to an urgent care setting under the age of 5. Objective parameters guide clinicians in an urgent care setting. They face many unwell children with markers of acute illness and knowing these vital signs help guide them to how extensively a child is investigated and whether they are referred to secondary care.

We seek to identify the frequency of documentation of clinicians in each of the parameters highlighted in the NICE guideline in acutely unwell children under the age of 5.

Methodology

This study setting was in an 'out of hours' setting; an urgent primary care setting. Permission was sought and granted from the clinical director.

The criteria was to include all acutely unwell children aged 5 and under presenting to the clinic for face to face appointment to see a clinician in a one week period. Patients presenting with simple complaints such as medication queries or eczema were excluded from the study.

The objective when collecting information was to identify which of the parameters mentioned in the NICE guideline if any were measured. These were 'colour', 'activity', 'respiratory', 'circulation and hydration' and 'temperature'. If mention was made of these parameters either numerically or in free text it was noted. Note that temperature is not a separate entity in the NICE guideline but forms part of the 'other' category. In order to simplify the study and measure this component it was added as a category.

The interim goal was education and the reiteration of the importance of objectively measuring these parameters in children presenting acutely unwell to clinicians. To this effect information on this and the NICE guideline was circulated to all clinicians working in the urgent care setting. This was emphasised further with informal information sharing with colleagues.

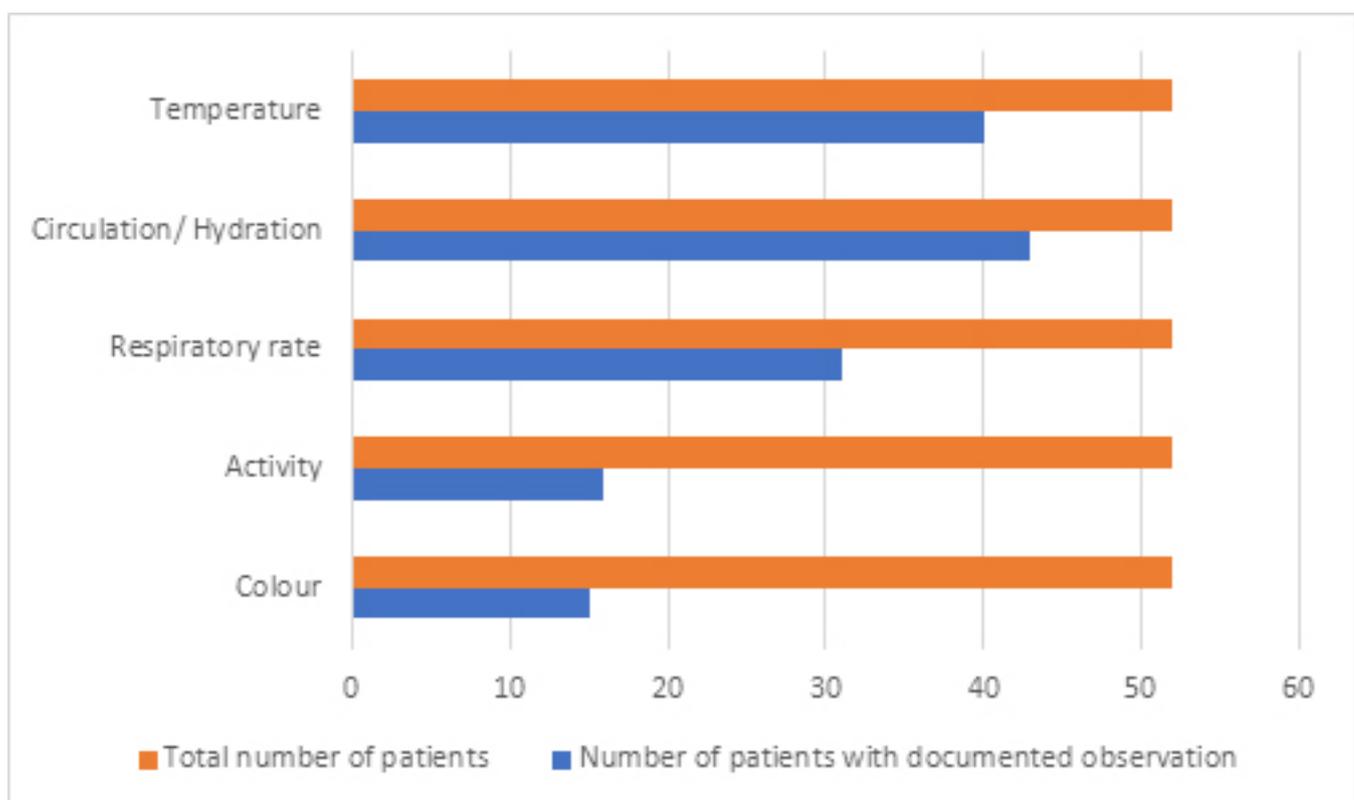
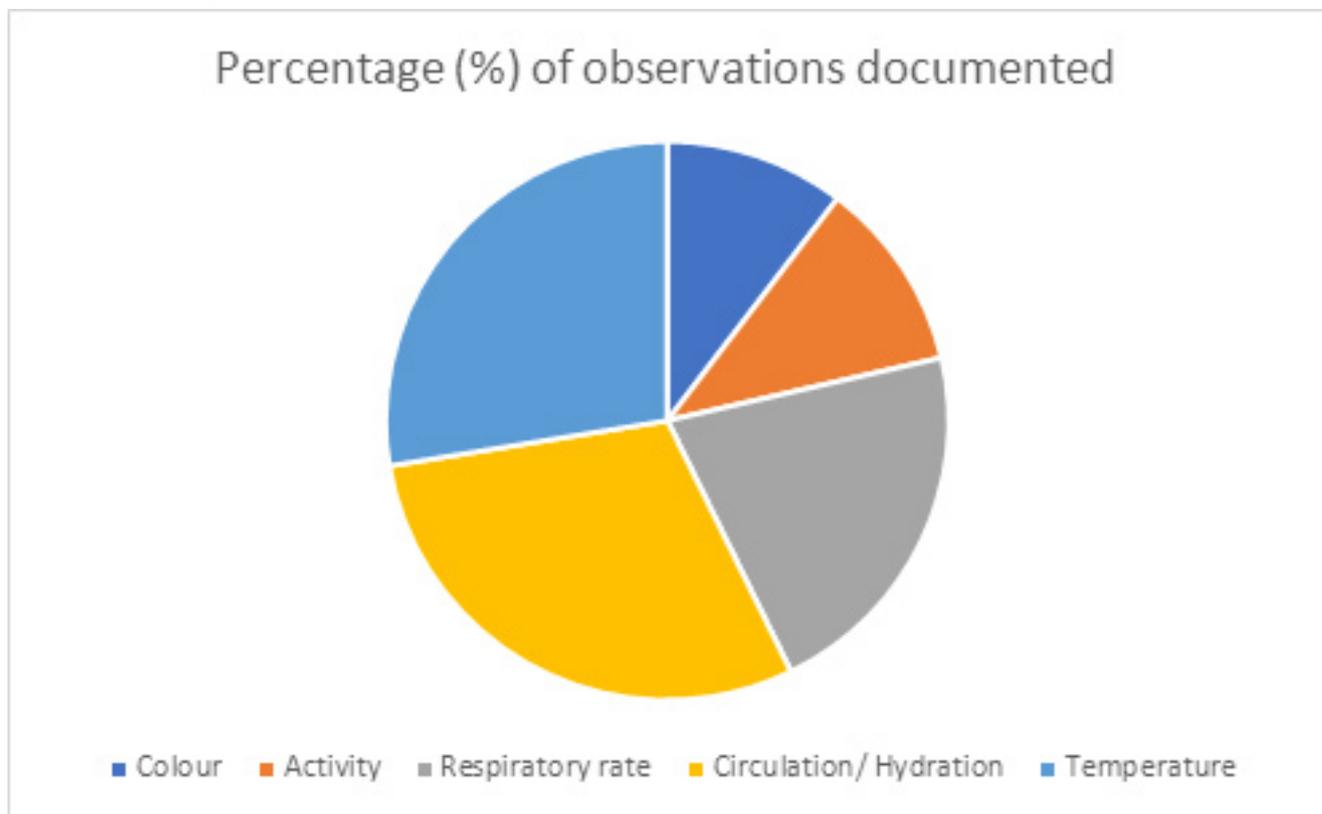
Data was shared via an emailing system. Clinicians were advised that a re-audit was going to take place after a period of time.

The re-audit was done after 3 months. No notice was given to clinicians that the re-audit was to commence. The same parameters were measured again for a one week period.

Results

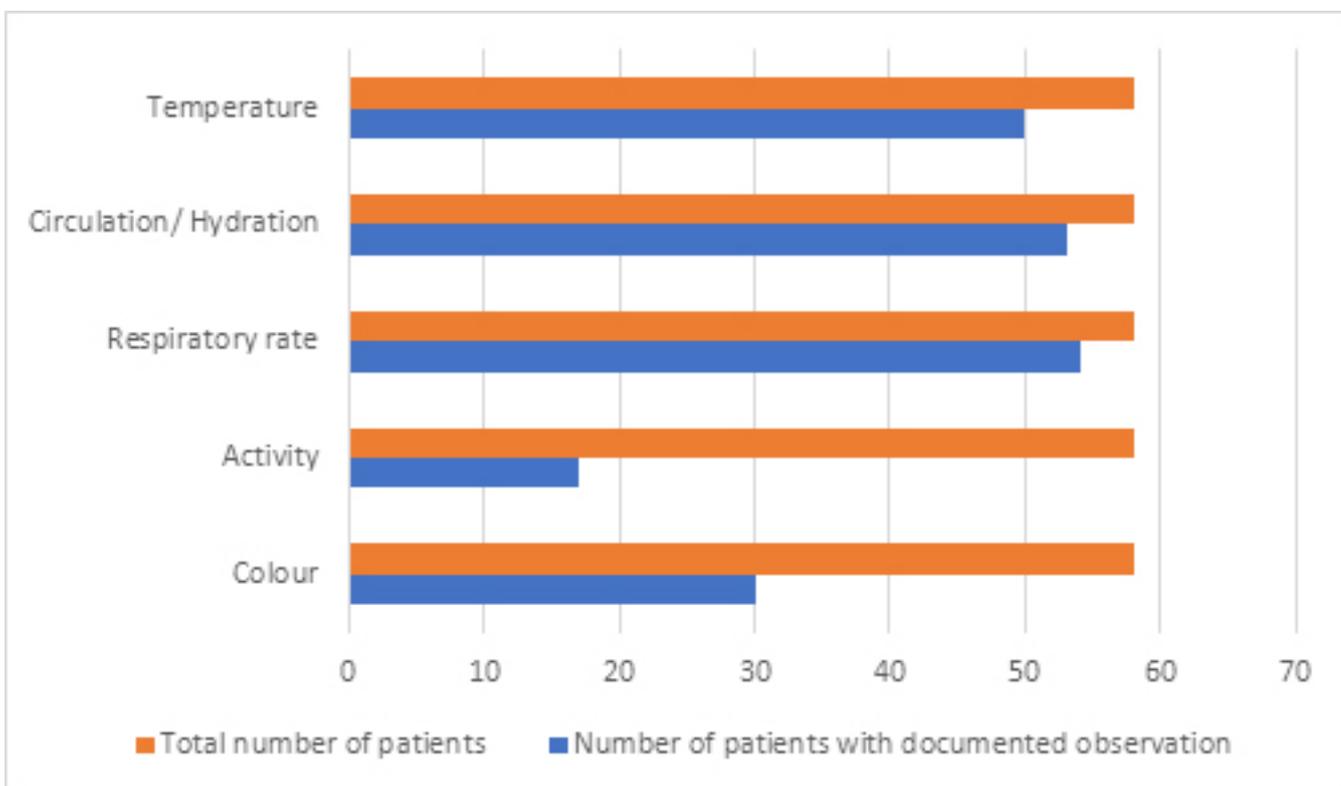
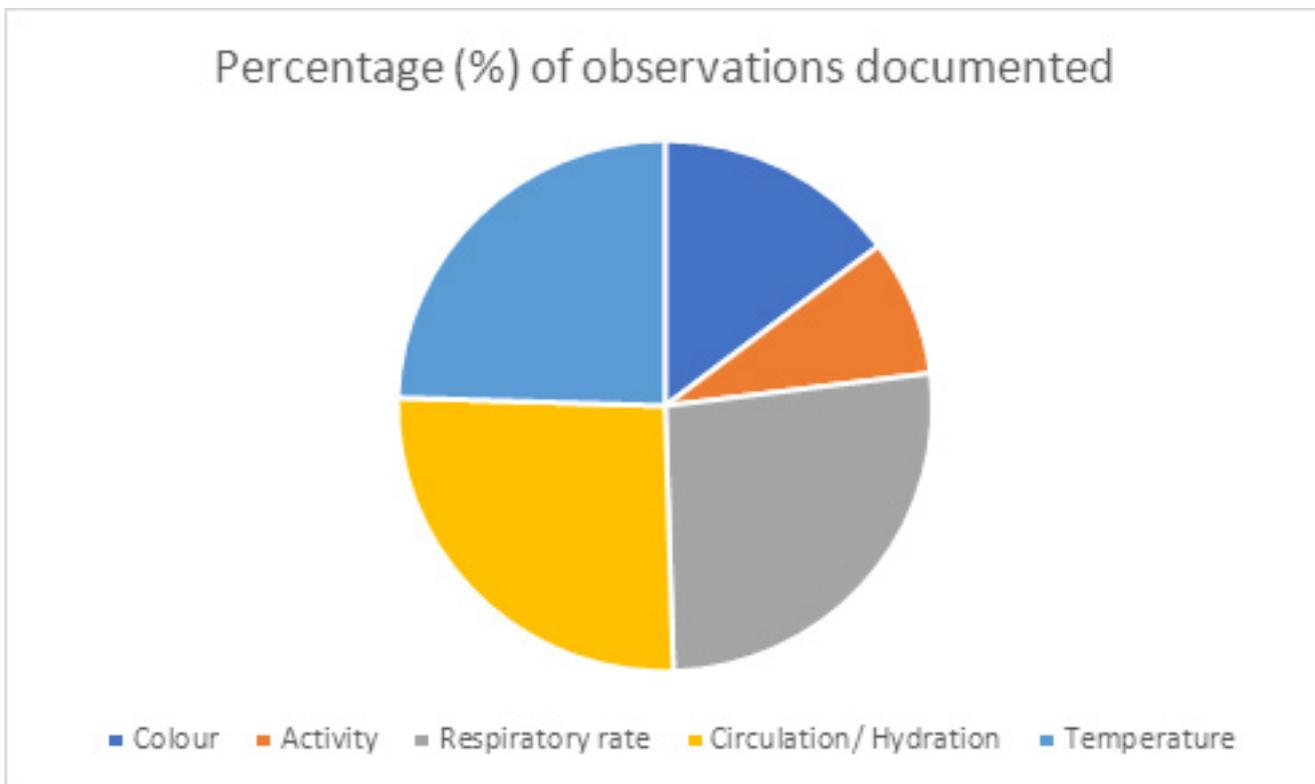
52 patients were looked at in the first audit. Of those the most frequently documented observation was fever and heart rate or capillary refill time. Colour and activity were the least commented on.

Colour	Activity	Respiratory rate	Circulation/hydration	Temperature
15	16	31	43	40



58 patients were collected in the second audit. There was an improvement across the board in documentation of all observations. Temperature, heart rate and respiratory rate were the most documented and activity was the least commented on.

Colour	Activity	Respiratory rate	Circulation/hydration	Temperature
30	17	54	53	50



Discussion

Summary of main findings

Excluding circulation and temperature, the vital signs outlined in the NICE feverish child guidelines were infrequently measured by clinicians. Information collated included written figures or free text. A good improvement of measurements across the board was noted on re-audit 3 months later following educational information being shared in written format and informally circulated.

This quality improvement study supports existing research suggesting that GPs seldom rely on vital signs, particularly when assessing children who they do not think have a serious infection (7).

Strengths and limitations of the study

The age group chosen reflects those targeted with the NICE guidelines. The urgent primary care setting was excellent as a good number of children were seen on a daily basis and so a direct comparison could be made in this quality improvement project. The out of hours setting chosen is recognised to provide a high standard of care and so is reflective of good general practice on a wider scale.

It was not possible in this short study to receive feedback from the clinicians as to why the recordings of vital signs was low particularly on the first audit.

The time frame was relatively short leaving a short window for change to take place. Conversely the improvement in vital sign recording could reflect that the information was fresh in their mind.

Only measurement of temperature from the category 'other' in the NICE framework was taken and formally recorded. This could limit the use of this study comparison to others looking at this particular guideline.

The objective of this study was not to look at the outcome of these measurements and thus this was not looked at.

Comparison with existing literature

It has been suggested by a previous study that vital signs are not routinely measured but clinicians feel they are more useful with children who look clinically unwell (5). This notion is not entirely unfounded as there is a study that showed that assessing feverish unwell children overall was a powerful indicator of serious illness (6). The NICE feverish child guideline followed in this study does give weight to activity and colour which are objective indicators which clinicians may be taking into consideration when making their assessment but perhaps not writing down. The NICE feverish child guideline reviewed literature which indicated strong evidence that a fast respiratory rate was associated with serious illness as was a high fever, particularly in infants 6 months or younger (3). Interestingly it provided evidence from strong prospective studies showing that the overall sensitivity of prolonged capillary refill time for serious illness or dehydration was only 60%,

but in children with a greater risk of serious disease (those with a petechial rash), a refill time ≥ 3 seconds was strongly associated with meningococcal disease (odds ratio 29). It also found that there was little evidence of heart rate being an indicator of serious illness but recommended it based on the Delphi consensus.

Implications for future research and clinical practice

The results from this study confirm existing research that General Practitioners in the UK do not measure vital signs in acutely unwell children (8). Some suggestions why this could be, range from equipment to time being obstacles in measuring these observations or that some clinicians may find subjective assessments such as a 'gut feeling' guiding them.

Measuring vital signs accurately can be problematic in a short GP consultation. An example of this is the measuring of respiratory rate which is recommended to be a full minute (9).

Previous studies have alluded to the fact that General Practitioners find the activity or behaviour of a child to be more useful when assessing how unwell a child is compared to other vital signs (7). A large prospective study in Belgium found that 'gut feeling' was a hugely important guideline in the assessment of a seriously ill child (10). The NICE feverish child guidance has taken this into account by highlighting 'colour' and 'activity' in the assessment. We have found a good improvement on the objective measurement and documentation of the vitals highlighted in the NICE feverish child guideline following reiteration and re-education of colleagues using written and informal information sharing. Nevertheless a key aspect of diagnosis in general practice is assessing change over time. It is much easier to assess clinical change if objective measurements have been accurately made and recorded.

In conclusion, current practice is to measure vital signs infrequently, with the exception of circulation and temperature. If measurement of vital signs is to become an accepted part of the good clinical care of children, then accurate measurement techniques and evidence for their diagnostic value in primary care are needed.

The existing evidence supports the diagnostic value of global assessment, and we suggest that this also should continue to be assessed and documented during assessments of unwell children.

Appendix

NICE National Institute for
Health and Care Excellence

Traffic light system for identifying risk of serious illness*

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour (of skin, lips or tongue)	<ul style="list-style-type: none"> Normal colour 	<ul style="list-style-type: none"> Pallor reported by parent/carer 	<ul style="list-style-type: none"> Pale/mottled/ashen/blue
Activity	<ul style="list-style-type: none"> Responds normally to social cues Content/smiles Stays awake or awakens quickly Strong normal cry/not crying 	<ul style="list-style-type: none"> Not responding normally to social cues No smile Wakes only with prolonged stimulation Decreased activity 	<ul style="list-style-type: none"> No response to social cues Appears ill to a healthcare professional Does not wake or if roused does not stay awake Weak, high-pitched or continuous cry
Respiratory		<ul style="list-style-type: none"> Nasal flaring Tachypnoea: <ul style="list-style-type: none"> RR >50 breaths/minute, age 6–12 months RR >40 breaths/minute, age >12 months Oxygen saturation \leq95% in air Crackles in the chest 	<ul style="list-style-type: none"> Grunting Tachypnoea: RR >60 breaths/minute Moderate or severe chest indrawing
Circulation and hydration	<ul style="list-style-type: none"> Normal skin and eyes Moist mucous membranes 	<ul style="list-style-type: none"> Tachycardia: <ul style="list-style-type: none"> >160 beats/minute, age <12 months >150 beats/minute, age 12–24 months >140 beats/minute, age 2–5 years CRT \geq3 seconds Dry mucous membranes Poor feeding in infants Reduced urine output 	<ul style="list-style-type: none"> Reduced skin turgor
Other	<ul style="list-style-type: none"> None of the amber or red symptoms or signs 	<ul style="list-style-type: none"> Age 3–6 months, temperature \geq39°C Fever for \geq5 days Rigors Swelling of a limb or joint Non-weight bearing limb/not using an extremity 	<ul style="list-style-type: none"> Age <3 months, temperature \geq38°C Non-blanching rash Bulging fontanelle Neck stiffness Status epilepticus Focal neurological signs Focal seizures

CRT, capillary refill time; RR, respiratory rate

* This traffic light table should be used in conjunction with the recommendations in the guideline on investigations and initial management in children with fever. See <http://guidance.nice.org.uk/CG160> (update of NICE clinical guideline 47).

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