



Healthcare  
Improvement  
Scotland

| ihub

Paediatrics programme

Measurement framework

September 2023



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# 1 How to use this measurement framework

Measurement is an essential part of improvement. It helps teams understand if the changes they are making are leading to improved care. This document contains an overview of the three types of measurement used in improvement. It also sets out the data that participating teams are required to submit as part of the Paediatrics programme. It is designed to be used in conjunction with the [SPSP Paediatrics Change Package](#).

To learn more about measurement click on the link: [The Improvement Journey – Measurement \(NHS Education for Scotland\)](#)

## 1.1 Why measure

This measurement framework is intended to measure the impact of key changes that you want to make.

Measurement helps you to:

- Recognise the variation that exists within your system and processes.
- Work out whether your changes are making an improvement.
- Help tell your improvement story.

To learn more about measurement click on the link: [Introduction to measurement for improvement \(NHS Education for Scotland\)](#)

## 1.2 Choosing measures

An improvement project should have a small family of measures that track the progress of the project over time. These should include:

- Outcome measures: to tell an NHS board, health and social care partnership, site or team whether the changes it is making are helping to achieve the stated aim. For example, **the percentage of PEWS charts with correct scoring applied.**
- Process measures: to tell the team whether things that must be carried out to achieve the desired outcomes are happening reliably.
- Balancing measures: to check for possible consequences elsewhere in the system. For example, staff wellbeing.

To learn more about measures click on the link: [Developing your measures \(NHS Education for Scotland\)](#)

## 1.3 How to measure

When planning your data collection you will need to consider:

Collecting your data	Displaying your data
<ul style="list-style-type: none"> <li>• Who will collect the data?</li> <li>• What data will you collect?</li> <li>• When will you collect the data?</li> <li>• How will you collect/record the data?</li> </ul>	<ul style="list-style-type: none"> <li>• What chart type you will use?</li> <li>• How will you share and use your data?</li> </ul>

To learn more about data collection click on the link: [Data collection \(NHS Education for Scotland\)](#)

## 1.4 Sampling

Measuring for improvement relies on small sample sizes, often referred to as 'just enough' data to learn from. When it is not possible to access a larger amount of data, it is suggested that a random selection of 5 records per week, giving 20 records per month will gather enough data.

## 1.5 Presenting data

Run charts are an excellent way to present your data to help you to understand what is happening in your service. They are used to distinguish between random variation (variation that affects all processes, people and outcomes equally) and non-random variation, which could be due to the changes you have introduced.

The Paediatrics team will issue a toolkit for outcome measures and for process measures to participating teams.

To learn more about presenting your data in a run chart click on the link: [Presenting your data \(NHS Education for Scotland\)](#)

## 2 Paediatrics measures

### 2.1 Outcome measures

Outcome measures help you understand if the changes are resulting in improvements towards the aim. All participating teams are required to submit data on outcome measures.

Measure Name	Why measure	What/how to measure	Data Source
Use of correct age-related chart	<p>The normal ranges of PEWS physiology are age-dependent. PEWS charts are developed for five age bands:</p> <ul style="list-style-type: none"> <li>• 0-11 months</li> <li>• 12-23 months</li> <li>• 2-4 years</li> <li>• 5-11 years</li> <li>• 12+ years</li> </ul> <p>The five charts can be found at <a href="https://ihub.scot/improvement-programmes/scottish-patient-safety-programme-spsp/spsp-paediatric-programme/resources-to-support-paediatric-care/">https://ihub.scot/improvement-programmes/scottish-patient-safety-programme-spsp/spsp-paediatric-programme/resources-to-support-paediatric-care/</a></p>	<p>Review electronic or paper records of children/young people to compare age of child/young person with the PEWS charts being used.</p> <p><b><u>Numerator:</u></b> Number of children and young people with correct age-related chart</p> <p><b><u>Denominator:</u></b> Number of PEWS charts reviewed</p> <p><b><u>Percentage:</u></b> (numerator / denominator) x 100</p>	<p>Electronic or paper PEWS records</p> <p>Select 5 children/young people per week and review their most recent PEWS chart.</p> <p>If fewer than 5 children/young people were present that week, include all children/young people within the sample.</p> <p>Inclusion: Children or young people (0-16 years) with PEWS charts.</p> <p>Exclusion: Children or young people without PEWS charts</p>

Measure Name	Why measure	What/how to measure	Data Source
<p>Reliable use of PEWS observations</p>	<p>Standardised recognition of deterioration (PEWS) relies on multiple physiological measurements completed at specific time intervals.</p> <p>For PEWS to be integrated within a safe and effective care system, PEWS observations need to be completed accurately and promptly.</p> <p>Sites may wish to apply this to individual observations as a separate process measure. For example, in reviewing charts for this measure, it is observed that charts tend to fail based on oxygen saturation observations. An additional process measure for oxygen saturation observations is set up and change ideas are introduced to improve the prompt recording of oxygen saturation.</p>	<p>Review electronic or paper records of children/young people for the correct measurements taken at the correct frequency as described in the observation monitoring plan.</p> <p>This is a binary pass/fail measure – any one missing or late observation in the PEWS chart will result in a failure for that chart.</p> <p>Note that the required frequency of observations will change with the patient’s condition and in line with any escalation response.</p> <p><b><u>Numerator:</u></b></p> <p>Number of charts with fully correct observations taken at correct frequency</p> <p><b><u>Denominator:</u></b></p> <p>Number of PEWS charts reviewed</p> <p><b><u>Percentage:</u></b></p> <p>(numerator / denominator) x 100</p>	<p>Electronic or paper PEWS records</p> <p>Select 5 children/young people per week and review their most recent PEWS chart.</p> <p>If fewer than 5 children/young people were present that week, include all children/young people within the sample.</p> <p>Inclusion:</p> <p>Children or young people (0-16 years) with PEWS charts.</p> <p>Exclusion:</p> <p>Children or young people without PEWS charts</p>
<p>Reliable scoring of PEWS</p>	<p>Scores are used to detect observations outside the normal range.</p>	<p>Review electronic or paper records of children/young people for the correct scores being assigned based on each observation.</p>	<p>Electronic or paper PEWS records</p> <p>Select 5 children/young people per week and review their most recent</p>

Measure Name	Why measure	What/how to measure	Data Source
	<p>Assigning the correct scores and summing these accurately will provide a composite picture of the child/young person's condition and trigger escalation processes.</p>	<p>This is a binary pass/fail measure – any one incorrect score in the PEWS chart, or the incorrect total, will result in a failure for that chart.</p> <p>Note that the required frequency of observations will change with the patient's condition and in line with any escalation response.</p> <p><b><u>Numerator:</u></b> Number of charts with fully correct scores</p> <p><b><u>Denominator:</u></b> Number of PEWS charts reviewed</p> <p><b><u>Percentage:</u></b> (numerator / denominator) x 100</p>	<p>PEWS chart.</p> <p>If fewer than 5 children/young people were present that week, include all children/young people within the sample.</p> <p>Inclusion: Children or young people (0-16 years) with PEWS charts.</p> <p>Exclusion: Children or young people without PEWS charts</p>
<p>Reliable response to children and young people that trigger PEWS</p>	<p>Reliable escalation of PEWS scores should result in the reduction of cases where observations are not appropriately acted on and/or inappropriate interventions undertaken. A clearly defined escalation process should be in place to support the appropriate</p>	<p>Review electronic or paper records of children/young people for evidence of appropriate escalation of trigger event.</p> <p><b><u>Numerator:</u></b> Number of children and young people where "at risk" observations are acted on and appropriate interventions are</p>	<p>Electronic or paper PEWS records</p> <p>Select 5 children/young people per week presenting with "at risk" observations and review their most recent PEWS chart.</p> <p>If fewer than 5 children/young people were present that week,</p>



Measure Name	Why measure	What/how to measure	Data Source
	<p>and timely referral and treatment of deteriorating and deteriorated children and young people.</p> <p>Reliable recognition of deterioration determines a reliable response to deterioration, so this measure is linked to the three above.</p> <p>This measure mirrors the Excellence In Care measure “PEWS Escalation”</p>	<p>carried out</p> <p><b><u>Denominator:</u></b> Number of children and young people with “at risk” observations</p> <p><b><u>Percentage:</u></b> (numerator / denominator) x 100</p>	<p>include all children/young people within the sample.</p> <p>Inclusion: Children and young people (0-16yrs) who have “at risk” observations undertaken.</p> <p>Exclusion: Children and young people who do not have “at risk” observations</p>

## 2.2 Process measures

Process measures demonstrate that change ideas are improving the underlying processes that contribute towards your aim. Teams are advised to develop process measures that check that the primary drivers are being reliably achieved. Some examples are provided below: these are not exhaustive and teams are not required to collect data against each of these process measures. A series of blank measure templates is provided in the toolkit to allow you to measure your process measures in the toolkit.

- Rate of escalations based on parent or professional concern.
- Time to review by decision maker
- Rate of use of communication tools
- Staff wellbeing

## 2.3 Balancing measures

Balancing measures determine if the changes are affecting things elsewhere in the system, highlighting any unintended consequences. Below you will find a table where you can populate a list of balancing measures. Teams should develop balancing measures that relate to their planned improvement work.

Measure Name	Why measure	What/how to measure	Data source

Published September 2023

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