

National Neonatal Audit Programme: Detection and management of outlier status for 2022 data

Introduction

This document sets out the process for detection and management of outlier status in the National Neonatal Audit Programme (NNAP) for 2022 data. It follows the process set out in the [HQIP outlier guidance for England and Wales](#) and outlines where the NNAP takes steps that diverge from those outlined in that guidance.

Choice of performance indicators for outlier analysis

The performance indicators subject to outlier analysis are selected by the NNAP Methodology and Dataset Group and endorsed by the NNAP Project Board.

For the 2022 data year, the NNAP conducts outlier analysis on the following measures at unit level:

- Is a mother who delivers a baby below 30 weeks gestational age given magnesium sulphate in the 24 hours prior to delivery?
- Does a baby born at less than 34 weeks gestational age have their cord clamped at or after one minute?
- Does an admitted baby born at less than 32 weeks gestational age have its first measured temperature of 36.5°C to 37.5°C within one hour of birth?
- Does a baby born at less than 30 weeks gestational age receive medical follow-up at two years gestationally corrected age (18-30 months gestationally corrected age range of acceptable ages)?
- Does an admitted baby born at less than 32 weeks gestational age meet the NNAP surveillance definition for necrotising enterocolitis (NEC) on one or more occasion?
- Does an admitted baby have one or more episodes of bloodstream infection, characterised by one or more positive blood cultures taken, after 72 hours of age?

For the 2022 data year, the NNAP will notify positive outliers for the following measures:

- Does an admitted baby born at less than 32 weeks gestational age have its first measured temperature of 36.5°C to 37.5°C within one hour of birth?
- Is a mother who delivers a baby below 30 weeks gestational age given magnesium sulphate in the 24 hours prior to delivery?
- Does a baby born at less than 30 weeks gestational age receive medical follow-up at two years gestationally corrected age (18-30 months gestationally corrected age range of acceptable ages)?
- Does a baby born at less than 32 weeks gestational age have their cord clamped at or after one minute?

Detection of a potential outlier

The NNAP identifies outliers between 2 and 3 standard deviations below expected performance (known as **alert** level) and at 3 or more standard deviations below expected performance (known as **alarm** level).

The NNAP also identifies, for some measures, outliers between 2 and 3 standard deviations above expected performance (known as **excellent**) and at 3 or more standards deviations above expected performance (known as **outstanding**).

Outcomes are missing for some babies that satisfy the inclusion criteria for the analysis. In the outlier analysis, these babies are discarded; that is, no imputation is applied. The rate of non-response (frequency of missing entries) is evaluated and units and networks with exceptionally high rates are noted. A unit-level summary of the rates of non-response is also compiled.

The expected target, or comparison standard for outlier analysis, is set at the national mean rate. More information about comparison standard and developmental standard for each NNAP measure is available in the NNAP audit measures guide: <https://www.rcpch.ac.uk/work-we-do/clinical-audits/nnap/measures>

More information about outlier identification and the methodology used are available in the NNAP methodology and statistical analysis plan, available at: <https://www.rcpch.ac.uk/nnap-data-flow-methodology>

Management of a potential outlier

The NNAP follows the HQIP guidance for outlier management, however it has chosen to additionally inform neonatal networks of both alert and alarm level notifications to units within their network. It has also chosen to write to neonatal units and their respective neonatal networks to inform them of positive outlier status.

Stage	Working days	Start date	End date	Description	Responsible person
1	10	12/7/23	25/7/23	<p>The process underpinning the analysis of the outlier metric data of identifying the 'alarm' and 'alert' outliers will be validated.</p> <p>At which point the audit will be satisfied that there is a 'case to answer' for those identified.</p> <p>A designation of potential outlier status will be annotated against identified units and they will progress to stage 2.</p>	RCPCH Audit team
2	5	26/7/23	1/8/23	<p>The clinical lead in the participating provider is informed about the potential outlier status at 'Alarm Level' and requested to identify any data errors associated with the data analysis. They are also asked share the request and discuss the finding with senior management including the CEO and Medical Director in advance of direct communication from the audit team to the CEO in stage 6 should there be a case to answer.</p> <p>All relevant data and analyses details can be made available to the clinical lead and queries will be prioritised and answered promptly.</p> <p>RCPCH audit teams will inform the Scottish Government (via phs.snap@phs.scot) and the Welsh Government (via wgclinicalaudit@gov.wales) of alarm level outliers as requested by these national governments. This notification of potential outliers is for information only to the relevant government policy lead. No immediate action is requested or expected at this stage.</p> <p>The NNAP will also notify the clinical lead and network manager of 'Alert Level' outlier status, however no further response will be required. The expectation is that NHS Trusts should use 'alert' information (available within local NHS Trust reports) as part of their internal quality monitoring process. They should investigate alerts in a proactive and timely manner, acting accordingly before they potentially escalate to alarm level status.</p>	RCPCH Audit team
3	25	2/8/23	6/9/23	<p>Clinical lead in the participating provider to provide written response to the RCPCH audit team acknowledging the potential outlier status, responding to queries regarding the data analysis identified in Step 2 and confirmation that discussions with senior management have taken place.</p>	Participating provider clinical lead
4	5	7/9/23	13/9/23	<p>Review of response from the clinical lead in the participating provider to determine if there is:</p> <p>'No case to answer'</p> <ul style="list-style-type: none"> If it is confirmed that there was data error within the data originally supplied which was outside the control of the submitting unit. Re-analysis of accurate data may be considered and published if possible, depending upon timing and impact. But an indication will always be made stating that an outlier status is unlikely. Data and results should be annotated within RCPCH audit records at this stage and within details of the provider's response and the subsequent reports online and any CQC slides generated. <p>'Case to answer'</p>	RCPCH Audit team

				<ul style="list-style-type: none"> If it is confirmed that although the data originally supplied by the participating provider were inaccurate and analysis still indicates outlier status under exceptional circumstances mitigation messages can be annotated onto the online reporting. For example, equipment calibration failures or IT system errors. <p>or</p> <ul style="list-style-type: none"> It is confirmed that the originally supplied data were accurate, thus confirming the initial designation of outlier status. <p>They will proceed to Stage 5</p>	
5	2	14/9/23	15/9/23	<p>Contact clinical lead of the participating provider to confirm outlier status and advise of next steps. Clinical lead to be reminded to discuss their result with their Chief Executive and Medical Director.</p> <p>The NNAP will notify the clinical lead and network managers of positive outlier status (Outstanding only). No further response will be required.</p>	RCPCH Audit team or clinical lead
6	3	18/9/23	20/9/23	<p>Written confirmation of alarm status to be sent to the CEO and copied to clinical lead, Medical Director, and regional network manager (where applicable).</p> <p>All relevant data and statistical analyses, including previous response from the clinical lead of the participating provider, will be made available to the Medical Director and CEO in writing, with copies going to the Clinical Lead and Regional Network Manager.</p> <p>Within this letter the CEO will also be informed of the publication schedule and information of comparative performance that will identify their participating provider.</p>	RCPCH Audit team or clinical lead
7	3	21/9/23	25/9/23	<p>RCPCH Audit teams will inform the CQC (clinicalaudits@cqc.org.uk) and HQIP of alarm level outliers in England.</p> <p>The CQC will do the following in response to an alarm level outlier notification as part of their routine local engagement:</p> <ul style="list-style-type: none"> Encourage you to identify any learning from your performance and provide them with assurance that you have used the learning to drive quality improvement. Ask you how you are monitoring or plan to monitor your performance. As part of the assurance you may provide the CQC with an action plan, and progress against it should be monitored locally. Continue reviewing the risk until they are satisfied it has reduced. <p>The CQC and HQIP will also be notified of alert level outliers. The CQC and HQIP are not mandating a formal NHS Trust notification or response process for alert level. However, CQC plan to include such alert information as part of their "soft" intelligence and it might come up in a Trust inspection so it should also be clear in the local level NHS Trust performance reports if a Trust is an outlier at the alert level.</p> <p>The CQC will do the following in response to an alert level outlier notification as part of their routine local engagement:</p> <ul style="list-style-type: none"> Encourage you to identify any learning from your performance, Ask you how you are monitoring or plan to monitor your performance, 	RCPCH Audit team or clinical lead

				<ul style="list-style-type: none"> Continue reviewing the risk until they are satisfied it has reduced. 	
				<p>RCPCH audit teams will inform the Welsh Government (wgclinicalaudit@gov.wales) of alarm level outliers in Wales. The Welsh Government and HQIP will also be notified of outliers at the alert level. However, unlike for alarm level outliers, the Welsh Government and HQIP are not mandating a formal Health Board notification or response process for alert level.</p>	
				<p>RCPCH audit teams will inform the Scottish Government (phs.snap@phs.scot) of alarm level outliers in Scotland. The Scottish Government and HQIP will also be notified of outliers at the alert level. However, unlike for alarm level outliers, the Scottish Government and HQIP are not mandating a formal Health Board notification or response process for alert level.</p>	
8	10	26/9/23	9/10/23	<p>Acknowledgement of receipt of the letter confirming that a local investigation will be undertaken with independent assurance of the investigation's validity, (identified at provider level).</p> <ul style="list-style-type: none"> Providers in Wales are expected to copy in the Welsh Government (wgclinicalaudit@gov.wales) Providers in England are expected to copy in the CQC (clinicalaudits@cqc.org.uk) Providers in Scotland are expected to copy in the Scottish Government (phs.snap@phs.scot) 	Participating provider CEO, tracked by the audit team.
9	15	10/10/23	30/10/23	<p>If no acknowledgement received, a reminder letter will be sent to the clinical lead of the participating provider copying in the CEO and the CQC.</p> <p>If an acknowledgement is not received within 15 working days, the relevant government agency will be notified of non-compliance: CQC in England, Welsh Government in Wales, Scottish Government in Scotland.</p>	RCPCH Audit team
10	0	Provisional date: 12/10/2023		Public disclosure of comparative information identifying providers through planned reporting and online reporting tools in line with the NHSE Standard Reporting Procedure.	RCPCH Audit team

If you have any questions about the NNAP outlier detection and management process, please contact the NNAP audit team via email: nnap@rcpch.ac.uk or via telephone: 020 3861 1910.