

The NSO Unsatisfactory Specimen Indicator

Introduction

Poor quality newborn screening (NBS) specimens are unsatisfactory for reporting and may result in the delayed diagnosis and treatment of a baby affected with the diseases screened. A specimen is deemed unsatisfactory by NSO when its analysis might yield unreliable, misleading, or clinically inaccurate values for one or more analytes.

Rejection of a specimen may:

- delay the identification of a baby affected with one of the diseases screened
- result in additional stress to the baby and family related to the collection of a repeat specimen
- result in a missed or incomplete screen if parents refuse a repeat collection attempt
- increase hospital/midwife workload in locating/retrieving the baby and collecting the repeat specimen
- increase NSO workload in the processing and follow up of the initial unsatisfactory and repeat specimens

Samples are reported as unsatisfactory when specific data and sample quality criteria are not met.	
<p>Dried Blood Spot (DBS) specimens are rejected when demographic information that may impact analytical screening results is missing or inaccurate, or when other specimen quality criteria are not met.</p> <p>Reasons for sample rejection include:</p> <ul style="list-style-type: none"> • collection on an expired blood collection card • delivery to NSO >14 days after the date of specimen collection • DBS collection at <24 hrs. of age* • missing critical demographic information requested on the blood collection card which is required for the interpretation of screening results and which cannot be obtained from the submitter within a reasonable length of time <p>These samples are analyzed in the lab but cannot be properly interpreted. A repeat sample is requested.</p>	<p>DBS samples are rejected when either the quality or quantity of the sample will impact analytical screening results.</p> <p>Reasons for sample rejection include:</p> <ul style="list-style-type: none"> • quantity of blood insufficient • blood spots appear scratched or abraded • blood spots are wet and/or discoloured • blood spots are supersaturated • blood spots appear diluted • blood spots exhibit serum rings • blood spots appear clotted or layered • blood spots appear contaminated • blood spots were damaged or delayed in transit <p>These samples are NOT analyzed in the lab. A repeat sample is requested.</p>

*There are situations where an initial specimen collected at <24 hours of age is recommended by NSO. These specimens are not included as unsatisfactory in the Unsatisfactory Specimen Report and are included in the acceptable total.

However, not all diseases on the screening panel are reliably detected on specimens collected at <24 hrs. of age. NSO requests a repeat specimen be collected within 5 days of the initial <24 hr. specimen.

Situations warranting collection at <24 hours include early discharge or prior to a packed red blood cell transfusion.

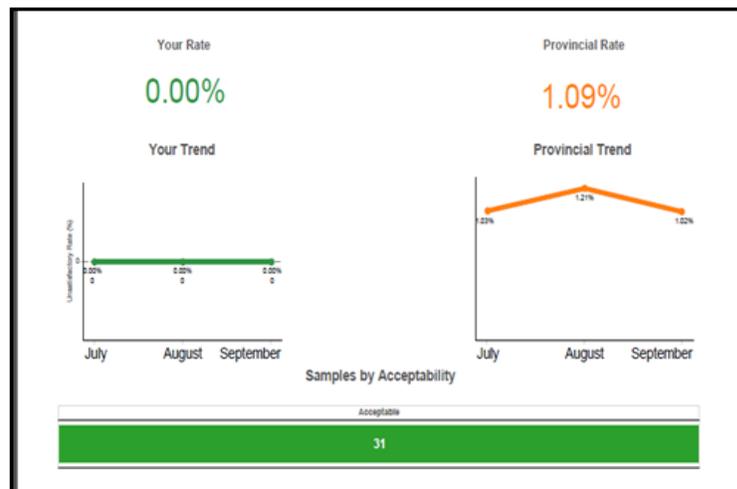
Benchmark and Interpretation

The Unsatisfactory Specimen indicator report is a graphical representation of NBS specimens collected at your hospital or midwifery practice and received at NSO during the period of the report.

The report contains the following metrics for specimens received at NSO during the period of the report:

- number of acceptable or satisfactory specimens
- number of unsatisfactory specimens reported by reason
- your percentage rate of unsatisfactory specimens
- the provincial percentage rate of unsatisfactory specimens
- graphs depicting unsatisfactory specimen rate trends for the period of the report for both your site and the province as a whole





Unsatisfactory specimens are reported both as an absolute number and as a percentage of the total number of specimens collected. They are colour coded to reflect performance based on an NSO defined benchmark. The NSO benchmark aligns closely with other laboratory specimen type rejection rates at approximately 1%.

COLOUR	DESCRIPTION	MESSAGE
Green	The total # of unsatisfactory specimens collected at your institution or practice is <1%.	You are doing a great job collecting high quality specimens.
Yellow	The total # of unsatisfactory specimens collected at your institution or practice is $\geq 1\%$ and $< 1.5\%$	Your practice is good. Try focusing on and improving the most frequent reason for specimen rejection.
Red	The total # of unsatisfactory specimens collected at your institution or practice is $\geq 1.5\%$	Your specimen rejection rate is contributing to delays in reporting newborn screening results.

Low Volume Submitters

NSO acknowledges that because of low specimen volumes, some institutions or midwifery practices will experience high unsatisfactory specimen percentage rates. NSO is considering implementing a minimum specimen volume cutoff for the unsatisfactory specimen percentage indicator and/or reporting unsatisfactory specimen rates as an absolute number only for this group. For now, NSO is providing the percentage unsatisfactory metric in all reports. When ascertaining opportunities for improvement, low volume submitters should review the absolute number of unsatisfactory specimens submitted and the reason for specimen rejection.

Concordance with the Better Outcomes Registry and Network (BORN) Maternal Newborn Dashboard

The BORN Maternal Newborn Dashboard Key Performance Indicator (KPI #1) displays a quarterly report of the number of newborn screening specimens that are unsatisfactory for testing, expressed as a percentage of the total number of newborn screening specimens submitted to NSO from a given organization. NSO and BORN use the same data source to populate their reports. However, data quality, specimen inclusion criteria and patient linking incongruities may result in the temporary exclusion of data in the BORN report, resulting in small differences in the absolute number and/or percentage of unsatisfactory specimens provided in the two reports.

