

## Critical Results

- The following results are considered as “Critical Values” and are reported to the Ordering Clinician within one hour of availability.
- A number of the critical values are only reported within NUH (see Table 1).
- Table 2 is the list of drugs that we notify as “Alert Values” above which the drug concentrations can be considered toxic.

Table 1 Critical Values

Division	Test	Critical Values
Clinical Chemistry	Calcium, serum	< 1.75 mmol/L > 3.00 mmol/L
	Glucose, serum	< 2.5 mmol/L > 20.0 mmol/L
	Sodium, serum	< 120 mmol/L > 160 mmol/L
	Potassium, serum	< 2.5 mmol/L > 6.0 mmol/L
	Troponin I (NUH only)	> 26.2 ng/L on first presentation per admission
	Ammonia (NUH only)	> 100 umol/L
	Creatine Kinase	> 10,000 U/L on first presentation per admission
	Lactate (NUH only)	> 5.0 mmol/L
	Bilirubin, neonatal (NUH only)	> 300 umol/L
	RPR (NUH antenatal only)	> 2 titre
Haematology	APTT	> 100 seconds
	INR	≥ 5.0
	Haemoglobin	< 6 g/dL
	White Blood Count	≤ 1x10 <sup>9</sup> /L ≥ 50x10 <sup>9</sup> /L on first presentation per admission
	Malaria/Filaria Parasite	Malarial/Filarial Parasite present on first presentation per admission
	Blast Cells	Presence of Blast Cells
	Glucose-6-phosphate Dehydrogenase, neonatal	Deficient or Indeterminate
	Toxic vacuolation, neonatal	Toxic Vacuolation seen
Microbiology	AFB Smear	Positive
	Blood Culture	Positive
	CSF Culture	Positive
	CSF Gram Smear	Positive
	Molecular Detection of Mycobacterium Tuberculosis	Mycobacterium tuberculosis complex detected
	Cryptococcal Antigen, CSF	Positive (titre ≥ 1)
	Microscopy - Microsporidia	Microsporidia seen
	Meningitis/Encephalitis Pathogens Panel PCR, CSF	Positive
	Respiratory Pathogens Panel PCR	For patients ≤ 18 years: Bordetella pertussis, Bordetella parapertussis and SARS-CoV-2

Table 2: Alert Values

Division	Test	Call Back Concentrations
	Acetaminophen	>200 mg/L
	Amikacin	>35 mg/L
	Digoxin	>2.4 ug/L
	Gentamicin	>13 mg/L
	Lithium	>1.5 mmol/L
	Phenobarbital	>40 mg/L
	Phenytoin	>20 mg/L
	Salicylate	>300 mg/L
	Theophylline	>20 mg/L
	Valproate	>120 mg/L
	Vancomycin, trough or random	>30 mg/L
	Vancomycin, peak	>50 mg/L

#### NUH Patients

- Our Healthcare Messaging System (Rooster) is utilised for the reporting of critical values to the Ordering Clinician via SMS.
- Once a critical result has been validated in LIS it will flow to an interface engine. Here the result is matched with the most up to date location for the patient, the Ordering Clinician and the critical result.
- The consolidated information creates and sends a SMS to the Ordering Clinician with details of the patient's name, identity number, location, critical result, and reference range.
- The Clinician is required to reply within 10 minutes of receiving the message with one of three options (they respond by replying 1,2 or 3)
  1. Correct doctor and acting on it.
  2. Wrong doctor but acting on it.
  3. Wrong doctor and not acting on it.
- When options 1 or 2 are selected, no further action is required.
- When option 3 is selection, Rooster will escalate to the next Clinician on the specific Department roster and cycle the process to start the clock at 10 minutes again.
- If no response, or option 3, the call will be intervened manually by the Call Centre staff.
- Call Centre staff will source for the next most suitable Clinician and retrigger the sms. The second message sent still needs to be acknowledged to close the case.
- Any cases that are unable to receive an sms the Call Centre staff will connect a doctor to the laboratory staff for the reporting of the results. A result read back is required to ensure the results are documented correctly by the recipient. All critical result notification is documented to indicate the recipient, time (for both electronic and manual notification) and the lab staff reporting the result (for manual reporting).