

Biochemistry critical results phoning limits

THESE GUIDELINES ARE BASED ON THE FIRST TIME AN ABNORMAL RESULT IS SEEN.

When results are already known to be abnormal, it may not be necessary to telephone them again. Repeat results may require telephoning if:

- There has been a significant change (worsening) in results.
- The last set of abnormal results are from a previous episode or admission.
- There has been a significant period of time between the original abnormal result and the current report.
- If location of patient has changed (e.g. an A&E patient that has been admitted; or previous results were in hospital and the current request is from Primary Care).

This document applies to all core Biochemistry labs within Synnovis on the Abbott Alinity analysers which are:

- Synnovis Hub at Blackfriars (Hub)
- Guy's Hospital (GH)
- St Thomas' Hospital (STH)
- King's College Hospital Denmark Hill (DH)
- Princess Royal University Hospital (PRUH)
- Harefield Hospital (HH)
- Royal Brompton Hospital (RBH)

The hospital sites are referred to as Essential Services Laboratories (ESL). These can be combined to form:

- GSTT (STH & GH)
- KCH (DH & PRUH)
- RBHH (HH & RBH)

Results to be communicated as soon as possible by the BMS staff							
Test	Lower limit (\leq)	Upper limit (\geq)	Rationale	Sites	Lab Comments		
ALT (U/L)	—	500 (<19y)	UK GOV Guidance - Increase in acute hepatitis cases of unknown aetiology in children. Published 8 April 2022	All			
		510 (F \geq 19y)	RCPath 2025				
		675 (M \geq 19y)					
AKI	—	Stage 2 & 3	RCPath 2025	All	Except known renal patients.		
Ammonia ($\mu\text{mol/L}$)	—	100	RCPath 2025	DH & STH (STH at <4 weeks)			
		50 (> 4 weeks)	Metabolic team at STH	STH			
Amylase (U/L)	—	50 (0-14d)	RCPath 2025	All			
		110 (15d-13w)					
		250 (13w-<1y)					
		505 (1-18y)					
		480 (\geq 18y)					
AST (U/L)	—	500 (<19y)	UK GOV Guidance - Increase in acute hepatitis cases of unknown aetiology in children. Published 8 April 2022	All			
		465 (F \geq 19y)	RCPath 2025				
		510 (M \geq 19y)					
Bicarbonate (mmol/L)	10	—	RCPath 2025	All			
Calcium (adjusted) (mmol/L)	1.80	3.40	RCPath 2017 (lower limit); NICE CKS Hypercalcaemia (definition of severe hypercalcaemia) (upper limit)	All			

Results to be communicated as soon as possible by the BMS staff					
Test	Lower limit (≤)	Upper limit (≥)	Rationale	Sites	Lab Comments
Carbamazepine (mg/L)	—	25	RCPATH 2010	All except RBHH	
Conjugated bilirubin (μmol/L)	—	25 (< 4 weeks)	RCPATH 2017	All	
Cortisol (nmol/L)	50	—	RCPATH 2025	ESL	Hub IP/OP results phoned by the Duty Biochemist in the Hub, see below section.
	100 (GP)		Local agreement based on published study.	Hub	
Creatinine (μmol/L)	—	200 (< 19y)	RCPATH 2025 amended for Beaker age brackets	All	Except known renal patients.
		354 (≥ 19y)			
CRP	—	300 (GP)	RCPATH 2025	Hub	
CK (U/L)	—	5000 1000 (SL&M)	RCPATH 2025 Local agreement (SL&M)	All	
Digoxin (μg/L)	—	2.5	RCPATH 2025	All	
Ethanol (mg/L)	—	4000	RCPATH 2025	ESL except RBHH	
Glucose (mmol/L)	2.5	15.0 (< 16y)	RCPATH 2025	All	
		9.0 (pregnancy)	Local agreement	Hub & KCH	
		25.0 (≥ 16y)	RCPATH 2025	All	
		35.0 (known Diabetics)	Local agreement	All	
Lactate (mmol/L)	—	4.0	Campbell et. al. 2016	ESL except RBHH	

Results to be communicated as soon as possible by the BMS staff					
Test	Lower limit (≤)	Upper limit (≥)	Rationale	Sites	Lab Comments
Lipase (U/L)		320	RCPath 2025	All	External requests to be phoned by Duty Biochemist in the Hub, see below section.
Lithium (mmol/L)	—	1.5	RCPath 2025	All	
Magnesium (mmol/L)	0.40	—	RCPath 2025	All	
Methotrexate (μmol/L)	—	All (external requestors only)	Local agreement	Hub	
Paracetamol (mg/L)	—	All detectable levels	RCPath 2025	ESL except RBHH	
Phenytoin (mg/L)	—	25	RCPath 2025	ESL except RBHH	
Phosphate (mmol/L)	0.30	—	RCPath 2025	All	
Potassium (mmol/L)	2.5 3.0 (SL&M)	6.5	RCPath 2025 Local agreement (SL&M)	All	Delayed separation, EDTA contamination and thrombocytosis should have been excluded.
Salicylate (mg/L)	—	300	RCPath 2025	ESL except RBHH	
Sodium (mmol/L)	130 (< 16y)	155	RCPath 2025 (lower limit); Campbell et. al. 2016 (upper limit);	All	
	125 (≥ 16y) (GP)		NICE Clinical Knowledge Summary for hyponatraemia	Hub	
	120 (≥ 16y) (IP/OP)		RCPath 2025 (lower limit); Campbell et. al. 2016 (upper limit);	All	

Results to be communicated as soon as possible by the BMS staff					
Test	Lower limit (≤)	Upper limit (≥)	Rationale	Sites	Lab Comments
Theophylline (mg/L)	—	25	RCPATH 2025	ESL except RBHH	
Triglycerides (mmol/L)	—	20.0	NICE CG181	All	
Troponin I (ng/L)	—	64	Local agreement based on GSTT Clinical Guideline for Acute Coronary Syndrome, 2022.	STH	STH A+E only.
Urea (mmol/L)	—	10.0 (< 16y) 30.0 (≥ 16y)	RCPATH 2025	All	Except known renal patients.

Results to be communicated the next working day by the Duty Biochemist					
Test	Lower limit (≤)	Upper limit (≥)	Rationale	Sites	Lab Comments
Cortisol (nmol/L)	50	—	RCPATH 2025 but agreed to be phoned by the DB to avoid unnecessary patient admissions.	Hub	
TSH (mIU/L)	—	50.00 (GP)	Local agreement	Hub	
FT4 (pmol/L)	5.4 (GP)	40.0 (GP)	Local agreement	Hub	
FT3 (pmol/L)	—	10.0 (GP)	Local agreement	Hub	Only required if FT4 within/below the reference interval.
Lipase (U/L)	—	320 (External requests)	RCPATH 2025	Hub	
Prolactin (mIU/L)	—	10,000 (GP)	Suggested best practice guidelines (ACB Wales and Thames Audit Group)	Hub	

SL&M = South London and Maudsley hospitals.

GP = Primary care patients under GP locations.

IP = inpatients (according to classification in EPIC).

OP = outpatients (according to classification in EPIC).