



Clinical Biochemistry NNUH/JPUH/QEH STANDARD OPERATING PROCEDURE Document Ref: EPA-BIOP-006

Criteria and Escalation Protocols for Telephoning Critical Results in Clinical Biochemistry and Immunology

1. Purpose and Scope

This document gives the telephone limits and escalation protocols for the communication of critical/urgent test results by laboratory staff in Clinical Biochemistry and Immunology at NNUH and Clinical Biochemistry at JPUH and QEH. It should be read in conjunction with the overarching EPA Telephone Policy EPA-GENP-004.

This guidance is based on the Royal College of Pathologists "The communication of critical and unexpected pathology results", G158, October 2017.

2. Criteria for telephoning Immunology results

Results for urgent anti-glomerular basement membrane (AGBM) should be telephoned immediately to the requesting doctor or qualified nursing staff, regardless of whether they are positive or negative.

A new presentation of a positive AGBM or positive anti-neutrophil cytoplasmic antibodies (ANCA) is also telephoned.

3. Criteria for telephoning NNUH, JPUH and QEH Clinical Biochemistry Test Results

Primary Care constitutes all results that are received from GP's and HM prisons (tel 01603 708 884). Outpatients are also included within this group as the tests are usually being requested as part of ongoing care.

Secondary Care are all Emergency Village such as A&E, AMU, and all Inpatient locations including Virtual Ward patients.

Any result communicated must be escalated to an appropriate member of staff, and the individuals first name and/or surname, with designation must be recorded in the LIMS.

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Revision: 8	Issued: 04/09/24	Authorised by: A Chipchase	Review interval: 2 years

A = Critical result that should be communicated within 2 hours

B = Needs communicating but if out of hours (OOH) can be communicated next day

Analyte	Units	Action Limits: Assume lower and upper cut points are \leq or \geq respectively		Communication Type			Comments
		Lower cut off	Upper cut off	Primary Care/OPD	Secondary	NNUH ED ONLY	
AKI 1 [‡]				A	A	A	Any AKI 1 if K \geq 6.0
AKI 2 ^{‡§}			AKI 2 with K ⁺ <6.0	B	A	A	To be communicated within 24h including w/ends
AKI 2 ^{‡§}			AKI 2 with K ⁺ \geq 6.0	A	A	A	All new occurrences
AKI 3 [‡]			AKI 3	A	A	A	All new occurrences
ALT (Paediatric \leq 16 yrs)	U/L		500	A (OOH do not phone 111)	A	A	GP to be contacted in hours only. #See below
ALT	U/L		750	B	A	-	
Ammonia	μ mol/L		100	N/A	A	-	
Amylase	U/L		550 (Adults only)	A	A	A	Paediatrics 5x ULN of reference range
Bicarbonate	mmol/L	10		B	A	-	
Bilirubin (Direct)	μ mol/l		25	B	A	-	Neonates only
Calcium (adj.)	mmol/L	1.8	3.0	A	A	-	
Cortisol	nmol/L	<100		B	A	-	If not on steroids, or if not a low dose dexamethasone suppression test.
Creatinine	μ mol/L		Adults: 354 Children: x2 Upper Limit of Normal	A	A	A	Renal OPD – Only if result increase of at least 50 within 3 weeks of previous
CRP	mg/L		300	A	-	-	
Analyte	Units	Action Limits: Assume lower and upper cut points are \leq or \geq respectively		Communication Type			Comments
		Lower cut off	Upper cut off	Primary Care/OPD	Secondary	NNUH ED ONLY	
Digoxin	μ g/L		2.5 (more urgent if K <3 mmol/L)	A (if K <3) B (if K within range)	A	-	Note: GP/OPD next working day if K ⁺ within ref range

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Ethanol	mg/dL		400	A	A	-	Phone any positive results in <18 yrs
Glucose	mmol/L	2.5	25 (adults) ≥15 if ≤16yrs	A	A	-	30 if known diabetic for GP's
Lithium	mmol/L		1.5	B	A	-	
Magnesium	mmol/L	0.4		A	A	-	
Paracetamol			Positive	A	A	A	
Phenytoin	mg/L		25	B	A	-	
Phosphate	mmol/L	0.3		B	A	-	
Potassium	mmol/L	2.5	6.5	A	A	A	*See below
Salicylate	mg/L		300	A	A	-	
Short Synacthen test	nmol/L	250 (30 or 60 min)		B	B	-	If details state "Usual steroid omitted" these do not need to be phoned
Sodium	mmol/L	125 130 if <16 yrs	150	A	A	A	
hs-Troponin I-time 0	ng/L		Female 15.6 Male 34.2 U 15.6	A	A	A	¥ See below ≠ See below
hs-Troponin I-2 nd sample	ng/L		Only if ≥50% delta change	A	A	A	Not cardiology ¥ See below ≠ See below
Urea	mmol/l		30.0 ≥10.0 if <16yrs	A	A	A	
TCK	U/L		≥5000	A	A	-	
Theophylline	mg/l		25	B	A	-	
Xanthochromia (NNUH & QEH only)			Positives	N/A	A	A	All results suggestive or confirmatory of SAH

‡ AKI at any stage is not phone through to NNUH Critical Care Complex (CCC) in agreement with Dr Suhas Kumar re-confirmed 02/11/23.

\$ AKI 2 deviation is based on a local agreement with the IC24 and Renal teams.

‡ Following a national alert all paediatric ALT results need urgent action. Within core hours (8.00-17.30) the ALT should be phoned to GP's for Primary Care, and to the paediatric requestor in Secondary Care. For all GP requests authorised OOH please phone through to NNUH CAU either on bleep 0009 or DECT x6580. For JPUH inpatients within hours contact the requesting consultant, and for OOH contact the on call SPR. For NNUH inpatients all results to go to CAU teams either on bleep 0009 or DECT x6580. FOR QEH inpatients all results to on call middle grade via switchboard 01553 613613 bleep 3350 (24/7), or on call consultant paediatrician.

≠ Troponins received from Haematology Outpatients and Haematology Consultants does not need to be phoned and clinical details should include "cardiac amyloidosis. Do not phone elevated Troponin" as agreed by Dr C Gomez (Haematology).

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* Renal team covering NNUH/JPUH have requested not to be phoned with high potassium results on pre-dialysis patients and low potassium on post-dialysis patients.

¥ Troponin is not available to Primary Care, but phoning limits have been included in case any should be received.

The telephone limits used are based on the Royal College of Pathologists 2017 document. However, where appropriate some of these have been amended in response to local requirements. Following a review in April 2022 it was confirmed that we would not phone AST or urate. For AST the majority of these were requested by Gastroenterology and not requiring further communication, and it is difficult to communicate raised urates in pregnancy and to date this has been accepted. As of 04/09/2023 it was agreed that any Primary Care result that was phoned through to 111 did not require an additional safeguard phone call to the GP on the next working day. Therefore, only out of area i.e. outside of Norfolk & Waveney, will require a further safe guard where any result that is phoned to 111 will be followed up with a phone call to the requesting GP on the next working day.

4. Escalation protocols

- Critical results should be communicated (phone or Alertive) immediately upon verification of accuracy
- One unsuccessful telephone call/Alertive is sufficient to escalate to the next step
- Please follow site specific protocol steps in order
- Communication of critical results should take place within 2 hours and no longer
- All attempts to communicate a critical result should be logged within the LIMS of the result record. This is to ensure a complete audit trail for shift handover, audit, and any incident root cause investigation.

PLEASE NOTE: If a result cannot be communicated within 2 hours a Datix/QSafe MUST be raised.

JPUH Only	
Monday to Friday 09:00-17:00	
<p>A. Inpatients (IP)*/Outpatients (OP)</p> <p>*All Virtual Ward patients to be escalated as Inpatients</p>	<ol style="list-style-type: none"> 1. IP: Ward nurse in charge 2. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 3. Speciality SpR/middle grade by bleep 4. Consultant responsible for patient
<p>B. Visiting Teams</p>	<ol style="list-style-type: none"> 1. Ward Nurse in charge 2. On call person for the corresponding speciality
<p>C. Reports with no Consultant or location identified</p>	<ol style="list-style-type: none"> 1. Phone the EADU ward clerk to identify the location of the patient 2. IP: Ward nurse in charge 3. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 4. Speciality SpR/middle grade by bleep 5. Consultant responsible for patient

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JPUH Only	
Monday to Sunday & Bank Holidays 17:00-09:00	
A. Inpatients*	<ol style="list-style-type: none"> 1. Ward nurse in charge 2. Ward cover F1 bleep/F2 bleep (bleep 1100) 3. Medical SpR on call (bleep 0023) 4. Speciality Consultant on call
*All Virtual Ward patients to be escalated as Inpatients	
B. Outpatients	<ol style="list-style-type: none"> 1. Medical SpR on call (bleep 0023)
C. Visiting Teams	<ol style="list-style-type: none"> 1. Ward Nurse in charge 2. Ward Cover F1 3. Medical SpR on call (bleep 0023) 4. Medical Consultant on call
D. Reports with no Consultant or location	<ol style="list-style-type: none"> 1. Phone EADU ward clerk to identify the location of the patient 2. Ward nurse in charge 3. Medical SpR (bleep 0023)

Primary Care	
A. Core Hours	<ol style="list-style-type: none"> 1. Phone the responsible surgery
B. Out of hours	<ol style="list-style-type: none"> 1. Phone GP out of hours' service through 111 and use by-pass number (0300 5550 315) 2. Norfolk Team Manager on 01603 952 829 3. Norfolk Dispatch on 0300 300 0044 ext. 5

JPUH Bleep Systems

1. Dial 88 and listen to the automated message
2. When instructed to do so enter the four-digit bleep number of the person you are trying to contact
3. Type your extension number when prompted
4. Replace the handset and wait to be called

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NUUH Only	
Monday to Friday 09:00-17:00	
<p>A. Inpatients (IP)*/Outpatients (OP)</p> <p>*All Virtual Ward patients to be escalated as Inpatients</p>	<ol style="list-style-type: none"> 1. IP: Ward nurse in charge 2. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 3. Speciality SpR/middle grade by bleep 4. Consultant responsible for patient
<p>B. Endocrinology</p> <p>Please note this includes Clinical Investigation Unit (CIU)</p>	<ol style="list-style-type: none"> 1. SpR on Dect 2763
<p>C. Reports with no Consultant or location identified</p>	<ol style="list-style-type: none"> 1. Phone clinical site manager via switchboard to identify the location 2. IP: Ward nurse in charge 3. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 4. Speciality SpR/middle grade by bleep 5. Consultant responsible for patient

NUUH Only	
Monday to Sunday & Bank Holidays 17:00-09:00	
<p>A. Inpatients*</p> <p>*All Virtual Ward patients to be escalated as Inpatients ** Please note hospital at night team start at 19:45</p>	<ol style="list-style-type: none"> 1. Ward nurse in charge 2. Speciality SpR/middle grade by bleep 3. If SpR no longer available Hospital at Night** SpR covering in patients (bleep 0067) for all medical specialities except Cardiology 4. Speciality Consultant on call 5. Virtual Ward results should be escalated through Switchboard
<p>B. Outpatients</p> <p>*Surgical Consultants identified by use of pronouns Mr, Mrs, Miss or review requesting team in PAS</p>	<ol style="list-style-type: none"> 1. Speciality SpR/middle grade on call by bleep 2. If SpR is no longer available then Hospital at Night SpR covering Medical Admissions (bleep 0022) for all medical specialties except Cardiology (contact switchboard), and Surgical SpR for all surgical admissions* (contact switchboard) 3. Speciality Consultant on call 4. Consultant responsible for patient
<p>C. Endocrinology</p> <p>Please note this includes Clinical Investigation Unit (CIU)</p>	<ol style="list-style-type: none"> 1. Consultant on call on ext. 4512

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Oncology-NNUH Only	
A. Inpatients/Outpatients	<ol style="list-style-type: none"> 1. IP: Ward nurse in charge 2. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 3. Speciality SpR/middle grade by bleep
B. Acute Oncology	<ol style="list-style-type: none"> 1. Phone to Acute Oncology Services 24/7 on ext. 6799 or ext. 1752
C. Haematology Oncology-Weybourne 09.00-17:00	<ol style="list-style-type: none"> 1. Phone to Weybourne Unit
D. Haematology Oncology-Weybourne Out of Hours	<ol style="list-style-type: none"> 1. Phone to Acute Oncology Services on ext. 6799 or ext. 1752
Please note for any Oncology Patient please double click on the requestor to identify the clinical team and whether the result needs to be phoned to Oncology or Haematology Oncology.	

Paediatrics-NNUH Only	
Monday to Friday 09:00-17:00	
A. Inpatients/Outpatients	<ol style="list-style-type: none"> 1. Secretary of responsible Consultant 2. Duty Registrar- bleep 0009 3. Duty Consultant
B. Reports with no consultant or location identified	<ol style="list-style-type: none"> 1. Duty Registrar- bleep 0009 2. Duty Consultant

Paediatrics-NNUH Only	
Monday to Sunday & Bank Holidays 17:00-09:00	
A. Inpatients/Outpatients	<ol style="list-style-type: none"> 1. Duty Registrar- bleep 0009 2. Duty Consultant
B. Reports with no consultant or location identified	<ol style="list-style-type: none"> 1. Duty Registrar- bleep 0009 2. Duty Consultant

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HMP Bure	
<p>A. Core hours</p> <p>Monday to Friday 08:00 – 19:00</p> <p>Weekends/ Bank Holidays 08:00 – 17:30</p>	<ol style="list-style-type: none"> 1. Phone Nurse 01603 326214/13 2. Admin 01603 326212 / 326047 Mon-Friday not on duty weekend or bank holidays 3. Phone Comms on 01603 326020 to locate Hotel 1 nurse if no nurses are available in office
<p>B. Out of hours</p>	<ol style="list-style-type: none"> 1. Phone GP out of hours' service through 111 and use by-pass number (0300 5550 315) 2. Norfolk Team Manager on 01603 952 829 3. Norfolk Dispatch on 0300 300 0044 ext. 5

HMP Norwich	
<p>A. 24/7 Weekday and Weekends</p>	<ol style="list-style-type: none"> 2. Phone Comms 01603 708600 and ask for a nurse to handover critical blood test results

HMP Wayland	
<p>A. Core hours</p> <p>Monday to Friday 07:30 – 19:30</p> <p>Weekends/ Bank Holidays 08:30 – 17:30</p>	<ol style="list-style-type: none"> 1. Phone Nurse 01953 804135 2. Admin 01953 804123 Mon-Friday not on duty weekend or bank holidays
<p>B. Out of hours</p>	<ol style="list-style-type: none"> 1. Phone GP out of hours' service through 111 and use by-pass number (0300 5550 315) 2. Norfolk Team Manager on 01603 952 829 3. Norfolk Dispatch on 0300 300 0044 ext.

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NSFT-NUH Only	
Monday to Friday 09:00-17:00	
Contact Hellesdon Hospital Switchboard 01603 421421	
A. Inpatients (IP)/Outpatients (OP)	<ol style="list-style-type: none"> 1. IP: Ward nurse in charge OP: Secretary of responsible Consultant or Team/Ward administrator 2. Speciality SpR/SAS doctor via Hellesdon switchboard (Trust mobiles used generally used) 3. Consultant responsible for patient
B. Reports with no Consultant or location identified	<ol style="list-style-type: none"> 1. Phone duty manager through Hellesdon Switchboard to identify the location 2. IP: Ward nurse in charge OP: Secretary of responsible Consultant or team/ward administrator 3. Speciality SpR/SAS doctor via Hellesdon switchboard (Trust mobiles used generally used) 4. Consultant responsible for patient

NSFT-NUH Only	
Out of Hours/Weekends & Bank Holidays	
Contact Hellesdon Hospital Switchboard 01603 421421	
A. Inpatients (IP)	<ol style="list-style-type: none"> 1. Ward Nurse in charge 2. Duty Manager Norfolk (or duty Manager Suffolk depending on location) 3. Executive on Call
B. Outpatients	<ol style="list-style-type: none"> 1. Duty Manager Norfolk (or duty Manager Suffolk depending on location) 2. Executive on Call

Primary Care	
A. Core Hours	<ol style="list-style-type: none"> 1. Phone the responsible surgery
B. Out of Hours	<ol style="list-style-type: none"> 1. Phone GP out of hours' service through 111 and use by-pass number (0300 5550 315) 2. Norfolk Team Manager on 01603 952 829 3. Norfolk Dispatch on 0300 300 0044 ext. 5

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RAF Marham	
A. Core Hours	<ol style="list-style-type: none"> 1. Phone to RAF Marham base on 01760 33 72 61 ext. 7226 or 7634 2. Phone the Duty Medic on 07624 313932
B. Out of Hours (Nights, weekends & Bank Holidays)	<ol style="list-style-type: none"> 1. Phone the Duty Medic on 07624 313932

NNUH Bleep Systems

1. Dial 156 and listen to the automated message
2. When instructed to do so enter the four-digit bleep number of the person you are trying to contact
3. Type your extension number when prompted
4. Replace the handset and wait to be called

Locating Requestors Bleep/Telephone Labtrak from ICE

1. Go to Patient Entry
2. Type in episode number (lab number)
3. At the bottom of the screen under 'ICE User' it details the requestor details and also a 4-digit number in the middle which can be an extension or a bleep number
4. This can be used to contact the requestor

Contacting Community or Other Hospitals

1. Please contact any community based hospital through their respective switchboard to escalate any abnormal result
2. If OOH and the community hospital is not answering, then these abnormal results should be escalated through to 111

A&E Alertive Process
<ol style="list-style-type: none"> 1. Follow same telephone limits as above 2. When abnormal result requires escalation, search for ED Flow Co-Ordinator as the recipient 3. Subject line should read as follows "Patient name, hospital number, DOB" 4. Subject body should state the test that is being escalated e.g. "Troponin" 5. ED Flow Co-ordinator to "acknowledge" the alert 6. If there is no response within 10 minutes, then another alert is sent to the ED Lead Nurse, then follow as step 4 7. If no response within 10 minutes, then lab to phone ED Lead Nurse on ext. 5272 8. If ED inform the lab that the patient has moved then it is the responsibility of ED to escalate the abnormal result to the new location/clinical team <p>Above process has been agreed between Biochemistry & the ED team. This was implemented on 12/08/24 (Dr B Lopez & Dr S Price).</p>

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QEH Only	
Monday to Friday 08:00-18:00	
<p>A. Inpatients (IP)*/Outpatients (OP)</p> <p>*All Virtual Ward patients to be escalated as Inpatients</p>	<ol style="list-style-type: none"> 1. IP: Ward nurse in charge 2. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 3. Speciality SpR/middle grade by bleep 4. Consultant responsible for patient
<p>B. Reports with no Consultant or location identified</p>	<ol style="list-style-type: none"> 1. Phone clinical site manager via switchboard to identify the location of the patient 2. IP: Ward nurse in charge 3. OP: Outpatient Nurse in charge or Secretary of responsible Consultant 4. Speciality SpR/middle grade by bleep 5. Consultant responsible for patient

QEH Only	
Monday to Sunday & Bank Holidays 18:00-08:00	
<p>A. Inpatients*</p> <p>*All Virtual Ward patients to be escalated as Inpatients</p>	<ol style="list-style-type: none"> 1. Ward nurse in charge 2. Clinical Site Manager via bleep 3. Speciality SpR/Middle Grade by bleep 4. Critical Care Outreach bleep (available 24/7) 5. Speciality Consultant on call
<p>B. Outpatients</p>	<ol style="list-style-type: none"> 1. Phone Clinical Site Manager to identify speciality and so they can request notes for review by the most relevant speciality SpR/Middle Grade

QEH Only	
24/7	
<p>A. A&E</p>	<ol style="list-style-type: none"> 1. Bleep doctor on request form 2. If no bleep number or no reply phone A&E coordinator on ext. 2552. Quote name of ordering doctor, which will help find the clinician

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QEH Only	
A. Clinical haematology (Outpatients)	<ol style="list-style-type: none"> 1. Secretary of responsible consultant 2. Core hours phone on-call Haematology on bleep 2895 3. Out of hours phone to on-call Haematology consultant through switchboard

QEH Only	
A. Pain Clinic- Dr de Gray	<ol style="list-style-type: none"> 1. Dr de Gray is happy to be contacted via switchboard at any time about her patients

Primary Care	
A. Core Hours	<ol style="list-style-type: none"> 1. Phone the responsible surgery
B. Out of hours	<ol style="list-style-type: none"> 1. Phone GP out of hours' service through 111 and use by-pass number (0300 5550 315) 2. Norfolk Team Manager on 01603 952 829 3. Norfolk Dispatch on 0300 300 0044 ext. 5

QEH Bleep Systems

1. Dial 10 or 15 and listen to the automated message
2. When instructed to do so enter the four-digit bleep number of the person you are trying to contact
3. Type your extension number when prompted
4. Replace the handset and wait to be called