PROGRAM Standard Operating Procedure	
Title: Communication of Critical Diagnostic Results	Policy Number: 21-04-V1
Program Name: Primary Care Services	
Applicable Domain: Primary Care Services	
Additional Domain(s): NA	
Effective Date: 17/09//2019	Next Review Date: 17/09/2022
Issuing Authority: NTHSSA Territorial Medical Director NTHSSA Director, Health Services	Date Approved: 17/09/2019
Accreditation Canada Applicable Standard: NA	
Accrediting Body and Standard: NA	

GUIDING PRINCIPLE:

This supports the Northwest Territories Health and Social Services Authority (NTHSSA) commitment to providing excellence in patient care based on principles of patient safety, accountability and transparency.

PURPOSE/RATIONALE:

The NTHSSA is committed to ensuring that critical diagnostic results are flagged and a communication process that is distinct from the routine process is followed to ensure that the most responsible health practitioner (MRP) immediately receives those results. A critical result indicates that a patient may require immediate medical attention to avert significant harm. When critical results are received, they must be immediately communicated to the MRP who can initiate the appropriate patient care (refer to *Appendix A: Communicating Critical Diagnostic Results within Primary Care* pathway). Failure to communicate and follow-up critical diagnostic results can result in adverse and potentially life threatening patient outcomes.

Laboratory Services critical results are managed in accordance with all legislative, accreditation, legal and regulatory requirements, recognized standards of practice and stakeholder needs.

Medically critical laboratory results will be flagged in the Laboratory Information System (LIS) and/or defined by specific laboratory protocols (e.g. Microbiology, anatomical pathology, or genetics).

The Canadian Association of Radiologists (CAR) recommends that radiologists should attempt to co-ordinate via direct communication of unusual, unexpected or urgent findings to the referring provider in advance of the formal written report.

These include:

A. The detection of conditions carrying the risk of acute morbidity and/or mortality which may require immediate case management decisions.
B. The detection of disease sufficiently serious that it may require prompt notification of the patient, clinical evaluation or initiation of treatment.
C. Detection of life or limb threatening abnormalities which might not have been anticipated by the referring physician.
D. Any clinically significant discrepancy between an emergency or preliminary report and the final written report should be promptly reconciled by direct communication to the referring physician or his or her representative.

In these circumstances, the radiologist, or his or her representative, should attempt to communicate directly (in person or by telephone) with the referring physician or his or her representative. Alternative methods including fax, text messaging or email (if not already in place) could be used for these purposes if there is a way of verifying receipt of the report. The timeliness of direct communication should be based upon the immediacy of the clinical situation.

DEFINITIONS:

Critical Result: means a critical diagnostic result (including all laboratory tests) at such variance as to represent a pathophysiological state that is life-threatening unless some action is taken in a very short time and for which an appropriate action is possible.

Health Care Professional (HCP): for the purpose of this procedure, means licensed practical nurse (LPN), registered nurse (RN), community health nurse-primary care (CHN-PC), nurse practitioner (NP), medical resident or physicians (MD) working within the NTHSSA. HCPs are the only individuals permitted to receive a critical result from laboratory staff.

Most Responsible Practitioner (MRP): means the ordering practitioner who has the responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by NTHSSA to perform the duties required to fulfill the delivery of such treatments/procedure(s), within the scope of his/her practice (nurse practitioner or physician).

Point of Care Testing (POCT): is defined as medical diagnostic testing performed outside the clinical laboratory in close proximity to where the patient is receiving care. POCT is typically performed by non-laboratory personnel and the results are used for clinical decision making.

Read Back: The process of an individual receiving the results of a critical or significantly abnormal result or a critical test by writing down and reading back the information to the individual providing this information.

Urgent Message: means any message/communication that requires immediate attention by a practitioner (i.e. a critical laboratory result).

SCOPE/APPLICABILITY:

This policy and procedure applies to all NTHSSA staff.

PROCEDURE:

Communication of Critical Results

1. Critical results will be communicated by laboratory staff (medical laboratory technologists only) or radiology via telephone to HCP's, and then followed-up by either hardcopy (fax) or electronic copy within the patient's electronic medical record (EMR).

2. The HCP provider (LPN, RN, CHN-PC, NP, medical resident or MD) who receives the critical result via telephone from Laboratory or Radiology Services is required to read back to the caller:

    - The patient's name (first and last name) and unique identifier (i.e. date of birth, healthcare number)
    - The critical result and;
    - Provide their (the health care provider's) first initial, last name and designation

3. In instances where the critical result is communicated from laboratory services directly to the MRP or the on-call physician in the emergency department, the practitioner's name, designation and the time the critical results were communicated will be documented directly on the laboratory report by laboratory services.

4. If the receiving HCP is someone other than the MRP or the emergency on-call physician, the HCP must promptly ensure that the critical result is communicated to the MRP (or their delegate).

5. If the MRP is on-site the critical result can initially be communicated by the HCP to the practitioner verbally. The HCP must then follow up by sending the practitioner an urgent message in EMR.

5.1 Documentation in a urgent EMR message, when sent to the notified practitioner must include:

- A subject line titled "Critical Result"
- Date and time call received
- The critical result
- The time the practitioner was initially notified verbally
- Other relevant information as appropriate

5.2 To send an urgent message to a practitioner:

5.2.1 Enter the patient specific EMR
5.2.2 Right click on the patients' medical summary screen
5.2.3 Select "New Message"
5.2.4 Select recipient in the "To:" column
5.2.5 Document the message in the "Message" box
5.2.6 Ensure "Urgent" is highlighted to the right of the message box
5.2.7 Click on the  icon in the top right hand corner to send to selected recipient
5.2.8 Will be received in the recipient's messages inbox in red
5.2.9 Recipient will also receive a pop-up notification on their screen

6. Once the practitioner has received and reviewed the urgent EMR message, if further follow-up is required by the HCP, the message will be re-directed back by the practitioner. If no further action is required by the HCP the MRP will "review" and complete the message.

7. When the MRP (or their delegate) is off-site, the HCP will call the practitioner (or their delegate) on their cell phone.

7.1 All efforts to contact the MRP (or their delegate) are documented on the patient health record in the "notes" section of the EMR message.

8. If the practitioner answers the phone, the critical result will be verbally conveyed by the HCP followed by sending an urgent message (as noted in section 5) in the EMR.

9. If after 15 minutes the HCP is unable to contact the MRP (or their delegate) the HCP will attempt to communicate the critical result to another on-site practitioner, ideally who is a member of the same team.

9.1 The HCP will then follow up the verbal communication of the critical lab result with an urgent message in EMR to the notified practitioner (as noted in section 5).

10. If after 60 minutes the HCP is unable to contact any practitioner within the facility, the on-call physician designated to the emergency department must be contacted and notified of the critical result.

    10.1 The HCP must document in the client's EMR record the on-call emergency physicians name, the time notified and the critical lab result provided within the "response" section of the clients EMR.

11. During evening and weekend clinic the critical result received will be communicated to the practitioner on-site providing clinic services as per step 5 above.

Critical Point of Care Testing Results:

1. If when completing a point of care test (POCT) a critical result is obtained (refer to *Appendix B – Laboratory Critical Results List Chemistry/Hematology* for a list of critical laboratory results), i.e. if a glucometer presents a reading of "Hi", "Lo", < 2.5 mmol/L or > 25 mmol/L:

    1.1 Repeat the POCT for a confirmation result and then;

    1.2 Contact the MRP immediately, if initially providing the practitioner with the critical result verbally, follow up with an urgent message in EMR that includes:

    - A subject line titled – "Critical Result"
    - The critical POCT
    - The time in which the result(s) was obtained
    - The time the practitioner was initially verbally notified

2. Once the practitioner has received and reviewed the urgent EMR message, if further follow-up is required by the HCP, the message will be re-directed back by the practitioner. If no further action is required by the HCP the MRP will "review" and complete the message.

Documentation:

1. All critical results (including POCT results) must be communicated immediately to a practitioner (NP/MD). Verbal communication of the result must be followed-up by sending an urgent message in EMR to the receiving practitioner that includes the following documentation:

    - A subject line titled – "Critical Result"
    - Date and time call received
    - The critical result
    - If unable to reach the practitioner immediately, all attempts to contact the practitioner

- The name of the practitioner notified
- The time the practitioner was notified
- Other relevant information as appropriate

2. Once the practitioner has received and reviewed the urgent EMR message, if further follow-up is required by the HCP, the message will be re-directed back by the practitioner. If no further action is required by the HCP the MRP will "review" complete the message.

PERFORMANCE MEASURES:

N/A

CROSS-REFERENCES:

N/A

ATTACHMENTS:

- **Appendix A:** Communicating Critical Diagnostic Results within Primary Care pathway
- **Appendix B:** Laboratory Critical Results List Chemistry/Hematology

REFERENCES:

- Canadian Patient Safety institute (2001). Teamwork and Communication in Healthcare a Literature Review. Literature Review, Needs Assessment, Evaluation of Training Tools, and Expert Consultations. Edmonton, Alberta, Canada: Canadian Patient Safety Institute.

- Covenant Health (2016). Communication of Critical Lab Results - VII-B-450.

- Northwest Territories Health and Social Services Authority (NTHSSA) (2019). Laboratory Services Program Standard Operating Procedure - Laboratory Alert/Critical Results Procedure.

- Singh, H. & Vij, M. (2010). Eight Recommendations for Policies Communicating Abnormal Test Results. The Joint Commission Journal on Quality and Patient Safety May 2010; volume 36(5) pg. 224-225.

- Stanton Territorial Hospital Authority (2009, December). Stanton Territorial Health Authority Policy, Critical Laboratory Values (Panic Values). Yellowknife, Northwest Territories, Canada: Stanton Territorial Hospital Authority.

- Yellowknife Health and Social Services Authority (YKHSSA) (2014). Management of Messages in the Primary Health care clinics – SOPCS-111.

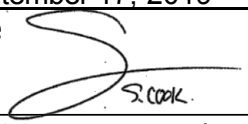
APPROVAL:

September 17, 2019
Date

NTHSSA Director, Health Services

APPROVAL:

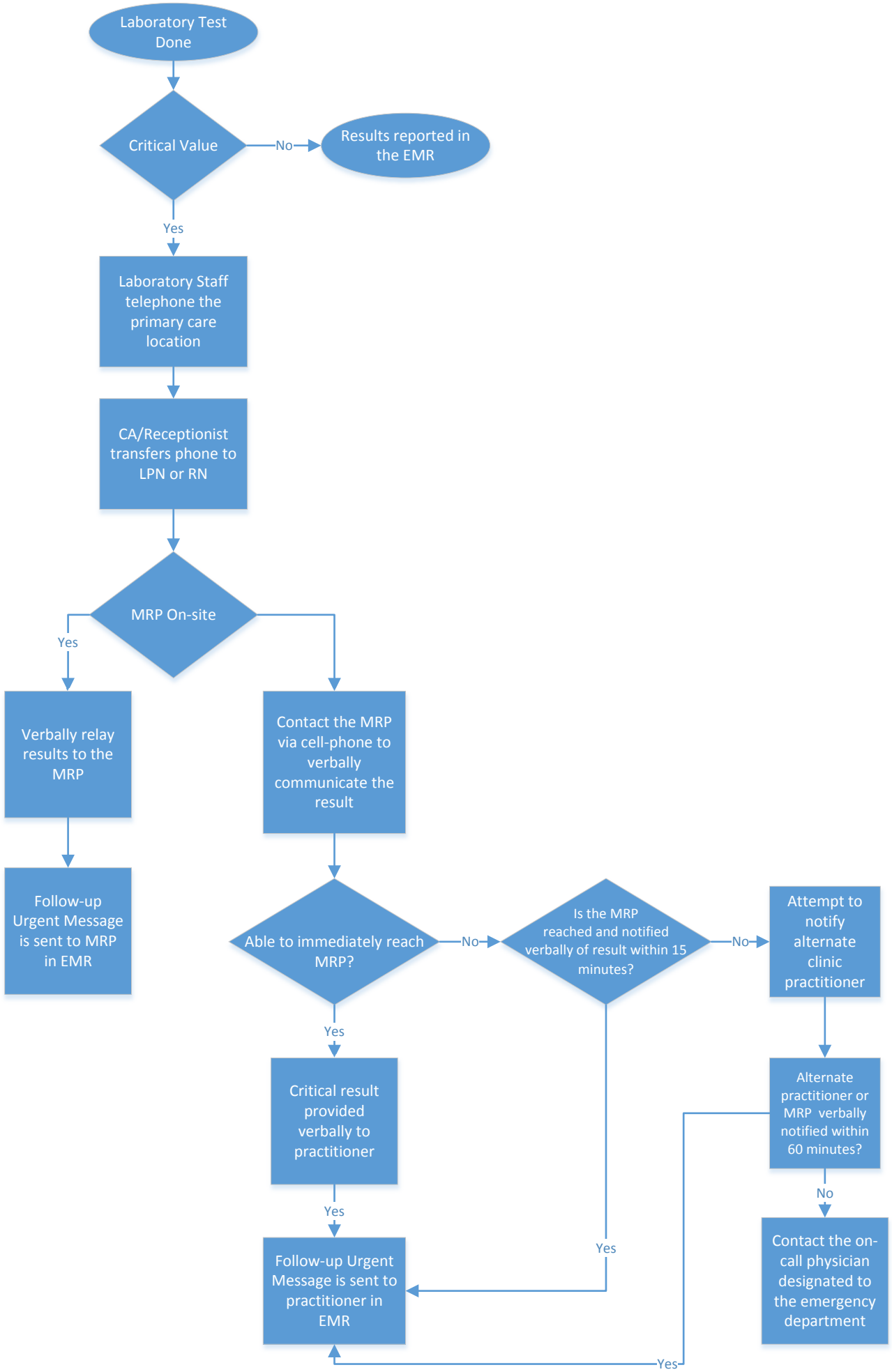
September 17, 2019
Date



NTHSSA Territorial Medical Director

Appendix A

Communicating Critical Laboratory Results within Primary Care



NORTHWEST TERRITORIES Health and Social Services Authority	**Document Name:** **Distribution:**	**Document Number:** **Date Issued:**

Laboratory Critical Results List Chemistry/Hematology

Test	Age	Critical Low	Critical High	Units	Comments	References
Acetaminophen			250	umol/L		2
Salicylate			2.50	mmol/L		2
Ethanol			65	mmol/L		2
Digoxin			2.6	nmol/L		2
Lithium			2.0	mmol/L		2, 4
Phenytoin	< 3 months		110	umol/L		2
	>/= 3 months		160			
Carbamazepine			100	umol/L		2
Vancomycin	Pre-dose (trough)		25.0	mg/L		2
	Other		59.9			
Sodium		125	155	mmol/L		2, 3
Potassium	</= 28 days	3.0	6.4	mmol/L		1
	29 days to <18 years	3.0	6.0			
	>/= 18 years	2.6	6.2			
TCO2		10	40	mmol/L		1, 3, 4
Calcium		1.65	3.25	mmol/L		2, 4
Glucose	<30 days	2.0	24.9	mmol/L		1, 2
	>/= 30 days	2.6	24.9			
Neonatal Bilirubin	</= 28 days		300	umol/L		2
Phosphorus	>/= 1 year	0.4		mmol/L		2
Magnesium		0.4	1.9	mmol/L		1, 2 ,4
Lactate			4.0	mmol/L		2, 3
Troponin I			0.12	ng/mL	Not i-Stat	
Troponin I			0.09	ng/mL	i-Stat Only	
Test	**Age**	**Critical Low**	**Critical High**	**Units**	**Comments**	**References**
Ionized Calcium		0.80	1.60	mmol/L		1, 3, 4
pH – Cord samples	Cord at delivery	7.00				5
pH - Arterial		7.20	7.60			1 - 3
pH - Venous		7.20	7.60			1 - 3
PO2 - Arterial		41		mmHg		1 - 3
PCO2		20	70	mmHg		1 - 3

Carboxyhemoglobin			20%	%		4

Test	Age	Critical Low	Critical High	Units	Notes
WBC		<0.6	>100 *	X 10^9/L	*except known CLL
Neutrophils		<0.6		X 10^9/L	
Hemoglobin	<6 days	<100		g/L	
	>6 days	<70			
Platelets		<40 *		X 10^9/L	*Assuming no platelets available for transfusion on site.
INR			>5.0		
PTT			>150 s		
Malaria			Positive *		*First time
CSF WBC	0-1 month		>27	X 10^9/L	
	2 mths – 16 yrs		>7		
	>16 years		>5		

References:

1. Genzen JR, Tormey CA, Education Committee of the Academy of Clinical Laboratory Physicians and Scientists. Pathology consultation on reporting of critical values. Am L Clin Pathol. 2011 Apr;135(4):505-13.
2. DynaLIFE North Zone Critical Values LTR36671. Last Approved Feb 26 2018.
3. Campbell CA, Georgiou A, Westbrook Jl, Horvath AR. What Alert Thresholds Should Be Used to Identify Critical Risk Results: A Systematic Review of the Evidence. Clin Chem. 2016 Nov;62(11)L1445-1457.
4. Simhan HN. Umbilical Cord Blood Acid-base Analysis at Delivery. UpToDate 2019. Accessed Apr 23 2019.
5. Higgins C. Critical Values in Laboratory Medicine. 2011. https://acutecaretesting.org/en/articles/critical-values-in-laboratory-medicine . Accessed Apr 22 2019.
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7. Reporting Critical Laboratory Values in Hematology. Indian J. Hematology Blood Transfusion. 2008 May; 24(2):81-2.
8. Proposed Alert and Critical Values Review, Dynalife Medical Labs, 02 May 2019

Laboratory Critical Results List Chemistry/Hematology

Test	Age	Critical Low	Critical High	Units	Comments	References
Acetaminophen			250	umol/L		2
Salicylate			2.50	mmol/L		2
Ethanol			65	mmol/L		2
Digoxin			2.6	nmol/L		2
Lithium			2.0	mmol/L		2, 4
Phenytoin	< 3 months		110	umol/L		2
	>/= 3 months		160			
Carbamazepine			100	umol/L		2
Vancomycin	Pre-dose (trough)		25.0	mg/L		2
	Other		59.9			
Sodium		125	155	mmol/L		2, 3
Potassium	</= 28 days	3.0	6.4	mmol/L		1
	29 days to <18 years	3.0	6.0			
	>/= 18 years	2.6	6.2			
TCO2		10	40	mmol/L		1, 3, 4
Calcium		1.65	3.25	mmol/L		2, 4
Glucose	<30 days	2.0	24.9	mmol/L		1, 2
	>/= 30 days	2.6	24.9			
Neonatal Bilirubin	</= 28 days		300	umol/L		2
Phosphorus	>/= 1 year	0.4		mmol/L		2
Magnesium		0.4	1.9	mmol/L		1, 2 ,4
Lactate			4.0	mmol/L		2, 3
Troponin I			0.12	ng/mL	Not i-Stat	
Troponin I			0.09	ng/mL	i-Stat Only	

Test	Age	Critical Low	Critical High	Units	Comments	References
Ionized Calcium		0.80	1.60	mmol/L		1, 3, 4
pH – Cord samples	Cord at delivery	7.00				5
pH - Arterial		7.20	7.60			1 - 3
pH - Venous		7.20	7.60			1 - 3
PO2 - Arterial		41		mmHg		1 - 3
PCO2		20	70	mmHg		1 - 3

Carboxyhemoglobin			20%	%		4

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Hemoglobin	<6 days	<100		g/L	
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INR			>5.0		
PTT			>150 s		
Malaria			Positive *		*First time
CSF WBC	0-1 month		>27	X 10^9/L	
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