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Laboratory Bulletin

DATE:	26 May 2025
TO:	South Zone – All Physicians, Nurses and Managers
FROM:	Clinical Biochemistry, Alberta Precision Laboratories (APL)
RE:	Implementation of High Sensitivity Troponin I (hs-TnI) with 2-hour Chest Pain Pathway, B-Natriuretic Peptide (BNP) and D-Dimer on the OrthoQuidel Triage MeterPro in Rural Sites

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Key Message

- Effective June 3, 2025, the new OrthoQuidel Triage MeterPro device will be implemented at 3 rural hospitals in South Zone (Table 1), which will lead to the following testing changes:
  - Implementation of the new Quidel TriageTrue high sensitivity troponin I (hs-TnI) assay
  - Testing for B-natriuretic peptide (BNP), which is a change from the current reporting of NT-proBNP
  - Testing for D-dimer, which is a change from the current testing device

Table 1. Triage MeterPro device implementation timeline

Bassano	June 3, 2025
Bow Island	June 3, 2025
Oyen	June 3, 2025

hsTnI:

- Sites using the TriageTrue hsTnI assay will offer the new *2-Hour Chest Pain Pathway for Quidel TriageTrue High Sensitivity Troponin-I Assay* (Appendix 1).
- The TriageTrue hs-TnI assay requires sample collection in lavender EDTA blood collection tubes.
  - No other sample collection tubes are acceptable.
  - For additional information refer to the APL reference: Order of Draw and Order of Transfer
- This troponin assay change will involve new: units of measure, reference interval (i.e. 99th percentile upper reference limit of the assay), reporting limits, rule-in/rule-out chest pain pathway, delta values, critical limits and interpretative comments (Table 2 and 3).
- At sites with the TriageTrue hs-TnI assay, critical troponin concentrations (≥ 60 ng/L) will be phoned to the ordering provider ONLY for troponin samples collected in the outpatient/community setting.
  - Lab will **not** phone troponin results for hospital patients (including ER patients and inpatients).

BNP:

- The change to the Triage Meter requires a change from current NT-proBNP to BNP. This requires changes to collection requirements and reporting information (Table 4).
- The required collection container is lavender EDTA (www.albertaprecisionlabs.ca/tc/Page13858.aspx ◊ Provincial ◊ Blood Collection: Order of Draw and Order of Transfer).

D-Dimer:

- The change to the Triage Meter requires a change in D-Dimer testing. This requires changes to collection requirements and reporting information (Table 5).
- The required collection container is lavender EDTA (www.albertaprecisionlabs.ca/tc/Page13858.aspx ◊ Provincial ◊ Blood Collection: Order of Draw and Order of Transfer).

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Background

- Evidence supports that a 2-hour chest pain pathway for TriageTrue hs-TnI is effective and safe for rule-in/rule-out of acute myocardial infarction (AMI).
- The recommended pathway for TriageTrue hs-TnI is consistent with clinical practice guidelines and is recommended by the Cardiovascular Program Improvement and Integration Network (PIN) in consultation with Emergency Medicine PIN and Laboratory Medicine provincially.

Why this is important

- The provincial rural immunoassay analyzer project is a large-scale provincial project that will improve access to vital laboratory testing in many of Alberta's rural hospitals and will improve standardization in instrumentation and reporting.
- Adoption of the 2-hour hs-TnI chest pain pathway with rapid rule-in/rule-out is greatly expanding across the province and improving flow of patients through emergency rooms.
    - This initiative reduces the variation of troponin assays and chest pain protocols in the province.
    - These changes will assist clinicians with evidence-based interpretation of troponin results and guide optimal patient management.

Action Required

Troponin

- Collect samples for TriageTrue hs-TnI in lavender EDTA tubes
- Be familiar with changes in assay reporting, container type and the new 2 hour chest pain pathway.
- Be aware of different troponin assays used within the South Zone.
- Do not interpret results across sites with different assays.

BNP

- Please be aware of the change in test. Do not directly compare NT-proBNP and BNP results.
- Be familiar with laboratory reporting changes and new collection requirements.

D-Dimer

- Collect samples for D-dimer in lavender EDTA tubes
- Be familiar with laboratory reporting changes which involves new units of measure, a new reference interval and new abnormal limit.

Questions/Concerns

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Table 2: Summary of new reporting changes for the TriageTrue hs-TnI assay

	Cobas h232 conventional TnT (Current)	TriageTrue hs-TnI 2-hour Chest Pain Pathway (New)	Notes
Collection Tube	Lithium heparin PST (light green) or Sodium heparin (dark green)	Lavender EDTA	
Rapid Chest Pain Pathway	N/A	2-hour	
Reporting Units	ug/L (3 decimals)	ng/L (whole number)	
Reference Interval	<0.040 ug/L	< 21 ng/L	
Critical Value	>0.100 ug/L	≥ 60 ng/L	
Reporting Limits	0.040 to 2.000 ug/L	2 to 1000 ng/L	
Delta Value	None	Reported for 0-2 hour delta	
Comments	Interpretive comments And Method identification comments	Pathway interpretative comments And Method identification comments	Interpretative comments have changed (Table 3)

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Table 3: Interpretative comments reported with Quidel TriageTrue hs-TnI

hs-TnI result (ng/L)	Comment	Flagging
< 4	For patients with a non-ischemic ECG, a Troponin I, High Sensitivity of 3 ng/L or less on presentation is highly sensitive for excluding acute myocardial infarction, provided the specimen was collected more than 3-hours from symptom onset. However, for patients with symptoms less than 3-hours duration or concerning clinical presentations, repeat troponin testing at 2-hours after the initial sample is recommended. Please note that patients with ischemic ECG changes and/or high-risk clinical presentations should be considered for further evaluation irrespective of troponin results.	Normal
4 – 20	Troponin I, High Sensitivity is below the upper reference limit (21 ng/L) and results are not consistent with myocardial infarction (MI) or injury. However, patients with acute symptoms (less than 6-hours) or concerning clinical presentations should undergo repeat troponin testing at 2-hours after the initial sample. - Troponin I, High Sensitivity of 4 ng/L or less on presentation AND a 2-hour delta(change) of 2 ng/L or less is highly sensitive for excluding acute myocardial infarction (MI) - A 2-hour delta (change) of 3-7 ng/L may indicate acute myocardial injury and suggest an additional troponin measurement 4 hours after the initial sample, serial ECG testing and clinical re-evaluation. - A 2-hour delta (change) of 8 ng/L or more suggests an acute myocardial injury and may represent acute myocardial infarction in the appropriate clinical scenario. Please note that patients with ischemic ECG changes and /or high-risk clinical presentations should be considered for further evaluation irrespective of troponin results	Normal
21 – 59	Troponin I, High Sensitivity has a non-specific/non-diagnostic elevation. Interpretation is highly dependent on clinical presentation and patient history. New elevations are concerning; however, many patients have chronic elevations in troponin and measured concentrations near the patient's baseline are reassuring. However, patients with acute symptoms (less than 6-hours) or concerning clinical presentations should undergo repeat troponin testing at 2-hours after the initial sample. - A 2-hour delta (change) of 2 ng/L or less is highly sensitive for excluding acute myocardial infarction. - A 2-hour delta (change) of 3-7 ng/L may indicate acute myocardial injury and suggest an additional troponin measurement 4 hours after the initial sample, serial ECG testing and clinical re-evaluation. - A 2-hour delta (change) of 8 ng/L or more suggests an acute myocardial injury and may represent acute myocardial infarction in the appropriate clinical scenario. Please note that patients with ischemic ECG changes and /or high-risk clinical presentations should be considered for further evaluation irrespective of troponin results	High
60	Clear elevation of Troponin I, High Sensitivity consistent with acute myocardial injury or infarction in the appropriate clinical context Repeat troponin testing at 2-hours after the initial sample may be helpful to assess for ongoing myocardial injury	Critical

Table 4: Reporting comments for NT-proBNP/BNP

Current NT-proBNP Reporting Comment	New BNP Reporting Comment with Triage Meter
Heart failure is unlikely if NT-Pro BNP is <300 ng/L. Heart failure is unlikely if: • NT-Pro BNP is 400 ng/L for patients < 50 years of age • NT-Pro BNP >900 ng/L for patients 50-75 years of age • NT-Pro BNP >1800 ng/L for patients >75 years of age	In an acute setting in the presence of appropriate clinical evaluation, the diagnosis of heart failure is: BNP 400 ng/L: Very likely. BNP 100-400 ng/L: Possible, but other diagnoses must be considered. BNP > 400 ng/L: Very likely. 2017 CCS HF Guidelines, CJC 2017

Table 5: Summary of New Reporting Changes for D-Dimer Assay

	Cobas h232 (current)	TriagePro D- Dimer (New)
Collection Tube	Dk Green Lithium Heparin	Lavender EDTA
Reporting Units	mg/L FEU	mg/L DDU
Reference Interval	<0.5	<0.5
Reporting Limits	0.10-4.00 mg/L FEU	0.10-5.00 mg/L DDU
Abnormality	>0.49 mg/L FEU	>0.49 mg/L DDU
Comments	A D-Dimer BELOW the 0.5mg/L FEU cutoff may be used with a standardized clinical assessment and/or imaging studies to help venous thromboembolism (VTE). Values above the cutoff are not diagnostically useful in VTE assessment. Results obtained using the second-generation Cobas h232 (Roche) assay.	A D-Dimer BELOW the 0.5mg/L DDU cutoff may be used with a standardized clinical assessment and/or imaging studies to help venous thromboembolism (VTE). Values above the cutoff are not diagnostically useful in VTE assessment. Results obtained using the Triage D-Dimer Assay on EDTA plasma.

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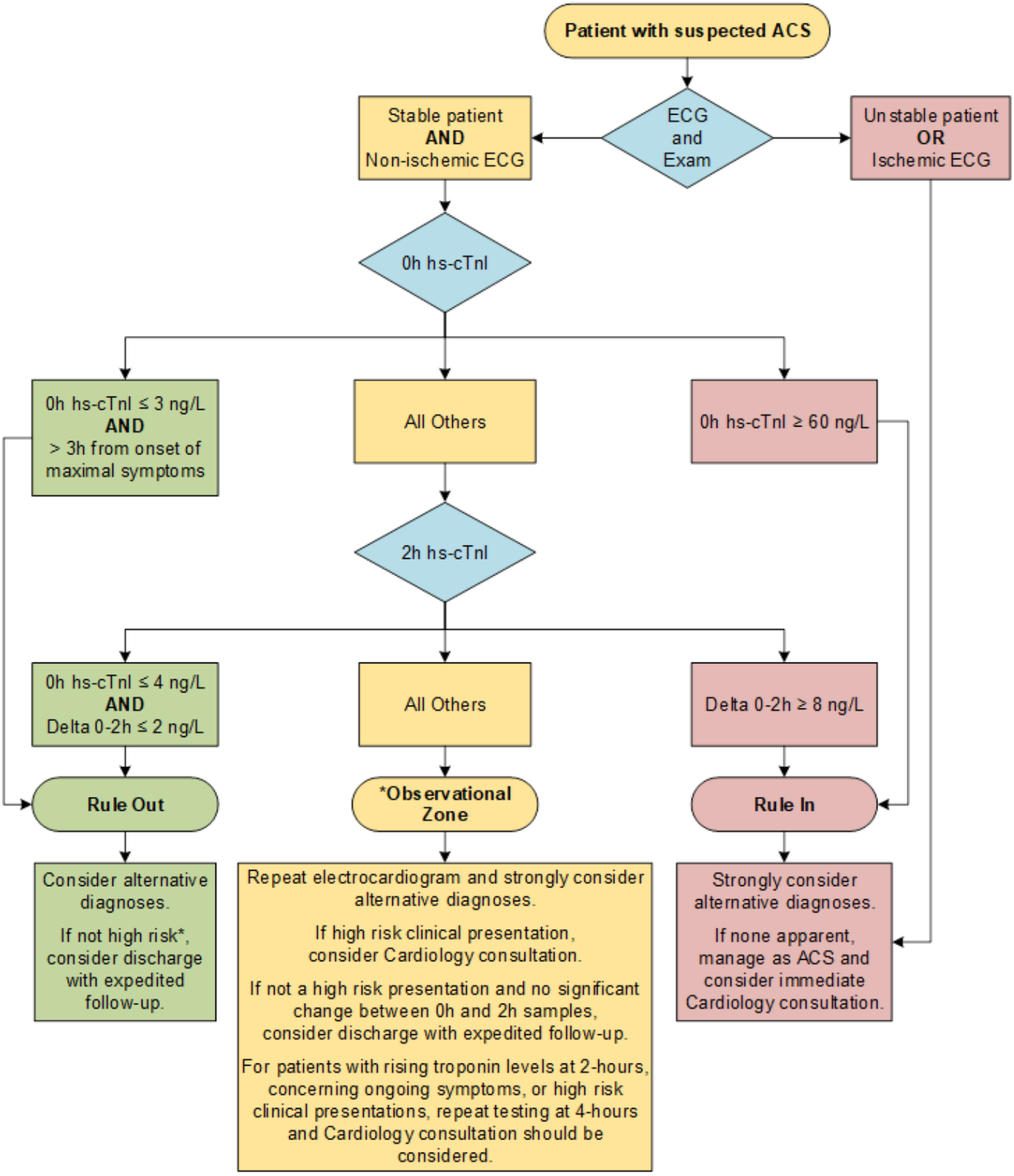
Appendix 1: 2-Hour Chest Pain Pathway for Quidel TriageTrue High Sensitivity Troponin-I Assay



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Note:
*For all patients with abnormal hs-cTnI results, check the medical record for prior results. Many patients have stable abnormalities in hs-cTnI and measured concentrations similar to the patient's baseline are reassuring.

Per European Society of Cardiology (ESC) Guidelines and 4th universal definition of MI, if the patient is >6h from symptom onset, has a hs-cTnI <21 ng/L (99th percentile upper reference limit), are pain-free, and have a low-risk presentation, they can be considered ruled out.

However, coronary ischemia has not been definitively excluded and unstable angina must be considered. Disposition after a single hs-cTnI <21 ng/L should only be considered for patients with low-risk clinical presentations who are >6 hours since symptoms onset, and should be used cautiously.

Troponin concentration may be elevated in the presence of kidney dysfunction. Patients with an eGFR <60 and an elevated troponin concentration should undergo serial testing to confirm a rising troponin concentration consistent with myocardial injury. Patients with an eGFR <60 who have troponin concentrations in the rule-out zone can be considered to have myocardial injury safely excluded.

HEART Score Calculation				
History		Highly suspicious	**2**	
		Moderately suspicious	**1**	
		Slightly suspicious	**0**	
ECG		Significant ST-depression	**2**	
		Non-specific repolarization disturbance, LBBB, LVH, Paced	**1**	
		Normal	**0**	
Age		≥ 65 years	**2**	
		45-64 years	**1**	
		≤ 44 years	**0**	
Risk Factors	☐ Diabetes ☐ Current smoker ☐ Obesity ☐ Family hx CAD ☐ HTN (diagnosed) ☐ HL (diagnosed)	≥ 3 risk factors or history of atherosclerotic disease	**2**	
		1 or 2 risk factors	**1**	
		No risk factors known	**0**	
hs-cTnI (peak)		> 3x normal limit (64 ng/L or greater)	**2**	
		1-3x normal limit (21-63 ng/L)	**1**	
		< normal limit (< 21 ng/L)	**0**	
			Total (10 maximum)	
HEART Score Interpretation				
			Low Risk	**0-3**
			Moderate Risk	**4-6**
			High Risk	**7-10**