Change to High Sensitivity Troponin Testing

To: Canyons Region/Desert Region Medical Staff
From: Dr. Adam Balls and Dr. Sarah Ilstrup
Date: September 1, 2023
Re: **Transition from Troponin-I to Roche 5th Generation High Sensitivity Troponin-T**

The Canyons Region hospitals and large clinics and Desert Region hospitals will be transitioning to new Roche clinical chemistry (Na, K, glucose, etc.) and immunochemistry (Cardiac markers, TSH, PSA, etc.) instruments as our legacy ABBOTT instruments have surpassed their useful life expectancy. The Canyons Region Clinical Chemistry Work Group worked for more than two years to evaluate instrument options. After a rigorous evaluation process the instrument evaluation information was shared with a decision support team which included Laboratory Medical Directors, Lab Operational Leadership, Supply Chain, Compliance, Finance, and Executive Leadership. A decision was made to transition to the Roche instruments. The proposed implementation timeline for each facility is outlined in the figures below:

Intermountain Health Implementation Program
Draft Future Schedule - 1

Community	Site Name	Instruments	PLANNED DELIVERY WEEK	TENTATIVE GO-LIVE WEEK (tentative until Project schedule developed)
1A	Utah Valley (Also Early Pro)	Pro (x 2)	DELIVERY COMPLETE	Week of Oct 2 (Monday)
1B	Spanish Fork	Pure (x 2)	DELIVERY COMPLETE	Week of Oct 2 (Wednesday)
1C	Orem	Pure	DELIVERY COMPLETE	Week of Oct 2 (Wednesday)
2A	McKay Dee	Pro 58 (x2)	DELIVERY COMPLETE	Week of Oct 23 (Tuesday)
2B	Layton	Pure (x2)	**Pure #1 Delivered,** Pure #2 11/13/23	Pure #1 Week of Oct 23 (Tuesday)
4	**Central Lab (Automation)**	Pro 558 (x4); CCM; p612 (x2); p701 (x3)	July 17 - Sept *(instruments delivered in phases)* **IN PROCESS**	**Jan 15, 2024**
5A	Primary Children's	Pro 58; Pure	Sept 25	**Jan 22, 2024**
5B	Salt Lake Clinic	Pure	Oct 16	**Jan 22**
5C	Lehi (New facility, Planned go-liveFeb 12, 2024)	Pure (x2)	Oct 30 (confirm site will be ready)	**Feb 12** *(Facility Opening)*
3B	Riverton	Pro 58; Pure	Nov 20	**April 15**
3A	LDS	Pro 58 (x2)	**Jan 1, 2024**	**April 15**
3C	Alta View	Pure (x2)	**Feb 5**	**April 15**
6A	Logan (Remodel needed)	Pro 58 (x2)	**Feb 26** (phasing will be required / Temp location time constraints - live by June 1 24)	**July 8** (might need to go live in advance of other sites?)
6B	Bear River	Pure; Pure e402	**April 8**	**July 8**
6C	Cassia	Pure, Pure e402	**April 29**	**July 8**

Intermountain Health Implementation Program
Draft Future Schedule - 2

Community	Site Name	Instruments	PLANNED DELIVERY WEEK	TENTATIVE GO-LIVE WEEK (tentative until Project schedule developed)
7A	St. George (Add Automation)	Pro 558; Pro 58 + Automation (p512 w471 & CCM)	**May 20 (Pros) - Automation TBD**	**Sept 16 (Pros)**
7B	Hurricane ER (opens Nov 2023)	Pure; Pure e402	**July 8**	**Sept 16**
8A	Cedar City	Pro 58; Pure	**July 29**	**Oct 28**
8B	Garfield	Pure; Pure e402	**Aug 19**	**Oct 28**
9A	American Fork	Pro 58; Pure	**Sept 9**	**Dec 9**
9B	Saratoga Springs ER (opens Oct 2023)	Pure; Pure e402	**Sept 30**	**Dec 9**
10A	Park City	Pure (x2)	**Oct 14**	**Jan 13, 2025**
10B	Heber	Pure; Pure e402	**Nov 4**	**Jan 13, 2025**
11A	Sevier (Remodel)	Pure (x2)	**Nov 25**	**Feb 24, 2025**
11B	Sanpete	Pure; Pure e402	**Dec 16**	**Feb 24, 2025**
12A	Delta	Pure; Pure e402	**Jan 6, 2025**	**Mar 31, 2025**
12B	Fillmore	Pure; Pure e402	**Jan 27**	**Mar 31, 2025**

One of the key benefits to the system include improved immunoassay instrument redundancy especially for our smaller facility labs that have suffered when their sole instrument has gone down, in some cases being unable to test for extended periods of time. The majority of the assays perform similarly between the ABBOTT and Roche instruments but the cardiac marker targets are very different. The current 4th generation Troponin I assay will transition to a high sensitivity troponin T assay (hs-cTnT)and the B-type natriuretic peptide will transition to N-terminal pro-B-type natriuretic peptide (NT-proBNP).

A group of expert clinicians reviewed the BNP to NT-proBNP transition and believe that this transition will be relatively seamless as many clinicians are already using NT-proBNP send out testing in patient care. An expert clinical group including cardiology, emergency medicine, hospitalists, etc. has been revising the acute coronary syndrome care process models to support the transition to hs-cTNT. The clinical use of hs-cTNT is significantly different than the current Troponin I assay.

The Canyons/Desert Regions is implementing a 5th generation, high sensitivity cardiac troponin T (hs-cTn) assay to improve the management of chest pain patients with suspected ACS. By definition, a hs-cTn assay is characterized by a lower limit of detection and an increased precision. Adoption outside of the US has been driven by clinical studies demonstrating that use of hs-cTn in ED patients undergoing evaluation for possible AMI permits more rapid and accurate rule-in and rule-out decisions compared with use of current Troponin-I assay. Algorithms incorporating a change (delta) in troponin also help to distinguish patients with cTn elevations from other causes such as advanced age, CHF, sepsis or CKD.

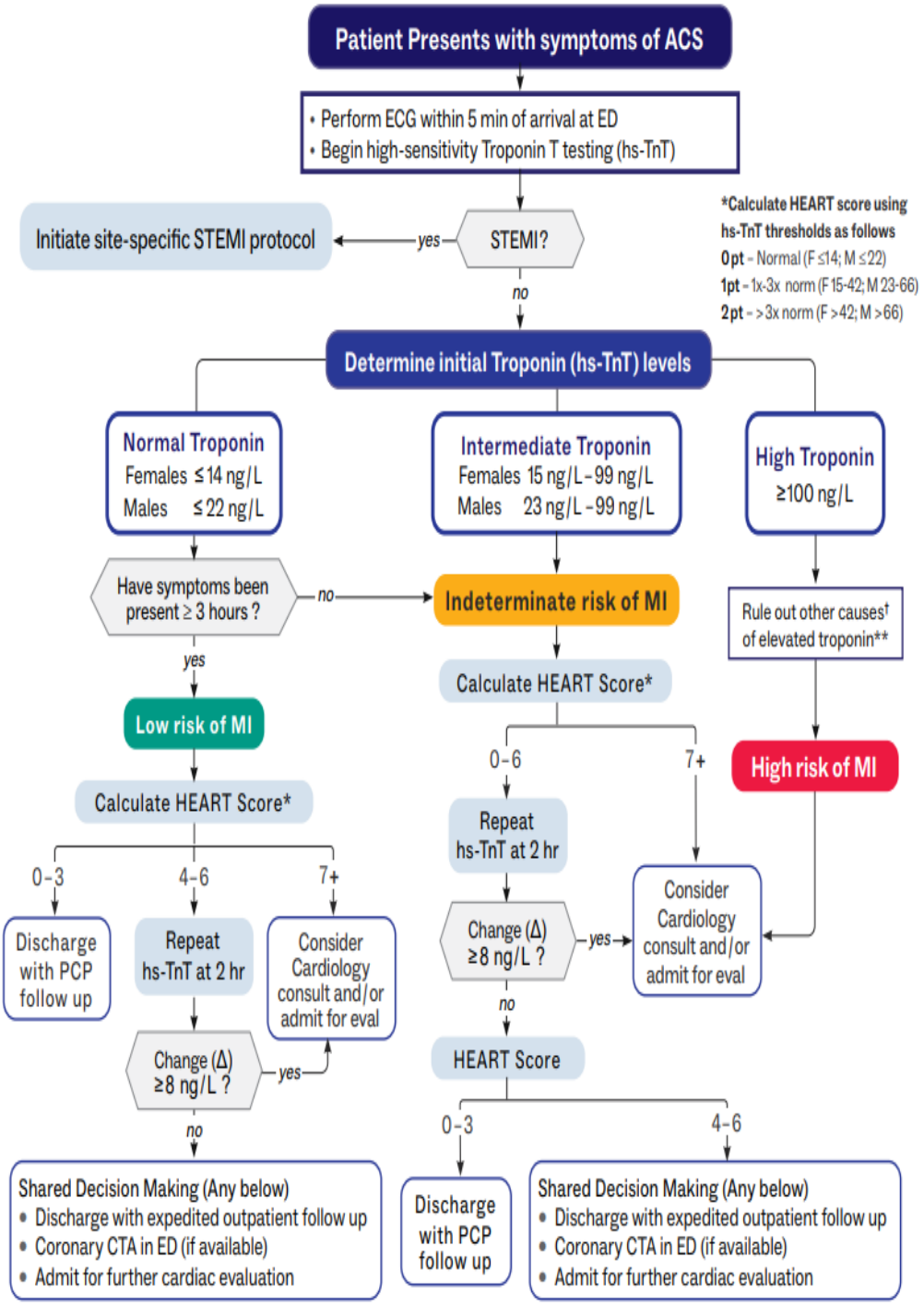
The advantages of hs-cTn for Intermountain Health patients are several. Low-risk patients can be more efficiently identified and discharged from the ED without need for excessive resource utilization, and more high-risk ACS patients can be identified with the opportunity for improved outcomes through application of more aggressive therapies. Published studies have shown implementation of hs-cTn assays along with evidence-based algorithms can lead to faster rule out of patients with less time in the ED and less invasive testing, with no increase in over-diagnosis as indicated by stable cardiac catheterization rates.

The successful implementation of hs-cTn across the Canyons/Desert regions will depend on provider education regarding appropriate ordering, use of 99th percentile thresholds, serial testing, changes in cTn, and risk assessment using validated clinical risk scores and/or ECGs. Providers also need to note the hs-cTn assay results in whole numbers compared to current Troponin-I assay, which result in decimals.

A clinical content expertise work group comprised of representatives from ED/Trauma, Cardiovascular Services, and Lab Services has updated the Acute Coronary Syndrome algorithm to include the use of high-sensitivity troponin. The algorithm is below and can also be accessed via **https://kr.ihc.com/ckr-ext/Dcmnt?ncid=530420539**

SUSPECTED ACUTE CORONARY SYNDROME (ACS) –ED AND INPATIENT

INTERMOUNTAIN CANYONS AND DESERT REGIONS ONLY



ACS Predictive and Non-predictive Features
Predictive
• Exertional discomfort
• Diaphoresis
• Radiation of pain (arms/neck/jaw)
• Vomiting
• Dyspnea
• Similar to past documented AMI
Non-predictive
• Brief pain (lasting seconds)
• Reproducible or traumatic pain
• Clear non-cardiac cause (history)

† High Sensitivity Troponin[1]	
hs-TnT (ng/L)	**Acute and Chronic Conditions with Elevated hs-TnT**
10,000	Very large AMI, severe myocarditis
1000	Large AMI, myocarditis, Takotsubo, PE, critical illness
100	Small AMI, myocarditis, Takotsubo, PE, shock, CHF, hypertensive crisis, SAB
50	Micro AMI, myocarditis, Takotsubo, PE, shock, CHF, hypertensive crisis, SAB, stable CAD etc.
10	Stable angina, CHF, LVH, subclinical heart disease
5	Healthy individuals

[1] Wildi K. *Clinic Biochem.* 2015 Mar 1;48(4-5):218-22.

**If chronic troponin elevation is present, any change ≥20% is significant for acute or chronic myocardial injury and may indicate AMI.

Intermountain Health