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| DATE: | 6 February 2023 |
| TO: | UAH, MCH, RAH, GNH, and SCH Physicians, Nurses, and Respiratory Therapists |
| FROM: | Clinical Biochemistry, APL North Sector |
| RE: | Impact of Cyanokit Drug on Laboratory Tests |

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Key Message

- One of the major side effects of Cyanokit (hydroxocobalamin) infusion is that it causes plasma and urine to turn red (see Supplemental Figure), which can interfere with certain laboratory tests and lead to inaccurate or invalid test results.
- The below table lists the tests that are affected and how results are reported to chart.
- Clinicians need to alert their local laboratory when Cyanokit is administered, so that the laboratory can identify these samples and ensure results will be correctly reported.

| Degree of impact | Tests | Reported or cancelled? |
|------------------|--|---|
| Moderate | <ul style="list-style-type: none"> • <u>Chemistry</u>: Total Bilirubin, and Conjugated Bilirubin • <u>Coagulation</u>: D-Dimer, and Fibrinogen (results reported after sample dilution to prevent interference) | Reported with cautionary comment |
| High | <ul style="list-style-type: none"> • <u>Chemistry</u>: Ammonia, ALT, AST, CK, Iron, LD, and TIBC • <u>Hematology</u>: Hb, and MCHC (recommend using RBC or HCT instead) • <u>Coagulation</u>: Anti-Xa, APTT, and PT (Fibrinogen added-on for APTT and PT) • <u>Dipstick Urinalysis</u>: Ketones, nitrite, leukocyte, and blood • <u>Blood gases</u>: tHB, sO₂, O₂Hb, COHb, MetHb, and Hct | <p>All tests cancelled except blood gases.</p> <p>Blood gases may be falsely high or altogether suppressed, and should be interpreted with caution.</p> |

Background

- Cyanokit infusion is commonly used in the Emergency Room to treat cyanide poisoning due to smoke inhalation from house fires, and less commonly in the Operating Room for vasoplegic syndrome following cardiothoracic surgery.
- Patients receiving Cyanokit in the Edmonton Zone are most often treated at UAH and MCH, but can also be treated at the other major hospitals (RAH, GNH and SCH).
- Recent [published](#) and unpublished studies conducted in Edmonton demonstrate significant impact to some laboratory test results across various analyzers.
- Impacted laboratory tests will no longer be reported when the drug is present.
- Clearance from circulation can take 6 or more days (see Supplemental Figure). The laboratory will resume result reporting of impacted tests once plasma or urine is no longer coloured red or 6 days has elapsed from time of infusion.

Action Required

- Be aware that some chemistry, urinalysis, hematology, and coagulation tests are significantly affected by Cyanokit infusion, and as such, test reporting will be modified, flagged with warning comments, and/or cancelled as shown in the above table.
- Be aware that some reported blood gas tests are significantly affected by Cyanokit infusion and results may be falsely high or altogether suppressed.



- It is critical that the clinical team contact the laboratory as soon as a patient is infused with Cyanokit, so that blood and urine samples are correctly identified, and the correct test reporting is performed. Laboratory phone numbers are:
 - UAH: 780-407-7484
 - RAH: 780-735-4380
 - SCH: 780-418-8255
 - MCH: 780-735-9308
 - GNH: 780-735-7088
- Consult the on-call biochemist (780-407-8822) if results from cancelled tests are urgently required.

Questions/Concerns

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Supplemental Figure

Plasma collected up to 6 days from a patient infused with Cynaokit. Normal and grossly hemolysed plasma are shown for comparison.

