ALLINA HEALTH LABORATORY

Memo

To: Allina Health Laboratory outreach clients

From: Allina Health Laboratory outreach services

Date: June 22, 2022

Re: **Tube shortage affecting blood testing for trace metals**

Trace concentrations of metals are ubiquitous in the environment and trace metal testing in blood requires certified metal-free collection tubes for accurate results. There is now a severe national shortage of metal-free blood collection tubes. As with other tube shortages, the vendors cite multiple contributing factors. We must take immediate steps to conserve the remaining supply of metal-free tubes for critical testing only.

FOR LAB STAFF:

All sites will need to limit the use of both the Navy EDTA and Navy No Additive collection tubes and begin to use alternate tube types. Refer to the table on the following page for acceptable alternate tubes for metals testing. Alternate tube type alerts will also be in the Allina Health Laboratory Test Catalog.

When an elevated result for a test that is originally expected to be collected in a navy blue metal free tube is collected in a Lavender EDTA tube, a disclaimer will be added to the results. "*The specimen submitted for Trace Metal testing was collected in a container that was not certified as 'metal free', which may produce a falsely elevated result. Repeat testing, utilizing a collection tube certified as metal free (royal-blue top), prior to initiating therapy or conducting environmental investigations is recommended.*"

Exception: Zinc, Selenium, and Copper testing will be restricted and only orderable for specific conditions. These tests will continue to be collected in the Navy EDTA or Navy No Additive

- Copper, serum/plasma 13302
- Selenium, serum/plasma 13666
- Zinc, red blood cell (RBC) 12520
- Zinc, serum/plasma 13305
- Selenium, whole blood 994 – *requires pathology approval*

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Note that the blood collection tube supply continues to be an evolving situation, and sites may be asked to use different tubes again depending on available inventory.

To Do:

1. If you get a blood collection label with a tube type of Navy No Additive or Navy EDTA, collect an alternate tube type if indicated in the chart below.
2. Continue to collect zinc, selenium and copper in Navy top tubes.
3. If a provider receives an elevated result with the disclaimer to draw confirmatory testing in a navy metal free tube, they will order the testing with an order level comment of "need confirmatory testing for elevated result – must draw in a navy metal free tube.
4. Tan K2EDTA tubes:
    a. Central supply will be sending out Tan K2EDTA tubes to our affiliate sites to use for collection of Lead, venous blood assay based on test utilization for each site. All other clients should order tan tubes only as needed.
    b. Order of Draw: Collect after Lavender EDTA and before Gray sodium fluoride

Test name	**Test #**	**Alternative tube type**
Aluminum, serum or plasma	994	Lavender EDTA
Antimony, blood	994	Lavender EDTA
Arsenic, blood	2556	Lavender EDTA
Barium, blood	12519	Lavender EDTA
Bismuth, whole blood	994	Lavender EDTA
Cadmium	1636	Lavender EDTA
Chromium, plasma	994	Lavender EDTA
Chromium, serum/plasma	12463	Lavender EDTA
Chromium, whole blood	12464	Lavender EDTA
Cobalt, serum	2562	Lavender EDTA
Cobalt, whole blood	12518	Lavender EDTA
Fluoride serum/plasma	994	Lavender EDTA
Iodine serum/plasma	994	Lavender EDTA
Lead, venous	13306	Tan K2EDTA
Manganese plasma	13360	Lavender EDTA
Mercury, blood	13312	Lavender EDTA
Metal panel (As, Cd, Hg, Pb) blood	13309	Lavender EDTA
Methyl bromide as metabolite, blood	994	Lavender EDTA
Nickel, blood	2578	Lavender EDTA
Thallium, serum or plasma	994	Lavender EDTA
Titanium, serum or plasma	994	Lavender EDTA
Zinc protoporphyrin	13303	Lavender EDTA

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Tube shortage affecting blood testing for trace metals

Information for providers

Trace concentrations of metals are ubiquitous in the environment and trace metal testing in blood requires certified metal-free collection tubes for accurate results. There is now a severe national shortage of metal-free blood collection tubes. As with other tube shortages, the vendors cite multiple contributing factors.

We must take immediate steps to conserve the remaining supply of metal-free tubes for critical testing only. ***Please defer non-critical trace metal testing for three months.*** The conservation strategy for critical testing depends on the clinical indication.

Testing for deficiency of essential trace metals (Zinc, Copper, Selenium):

1. Over 90% of all trace metal testing at Allina is ordered to evaluate for deficiency of Zn, Cu, or Se. A metal-free tube is essential for deficiency testing.
2. To conserve scarce metal-free tubes, all future orders for Zn, Cu, and Selenium with an expected collection date prior to October 2022 should be cancelled
3. New orders for Zn, Cu, and Se should be deferred for three months unless the patient has specific indications

Lead (Pb) testing: Not affected at this time. We were able to source an alternate collection tube that is certified for Pb testing only.

Testing for toxic trace metals other than Pb: (As, Hg, Cd, Co, Cr, Al, etc.)

1. Blood will be collected in non-metal-free tubes.
2. If the test result is above the reference range, you will see this disclaimer with the result stating: "*The specimen submitted for Trace Metal testing was collected in a container that was not certified as 'metal free', which may produce a falsely elevated result. Repeat testing, utilizing a collection tube certified as metal free (royal-blue top), prior to initiating therapy or conducting environmental investigations is recommended.*"
3. If you get an elevated result with the disclaimer:
    a. Place an order for a confirmatory test with the comment "need confirmatory testing for elevated result – must draw in a navy metal free tube".
    b. Contact the lab to ensure that the lab has the appropriate Navy EDTA or Navy No Additive tube for confirmation testing.

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TO DO:

1. Copper, Zinc, Selenium deficiency testing:
    a. Defer new orders for three months when possible.
    b. Urgent testing is restricted to patients with specific indications
        - **Copper, serum/plasma LAB13302 Indications:**
            - Wilson's disease evaluation
            - Established diagnosis of malabsorption syndrome (Roux-en-Y, celiac disease)
            - Total Parenteral Nutrition
            - Penicillamine therapy
            - Menkes disease evaluation
            - Malignancy with question of malnutrition
            - Toxic ingestion of zinc or iron supplements

        - **Selenium, serum/plasma LAB13666 Indications:**
            - Established diagnosis of malabsorption syndrome (Roux-en-Y, celiac disease)
            - Known inflammatory bowel disease (Crohns disease, ulcerative colitis.)
            - Total Parenteral Nutrition
            - Malignancy with question of malnutrition

        - **Zinc, red blood cell (RBC) LAB12520**
            - Total Parenteral Nutrition
            - Open wounds or burns
            - Cirrhosis
            - Malignancy with question of malnutrition

        - **Zinc, serum/plasma LAB13305**
            - Established diagnosis of malabsorption syndrome (Roux-en-Y, celiac disease)
            - Known inflammatory bowel disease (Crohn's disease, ulcerative colitis.)

2. Pb testing: Not affected at this time

3. Toxic metals other than Pb:
    a. Blood will be collected in non-metal-free tubes.
    b. If you see a disclaimer for an elevated result, enter a new order and add/include the comment noted previously.
    c. Contact your site laboratory to make sure a metal-free tube is available.

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