



Mercury in Moms: Inorganic Mercury Screening in Pregnancy to Reduce Harmful Exposures

INTRODUCTION

- The Minnesota Department of Health (MDH), through a study conducted in 2017, found that women of childbearing age in Minnesota, especially those of East African, Latina, and Hmong ethnicity, are at increased risk of inorganic mercury exposure by using skin-lightening products.
- Inorganic mercury:**
 - No safe levels in humans
 - Contaminates household objects such as towels, counters, clothing, and furniture
 - Vaporizes and can be detected in household air
 - Exposure may occur through dermal application, accidental ingestion, and vapor inhalation
- Continual exposure by any route can cause **harm:**
 - Renal system effects including nephrotoxicity
 - Neurologic symptoms including anxiety, headaches, fatigue, memory loss, neuropathies, insomnia, and tremors
 - Integumentary effects
- There is very little research on the effects of inorganic mercury exposure on fetal and child development.

PURPOSE

To increase the detection of inorganic mercury exposures in pregnant women using urine mercury screening during initial pre-natal visits in the outpatient clinic setting.

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METHODS

Setting

- Two clinic sites in MN serving large Hmong and Latino communities
- Project team: eleven midwives, clinic and MDH laboratory staff, MDH biomonitoring staff, the Minnesota Pollution Control Agency, and local public health agencies

Intervention

- Primary:** Inorganic mercury level laboratory analysis was added to standard prenatal urine screens that were completed on all pregnant women at their first prenatal visit between May 15th and October 18th, 2019. Educational materials were provided for midwives to give to their patients discussing the health hazards and potential sources of mercury within the home and environment.
- Secondary:** A follow-up process for elevated cases (**urine Hg > 5 mcg/L**), conducted by MDH, consisted of notifying the patient's midwife provider and patient of elevated level along with offering a no-cost home visit by local public health agencies for exposure source identification and eradication.
- Elevated cases were recommended to have a mercury level re-test 2-3 months after exposure eradication to ensure the level was decreasing.

RESULTS

250

women screened over a five-month period.

7

elevated cases.

6

cases due to skin-lightening products.

CONCLUSION

- Prevalence of elevated urine mercury in the clinic's total screened population was 2.8%.
- 27% (3/11) of women screened who preferred speaking Hmong and 50% (2/4) of women screened who preferred speaking Somali had elevated urine mercury levels, with Somali speakers having the highest proportion of elevated results and highest urine mercury levels overall.
- This signifies that certain populations in Minnesota may have higher risk of mercury exposure by using skin-lightening products.**
- 5 of the 7 women with elevated cases were either self-pay or on Medicaid **demonstrating that many of the women most at risk for exposure would also be disproportionately burdened by the price of screenings.**
- Further collaborative work is needed to better target these screening services and assess their effectiveness and value.

| Ethnicity | Race | Preferred Language | Insurance Status | Urine Hg Level (mcg/L) | Hg Source |
|------------------------|---------------------------|--------------------|------------------------|------------------------|--------------|
| Not Hispanic or Latino | Black or African American | Somali | Medicaid | 42.8 | Skin Product |
| Not Hispanic or Latino | Black or African American | Somali | Self-pay | 67.7 | Skin Product |
| Not Hispanic or Latino | Asian | Hmong | Medicaid | 11.3 | Skin Product |
| Not Hispanic or Latino | Asian | Hmong | Blue Cross/Blue Shield | 10.7 | Skin Product |
| Not Hispanic or Latino | Asian | Hmong | Self-pay | 17.2 | Skin Product |
| Not Hispanic or Latino | White | English | Medicaid | 6.85 | Thermometer |
| Hispanic or Latino | White | Spanish | Blue Cross/Blue Shield | 12.0 | Skin Product |

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