Advocating for Our Youngest Victims: Wisconsin's Approach to Testing Drug-Endangered Children

Hillary W. Petska, MD, MPH; Ann E. Budzak-Garza, MD; Arne H. Graff, MD; Judy Guinn, MD; Kristin C. Iniguez, DO; Barbara L. Knox, MD; Carolyn R. Nash, MD; Rita Ventura, DNP; Lynn K. Sheets, MD

Substance abuse in the United States is a public health crisis. The opioid epidemic claims more than 130 lives every day.[1] Marijuana is becoming increasingly available as more and more states legalize it. Methamphetamine use in Wisconsin increased 462% between 2010 and 2017.[2] And in 2018, Wisconsin was ranked as the worst state in the country for excessive drinking.[3]

But what is less obvious from the headlines is the impact this crisis is having on children. One in 8 children in the United States lives in a household with a parent with alcohol and other drug abuse (AODA) issues.[4] In 2016, approximately half of all human drug exposures reported to US Poison Centers involved children less than 6 years of age.[5] Medical providers in Wisconsin are seeing drug-endangered children regularly, whether or not they know it.

In addition to the direct risk of harm, having a parent with a substance use disorder is an adverse childhood experience that can lead to short- and long-term health consequences, such as diabetes, hypertension, heart disease, liver disease, cancer, and stroke.[6] These children are also at increased risk of child maltreatment and have higher rates of mental and behavioral disorders.[4] Substance abuse is also often associated with additional adverse childhood experiences (eg, caregiver with a mental health disorder, domestic violence) that lead to accumulation of risks.[7] Children in these homes can even have drugs in their systems but are not easily identified. Screening for drug endangerment needs to include children who are identified as at-risk, but no national consensus currently exists on when and how pediatric drug testing should be performed.

In early 2019, Wisconsin medical providers specializing in child maltreatment convened to develop a consensus statement regarding this issue. Consensus was reached in regard to overarching principles, indications for testing, preferred biologic substrates, scope of drugs included in the test, and limits to testing. Overall, the purpose of pediatric drug testing should be to promote the health, safety, and well-being of children. Detection of a drug-exposed child provides a window of opportunity in which medical providers can advocate to improve a child's life course trajectory. This often leads to referrals to child protective services and law enforcement in order to facilitate safety and services for children and families. Detection of an illicit drug or nonprescribed pharmaceutical should lead to a safety assessment but does not by itself indicate parental drug use or the need for out-of-home care.

> Detection of a drug-exposed child provides a window of opportunity in which medical providers can advocate to improve a child's life course trajectory.

Medical providers frequently perform drug testing when there is concern for drug exposure, such as in children with altered mental status, suspected ingestion, or suicide attempt. Testing is also often sought for children found in drug-endangered environments and should be considered in children with concerns for child physical abuse.[8] Drug testing of adolescents requested by caregivers should not be pursued without the youth's knowledge and consent.[9] Many institutions address drug testing in their general policies on consent, although institutional policies vary.

Available drug tests vary significantly in detection thresholds, automatic/reflexive confirmation of positive results, range of drugs detected, and substrates tested (eg, urine, hair, blood). Ideally, pediatric drug tests should utilize an easily available substrate, be highly sensitive, include a broad range of drugs, and have reflexive confirmation of any positive results.[7,9]

• • •

Author Affiliations: Medical College of Wisconsin, Milwaukee, Wis (Petska, Sheets); Children's Hospital of Wisconsin, Milwaukee, Wis (Petska, Guinn, Ventura, Sheets); Gundersen Health System, La Crosse, Wis (Budzak-Garza); Mayo Clinic, Rochester, Minn (Graff); Marshfield Medical Center, Marshfield, Wis (Iniguez); University of Wisconsin Hospital and Clinics, Madison, Wis (Knox); University of Wisconsin School of Medicine and Public Health, Madison, Wis (Knox); Marshfield Clinic, Wausau, Wis (Nash).

Corresponding Author: Hillary W. Petska, MD, MPH, Children's Hospital of Wisconsin, Child Advocacy and Protection Services, PO Box 1997, C615, Milwaukee, WI 53201; phone 414.266.2090; email hpetska@mcw.edu.

Any lab utilized should be CLIA certified. In Wisconsin, the substrate used varies based on current best evidence, local environment (eg, proximity of medical care), nuances of multidisciplinary relationships, and clinical judgment.

Urine testing is well-standardized and studied and is the most common sample used for drug testing in primary care.[9] It can detect systemic exposure typically within the last 3 days. Hair testing can detect but not differentiate environmental and/or systemic exposure that occurred within the past 3 months. Due to its long window of detection, hair testing is not clinically useful for the child with signs of acute intoxication.[9] Attempts to time the exposure by using hair segmentation should be avoided.[10] Results of hair testing also can be affected by hair structure, growth rate, melanin content, hygiene, and cosmetic treatments and must be interpreted carefully to prevent misuse in child protection cases.[10,11] Qualitative and quantitative blood testing should be considered if a child is symptomatic and time of exposure is known as it may help estimate the amount of drug a child was exposed to.[9]

Rapid urine drug screens commonly used in emergency departments (ED) should be used only to guide medical treatment in an altered child but are not forensically defensible. Many EDs use urine drug screens developed for adults, most of which detect drugs of abuse at workplace thresholds. Thus, false negatives can occur when a drug of abuse is present but below the workplace limit of detection. However, in young children, any level of exposure may signal a threat to their health and safety. In addition, many drugs may be missed with these screens, including nonprescribed pharmaceuticals and synthetics (eg, fentanyl). Without confirmation, there is also a possibility of a false positive, which can have serious implications for children and families.[7] In such cases, a more comprehensive urine screen also should be performed.

Any positive result must be interpreted in the context of the evaluation, investigation, and limitations of the test. Although a comprehensive review is beyond the scope of this commentary, there are several specific examples that should be noted due to their relative frequency in clinical practice and potential for harm:

- If possible, urine testing should be performed immediately after removal from a drug-endangered environment, as a positive result after placement in a new environment may represent exposure in either setting.
- A positive result on hair testing in children up to 12 months of age may represent in utero drug exposure.[10]
- A positive result for methamphetamine should lead to consideration of which isomer is present, as the l-isomer can be found in over-the-counter nasal preparations and other prescription medications unlike the d-isomer, which can only result from exposure to 3 substances (ie, prescription methamphetamine [Desoxyn], benzphetamine [Didrex], or street drugs).[12]
- A negative result does not rule out exposure as a child may be exposed to a substance not on the testing panel or the substance may be present at a level too low to be detected or outside the window of detection.
- Safety decisions should not rely on retesting unless there is a new concern, as a positive result may indicate the initial or ongoing exposure and a negative result may indicate no ongoing exposure or missed detection.[13]

Once identified, any child with concern for drug-endangerment should be tested for drugs followed by an urgent medical evaluation, ideally within 48 hours. Given their increased risk of physical, developmental, academic, and emotional consequences, enhanced periodicity and mental health are also important considerations in drug-endangered children.[14]

The opioid epidemic, legalization of marijuana, the presence of widely prescribed psychoactive substances and other factors will guarantee that drug endangerment of children will continue long into the future. As health care providers, we have a duty to develop best practices regarding drug testing of children that are based on scientific evidence.

Funding/Support: Funding for meeting expenses was provided by the Wisconsin Children's Justice Act.

Financial disclosures: None declared.

REFERENCES

1. National Vital Statistics System, Mortality Data. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2018. https://www.cdc.gov/nchs/nvss/deaths.htm. Accessed June 12, 2019.

2. Methamphetamine (Meth). Wisconsin Department of Health Services. https://www.dhs.wisconsin.gov/meth/index.htm. Updated October 7, 2019. Accessed October 17, 2019.

3. America's Health Rankings: Wisconsin Summary 2018. United Health Foundation. https://www.americashealthrankings.org/explore/annual/state/WI. Accessed June 12, 2019.

4. Lipari RN, Van Horn SL. The CBHSQ Report: Children living with parents who have a substance use disorder. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration; August 24, 2017.

5. Gummin DD, Mowry JB, Spyker DA, et al. 2016 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 34th Annual Report. *Clin Tox (Phila).* 2017;55(10):1072-1252.

6. Felitti VJ, RF Anda, D Nordenberg, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) study. *Am J Prev Med*. 1998;14(4):245-258.

7. Farst K, BB Bolden. Substance-exposed infants and children: Forensic approach. *Clin Pediatr Emerg Med*. 2012;13(3):221-228. doi.org/10.1016/j.cpem.2012.06.003

8. Petska HW, Porada K, Nugent M, Simpson P, Sheets LK. Occult drug exposure in young children evaluated for physical abuse: An opportunity for intervention. *Child Abuse Negl*. 2019;88:412-419. doi:10.1016/j.chiabu.2018.12.015

9. Levy S, Siqueira LM, AAP Committee on Substance Abuse, et al. Testing for drugs of abuse in children and adolescents. *Pediatrics*. 2014;133(6):e1798-1807. doi:10.1542/peds.2014-0865

10. Kintz P. Hair analysis in forensic toxicology: An updated review with a special focus on pitfalls. *Curr Pharm Des*. 2017;23(36):5480-5486. doi:10.2174/1381612823666170929155628

11. Cuypers E, Flanagan RJ. The interpretation of hair analysis for drugs and drug metabolites. *Clin Toxicol (Phila)*. 2018;56(2):90-100. doi:10.1080/15563650.2017.1379603

12. Hoffman RJ. Testing for drugs of abuse (DOA). In: Traub SJ, Grayzel J, eds. UpToDate. Waltham, MA: UpToDate. https://www.uptodate.com. Accessed August 22, 2019.

13. Drug Testing in Child Welfare: Practice and Policy Considerations. Rockville, MD: US Dept of Health and Human Services, Substance Abuse and Mental Health Services Administration and Administration of Children and Families; 2010. HHS Pub. No. (SMA) 10-4556

14. Flaherty E, Legano L, Idzerda S, AAP Council on Child Abuse and Neglect. Ongoing pediatric health care for the child who has been maltreated. *Pediatrics*. 2019;143(4):e20190284.

advancing the art & science of medicine in the midwest

WMJ

WMJ (ISSN 1098-1861) is published through a collaboration between The Medical College of Wisconsin and The University of Wisconsin School of Medicine and Public Health. The mission of *WMJ* is to provide an opportunity to publish original research, case reports, review articles, and essays about current medical and public health issues.

Visit www.wmjonline.org to learn more.