Tracking Cotinine: Screening for Tobacco Use in Hospitalized Pediatric Patients

Alexander S. Golec, MD[1], Kelsey K. Schmuhl, PharmD[2,3], Andrea E. Bonny, MD[2,4], Brittny E. Manos[2], Ashley L. Merianos, PhD[5], Samuel W. Stull, MS[6], and Ashley M. Ebersole, MD, MS[2,4]

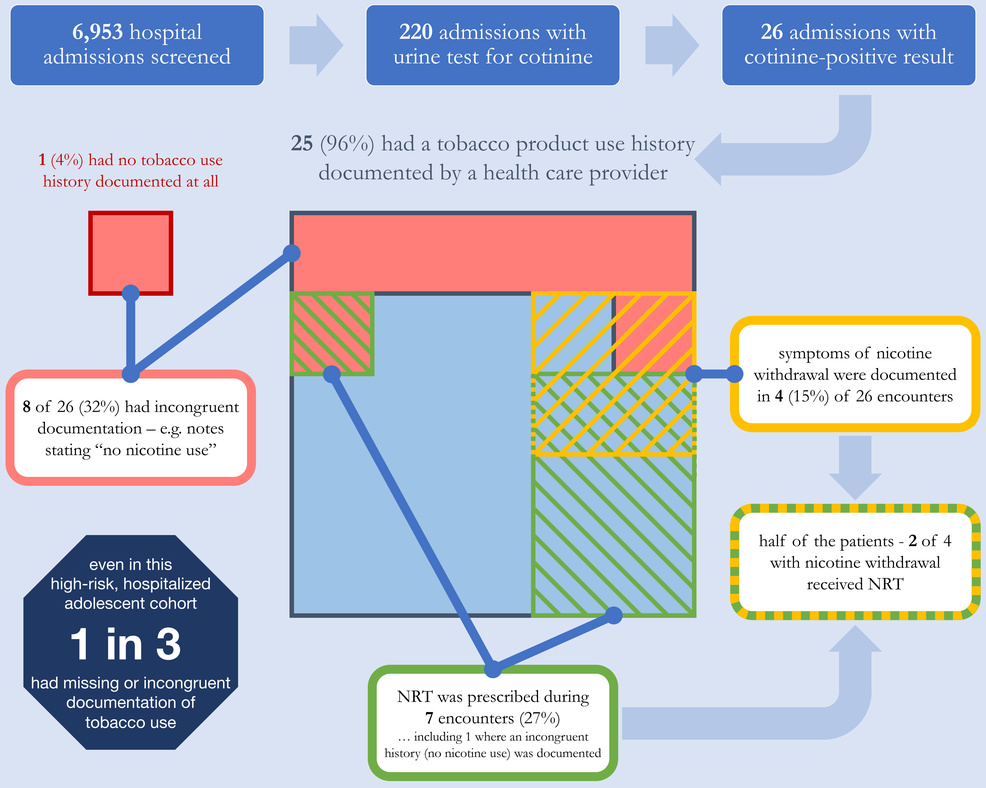
Background

- Adolescents who use tobacco have an increased risk of other substance use and development of use disorders later in life
- In 2022, adolescents reported past 30-day use of:
  - Any tobacco product: 11.3%
  - Electronic nicotine delivery systems (ENDS): 9.4%
  - Combustible cigarettes: 1.6%
- Screening remains integral to identifying and treating high-risk use
- Guidelines for screening have focused on outpatient settings
  - Inpatient encounters present an opportunity for intervention
- Biomarkers can further guide and corroborate screening efforts
  - Cotinine is a nicotine metabolite with a half-life of about 16 hours
- No studies have assessed the correlation between a positive cotinine test and screening for tobacco use in the pediatric inpatient setting
- Study aim
  - to assess documented nicotine use history, withdrawal symptoms, and intervention with nicotine replacement therapy
  - for patients admitted to a quaternary children's hospital
  - who tested positive for cotinine

Methods

- Retrospective chart review at a quaternary, urban children's hospital
- Inclusion criteria for study:
  - Patients aged ≥11 admitted between Jan 2020 and Jan 2022
  - Positive nicotine exposure, defined as having urine cotinine level >500 ng/ml using enzyme-multiplied immunoassay technique
- The electronic medical records (EMR) were reviewed for:
  - Documentation of tobacco product use history
  - Whether documented history aligned with the cotinine result
  - Documentation of nicotine-related withdrawal symptoms
  - Prescription of nicotine replacement therapy
- This study was approved by the IRB of Nationwide Children's Hospital

Results



Admission demographics	(n=26)
Mean age at admission *(range)*	15.8±1.1 *(13–17)*
Female gender identity	14 (54%)
Male gender identity	12 (46%)

Primary admission diagnoses	(n=26)
Suicidal ideation with intentional ingestion	13 (50%)
Overdose	6 (23%)
Seizure or seizure-like activity	4 (15%)
Other	3 (12%)

Discussion

- Screening for nicotine dependence is vital in adolescents
- The cotinine-positive hospitalized population are likely the youth at highest risk for future substance use disorder(s)
  - Many of these patients were admitted for overdose or ingestion
- Even in this high-risk cohort, 1 in 3 had missing or incongruent tobacco use screening documentation
- Study limited by retrospective review
  - Provider intent and patient motives are not known
  - EMR data is limited by provider-dependent documentation
  - Historical data (e.g. social history) not updated regularly
- Small sample size: ordering of cotinine testing is likely biased
- Cotinine is a send-out test and takes several days to result
  - Results not available until several days into admission
  - Ordering provider may be from different department (e.g. emergency medicine) and not follow-up on result
- This study illustrates missed opportunities to engage high-risk patients in addressing tobacco use
- Future efforts: integration of standardized screening tools and risk-based cotinine screening into the pediatric inpatient setting

Author Affiliations & Disclosures

1. Division of Adolescent and Young Adult Medicine, Johns Hopkins University, Baltimore, MD, USA
2. Division of Adolescent Medicine, Nationwide Children's Hospital, Columbus, OH, USA
3. The Ohio State University College of Pharmacy, Columbus, OH, USA
4. Department of Pediatrics, The Ohio State University College of Medicine, Columbus, OH, USA
5. School of Human Services, University of Cincinnati, Cincinnati, OH, USA
6. Department of Biobehavioral Health, The Pennsylvania State University College of Health and Human Development, University Park, PA, USA

- All authors have no conflicts of interest to disclose

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