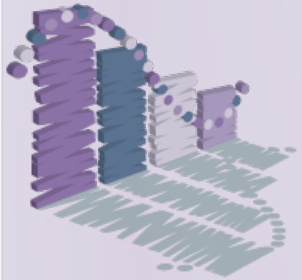
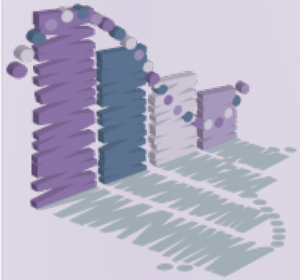


Identification of Substance-Involved Emergency Department Visits Using Data from the National Hospital Care Survey:

Current Status and Future PCORTF Enhancement Work

Denys T. Lau, PhD
Division of Health Care Statistics

June 19, 2018
NCHS Board of Scientific Counselors Meeting



Acknowledgments

- Amy Brown
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- Ryne Paulose

Background

- Opioid overdose crisis renews national attention on substance abuse.
- In 2011, ~2.5m ED visits were due to medical emergencies involving drug misuse or abuse.
- Drugs now account for 90% of all poisoning deaths.
- Between 2000 and 2014, drug-poisoning deaths more than doubled.
- Monitoring misuse or abuse of drugs and alcohol is a public health priority.

The National Hospital Care Survey (NHCS)

Goal:

- Provide reliable and timely healthcare utilization data for hospital-based settings.

Objectives:

- Move toward electronic data collection.
- Continue to make available health statistics previously provided.
- Link episodes of care across hospital units and link to other data, e.g. National Death Index and Medicare data.

National Hospital Care Survey

The National Hospital Care Survey (NHCS)

- All inpatient, ED and OPD encounters for the year
- Non-institutional, non-Federal hospitals with 6+ staffed beds in the 50 States & DC
- Data types
  - Since 2011, inpatient UB-04 administrative claims
  - Since 2013, inpatient/ambulatory UB-04 claims
- 2013 target sample = 581 hospitals
  - 506 acute care; 75 other (ped, psych, long-term acute, rehab)
- Since 2015, inpatient/ambulatory UB-04 *+ Vizient + EHR*

National Hospital Care Survey

Claims Data vs. Medical Abstraction to Identify Substance Use

- Analyzing claims data
  - objective and automated
  - large-scale surveys
- Abstraction of medical records (gold standard)
  - subjective
  - labor intensive, costly
  - disruptive to workflow at clinical settings

Challenges Using Claims Data to Identify Substance Use

- Claims data for billing, not research
- Limited number of clinical data elements
  - no lab results, medications administered, clinical notes
- Limited contextual info about substance use
  - difficult to id visit for recent substance use (i.e., substance as cause or contributing factor)
- ICD-9-CM codes classify meds by therapeutic category
  - limited info on specific substances involved in visits
- "Carryover" diagnoses may be long-standing, not recent or related to the current visit

Collaboration with SAMHSA to Objectively Identify Substance-Involved ED Visits

- Identified priority list of top 10 substance categories

Opiates/opioids	Cannabinoids	Alcohol (age<21y)
Antidepressants	Cocaine	
Antipsychotics	Hallucinogens	
Benzodiazepines	Heroin	
Pharmaceutical CNS Stimulants		

- Developed two algorithms using claims data to identify substance-involved ED visits for the priority list

Study Objectives

- Describe two algorithms to identify substance-involved ED visits for 10 priority substances using claims data from the 2013 NHCS ED data.
- Provide descriptive statistics using the two algorithms.
- Determine if the methods are biased toward selecting certain types of visits.

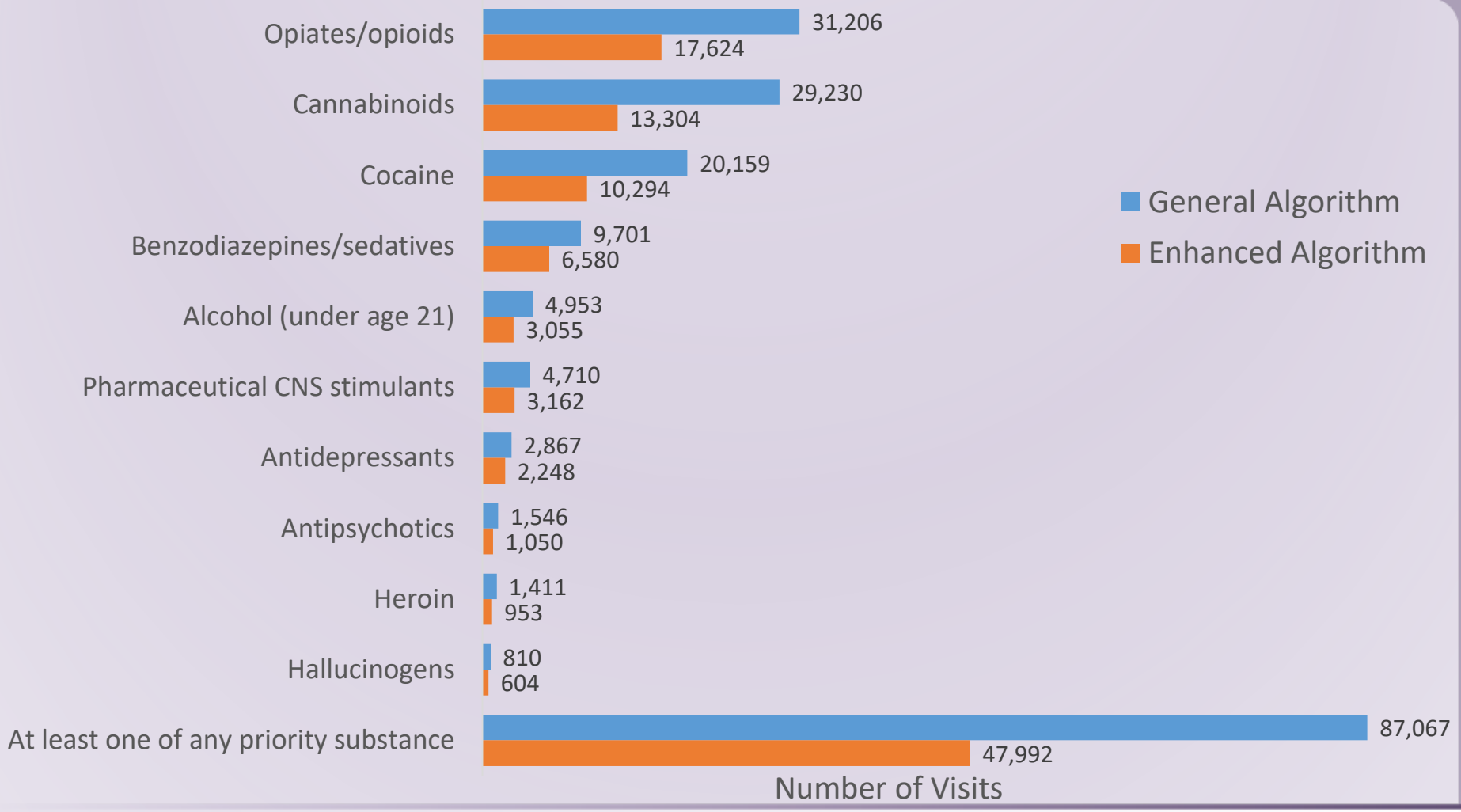
Study Methods

- N = 82 hospitals that provided ED claims data for the 2013 NHCS; 3.78M ED visits
- Analysis restricted to only substance-involved ED visits based on 10 priority substances

Coding Algorithms to Identify Substance-Involved ED Visits

Algorithm	Description
General	(1) External cause of injury code (E-code) field with an ICD-9-CM code for specified priority substance OR (2) Diagnosis field with an ICD-9-CM code for specified priority substance
Enhanced	(1) E-code field with an ICD-9-CM code for specified priority substance OR (2) Diagnosis field with an ICD-9-CM code for specified priority substance *AND a diagnosis or procedure field with a substance use-related symptom/procedure*

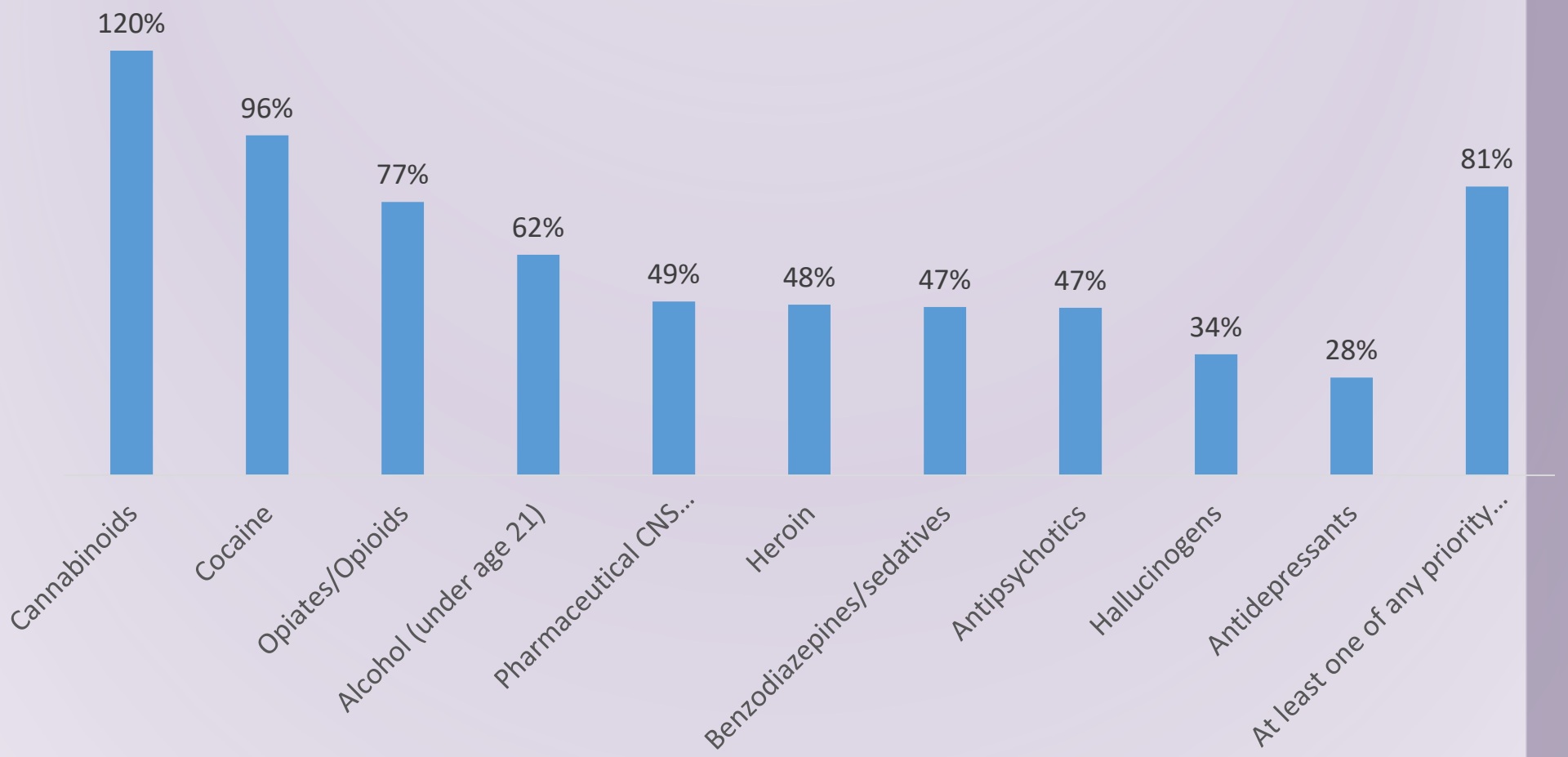
Number of ED Visits by Algorithm for Priority Substances: NHCS, 2013



- Priority substance categories are not mutually exclusive.
- Data are not nationally representative.
- SOURCE: National Center for Health Statistics, National Hospital Care Survey, 2014.

National Hospital Care Survey

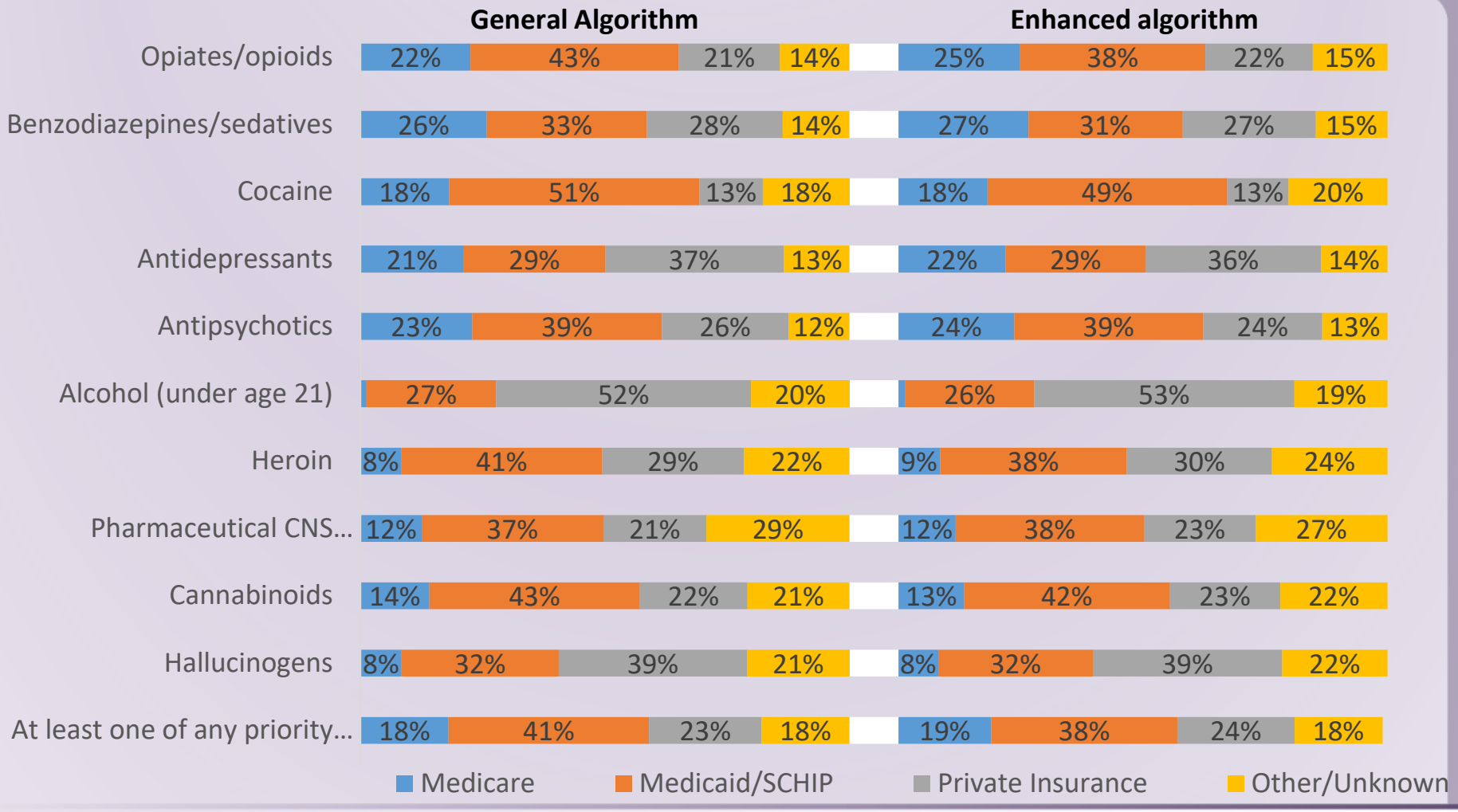
Relative Percent Difference in # ED Visits By Algorithms for Priority Substances: NHCS, 2013



- Priority substance categories are not mutually exclusive.
- Relative percent difference between general and enhanced algorithm, with enhanced as reference.
- Data are not nationally representative.
- SOURCE: National Center for Health Statistics, National Hospital Care Survey, 2014.

National Hospital Care Survey

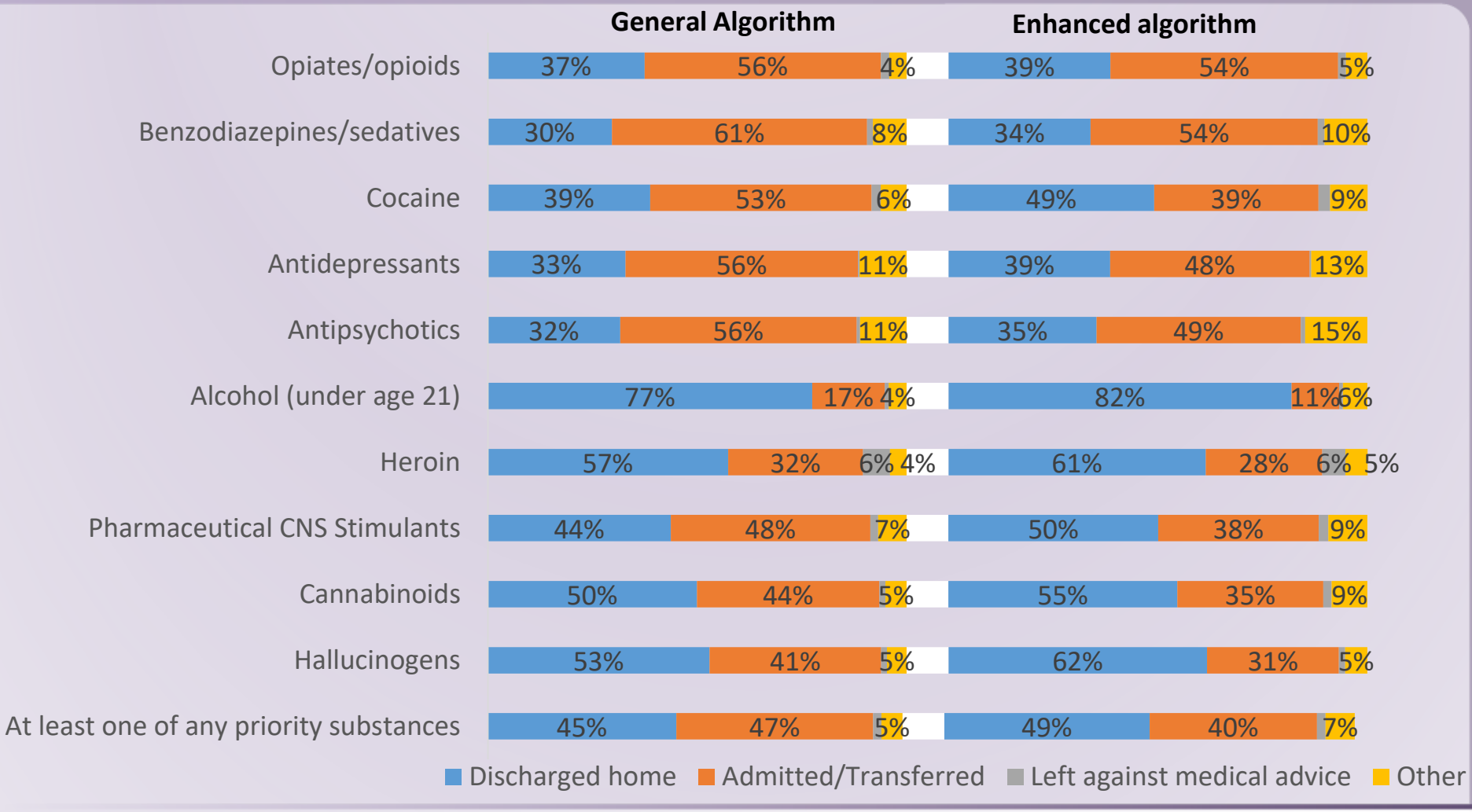
Percent ED Visits by Algorithm and Source of Payment: NHCS, 2013



- Priority substance categories are not mutually exclusive.
- Data are not nationally representative.
- SOURCE: National Center for Health Statistics, National Hospital Care Survey, 2014.

National Hospital Care Survey

Percent ED Visits by Algorithm and Discharge Status: NHCS, 2013



- Priority substance categories are not mutually exclusive.
- Data are not nationally representative.
- SOURCE: National Center for Health Statistics, National Hospital Care Survey, 2014.

National Hospital Care Survey

Discussion

- This study described two methods for identifying substance-involved ED visits from UB-04 administrative claims data using NHCS 2013
- General algorithm
  - Using only E-codes and diagnosis codes may likely overestimate ED visits involving narrowly defined types of substance use.
- Enhanced algorithm
  - Using E-codes and diagnosis codes with accompanying symptoms or procedures codes associated with substance use may increase the chance of identifying *recent* substance use *related* to patient's reason for ED visit.

Limitations

- UB-04 administrative claims data are for billing purposes.
  - Would not capture all charity care and self-pay visits
  - Lacked labs, meds, and clinical notes
- Bundled claims did not always allow distinguishing between ED and inpatient department services.
  - Attempts were made to identify unique visits on bundled claims when possible
- Claims data are subject to coding practices.
  - Validation study against medical abstraction is needed

EHR Data Enhances Algorithms

- Since 2015, NHCS has collected EHR data from hospitals
  - Plus claims and Vizient data
- EHR data will:
  - contain clinical notes, labs and medications
  - be easier to distinguish unique encounters in ED and inpatient setting
  - include all visits regardless of payment source

Patient Centered Outcomes Research Trust Fund (PCORTF): FY17 – Feasibility of Data Linkage

"Enhancing Data Resources for Studying Patterns and Correlates of Mortality in Patient-Centered Outcomes Research"

Project #1: (IAA#750117PE090019) 2/2017–1/2021

- Project links NHCS claims and EHR data to NDI and CMS Master Beneficiary Summary File (MBSF) and Chronic Conditions Warehouse (CCW)

National Hospital Care Survey

Patient Centered Outcomes Research Trust Fund (PCORTF): FY18 – Enhancing Opioid Identification

"Enhancing Identification of Opioid-Involved Health Outcomes Using Link Hospital Care and Mortality Data" (IAA #750118PE090004) 5/2018- 4/2020

Project Goals:

- Develop and apply text mining strategies (e.g., natural language processing), to written and coded data to identify specific opioids involved in hospital encounters and drug overdose deaths.
- Create enhanced, comprehensive data file on care and outcomes by merging NHCS, NDI, and National Vital Statistics restricted-use mortality file, with information on specific drugs involved in a death.

Final Products:

- Web-based portal to report clinical information back to hospitals
- Data files, reports, findings and other output

National Hospital Care Survey

Enhancing Opioid Identification PCORTF FY18: Major Tasks

- Task 1: Create and analyze 2014 NHCS/NDI/NVSS-M-DO file.
- Task 2: Improve existing techniques and develop new methods to identify opioids in hospital setting and from death certificates.
- Task 3: Create 2016 NHCS/NDI/NVSS-M-DO file with enhanced hospital death certificate opioid identification.
- Task 4: Disseminate and promote enhanced data and methodologies.

National Hospital Care Survey

Engagement with Stakeholders and End-Users

ASPE, FDA, NIDA and SAMHSA have partnered with NCHS on this project. ⟶ Technical Expert Panel

Engage with external stakeholders to align data products with research goals, particularly on Tasks 2 and 4. ⟶ BSC Workgroup

Next Steps

- Continue to recruit hospitals for NHCS.
- Collect claims and EHR data for 2018 NHCS data collection.
- Continue to enhance algorithms.
- Plan algorithm validation study.

Thank you!

QUESTIONS?

National Hospital Care Survey