



Patient Centered Outcome Research Trust Fund Projects Updates and Response to BSC Recommendations: Division of Health Care Statistics

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Presentation to the NCHS Board of Scientific Counselors
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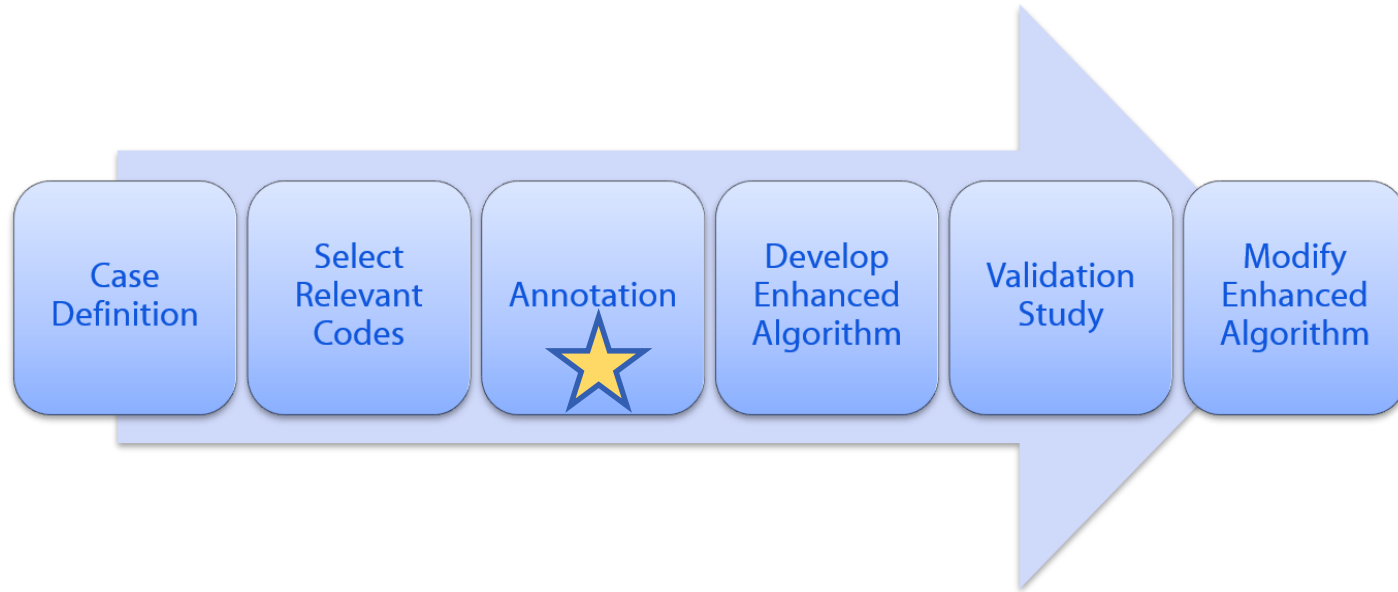
Division of Health Care Statistics PCORTF Project Status

- **FY17:** Enhancing Data Resources for Studying Patterns and Correlates of Mortality in Patient-Centered Outcomes Research: Project 1 - Adding Cause-Specific Mortality to NCHS's National Hospital Care Survey by Linking to the National death index
 - ***Project completed.*** National Hospital Care Survey (NHCS) data linked to the National Death Index (NDI) and CMS Master Beneficiary Summary File (MBSF) available in the NCHS Research Data Center (RDC).

Division of Health Care Statistics PCORTF Project Status

- **FY18:** Enhancing Identification of Opioid-Involved Health Outcomes Using Linked Hospital Care and Mortality Data
 - 2014 NHCS and NDI linked data linked to the Drug Involved in Mortality (DIM) file. Development continues on the enhanced opioid-involved algorithm.
- **FY19:** Identifying Co-Occurring Disorders among Opioid Users Using Linked Hospital Care and Mortality Data: Capstone to an Existing FY18 PCORTF Project
 - Development of the co-occurring disorders algorithm happening concurrently with the opioid algorithm. Planning of validation study is underway.

Enhanced Methodology Process for Identification of Opioids and Co-occurring Disorders (FY18 & F19)



Case Definition: Opioid-Involvement (FY18)

Eligible Opioids

Prescription opioids, such as:

- Morphine
- Oxycodone
- Meperidine

Illicit opioids, such as:

- Heroin
- Illicitly manufactured fentanyl/fentanyl analogs

Medication-Assisted Treatment (MAT), such as:

- Methadone
- Buprenorphine
- Naltrexone

Substances with Opioid-Like Effects, such as:

- Kratom
- Loperamide
- Tianeptine

Opioid Use

OVERALL USE: Pt used an opioid at any time prior to presenting at the hospital

OVERDOSE: Pt used an opioid recently and presented with acute opioid poisoning

Case Definition: Co-Occurring Disorders (FY19)

Substance Use Disorders

Alcohol Use Disorder

Cannabis Use Disorder

Cocaine Use Disorder

Opioid Use Disorder

Hallucinogen Use Disorder

Inhalant Use Disorder

Amphetamine Use Disorder

Sedative, Hypnotic or Anxiolytic Use Disorder

Tobacco Use Disorder

Psychoactive Use Disorder

Selected Mental Health Issues

Depressive Disorders, including:

- Major depression (single and current episodes)
- Premenstrual dysphoric disorder
- All other depressive disorders
- Suicidal ideation

Anxiety Disorders, including:

- Acute stress reaction
- Generalized anxiety disorders
- Obsessive compulsive disorders
- Panic disorders
- Posttraumatic stress disorder (PTSD)
- Social anxiety disorders/social phobias

Select Relevant Opioid Codes

- Created a comprehensive list of opioids and selected stimulants.
 - Division of Vital Statistics
 - CDC's Enhanced State Opioid Overdose Surveillance
 - National Electronic Injury Surveillance System-Cooperative Adverse Drug Event Surveillance Project
 - Drug Enforcement Administration
 - Technical Expert Panel-identified drugs
- Includes brand & generic names, street names, alternate spellings & misspellings.

Enhanced Methodology: Data Annotation

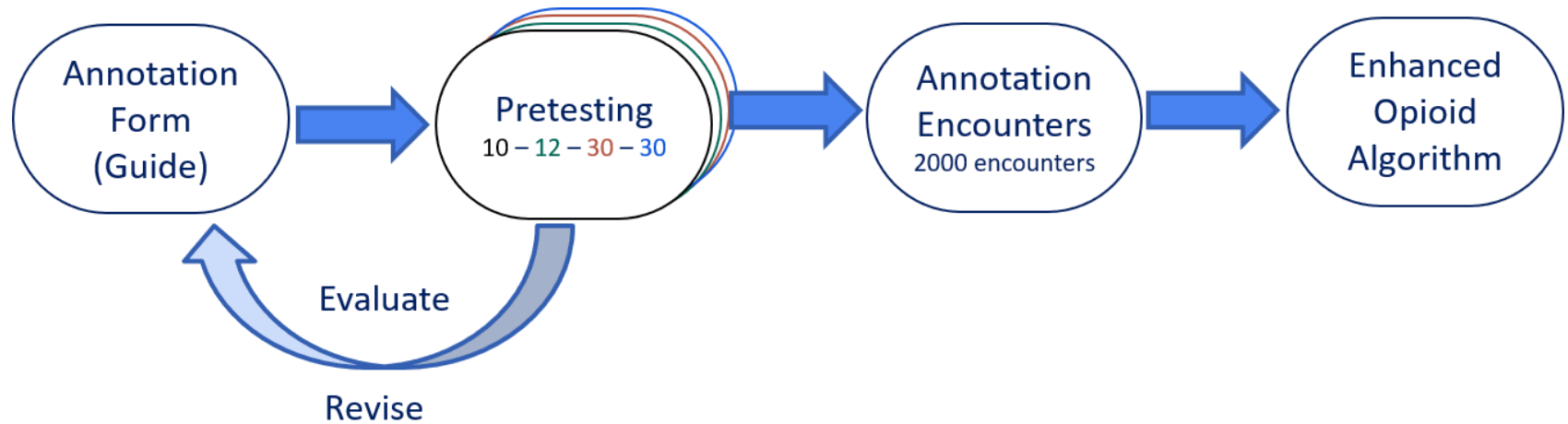
- Natural Language Processing (NLP) provides a complimentary and efficient way to query both structured and unstructured mentions of opioid-involvement
- Human-annotated data are needed to train a **machine classifier**.
- Clinical data annotation involves:
 - A team of annotators with clinical expertise.
 - Development of an annotation guide, form, and workflow.
 - Annotating encounters as true or false cases.

DESIRED INFORMATION:

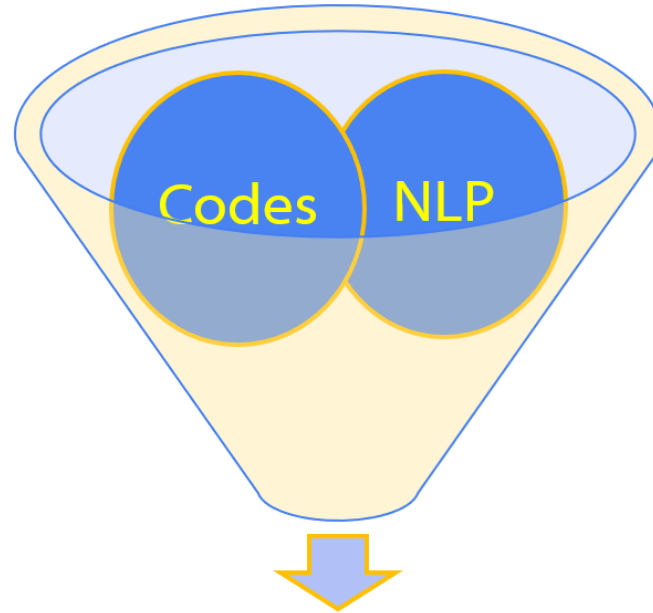
- Did the patient use an opioid?
- If so, what specific opioid agent was used?
- Did the encounter involved an acute opioid overdose?

Annotation Process

- 4 clinically trained annotators
- 2,000 NHCS hospital encounters



Develop Enhanced Algorithm



Enhanced Opioid Identification

Validation Study

- Validate the results of the enhanced opioid-involved identification algorithm by utilizing the actual hospital records.
- Investigate if an enhanced algorithm can be produced that would assist researchers in identifying hospital encounters involving opioids.
- Findings from this study will be used to identify the highest performing iterations of both sets of algorithms.
- Field in late 2020.

Upcoming BSC Drug Work Group

- January 15, 2020 at 11 AM EST.
- Provide feedback on the abstraction form that will be used in FY19 PCORTF validation study.



PCORTF Products Updates

PCORTF Products Available

- With support from the Office of the Secretary PCORTF, the following NHCS files were linked and are currently available in the NCHS Research Data Center:
 - 2014 NHCS data with the 2014-2015 NDI (**FY17**)
 - 2014 NHCS data with the 2014-2015 NDI linked to the 2014-2015 Drug Involved in Mortality (DIM) file (**FY18**)
 - 2014 NHCS data with the 2014-2015 CMS Master Beneficiary Summary File (MBSF) (**FY17**)
 - 2016 NHCS data with the 2016-2017 NDI (**FY17**)

Upcoming PCORTF Products

FY18

- 2016 NHCS data with the 2016-2017 NDI linked to the 2016-2017 Drug Involved in Mortality (DIM) file with enhanced opioid-identification
- Enhanced opioid-identification algorithm

FY19

- 2016 NHCS data with the 2016-2017 NDI linked to the 2016-2017 Drug Involved in Mortality (DIM) file with enhanced opioid and co-occurring disorders identification
- Report on validation study results
- Enhanced co-occurring disorders algorithm

Addressing the BSC Work Group's Recommendations

BSC Work Group recommendations

1. Generate interest in the use of PCOR-generated datasets.
2. NCHS should provide support in the use of data, such as transparent documentation of methods, guidance on data use, and publication of validation studies.
3. The sharing of the data and its documentation needs to be enhanced. Explore the use of different documentation sites such as GitHub.
4. Enhancements to datasets and data tools. Improvements to logical operator selection in WONDER.
5. Expanding the user base of the PCOR dataset would be helpful.

Visit and seminar at the University of Kentucky

- October 24-25, 2019
- Paul Sutton (Division of Vital Statistics), Carol DeFrances (DHCS), Amy Brown (DHCS), and Geoff Jackson (DHCS) presented on PCORTF work related to the NHCS and vital statistics data.
- Workshop on application tips for the research data center (RDC) access for NHCS data.
- The University of Kentucky agreed to fund up to four RDC requests using the NHCS and DVS death data.
 - One RDC request has been submitted and is under review.



Promotion of PCORTF funded projects and datafiles

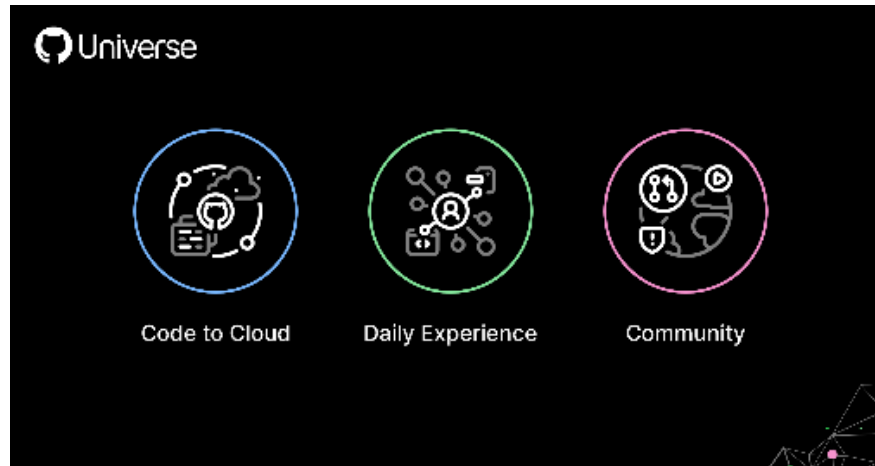
- “Opioid-involved Emergency Department Visits, Hospitalizations, and Deaths: Analysis of Linked Data from the NCHS” poster at the 2019 Data Linkage Day (October 19, 2019).
- “Mortality for Women within One Year after Delivery in the National Hospital Care Survey, 2016” poster at the 2020 International Conference on Health Policy Statistics (January 6, 2020).
- “Identification of Opioid Involved Health Outcomes using Linked Hospital Care and Mortality Data” presented at the 2020 International Conference on Health Policy Statistics (January 8, 2020).

Upcoming promotion of PCORTF funded projects and data files

- Breakout session at the 2020 National Rx Drug Abuse and Heroin Summit (April 13-16, 2020) discussing the development of the enhanced opioid and co-occurring disorder algorithm and available research files.
- Abstracts submitted to the 2020 Sixth International Conference on Establishment Statistics and 2020 Academy Health Research Meeting.

GitHub as a promotional tool

- Various CDC centers are using GitHub to make code publicly available.
- We are actively exploring using GitHub as a way to disseminate the code for the enhanced opioid and co-occurring disorders.



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