

# Behavioral Health is Essential To Health



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# The NHCS Pretest: Incorporating DAWN

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# Today's Talk

- Brief Description of DAWN
- Benefits and Losses in Transition to NHCS
- Issues and Concerns
- Addressing Concerns in the Pretest

# DAWN - Background

- a public health surveillance system monitoring drug-related ED visits to hospitals
- a probability sample of hospitals located throughout the U.S.
- a hospital = a non-Federal, short-stay, general surgical and medical hospital located in the U.S., with at least one 24-hour ED
- about 250 hospitals provide data on drug-related ED visits

# DAWN - Background

- ED visits related to drugs—direct cause or contributing factor
- 2010 drug-related ED visits in DAWN = 4.9 million (estimated)
- 2010 total ED visits = 125 million (estimated)
- DAWN reports for nation and 12 metro areas

# Reasons for Incorporating DAWN Into the NHCS

- improved response rate
- collect more data from ED records
- potential for burden reduction on hospitals
- possible savings for taxpayers

# How We're Changing

- DAWN integrated into NCHS's National Hospital Care Survey
- data elements incorporated in NHCS ED data collection instrument
  - drugs involved added to NCHS ED collection
  - addition of mental illness episodes

# NCHS Design Objectives

- To collect discharge data on all inpatients
- To replace National Hospital Discharge Survey (NHDS)
- To collect protected health information (PHI) for linkage to, for example, the National Death Index and Medicare data

# NCHS Design Objectives

- Improve general purpose hospital statistics on inpatient and ambulatory encounters
- Move toward electronic collection of data
- Link encounters across hospital units, both inpatient and ambulatory, and with other data, for example, the National Death Index and Medicare

# What We Expect to Gain

- lower cost
- less Respondent Burden
- reduced sampling of drug-related ED visits but improved response rate
- expanded information on
  - patient demographics, condition, ED treatment
  - linkage with in-hospital stay
  - co-morbidities

# What We Expect to Gain

- Expanded facility level data
- Medical record abstraction and reabstraction for sampled visits to Emergency Departments, Outpatient Departments and Ambulatory Surgery Centers
- Linkage with other data sets

# What We Expect to Gain

- Electronic transmission of data for all inpatient discharges
- Special studies to address specific questions with record sampling, Electronic Health Record (EHR) linkage, abstraction and reabstraction

# What We Expect to Give Up

- Metropolitan Area Estimates
  - The current DAWN design was driven by the desire to produce reliable estimates of the numbers of drug-related ED visits for Metropolitan Statistical Areas
  - NHCS will not be able to produce such estimates, at least not using design-based estimation
- The ability to make estimates for rare drugs or small demographic groups

# Two Key Questions

- What sample sizes will be needed for us to have a large enough sample of drug-related ED visits?
  - Can we get enough of our rare events (drug-related visits) to do useful analyses?
- How do we get sufficient numbers of cases to meet our precision goals for our analyses within the constraints of a multi-objective design?

# Overall NHCS Design

- Two-stage sample of visits within hospitals, stratified by number of beds and type of geographic location (urban, rural, etc.)
- Limited to 450 general short-stay and psychiatric hospitals (plus 50 hospitals not in-scope for SAMHSA)

# Overall NHCS Design

- Allocation of sample size to strata meets many goals, not just optimized for drug-related visits
- Limits on second stage sample sizes due to reporting burden and data collection costs

# NHCS Second Stage Design

- Sample of 100 visits in each hospital for 13/16 of the sampled hospitals each year (panel rotation)
- 100% response implies about 40,000 NHCS ED visits, 36,600 in SAMHSA eligible hospitals
- Excepting adverse reactions about 2 percent of ED visits are expected to be drug-related, so sample is expected to yield at most 730 drug-related visits

# Challenge

- The original design yielded too few expected visits to make more than a handful of drug-related visit estimates with acceptable precision
- Original design expect to yield: 730 drug-related visits (under the most favorable scenario) out of about 40,000 total cases
- Current DAWN sample yields 350,000 – 400,000 drug-related visits

# New Strategies Needed

- Approximately 20 percent of hospitals allow DAWN reporters to log in and collect data from patient records remotely without having to be on site (“remote reporting”)
- Strategy 1: Complete enumeration of remote reporting hospitals’ ED visits

# New Strategies Needed

- Limit on number of visits reviewed on-site driven by burden of having reporters in EDs
- Reviewing or selecting additional visits requires zero marginal burden in remote reporting hospitals (burden is all fixed and occurs in setting up the remote reporting arrangement)

# New Strategies Needed

- Strategy 2: Increase the sample size to 200 in on-site reporting hospitals (felt to be the upper limit of acceptable burden), and use diagnosis codes to stratify at the second stage
  - Many hospitals are willing to share universal billing form (UB-04) data with diagnoses codes (ICD-9) that will be available at the time of second stage sample selection

# New Strategies Needed

- Find codes that predict a drug-related visit
- Create a stratum with high probability of drug-related cases and oversample

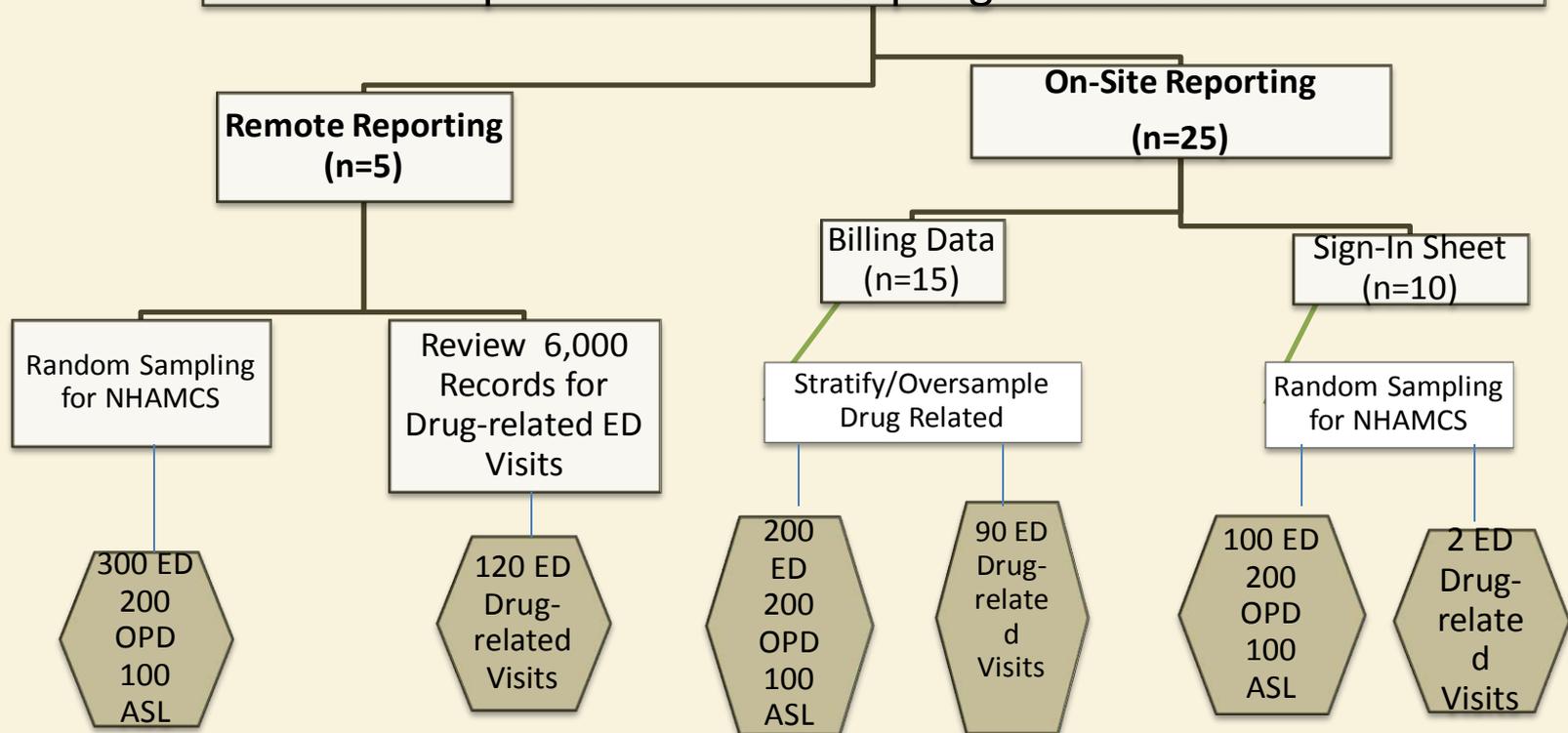
# Testing the New Strategy

- Before implementing these strategies in an operational survey, pre-test required
- NHCS Pretest = trial run for the design with a few hospitals for a short period of time
- Scheduled for October

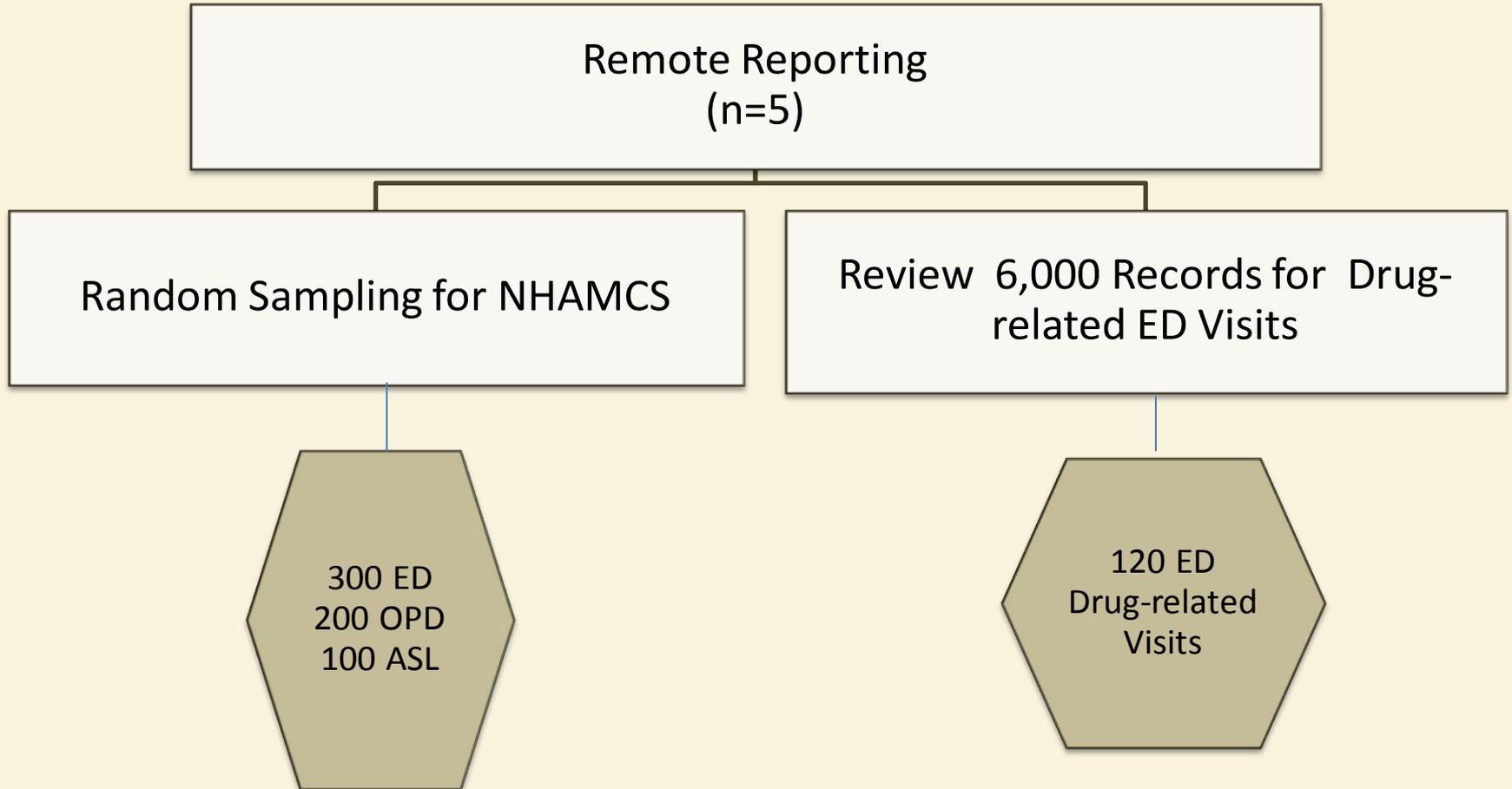
# Overview of Pretest Sampling

NHCS Pretest Hospitals: Ambulatory Data Collection (N=32)\*

\*For 2 electronic health record extraction hospitals data will be requested but no sampling will be carried out



# Remote Reporting Hospitals



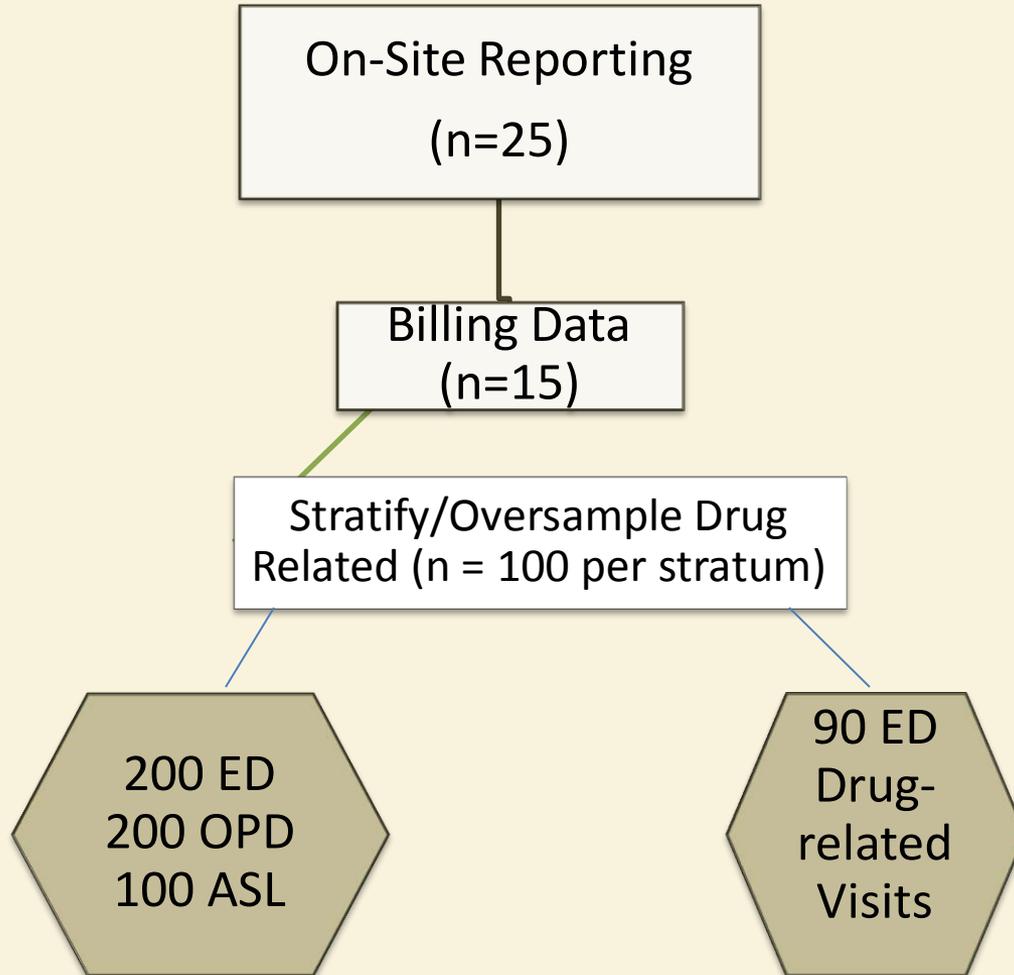
# Remote Reporting NHAMCS Sampling

- For each of the 5 remote reporting hospitals, the NHCS will still select 300 Emergency Department visits, 200 Outpatient Department visits, and 100 Ambulatory Surgery Center visits per their design for the NHAMCS. These visits will be enumerated by the reporters

# Drug-Related Remote Reporting

- The first 6,000 visits in each remote reporting hospital over the 3 month reference period will be reviewed (up to 100 percent review in 2013)
- Expected yield ~ 120 drug-related visits per hospital. Each case will be enumerated by the reporter
- Tests the ability of reporters to collect drug-related cases in remote reporting.
- ICD-9 codes from the billing data test effectiveness of codes in predicting drug-related cases

# On-Site with Billing Data



# NHAMCS On-Site Reporting

- 25 on-site reporting hospitals
- The sampling frame for 15 hospitals will be the billing data
- Over a two month reference period, NHAMCS will collect 200 ED, 200 OPD, and 100 ASL visits.

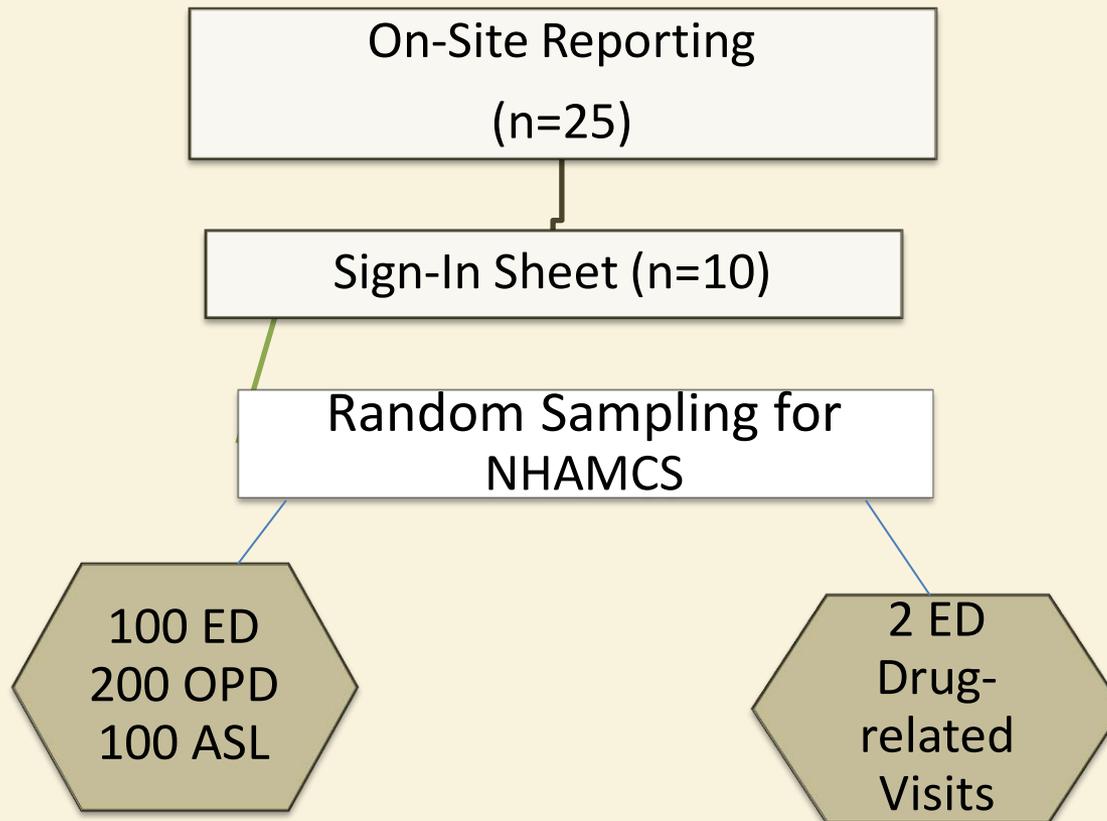
# Drug-Related On-Site (Billing Data)

- In the same 15 on-site reporting hospitals that use the billing data as a sampling frame, visits will be divided into two strata, the oversampled stratum for visits with diagnosis codes that predict drug-related cases, and a remainder stratum for all other visits.

# Drug-Related On-Site (Billing Data)

- 100 visits will be drawn from the oversampled stratum and 100 from the remainder stratum for each of the two reference months
- Gives an idea of how effective the ICD-9 diagnosis code strata are
- Tests the “logistics” of selecting visits based on ICD-9 code

# On-Site without Billing Data



# NHAMCS On-Site Reporting ED Sign-In Sheets

- Some hospitals may not have billing data available to use as a frame.
- Further, old NHAMCS used the sign-in sheets as a frame
- In order to evaluate procedures when billing data are not available, and to get a sense of the completeness of the UB-04 frame, NCHS will use the sign-in sheets for 10 on-site reporting hospitals
- 100 ED, 200 OPD, and 100 ASL cases will be selected in each of these hospitals for the one month reference period

# DAWN On-Site Sign-In

- These are the hospitals where neither of our sample size enhancement strategies can be used (no billing data or remote reporting)
- Note that the sample of 100 hospitals for the one-month reference period is expected to produce only two DAWN cases
- We sincerely hope that we have none or at most only a handful of hospitals like this in the part of the sample

# Conclusion

- The pretest will let us evaluate methods of increasing the number of stage two sampling units (visits) that we can review, and the number of drug-related visits we can collect

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