HEALTHCARE SURVEILLANCE FOR EMERGING AND ENDURING THREATS
CDC'S NATIONAL HEALTHCARE SAFETY NETWORK (NHSN)

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Improving surveillance across the healthcare continuum

37,000+ facilities use NHSN to track and stop infections.

In 2020, CDC quickly adapted NHSN to track information for the U.S. COVID-19 pandemic response.

NHSN data contributes to CMS saving at least $350 million in payments every year.[4]

- CDC's NHSN is the nation's tracking and response system to identify emerging and enduring threats across healthcare, including:
  - Healthcare-associated infections (HAIs)
  - Antibiotic resistant infections
  - Emerging pathogens and diseases, such as SARS-CoV-2 / COVID-19
- Provides coverage across the majority of healthcare facilities
  - Launched in 2005 and currently in use in more than 37,500 healthcare facilities in the U.S., with 120,000 individual users
- Bridges individual facility-level data and national surveillance
  - Combines facility-level clinical performance measurement with national-level public health surveillance (CDC) and reimbursement programs (CMS)
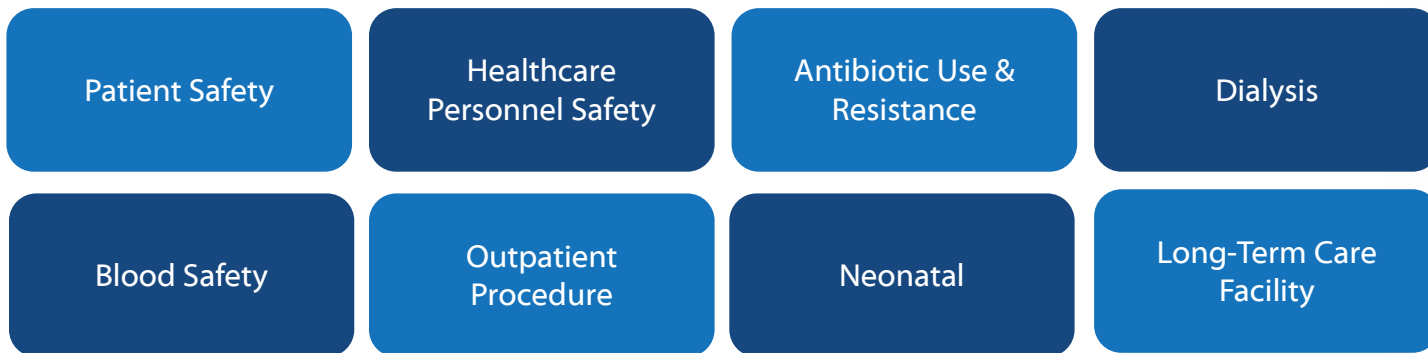
Providing data access and analysis for action

- **Data access at the healthcare facility level**

  - NHSN users in healthcare facilities have immediate access to their own data and NHSN dashboards & analytics to drive action

- **Data access at the state & local level**

  - State and local health departments have immediate access to NHSN data reported by healthcare facilities in their jurisdictions

- **Data access at the federal level**

  - CDC shares data across various federal agencies, including CMS

- **Transparent public data**

  - Facility level data is often posted on various CMS public websites and aggregate, state-level analysis is posted on various CDC websites
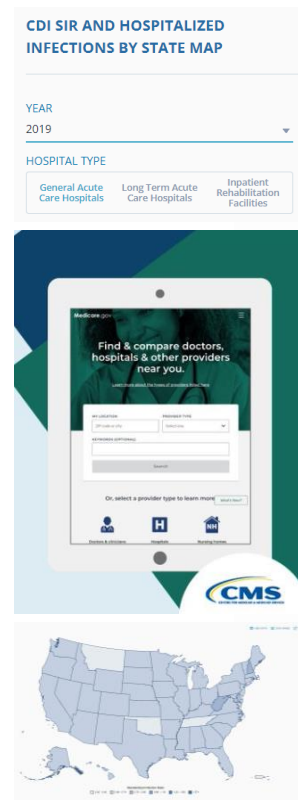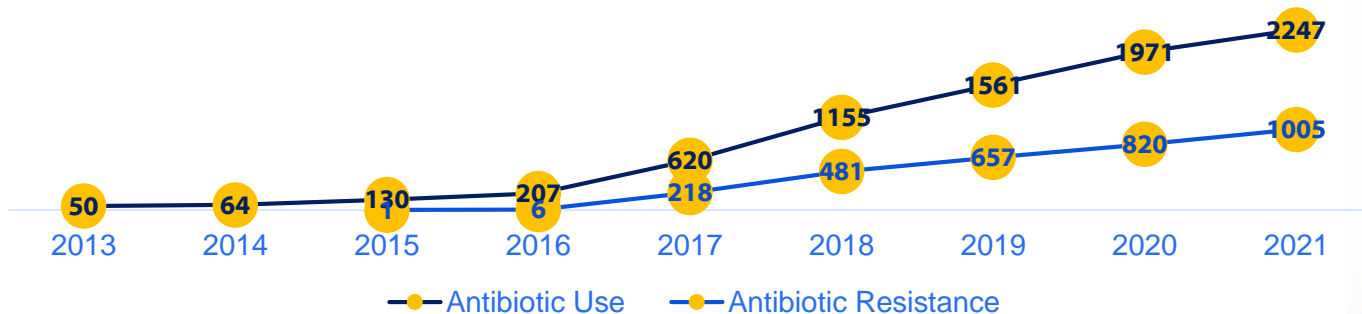
Where we've been: Pre-pandemic reporting

- Prior to the COVID-19 pandemic, 22,000 healthcare facilities used NHSN

  - Reporting largely tied to several CMS mandatory quality improvement programs, mostly related to HAIs and patient safety across various NHSN modules and components

  - 36 states also require certain facilities to report HAIs to NHSN

Patient Safety	Healthcare Personnel Safety	Antibiotic Use & Resistance	Dialysis
Blood Safety	Outpatient Procedure	Neonatal	Long-Term Care Facility

Where we've been: Antibiotic use & resistance reporting

- **Antibiotic use and resistance (AUR) modules are a fully automated NHSN component, with reporting via:**

  - Hospital Laboratory Information Systems

  - Hospital Electronic Medication Administration Systems

- **Significant numbers of hospitals voluntarily report AUR data to NHSN**

  - More than 2,000 hospitals report antibiotic use data, and more than 1,000 hospitals report antibiotic resistance data

HOSPITALS REPORTING AU AND AR DATA

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Antibiotic Use	50	64	130	207	620	1155	1561	1971	2247
Antibiotic Resistance			6	6	218	481	657	820	1005

— Antibiotic Use   — Antibiotic Resistance

Providing data for action: Driving quality improvement

- Risk-adjusted analysis and benchmarking in NHSN

  - Risk-adjusted Standardized Infection Ratio (SIR) for HAIs

  - Standardized Antimicrobial Administration Ratio (SAAR) for antibiotic

- Both measures have driven success in HAIs and antibiotic use

Adult 2020 SAAR Distributions by Antimicrobial Agent Category and Location Type
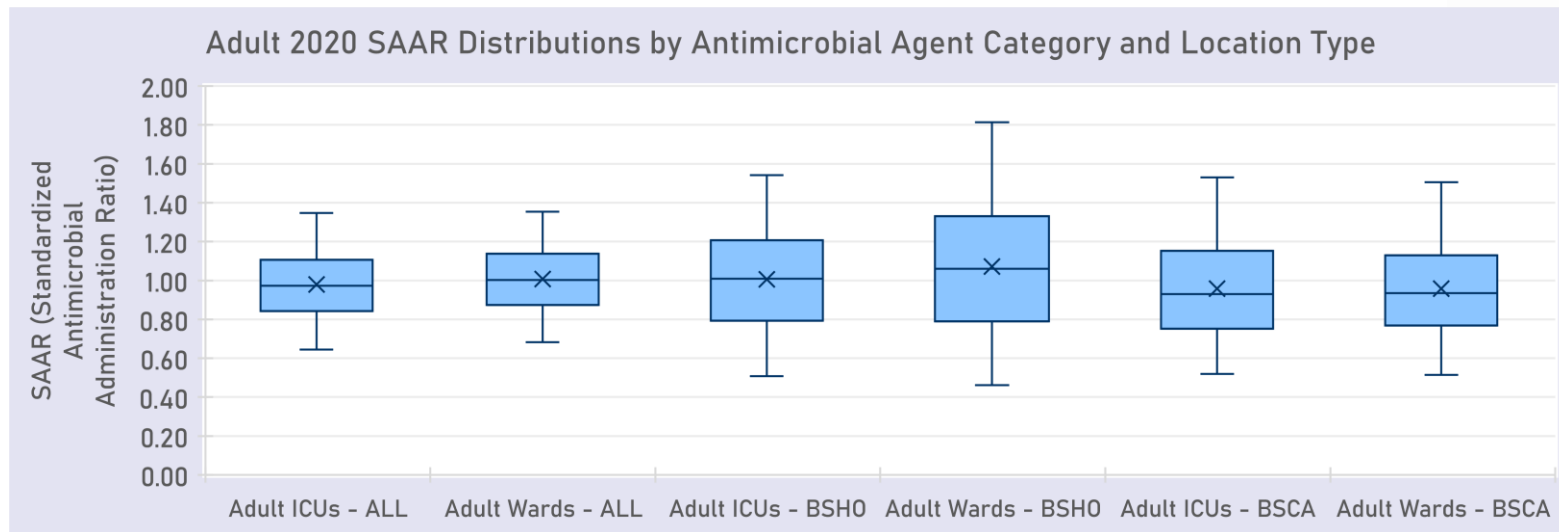
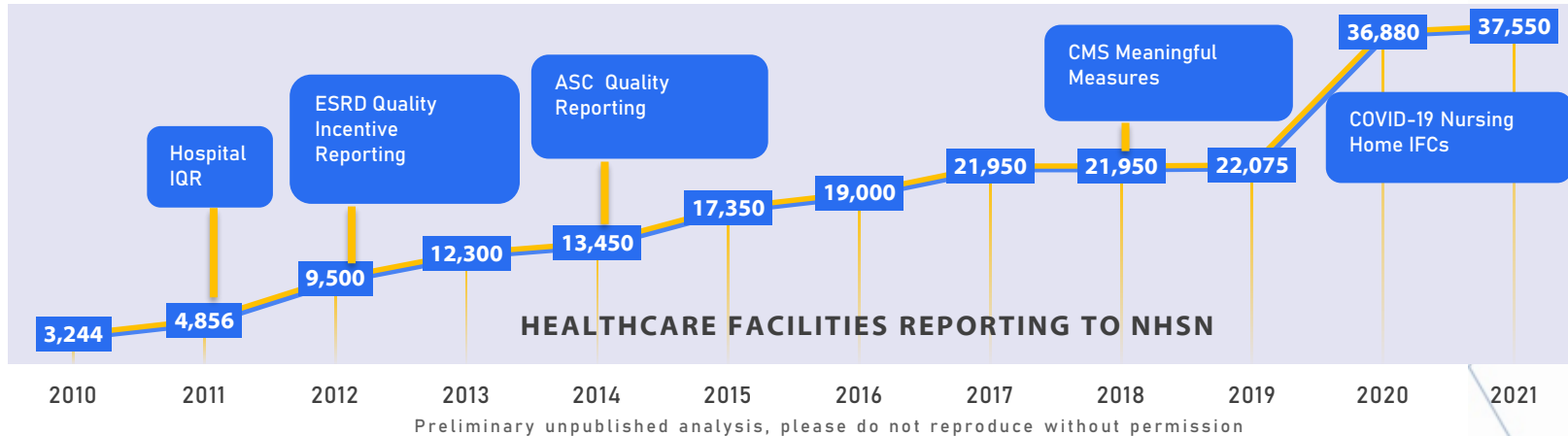# Collaboration with CMS: Increasing AUR reporting

- **Increasing voluntary AUR reporting through collaboration with CMS**

  - Inclusion of AUR reporting as an option in CMS' Promoting Interoperability Program

  - Hospitals can meet Public Health and Clinical Data Exchange element through NHSN AUR reporting

- **Inclusion of NHSN AUR reporting in CDC's Core Elements of Antibiotic Stewardship**

  - State and local health departments have immediate access to NHSN data reported by healthcare facilities in their jurisdictions

- **Data access at the federal level**

  - CMS required all hospitals to have antibiotic stewardship programs in FY 2020

- **Discussions with CMS and external partners, such as Joint Commission, to spur AUR reporting**

Core Elements of Hospital Antibiotic Stewardship Programs

Hospital Leadership Commitment
Dedicate necessary human, financial, and information technology resources.

Accountability
Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.

Pharmacy Expertise (previously "Drug Expertise"):
Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.

Action
Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.

Tracking
Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.

Reporting
Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.

Education
Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.

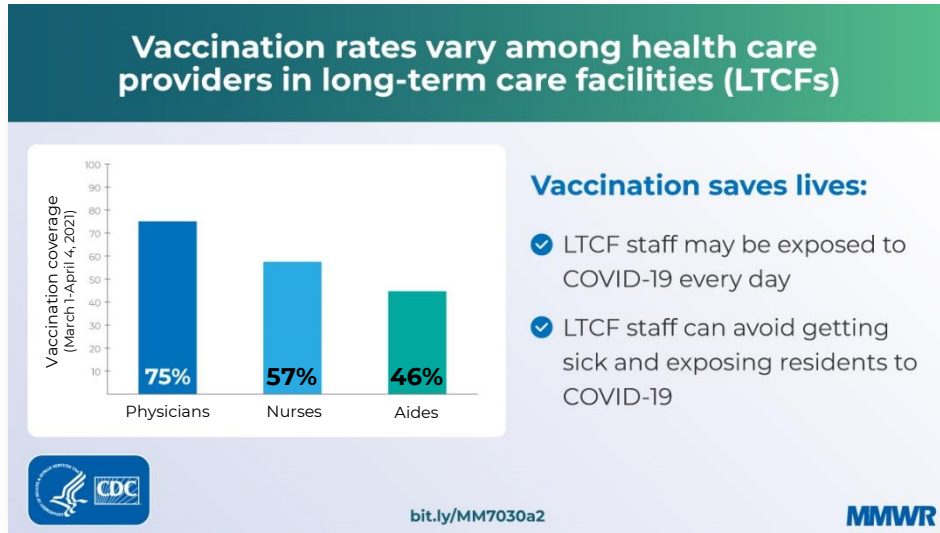# Providing data for action: Pandemic expansion of NHSN

- **CDC rapidly pivoted NHSN to collect urgently needed COVID-19 data from hospitals, nursing homes, dialysis clinics, and other facilities**

  - CDC now collects and analyzes COVID-19 data from every nursing home in the country (~15,400), including vaccination coverage of 1.2 million residents and 1.8 million staff

- **COVID-19 surveillance in NHSN is a direct result of collaboration with CMS**

  - Various Interim Final Rules and quality measurement programs provide the regulatory vehicle for comprehensive surveillance

Hospital IQR

ESRD Quality Incentive Reporting

ASC Quality Reporting

CMS Meaningful Measures

COVID-19 Nursing Home IFCs

36,880

37,550

21,950

21,950

22,075

21,950

19,000

17,350

13,450

12,300

9,500

4,856

3,244

HEALTHCARE FACILITIES REPORTING TO NHSN

2010   2011   2012   2013   2014   2015   2016   2017   2018   2019   2020   2021

Preliminary unpublished analysis, please do not reproduce without permission

Providing data for action: Pandemic expansion of NHSN (continued)

- Vaccination data in NHSN drives policy, including

  - Vaccine effectiveness monitoring in vulnerable population

  - Booster recommendations

  - Vaccination mandate policies for healthcare workers

Vaccination rates vary among health care providers in long-term care facilities (LTCFs)

Vaccination coverage (March 1–April 4, 2021)

Physicians 75% Nurses 57% Aides 46%

Vaccination saves lives:
- LTCF staff may be exposed to COVID-19 every day
- LTCF staff can avoid getting sick and exposing residents to COVID-19

bit.ly/MM7030a2   MMWR

Morbidity and Mortality Weekly Report

Effectiveness of Pfizer-BioNTech and Moderna Vaccines in Preventing SARS-CoV-2 Infection Among Nursing Home Residents Before and During Widespread Circulation of the SARS-CoV-2 B.1.617.2 (Delta) Variant — National Healthcare Safety Network, March 1–August 1, 2021

Vaccination to Prevent COVID-19 Outbreaks with Current and Emergent Variants — United States, 2021

HAN HEALTH ALERT NETWORK

This is an official CDC HEALTH ADVISORY

Press release

Biden-Harris Administration to Expand Vaccination Requirements for Health Care Settings

Sep 09, 2021 | Policy

Where we're going: Automation, modernization and increased reporting

CDC is automating data collection, leveraging electronic health records, and reducing manual reporting burden on healthcare facilities

CDC continues to assess and collaborate with partners on analytic approaches to maximize the utility of NHSN data (e.g. exploration of risk adjustment approaches)
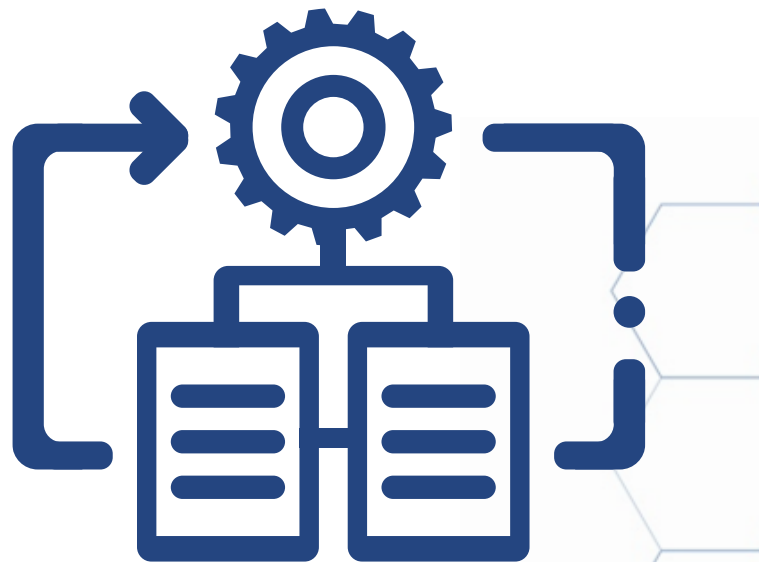
NHSN is the USG system for surveillance, quality, and safety in healthcare facilities and should be the central data system for healthcare preparedness

CDC will capitalize on its new reach to nursing homes for additional quality, patient safety, and emergency preparedness & response reporting

CDC will continue to work across USG and with healthcare facilities to increase AUR reporting

Where we're going: Hands-free automation

- **Improved data collection and reporting requires automation of data capture from electronic health records**

  - NHSN seeks to automate data collection and reporting by working in a standards-based way with electronic health record system industry partners and other health information technology suppliers

  - As newer standards like FHIR (fast health interoperability resources) are more available in electronic health records (EHRs), NHSN will use them for the automated generation and transmission of reports from the electronic health record (EHR) to public health agencies for review and action

Thank you, NHSN team and Dan!