

CDA for Healthcare-Associated Infections Reporting to the Centers for Disease Control and Prevention

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**National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion**



Overview

- *Introduction to CDC's National Healthcare Safety Network (NHSN) and its use by hospitals to report healthcare-associated infections (HAI)*
- *CDC's collaborations with Health Level Seven (HL7) and healthcare information technology vendors to enable HAI reporting via Clinical Document Architecture (CDA) to NHSN*



The Basics

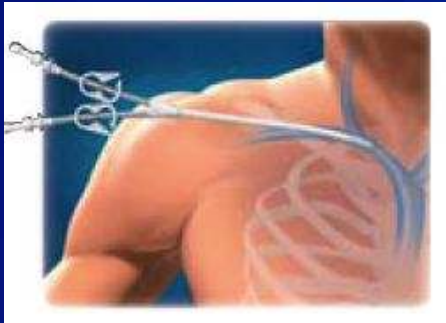
- *Designed for surveillance and prevention of healthcare-associated infections and other adverse events among patients and healthcare personnel and for process-of-care measurement and improvement*
- *Technical infrastructure enables manual data entry into web-based application or electronic reporting through file imports or transfers*
- *Serves multiple purposes and user groups: infection control, quality improvement, prevention research, mandatory public reporting, and public health surveillance*

Healthcare-Associated Infection: Definition



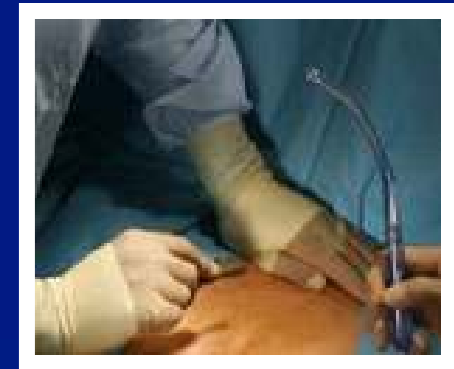
The U.S. Centers for Disease Control and Prevention (CDC) defines an HAI as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating when the healthcare encounter began.

Examples of Healthcare-Associated Infections



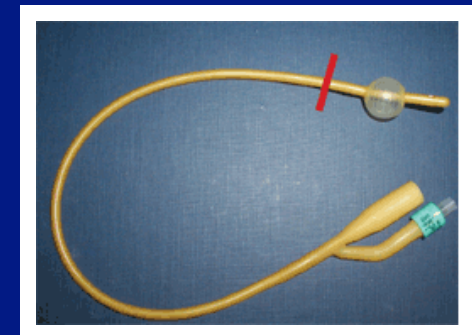
*Central line associated
bloodstream infection
(CLABSI)*

*Surgical site
infection (SSI)*

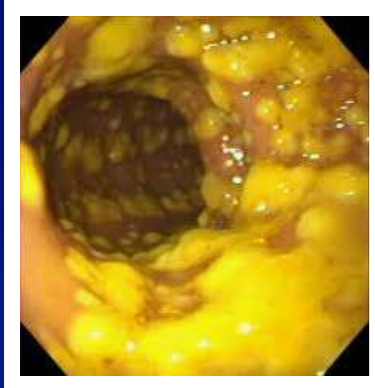


*Ventilator associated
pneumonia (VAP)*

*Catheter associated
urinary tract
infection (CAUTI)*



Additional Examples of Healthcare-Associated Infections



Clostridium difficile
associated disease
(CDAD)



*Multi-drug
Resistant
Organism
(MDRO)*

Including:

Methicillin resistant S. aureus

Methicillin sensitive S. aureus

Vancomycin resistant Enterococcus

Multi-drug resistant Klebsiella

Multi-drug resistant Acinetobacter

NHSN Today: Dependent on Manual Processes

Paper records

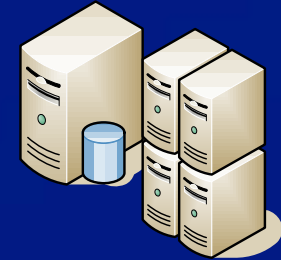
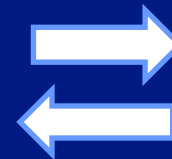


Manual Processes

- Case finding
- Data collection
- Data entry



**NHSN web interface –
reporting, analysis,
and data sharing**



**NHSN
Servers**



**Disparate electronic
data sources**

NHSN's Future: Electronic Data for HAI Detection and Reporting

Electronic records

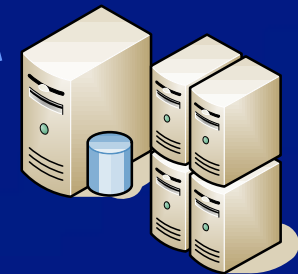


Automated Processes

- Case finding
- Data collection
- Data entry



NHSN data transfer using CDA



NHSN Servers



NHSN web interface – analysis, visualization and data sharing



Interoperable Electronic data sources

NHSN from 2005 to 2011: HAI Reporting Evolves from Purely Voluntary and Confidential to Mainly Mandatory and Public



- *NHSN was launched in 2005 as a voluntary and confidential system*
- *In 2006, Vermont became the first state to mandate use of NHSN*
- *Rapid increase in users; over 4000 hospitals participate in 2010*
- *22 states and the District of Columbia mandate use of NHSN*
- *Center for Medicare and Medicaid Services (CMS) requires hospital reporting via NHSN starting in 2011*
- *Vendors have configured their systems to enable 100 facilities to report via CDA*

Use of the NHSN for Mandatory HAI Reporting in 22 States and the District of Columbia

	VT	NY	SC	CO	CT	TN	DE	PA	MA	OK	WA	MD	IL	NH	NJ	OR	CA	DC	NV	TX	AL	
	2006		2007		2008						2009			2010		2011						
Central line-associated bloodstream infections (CLABSIs)					AL, CA, CO, CT, DC, DE, IL, MA, MD, NH, NJ, NV, NY, OK, OR, PA, SC, TN, TX, VA, VT, WA, WV																	
Surgical site infections (SSIs)					AL, CO, IL, MA, NH, NJ, NV, NY, OR, PA, SC, TN, TX, VT, WA																	
Multidrug-resistant organisms (MDRO) and Clostridium difficile associated disease (CDAD)					CA, DC, NJ, NV, NY, TN and other states considering its use																	
Ventilator-associated pneumonias (VAPs)					OK, PA, WA																	
Catheter-associated urinary tract infections (CAUTIs)					AL, NJ, PA																	
Central line insertion practices (CLIP)					CA, NH																	
Dialysis events					CO																	

NHSN and the Center for Medicare and Medicaid Services (CMS): Mandatory HAI Reporting on the Federal Level

- *Final rule published - August 16, 2010: calls for central-line associated bloodstream infection reporting from ICUs via NHSN*
- *First reporting quarter - January 1 through March 31, 2011*



Implementation of healthcare associated infection (HAI) reporting via NHSN as a CMS reporting requirement for the Inpatient Quality Reporting program is under way – Central line association bloodstream infection (CLABSI) begins in 2011. Surgical site infection (SSI) reporting is to begin in 2012.

Clinical Document Architecture (CDA) HAI Reporting to NHSN - Current



HL7 CDA
HAI file import



NHSN

Clinical document architecture (CDA) for healthcare-associated infection (HAI) reporting enables hospitals using commercial infection control surveillance systems to report HAI data electronically to NHSN.

Use of CDA: Adherence to Standards

Goal *is to achieve semantic interoperability through:*

- *Fully balloted HL7 Implementation Guidance using the Clinical Document Architecture standard (CDA).*
- *Vocabulary development based on industry standards such as SNOMED, LOINC, RxNorm, Healthcare Service Location and more.*
- *Move towards development of protocols that support the collection of data through electronic sources, such as Laboratory Identified Multi-drug Organism Event (LABID).*

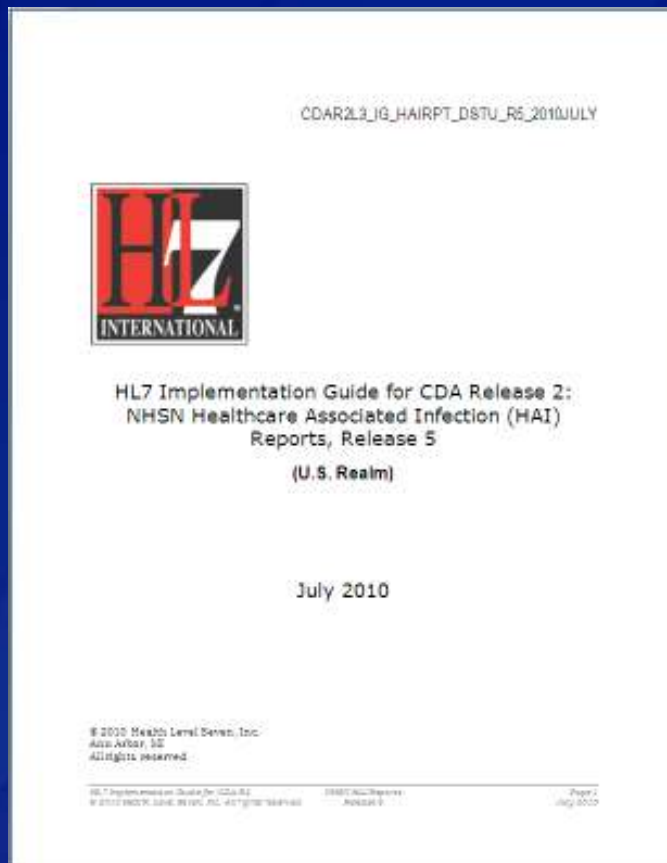
Vendor-CDC collaboration

- *Vendors provide input to:*
 - *CDA Implementation Guide authoring*
 - *NHSN Protocol development*
- *Vendors participate in pilot project to ensure project success*
- *CDC provides on-going technical support for vendors to address questions and comments as they arise*

Protocol Collaboration – Antimicrobial Use

- *Electronic Medication Administration Record (eMAR) provides opportunity to ease data reporting burden*
- *Protocol authored to insure data is electronically available and supports the data requirements for national benchmarking for antimicrobial use*
- *Vendors provided input through entire process to ensure the project is implementation-ready*

Clinical Document Architecture (CDA) for HAI Reporting to NHSN: www.cdc.gov/nhsn



- *Health Level Seven (HL7) CDA Implementation Guide*
- *Supporting import file validation tools*
- *Training Slide Sets for users performing data importation*

NHSN Vocabulary Distribution

PHIN VADS - Search All Vocabulary

PHIN Vocabulary Access and Distribution System (VADS) Help | Contact Us CDC

Search Home

Application Version: 3.2
Content Version: 3.0.7
Release Notes

Related Link(s)

- PHIN Vocabulary Services
- VADS Quick Links / Mapping Tools
- Community of Practice (PHiCoP)
- External Standards Resources
- Code System Representation
- Message Specifications/Guides
- PHIN VADS Model
- Workgroups

CSTE Technical Implementation Guide Vocabulary Review

Developer Link(s)

- Developer's Guide

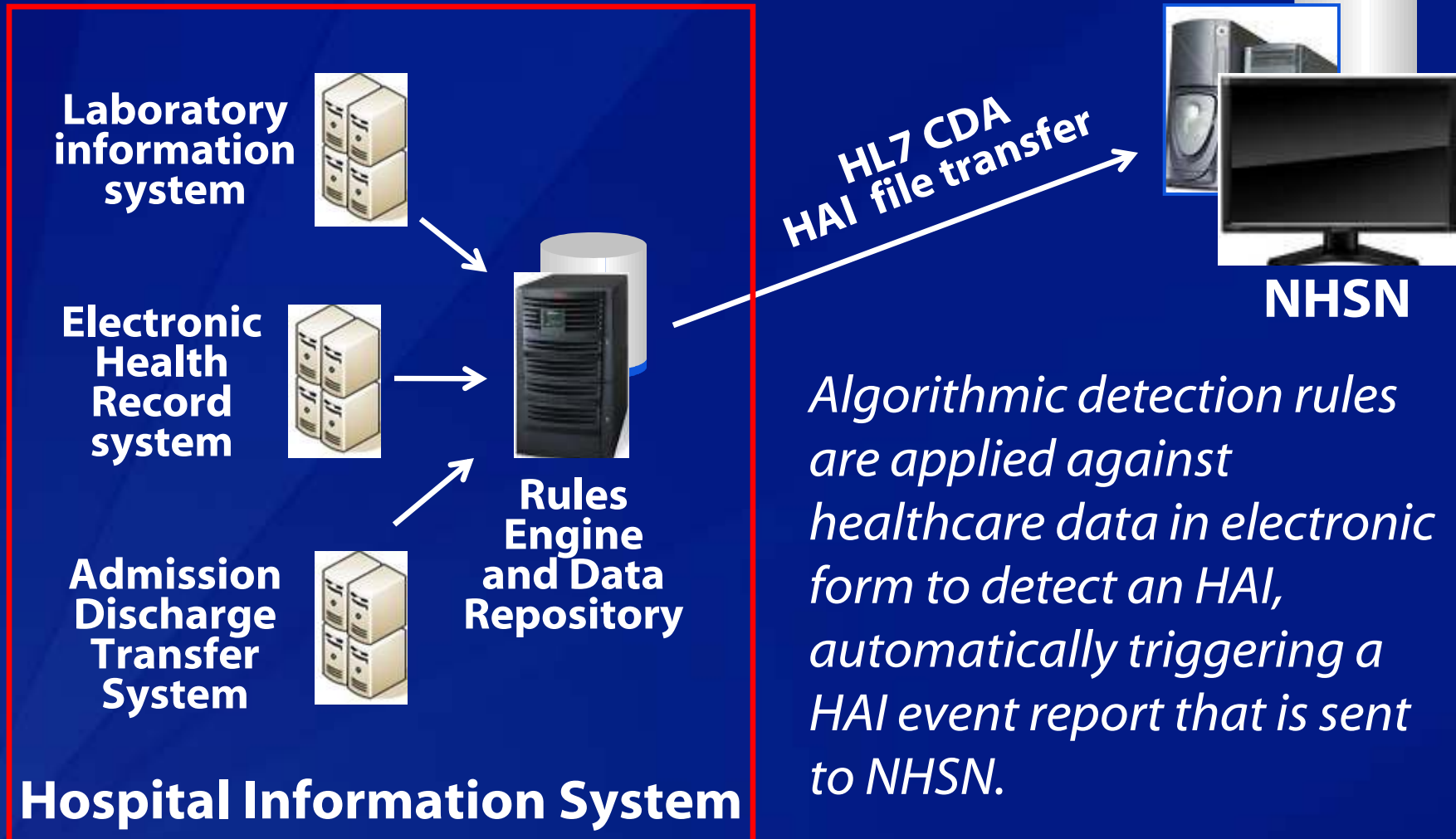
All Vocabulary | Value (Msg. Guides) | Value Sets | Value Set Concepts | Code Systems | Code System Concepts | Groups

Search All Vocabulary

Meaningful Use Hot Topics

- ELR HL7 2.5.1** - Value sets associated with Electronic Laboratory Reporting HL7 2.5.1 Implementation Guide.
LDN: ELR 2.5.1 Value Sets
- Immunization HL7 2.5.1** - Value sets associated with Immunization HL7 2.5.1 implementation guide
LDN: Immunization 2.5.1
- Syndromic Surveillance** - Value sets associated with Core BIR Requirements for Syndromic Surveillance (9/29/10)
FILE: Syndromic Surveillance Value Sets.doc - Syndromic Surveillance
- NHSN Healthcare Associated Infection (HAI)** - All the value sets associated with National Healthcare Safety Network - Healthcare Associated Infection (HAI) - Release 5
LDN: NHSN HAI - Release 5
- CDC Race Category Value Set** - List of concepts present in CDC Race Category value set which is based upon OMB recommendations.

Electronic HAI Detection and Reporting – Use of Computer-based Algorithms





- *Use of greenCDA and supporting transformation tools show great promise as an approach for reducing the effort required to implement fully normative CDA*
- *CDC is planning a pilot project with vendors interested in using greenCDA to enable use of their systems for submitting Central Line Insertion Practices (CLIP) data to NHSN*

Thank You!

Your Questions and Comments are Welcome

For More Information about NHSN:

<http://www.cdc.gov/nhsn/>



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