

Occupational Data for Health: Progress towards incorporating occupational information in electronic health records and health IT systems

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NIOSH Board of Scientific Counselors

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

NIOSH Electronic Health Records (EHR) Work Group

- **Respiratory Health Division (RHD)**
- **Division of Safety Research (DSR)**
- **Division of Field Studies and Engineering (DSFE)**
- **Western States Division (WSD)**
- **National Personal Protective Technology Laboratory (NPPTL)**
- **Office of the Director**

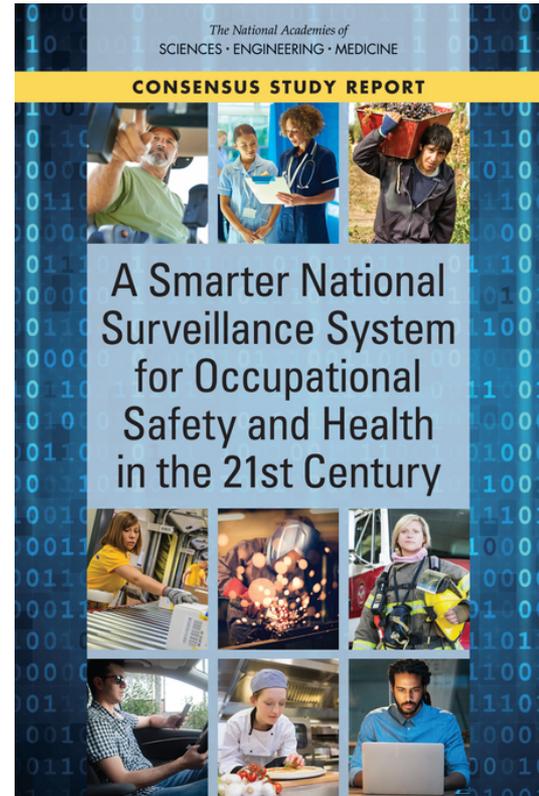
NIOSH Occupational Data for Health (ODH) Project Topics

- **Challenges and goals**
- **ODH content and informatics products**
- **A method for collecting ODH in healthcare settings**
- **Challenges going forward**



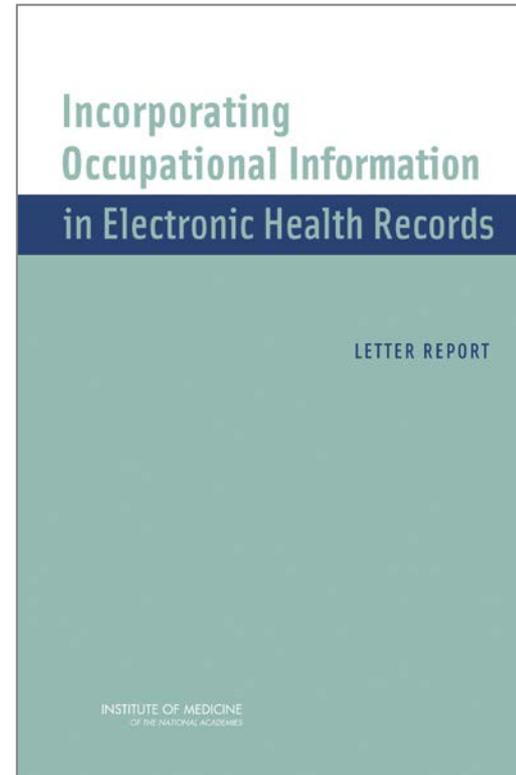
Important to Engage in Nationwide Move to EHRs

- Limitations of current population-based approaches to surveillance
- Opportunity presented by national efforts to build electronic health IT systems into the U.S. healthcare and public health infrastructure
- Opportunity time-limited



2011 Institute of Medicine Report Provided a Roadmap

- **Conduct demonstration projects**
- **Define requirements**
- **Adopt coding standards for I/O**
- **Pursue clinical decision support**
- **Develop informatics tools**
- **Demonstrate feasibility**



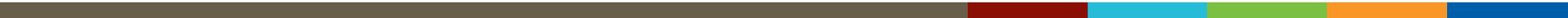
Partners, Contributors, Supporters, and Stakeholders

- Federal agencies
 - State and local public health
 - Academic researchers
 - Professional associations
 - Worker organizations
 - Standards development organizations
 - Healthcare organizations
 - Health IT vendors
- 

Landscape of Health IT is Multi-Faceted

- **Improving clinical care is the driver: value-based care**
- **Empowering patients (patients have access to their data), lower costs (reduced redundancies), more efficient medicine**
- **Office of the National Coordinator for Health IT (ONC) regulations: health IT certification criteria**
- **CMS regulations: Financial incentives to use certified health IT**
- **Recent increased attention to public health reporting**

Steps to Promote Key ODH Data Elements in ONC EHR Certification Criteria

- Inclusion in use cases that are part of regulations
 - Use cases that describe widespread need for these data
 - Published standards and technical specifications
 - Testing exchange of the data
 - Pilot use and exchange of the data
 - Multi-system use and exchange of the data
- 

Occupational Data for Health (ODH) is Useful for...



Clinical Care



Population Health



Public Health

Clinical Decision Support: Considering Work in the Primary Care Setting Improves Care

Work-Related Asthma

IF:

- Asthma that began in past two years
- OR
- Emergency/unscheduled visit for asthma in past two years

THEN:

- Ask about temporal relationship between asthma symptoms and work

Diabetes Management

IF:

- HbA1c > 8%
- OR
- Patient demonstrates serious hypoglycemia

THEN:

- Ask about conditions at work that may affect diabetes

<https://tinyurl.com/y5opn47o>

Return to Work

IF:

- Acute low back pain without red flags, AND
- Functional limitations, AND
- Request for activity restrictions

THEN:

- Discuss impact on work
- Write activity prescription
- Include education brochure

Work Information Supports Population Health



Work Information Assists in Reducing Spread of Infectious Disease

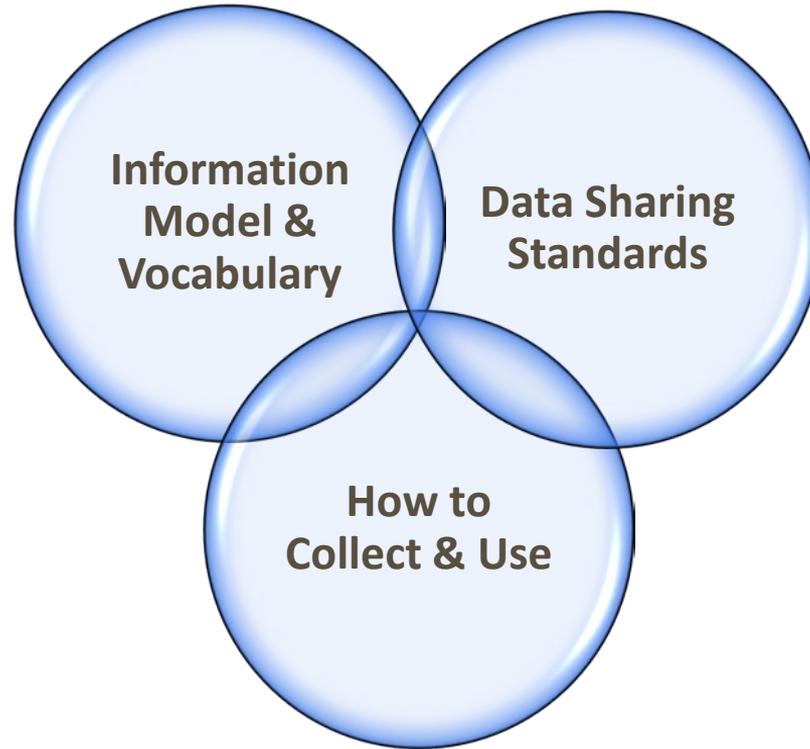


Current NIOSH Efforts

- **Socialize value of ODH in healthcare**
- **Provide informatics products to serve as blueprints**
- **Demonstrate proof-of-concept**
- **Secure ODH in regulations for EHR certification**



ODH Informatics Products Facilitate Implementation



www.cdc.gov/niosh/topics/ehr/default.html

ODH Information Model is Organized into Topics

Employment Status

Job(s) (Past or Present) and Voluntary Work

Longest-Held Work (Usual)

Retirement Date(s)

Combat Zone Period(s)

Work of Household Member(s) of a Minor

ODH Vocabulary is Publicly Available

phinvads.cdc.gov/vads/SearchVocab.action



Public Health Information Network Vocabulary Access and Distribution System (PHIN VADS)

Application Version: 4.0.6.3
Content Version: 2019.10.03

[Release Notes](#) [PDF272KB]

[User Guide](#) [PDF6.08MB]

[Code System Update](#)

[Calendar](#) [PDF112KB] ★

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PHIN VADS Hot Topics

[Expand All +](#)

[Collapse All -](#)

[Arboviral Case Notification](#) +

[\[Truncated Title\]](#) +



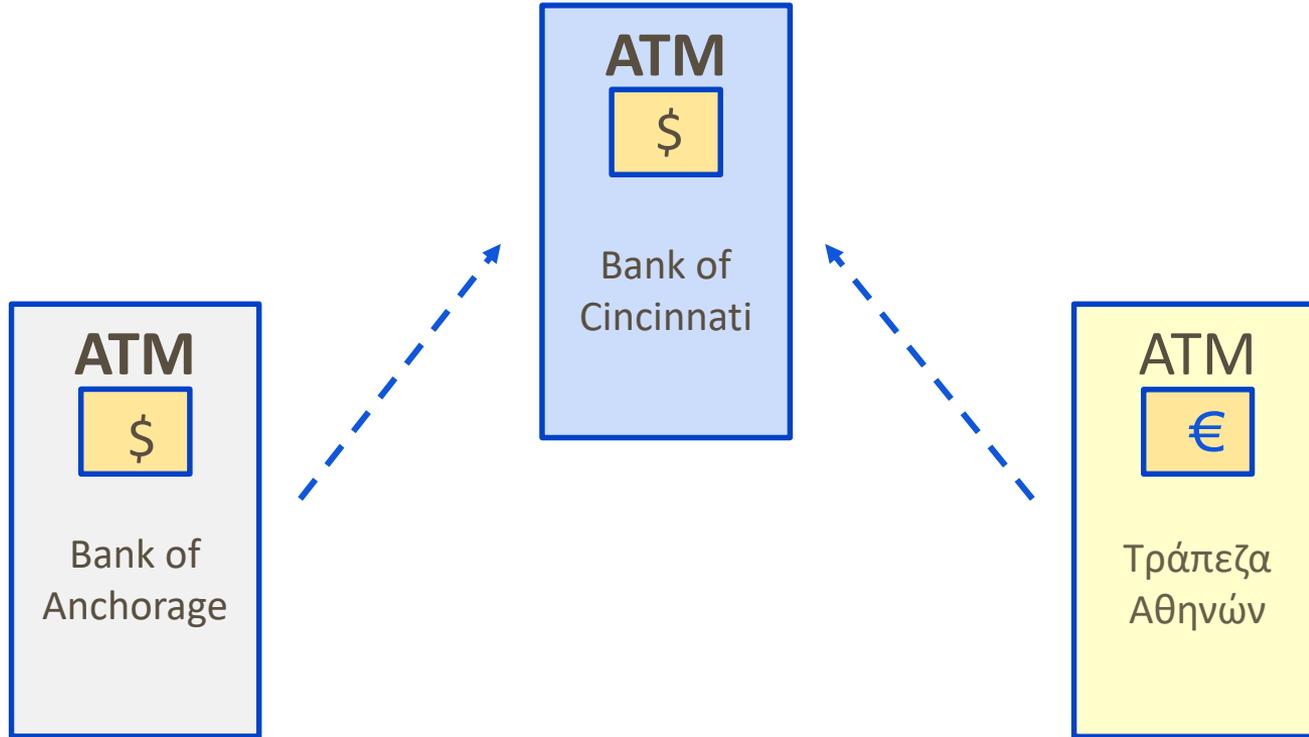
[Occupational Data for Health \(ODH\)](#) +

[Microorganism \(SNOMED\) value set](#) +

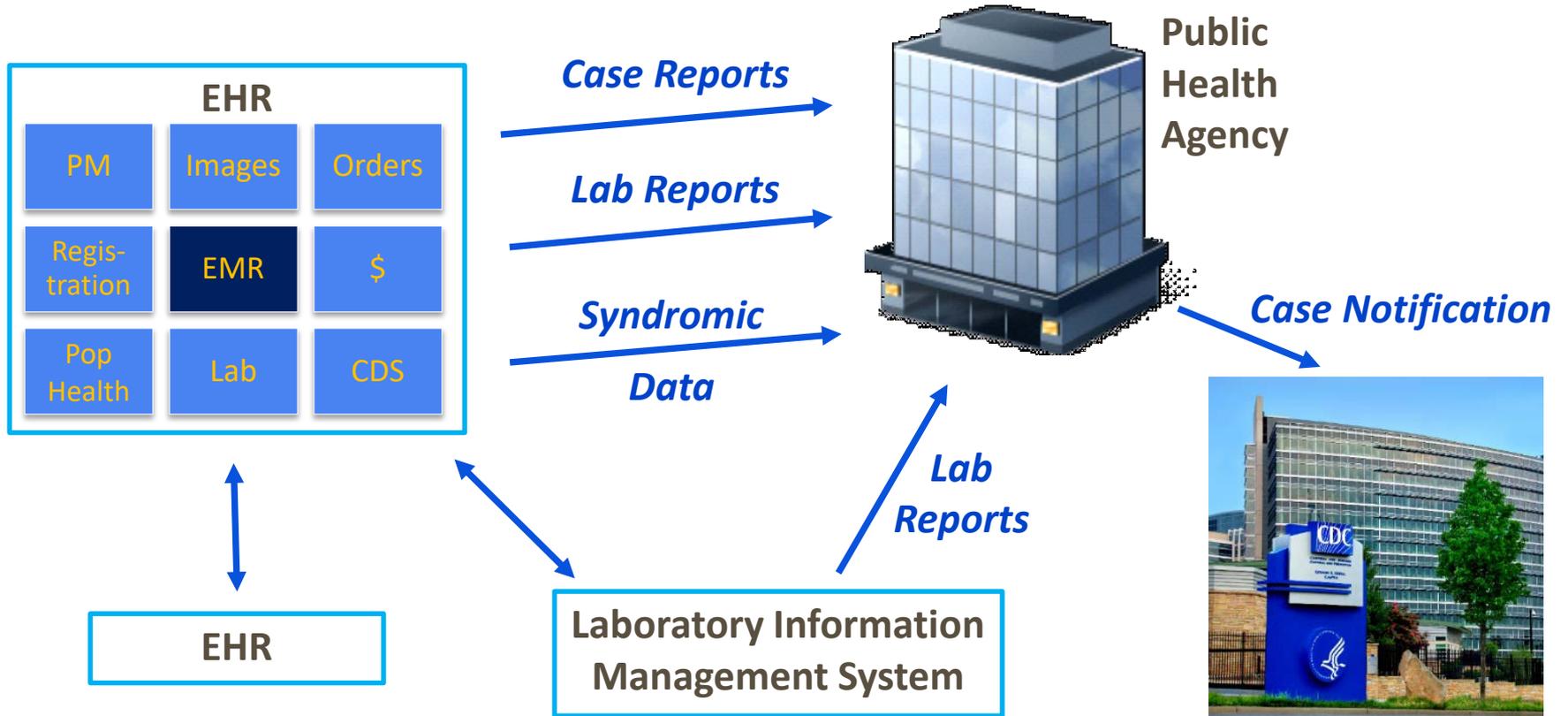
This is *Not* Interoperability



This *Is* Interoperability



Health IT Interoperability Used to Share Data



ODH Interoperability Templates are Available

- **HL7 Fast Healthcare Interoperability Resources (FHIR)**
 - ODH FHIR Profile
- **Clinical Document Architecture (CDA)**
 - HL7 ODH Consolidated-CDA (C-CDA) Supplemental Template
 - IHE Patient Care Coordination Technical Framework Content Module, ODH Supplement
- **HL7 Version 2 Messaging Standard (V2)**
 - V2.9 ODH segments

ODH Is in Place for Some Interoperability Use Cases

1. *HL7 Consolidated CDA **Templates for Clinical Notes *and* IHE Medical Summary** CDA: patient summaries, transitions of care, etc.
2. HL7 **Electronic Initial Case Report (eICR)**, CDA (Release 2) & **Electronic Case Reporting (eCR)**, FHIR
3. *HL7 **Cancer Registry Reporting**, CDA
4. HL7 **Vital Records Death Reporting**, CDA
5. HL7 **Early Hearing Detection and Intervention (EHDI) Results**, V2
6. HL7 **Critical Congenital Heart Defects (CCHD) Pulse Oximetry Screening Results**, V2
7. IHE **Healthy Weight**, CDA
8. IHE **Emergency Department Referral**, CDA
9. IHE **Exchange of Personal Health Record Content**, CDA
10. IHE **Query for Existing Data for Mobile**, FHIR
11. IHE **International Patient Summary**, FHIR

2015 Edition Health Information Technology (Health IT) Certification Criteria, 2015 Edition Base Electronic Health Record (EHR) Definition, and ONC Health IT Certification Program Modifications [80 FR 62601]

- **Industry and Occupation**

- “we continue to believe in the value of I/O information ... to improve patient health outcomes...”
- “Our long-term goal is for health care providers to use I/O information to assess symptoms in the context of work activities and environments, inform patients of risks, obtain information to assist in return-to-work determinations and evaluate the health and information needs of groups of patients.”

Collection and Standardization of Industry and Occupation in EHRs is Different than in Surveys

	Death Records, Cancer Registries, Surveys	EHRs
Objective	Convert concepts to standard results	
Process	Separated steps: Interpret: respondent-to-(interviewer) entry Translate: entry-to-standardized-result (NIOCCS)	Combined step (ODH vocabulary/guidance): Interpret and identify/select: respondent-to-standardized-result
Who uses results	Public health	Patient care, population health, public health
Desired results	Categories	Detailed terms that can be categorized

ODH Occupation Vocabulary Meets Multiple Needs

Standard Occupational
Classification (SOC)

Carpenters
(47-2031)

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Standard Occupational
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Categorized to

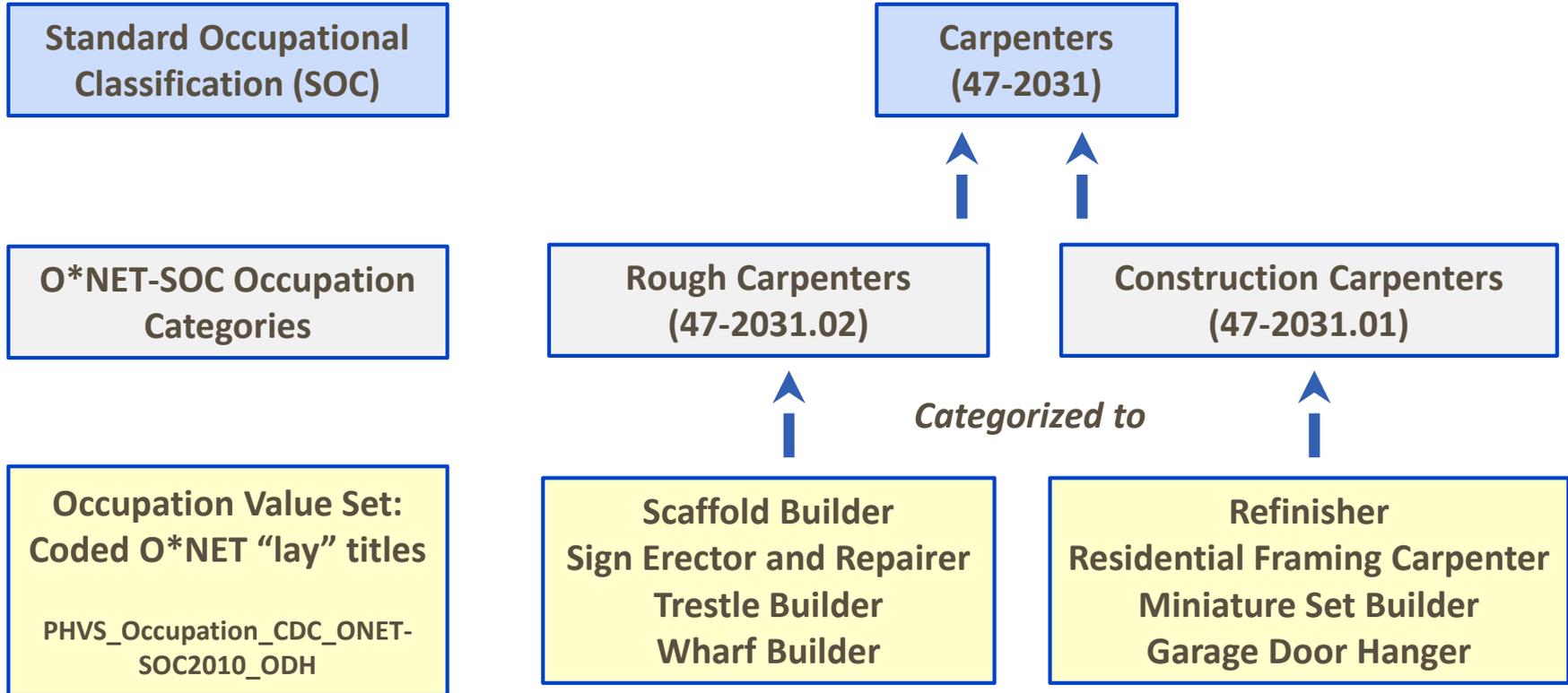
Occupation Value Set:
Coded O*NET “lay” titles

PHVS_Occupation_CDC_ONET-
SOC2010_ODH

Scaffold Builder
Sign Erector and Repairer
Trestle Builder
Wharf Builder

Refinisher
Residential Framing Carpenter
Miniature Set Builder
Garage Door Hanger

ODH Occupation Vocabulary Meets Multiple Needs



ODH Industry Vocabulary Meets Multiple Needs

**North American Industry
Classification System
(NAICS)**

**All Other Amusement and
Recreation Industries
(71-3990)**



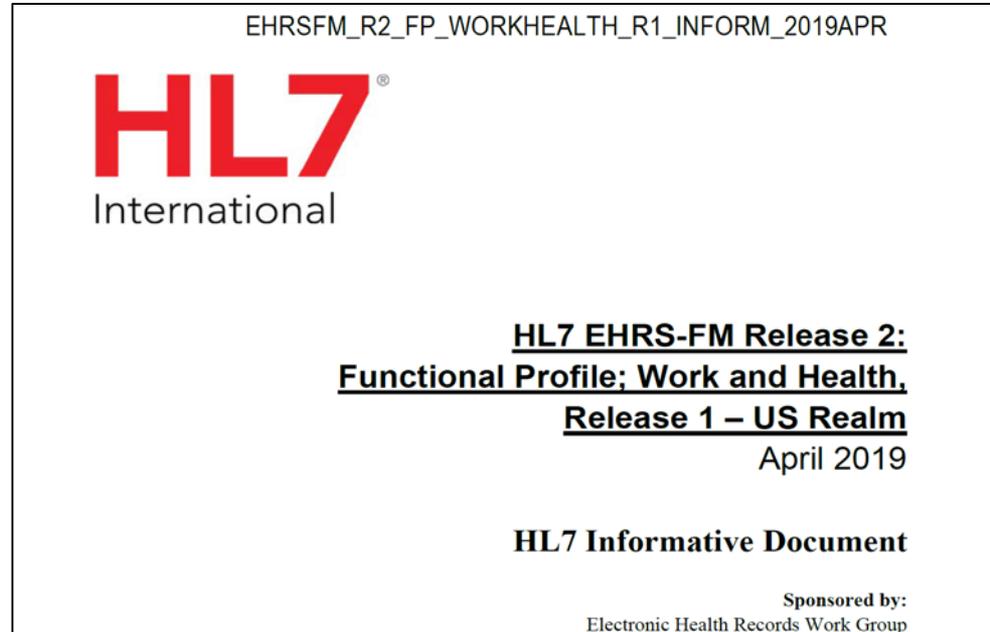
Categorized to

**Industry Value Set:
Coded NAICS index terms**

PHVS_Industry_CDC_NAICS2012_ODH

**Archery ranges
Riding stables
Billiard rooms
Golf driving ranges
Shooting galleries
Skeet shooting facilities
Trampoline facilities**

Instructions for Health IT System Developers Are Available



http://www.hl7.org/implement/standards/product_brief.cfm?product_id=498

Demonstration of ODH Collection Prototype

Ready to Promote Key ODH Data Elements in Next ONC Regulation

- What's important to move along the progression?
 - Inclusion in use cases that are part of regulations, such as transition of care, cancer reporting ✓
 - Additional use cases that demonstrate widespread need for these data ✓
 - Published standards and technical specifications ✓
 - Pilot use and exchange of the data *Next!*
 - Multi-system use and exchange of the data

Questions

- How can NIOSH identify potential healthcare partners to collect and use ODH?
- How can NIOSH best champion the collection and use of ODH in primary care settings?
- How can NIOSH socialize the value of ODH with workers, so they will enter the information in their records?
- Once ODH is in EHRs, what are the most important problems it could be used to address?

www.cdc.gov/niosh/topics/ehr/default.html



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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