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

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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

<table>
<thead>
<tr>
<th>Work-Related Asthma</th>
<th>Diabetes Management</th>
<th>Return to Work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IF:</strong></td>
<td><strong>IF:</strong></td>
<td><strong>IF:</strong></td>
</tr>
<tr>
<td>▪ Asthma that began in past two years OR ▪ Emergency/unscheduled visit for asthma in past two years</td>
<td>▪ HbA1c &gt; 8% OR ▪ Patient demonstrates serious hypoglycemia</td>
<td>▪ Acute low back pain without red flags, AND ▪ Functional limitations, AND ▪ Request for activity restrictions</td>
</tr>
<tr>
<td><strong>THEN:</strong></td>
<td><strong>THEN:</strong></td>
<td><strong>THEN:</strong></td>
</tr>
<tr>
<td>▪ Ask about temporal relationship between asthma symptoms and work</td>
<td>▪ Ask about conditions at work that may affect diabetes</td>
<td>▪ Discuss impact on work ▪ Write activity prescription ▪ Include education brochure</td>
</tr>
</tbody>
</table>

[https://tinyurl.com/y5opn47o](https://tinyurl.com/y5opn47o)
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

Data Sharing Standards

Information Model & Vocabulary

How to Collect & Use

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

PHIN VADS Hot Topics
- Arboviral Case Notification
- Occupational Data for Health (ODH)
- Microorganism (SNOMED) value set
This is *Not* Interoperability
This *is* Interoperability
Health IT Interoperability Used to Share Data

- EHR
  - PM
  - Images
  - Orders
  - Registration
  - EMR
  - $ (unknown)
  - Pop Health
  - Lab
  - CDS

- Public Health Agency
- Case Reports
- Lab Reports
- Syndromic Data
- Case Notification
- Laboratory Information Management System
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
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

<table>
<thead>
<tr>
<th></th>
<th>Death Records, Cancer Registries, Surveys</th>
<th>EHRs</th>
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<tr>
<td><strong>Objective</strong></td>
<td>Convert concepts to standard results</td>
<td></td>
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</table>
| **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)
ODH Occupation Vocabulary Meets Multiple Needs

Standard Occupational Classification (SOC)

Carpenters (47-2031)

Occupation Value Set: Coded O*NET “lay” titles
PHVS_Occupation_CDC_ONET-SOC2010_ODH

Categorized to

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

Standard Occupational Classification (SOC)

O*NET-SOC Occupation Categories

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

PHVS_Occupation_CDC_ONET-SOC2010_ODH

Carpenters (47-2031)

Rough Carpenters (47-2031.02)

Construction Carpenters (47-2031.01)

Scaffold Builder
Sign Erector and Repairer
Trestle Builder
Wharf Builder

Refinisher
Residential Framing Carpenter
Miniature Set Builder
Garage Door Hanger

Categorized to
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

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)

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