ISDS Webinar: ICD-9/10 Transition for Syndromic Surveillance

or

Avoiding planning paralysis for the ICD-9/10 Armageddon

Peter Hicks, MA, MPH
April 24, 2014
Agenda

1. Overview of ICD-9/10 transition
2. Project Planning
3. Conversion impact on Syndromic Surveillance
4. Code Mapping
5. Trend Analysis
6. Review of Tools & Resources
7. Benefits and future of ISDS ICD/9/10 CoP
Overview of ICD-9 /10 Transition
HIPAA Administrative Simplification: Modifications to Medical Data Code Set Standards

- Published January 16, 2009
- October 1, 2013 – Compliance date for implementation of ICD-10-CM and ICD-10-PCS (no planned delays or grace periods)

- Single implementation date for all users
- All HIPAA covered entities impacted
- CPT coding unaffected
ICD-9/10 Transition Delay

“The Secretary of Health and Human Services may not, prior to October 1, 2015, adopt ICD-10 code sets as the standard for codes sets under section 1173 (c) of the Social Security Act”

Limitations of ICD-9 CM

• The number of available codes is limited and the structure is restrictive (14K)

• Lack clinical specificity to account for complexity or severity of medical diseases/diagnoses and conditions; up-coding / compliance

• Inability to capture data relating to factors other than disease affecting health

• Lack of context / venue of injury / disease / condition / laterality

• Inability to explore new questions regarding healthcare utilization, socio-economic / lifestyle issues related to health
Benefits of ICD-10 CM / PCS

- Greater specificity, sensitivity, and precision

<table>
<thead>
<tr>
<th></th>
<th>ICD-9-CM / CPT</th>
<th>ICD-10-CM / PCS</th>
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</thead>
<tbody>
<tr>
<td>Diagnoses</td>
<td>14,025 codes</td>
<td>68,069 codes (&gt;4x)</td>
</tr>
<tr>
<td>Procedures</td>
<td>3,824 codes</td>
<td>72,589 codes (&gt;18x)</td>
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</tbody>
</table>

- Updated medical terminology and classification of diseases and procedures
- Easier comparison of mortality & morbidity diagnosis data
Benefits of ICD-10

Place of Occurrence

- Y92.0xx  Home
- Y92.1xx  Residential institution
- Y92.2xx  School, other institution & public admin area
- Y92.3xx  Sports and athletic area

Activities

- Y93.0x  Injured while engaged in sports activity
- Y93.1x  Injured while engaged in leisure activity

Potential impact upon Emergency Response / Occupational Health / Consumer Health
Useful ICD-10 CM Codes

- Bitten by a turtle – W5921XS
- Bitten by sea lion, subsequent encounter – W5611XD
- Struck by macaw, initial encounter – W6112XA
- Prolonged stay in weightless environment – X52
- Hurt walking into a lamppost, initial encounter – W2202XA
- Problems in relationship with in-laws – Z63.1
ICD-9/10-CM Structure Comparison

ICD-9-CM
• 3 -5 characters
• First character is numeric or alpha (E or V)
• Characters 2-5 are numeric
• Always at least 3 characters
• Use of decimal after 3rd character

ICD-10-CM
• 3 -7 characters
• Character 1 is alpha (all letters except U are used)
• Character 2 is numeric
• Characters 3 -7 are alpha or numeric
• Use of decimal after 3rd character
• Use of dummy placeholder “x”
• Alpha characters are not case-sensitive
ICD-10 Structure

- Diagnosis
  ICD-10-CM

- Procedure
  ICD-10-PCS
Overview of ICD-9/10 transition

<table>
<thead>
<tr>
<th>Differences Between ICD-9-CM and ICD-10 Code Sets</th>
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<tbody>
<tr>
<td><strong>Procedure</strong></td>
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<table>
<thead>
<tr>
<th>ICD-10 Code Structure Changes (selected details)</th>
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<tbody>
<tr>
<td><strong>Diagnosis Structure</strong></td>
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<tr>
<td>ICD-9-CM</td>
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</table>

<table>
<thead>
<tr>
<th>Procedure Structure</th>
<th>ICD-9-CM</th>
<th>ICD-10-PCS</th>
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</thead>
<tbody>
<tr>
<td>• 3-4 characters</td>
<td>• ICD-10-PCS has 7 characters</td>
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</tr>
<tr>
<td>• All characters are numeric</td>
<td>• Each can be either alpha or numeric</td>
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</tr>
<tr>
<td>• All codes have at least 3 characters</td>
<td>• Numbers 0-9; letters A-H, J-N, P-Z</td>
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</tr>
</tbody>
</table>

Differences Between ICD-9-CM and ICD-10 Code Sets

- **Procedure**:
  - ICD-9-CM: 3,824 codes, 14,025 codes
  - ICD-10 code sets: 71,924 codes, 69,823 codes

- **Diagnosis**:
  - ICD-9-CM: 3 -5 characters, First character is numeric or alpha, Characters 2-5 are numeric
  - ICD-10-CM: 3 -7 characters, Character 1 is alpha, Character 2 is numeric, Characters 3 – 7 can be alpha or numeric
  - ICD-9-CM: 3-4 characters, All characters are numeric, All codes have at least 3 characters
  - ICD-10-PCS: ICD-10-PCS has 7 characters, Each can be either alpha or numeric, Numbers 0-9; letters A-H, J-N, P-Z
SOAP Note Example

**Subjective:**
- Mrs. Finley presents today after having a new cabinet fall on her last week, suffering a concussion, as well as some cervicalgia. She was cooking dinner at the home she shares with her husband. She did not seek treatment at that time. She states that the people that put in the cabinet in her kitchen missed the stud by about two inches. Her husband, who was home with her at the time, told her she was “out cold” for about two minutes. The patient continues to have cephalgias since it happened, primarily occipital, extending up into the bilateral occipital and parietal regions. The headaches come on suddenly, last for long periods of time, and occur every day. They are not relieved by Advil. She denies any vision changes, any taste changes, any smell changes. The patient has a marked amount of tenderness across the superior trapezius.

**Objective:**
- Her weight is 188 which is up 5 pounds from last time, blood pressure 144/82, pulse rate 70, respirations are 18. She has full strength in her upper extremities. DTRs in the biceps and triceps are adequate. Grip strength is adequate. Heart rate is regular and lungs are clear.

**Assessment:**
- 1. Status post concussion with acute persistent headaches
- 2. Cervicalgia
- 3. Dorsal somatic dysfunction

**Plans:**
- The plan at this time is to send her for physical therapy, three times a week for four weeks for cervical soft tissue muscle massage, as well as upper dorsal. We’ll recheck her in one month, sooner if needed.

**ICD-10 Coding**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Category</th>
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</thead>
<tbody>
<tr>
<td>S06.0x1A</td>
<td>Concussion with loss of consciousness of 30 minutes or less</td>
<td>Initial encounter</td>
</tr>
<tr>
<td>G44.311</td>
<td>Acute post traumatic headache</td>
<td>Intractable</td>
</tr>
<tr>
<td>M54.2</td>
<td>Cervicalgia</td>
<td></td>
</tr>
<tr>
<td>M99.01</td>
<td>Segmental and somatic dysfunction of cervical region</td>
<td></td>
</tr>
<tr>
<td>W20.8xxA</td>
<td>Struck by falling object (accidentally)</td>
<td>Initial encounter</td>
</tr>
<tr>
<td>Y93.g3</td>
<td>Activity, cooking and baking</td>
<td></td>
</tr>
<tr>
<td>Y92.010</td>
<td>Place of occurrence, house, single family, kitchen</td>
<td></td>
</tr>
</tbody>
</table>

**External Cause**
The falling cabinet is what caused the injuries. Description of the cause is required.

**Activity**
In ICD-10 the activity of the patient needs to be documented. An activity code is only used once at the initial encounter.

**Location**
Documentation needs to include the location of the patient at the time of injury or other condition. In ICD-10 the details include the actual room of the house the patient was in when the injury occurred.

**Relief or No Relief**
Intractable vs. non-intractable are an inherent part of the ICD-10 code for headaches and documentation needs to be clear for the appropriate code to be assigned.
**PHYSICIANS**
- **Documentation**: The need for specificity dramatically increases by requiring laterality, stages of healing, weeks in pregnancy, episodes of care, and much more.
- **Code Training**: Codes increase from 17,000 to 140,000. Physicians must be trained.

**NURSES**
- **Forms**: Every order must be revised or recreated.
- **Documentation**: Must use increased specificity.
- **Prior Authorizations**: Policies may change, requiring training and updates.

**CLINICAL**
- **Patient Coverage**: Health plan policies, payment limitations, and new ABN forms.
- **Superbills**: Revisions required and paper superbills may be impossible.
- **ABNs**: Health plans will revise all policies linked to LCDs or NCDs, etc., ABN forms must be reformatted, and patients will require education.

**MANAGERS**
- **New Policies and Procedures**: Any policy or procedure associated with a diagnosis code, disease management, tracking, or PQRI must be revised.
- **Vendor and Payer Contracts**: All contracts must be evaluated and updated.
- **Budgets**: Changes to software, training, new contracts, and new paperwork will have to be paid for.
- **Training Plan**: Everyone in the practice will need training on the changes.

**LAB**
- **Documentation**: Must use increased specificity.
- **Reporting**: Health plans will have new requirements for the ordering and reporting of services.

**BILLING**
- **Policies and Procedures**: All payer reimbursement policies may be revised.
- **Training**: Billing department must be trained on new policies and procedures and the ICD-10-CM code set.

**CODING**
- **Code Set**: Codes will increase from 17,000 to 140,000. As a result, code books and styles will completely change.
- **Clinical Knowledge**: More detailed knowledge of anatomy and medical terminology will be required with increased specificity and more codes.
- **Concurrent Use**: Coders may need to use ICD-9-CM and ICD-10-CM concurrently for a period of time until all claims are resolved.

**FRONT DESK**
- **HIPAA**: Privacy policies must be revised and patients will need to sign the new forms.
- **Systems**: Updates to systems may impact patient encounters.
Planning for (Syndromic) Surveillance
ICD-10 Conversion Challenges

### How Might You be Affected by the Transition?

**Systems:**
- Changes may be needed to accommodate the new codes:
  - Extend character length to 7
  - Increase messaging capacity
  - Increase storage capacity
  - Modify system logic and edits
  - Update system documentation
  - Modify links with other systems

**Processes:**
- Modifications may be needed for public health business processes:
  - Statistical analysis programs
  - Data extraction programs
  - Data tables
  - Publications
  - Reports
  - Health condition definitions
  - Trend analyses

**People:**
- Primary users: For those who assign diagnosis and/or procedure codes, you will need thorough training in ICD-10 code sets.
- Secondary users: For those of you who utilize already coded ICD data, you will need to learn the new codes that apply to your data.
- Training of staff will be critical to a smooth transition.

### Impact of Transition on Public Health Surveillance

Public health entities whose systems, processes and people rely on already coded ICD data may face many challenges with the transition to ICD-10 code sets:

- Competing priorities with Meaningful Use and shrinking budgets
- Lacking ICD-10 expertise in public health sector
- Training needs for public health workforce
- Differing condition definitions across code sets

- Reporting 9 months of ICD-9-CM data and 3 months of ICD-10-CM/PCS in same year
- Analyzing multi-year data across code sets
- Achieving consensus on transition issues among stakeholders
ICD-10 Conversion Challenges

1. So much to do
   a. Build reverse translation analysis methodology
      ▪ Syndrome/sub-syndrome classification
   b. Revise time series analysis methodology
   c. Develop new baselines with revised ICD-10 coding
   d. Access impact on statistical methods / tools (CUSUM, ESSENCE, etc.)
   e. Review and test Sensitivity, Specificity
   f. Develop new evaluation “Gold Standard”

2. Limited resources

3. Collaboration needed with Public Health partners

4. Lack of funding

5. Lack of standards

6. Best practices have yet to be developed
Overview of ICD-9/10 transition

Business Functions

1. Develop multi-functional plan to receive, process, store, and use ICD-10 CM / PCS codes
2. Develop technical requirements and specifications based upon business need
3. Develop ICD-9 CM to 10 CM code mappings (revise current ICD-9 CM mappings)
4. Revise existing syndromic definitions and queries
5. Revise analytical procedures
6. Produce codebooks, conversion tools, reference materials and best practices to share with the Public Health community
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# Project Plan

<table>
<thead>
<tr>
<th>ID</th>
<th>Task</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
<th>Predecessors</th>
<th>Resource Names</th>
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<td>ICD 9 - 10 Transition</td>
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<td>ICD10 CM/PCS - 9 CM</td>
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<td>Syndrome Definition</td>
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# Project Plan

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<th>Task</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td><strong>Technical – (Plan / Implementation)</strong></td>
<td>45 Days / unknown</td>
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<tr>
<td>- Database Design and Specification</td>
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<tr>
<td>- Messaging</td>
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<tr>
<td>- Data Extraction Rules</td>
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<tr>
<td>- Data Binning and Classification</td>
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<tr>
<td>- Prospective / Retrospective re-classification</td>
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<tr>
<td><strong>Develop / Refine Business rules</strong></td>
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<tr>
<td><strong>Mapping / Syndrome Definitions / Reverse Translation</strong></td>
<td>15 days / 120-160 days</td>
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<td>(Plan / Finalize Provisional Output)</td>
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<tr>
<td><strong>Training – Community Engagement</strong></td>
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Translation Overview

• **Assets**
  – GEMS, other references
  – CTT
  – HCUP CCS
  – Syndromic Surveillance Definitions 2003
  – BioSense 1 Definitions, BioSense 2 Definitions
  – Local / State Definitions
  – SNOMED CT
  – CPT

• **Process**
  – Intelligent
  – Un-intelligent
  – Hybrid

• **Review**
  – Internal Program
  – Local Experts – Program SMEs
  – External Partners – CoP, National Experts NADHO / UC-Davis
Syndromic Surveillance
Syndromic Surveillance

• Derived from pre-diagnostic, preliminary, or incomplete healthcare data (e.g. chief complaint, working diagnosis, ICD-9) prior to availability of lab data

• Can monitor seasonal trends or identify clusters of diseases that don’t require lab confirmation

• Examples: asthma, burns, CO exposures, falls, heat-related, GI disease, influenza-like illness
Syndrome Definitions for Diseases Associated with Critical Bioterrorism-associated Agents

Participating Agencies:

National Center for Infectious Diseases and Epidemiology Program Office, Centers for Disease Control and Prevention, Atlanta, Georgia
Division of Preventive Medicine, Walter Reed Army Institute of Research, Silver Spring, Maryland
Emergency Medical Associates of New Jersey Research Foundation, Livingston, New Jersey
Bureau of Epidemiology Services, New York City Department of Health and Mental Hygiene, New York City, New York
Harvard Medical School and Harvard Pilgrim Health Care, Boston, Massachusetts

Introduction

Recent events, including the emergence of severe acute respiratory syndrome (SARS), West Nile virus, and monkeypox, have resulted in the implementation of alternate methods of disease surveillance that can potentially identify clusters of cases before traditional methods. Some surveillance systems utilize International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) coded health information from physician visit records or emergency department discharge data (1). Other systems abstract data from emergency department logs, 911 calls, or nurse call line data through analysis of text or other developed coding systems (2). Such surveillance methods are often referred to as syndromic surveillance since they typically monitor the non-specific clinical information that may indicate a bioterrorism-associated disease before specific diagnoses are made. Syndromic surveillance systems often utilize data sources that already exist but have not been designed specifically for public health surveillance purposes. Two data sources that may be available to augment a public health agency’s surveillance activities are ICD-9-CM-coded discharge diagnoses for outpatient visits and emergency department visits.

ICD-9-CM codes were developed to allow assignment of codes to diagnoses and procedures associated with hospital utilization in the United States and are often used for third-party insurance reimbursement purposes. ICD-9-CM codes have been monitored in several settings to support public health surveillance.
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<thead>
<tr>
<th>Syndrome</th>
<th>Definition</th>
<th>Category A Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rash</td>
<td>ACUTE condition that may present as consistent with smallpox (macules, papules, vesicles predominantly of face/arms/legs) SPECIFIC diagnosis of acute rash such as chicken pox in person &gt; XX years of age (base age cut-off on data interpretation) or smallpox ACUTE non-specific diagnosis of rash compatible with infectious disease, such as viral exanthem EXCLUDES allergic or inflammatory skin conditions such as contact or seborrheic dermatitis, rosacea EXCLUDES rash NOS, rash due to poison ivy, sunburn, and eczema</td>
<td>Smallpox</td>
</tr>
</tbody>
</table>
## Syndromic Surveillance ICD-9CM - 2003

### Rash ICD-9-CM Code List

<table>
<thead>
<tr>
<th>ICD9CM</th>
<th>ICD9DESCR</th>
<th>Consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td>050.0</td>
<td>SMALL POX, VARIOLA MAJOR</td>
<td>1</td>
</tr>
<tr>
<td>050.1</td>
<td>SMALL POX, ALASTRIM</td>
<td>1</td>
</tr>
<tr>
<td>050.2</td>
<td>SMALL POX, MODIFIED</td>
<td>1</td>
</tr>
<tr>
<td>050.9</td>
<td>SMALLPOX NOS</td>
<td>1</td>
</tr>
<tr>
<td>051.0</td>
<td>COWPOX</td>
<td>1</td>
</tr>
<tr>
<td>051.1</td>
<td>PSEUDOCOWPOX</td>
<td>1</td>
</tr>
<tr>
<td>692.9</td>
<td>DERMATITIS UNSPECIFIED CA</td>
<td>2</td>
</tr>
<tr>
<td>782.1</td>
<td>RASH/OTHER NONSPEC SKIN E</td>
<td>2</td>
</tr>
<tr>
<td>026.0</td>
<td>SPIRILLARY FEVER</td>
<td>3</td>
</tr>
<tr>
<td>026.1</td>
<td>STREPTOBACILLARY FEVER</td>
<td>3</td>
</tr>
</tbody>
</table>

### Category 1
- Consists of codes that reflect general symptoms of the syndrome group and also include codes for the bioterrorism diseases of highest concern or those diseases highly approximating them.

### Category 2
- Consists of codes that might normally be placed in the syndrome group, but daily volume could overwhelm or otherwise detract from the signal generated from the Category 1 code set alone.

### Category 3
- Consists of specific diagnoses that fit into the syndrome category but occur infrequently or have very few counts. These codes may be excluded to simplify syndrome category code sets.
Syndromes within BioSense

• 11 syndromes defined by Federal, State, and Local Public Health SME working group
  – Botulism-like
  – Fever
  – Gastrointestinal
  – Hemorrhagic illness
  – Localized cutaneous lesion
  – Lymphadenitis
  – Neurological
  – Rash
  – Respiratory
  – Severe illness/death
  – Specific infection

### Sub-Syndromes (partial list)

<table>
<thead>
<tr>
<th>Abdominal pain</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy</td>
<td>Cough</td>
</tr>
<tr>
<td>Alteration of consciousness</td>
<td>Cyanosis and hypoxemia</td>
</tr>
<tr>
<td>Anemia</td>
<td>Death</td>
</tr>
<tr>
<td>Anorexia</td>
<td>Dehydration</td>
</tr>
<tr>
<td>Asthma</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>Bites, animal</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>Bronchitis and bronchiolitis</td>
<td>Dizziness</td>
</tr>
<tr>
<td>Burns</td>
<td>Dysphagia</td>
</tr>
<tr>
<td>Carbon monoxide poisoning</td>
<td>Edema</td>
</tr>
<tr>
<td>Cardiac dysrhythmias</td>
<td>Falls</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>Fever</td>
</tr>
<tr>
<td>Chest pain</td>
<td>Food poisoning</td>
</tr>
<tr>
<td>CNS, inflammatory disease</td>
<td>Fractures and dislocation</td>
</tr>
<tr>
<td>Coagulation defects</td>
<td>Gait abnormality</td>
</tr>
<tr>
<td>Coma</td>
<td>Gastrointestinal</td>
</tr>
<tr>
<td>Convulsions</td>
<td>Hemorrhage</td>
</tr>
<tr>
<td></td>
<td>Hypertension</td>
</tr>
<tr>
<td></td>
<td>Hypotension</td>
</tr>
<tr>
<td></td>
<td>Influenza-like illness</td>
</tr>
<tr>
<td></td>
<td>Injury, nos</td>
</tr>
<tr>
<td></td>
<td>Insect bites</td>
</tr>
<tr>
<td></td>
<td>Intestinal infections</td>
</tr>
<tr>
<td></td>
<td>Jaundice</td>
</tr>
<tr>
<td></td>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td></td>
<td>Malaise and fatigue</td>
</tr>
<tr>
<td></td>
<td>Meningismus</td>
</tr>
<tr>
<td></td>
<td>Mental disorders</td>
</tr>
<tr>
<td></td>
<td>Migraine</td>
</tr>
<tr>
<td></td>
<td>Motor vehicle traffic accidents</td>
</tr>
<tr>
<td></td>
<td>Myalgia</td>
</tr>
<tr>
<td></td>
<td>Nausea and vomiting</td>
</tr>
</tbody>
</table>
# Examples of ICD-9 CM to Syndrome Mapping

<table>
<thead>
<tr>
<th>ICD9 CM code</th>
<th>Syndrome</th>
<th>ICD9 CM description</th>
</tr>
</thead>
<tbody>
<tr>
<td>787.03</td>
<td>Gastrointestinal</td>
<td>VOMITING ALONE</td>
</tr>
<tr>
<td>787.3</td>
<td>Gastrointestinal</td>
<td>FLATUL/ERUCTAT/GAS PAIN</td>
</tr>
<tr>
<td>787.91</td>
<td>Gastrointestinal</td>
<td>DIARRHEA</td>
</tr>
<tr>
<td>075</td>
<td>Respiratory</td>
<td>MONONUCLEOSIS, INFECTIOUS</td>
</tr>
<tr>
<td>381.4</td>
<td>Respiratory</td>
<td>OTITIS MEDIA NONSUPPURATIVE</td>
</tr>
<tr>
<td>381.50</td>
<td>Respiratory</td>
<td>EUSTACHIAN SALPINGITIS, U</td>
</tr>
<tr>
<td>381.51</td>
<td>Respiratory</td>
<td>EUSTACHIAN SALPINGITIS AC</td>
</tr>
<tr>
<td>382</td>
<td>Respiratory</td>
<td>OM SUPPURATIVE &amp; UNSPEC</td>
</tr>
<tr>
<td>780.01</td>
<td>Severe Illness or Death</td>
<td>COMA</td>
</tr>
<tr>
<td>785.50</td>
<td>Severe Illness or Death</td>
<td>SHOCK (UNSPECIFIED)</td>
</tr>
<tr>
<td>785.59</td>
<td>Severe Illness or Death</td>
<td>SHOCK, OTHER, W/O TRAUMA</td>
</tr>
<tr>
<td>798.1</td>
<td>Severe Illness or Death</td>
<td>DEATH INSTANTANEOUS</td>
</tr>
<tr>
<td>798.2</td>
<td>Severe Illness or Death</td>
<td>DEATH IN E.R.</td>
</tr>
<tr>
<td>798.9</td>
<td>Severe Illness or Death</td>
<td>Death Unattended</td>
</tr>
<tr>
<td>799.9</td>
<td>Severe Illness or Death</td>
<td>Mortality or Morbidity, Cause Unknown</td>
</tr>
<tr>
<td>047.8</td>
<td>Neurological</td>
<td>MENINGITIS, VIRAL NEC</td>
</tr>
<tr>
<td>047.9</td>
<td>Neurological</td>
<td>MENINGITIS VIRAL NOS</td>
</tr>
<tr>
<td>048</td>
<td>Neurological</td>
<td>DIS ENTEROVIRAL OF CNS, NEC</td>
</tr>
<tr>
<td>049.0</td>
<td>Neurological</td>
<td>CHORIOMENINGITIS, LYMPHOCYTIC</td>
</tr>
</tbody>
</table>
FIGURE 2. Number of emergency department visits, by chief complaint* and diagnosis† of asthma — six hospitals, San Diego, California, September 22–November 17, 2007

Monitoring health effects of wildfires using the BioSense System—San Diego County, CA, October 2007. MMWR 57: 741-744
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5727a2.htm?s_cid=mm5727a2_e
Surveillance Specific Challenges

- **Processing** - Modification to accommodate alpha numeric encoding / field length
- **Messaging** – volume considerations
- **DMB** - New Consistency / Data quality checks
  - Storage - Greater data volume / detail
  - Leverage historic / legacy data
    - Map ICD-10 to ICD-9 leveraging GEMs
- Modify / expand current definitions to leverage ICD-10
- **Adjust / improve analytic methods**
- Accommodate early adopters during 2013 transition
- **Need to modify statistical, analytic, and business processes**
- **Evaluation and Assessment**
- **Training** – impact upon analysis and reporting
Reverse Translation Validation
Gastrointestinal Syndrome Example

<table>
<thead>
<tr>
<th>ICD-9 CM</th>
<th>ICD-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>97</td>
</tr>
<tr>
<td>Discrete Codes comprise B2 – Gastrointestinal Syndrome</td>
<td></td>
</tr>
<tr>
<td>Accidental Poisoning By Other Specified Solvents, Not Elsewhere Classified</td>
<td>E862.4</td>
</tr>
<tr>
<td>Accidental Poisoning By Unspecified Solvent, Not Elsewhere Classified</td>
<td>E862.9</td>
</tr>
<tr>
<td>Toxic effect of petroleum products</td>
<td>E981.0</td>
</tr>
<tr>
<td>Contact dermatitis and other eczema due to other chemical products</td>
<td>E692.4</td>
</tr>
<tr>
<td>Accident caused by excessive heat due to weather conditions</td>
<td>E900.0</td>
</tr>
</tbody>
</table>
### Gastrointestinal Syndrome Example

<table>
<thead>
<tr>
<th>ICD-9 CM</th>
<th>ICD-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>70</strong> Discrete Codes comprise Gastrointestinal Syndrome for B2</td>
<td>Resulting in <strong>97</strong> Discrete Codes</td>
</tr>
<tr>
<td><strong>Results in 83</strong> ICD-9 Codes</td>
<td>Reverse Translation Process</td>
</tr>
<tr>
<td><strong>Assess and evaluate 13 code exclusion rule</strong></td>
<td>Further review indicates <strong>143</strong> potential codes that <em>could</em> be included in new syndrome definitions</td>
</tr>
<tr>
<td><strong>Results in 116</strong> ICD-9 Codes</td>
<td>Reverse Translation Process</td>
</tr>
<tr>
<td><strong>Assess and evaluate 42 code exclusion rule</strong></td>
<td><strong>Assess and evaluate the impact of 46 code exclusion rule</strong></td>
</tr>
</tbody>
</table>
Trending
Possible Strategies

• Backwards map the 3 months of ICD-10-CM coded data into ICD-9-CM and report together

• Let 9 months of ICD-9-CM coded data represent entire year

• Report on first 9 months and last 3 months of data separately

• Forward map the 9 months of ICD-9-CM coded data to ICD-10-CM/PCS and report together
Reality of Impact

• ICD-9 CM codes updated regularly so data have always been impacted

• Transition will change the way public health defines, identifies, analyzes, and reports on *many* health conditions and health care services

• There will be some level of data discontinuity for analyses over time and across code sets

• No single best approach for conducting trend analyses; each program/project team will need to determine own approach
For Data Users: Selection and Interpretation of Data

- **Users of data derived from ICD codes need to understand how the data have changed**
  - Understand origin of the data (information supply chain)
  - Selection/extraction of data for independent analysis
  - Understand published data analysis/reports

- **Interpretation of data**
  - May be considered new baseline year
  - May not be able to draw conclusions for first year or two
Possible Trending Impact

Age-adjusted death rates for Nephritis, nephrotic syndrome, and nephrosis: United States, 1968-2005

Possible Strategies for Deciding How to Trend

• **Comparability analysis for already coded data**
  - Take existing year/s of ICD-9-CM-based reporting and map them forwards into ICD-10-CM
  - Evaluate how original estimates (based on ICD-9-CM) compare with new estimates (ICD-10-CM)
  - Make determination from there (e.g., refine what ICD-10-CM codes to use, redo comparison, move forward with selected ICD-10-CM codes, etc.)

• **Comparability ratios for narrative clinical information**
  - Dual code data
  - Divide estimate for one coding scheme by estimate for other
  - Use to estimate values if coded in other coding scheme
Potential impact on time series analysis
Potential impact on time series analysis
Summary

- Many challenges for trending data over time and across the different code sets

- Analyses will depend on unique circumstances of each condition, range of codes used, reason for analysis, level and type (and source) of data collected, and ability to analyze and understand comparability between code sets
ICD-9/10 Transition Resources
## Conversion Tools

### Tools You Can Use

Below are some free tools that may be useful to you in your transition planning efforts.

**General Equivalence Mappings (GEMs)** - These are bi-directional (backward and forward maps) mappings designed to aid in converting applications and systems from ICD-9-CM to ICD-10-CM/PCS. They can also be used to “find and replace” codes or lists of codes.

- To obtain GEMs for CM: [http://www.cdc.gov/nchs/icd/icd10cm.htm](http://www.cdc.gov/nchs/icd/icd10cm.htm) and select “General Equivalence Mapping Files”
- To obtain GEMs for PCS: [https://www.cms.gov/Medicare/Coding/ICD10/2013-ICD-10-PCS-GEMs.html](https://www.cms.gov/Medicare/Coding/ICD10/2013-ICD-10-PCS-GEMs.html)

**Systematized Nomenclature of Medicine—Clinical Terms (SNOMED CT) to ICD-10-CM map**: [http://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html](http://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html)

**Cancer case finding lists for ICD-10**: [http://seer.cancer.gov/registrars/](http://seer.cancer.gov/registrars/)

---

**ICD-10 On-line Look-up Conversion Tool:**

**ICD-9 On-line Look-up/Conversion Tool:**
[http://icd9cm.chrisendres.com/](http://icd9cm.chrisendres.com/)
# Other Resources

<table>
<thead>
<tr>
<th>ICD-10 Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ National Center for Health Statistics ICD-10 website: <a href="http://www.cdc.gov/nchs/icd/icd10cm.htm">http://www.cdc.gov/nchs/icd/icd10cm.htm</a></td>
</tr>
</tbody>
</table>
CDC NCHS ICD Website

http://www.cdc.gov/nchs/icd/icd10cm_pcs.htm
Use the CMS ICD-9 code lookup tool to identify codes:
ICD-10 Code Translator

The ICD-10 code online translator tool allows you to compare ICD-9 to ICD-10 codes. ICD-9 is being expanded from 17,000 to approximately 141,000 ICD-10 codes, and this online tool can help you map that expansion. (Note: this tool only converts ICD-10-CM codes, not ICD-10-PCS.)

Note: For a better explanation of the code format, please refer to our ICD-10 conversion and mapping tutorial. For help with mapping, consider our ICD-10 mapping services.

ICD-9 to ICD-10
ICD-10 to ICD-9

Enter Code: R11.2

ICD-10 R11.2 > ICD-9

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>787.01</td>
<td>Nausea with vomiting</td>
</tr>
</tbody>
</table>
http://www.icd10data.com/Convert
3M CTT Tool
CDC / CSTE / ISDS / NAHDO Collaborations
ICD-9 /10 Transition Activities

- **CDC / ISDS Co-operative Agreement**
  - Code Translation
  - Syndrome definition review and update
  - 2013-2014; to be renewed for 2015

- **CDC / NAHDO Co-operative Agreement**
  - Technical assistance Code Translation
  - Access to Map-It! Code translation tool
Placeholder to demo
Master Reference Table
### ICD-9 /10 Transition Consensus Process

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T |
|   | Asthma | Associated | Agents 2001 | 2015 |                 |                 |                 |                     |                     |                     |                     |     |     |     |     |            |            |               |
| 491.00 | Asthma, unspecified | Forward Map | J45.20 | Mild intermittent asthma, uncomplicated | J45.20 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 491.01 | Asthma, unspecified | Forward Map | J45.30 | Mild persistent asthma, uncomplicated | J45.30 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 491.02 | Asthma, unspecified | Forward Map | J45.40 | Moderate persistent asthma, uncomplicated | J45.40 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 491.03 | Asthma, unspecified | Forward Map | J45.50 | Severe persistent asthma, uncomplicated | J45.50 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 491.04 | Asthma, unspecified | Forward Map | J45.62 | Severe persistent asthma with status asthmaticus | J45.62 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.01 | Asthma, unspecified | Status asthmaticus | J45.72 | Moderate persistent asthma with status asthmaticus | J45.72 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.02 | Asthma, unspecified | Status asthmaticus | J45.82 | Moderate persistent asthma with status asthmaticus | J45.82 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.03 | Asthma, unspecified | Status asthmaticus | J45.92 | Moderate persistent asthma with status asthmaticus | J45.92 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.04 | Asthma, unspecified | Status asthmaticus | J45.10 | Moderate persistent asthma with status asthmaticus | J45.10 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.05 | Asthma, unspecified | Status asthmaticus | J45.20 | Moderate persistent asthma with status asthmaticus | J45.20 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.06 | Asthma, unspecified | Status asthmaticus | J45.30 | Moderate persistent asthma with status asthmaticus | J45.30 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.07 | Asthma, unspecified | Status asthmaticus | J45.40 | Moderate persistent asthma with status asthmaticus | J45.40 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.08 | Asthma, unspecified | Status asthmaticus | J45.50 | Moderate persistent asthma with status asthmaticus | J45.50 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 492.09 | Asthma, unspecified | Status asthmaticus | J45.60 | Moderate persistent asthma with status asthmaticus | J45.60 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.00 | Asthma, unspecified | Status asthmaticus | J45.70 | Moderate persistent asthma with status asthmaticus | J45.70 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.01 | Asthma, unspecified | Status asthmaticus | J45.80 | Moderate persistent asthma with status asthmaticus | J45.80 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.02 | Asthma, unspecified | Status asthmaticus | J45.90 | Moderate persistent asthma with status asthmaticus | J45.90 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.10 | Asthma, unspecified | Status asthmaticus | J45.10 | Moderate persistent asthma with status asthmaticus | J45.10 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.11 | Asthma, unspecified | Status asthmaticus | J45.20 | Moderate persistent asthma with status asthmaticus | J45.20 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.20 | Asthma, unspecified | Status asthmaticus | J45.30 | Moderate persistent asthma with status asthmaticus | J45.30 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.30 | Asthma, unspecified | Status asthmaticus | J45.40 | Moderate persistent asthma with status asthmaticus | J45.40 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.40 | Asthma, unspecified | Status asthmaticus | J45.50 | Moderate persistent asthma with status asthmaticus | J45.50 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.50 | Asthma, unspecified | Status asthmaticus | J45.60 | Moderate persistent asthma with status asthmaticus | J45.60 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.60 | Asthma, unspecified | Status asthmaticus | J45.70 | Moderate persistent asthma with status asthmaticus | J45.70 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.70 | Asthma, unspecified | Status asthmaticus | J45.80 | Moderate persistent asthma with status asthmaticus | J45.80 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 493.80 | Asthma, unspecified | Status asthmaticus | J45.90 | Moderate persistent asthma with status asthmaticus | J45.90 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.10 | Asthma, unspecified | Status asthmaticus | J45.10 | Moderate persistent asthma with status asthmaticus | J45.10 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.20 | Asthma, unspecified | Status asthmaticus | J45.20 | Moderate persistent asthma with status asthmaticus | J45.20 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.30 | Asthma, unspecified | Status asthmaticus | J45.30 | Moderate persistent asthma with status asthmaticus | J45.30 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.40 | Asthma, unspecified | Status asthmaticus | J45.40 | Moderate persistent asthma with status asthmaticus | J45.40 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.50 | Asthma, unspecified | Status asthmaticus | J45.50 | Moderate persistent asthma with status asthmaticus | J45.50 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.60 | Asthma, unspecified | Status asthmaticus | J45.60 | Moderate persistent asthma with status asthmaticus | J45.60 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.70 | Asthma, unspecified | Status asthmaticus | J45.70 | Moderate persistent asthma with status asthmaticus | J45.70 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.80 | Asthma, unspecified | Status asthmaticus | J45.80 | Moderate persistent asthma with status asthmaticus | J45.80 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 494.90 | Asthma, unspecified | Status asthmaticus | J45.90 | Moderate persistent asthma with status asthmaticus | J45.90 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
| 495.00 | Asthma, unspecified | Status asthmaticus | J45.00 | Asthma unspecified | J45.00 | Asthma | Asthma | A | A | A |               |     |     |     |     |            |            |               |
BioSense related activities
ICD-9 /10 Transition Activities

- Modifications to BioSense Data model
  - Differentiates between ICD-9/10 Codes
  - Accepts either ICD-9 or ICD-10 Codes
  - Calculates ICD-9 to ICD-10; ICD-10 to ICD-9
  - Leverages CDC / ISDS created Master Reference Table (MRT)
  - Implementation Complete by June 1, 2014
  - Synthetic Data (dual coded) project
## Back-end Database Modifications

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## ICD-9 /10 Transition Consensus Process

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Potential impact on time series analysis
Potential impact on time series analysis

Projected Gastrointestinal Syndrome ICD-9 v. ICD-10 Comparison

October 2014 Transition Deadline

Graph showing count over time with different coding methods.
CDC / ISDS Collaboration
Code Mapping Project
Purpose:

1. Translate ICD-9 to ICD-10 codes
2. Compare translations across settings to identify discrepancies
3. Create code to parse data into syndromes
4. Develop analytical approaches to address the “changing baseline” issue
We need your help!

1. Volunteer to review code-mappings (indicate interest by April 28th)
2. Receive chapter assignments (1-16 total chapters, or syndrome groupings)
3. Complete your review in 2-4 weeks, depending on the number of chapters you are assigned
4. Each chapter or subsection will only take a few hours
5. When you sign up you will be asked to identify your role in your organization and area of specialty.

Interested? Sign up to review chapters here: https://www.surveymonkey.com/s/9S262FH
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Next Steps

Join the Community:
• ICD-10 Conversion Community Forum Group: http://communityforum.syndromic.org/group/icd-10-conversion

Questions Regarding the ISDS/CDC ICD-10 project?
• Email us at icd10@syndromic.org
Embrace and leverage the opportunity!
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