eHealth Supporting Public Health

Dr Brian O’Mahony
Specialist in Health Informatics
May 25th 2016
Brian O’Mahony

• Specialist in Health Informatics
  • Structured Messages
  • Electronic communications

• General Practitioner

• Work history: Ireland, England, Zimbabwe

• Rural dweller
I will talk about:

Data Collection and Exchange:
• Moving information between machines
• Impact on human data recorders (GPs)
• Advice for public health data collection
Interoperable

• (of computer systems or software) able to exchange and make use of information
Capturing data from GP systems

• Blood pressure: 120/80 is human readable

• What do the interfacing machines need to know?
  • Not a ratio (0.15)
  • Two separate measurements, systolic and diastolic blood pressure
  • Datatype: number
  • Code to describe the measurement: LOINC or SNOMED
  • Units: mmHg
HIQA GP Messaging Standard: Health Level Seven (HL7), version 2.4

Observation Result Segment (OBX)

- <OBX.1> Set ID
- <OBX.2> Value Type
- <OBX.3> Observation Identifier
- <OBX.5> Observation value
- <OBX.6> Units
- <OBX.7> Reference range
- <OBX.8> Abnormal flags
- <OBX.11> Result status
- <OBX.14> Date/Time of the Observation
ORU_R01.OBSERVATION
  OBX
    OBX.1>1</OBX.1
    OBX.2>NM</OBX.2
    OBX.3
      CE.1>8480-6</CE.1
      CE.2>Systolic Blood pressure</CE.2
    >2
      CE.3>LN</CE.3
    </OBX.3>
    OBX.5>120</OBX.5
    OBX.6
      CE.1>mmHg</CE.1
      CE.2>mmHg</CE.2
      CE.3>L</CE.3
    </OBX.6>
    OBX.7/>
    OBX.8/>
    OBX.11>F</OBX.11>
    OBX.14
      TS.1>20160525</TS.1>
    </OBX.14>
  </OBX>
</ORU_R01.OBSERVATION>
### Logical Observation Identifiers Names and Codes

<table>
<thead>
<tr>
<th>LOINC</th>
<th>LongName</th>
<th>Component</th>
<th>Property</th>
<th>Timing</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>24372-5</td>
<td>Peak systolic blood pressure during right ventricular septal defect maximum velocity measurement</td>
<td>Intravascular peak systolic during RVSP max vel measurement</td>
<td>Pres</td>
<td>Pt</td>
<td>Arterial system. XXX</td>
</tr>
<tr>
<td>8480-6</td>
<td>Systolic blood pressure</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>Pt</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8479-8</td>
<td>Systolic blood pressure by palpation</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>Pt</td>
<td>Arterial system</td>
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<tr>
<td>8488-9</td>
<td>Systolic blood pressure 10 hour mean</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>10H*me</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8489-7</td>
<td>Systolic blood pressure 12 hour mean</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>12H*me</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8486-3</td>
<td>Systolic blood pressure 1 hour mean</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>1H*mea</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8490-5</td>
<td>Systolic blood pressure 24 hour mean</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>24H*me</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8487-1</td>
<td>Systolic blood pressure 8 hour mean</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>8H*mea</td>
<td>Arterial system</td>
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<td>8483-0</td>
<td>Systolic blood pressure 10 hour maximum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>10H*ma</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8493-9</td>
<td>Systolic blood pressure 10 hour minimum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>10H*min</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8484-8</td>
<td>Systolic blood pressure 12 hour maximum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>12H*ma</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8494-7</td>
<td>Systolic blood pressure 12 hour minimum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>12H*min</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8481-4</td>
<td>Systolic blood pressure 1 hour maximum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>1H*max</td>
<td>Arterial system</td>
</tr>
<tr>
<td>8491-3</td>
<td>Systolic blood pressure 1 hour minimum</td>
<td>Intravascular systolic</td>
<td>Pres</td>
<td>1H*min</td>
<td>Arterial system</td>
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<tr>
<td>8485-5</td>
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<td>Intravascular systolic</td>
<td>Pres</td>
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<td>8495-4</td>
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<td>Arterial system</td>
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<td>8482-2</td>
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<td>Pres</td>
<td>8H*max</td>
<td>Arterial system</td>
</tr>
</tbody>
</table>

Search generated 111 hits in 0.011 secs.
Systolic blood pressure (observable entity) {271649006, SNOMED-CT}

Parent/Child (Relationship Type)

Average systolic blood pressure (observable entity) {314440001, SNOMED-CT}
Lying systolic blood pressure (observable entity) {407556006, SNOMED-CT}
Maximum systolic blood pressure (observable entity) {314439003, SNOMED-CT}
Minimum systolic blood pressure (observable entity) {314438006, SNOMED-CT}
Sitting systolic blood pressure (observable entity) {407554009, SNOMED-CT}
Standing systolic blood pressure (observable entity) {400974009, SNOMED-CT}
Systolic arterial pressure (observable entity) {72313002, SNOMED-CT}
Systolic blood pressure on admission (observable entity) {399304008, SNOMED-CT}
Target systolic blood pressure (observable entity) {315612005, SNOMED-CT}
## Diabetes cycle of care, first review

<table>
<thead>
<tr>
<th>Test</th>
<th>Action/Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>Brief intervention</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>Review treatment</td>
</tr>
<tr>
<td>LDL Cholesterol</td>
<td>Foot review</td>
</tr>
<tr>
<td>Creatinine</td>
<td>Foot referral</td>
</tr>
<tr>
<td>Albumin Creatinine Ratio (ACR)</td>
<td>Retinopathy screening</td>
</tr>
<tr>
<td>Microalbuminuria</td>
<td>Retinopathy screening referral</td>
</tr>
<tr>
<td>Smoking</td>
<td>Weight</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Height</td>
</tr>
<tr>
<td>Exercise</td>
<td>BMI</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td></td>
</tr>
<tr>
<td>Immunisation offered</td>
<td></td>
</tr>
<tr>
<td>Patient education</td>
<td></td>
</tr>
<tr>
<td>Cycle of care</td>
<td></td>
</tr>
<tr>
<td>Schedule next review</td>
<td></td>
</tr>
<tr>
<td>Reason for stopping</td>
<td></td>
</tr>
</tbody>
</table>
How many data items in a message?

• Minimum of 6 fields for each measurement
• For diabetes $27 \times 6 = 162$

• A structured message also needs to include information on the message itself, the GP, the patient and the visit

• In total, around 200 data items in a diabetes annual review message
The trouble with datasets

• Usually put together by domain experts rather than generalists
• Described as ‘minimum’ but usually maximum
• Every data item is MANDATORY!
• Not enough emphasis on data quality
• Not enough clarity on why the data is being collected
• Keep the dataset stable for a period of time
Ensure good governance of data

- Use anonymised data
- Patient consent
- GP consent
- Access control and audit trails
- Security, hackers, trojans, viruses
- Secondary uses of the data
- Privacy Impact Assessment
At the GP practice level

• Increasing workload in terms of numbers of patients and complexity of illness
• Increasing patient expectations
• Increasing waiting times for Hospital services
• Poor access to diagnostic imaging
• Increasing external demands for use of protocols, guidelines and data collection
GP views on collecting data

• They have 12 minutes to sort out the patient’s presenting complaint and also consider other physical, psychological, social and wellness aspects of the patient’s care
• They see 15 to 20 patients per session
• GPs have invested in practice software systems
• GPs don’t like ‘tick box medicine’
• If they are going to collect data they need the time and resources to do it
Commenting on a new Medicare Program: merit-based incentive payment system (MIPS)

• “This may sound cynical, but there are probably only two rational choices for clinicians going forward - become a salaried employee delivering clinical care or become a hospital-based clinician exempted from the madness.”

• “As a practicing clinician for 30 years, I can honestly say that it’s time to leave the profession if we stay on the current trajectory.”
How do you get GPs to collect data?

- First of all, discuss what you want to do with the GPs
- Recruit GPs into a research project
- Make it part of the GP contract and reimburse them accordingly
- Ensure the data collection is easy for GPs and their staff
- Ensure the data is extracted from the GP software system and transmitted electronically to the HSE
- Ensure the data collection is part of normal GP workflow
Advice for public health data collection

• Agree with GPs and patients: “It’s OK to ask, but not to take.”
• Keep it simple
• Provide the resources
• Ensure strong governance
• Keep the data safe
Thank you

Brian O’Mahony

• Normal email
  brian.omahony@runbox.com

• Secure email
  brian.omahony@healthmail.ie