Keeping Your Data Alive
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Melissa Capps, Ambulatory IT, St. Luke’s Magic Valley Medical Center

Spring CHUG 2010
Objectives

• Understand the difference between live data and lost data

• See the benefits of capturing live data
  • Data Trending
  • Data Recall
  • Using data in clinical documentation and patient education
  • Serving data at the point of care
  • Evaluating data at the point of care
  • Population Disease Management
  • Workflow efficiency

• See how live data helps Chronic Disease Management become the strength of the EMR
Live Data: What is it?

Live Data vs. Lost Data
**Case Summary:** Walter S. Caldwell is a 60-year-old male who has been followed by Dr. Winston for multiple medical problems. He had risk factors for heart disease and has developed symptoms of anemia. He's also been found to have chronic pulmonary disease, COPD, and an enlarged prostate (benign prostatic hyperplasia - BPH). He has had appropriate testing and treatment of these conditions. Recently, however, he was admitted to the hospital with an acute myocardial infarction (heart attack).

**Demonstration Notes:** This case is a typical complex, multispecialty case that will resonate well with internists and cardiologists, with some useful material for pulmonology and urology as well. There are examples of lab reports with abnormal readings -- try following the cholesterol, or the pulmonary functions -- and several images (chest x-ray, EKG, echocardiogram). The hospital discharge summary and consultation report are on Dr. Winston's desktop, unsigned, waiting for action.

Signed by Harry S. Winston MD on 03/02/04 at 9:01 PM
LIVE DATA
<table>
<thead>
<tr>
<th>Live Data</th>
<th>Lost Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data can be retrieved, sorted or searched</td>
<td>Difficult to search, impossible to retrieve</td>
</tr>
<tr>
<td>Data has context</td>
<td>Data has no context</td>
</tr>
<tr>
<td>Can be analyzed by protocols</td>
<td>Data not recognizable by any protocol</td>
</tr>
<tr>
<td>Easy to report and trend</td>
<td>Manual reporting and trending necessary</td>
</tr>
<tr>
<td>Data can be served</td>
<td>User needs to know where data is and go get it</td>
</tr>
<tr>
<td>Data entry workflows may be restricting and limit efficiency</td>
<td>Flexible data entry is the chief efficiency</td>
</tr>
<tr>
<td>Accommodates asynchronous non-chronological sorting</td>
<td>Usually requires chronological sorting</td>
</tr>
</tbody>
</table>
See the benefits of capturing live data

- Data Trending
- Data Recall
- Using data in clinical documentation and patient education
- Serving data at the point of care
- Evaluating data at the point of care
- Population Disease Management
- Workflow efficiency
<table>
<thead>
<tr>
<th>Date</th>
<th>Weight (kg)</th>
<th>Height (cm)</th>
<th>Head Circ (cm)</th>
<th>BMI</th>
<th>Respiration Rate</th>
<th>Pulse Rate</th>
<th>Temperature</th>
<th>Blood Pressure Systolic</th>
<th>Blood Pressure Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/2008</td>
<td>46.38</td>
<td>47</td>
<td></td>
<td></td>
<td>18</td>
<td>98</td>
<td>98.4</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>6/2007</td>
<td>41.13</td>
<td>44.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/2006</td>
<td>35.4</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>83.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/2005</td>
<td>31</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/2003</td>
<td>23.6</td>
<td>30.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/2003</td>
<td>13.6</td>
<td>28.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/2003</td>
<td>17.75</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Vaccines**

- DTaP #1
- DTaP #2
- DTaP #3
- DTaP #4
- DTaP #5

- HepaVax #1
- HepaVax #2
- HepaVax #3
- HepaVax #4

- IPV #1
- IPV #2
- IPV #3
- IPV #4

- PediARIK1
- PediARIK2
- PediARIK3

- PneuLped #1
- PneuLped #2

**Notes**

- Recorded...
- Recorded...
- Recorded...
### Why Store Live Data:

- **Trending Over Time**
  - Flowsheets
  - Vitals and Lab data (button labels that present historical data)

### Chemistry

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td></td>
<td>139</td>
<td>138</td>
<td>140</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.5</td>
<td>4.5</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Chloride</td>
<td>100</td>
<td></td>
<td>94</td>
<td>90</td>
</tr>
<tr>
<td>CO2</td>
<td></td>
<td>34</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>BUN</td>
<td></td>
<td>20</td>
<td>49</td>
<td>13</td>
</tr>
<tr>
<td>Creatinine</td>
<td></td>
<td>0.63</td>
<td>1.73</td>
<td>0.90</td>
</tr>
<tr>
<td>Glucose</td>
<td></td>
<td></td>
<td>208</td>
<td>142</td>
</tr>
<tr>
<td>Anion Gap</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osmolality, Calc</td>
<td></td>
<td>280</td>
<td>294</td>
<td>283</td>
</tr>
<tr>
<td>BUN/Creatinine ratio</td>
<td></td>
<td>24</td>
<td>28</td>
<td>20</td>
</tr>
<tr>
<td>Estimated GFR</td>
<td></td>
<td>&gt; 60</td>
<td>42 (7)</td>
<td>&gt; 80</td>
</tr>
<tr>
<td>Calcium</td>
<td>9.8</td>
<td>9.8</td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>Protein, Tot</td>
<td></td>
<td></td>
<td></td>
<td>7.5</td>
</tr>
<tr>
<td>Albumin</td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>Globulin</td>
<td></td>
<td></td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>Bilirubin, Total</td>
<td></td>
<td></td>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td>Bilirubin, Direct</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALT</td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>AST</td>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td></td>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Amylase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lipase</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDH Serum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphorous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Why Store Live Data:

- Trending Over Time
  - Labels that present historical data

### Lab and Studies:

#### Review of Lab Results

**Historical Labs**

- **Routine Labs**
  - **Cholesterol**: 156 mg/dL
  - **LDL**: 79 mg/dL
  - **HDL**: 33.3 mg/dL
  - **Triglycerides**: 221 mg/dL
  - **Creatinine**: 1.02 mg/dL
  - **Glucose**: 136 mg/dL
  - **Calcium**: 9.8 mg/dL
  - **Total Protein**: 7.5 g/dL
  - **Hemoglobin**: 12 g/dL
  - **Total Bilirubin**: 1.2 mg/dL

#### Select Category:

- **Routine Labs**
- **Preventative**
- **Coag**
- **GI**

#### Select Range (Days):

- **HbA1c**: 7.0%
- **TSH**: 1.040 microunits/L
- **T4 FREE**: 0.645 ng/mL

### Other Tests:

- **PSA**: 0.645 ng/mL
- **CRP**: 
- **Lipase**: 
- **Amylase**: 
- **LDH**: 
- **AST**: 
- **ALT**: 

---

**Note:** Include All in Note

**Commit to Notes:**
Why Store Live Data: Recall Previous Data
Why Store Live Data: Recall Previous Data

A review of commonly followed diabetic parameters reveals the following:
Diagnosed with diabetes on \{OBSANY("ONSET DM")\}.
Last HgbA1C: \{OBSANY("HGBA1C")\} done on
\{LASTOBSDATE("HGBA1C")\}.
Last TSH: \{OBSANY("TSH")\} done on \{LASTOBSDATE("TSH")\}.
Last Diabetic eye checkup: \{OBSANY("DIAB EYE EX")\} recorded on
\{LASTOBSDATE("DIAB EYE EX")\}.
Last spot Microalbumin/Creatinine ratio: \{OBSANY("MICROALB/CRE")\}
done on \{LASTOBSDATE("MICROALB/CRE")\}.
A review of commonly followed diabetic parameters reveals the following:
Diagnosed with diabetes on 2004.
Last HgbA1C: 7.9 done on 03/17/2010.
Last Diabetic eye checkup: Walker, no retinopathy recorded on 04/17/2009.
Last spot Microalbumin/Creatinine ratio: 9 done on 12/26/2008.
Using data for documentation patient education

• Recall data to add context to the moment • Previous HPI, A/P • Previous data buttons on vitals, DMDB, CKD dashboard, et c.

• Current vitals to areas of core forms

He has longstanding DM which has been doing better generally. He has been taking 65 bid of Humulin N but blood glucose still 130 in the morning. No hypoglycemia. He is not eating much in front of his wife, but she insists that he is snacking. He had gout flare up which has resolved. He has chronic shortness of breath due to RLD from...
Using data for documentation patient education

• Recall data to add context to the moment
  • Previous HPI, A/P
  • Previous data buttons on vitals, DMDB, CKD dashboard, etc.
• Current vitals to areas of core forms

Plan Set:
- LAB
- RAD
- F/U
- 1
- 2

Vitals:
- W: 278
- RR: 18
- P: 75
- R: Regular
- BP: 142 / 80 in left arm, sitting
- BMI: 51
- BSA: 2.20
Using data for documentation patient education
Using data for documentation patient education

Your Diabetes Report Card

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>is for “A1c”</td>
<td>is for “Blood Pressure”</td>
<td>is for “Cholesterol”</td>
<td>is for “Diet”</td>
</tr>
<tr>
<td>Poor Diabetes Control</td>
<td>High Blood Pressure</td>
<td>Total Cholesterol</td>
<td>Poor Diet and Obesity</td>
</tr>
<tr>
<td>My Hemoglobin A1c is 8.1%</td>
<td>My blood pressure is 142.8/81</td>
<td>Total Cholesterol level is 150</td>
<td>My BMI (body mass index) is 51.03</td>
</tr>
<tr>
<td>This A1c blood test measures how your sugars (glucose) have been running.</td>
<td>This blood pressure goal is very important in preventing the complications of diabetes.</td>
<td>Triglyceride level is 221</td>
<td>A BMI of 23-27 is considered healthy.</td>
</tr>
</tbody>
</table>

Your Goals:

- Hemoglobin A1c goal is less than 7.0%.
- You should get your A1c checked every 3 to 6 months.
- 130/80 or less.
- You should get your blood pressure checked at every office visit.
- Total Cholesterol less than 200
- Triglycerides less than 150
- HDL more than 45 (men), more than 55 (women)
- LDL less than 100 (if high risk heart disease target is 70).
- Healthy eating and a healthy body weight help keep blood sugar and diabetes under control.

Date: March 16, 2010
Data Serving: Add form components by Dx code

```java
{ 
  !if match(PROB_AFTER("comma"), 1, "250."))> 0 then
  ADD_FORM_COMP("Enterprise\MVRMC\MED SRVS", "Diabetes Dashboard", 3)
  endif 
}
```
Data Serving: Preference for context sensitive data

- Recall data to add context to the moment
- Previous HPI, A/P
- Previous data buttons on vitals, DMDB, CKD dashboard, etc.
- Current vitals to areas of core forms
Data Serving: Add form components by Dx code

```
{ 
  !if match(PROB_AFTER("comma"), 1, "250.") > 0 then 
  ADD_FORM_COMP("Enterprise\MVRMC\MED SRVS", "Diabetes Dashboard", '3')
  endif 
}
```
**Protocol “Diabetes Dashboard”**:

Patients of either sex.
a "Dx of" coded "250.00"

Should have the following:

<table>
<thead>
<tr>
<th>Test</th>
<th>Schedule</th>
<th>Last Done</th>
<th>Last Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGBAlC</td>
<td>Every 6 months</td>
<td>02/03/2010</td>
<td>4.9</td>
<td>Due On: 08/03/2010</td>
</tr>
<tr>
<td>LDL (CALCUL)</td>
<td>Every 12 months</td>
<td>06/10/2008</td>
<td>95</td>
<td>Due Now</td>
</tr>
<tr>
<td>BP SYSTOLIC</td>
<td>Every 6 months</td>
<td>02/19/2010</td>
<td>180</td>
<td>Due On: 08/19/2010</td>
</tr>
<tr>
<td>BP DIASTOLIC</td>
<td>Every 6 months</td>
<td>02/19/2010</td>
<td>84</td>
<td>Due On: 08/19/2010</td>
</tr>
<tr>
<td>ASA USE</td>
<td>At Age 45 years</td>
<td></td>
<td></td>
<td>Due Now</td>
</tr>
<tr>
<td>MICROGLOB/CRE</td>
<td>Every 12 months</td>
<td></td>
<td></td>
<td>Due Now</td>
</tr>
<tr>
<td>DIAB EYE EX</td>
<td>Every 12 months</td>
<td>04/01/2007</td>
<td>Normal</td>
<td>Due Now</td>
</tr>
<tr>
<td>DIAB FOOT CK</td>
<td>Every 12 months</td>
<td>04/16/2009</td>
<td>Followed...</td>
<td>Due On: 04/16/2010</td>
</tr>
<tr>
<td>FLU VAX</td>
<td>Every 12 months</td>
<td>12/01/2006</td>
<td>Done</td>
<td>Due Now</td>
</tr>
<tr>
<td>PNEUMOVAX</td>
<td>At Age 65 years</td>
<td></td>
<td></td>
<td>Due On: 03/15/2011</td>
</tr>
</tbody>
</table>

**Protocol “USPS Ages 50-64 Males”**:

Male patients with an age of greater than 50 years, and less than 65 years.

Should have the following:

<table>
<thead>
<tr>
<th>Test</th>
<th>Schedule</th>
<th>Last Done</th>
<th>Last Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD BOOSTER</td>
<td>Every 10 years</td>
<td></td>
<td></td>
<td>Due Now</td>
</tr>
<tr>
<td>BP DIASTOLIC</td>
<td>Every 24 months</td>
<td>02/19/2010</td>
<td>84</td>
<td>Due On: 02/19/2011</td>
</tr>
<tr>
<td>BP SYSTOLIC</td>
<td>Every 24 months</td>
<td>02/19/2010</td>
<td>160</td>
<td>Due On: 02/19/2011</td>
</tr>
</tbody>
</table>
### Data Evaluation

#### Reviewing History/Reminders

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RESULT</th>
<th>LAST COMPLETED</th>
<th>TARGET</th>
<th>PROMPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HgbA1C</td>
<td>7.0</td>
<td>12/11/2009</td>
<td>&lt; 7.0</td>
<td>Good Job!</td>
</tr>
<tr>
<td>LDL</td>
<td>79</td>
<td>07/14/2009</td>
<td>&lt; 100</td>
<td>Good Job!</td>
</tr>
<tr>
<td>BP</td>
<td>142/82</td>
<td>12/17/2009</td>
<td>&lt; 130/80</td>
<td>High systolic. Let’s work on it!</td>
</tr>
<tr>
<td>ASA</td>
<td>No</td>
<td>04/03/2007</td>
<td>Age &gt; 40</td>
<td>CA reason: Pt Refusal</td>
</tr>
<tr>
<td>Microalb./Cr.</td>
<td>207</td>
<td>07/07/2008</td>
<td>Yearly or on ACE/ARB</td>
<td>Check trends, consider intervention.</td>
</tr>
<tr>
<td>Foot exam</td>
<td>Normal</td>
<td>12/30/2008</td>
<td>Yearly</td>
<td>L: normal</td>
</tr>
<tr>
<td>Flu shot</td>
<td>Done</td>
<td>10/07/2009</td>
<td>Yearly</td>
<td>R: normal</td>
</tr>
<tr>
<td>Pneumovax</td>
<td>Done</td>
<td>11/11/2000</td>
<td>Once</td>
<td></td>
</tr>
</tbody>
</table>

**Vitals**

No vitals recorded today.
### Data Evaluation: History Views

**Dave Diabetic Test**
- **Age:** 64 Years Old Male
- **DOB:** 03/15/1946
- **PCP:** Dr. Suess
- **MRN:** 0000000
- **Insured:** REGENCE (052907)
- **Group:** Next Appt: None

**DM Provider:** Ge-Zebe, Dr. Lynn
**DM Registry:** Yes
**Weight (lb):** 180 (02/18/2010)

**Parameters**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RESULT</th>
<th>LAST COMPLETED</th>
<th>TARGET</th>
<th>PROMPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HgbA1C</td>
<td>4.9</td>
<td>02/03/2010</td>
<td>&lt;7.0</td>
<td>Good Job!</td>
</tr>
<tr>
<td>LDL</td>
<td>95</td>
<td>06/10/2009</td>
<td>&lt;100</td>
<td>Good Job!</td>
</tr>
<tr>
<td>BP</td>
<td>180/84</td>
<td>02/19/2010</td>
<td>&lt;130/80</td>
<td>High systolic. Let's work on it!</td>
</tr>
<tr>
<td>ASA</td>
<td>Contraindicated</td>
<td>05/13/2009</td>
<td>AGE&gt;40</td>
<td>C/I reason: Allergy</td>
</tr>
<tr>
<td>Microalbumin/Cr.</td>
<td>210</td>
<td>08/04/2008</td>
<td>Yearly or on ACE/ARB</td>
<td>Check trends, consider intervention.</td>
</tr>
<tr>
<td>Retinal Exam</td>
<td>Normal</td>
<td>04/01/2007</td>
<td>Yearly</td>
<td>Next Due: 04/01/2008</td>
</tr>
<tr>
<td>Foot Exam</td>
<td>Followed by Podiatry</td>
<td>04/16/2009</td>
<td>Yearly</td>
<td>L: normal R: decreased</td>
</tr>
<tr>
<td>Flu Shot</td>
<td>Done</td>
<td>12/01/2006</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>Pneumovax</td>
<td>Done</td>
<td>05/15/2008</td>
<td>Once</td>
<td></td>
</tr>
</tbody>
</table>
Data Evaluation: Immunization Validation

Dave Diabetic Test
54 Years Old Male (DOB 01/01/1956)

Immunizations Protocol: Dave Diabetic Test

Give Vaccine

- Preload
- ECO
- Boostrix
- Convax
- DT
- DTaP
- Hep A
- Hep B

Twinrix (Hep A&B) #2

Date: 04/12/2010 8:51 AM

Protocols are not yet satisfied

- View
- Review
- Flowsheet
- Protocol
- Changes
- Orders

- DTaP
- DT
- Hep A
- Hep B
- Prevnar
- MMR
- Varicella

Given by: Melissa Capps
Route: IM

Record

- Hep B #1 given at hospital
- Varicella
- RPR Reading
- Varicella titer
- Had chickenpox?
- Adcd VZV vaccine

Included in translation for note:
- Native American
- No Health Ins
- Underinsured
- Insurance vaccine by VFC
- Not eligible

Centrality

The previous vaccine in this series (Twinrix (Hep A&B) #1) hasn't yet been recorded. Proceed anyway?

Yes  No
Workflow Efficiency: Interface to Discrete Data

Procedure Report

Patient Name: [Redacted]
Procedure: Colonoscopy
Date: 02/26/2010

Indications: Chronic diagnosis
Providers: Robert K. Ward, MD, Anna Hammer, RN
Referring MD: Robert J. Lobb Jr., MD
Medications: Fentanyl IV 100 mcg, Meperidine IV 50 mcg
Complications: No immediate complications. Estimated blood loss: None

Pre-Anesthesia Assessment:
- Prior to the procedure, a history and physical was performed, and patient's tolerance of previous anesthesia has been reviewed.
- The risks and benefits of the procedure and the sedation options and risks were discussed with the patient. All questions were answered and informed consent was obtained.
- ASA Grade III: A patient with mild systolic disease.
- After reviewing the risks and benefits, the patient was deemed fit for surgery. Indications for the procedure to undergo the procedure:
- The anesthetic sedation/anal.
- Immediately post-procedure, medications,

Findings:
- Divert...
- Condit...
- Robert V...

Summary:
- BSA: 2.05, 2.04, 2.01
- Caffeine Use
- Carotid Exam
- Cervical Nodes
- Chest Exam
- Chest Palpation
- Chief Complaint
- Clinical Comment
- Colon Interf
- Colonoscopy
- Colonoscopy
- Colonoscopic
- Colonoscopy by
- Conjugated INS...
Workflow Efficiency: Interface to Discrete Data

- GI Interface
- Document view with the document outlined.
- Show the flowsheet and how we're bringing it in there.
- Preventive Care form that pops open the interpreter.

*Centricity*

**History for COLONOSCOPY**
01/04/2010

Findings:
- Multiple small and large-mouthed diverticula were found in the sigmoid colon and in the descending colon. Biopsies were taken with a cold forceps for histology. The terminal ileum appeared normal.

Impression:
- Diverticulosis sigmoid colon and descending colon.
- The examined portion of the ileum was normal.

Recommendation:
- Continue present medications.
- Discharge patient to home (ambulatory).
- Because of age, no routine follow-up colonoscopy. No recall.
- Return to GI clinic at the next available appointment.
## Workflow Efficiency: History Views

### Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEURONTIN 600 MG TABS (Gabapentin) 2 tablet by mouth three times a day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HUMULIN R 100 UNIT/ML INJ SOLN (Insulin Regular Human) 33 units three times daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COUMADIN 5 MG TAB (Warfarin Sodium)</td>
<td>Take 1 tablet by mouth on M/W/F and 1/2 tab on T/W/Th/Sa/Su</td>
<td></td>
</tr>
<tr>
<td>BYETTA 10 MG PEN 250 MCG/ML SOLN (Exenatide) 1 by mouth daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMBIEN CR 12.5 MG TECR (Zolpidem Tartrate) 1 tablet by mouth every evening as needed for insomnia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METOCLOPRAMIDE HCL 5 MG/5ML SYRUP (Metoclopramide HCL) 0.3 ml by mouth 4 x daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JANUVIA 100 MG TABS (Sitagliptin Phosphate) 1 tablet by mouth daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VYTORIN 10-10 MG TABS (Ezetimibe-Simvastatin) 1 by mouth at bedtime</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LORAZEPAM 1 MG TABS (Lorazepam) 1 tablet by mouth every evening as needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS CONTIN 200 MG XR12H-TAB (Morphine Sulfate) 1 tablet twice daily</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERIPHERAL NEUROPATHY (ICD-356.9) entered on 01/06/2009</td>
<td></td>
</tr>
<tr>
<td>RHEUMATOID ARTHRITIS (ICD-714.0) entered on 10/30/2008</td>
<td></td>
</tr>
<tr>
<td>HTN (ICD-401.9) entered on 03/11/2003</td>
<td></td>
</tr>
<tr>
<td>DIABETES MELLITUS, TYPE II (ICD-250.00) entered on 02/01/2006</td>
<td></td>
</tr>
<tr>
<td>PREOPERATIVE EXAMINATION (ICD-77.64) entered on 02/19/2008</td>
<td></td>
</tr>
<tr>
<td>KNEE PAIN (ICD-719.45) entered on 04/26/2007</td>
<td></td>
</tr>
<tr>
<td>APPENDECTOMY (CPT-44950) entered on 09/12/2001</td>
<td></td>
</tr>
</tbody>
</table>

### Allergies

- SHELLFISH.

### Directives

- 03/02/2005 NO HEROIC MEASURES

### Recent Visits

**Visit Date:** 02/19/2010  
**Vitals:** Ht(ng) 58 Wt(bo): 180 BMI: 27.47 E.S.A. 1.96 BP: 180/64  
*signed by Sharon R. Barker CMA*

**Visit Date:** 01/06/2010  
**Visit Type:** follow-up  
**Chief Complaint:** cough  
**Vitals:** BP: 135/80  
**Assessment:** 1. DIABETES MELLITUS, TYPE II  
**Medications continued:** HUMULIN R 100 UNIT/ML INJ SOLN (33 units three times daily), Lab ordered: Glycohermoglobin Mr. Test will see me again in six weeks.

**Visit Date:** 07/27/2009  
**Visit Type:** follow-up  
**Chief Complaint:** back pain  
**Vitals:** Wt(bo): 190 BMI: 26.32 E.S.A. 2.01 BP: 135/90  
**Assessment:** 1. KNEE PAIN We are going to continue the following medication(s): NEURONTIN 600 MG TABS (2 tablet by mouth three times a day), Mr. Test will see me again in two weeks.

**Visit Date:** 07/24/2009  
**Assessment:** 1. PERIPHERAL NEUROPATHY  
**2. RHEUMATOID ARTHRITIS**  
**3. HTN**  
**4. DIABETES MELLITUS, TYPE II**  
**Assessment:** 1. RHEUMATOID
# Live Data and Chronic Disease Management

## Diabetes Dashboard:

### Reviewing History/Reminders

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RESULT</th>
<th>LAST COMPLETED</th>
<th>TARGET</th>
<th>PROMPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HgbA1C</td>
<td>7.0</td>
<td>12/11/2009</td>
<td>&lt; 7.0</td>
<td>Good Job!</td>
</tr>
<tr>
<td>LDL</td>
<td>79</td>
<td>07/14/2009</td>
<td>&lt; 100</td>
<td>Good Job!</td>
</tr>
<tr>
<td>BP</td>
<td>142/82</td>
<td>12/17/2009</td>
<td>&lt; 130/80</td>
<td>High systolic. Let’s work on it!</td>
</tr>
</tbody>
</table>

ASA: No 04/03/2007 Age > 40

C/I reason: Pt Refusal

**Microalbumin/Cr.**

- **Result:** 207
- **Last Completed:** 07/07/2008
- **Target:** Yearly or on ACE/ARB
- **Prompt:** Check trends, consider intervention.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Status</th>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal exam</td>
<td>Normal</td>
<td>09/02/2008</td>
<td></td>
</tr>
<tr>
<td>Foot exam</td>
<td>Normal</td>
<td>12/30/2008</td>
<td></td>
</tr>
<tr>
<td>Flu shot</td>
<td>Done</td>
<td>10/07/2009</td>
<td></td>
</tr>
</tbody>
</table>

See more stuff! [Go](#) [Edit Flowsheet](#) [View Meds](#) [View Problems](#) [View Allergies](#)

Enter historical or outside information here

- [HgbA1c](#)
- [LDL](#)
- [BP](#)
- [ASA](#)
- [Microalbumin](#)
- [Eye exam](#)
- [Foot exam](#)
- [Flu](#)
- [Pneumo](#)

Vitals:

No vitals recorded today.
### Patient Information:

- **Name:** Olsen, Leroy D
- **Age:** 72 years old
- **Gender:** Male
- **Race:** White

### Health Parameters:

<table>
<thead>
<tr>
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<td>12/17/2009</td>
<td>&lt; 130/60</td>
<td>High systolic. Let’s work on it!</td>
</tr>
</tbody>
</table>

#### Laboratory Results:

- **ASA:** No, 04/03/2007
- **Microalbumin:** 207, 07/07/2008

#### Examination Results:

- **Retinal Exam:** Normal, 09/02/2008
- **Foot Exam:** Normal, 12/30/2008
- **Flu Shot:** Done, 10/07/2009

#### Immunizations:

- **Pneumovax:** 11/11/2000

### Additional Information:

- **C/A Reason:** Pt Refusal
- **Diabetes Registry:** Yes

### Vitals:

- **No vitals recorded today.**
Live Data and Chronic Disease Management

- Total Patients in Registry
- Total Patients w/Diabetes
HGBA1C Average

- No DM Provider: 7.24
- DM Provider: 7.17
Patients with a DM Provider more likely to receive care

- HGBA1c within 6 months:
  - DM Provider: 82%
  - No DM Provider: 33%

- HGBA1c result > 1 year:
  - DM Provider: 58%
  - No DM Provider: 10%
Patients with a DM Provider more likely to receive care

![Bar chart showing comparison between patients with and without a DM Provider. The chart indicates that patients with a DM Provider are 76% more likely to receive care compared to those without.](chart.png)
Patients with a DM Provider more likely to receive care

- % of patients without Pneumovax
- % of patients with Pneumovax

No DM Provider: 31%
DM Provider: 86%
Report data on populations of patients

- DMDB reports
- Medication generic vs. brand prescribing patterns
- Narcotic prescribing usage
- Preventive Services
- Immunizations
- MQIC
• Create workflows so efficient that users want to use the tool rather than free text or dictate lost data.
• Make processes so efficient that it is a “win-win” (quick payback to put the right data in the right place)
• When dictation necessary, consider putting it in discrete fields.
• Provide the discrete data at the point of care where they need it, when they need it.
• Give clinicians individual patient data about their disease populations.
• Use CME activities and other educational venues to demonstrate the value of discrete data at the point of care.
• Avoid conflicting observation terms and differing data within one observation term.
• Avoid form components that use different observation terms for the same item or workflow.
• Encourage discussion with users about workflow problems and approach those problems with discrete data solutions.
Conclusions

• Live data pays you back in the future. Lost data is electronic paper charting.

• The benefits of capturing live data include:
  • Data Trending
  • Data Recall
  • Using data in clinical documentation and patient education
  • Serving data at the point of care
  • Evaluating data at the point of care
  • Population Disease Management
  • Workflow efficiency

• Capturing live data makes Chronic Disease Management possible
Thanks to

Dr. Greg Jones
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Mike Sleep
INHS

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Heather Merritt
Carol Cunningham
Candy Reinke
Sharon Barker
Sheila Thompson