Electronic Health Records – Pitfalls and Best Practices from the Large Practice Perspective

Electronic Health Records: The Next Chapter
April 30th, 2014
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Medical Director for Informatics
Reliant Medical Group

Reliant Medical Group (formerly Fallon Clinic)
• 300+ provider multi-specialty group practice
• 30 specialties, including Occ Med & Behav Med
• 23 sites in central Massachusetts
• 200,000 patients with over 1 Million visits/year
• Not affiliated with any hospitals
• Not-for-profit, member of Atrius Health
• Winner of HIMSS Davies Award for implementing a HIMSS Stage 7 EHR
BUILDING THE FOUNDATION

Electronically Pre-loaded Old Data
- Prescriptions – 22 years
- Lab Results – 16 years
- Transcribed Visit and Imaging Notes – 15 years
- Immunizations, Health Maintenance, Disease Management – 15 years
- EKGs (MUSE) – 15 years
- Allergies – 10 years
- Future Lab and Visit appointments – 1 year

Over 100 Million Records Preloaded into EHR
LEVEL – Exam room etiquette

- Let the patient look on
- Eye contact with the patient
- Value the computer as a tool
- Explain what you are doing
- Logoff and say you are doing so

www.youtube.com/watch?v=LZAqeJtpzEY&hd=1

LEVEL Used with permission of Kaiser Permanente © 2004. The Permanente Federation LLC
Speech Recognition

- Mostly to document HPI and Medical Decision Making
- Study showed higher quality notes and increased physician satisfaction with documentation & Epic
- Hybrid notes are most efficient
- Notes signed in EHR improved 4 days → 45 minutes
- Average increase of 8 minutes/day/MD
- Saves $7,000/MD/year

Interfaces

- 5 Hospitals and 8 SNFs
- Ancillaries (Surescripts, QS1, Quest Lab, MUSE EKG, Infinitt PACs + Powerscribe)
- Patients
- CareEverywhere to Other Epic Sites
- eRecordLink to Community MDs
- Vignette Document Imaging
- Transcription and Dragon
- 4 Payers
- MA DPH Immunization Registry
- Health Coach Disease Management Registry
- Health Coach
- eliza
- Appt Reminder IVR
- Reliant’s EHR & Data Warehouse
- Mckesson & healthwise Patient References
- CCDs
- Home Health Agency
- HealthVault
- SharePoint
- UpToDate
- UPMC Chart
- Chart
- HealthVault
- Other

Imaging

Mailing Service

Appt Reminder IVR
At-risk claims data fed to clinic

Billing and Claims data

- FCHP Claims → medication list and fill hx
- FCHP and Reliant claims/billing:
  - Immunizations
  - Health Maintenance Dates (e.g. Mammo, Colonoscopy, CPE, etc…)
  - Disease Management Dates (e.g. HA1c, Retinal Exam, Smoking status, etc…)
  - Past Medical Hx (filtered for chronic & signif. dxs)
  - Past Surgical Hx (filtered for significant procedures)
  - Visit Hx (OV, CPE, Consults, ER, Hospital, SNF, LTC)
Hassle-Free to ED

30 seconds after ED registration, Reliant’s CCD is automatically loaded into ED’s EHR

PRACTICE EFFICIENCIES
Improve Note Creation

- Have the right person do the work
- Use the right tools
- Re-use data whenever possible

Who should do the documentation?

In order of preference:
1. The computer (last note, history, results, keyboard macros)
2. The patient (patient portal or forms)
3. The nurse triaging problem on phone
4. The medical assistant that rooms patient
5. The doctor assisted by speech recognition
6. The doctor assisted by transcriptionist
7. The doctor typing
8. A scribe typing
MA rooms patient for CPE enters:

- Chief Complaint(s)
- Allergies/Medications (including OTC)
- Preferred Pharmacy
- Pends medications that need renewals
- Full Social and Family History
- Vital signs
- Review of Systems
- Loads MD’s note template & pastes last PE

Identifying Abnormal Results

Where do you start?
Degrees of Abnormality

- Critically Abnormal
- Moderately Abnormal
- Slightly Abnormal
- Slightly Abnormal
- Moderately Abnormal
- Critically Abnormal

- Always Urgent
- Urgent if new/change
- Normal Range
- Never Urgent
- Urgent if new/change
- Always Urgent

Flag if Significantly Abnormal Result

<table>
<thead>
<tr>
<th>P</th>
<th>Status</th>
<th>BPA</th>
<th>Enc Date</th>
<th>P</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Read</td>
<td>X</td>
<td>02/23/2011</td>
<td>C- Fecal Globin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New</td>
<td></td>
<td>03/16/2011</td>
<td>R- Non-Gynecolo; Urine Cultur; Urinalysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New</td>
<td></td>
<td>03/10/2011</td>
<td>S- Platelet Ass; CBC 5 Part D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New</td>
<td></td>
<td>03/16/2011</td>
<td>U- Cardiovascul</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New</td>
<td></td>
<td>03/13/2011</td>
<td>Y- Fecal Globin; Urine Cultur; Basic Metabo; Alanine Ami</td>
<td></td>
</tr>
</tbody>
</table>

BestPractice Advisories

- One or more of these lab results have significant abnormalities and should be reviewed high priority.

**Fecal Globin Immunochemical (Insure) Preferred**

**Occult Blood Test**

<table>
<thead>
<tr>
<th>Component Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>Fecal Globin Immunochemical Test (Fallon)</td>
</tr>
</tbody>
</table>
Monitor meds at time of renewal

63 y.o. female calling with request to renew:

Lisinopril 5mg OR Tabs

Any special requests or concerns? 
- (Choose only the relevant questions for
  When do you need the medication for? (REFILL TIME NEEDED BY 12/6/20)

Next visit in PCP office: Visit date not found
Last OV in Dept: 2/23/2011
Allergies: Sulfaemethoxazole w-trimethoprim and Macrobid

Lab Results:

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM</td>
<td>4.1</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>CHLOR</td>
<td>106</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>CO2</td>
<td>25</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>BUN</td>
<td>14</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>CREATININE</td>
<td>0.67</td>
<td>2/23/2011</td>
</tr>
<tr>
<td>GLUCOSE</td>
<td>113</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>CAL</td>
<td>3.7</td>
<td>2/12/2010</td>
</tr>
</tbody>
</table>

An open order for Basic exists.

Testing recommended a minimum of yearly for chronic therapy.
Based on last lab testing intervals, 1 month of refills suggested for potassium, diuretics, ACE inhibitors and ARBs. Please arrange updated lab monitoring.

Prescribing Guidance in Descriptions

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flagyl 500 mg OR Tabs</td>
<td>(Doxycycline) QID X 10 days #10 Ref 0</td>
</tr>
<tr>
<td>Metronidazole 500 mg OR Tabs</td>
<td>(Metronidazole) 9ID X 10 days #10 Ref 0</td>
</tr>
</tbody>
</table>
# “1-Click” Radiology Orders

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>74110.851</td>
<td>CT Abdomen and Pelvis W/ contrast (DX: Abdominal pain) (within 1 wk) FC</td>
</tr>
<tr>
<td>74150.851</td>
<td>CT Abdomen and Pelvis W/O contrast (DX: Renal Colic 783.0) (within 1 wk) - FC</td>
</tr>
<tr>
<td>74170.856</td>
<td>CT Abdomen and Pelvis W and W/O contrast (DX: Hematuria) (Within 2 weeks) FC</td>
</tr>
<tr>
<td>74180.855</td>
<td>CT Abdomen and Pelvis W/ contrast (DX: Unexplained Weight Loss) (Within 2 weeks)</td>
</tr>
<tr>
<td>74180.856</td>
<td>CT Abdomen and Pelvis W/ contrast (DX: Cancer Staging) (Within 2 weeks) FC</td>
</tr>
</tbody>
</table>

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### % Radiology Orders Requiring Changes

![Graph showing % Radiology Orders Requiring Changes](image)
The total economic burden of diabetes in the United States is estimated at $245 billion, a 41% increase from 2007\(^1\).

Reliant’s Diabetes HbA1c Screening Rate and Control Rate did not change significantly with EHR implementation.

### Alerts during patient visits

**Last date**

<table>
<thead>
<tr>
<th>BestPractice Advisories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye Retinal Exam should be scheduled.</strong> (EYEBALL EXAM last satisfied: 11/11/2011)</td>
</tr>
<tr>
<td>- Overdue EYEBALL EXAM</td>
</tr>
<tr>
<td>- Postpone EYEBALL EXAM</td>
</tr>
<tr>
<td>- Open order Diabetic Eye Exam (YR FROM LAST) FC</td>
</tr>
</tbody>
</table>

**Next order**

| This patient is due or overdue for a Hemoglobin A1C and already has the test ordered. PLEASE REMIND THEM TO GO TO THE LAB. |

But doesn’t ask for an order if it’s not due or already ordered

---

### Registries

<table>
<thead>
<tr>
<th>MN</th>
<th>Patient name</th>
<th>A1C Date</th>
<th>Last A1C Value</th>
<th>Last LVL Date</th>
<th>Last Eye Exam</th>
<th>Next Appt Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>11/1/2008</td>
<td>8.7</td>
<td>1/11/2008</td>
<td></td>
<td></td>
<td></td>
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<td>16</td>
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<tr>
<td>16</td>
<td>7/12/2007</td>
<td>5.6</td>
<td>7/12/2007</td>
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<td>16</td>
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<tr>
<td>10</td>
<td>9/17/2007</td>
<td>7.4</td>
<td>1/23/2008</td>
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<td>16</td>
<td>3/9/2008</td>
<td>15.3</td>
<td>2/9/2008</td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>10/5/2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Barometer of Actionable Deficiencies**
Congratulations on your upcoming birthday! As your primary care provider at Fallon Clinic I feel it is very important for you to have timely preventive services to ensure early detection of health problems which are treatable in early stages.

Our records indicate that you are due for the following test/procedure(s):

- PAP smear
- Mammogram
- Bone Density Test
- Colonoscopy
- Tetanus shot
- Pneumovax shot
- A1c (diabetes) Lab test
- Cholesterol Lab test (fasting for 12 hours)
- Eye Exam
- Microalbumin (urine) lab test

Please call our office at xxx-yyyy-zzzz to schedule the test/procedure(s).

Sincerely,
**Better Outcomes**

**Diabetes Control**

- IVR calls to remind patients of upcoming lab tests just prior to “expected date”
- Alerts when patient calls or is seen that they have overdue labs that have been ordered already
- Letters to patients who no-show labs
  - If 25% overdue (e.g. 1 month late on a 4 month f/u or 3 months late on a 1 year f/u)
  - Letter automatically sent to patient from EHR
Lower Cost

Annual Cost Per ACO Patient (Age 65+)
(12 months ending March 2013)

Avg. Massachusetts FFS: $13,000+
Avg. Massachusetts ACO: $12,000+
Atrius Health ACO: $10,700

Return on Investment

EMR-Specific Annual Profit/(Loss) Including Benefits, Meaningful Use Incentives & Improved HCC Coding
Summary

With thoughtful use of the EHR, HIEs, clinical decision support, and analytics, we improved the quality, outcomes, safety, and efficiency of healthcare delivery.

Questions?

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