The AMDIS Consensus Recommendations to Industry for Electronic Health Record Documentation

Claus Hamann MD  |  Larry Ozeran MD

AMDIS Ojai          |       June 19, 2014
EHR Documentation Best Practices

Consensus Recommendations to Industry for Electronic Health Record Documentation

By Joel S. Shoolin, DO; Larry Ozeran, MD; Claus Hamann, MD; and William F. Bria, MD
Why Present our AMDIS Paper?

- Joel and Bill
- Explain your contribution to consensus
- Assist with your product selection
- Support your personal requests
  - Everyone wants effective, efficient documentation functions (not just you)
- Move the dialog toward better systems
- Go forth and proselytize!
Consensus Process

AMDIS EHR Recommendations to Industry

• Draft initial thoughts (2012)
• Get input from AMDIS list
• Invite others to edit sections
• Review and discuss (calls, email)
• Request final comments
• Incorporate final comments
• Submit for publication
EHR Documentation Best Practices

Goals

Begin and support ongoing dialog among the vendor community, AMDIS, and other interested organizations

• Improve electronic clinical documentation
• Promote our national goals of better care, healthier populations, and lower cost
EHR Documentation Best Practices

- Clinical documentation supports patient care
- EHR features integrate into clinical workflow
- Usability is critical
- Clinical decision support fits into workflow
- EHR design promotes effectiveness and efficiency
EHR Component Recommendations

- Graphical user interface, data model
- Data entry
- Data display
- Usability, human factors
- Versatile documentation

- Care provider connection
- Efficiency
- Compliance
- Decision support
- Record integrity
Graphical User Interface and Data Model

*Flexible GUI, extensible EHR (1)*

- Move from data capture to clinician engagement – like consumer apps
  - Link data entry flexibly to the underlying data model and seamlessly into optimized clinical workflow
  - *Not* tie data entry fields of the presentation layer (GUI) to data model that stores data
  - Need data abstraction layer to facilitate update of GUI
• Make EHR extensible via APIs to permit qualified third parties assisting user organizations with needed upgrades, independently of EHR vendor
Graphical User Interface and Data Model

Flexible GUI, extensible EHR (3)

• Consider “situational awareness” from battlefield applications
  ▪ Time-pressure, multiple parallel tasks, risk and decision-making impact resemble clinical care
Data Entry (1)

Limit data entry, support time for decision & action

• Keep electronic data electronic
  ▪ Least possible human involvement in data transfer for maximum accuracy and minimum risk

• Make data entry context-sensitive
  ▪ Pick lists, check boxes preferred over scrolling
  ▪ Test balance of data-entry types before production
  ▪ Minimize selection errors in multi-tasking environment
    o Example: Present specific list of diagnoses based on prior history
Data Entry (2)

Limit data entry, support time for decision & action

• Make data entry easy and rapid
  ▪ Limit data re-entry and data-gathering from disparate parts of the record
  ▪ Make judicious use of macro functions (tokens, dot functions, acronym expanders, etc.)
  ▪ Give clinician the time to analyze information and make decisions
Data Entry (3)

Customize data entry to the clinical need

- Incorporate analytics to improve data-entry performance
  - Inappropriate selection of topmost medication choice → re-design
- Support free-text entry for narrative
- Give us a 3-fer
  - Assessment → Problem List → (the) Bill
Data Entry (4)

*Customize data entry to the clinical need*

- Copy-paste/forward with care: Consider
  - Forcing function; ex., no copy-forward for HPI
  - Hover message: “Sure you want to include copied text?”
  - Add reference, different font/color, original text
- Predictive analytics to the rescue?
  - Seamless electronic capture of all contextual information will obviate most copy-paste/forward.
Data Display (1)

Ensure accurate appraisal in the shortest time

• Make displays configurable by the user
  ▪ Use a common metaphor
  ▪ Tabs or menu bars should be consistent across web pages
• Minimize the number of colors, keep within a single color scheme
• Use consistent fonts, sizes, styles, indentation, tall-man as needed, AVOID ALL-CAPS
Data Display (2)

Ensure accurate appraisal in the shortest time

• Place identical functions (Enter, Next), results and data types in the identical locations across pages and contexts
• Use white space to emphasize key information
• Provide intuitive icons
• Keyboard shortcuts should be available
• Help should be context-sensitive
Example

**ALL CAPS – White Space**

<table>
<thead>
<tr>
<th>Problems</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABDOMINAL PAIN, ACUTE</td>
<td>ZAROXOLYN TAB 5MG (METOLAZONE) 1 po qd</td>
</tr>
<tr>
<td>CONGESTIVE HEART FAILURE</td>
<td>FUROSEMIDE TABS 20 MG (FUROSEMIDE) 1 po bid</td>
</tr>
<tr>
<td>EFFUSION, PLEURAL EDEMA</td>
<td>ALBUTEROL AER 90MCG (ALBUTEROL) 2 puffs daily</td>
</tr>
<tr>
<td></td>
<td>ASPIRIN TAB 325 MG TABS (ASPIRIN BU/ALHYD-MGHYD-CACAR) 1 by mouth</td>
</tr>
<tr>
<td></td>
<td>ATENOLOL TAB 25MG (ATENOLOL) 1 by mouth daily</td>
</tr>
<tr>
<td></td>
<td>NIFEREX-150 FORTE CAPS (FE BIGLY-FE POLYSAC-C-B12-FA) 1 by mouth</td>
</tr>
<tr>
<td></td>
<td>COLACE 100 MG CAPS (DOCUSATE SODIUM) 1 by mouth twice daily</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flowsheet: Enterprise/Medicine/Cardiology/Cardiac</th>
<th>Documents: Summary View</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP SYSTOLIC 01/03/2007 122</td>
<td>Date</td>
</tr>
<tr>
<td>BP DIASTOLIC 01/03/2007 84</td>
<td>01/03/2007 12:4</td>
</tr>
<tr>
<td>PULSE RHYTHM 04/02/2003 regular</td>
<td>04/02/2003 4:23</td>
</tr>
<tr>
<td>RESP RATE 04/02/2003 84</td>
<td>09/10/2001 6:00</td>
</tr>
<tr>
<td>WEIGHT 04/02/2003 210</td>
<td>09/10/2001 6:00</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
</tr>
<tr>
<td>AUSCUL HEART 04/02/2003 S1, S2, no murmur, rub, or gallop</td>
<td></td>
</tr>
<tr>
<td>EXERCISE 04/02/2003</td>
<td></td>
</tr>
<tr>
<td>SMOK HX PFD 04/02/2003 1/2</td>
<td></td>
</tr>
<tr>
<td>ALCOHOL USE 09/02/2003</td>
<td></td>
</tr>
<tr>
<td>SODIUM 09/02/2003 141</td>
<td></td>
</tr>
<tr>
<td>POTASSIUM 09/02/2003 4.7</td>
<td></td>
</tr>
<tr>
<td>CHLORIDE 09/02/2003 101</td>
<td></td>
</tr>
<tr>
<td>CO2 09/02/2003 23</td>
<td></td>
</tr>
<tr>
<td>CALCIUM 09/02/2003 9.3</td>
<td></td>
</tr>
<tr>
<td>CHOLESTEROL 09/02/2003 190</td>
<td></td>
</tr>
<tr>
<td>HDL 09/02/2003 60</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBUTEROL/IPRATROPNIUM INHALER</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ARTIFICIAL TEARS OPTH SOLN 15ML BTL</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ENOXAPARIN 40 MG/0.4 ML SYR 40 MG SUBQ 1200</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>FAMOTIDINE IVPB 20 MG/50 ML BAG 20 MG IV Q12</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>NICOTINE 14 MG/24 HR TDSY</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PIPERACILLIN/TAZO 3.375 GM (ZOSYN) IVPB 3.375 GM IV Q6</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Vanco. 1 GM FROZEN (PHARMACY Only) 200 MLS/HR IV Q12 H (Tot Vol 20 ML)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PRN</td>
</tr>
<tr>
<td>0.9% NACL 1000 ML IV</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Given 2 times in last 24 hours
Usability and Human Factors (1)

Optimize design for patient safety and user efficiency

- Simplicity – no visual clutter
- Naturalness – navigation matches workflow tasks
- Consistency – screen locations, phrasing, colors, text styles
Usability and Human Factors (2)

Optimize design for patient safety and user efficiency

• Forgiveness & Feedback
  - No fear of negative consequences
  - Spell-check
  - Alerts for missing documentation elements
  - “Undo last command“ functionality
  - Abbreviation expanders
Usability and Human Factors (3)

Optimize design for patient safety and user efficiency

- Language – succinct, familiar, avoiding IT buzzword
- Efficient interactions – minimize steps, clicks, page flips, dense screens
- Preserved context – minimize screen changes, interruptions during single task
- Cognitive load – simplify for safety
EHR Component Recommendations

- Graphical user interface, data model
- Data entry
- Data display
- Usability, human factors

- Versatile documentation
- Care provider connection
- Efficiency
- Compliance
- Decision support
- Record integrity
Versatility of Documentation

• Enable pertinent data to be viewed in many ways – import data into multiple displays and formats
  ▪ clinical note,
  ▪ final summary
  ▪ note to support clinical decision-making

• Include triggers to populate clinical dashboards and quality reporting
Connecting Care Providers

• Acknowledge or reference the notes of other care providers
• Support team documentation, like a wiki
• Sign-out lists should be automatically populated by orders as entered
Efficiency

• Standard templates for the admission history and physical, progress, consultation and discharge notes

• Easy access to the assessment – APSO toggle

• Integrate notes from other organizations, e.g. outside consultations

• Support draft or preliminary status
Compliance

• Versioning – make it easy to identify current and prior versions
• Recognize disallowed abbreviations and advise or recommend alternatives
Decision Support

- Identify and display existing study results pertinent to the provider’s assessment
- Identify patient risks proactively
- Document use or override of decision support in the record audit trail
- Medication reconciliation at admission and discharge
Record integrity

• Time-stamp all note creation, review and edits (when permitted)
• Support track changes display functionality for notes that have changed
• Actively monitor metadata for trends
EHR Documentation Best Practices

Summary: *Recommendations to Industry*

- Graphical user interface, data model
- Data entry
- Data display
- Usability, human factors
- Versatile documentation

- Care provider connection
- Efficiency
- Compliance
- Decision support
- Record integrity
EHR Documentation Best Practices

Recommendations to Industry - Conclusion

✓ **AMDIS** roadmap for better documentation functionality
✓ **Make** our case with vendors
✓ **Drive** the changes we need
✓ **Improve** usability in clinical documentation tools
✓ **Support** clinicians for optimal, safe and efficient patient care
We gratefully acknowledge our AMDIS reviewers:

Peter Basch, Peter Catinella, Rose Dunn, Steven Davidson, Jin Hahn, Ken Ong, Richard Schreiber, Rod Tarrago, Nick van Terheyden, and Nancy Walker