The AMDIS Consensus Recommendations to Industry for Electronic Health Record Documentation

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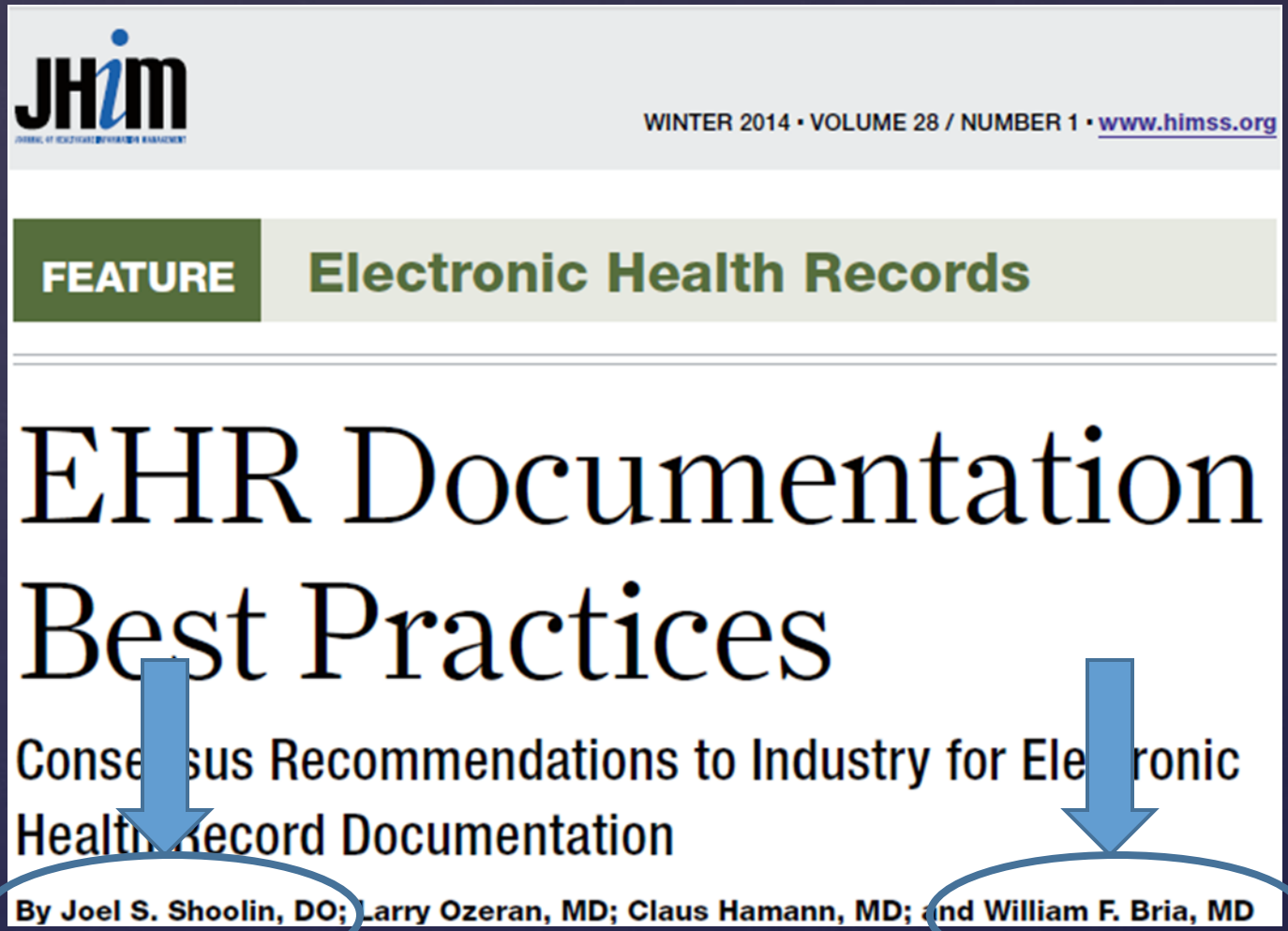
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FEATURE
Electronic Health Records
EHR Documentation Best Practices
Consensus Recommendations to Industry for Electronic Health Record Documentation
By Joel S. Shoolin, DO; Larry Ozeran, MD; Claus Hamann, MD; and William F. Bria, MD

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

Graphical User Interface and Data Model
Flexible GUI, extensible EHR (2)

- 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 scr☹lling
  - Test balance of data-entry types before production
  - Minimize selection errors in multi-tasking environment
    - 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

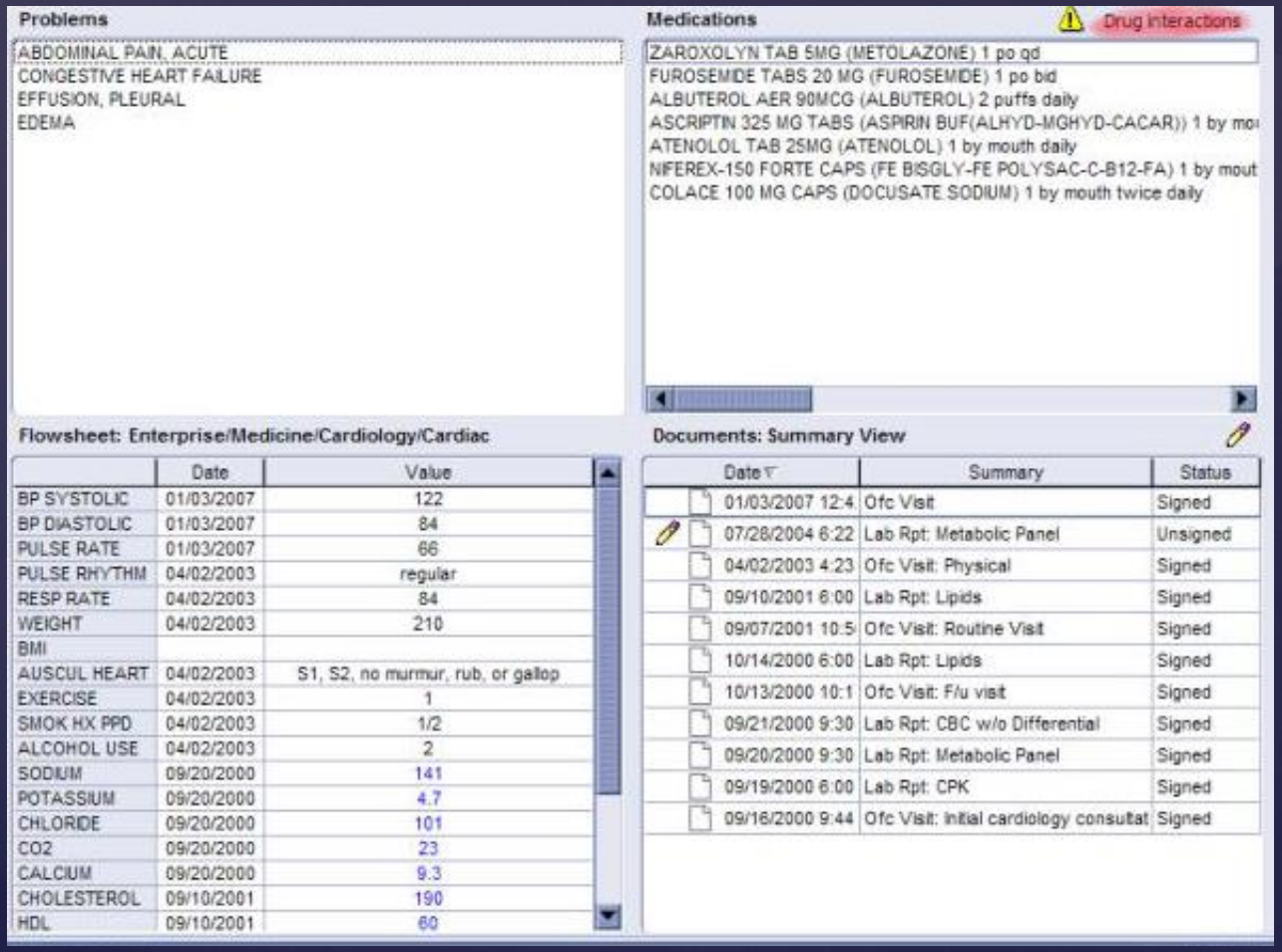
Data Display (2)

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



Problems

ABDOMINAL PAIN, ACUTE
CONGESTIVE HEART FAILURE
EFFUSION, PLEURAL
EDEMA

Medications — Drug interactions

ZAROXOLYN TAB 5MG (METOLAZONE) 1 po qd
FUROSEMIDE TABS 20 MG (FUROSEMIDE) 1 po bid
ALBUTEROL AER 90MCG (ALBUTEROL) 2 puffs daily
ASCRIPTIN 325 MG TABS (ASPIRIN BUF(ALHYD-MGHYD-CACAR)) 1 by mo
ATENOLOL TAB 25MG (ATENOLOL) 1 by mouth daily
NIFEREX-150 FORTE CAPS (FE BISGLY-FE POLYSAC-C-B12-FA) 1 by mout
COLACE 100 MG CAPS (DOCUSATE SODIUM) 1 by mouth twice daily

Flowsheet: Enterprise/Medicine/Cardiology/Cardiac

	Date	Value
BP SYSTOLIC	01/03/2007	122
BP DIASTOLIC	01/03/2007	84
PULSE RATE	01/03/2007	66
PULSE RHYTHM	04/02/2003	regular
RESP RATE	04/02/2003	84
WEIGHT	04/02/2003	210
BMI		
AUSCUL HEART	04/02/2003	S1, S2, no murmur, rub, or gallop
EXERCISE	04/02/2003	1
SMOK HX PPD	04/02/2003	1/2
ALCOHOL USE	04/02/2003	2
SODIUM	09/20/2000	141
POTASSIUM	09/20/2000	4.7
CHLORIDE	09/20/2000	101
CO2	09/20/2000	23
CALCIUM	09/20/2000	9.3
CHOLESTEROL	09/10/2001	190
HDL	09/10/2001	60

Documents: Summary View

Date	Summary	Status
01/03/2007 12:4	Ofc Visit	Signed
07/28/2004 6:22	Lab Rpt: Metabolic Panel	Unsigned
04/02/2003 4:23	Ofc Visit: Physical	Signed
09/10/2001 6:00	Lab Rpt: Lipids	Signed
09/07/2001 10:5	Ofc Visit: Routine Visit	Signed
10/14/2000 6:00	Lab Rpt: Lipids	Signed
10/13/2000 10:1	Ofc Visit: F/u visit	Signed
09/21/2000 9:30	Lab Rpt: CBC w/o Differential	Signed
09/20/2000 9:30	Lab Rpt: Metabolic Panel	Signed
09/19/2000 6:00	Lab Rpt: CPK	Signed
09/16/2000 9:44	Ofc Visit: Initial cardiology consultat	Signed

Scheduled

ALBUTEROL/IPRATROPIUM INHALER None INH Q4
Last Dose: 2 EA (9/1/2010 07:54)

ARTIFICIAL TEARS OPHTH SOLN 15ML BTL. None OP Q2
Last Dose: 2 DROP (9/1/2010 05:44)

ENOXAPARIN 40 MG/0.4 ML SYR 40 MG SUBQ 1200
Last Dose: 40 MG (8/31/2010 11:57)

FAMOTIDINE IVPB 20 MG/50 ML BAG 20 MG IV Q12
Last Dose: 20 MG (8/31/2010 21:26)

NICOTINE 14 MG/24 HR TDSY 1 EA TD DAILY
Last Dose: 1 EA (8/31/2010 08:11)

PIPERACILLIN/TAZO 3.375 GM (ZOSYN) IVPB 3.375 GM IV Q6
Last Dose: 3.375 GM (9/1/2010 05:21)

Vanco. 1 GM FROZEN (PHARMACY Only) 200 MLS/HR IV Q12H (Tot Vol 20...
Last Dose: 200 MLS/HR (9/1/2010 03:54)

PRN

0.9% NACL 1000 ML IV 0 MLS/HR IV .Q0M
Last Dose: 0 MLS/HR (9/1/2010 00:26)
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
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EHR Documentation Best Practices
Recommendations to Industry - Conclusion

- ✓ **A**MDIS roadmap for better documentation functionality
- ✓ **M**ake our case with vendors
- ✓ **D**rive the changes we need
- ✓ **I**mprove usability in clinical documentation tools
- ✓ **S**upport clinicians for optimal, safe and efficient patient care

We gratefully acknowledge our AMDIS reviewers:

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