**HL7 EHR WG – “Reducing Clinician Burden” (RCB) Project**

**Burden Reduction Success Stories**

**Duke Heart Business Unit – Procedure Reporting**

1. Burden(s) Addressed = PROBLEM(s)

1, 2, 3, 4, 5, 6, 10, 11, 16, 17, 19, 20, 21, 22, 23, 24, 26, 27, 34, 35, 36, 37.5

1. Submitting Organization: provider, EHR/HIT vendor, other

Duke University Health System

1. Reference Site(s): healthcare organization(s) or practice(s)

Duke University Health System

1. Contact(s): name(s), organization(s), email address(es), phone number(s)

James E. Tcheng, MD

Tchen001@mc.duke.edu

M: (919) 225-4701

Joseph Kelly

Joe.kelly@duke.edu

O: (919) 668-0167

1. Public Domain or Proprietary Solution (e.g., available for a fee)?

Proprietary – developed in conjunction with a vendor, described in:

Sanborn TA, **Tcheng JE**, Anderson HV, Chambers CE, Cheatham SL, DeCaro MV, Durack JC, Everett AD, Gordon JB, Hammond WE, Hijazi ZM, Kashyap VS, Knudtson M, Landzberg MJ, Martinez-Rios MA, Riggs LA, Sim KH, Slotwiner DJ, Solomon H, Szeto WY, Weiner BH, Weintraub WS, Windle JR (Committee Co-Chair). ACC/AHA/SCAI 2014 health policy statement on structured reporting for the cardiac catheterization laboratory: a report of the American College of Cardiology Clinical Quality Committee. J Am Coll Cardiol. 2014; 63:2591-623. PMID: 24685667.

1. Description (Success Story) = SOLUTION(s)

Traditionally, physician procedure documentation has relied on the transcription of dictation. Electronic health record systems have attempted to simulate the generation of dictated text. However, this approach perpetuates existing models of clinician documentation, increases the cognitive load on the physician, fails to leverage existing data, and does not inherently manage clinical information as actionable data.

At Duke we have implemented structured reporting across the Heart Center business line (cardiac catheterization, electrophysiology, peripheral vascular disease, cardiothoracic surgery, echocardiography, cardiac MRI). The basic tenets of our approach have included the following:

* Explicit clinical data captured by the person closest to that data (e.g. MA, tech, RN, pt)
* Engineered workflows where data capture is integrated into the clinical workflow
* Use of controlled, defined common data elements as the vocabulary of the data that is captured
* Use of the Unique Device Identifier (UDI) for documentation related to medical devices
* Use of a unifying data model that parallels (i.e., is representational of) the clinical care model
* Adapting IT systems to clinician workflow (rather than the opposite)
* Having data compiled by the computer to produce the majority of procedure report content – instead of creating documentation, the primary role of the physician is to validate data, contributing only interpretation, cognitive assessment and recommendations
* In the resulting procedure report there is only a limited use of text, limited to those contexts where unstructured text is the most effective format for communication – 95% of the information in the report is structured text (label:value pairs)
* Data is handled per the paradigm “Capture once, use many times” – the same data used to generate the clinical report is packaged for registry submission and use for quality / performance assessment

We elected to create the system in collaboration with a CVIS (Cardiovascular Information System) vendor. The portions Duke developed focused on the clinical content to be captured as data, the engineering of clinical workflows to optimally manage data, the distribution of data capture and validation responsibilities across the clinical team, business rules to assure compliance, and the formatting and production of clinical reports. The vendor assumed primary responsibility for the database structure, data model and the data elements thereof, and the mechanics of data translation for analytics and data transmission to registries.

The benefits realized included the following:

* Increased data quality, with capture of data much more closely aligned with defined data element definitions
* Increased data quantity, with prompting based on structured user interfaces specific to the task and role of the individual
* Reduced redundancy and repetition across processes, elimination of inconsistent data
* Reduced time for physician report generation (reduced by >50%)
* Elimination of preliminary reports – final procedure reports are generated before the patient departs the procedure room
* Shorter time / improved communication and coordination due to availability of final procedure reports
* Reduced time to posting of bills, reducing both “float” time and bill rejection
* Tighter inventory management, with concomitant financial savings
* Improved staff satisfaction (responsibility for data viewed as an enabler of team-based care)

We are now working with several vendors and health systems to build and implement structured reporting within their respective systems based on the Duke model.

Burden Topics

1) Generally

2) Patient Safety (and Clinical Integrity)

3) Administrative tasks

4) Data entry requirements

5) Data entry scribes and proxies

6) Clinical documentation: quality and usability

7) Prior authorization, coverage verification, eligibility tasks

8) Provider/patient face to face interaction

9) Provider/patient communication

10) Care coordination, team-based care

11) Clinical work flow

12) Disease management, care and treatment plans

13) Clinical decision support, medical logic, artificial intelligence

14) Alerts, reminders, notifications, inbox management

15) Information overload

16) Transitions of care

17) Health information exchange, claimed “interoperability”

18) Medical/personal device integration

19) Orders for equipment and supplies

20) Support for payment, claims and reimbursement

21) Support for cost review

22) Support for measures: administrative, operations, quality, performance, productivity, cost, utilization

23) Support for public and population health

24) Legal aspects and risks

25) User training, user proficiency

26) Common function, information and process models

27) Software development and improvement priorities, end-user feedback

28) Product transparency

29) Product modularity

30) Lock-in, data liquidity, switching costs

31) Financial burden

32) Security

33) Professional credentialing

34.1) Identity matching

34.2) Identity and credential management

35) Data quality and integrity

36) Process integrity

37.1) Problem list

37.2) Medication list

37.3) Allergy list

37.4) Immunization list

37.5) Surgery, intervention and procedure list

HL7 EHR WG – RCB project materials and reference sources are available here:

 <http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG#HL7_.22Reducing_Clinician_Burden.22_.28RCB.29_Project>