

## ELECTIVE FACT SHEET

**Elective Name:** Medical Informatics

**Primary Faculty Contact:** Donald Levick, MD, MBA, CPE, FHIMSS

**Department/Division:** Chief Medical Information Officer

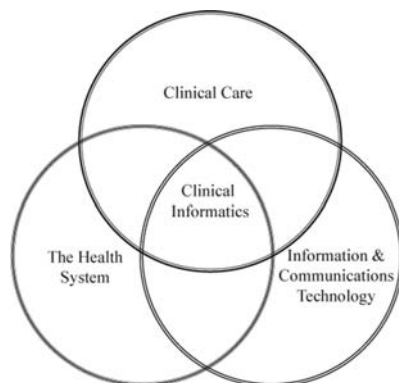
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**Is this elective inpatient, outpatient, or both?** There is no direct patient care responsibilities for this rotation. This is primarily an experiential, reading/learning and project-based elective.

**A. What are the goals & objectives of the elective?**

1. State and understand how the discipline of medical informatics intersects with and influences the three domains of clinical care, local and national healthcare systems, and information and communications technologies (as illustrated by Figure 1 below).
2. Gain an understanding in the basics of medical informatics, including:
  - a. General scope of Medical Informatics (selection, implementation, support, optimization of EHR)
  - b. Analytics
  - c. Clinical Decision Support
  - d. Population Health and value based care
  - e. Evidence based care and information retrieval
  - f. Information systems security and privacy
  - g. Innovation and Telehealth
3. Participate (as able) in simple projects with faculty mentors in health informatics, optimization of electronic health record systems, using data analysis techniques for research/quality improvement.



**B. What will be the student's responsibilities/schedule of activities?**

1. An initial meeting of the resident's knowledge and interests in informatics with Don Levick or a member of the CMIO Group at the beginning of the rotation to personalize the goals and objectives of the rotation for each student. (This could be done prior to the rotation starting as well).
2. Based on the above goals and needs assessment, directed and goal-specific activities to achieve above such as:
  - i. Viewing of specific topics in health informatics, presented by regional and national informatics experts, including the Office of the National Coordinator for Health IT (ONC) Resources website:
    1. <https://www.healthit.gov/providers-professionals/health-it-curriculum-resources-educators>
  - ii. Selected chapters from applicable textbooks:
    1. Shortliffe EH and Cimino JJ. Biomedical Informatics: Computer Applications in Health Care and Biomedicine, 4<sup>th</sup> Edition
    2. Hoyt, Robert. Health Informatics: Practical Guide for Healthcare and Information Technology Professionals) 6th Edition
    3. Osheroff, J., Levick, D., Teich, J., Sittig, D., Velasco, F., Rogers, K., Saldna, L., Jenders, R. "Improving Outcomes with Clinical Decision Support: An Implementer's Guide, Second Edition." HIMSS Publishing. February, 2012
  - iii. Selected Journal articles to review, specifically dealing with health informatics topics as outlined above.
3. Participation in various informatics related meetings/conferences will give the student a first-hand view of the types of decisions and approaches to decision making involving health IT and informatics projects at LVHN (see schedule for available meetings during rotation)
4. **Four week electives:** Meeting with faculty mentor to discuss and plan participation in an informatics related project. This could be involvement in a current project of the mentor or design and completion of a related project.
  - a. By the end of the rotation, presentation to the CMIO Group on the specific project worked on with the faculty mentor.
  - b. Possible presentation to student colleagues about a pertinent topic in health informatics.

**C. During what months is the elective offered?**

ALL

**D. How many residents do you accept per month? ONE**

## E. Course Description and References

- a) Overview of Medical Informatics and Biomedical Computing
  - i) An overview of the scope and practice of a Medical Informaticist; including training and education for the role, Board Certification, governance, interactions with other HIT stakeholders
  - ii) Resources:
    - (1) [http://files.healthit.gov/Component\\_6/Comp6\\_Unit1.zip](http://files.healthit.gov/Component_6/Comp6_Unit1.zip)
    - (2) Discussion with Matt Miller and CMIO Group (based on availability)
- b) Electronic Health Records / EHR/ PHR
  - i) Overview of electronic health records, including history and current state
  - ii) Resources
    - (1) Self-study: [http://files.healthit.gov/Component\\_6/Comp6\\_Unit3.zip](http://files.healthit.gov/Component_6/Comp6_Unit3.zip)
    - (2) Self study: [http://files.healthit.gov/Component\\_6/Comp6\\_Unit8.zip](http://files.healthit.gov/Component_6/Comp6_Unit8.zip)
    - (3) Self study: [http://files.healthit.gov/Component\\_14/Comp14\\_Unit2.zip](http://files.healthit.gov/Component_14/Comp14_Unit2.zip)
- c) EHR Implementation
  - i) Basics of implementation of clinical information systems including readiness assessment, planning/design of system for implementation, go-live and support, post go-live activities
  - ii) Resources:
    - (1) Discussion with CMIO Group (Brooks and Sheinberg)
    - (2) Self-study: <https://www.healthit.gov/providers-professionals/ehr-implementation-steps>
    - (3) Self-study: workflow redesign powerpoint  
[https://www.google.com/url?q=https://www.stratishealth.org/documents/HITToolkitHospital/1.Adopt/1.2Plan/1.2Workflow\\_and\\_Process\\_Redisig\\_n.ppt&sa=U&ved=0ahUKEwjn\\_obO-s3XAhXozVQKHbLkAYsQFggEMAA&client=internal-uds-cse&cx=017410084581823431738:2kz\\_uqgs8\\_g&usg=AOvVaw1sO\\_frH\\_-QGUGHFzDIJ7](https://www.google.com/url?q=https://www.stratishealth.org/documents/HITToolkitHospital/1.Adopt/1.2Plan/1.2Workflow_and_Process_Redisig_n.ppt&sa=U&ved=0ahUKEwjn_obO-s3XAhXozVQKHbLkAYsQFggEMAA&client=internal-uds-cse&cx=017410084581823431738:2kz_uqgs8_g&usg=AOvVaw1sO_frH_-QGUGHFzDIJ7)
- d) Standards and Interoperability
  - i) Overview of HIT standards, including various nomenclatures and taxonomies (e.g. HL-7, SNOMED, DICOM)
  - ii) Resources: Self-study
    - (1) <http://files.healthit.gov/Component21.zip>
    - (2) [http://files.healthit.gov/Component\\_3/Comp3\\_unit14/comp3\\_unit14.zip](http://files.healthit.gov/Component_3/Comp3_unit14/comp3_unit14.zip)
- e) Population Health and Value Based Care
  - i) Overview of the emerging field of Population Health and the importance that value based care will play in the future of healthcare delivery. Discussion of how HIT plays a critical role in both of these areas.
  - ii) Resources
    - (1) Discussion with VP of Population Health and associates. Will include overview and discussion of EHR integration with Optum
    - (2) Self study  
[http://files.healthit.gov/Component\\_21/Comp21\\_ComponentGuide.docx](http://files.healthit.gov/Component_21/Comp21_ComponentGuide.docx)
      - (a) 21.1 PH and the application of HIT
      - (b) 21.3 Structural Accountable care approaches

- (c) 21.5 PH IT and data systems
- (d) Value based care:
  - [http://files.healthit.gov/Component\\_23/Comp23\\_ComponentGuide.zip](http://files.healthit.gov/Component_23/Comp23_ComponentGuide.zip)
- (e) 23.1 Intro
- (f) 23.2 Regulatory environment
- (g) 23.6 Volume to value
- (h) 23.7 Outcomes and reimbursement
- f) Healthcare IT Security and Privacy
  - i) Overview of the risks of HIT and potential exposure of data; review of HIPAA and the various privacy and security measures in place in healthcare.
  - ii) Resources:
    - (1) Discussion/lecture by CIO and Director Security I/S
    - (2) Presentations / articles as per CIO
- g) Evidence Based Medicine and Information Retrieval
  - i) The use of evidence based guidelines in healthcare and their importance in achieving the Triple Aim. Tools for efficient searching of the medical literature
  - ii) Resources: TLC modules on Advanced Literature Search and EBM
    - (1) Introduction to Evidence Based Literature Searching
    - (2) Creating a Clinical Question
    - (3) Preparing a Search Strategy
    - (4) Choosing the Correct Resources to Search
- h) Innovation and Telehealth
  - i) Innovation in healthcare is critical to progress and improving quality. Telehealth is a maturing technology that is driving innovation.
  - ii) Resources
    - (1) Discussion with VP of Telehealth and immersion in the Air Products and Chemical LVHN Innovation Center
    - (2) Presentations and articles as per VP Telehealth
- i) Data and Analytics
  - i) Data is one the most important assets for any healthcare organization. Understanding the sources of data (clinical, operational, quality, financial) and the challenges for effective use in healthcare delivery
  - ii) Resources
    - (1) Immersion in Enterprise Analytics, supervised by Administrator for EA
    - (2) [http://files.healthit.gov/Component\\_24/Comp24\\_Component%20Guide.docx](http://files.healthit.gov/Component_24/Comp24_Component%20Guide.docx)
- j) Clinical Decision Support
  - i) Clinical Decision Support is an integral part of all clinical information systems, and impacts many classes of end users. Appropriate design, implementation and monitoring of CDS is critical to HIT adoption and success
  - ii) Resources:
    - (1) Discussion with CMIO Group (Levick, Sheinberg, Brooks)
    - (2) “Improving Outcomes with Clinical Decision Support: An Implementer’s Guide, Second Edition.”
- k) Patient Engagement and HIT

- i) Overview of patient engagement tools and strategies to implement; key metrics for success
  - ii) Resources:
    - (1) Discussion with CMIO Group (Sheinberg)
    - (2) [http://files.healthit.gov/Component\\_25/Comp25\\_Unit1.zip](http://files.healthit.gov/Component_25/Comp25_Unit1.zip)
    - (3) Self-study: <https://www.healthit.gov/playbook/patient-engagement/>
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- l) Project Management and Budgeting in HIT
    - i) Overview of the importance of project management in the success of HIT projects; and an introduction to capital and operating budgets as used in HIT
    - ii) Resources:
      - (1) Discussion with Administrator for I/S and Epic
      - (2) Resources as per Administrator

## **Appendix A (An example of a “Mentored Project”):**

### ***Optimizing EHR Clinical Documentation Content --A Hands-On Approach***

*Residents are frequent users of Epic clinical content and can be the best persons to optimize the effectiveness of this content. But they lack the skills required to assess and carry out changes to the content. This project will give the resident basic information about the design of clinical content templates in Epic, principles behind best practices in the use of this content in clinical care, and skills to make simple modifications to existing content. By the end of this project, the resident will have completed at least one optimization project for use in the current Epic “Production” system and will be able to continue to champion such efforts with fellow residents in the future.*

#### **1. Goals:**

- gain technical knowledge/skills in the design, build, implementation of clinical content templates in Epic
- use above expertise in a defined project using specific Smart Tools in Epic
- lead efforts in assessment of need in clinical content optimization
- collaborate with a defined user community (i.e. other residents and/or nurses) in the various stages of the project
- design metrics for determining success of the project
- learn/apply Plan-Do-Study-Act (PDSA) process throughout the life cycle of the project
- contribute any successful clinical documentation templates both the CHOP clinical content library and to the Epic Community Library

#### **2. Specific activities to achieve the above goals:**

- Access will be granted to the **Epic Community Library** (a resource at [www.epic.com](http://www.epic.com) with training modules and many examples of clinical documentation templates from multiple pediatric organizations).
- Completion of the following e-learning modules (as appropriate for the project):

##### ***AMB700 Building SmartLists***

In this lesson, you build SmartLists.

##### ***AMB701 Building SmartTexts***

In this lesson, you build a SmartText.

##### ***AMB702 Building SmartGroups***

Build SmartGroups.

##### ***AMB703 Building SmartSets***

In this lesson, you build a SmartSet.

##### ***AMB704 Building BestPractice Advisories***

In this lesson, you build a BestPractice Advisory, including base and criteria records.

##### ***AMB706 Building SmartPhrases***

Create and manage SmartPhrases as an administrator.

***AMB707 Building Preference Lists***

In this lesson, you build a preference list using the Preference List Composer.

***AMB709 Suggesting SmartSets***

In this lesson, you use a Criteria record and a SmartSet Suggestion record to trigger a SmartSet.

-- Using best practice assessment principles, review of examples of current CHOP Epic clinical content in determining areas of improvement, principles of optimization, and assessment strategies with users, etc. (discussion with mentor)

-- refresh/apply Plan-Do-Study-Act (PDSA) Quality Improvement processes and principles (discussion with mentor)

-- Defining and implementing a project which at a minimum would entail:

- a. developing tools/methods of assessing the needs of the user community
- b. performing a needs assessment and developing an approach to optimizing current defined clinical content
- c. selecting at least one smartset, smarttext, smartlist, smartphrase and preference list to apply above principles and techniques learned in e-learning modules
- d. optimize clinical content in the Development environment (under supervision of the mentor)
- d. continuously improve process with feedback from mentor and defined/selected user community
- e. work with CHOP IS team to get approved changes moved to Production environment
- f. measure success and determine areas of improvement with user community

-- champion and build/enhance a "resident user group community" at CHOP and learn how to lead such efforts with fellow residents

--participate in ongoing optimization efforts in other CHOP settings to see a variety of approaches to clinical content optimization

3. Measure what was learned:

- objective feedback from users on the success of optimization efforts
- ongoing feedback from mentor as to the appropriateness of the processes used
- assessment of technical expertise applied/gained by independent Epic Clinical Champion reviewers
- ongoing participation in optimization efforts
- present what was accomplished and learned at monthly CBMi educational meeting