

3241.0 – Health IT Applications and Disease Registries

Building capacity to use disparate electronic medical records and clinical information systems for health outcomes research

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Learning Objectives


1. To introduce an ongoing chronic disease quality improvement initiative spanning primary care, public health, and academia
2. To understand benefits of and challenges in using electronic health records for health outcomes research and quality of care improvement
3. To understand how electronic health records and electronic patient registries can work in tandem
4. To explore potential public health uses of electronic health record/patient registry generated data

Background – WVU Office of Health Services Research




Funded by the WV Bureau for Public Health

- Active partners with 51 WV primary care centers (safety-net clinics) (36 Federally Qualified Health Centers; 10 Free Clinics; 5 community hospitals)
- Provide training/coaching in:
 - Using clinical information systems for quality improvement
 - Linking outcomes to evidence-based education
 - Teaching skills in data management/use, and improving data quality
 - Tracking key indicators
 - Practice/Policy changes
- Receive quarterly de-identified data on patients with chronic health conditions from 32 sites
 - Total patient count as of 03/31/2011: 51,817
 - 96.2% increase in 12 months




Definitions – EHR and Registry



- **Electronic Health Record***: “An electronic record of health-related information on an individual that conforms to nationally recognized standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization”
 - **Individual focused**, with the purpose of collecting, sharing, and using health information for the benefit of that individual
- **Registry***: “An organized system that uses observational study methods to collect uniform clinical and other data to evaluate outcomes for a population defined by a particular disease, condition, or exposure, that serves one or more predetermined scientific, clinical or policy purpose”
 - **Population focused**, and designed to fulfill specific purposes

*Source: Agency for Healthcare Research and Quality

EHR potential



Broadly defined, EHRs are intended to:

- store clinical information for use in patient care and are intended to allow efficient, secure and accurate data sharing
- offer decision support for patient care
- improve the management of medical information
- reduce health disparities among safety-net clinics
- improve patient care at reduced cost

EHR challenges

Successful implementation historically difficult, beginning in the 1960's

- Especially difficult in small, rural practices

– Common barriers:

- views that EHR technology interferes with clinical judgments
- lack of trust in EHRs to safely, securely store medical records
- lack of standards in data formatting and lack of interoperability
- time, training and monetary investments to adequately use the systems
- the necessity of local leadership to champion the system
- difficulties in determining whether an EHR meets practice needs
- difficulties in organizational redesign
- lack of readiness to implement

EHR challenges

Adding to the challenge

– EHRs are intended to help document patient care; not population level tracking and analysis

- Often lacking data management tools

– Even large, resource-rich and organizations experience difficulties in:

- structure, consistency and completeness of data capture and coding
- ability to retrieve data due to free text entries rather than discrete data fields
- data reliability due to issues in data entry/management

Integrating EHR data with a patient registry

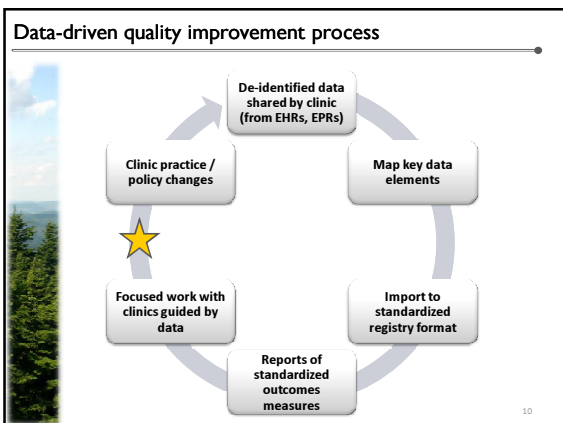
Each EHR has its own unique data structure

- Used CDEMS (relational database) to create a standardized data set
 - Developed a mapping process for each EHR
 - ID the key data elements and where stored in the EHR
 - Map the data transfer (extract, transform, load [ETL])
 - Standardize naming conventions across systems

Formed a principal dataset, comprised of:

➢ Demographics	➢ Laboratory results
➢ Diagnoses	➢ Services results
➢ Visit information / Vitals	➢ Other measures

- Data placed into SAS for analysis



Experiences from the field

Key indicators benchmark groups of patients (i.e., patients with a specific health condition) relative to their progress in meeting specific goals.

- Common metrics:
 - High blood pressure
 - % of patients with HTN with blood pressure <140/90
 - Diabetes
 - % of patients with DM-1 or DM-2 with their last HbA1c value <7.0
 - Asthma
 - % of patients with asthma with documentation of an asthma action plan

Name 1 major assumption of these indicators:

Challenges in using EHR data (Diabetes)

DIABETES TYPE II, STABLE	DIABETES
DIABETES, TYPE 2	DIABETES, 2
DM 2, STABLE	DM 2, STABLE
DIABETES TYPE II, STABLE	DM as per out-side record
DIABETES TYPE II	DM TYPE 2
DIABETES TYPE 2, STABLE	DM, TYPE 2
DIABETES TYPE 2, CONTROLLED	DM, TYPE II
DIABETES TYPE 2	DM2
DIABETES MELLITUS TYPE 2, CONTROLLED	DM2 NEWLY DIAG.
TYPE II DIABETES	NDIOM
DIABETES MELLITUS TYPE 2, UNCONTROLLED	TYPE 2 DM AND POST INF.
DIABETES TYPE 2, UNCONTROLLED	TYPE 2 DM
DIABETES TYPE II, UNCONTROLLED	DIABETES-TYPE 2
DIABETES TYPE II	DM assigned @ goal.
DM 2, UNCONTROLLED	DM, TYPE 2
DIABETES MELLITUS 2, UNCONTROLLED, RENAL MANIFESTATIONS	DM2/HR GL.
DIABETES MELLITUS 2, UNCONTROLLED, CIRCULATORY DISORDERS	TYPE 2 DIABETES
DIABETES MELLITUS TYPE II	TYPE 2 DIABETES WITH NEUROPATHY
DIABETES WITH OPHTHALM	TYPE 2 DIABETIC
DIABETES MELLITUS TYPE 2	TYPE 2 DIABETIC, AGE 7
DIABETES MELLITUS TYPE II	TYPE 2 DIABETIC
DIABETES MELLITUS 2	Type 2 DM
DIABETES MELLITUS POOR GLYCEMIC CONTR	TYPE 2 DM
DIABETES MELLITUS, TYPE 2	Type 2 non insulin DM
DIABETES MELLITUS	DM2
DIABETES TYPE 2	DIABETITIS
DIABETES TYPE 2	TYPE 2 DIABETES
DIABETES TYPE II	DIABETIC, Type 2
DIABETES WITH severe CAD	DIABETIC, Type II
DIABETES, sign	DIABETIC DM 2
DIABETES MELLITUS II	DIABETIC MELLITUS
DIABETES MELLITUS II	DIABETIC, DM2
DIABETES MELLITUS (DM2)	DIABETIC, TYPE 2
DIABETES MELLITUS - TYPE II	DIABETIC, TYPE TWO
DIABETES MELLITUS	DIABETIS
DIABETES MELLITUS TYPE II	DM w/ O-COMPLICATIONS
DIABETES MELLITUS TYPE 2	DIABETIS MELLITUS
DIABETES MELLITUS	DM 2
DIABETES II	DIABETES MELL.
DIABETES MELLITUS 2	DIABETES MELLITUS
DIABETIC	DIABETES MELLITUS
DIABETES 2	DIABETES TYPE 2
DIABETES	DIABETES MELLITUS
DM	DIABETES TYPE 2
DM 2	DIABETES MELLITUS
DIABETIS 2	DIABETES MELLITUS

Upcoming publication

Baus A, Hendryx M, Pollard C. Identifying Patients with Hypertension: A Case for Auditing Electronic Medical Record Data. (Accepted for Publication 7/21/2011). *Perspectives in Health Information Management*



Supplemental Registry Tool – Goal Letters



Sample Clinic
123 Highway Drive,
Cityville, WV 26555
Phone: (304) 555-5555
Fax: (304) 777-7777

August 24, 2011

Ms. Fh_1038 Ln_1038

Dear Ms. Ln_1038,

This letter is to inform you of your most recent lab and service results:

	Current	Goal	Previous
Blood Pressure	3/21/2011 132/84	Less than 130/80	3/1/2011 130/52
Body Mass Index (BMI)	3/21/2011 33.47	Between 23 and 27	3/1/2011 33.66
HbA1c (%) (3 month control)	3/21/2011 6.8	Less than 6.5 to 7.0%	11/17/2010 6.8
HDL or "Healthy" Cholesterol	3/21/2011 43	More than 40 mg/dL	8/25/2010 50
LDL or "Bad" Cholesterol	3/21/2011 67	Less than 70 to 100 mg/dL	8/25/2010 76
Total Cholesterol	3/21/2011 136	Less than 200 mg/dL	8/25/2010 154

Your health is important to us. Our goal is to keep you healthy so that you can live a long life with diabetes. Your doctor will be receiving a copy of this report. Please make an appointment with your doctor to review this report by February 2012.

Thank you,
Outreach Team



Supplemental Registry Tool – Reminder Letters



Sample Clinic
123 Highway Drive,
Cityville, WV 26555
Phone: (304) 555-5555
Fax: (304) 777-7777

August 24, 2011

Ms. Fh_104 Ln_104

Dear Ms. Ln_104,

This is to remind you that you are due for an office visit. It is important to see your doctor regularly. The date of your last visit was 7/8/2009.

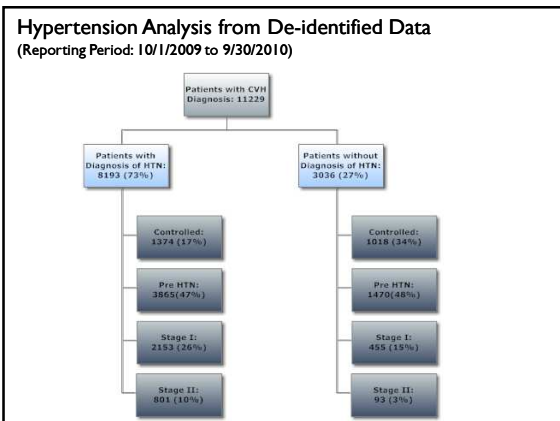
As you know, regular office visits can help in the diagnosis, prevention, and prompt treatment of health problems.

To make an appointment, please call Sample Clinic at (304) 555-5555. If you have been visiting another doctor, please call to let us know so that we can update our records.

We hope that you will take this opportunity to take care of your health. Our staff is dedicated to helping you with the management of your health care needs.

Thank you,





Benefits to primary care & public health

Benefits to primary care:

1. Close monitoring of patients by health condition
2. Detection of patients at risk for developing or undiagnosed with health conditions
 - Without need for time/resource intensive searching
3. Provides basis for quality improvement interventions
 - Using information that is gathered via routine office activities (non-disruptive intervention)

Benefits to public health:

1. Standardized data for surveillance, monitoring, program planning
 - Longitudinal data for analysis, detecting trends
2. Ability to grow programs in context of transitions to EHRs and clinics shifting from one EHR to another

Contact information

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