PATIENT SAFETY IMPACT OF EHRS

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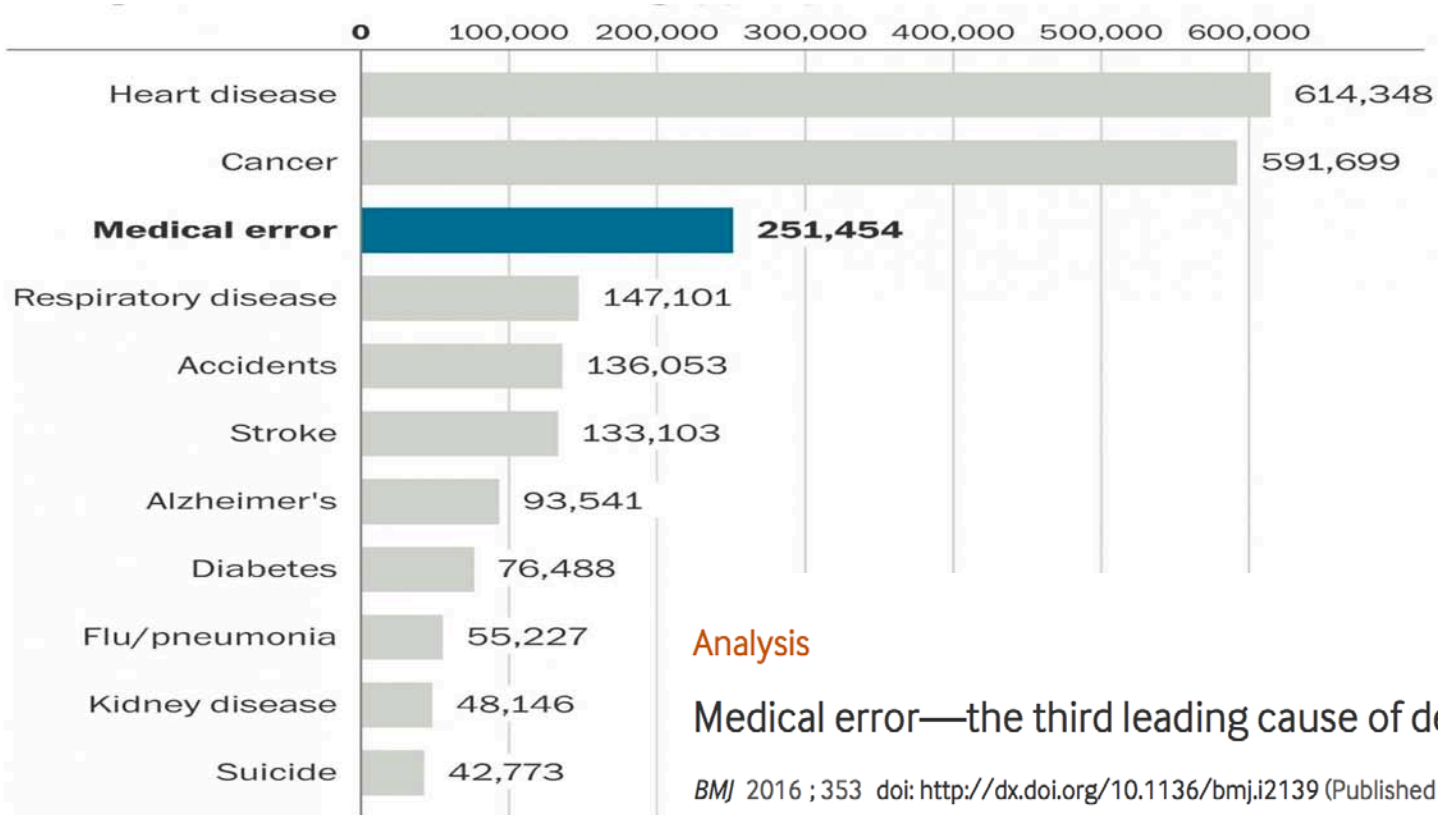
"Medicine used to be simple, ineffective, and relatively safe. Now it is complex, effective, and potentially dangerous."

Sir Cyril Chantler, the Kings Fund

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- Introduction
  - Medical errors
    - COACH eSafety guidelines
    - VA and AHRQ studies
  - Information fragmentation and shared EHR
- Our (Orion Health's) approach to safety issues
  - Methodology
  - Results
  - Conclusions
- Recommendations

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Source: National Center for Health Statistics,

Analysis

Medical error—the third leading cause of death in the US

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PATIENT SAFETY IMPACT OF EHRS | COACH E-SAFETY GUIDELINES

The COACH patient safety team identified a number of examples of e-Safety issues, such as:

- a report sent to the wrong physician
- missing information
- data quality
- client and provider identity issues

COACH™
ASSOCIATION CANADIENNE
D'INFORMATIQUE DE LA SANTÉ
CANADA'S HEALTH
INFORMATICS ASSOCIATION

5 Optimized

4 Managed & Measured

3 Structured Program

2 Recognized but Intuitive

1 Initial / *ad hoc*

0 Non Existent

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MEDICAL ERRORS AND HEALTH IT | EXPERIENCE AT THE VETERAN'S ADMINISTRATION

- The Informatics Patient Safety Office of the Veterans Health Administration (VA)

  - A non-punitive, voluntary reporting system to collect and investigate EHR-related safety concerns

  - Reviewed 344 reports between August 2009 and May 2013

    - Most safety concerns related to either
      - unmet data-display needs in the EHR
      - software upgrades or modifications
      - data transmission between components of the EHR
      - 'hidden dependencies' within the EHR

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PATIENT SAFETY IMPACT OF EHRS | JOINT COMMISSION EXPERIENCE

- Example from Joint Commission Report, March 2015
  - *A nurse noted that a patient had a new order for acetaminophen. After speaking with the pharmacist, the nurse determined that the order was placed for the wrong patient. The pharmacist had two patient records open, was interrupted, and subsequently entered the order for the wrong patient*

- Between January 1, 2010 and June 30, 2013 identified 120 sentinel events that were Health IT-related

- A collective mindfulness focused on identifying, reporting, analyzing and reducing health IT-related hazardous conditions, close calls or errors

- Shared involvement and responsibility for the safety of health IT

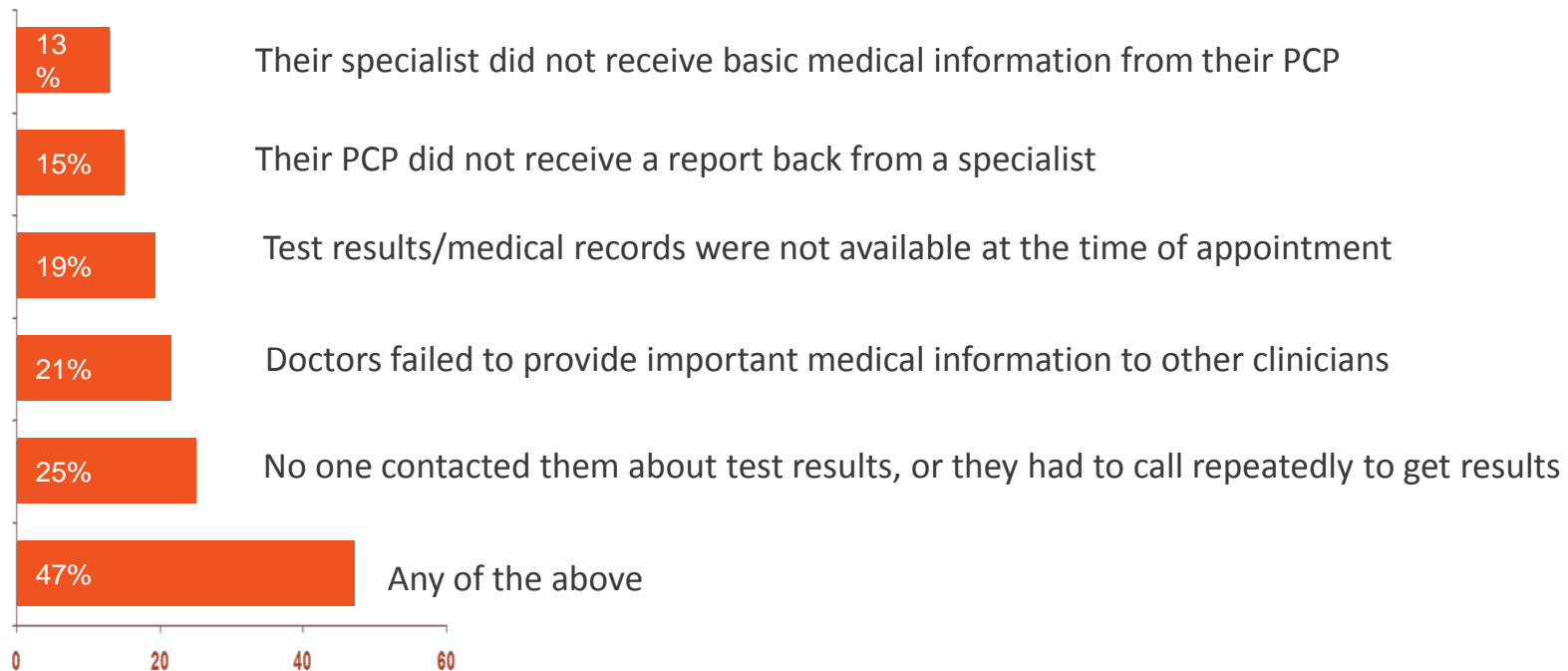among the healthcare organization, clinicians and vendors/developers

Sentinel Alert Event

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PATIENT SAFETY IMPACT OF EHRS | JOINT COMMISSION RECOMMENDATIONS

- Useful resources include the SAFER guide produced by ONC
  - https://www.healthit.gov/policy-researchers-implementers/safer/guide/sg002

- Involve frontline clinician users in system planning, design, selection, modification and potential hazard identification

- Continually improve the ability of organizational health IT systems to reliably and accurately exchange data with each other and with external systems, particularly in regard to the ability to send and receive critical information

- **Connection to external health information exchanges**, which facilitate the transfer of health information from one organization to another
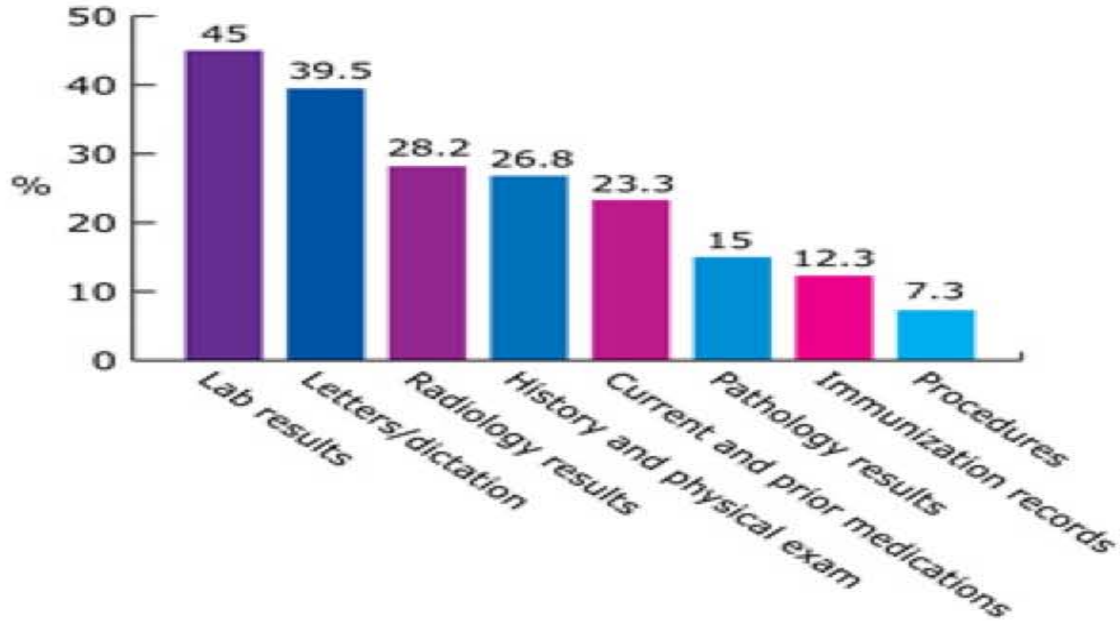
Sentinel Alert Event

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PATIENT SAFETY IMPACT OF EHRS | FRAGMENTATION OF HEALTH INFORMATION

Survey of the general population in the US % reported in past two years that:

%	Statement
13%	Their specialist did not receive basic medical information from their PCP
15%	Their PCP did not receive a report back from a specialist
19%	Test results/medical records were not available at the time of appointment
21%	Doctors failed to provide important medical information to other clinicians
25%	No one contacted them about test results, or they had to call repeatedly to get results
47%	Any of the above

Reducing Care Fragmentation: PRESENTATION ON COORDINATING CARE MacColl Institute for Healthcare Innovation, Group Health Research Institute; Puget Sound, WA, USA
http://www.improvingchroniccare.org/downloads/care_coordination_toolkit_presentation.ppt

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Categories of missing clinical information during primary care visits

Chart showing percentages of missing clinical information categories during primary care visits:
- Lab results: 45
- Letters/dictation: 39.5
- Radiology results: 28.2
- History and physical exam: 26.8
- Current and prior medications: 23.3
- Pathology results: 15
- Immunization records: 12.3
- Procedures: 7.3

Source: Smith PC, Araya-Guerra R, Bublitz C, et al. Missing clinical information during pr

# PATIENT SAFETY AND EHRS | IMPROVEMENTS **AND** HAZARDS

- Potential for Improvements in safety
  - By enabling clinicians with complete information at the point of care
  - Improved laboratory information processing
  - Improved communication among providers
  - Access to a complete patient record

- Potential for Hazards
  - if one patient's information was believed to be that of another
  - if there are errors in translating information between one system and the next (Interoperability)

- When implementing and evaluating Health Information Exchange be alert to these and other unintended consequences as well as the benefits

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METHODOLOGY | ADDRESSING PATIENT SAFETY RISK IN EHRS

- Over last five years, Orion Health developed and refined our processes
  - Senior management and board level buy - in to the concept and on going support for the work
  - External safety consultants
  - Company-wide clinician consensus (~25 clinicians, diverse background, location and experience)
  - Iterative improvement with regular process reviews

- Detect, assess and remediate potential safety related software defects

- Any potential or actual safety issue noticed by anyone at any stage across the company is triaged and addressed

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METHODOLOGY | RISK MANAGEMENT PROCESS

- Identify risks

- Develop assessment criteria

- Assess risk
  - **Risk score = Impact x Likelihood - Mitigation**

- Prioritize risks

- Respond / remediate

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PROCESS MAP

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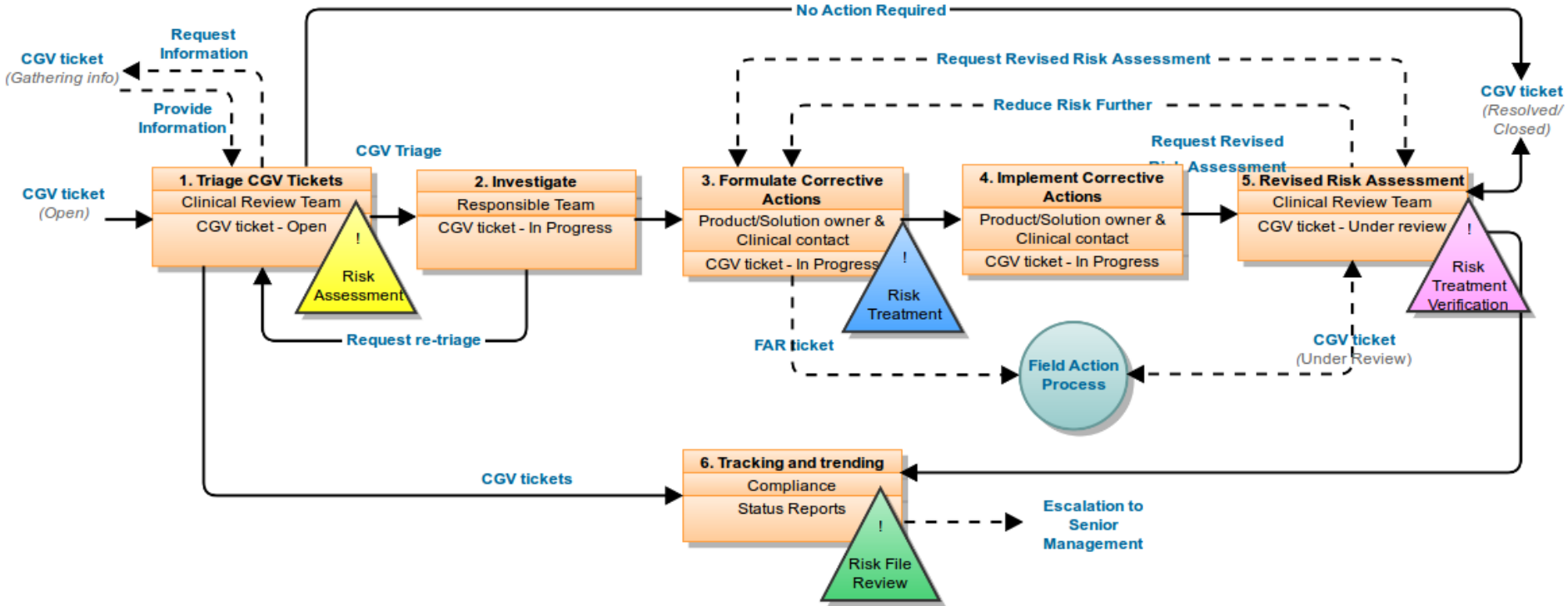
IMPACT SCORE

Classification	Severity number	Patient Harm definition	Product/Solution Hazards and/or Hazardous Situations
Catastrophic	S=0	Could result in patient death	- Wrong Patient errors - EMPI tuning / Patient ID
Critical	S=1	Could result in permanent impairment or life threatening injury	- Inaccurate, incomplete unacceptably delayed or completely absent clinical data - Style sheet errors / Document template errors that results in inaccurate, incomplete or completely absent clinical data - Any medication management issue - Data integrity / Overwritten content - Date / time sequencing / chronology issues in acute care settings e.g. ICU, CCU, HDU, ED
Serious	S=2	Could result in injury or impairment requiring professional medical intervention	- Inaccurate descriptors, ref ranges, comments, units of measure around the data, meta data display issue - Inaccurate, incomplete unacceptably delayed or completely absent meta-data - Style sheet errors / Document template errors that results in inaccurate, incomplete or completely absent meta-data - Date / time sequencing / chronology issues
Minor	S=3	Could result in temporary injury or impairment not requiring professional medical intervention	- Poorly designed or implemented UI with negative impact on clinical workflow - Loss of headers when scrolling
		Inconvenience or temporary	Dependent on context e.g. - Printed records do not include sufficient meta-data e.g. printed date not displayed,

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RISK MATRIX

This field will be auto-calculated based on the set levels of severity and likelihood.

Likelihood		Negligible S=4	Minor S=3	Serious S=2	Critical S=1	Catastrophic S=0
	Frequent L=0	9	10	20	24	25
	Probable L=1	7	13	17	22	23
	Occasional L=2	4	8	14	18	21
	Remote L=3	2	6	11	15	19
	Improbable L=4	1	3	5	12	16

Severity

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E-SAFETY IMPACT OF EHRS | CATEGORIES OF RISK

- Highest impact issues
  - Unique identifiers, patient misidentification
  - Medications
  - Data loss, Data integration, single source of truth
- Highest likelihood issues
  - Lab results
  - Poor quality messages from source systems
- Highest overall risk
  - Unique identifiers, patient misidentification
  - Medications
  - Lab data

CONCLUSIONS

- EHRs bring many benefits by providing complete information about a patient at the point of care.

- EHRs are still a form of HIT and we need to be alert to the same potential safety issues

- The impact of poor quality data, pat ID errors and medication lists are key

- Improving the quality of the solution will make it more deserving of trust by clinicians.

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RECOMMENDATIONS

- Adopt an open non - threatening collaborative approach to detecting and addressing risks
- Always get senior management buy in, establish clear strong leadership commitment and support.
  - CMO / CNO (or similar) needs to be the accountable person
- A risk management approach enables prioritization and focus on the right areas of concern
- Establish strong data governance committees
  - Obsessive attention to data quality should be the new normal
  - EHRs can detect poor data quality and provide feedback to originating systems
- EHRs can and do improve patient safety
  - They cannot do so without careful implementation, focus on data quality on - going monitoring and awareness

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