Problem Lists Across Organizations:
Implications for
Design and Implementation

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Background Information

- Can we all agree on a definition?

  - Ongoing management issues

  - Undiagnosed Symptoms / Results

  Very Controversial

- Why is a problem list content so debated?

  - Different approaches between EHRs

  - Who owns and manages the problem list? IP vs Amb.?

- What do we know about problem list content?

  - Filled with non-problems

  - Missing key problems

EHRs Approach Problem Lists Different

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	Encounter Dx		Problem List		PMHx
Epic	DM	→ *Manual*	DM	→ *Manual*	DM
Cerner	DM	→ *Manual*	DM	→ *Automatic, only when resolved*	DM
GE	**Encounter = Problem List** DM			**Free text** DM *Manual Retype*	
eCW	DM	→ *Automatic & Manual*	DM	→ *Automatic & Manual*	DM

Does PMHx mean problems which were in the past (i.e. everything) or problems which are passed (i.e. resolved)?

Data and Analysis

	Cedars-Sinai Amb.	Cleveland Clinic Amb. & IP	Memorial Hermann Cerner(**IP**) GE(**Amb**)	
			92% 8% (Cerner IP)	74% 24% 2% GE(Amb)

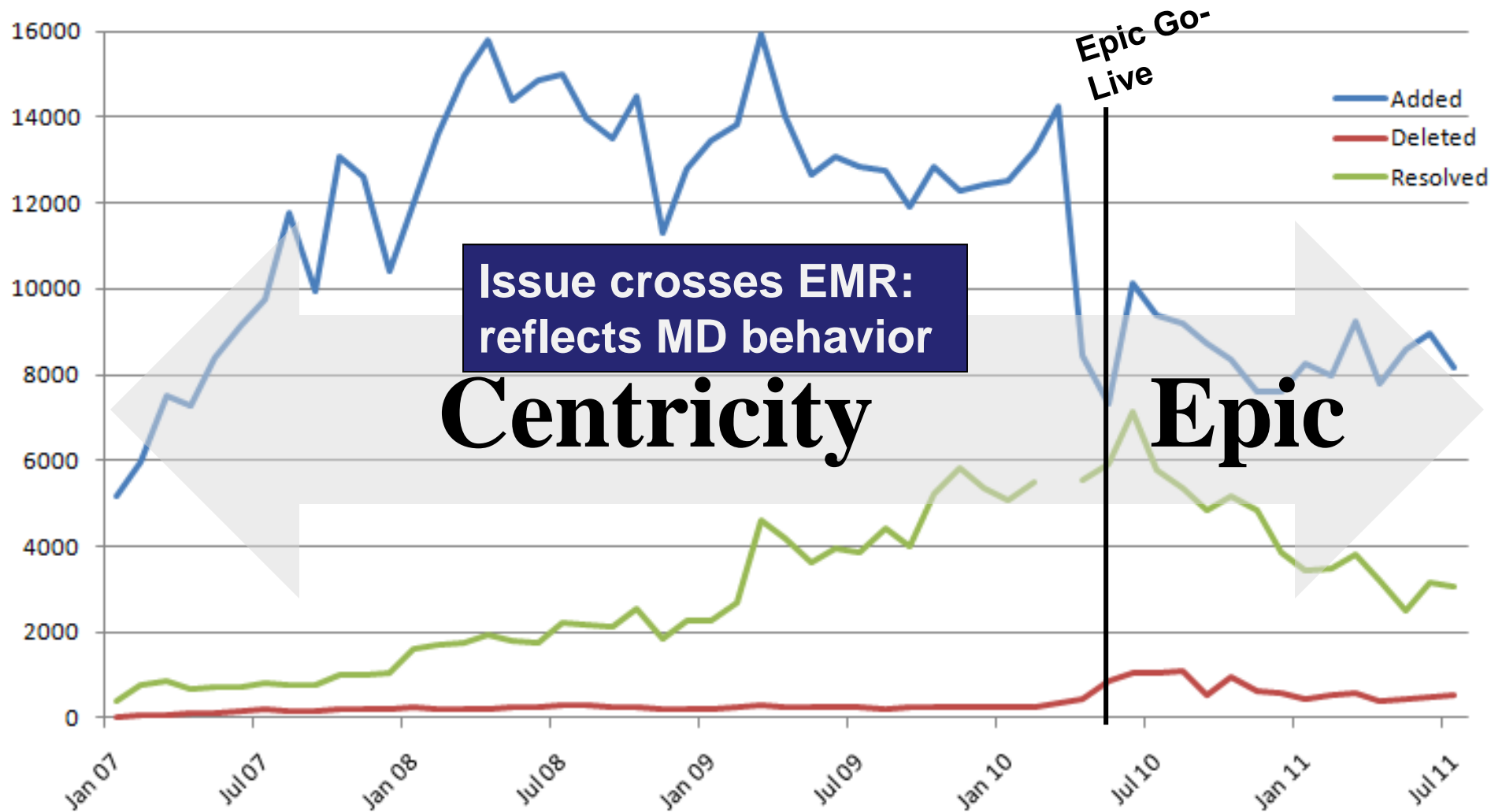## Problem List Clean-Up (GE to Cerner)
- Removed 30-40% of problems
- Physicals, Acute problems (URIs), Family Hx

Problem Lists Changes

Cedars-Sinai Outpatient Problem List Changes

Epic Go-Live

Issue crosses EMR: reflects MD behavior

Centricity

Epic

Legend: Added, Deleted, Resolved

5

Problem List Size Over Time

Number of Patients with Problem Lists Of Different Size

More pts had problem lists; PL size grew over time

Cleveland Clinic
Solid Lines

CSLink
Dashed lines

1 to 5
6 to 10
11 to 20
21 or more
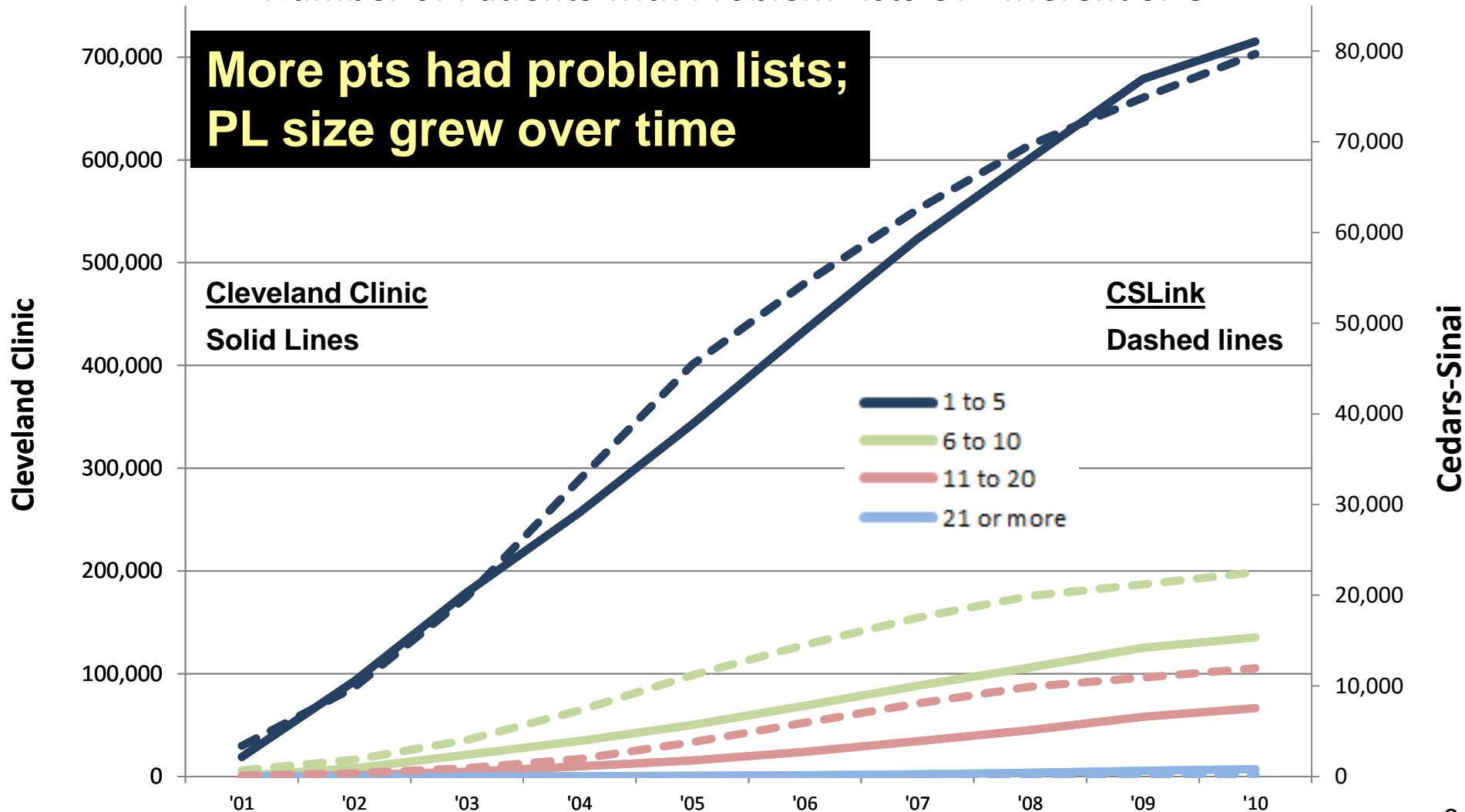
Issues Affecting PLs

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- **Non Problem V-Codes**
- **Acute Problems**
- **Duplicate ICD-9s**
- **Expired ICD-9s**
- **Two Active, Same Med**
- **Symptoms to Diagno**
- **NOS/NEC on List**
  - **Longer lists have more issues**
- **Similar ICDs** **Longer lists are**
    - **ICD-10 will make**

Physical Exam
160,000 Patient Lists
Sinusitis, UTIs

Problem		
List Size		
1 to 5	72%	20%
6 to 10		
11 to 20		
21 or mo		

HTN twice

BPH (expired)

HIV & h/o HIV

Colon CA
Screen for Colon CA

HTN, NOS & NEC

Basic ICD-9: First 3 numbers
Ex: - 477 is all allergies
- 477.2, 477.8, 477.9 on list

Measles Outbreak at Memorial Hermann
(In the EHR only)

Measles (4) Chickenpox (4)

Mumps (4) ADHD (3)

B12 Def. (4) Hypothryoidism(4)

Hypothryoidism (6) ADHD (3)

Mood D/O (6) Chest Pain (6)

ADHD (3)

Opiod Dep. (6)

Hemorroids (6)

Prostatitis (6)

Erectile Dysfx (6)

Positive ANA (4)

Hyponatremia (6)

Is this practice good or bad?

High Risk Sex Beh. (6)

Strep. Throat (6)

ADHD (4)

CRF III (6)

Prediabetes (6)

Prediabetes (6)

Measles (4)

Mumps (4)

Chickenpox (4)

Hashimoto's (4)

CRF III (6)

CRF III (6)

Strep. Throat (6)

Erectile Dysfx (6)

B12 Def. (4)

Hypothryoidism (4)

ADHD (4)

B12 Def. (4)

Hypogonadism(4)

High Risk Meds (6)
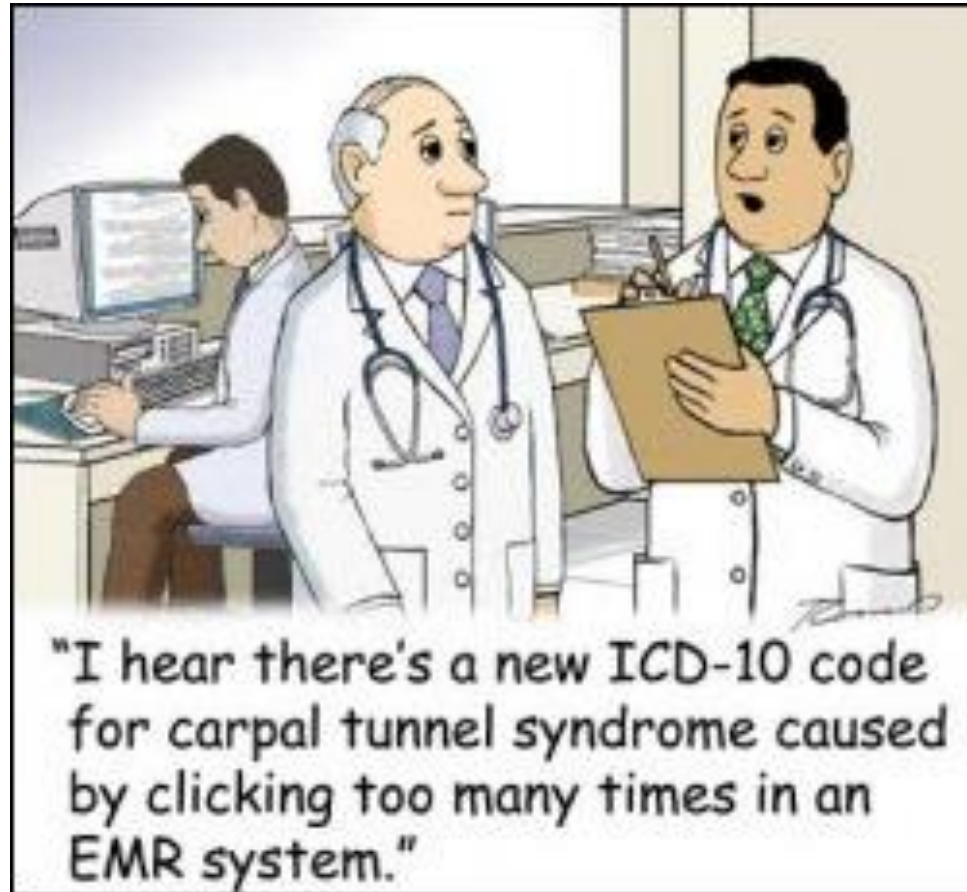
Neuropathy (6)

Mood D/O (3)

SVT (6) Positive ANA (3)

Parentheses are the number of standard deviations above the mean

Conclusions and Questions

- Variable EHR designs & providers use is corrupting PLs

- Results in long, increasing useless lists (& outbreaks)

Questions
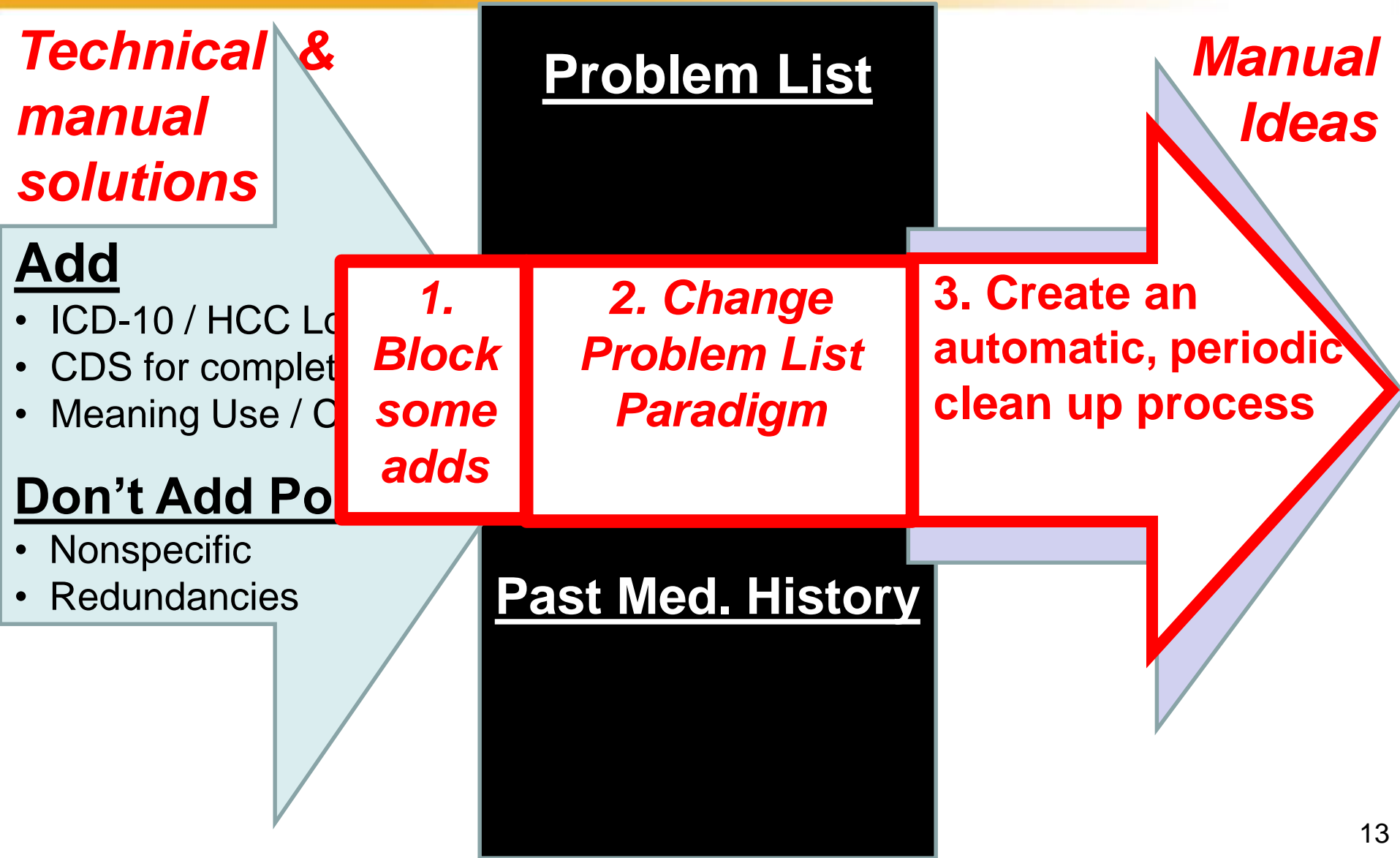
Thanks to the Cleveland Clinic, Cedars-Sinai and Memorial Hermann for allowing me to share their data

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Additional Slides if Needed

Solutions: Better Approach

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Technical & manual solutions

Problem List

Manual Ideas

Add
- ICD-10 / HCC L...
- CDS for complet...
- Meaning Use / O...

Don't Add Po...
- Nonspecific
- Redundancies

1. Block some adds

2. Change Problem List Paradigm

3. Create an automatic, periodic clean up process

Past Med. History

Incomplete Problem Lists

- What percent of problem lists capture issues?

  – 78.5%   Breast Cancer

  – 61.9%   Diabetes   *A Wright et al., 2012*

  – 50.7%   Hypertension

  CDS can assist to add missing problems

- Memorial Hermann ambulatory problem lists

  - 9% of pts are obese (>50% in Texas)

  - 50% of pts taking Phentermine are not Obese on PL

  - 50% of pts taking insulin are missing Diabetes

  - 60% of pts taking Adderall are not listed as having ADHD

Effect of ICD-10 on Problem Lists

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Cleveland Clinic Duplicates or Similar Codes Placed on Problem Lists

Examples: 250.00 on list 2x or HTN NOS & NEC

ICD-9 to IMO: 13,000 to 60,000 diagnoses
ICD-9 to ICD-10: 13,000 to 68,000 diagnoses

Expect ICD-10 (and IMO) to cause problem lists to greatly increase in size.

Epic Error – allowed dups

IMO implemented

Legend:
- Number of Patients
- Total Duplicates

X-axis: Q1 '00, Q3 '00, Q1 '01, Q3 '01, Q1 '02, Q3 '02, Q1 '03, Q3 '03, Q1 '04, Q3 '04, Q1 '05, Q3 '05, Q1 '06, Q3 '06, Q1 '07, Q3 '07, Q1 '08, Q3 '08, Q1 '09, Q3 '09, Q1 '10

Y-axis: 0 to 8000