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Use of Data and Measurement in Improving Diagnostic Safety

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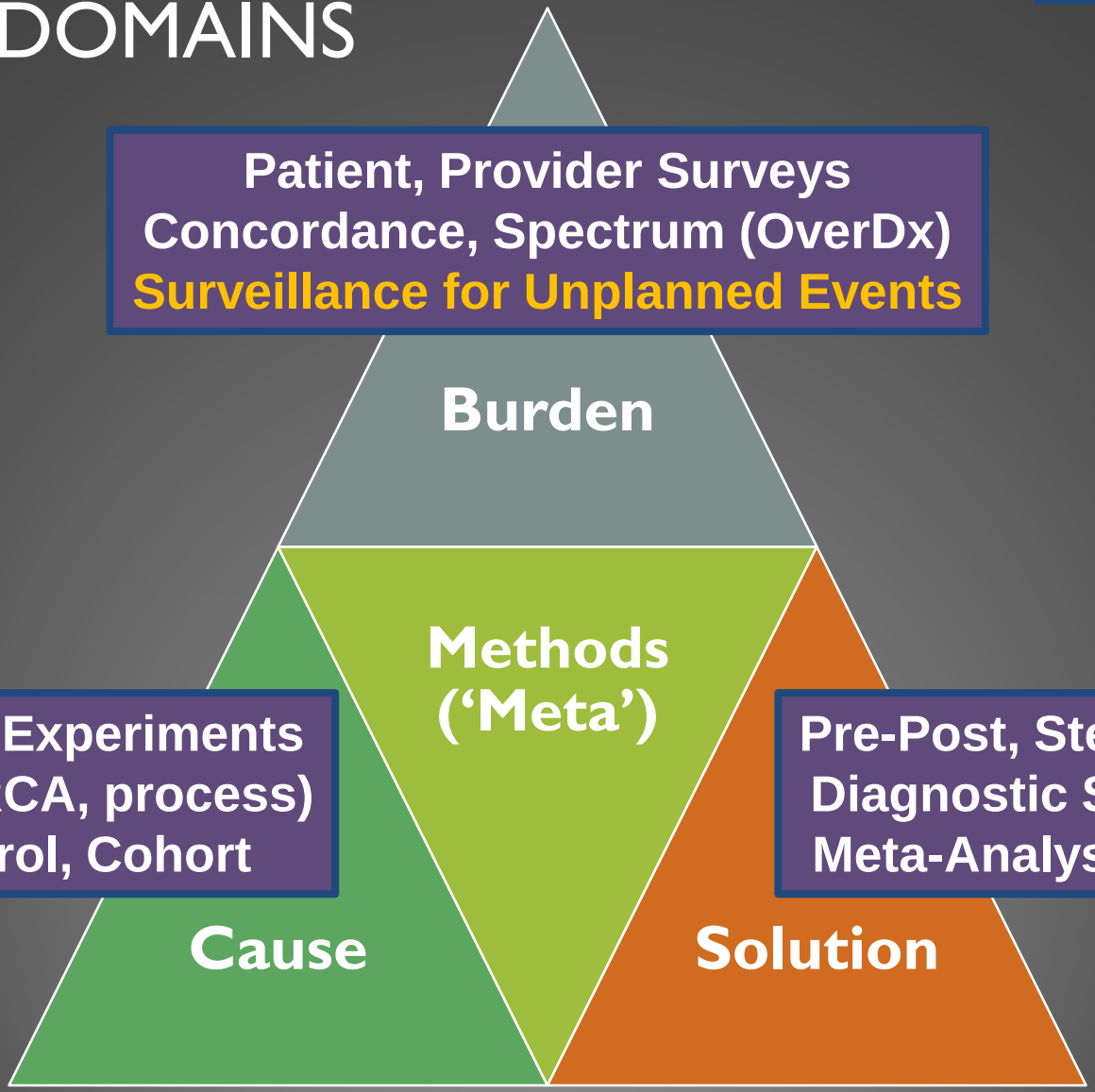
MEASUREMENT METHODS
SAFETY DOMAINS

Opportunity for…
Quality Assurance
Safety



Newman-Toker, Academy Health 2016

NUMERATOR-ONLY METHODS

1. Incident Reporting by Providers
   - M&M rounds within patient safety framework
   - Traditional incident reporting
   - Facilitated incident reporting or periodic surveys

2. Patient Complaints or Legal Actions
   - Patient complaints
   - Malpractice claims
   - Risk management reports

MAY IDENTIFY NEW OR SERIOUS PROBLEMS, CAUSES

NUMERATOR-DENOMINATOR METHODS

1. Calibration Procedures (Limited Scope)
   - Standardized (laboratory) reagents
   - Standardized images (radiology/pathology) or patients

2. Independent Review Verification (Effortful)
   - Direct observation (e.g., videotaped diagnostic encounters)
   - Independent second reads (esp. pathology, radiology, others)
   - Chart audits (+/- stimulated by trigger tools)

HELP MEASURE & TRACK PROBLEMS

NUMERATOR-DENOMINATOR METHODS

3. Systematic Diagnostic Ascertainment (Pricey)
   - Routine autopsy (or radiographic autopsy) diagnoses
   - Sampled or census 'gold standard' testing for specific diseases
   - Systematic patient follow-up (including automated phone calls)

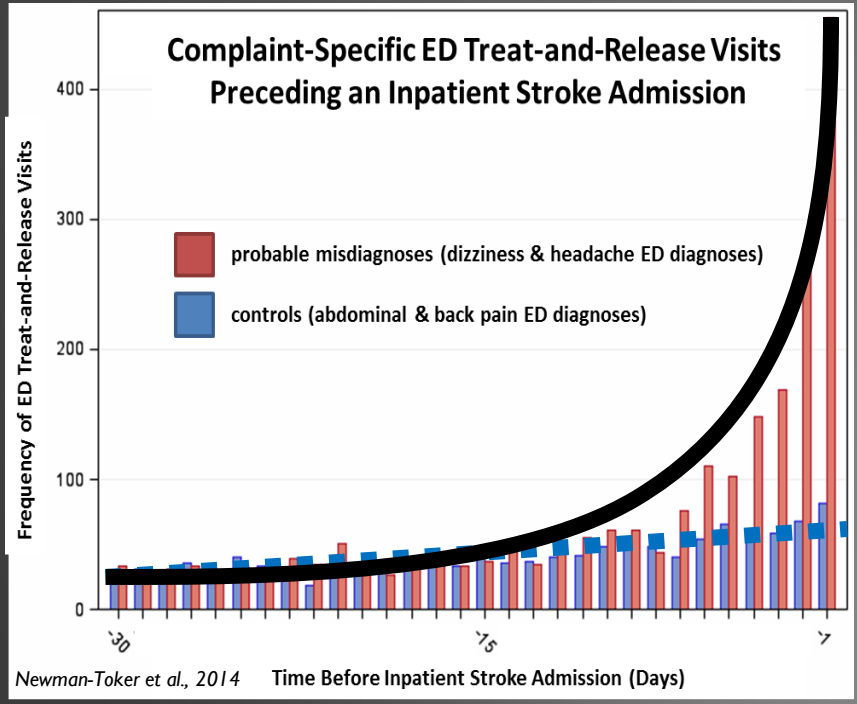
4. Electronic Performance Monitoring (?Validity)
   - Electronic triggers (e.g., labs not followed/acted on; corrected lab results or reports, monitoring pathologic discrepancies, e-autopsies)
   - Performance indicators from administrative data or clinical data warehouses (+/- supported by NLP)

HELP MEASURE & TRACK PROBLEMS

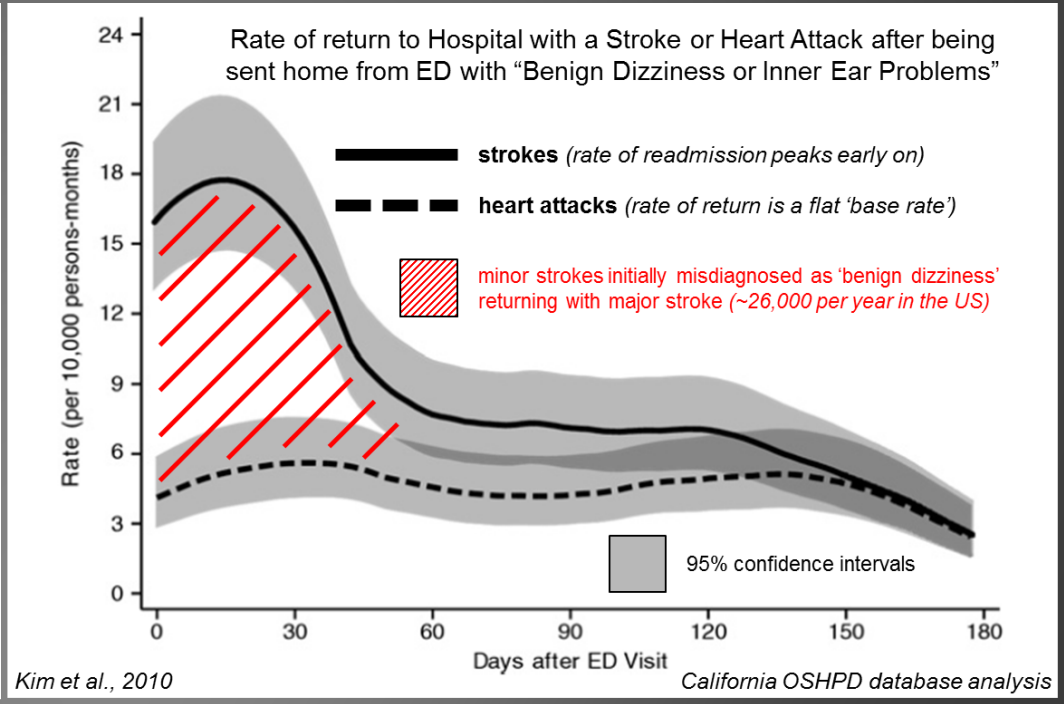
BIG DATA FOR DX ERROR
MISSED STROKE IN "BENIGN" DIZZINESS

***Look Back Approach*:**
Stroke patients more likely to have been discharged from ED with "benign" dizziness prior ~14 days (N = ~180,000 strokes)

***Look Forward Approach*:**
'Benign' dizziness sent home from ED more likely to return with a stroke within ~30 days, but not heart attack (N = ~30,000 ED dizzy discharges)



Newman-Toker et al., 2014



Kim et al., 2010

California OSHPD database analysis

OVERVIEW CURRENT LANDSCAPE

1. No single measurement method will address the full spectrum of diagnostic errors
2. Barriers include lack of chief complaint reporting, problem-oriented records, routine follow-up
3. Unsystematic measures available but incomplete picture
4. Systematic measures mostly restricted to use in research (autopsies not ideal "gold standard"; second reads only for image-based disciplines; chart reviews missing key data)
6. Electronic surveillance inexpensive and promising but need thoughtful analysis and access to out-of-network f/u
7. Within 10 years, it should be possible to have routine surveillance for misdiagnosis, esp. of dangerous disorders