Predicting the risk of readmission: easier said than done

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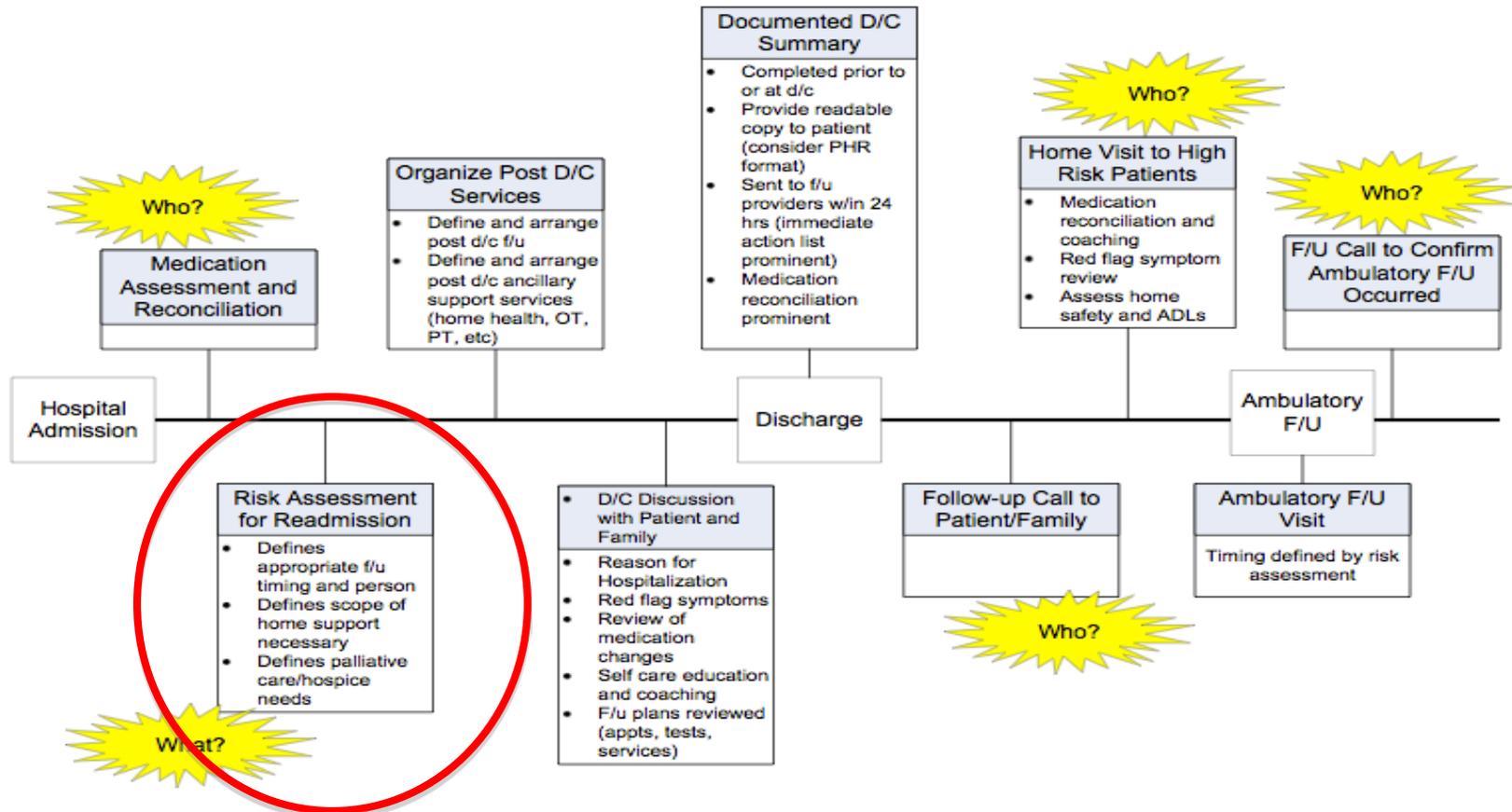
Q Corp Reducing Readmissions Conference

10/4/11

Reasons for interest

- Readmissions as a quality metric
  - Hospital comparison based on risk-standardized rates
    - Public reporting
    - Financial penalties
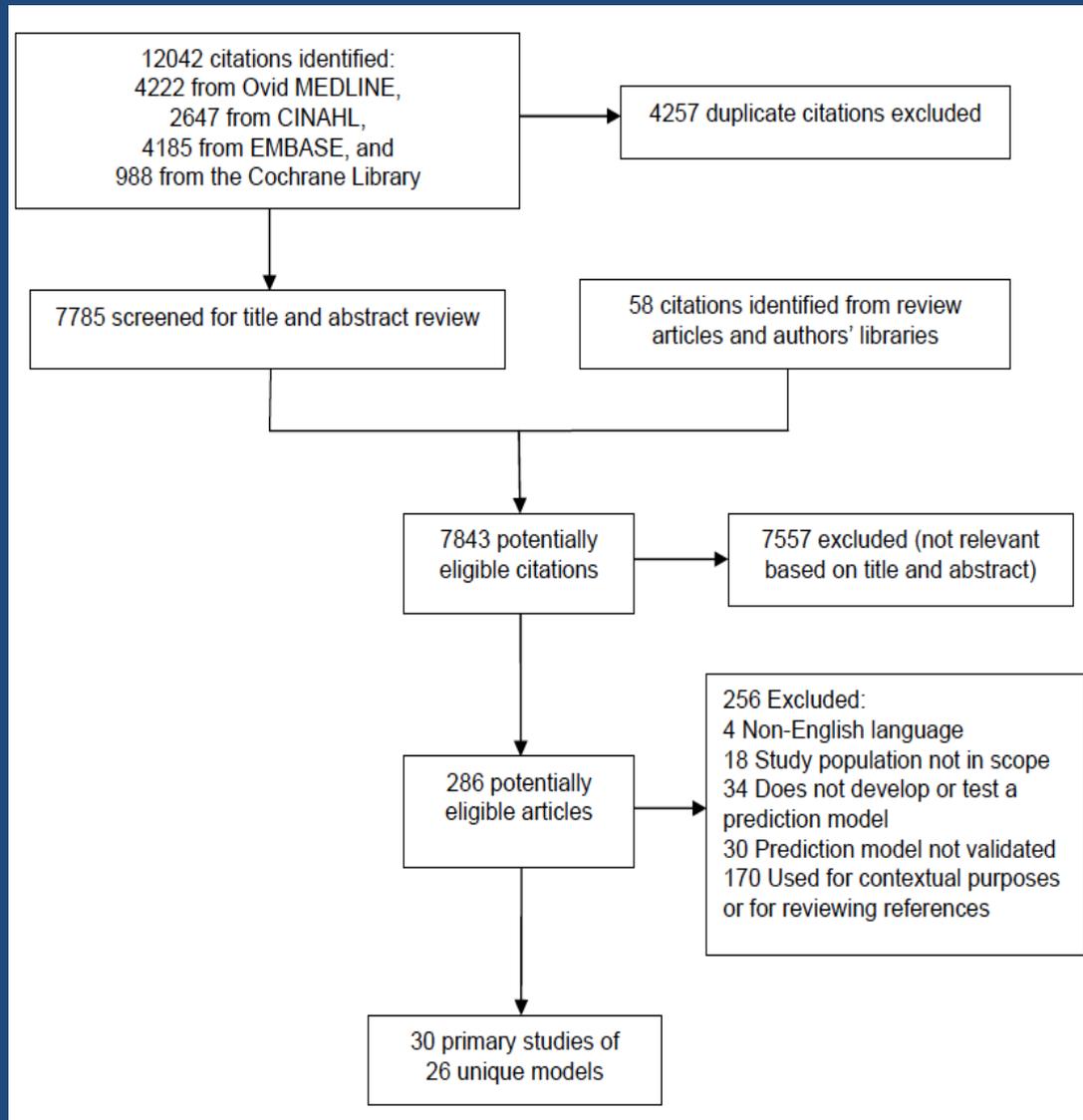- Identify high-risk patients for intervention

Clinical application

Characteristics of ideal models

- Hospital comparison
  - Reliable data that is easily obtained
  - Deployable in large populations
  - Use variables clinically related to and validated in target population
  - Good predictive value

- Clinical application
  - Provide data before discharge
  - Discriminate very high from very low risk patients
  - Not overly complex
  - Adapted to settings and populations in which use is intended

Systematic review

12042 citations identified:
4222 from Ovid MEDLINE,
2647 from CINAHL,
4185 from EMBASE, and
988 from the Cochrane Library

4257 duplicate citations excluded

7785 screened for title and abstract review

58 citations identified from review articles and authors' libraries

7843 potentially eligible citations

7557 excluded (not relevant based on title and abstract)

286 potentially eligible articles

256 Excluded:
4 Non-English language
18 Study population not in scope
34 Does not develop or test a prediction model
30 Prediction model not validated
170 Used for contextual purposes or for reviewing references

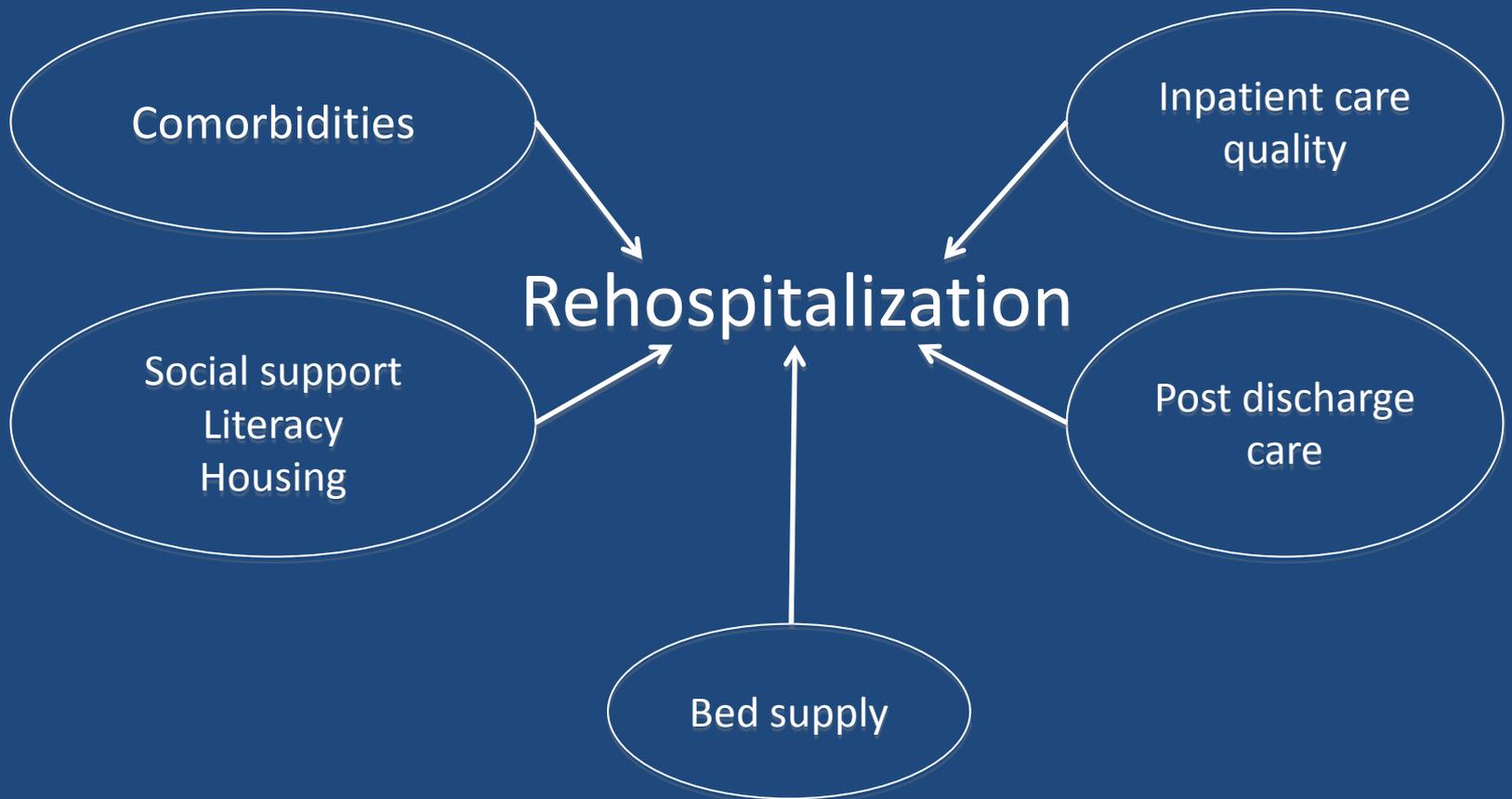30 primary studies of 26 unique models

Findings

- Half the models were created for hospital comparison purposes, half for clinical purposes

- Most models performed poorly in predicting readmission risk

- 3 CMS models (CHF, AMI, pneumonia)
  - All performed poorly

- Only one model explicitly defined and examined potentially preventable readmissions

Findings

- Most models used medical comorbidity, prior utilization, and basic sociodemographic data
- Few models examined broader sets of variables such as social determinants and functional status
  - Two studies suggest these variables may add to predictive ability

Readmissions: it's complicated

Implication 1

Broad-based comparisons of risk-standardized rates, especially when tied to reimbursement, may be problematic and could be associated with unintended consequences

Implication 2

For clinical purposes, the perfect does not have to be the enemy of the good. Even modest incremental knowledge of risk can improve the cost-effectiveness of interventions.

Implication 3

Match the model to intended use

– Models designed for measuring quality are probably not well suited for clinical use and vice versa.

– Think carefully about the local population to which it is being applied.

Implication 4

Given the lack of an existing risk prediction standard, incorporate clinically informative variables in your risk assessment that would not otherwise be captured.

- Housing status
- Access to care
- Health literacy
- Substance abuse

Implication 5

Think about workflow and feasibility of data collection when adapting risk assessment tools

- Avoid overly complex models that impede workflow
- Data must be easily available in real-time
  - ? Incorporate into EMR
  - Simple surveys

Implication 6

We do not know how many readmissions are preventable. Think about using additional metrics to measure peri-discharge care.