What does it take to implement change when the evidence is good?

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Quality Improvement's Basic Goal

"Implementation Science"
"Knowledge Translation"

Evidence → Practice

"Quality improvement strategies close the gap between health care processes or outcomes observed in practice and those obtainable on the basis of current professional knowledge."

Shojania KG, McDonald KM, Wachter RM, Owens DK. Closing The Quality Gap: A Critical Analysis of Quality Improvement Strategies. AHRQ Publication No. 04-0051-1. August 2004.

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

◄ Previous Volume 348:2635-2645 June 26, 2003 Number 26 Next ►

The Quality of Health Care Delivered to Adults in the United States

Elizabeth A. McGlynn, Ph.D., Steven M. Asch, M.D., M.P.H., John Adams, Ph.D., Joan Keesey, B.A., Jennifer Hicks, M.P.H., Ph.D., Alison DeCristofaro, M.P.H., and Eve A. Kerr, M.D., M.P.H.

ABSTRACT

Background We have little sy
care — a key element of qua

Methods We telephoned a ra
them about selected health c
the most recent two-year period and used this in formance on 439 indicators of quality of care for 30 acute and chronic conditions as wel care. We then constructed aggregate scores.

Results Participants received 54.9 percent (95 percent confidence interval, 54.3 to 55.5) of recommended care. We found little difference among the proportion of recommended preventive care provided (54.9 percent), the proportion of recommended acute care provided (53.5 percent), and the proportion of recommended care provided for chronic conditions (56.1 percent). Among different medical functions, adherence to the processes involved in care ranged from 52.2 percent for screening to 58.5 percent for follow-up care. Quality varied substantially according to the particular medical condition, ranging from 78.7 percent of recommended care (95 percent confidence interval, 73.3 to 84.2) for senile cataract to 10.5 percent of recommended care (95 percent confidence interval, 6.8 to 14.6) for

Across 30 acute and chronic conditions, patients in 12 US cities received an average of 50% of recommended processes of care

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The NEW ENGLAND JOURNAL of MEDICINE

The Quality of Ambulatory Care Delivered to Children in the United States

IAL ARTICLE

◄ Previous 1515-1523 October 11, 2007 Number 15 Next ►

The Quality of Ambulatory Care Delivered to Children in the United States

Rita Mangione-Smith, M.D., M.P.H., Alison H. DeCristofaro, M.P.H., Claude M. Setodji, Ph.D., Joan Keesey, B.A., David J. Klein, M.S., John L. Adams, Ph.D., Mark A. Schuster, M.D., Ph.D., and Elizabeth A. McGlynn, Ph.D.

On average…children in the study received 46% (95% CI: 44% to 48%) of the indicated care. They received 67% (95% CI: 63% to 71%) of the indicated care for acute medical problems, 53% (95% CI: 50% to 56%) of the indicated care for chronic medical conditions, and 40% (95% CI: 38% to 43%) of the indicated preventive care.

ABSTRACT

Background Lit
comprehensive

Methods We as
Quality indicator
children who we
medical records from all providers
recruitment. Trained nurses abstrac
dividing the number of times indicat
of times a care process was indicat
during the 2-year period before the date of study
cords. Composite quality scores were calculated by
ocumented as having been ordered or delivered by the number

Results On average, according to data in the medical records, children in the study received 46.5% (95% confidence interval [CI], 44.5 to 48.4) of the indicated care. They received 67.6% (95% CI, 63.9 to 71.3) of the indicated care for acute medical problems, 53.4% (95% CI, 50.0 to 56.8) of the indicated care for chronic medical conditions, and 40.7% (95% CI, 38.1 to 43.4) of the indicated preventive care. Quality varied according to the

Quality Improvement's Basic Goal

"Implementation Science"
"Knowledge Translation"

Evidence → **Practice**

- Inhaled steroids for asthma
- Optimal diabetes care
- Preventive care guidelines

- Educational interventions
- Reminder systems
- Audit & feedback
- Report cards, benchmarking
- Case management
- Continuous Quality Improvement

Unfortunately, none of these work that well

No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *CMAJ* 1995

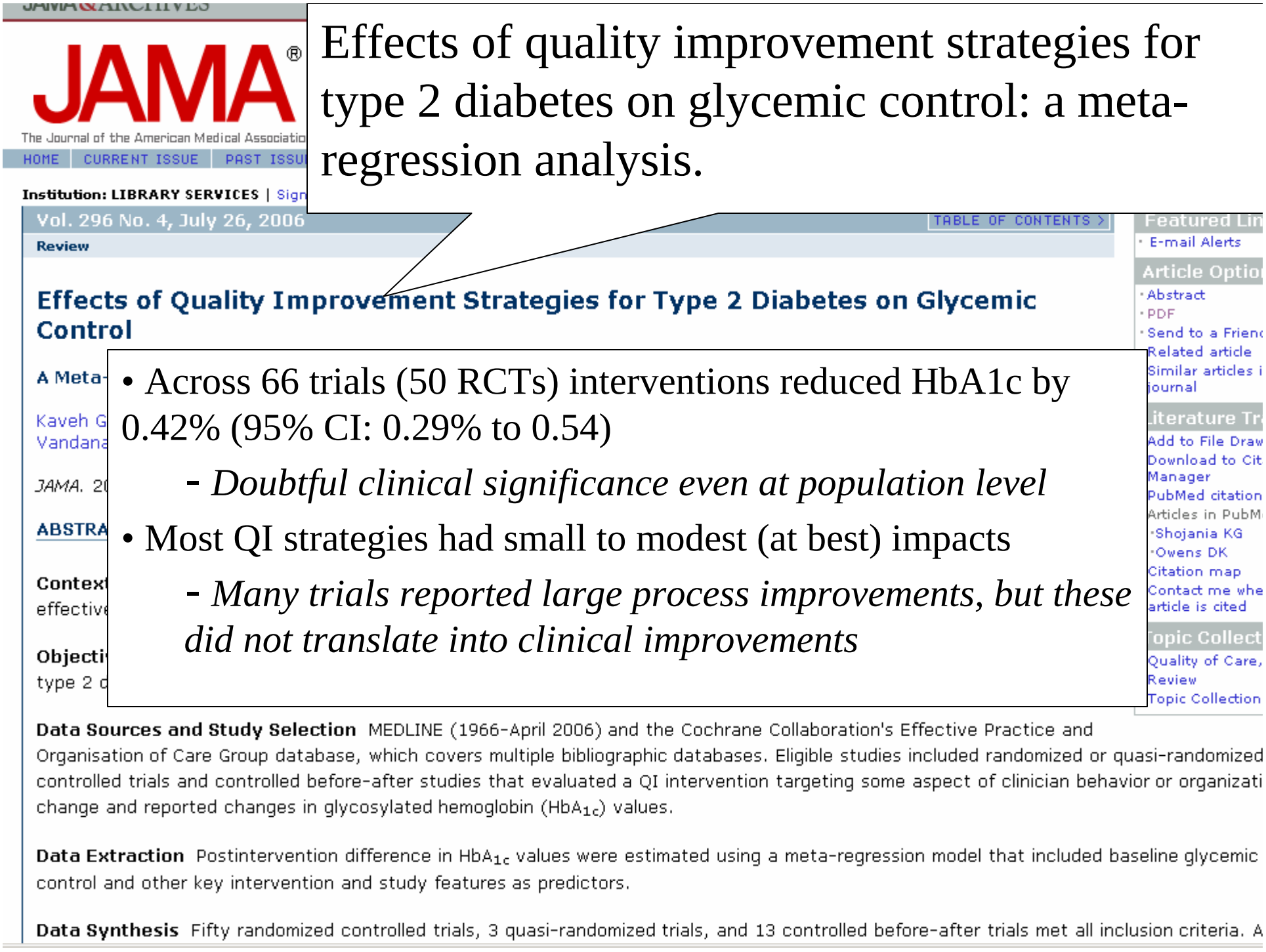
Canadian Medical Association Journal, Vol

JOURNAL ARTICLE

No magic bullets: a systematic review of 102 trials of interventions to improve professional practice

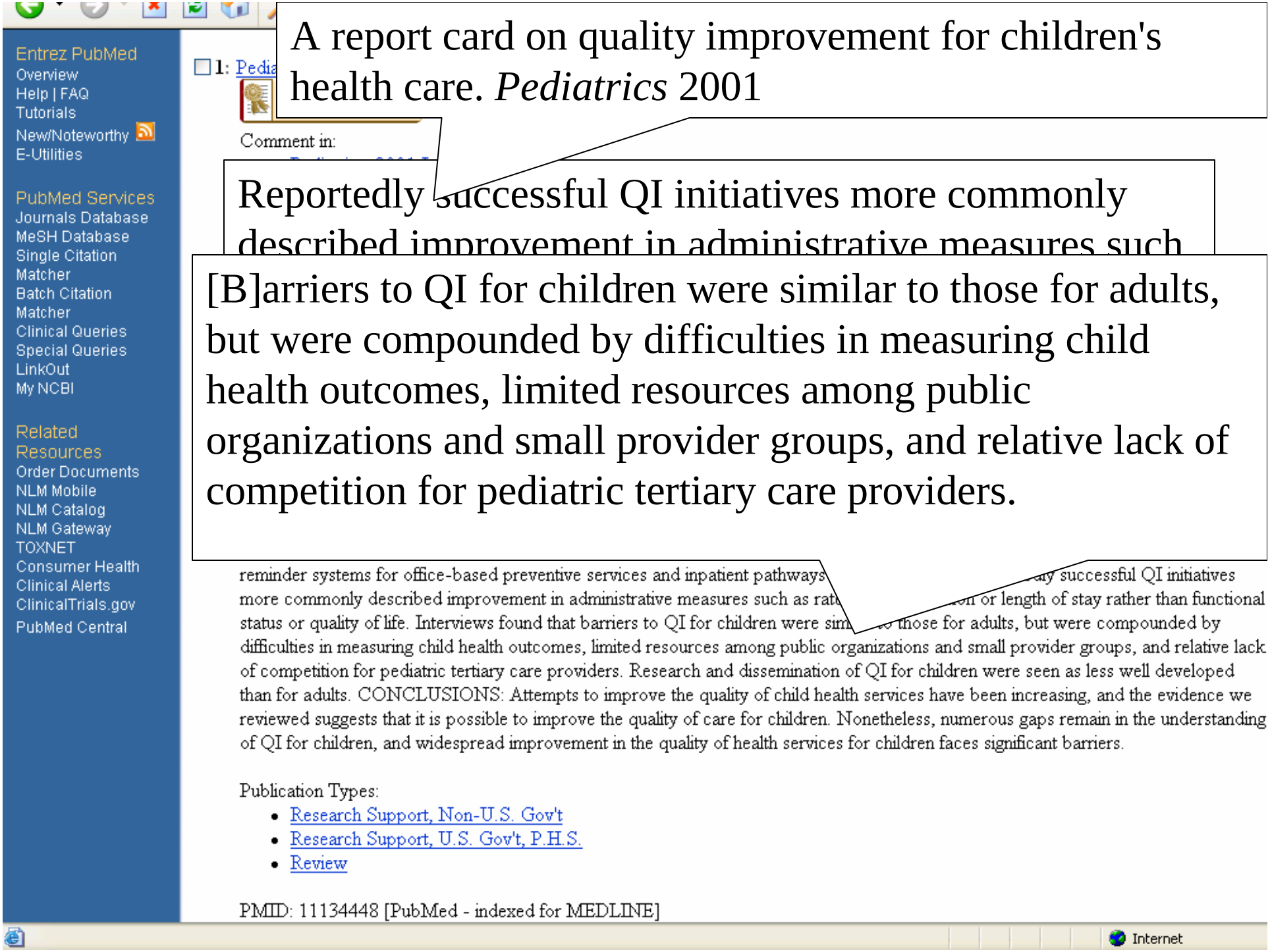
A. D. Oxman, M. A. Thomson, D. A. Davis and R. B. Haynes
Health Services Research Unit, National Institute of Public Health, Oslo, Norway.

OBJECTIVE: To determine the effectiveness of different types of interventions in improving health professional performance and health outcomes. DATA SOURCES: MEDLINE, SCISEARCH, CINAHL and the Research and Development Resource Base in CME were searched for trials of educational interventions in the health care professions published between 1970 and 1993 inclusive. STUDY SELECTION: Studies were selected if they provided objective measurements of health professional performance or health outcomes and employed random or quasi-random allocation methods in their study designs to assign individual subjects or groups. Interventions included such activities as conferences, outreach visits, the use of local opinion leaders, audit and feedback, and reminder systems. DATA EXTRACTION: Details extracted from the studies included the study design; the unit of allocation (e.g., patient, provider, practice, hospital); the characteristics of the targeted health care professionals, educational interventions and patients (when appropriate); and the main outcome measure. DATA SYNTHESIS: The inclusion criteria were met by 102 trials. Areas of behaviour change included general patient management, preventive services, prescribing practices, treatment of specific conditions such as hypertension or diabetes, and diagnostic service or hospital utilization. Dissemination-only strategies, such as conferences or the mailing of unsolicited materials, demonstrated little or no changes in health professional behaviour or health outcome when used alone. More complex interventions, such as the use of outreach visits or local opinion leaders, ranged from ineffective to highly effective but were most often moderately effective (resulting in reductions of 20% to 50% in the incidence of inappropriate performance). CONCLUSION: There are no "magic bullets" for improving the quality of health care, but there are a wide range of interventions available that, if used appropriately, could lead to important improvements in professional practice and patient outcomes.



Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis.

- Across 66 trials (50 RCTs) interventions reduced HbA1c by 0.42% (95% CI: 0.29% to 0.54)
  - *Doubtful clinical significance even at population level*
- Most QI strategies had small to modest (at best) impacts
  - *Many trials reported large process improvements, but these did not translate into clinical improvements*


A report card on quality improvement for children's health care. *Pediatrics* 2001
Reportedly successful QI initiatives more commonly described improvement in administrative measures such
[B]arriers to QI for children were similar to those for adults, but were compounded by difficulties in measuring child health outcomes, limited resources among public organizations and small provider groups, and relative lack of competition for pediatric tertiary care providers.
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reminder systems for office-based preventive services and inpatient pathways
more commonly described improvement in administrative measures such as rat
or length of stay rather than functional status or quality of life. Interviews found that barriers to QI for children were sim
those for adults, but were compounded by difficulties in measuring child health outcomes, limited resources among public organizations and small provider groups, and relative lack of competition for pediatric tertiary care providers. Research and dissemination of QI for children were seen as less well developed than for adults. CONCLUSIONS: Attempts to improve the quality of child health services have been increasing, and the evidence we reviewed suggests that it is possible to improve the quality of care for children. Nonetheless, numerous gaps remain in the understanding of QI for children, and widespread improvement in the quality of health services for children faces significant barriers.
Publication Types:
Research Support, Non-U.S. Gov't
Research Support, U.S. Gov't, P.H.S.
Review
PMID: 11134448 [PubMed - indexed for MEDLINE]
Internet

Common Failings in QI Efforts

- Evidence for target not always that good
- Change strategy to implement evidence picked “off the shelf”
- Inattention to attitudes/needs of front line workers
- Little appreciation of barriers to implementation

Principles to Keep in Mind

- Determine basis of a given quality or safety problem
  - *Don't assume you know the answer*
- Match proposed solution to the problem
- Anticipate barriers to implementation
- Pilot test
- More formal evaluation

Principles I Won’t Be Discussing

- Engage senior administrators
  - *Make sure this is real, not just lip service*
- Change the culture of your organization
  - *Good luck with that*
- No new meetings: hijack existing ones

Principles to Keep in Mind

- Determine basis of a given quality or safety problem
  - *Don't assume you know the answer*
- Match proposed solution to the problem
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- Pilot test
- More formal evaluation

Example Problem: Overuse of Urinary Catheters → Nosocomial UTIs

- Organisational – [illegible] inadequate staffing
- Professional
  - Knowledge/skills
  - Attitudes, peer opinion
  - Memory, time factors
- Patient --e.g. knowledge, expectations

Probably contributes, but hard to fix

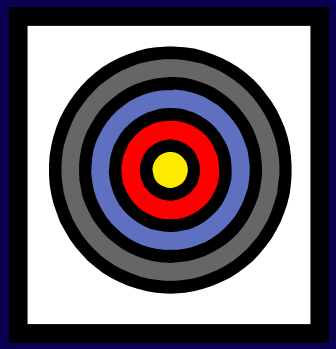
Likely not a major factor in this case

[illegible] much catheters bother

Probably a major factor: MDs often unaware of catheters

[illegible] factor in this case

Successful Application of Matching Solution to Problem : reduction of nosocomial UTIs



Target: decreased use of Foley catheters

- Insertion not indicated 25% of the time
- *But*, often placed in Emerg before MDs see patients
- Continued use not indicated 50% of time
- MDs unaware of catheter 30-50% of time

Interventions directed at decreased insertion likely to be ineffective; *decreasing duration seems more promising*

Automatic Stop Orders for Urinary Catheters

	Control Ward	Study Ward	Difference
Catheter Duration	8 ± 5 days	5 ± 3 days	3 days ($p = 0.03$)

Cornia et al. *Am J Med.* 2003

Importance of Example

- Educational initiatives – almost certainly would have had no effect
- Local champions, opinion leaders - ditto
- Audit & feedback – possibly could have had an effect, but likely weak but would still rely on sustained vigilance by clinicians

In this case, a reminder that targeted decreased duration of catheterization was more appropriate than other potential strategies, but each problem will be different.

Principles to Keep in Mind

- Determine basis of a given safety problem
  - *Don't assume you know the answer*
- Match proposed solution to the problem
- Anticipate barriers to implementation
- Pilot test
- More formal evaluation

Computerized Provider Order Entry

- Reports of major implementation problems
  - Cedars-Sinai in LA (2004), CHEO in Ottawa
- More insidious implementation failures
- Among 100 hospitals with CPOE
  - 50% reported participation by <50% of physicians
  - 30% reported >90% of all orders remain handwritten

Ash et al. *J Am Med Inform Assoc* 2004

"Role of computerized physician order entry systems in facilitating medication errors"

Vol. 293 No. 10, March 9, 2005
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Original Contribution

Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors

Ross Koppel, PhD; Joshua P. Metlay, MD, PhD; Abigail Cohen, PhD; Brian Abaluck, BS; A. Russell Localio, JD, MPH, MS; Stephen E. Kimmel, MD, MSCE; Brian L. Strom, MD, MPH

JAMA. 2005;293:1197-1203.

ABSTRACT

Context Hospital computerized physician order entry (CPOE) systems are widely regarded as the technical solution to medication ordering errors, the largest identified source of preventable hospital medical error. Published studies report that CPOE reduces medication errors up to 81%. Few researchers, however, have focused on the existence or types of medication errors facilitated by CPOE.

Objective To identify and quantify the role of CPOE in facilitating prescription error risks.

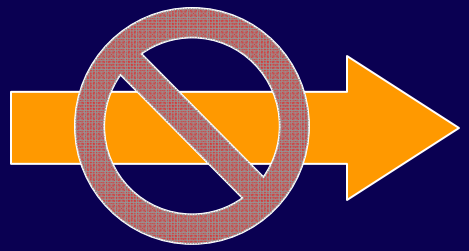
Design, Setting, and Participants We performed a qualitative and quantitative study of house staff interaction with a CPOE system at a tertiary-care teaching hospital (2002-2004). We surveyed house staff (N = 261; 88% of CPOE users); conducted 5 focus groups and 32 intensive one-on-one interviews with house staff, information technology leaders, pharmacy leaders, attending physicians, and nurses; shadowed house staff and nurses; and observed them using CPOE. Participants included house staff, nurses, and hospital leaders.

Main Outcome Measure Examples of medication errors caused or exacerbated by the CPOE system.

Results We found that a widely used CPOE system facilitated 22 types of medication error risks. Examples include fragmented CPOE displays tha prevent a coherent view of patients' medications, pharmacy inventory displays mistaken for dosage guidelines, ignored antibiotic renewal notices

Potassium Chloride Safety

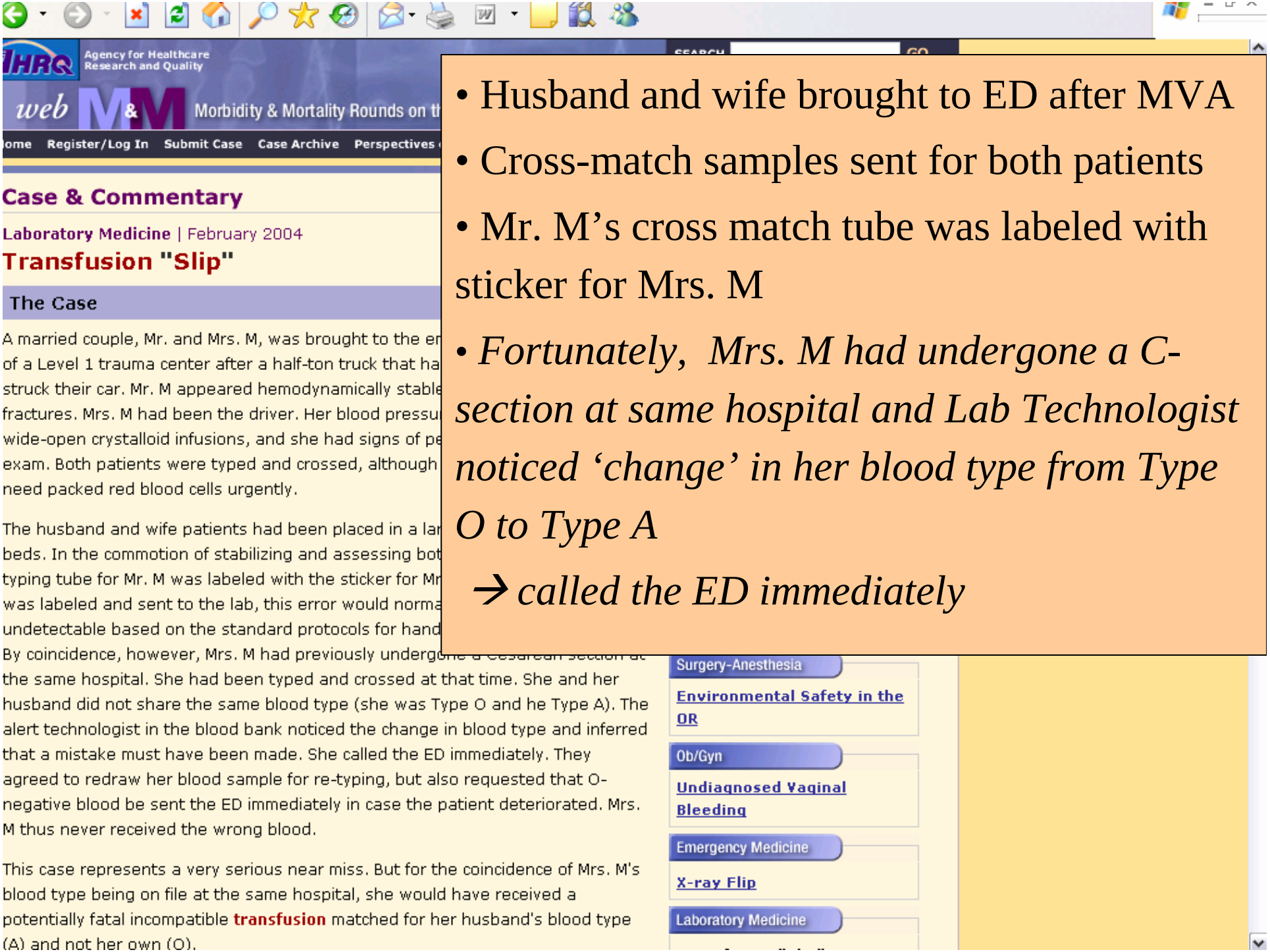
Concentrated KCl resembles other iv solutions



Lethal errors involving injections of concentrated KCl

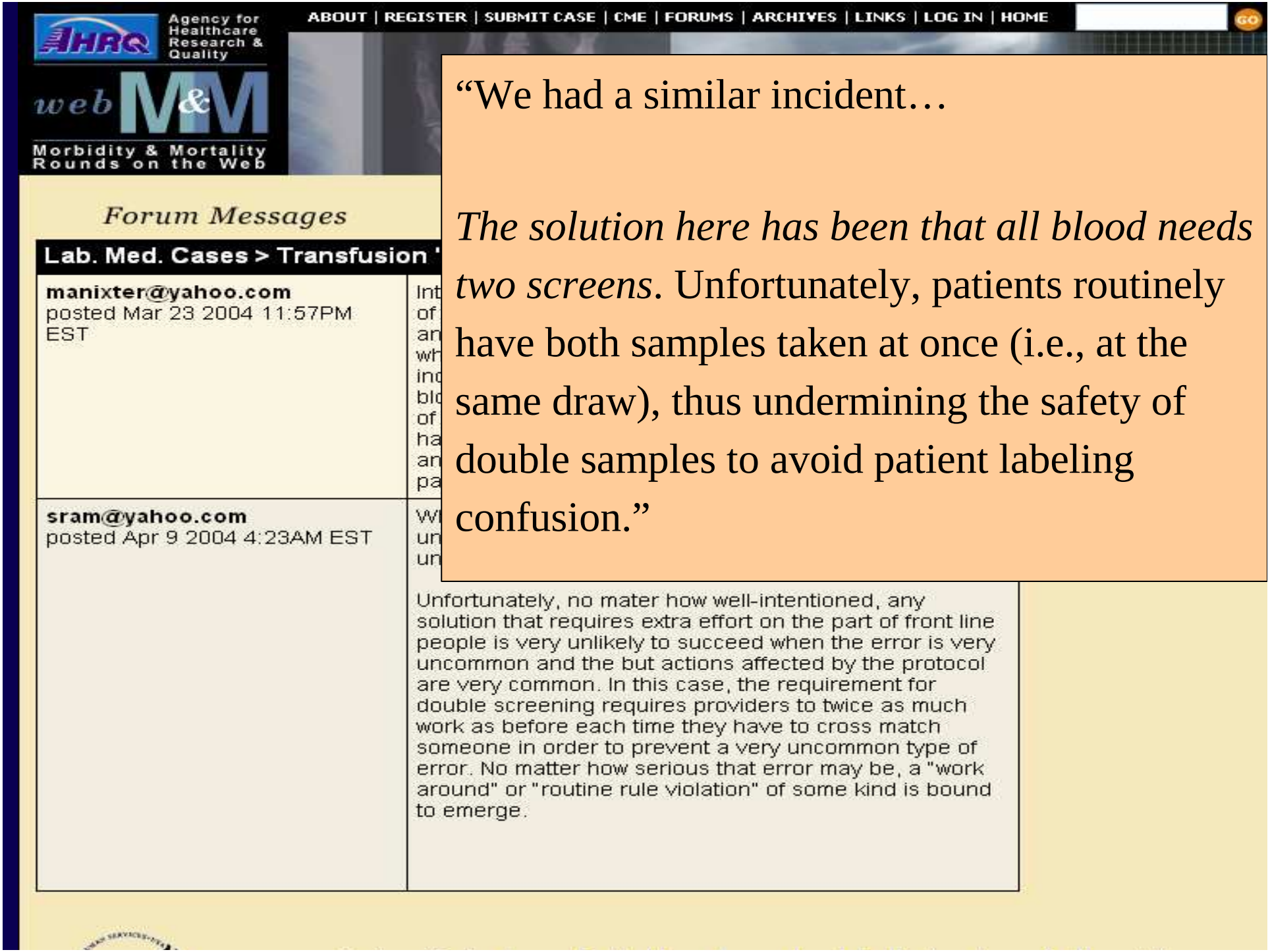
Sobering example of hospital where delays in receiving KCl from Pharmacy resulted in surreptitious hording of KCl on wards

→ ***Increase, rather than decrease in hazard***



- Husband and wife brought to ED after MVA
- Cross-match samples sent for both patients
- Mr. M's cross match tube was labeled with sticker for Mrs. M
- *Fortunately, Mrs. M had undergone a C-section at same hospital and Lab Technologist noticed 'change' in her blood type from Type O to Type A*

  → *called the ED immediately*



"We had a similar incident…

The solution here has been that all blood needs two screens. Unfortunately, patients routinely have both samples taken at once (i.e., at the same draw), thus undermining the safety of double samples to avoid patient labeling confusion."

Implementation Issues

- Expect to occur with any new technology
  - CPOE, barcoding, smart pumps
- Expect to occur with any intervention involving reorganization of care
- Expect with any intervention that requires additional work for frontline personnel
- Expect with any ‘add-on’ policy, especially when target problem is uncommon

What does it take to implement change when the evidence is good?

A change strategy that

- Makes work easier for front line providers (or at least not harder)
- Is based on an understanding of the target problem
- Has good evidence supporting its effectiveness

- Still don’t be surprised if you fail!
- Even successes will usually be modest

But, that’s OK - consistent, modest gains will eventually produce major improvements, just as with the rest of biomedicine