PDRM Indicators and the Adoption of Pharmaceutical Care

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Problem Statement

- Research reports of PDRM have been appearing for years in most industrialized nations. They show that *Preventable* Drug-Related Morbidity (PDRM) is prevalent. PDRM reduces the safety and effectiveness of *medical care* and increases costs (lowers efficiency).
- The usual attempts to manage drug use or to control the costs of drug therapy often fail or have "unintended consequences" that harm patients and raise total costs of care

Problem Statement (2)

- Published research shows that pharmaceutical care (PhC) can improve patient outcomes and lower total costs of care per patient, when provided appropriately in populations that can benefit from it.
- Yet adoption of PhC and Medications Management Systems (MMS) has been very slow. Meanwhile, patients suffer and money is wasted paying for avoidable care.

This Presentation Explores …

- Why the adoption of PhC and Medication Management Systems – and the relinquishment of inappropriate medication management approaches -- has been much slower than the evidence would support
- What conditions are needed for the wide and rapid adoption of Pharmaceutical Care?

Market Forces Have Failed

Supply
- Pharmacists
- Physicians

Demand
- Patients
- Payers

Physicians influence both supply (by cooperating) and demand (through recommendations and referrals)

Supply and demand must grow each other but that has not happened.

Speculations – Why Slow Progress ?

- **INVISIBILE** -- The human, clinical and economic magnitude of the PDRM problem remains unrecognized as such – often attributed to disease. (Coding)
- **MISUNDERSTOOD** -- PDRM not attributed to system failure. Seen as professional failure, "noncompliance", unsafe/ineffective drug products or as unavoidable

Speculations – Why Slow Progress?

- **PERMITTED**
  - Most payment systems do not penalize PDRM and often may reward it (fee-for-service pays to correct iatrogenic problems)
  - Payment and accounting silos (component cost management)
  - Professional performance measures are lacking, so denial of problem is possible

Speculations – Why Slow Progress?

- **SOLUTION IS RADICAL –**
  - Prevention requires a cooperative system with new roles and new training for many stakeholders.
  - Interprofessional cooperation is difficult in silo practice model.
  - Sharing information, authority and responsibility seems risky

Conclusion: Adoption of Pharmaceutical Care

- Adoption of PhC involves pharmacists, physicians, patients and payers – each with different needs, values, and perspectives.
- We should seek common purposes among stakeholders, i.e., effectiveness, safety, and reduced total cost of care.

Conclusion: Adoption of Pharmaceutical Care

- Need to construct *systems-in- place*. Research experience showing "value of pharmacist" is seen as possibly not applicable
- Adoption of PhC may require centralized organizational leadership and coordination e.g. from a health care provider or payer

Drug Related Morbidity

- An unintended patient injury with a scientifically plausible relationship either to
  - adverse effect of drug therapy (or)
  - failure of attempted drug therapy
  - an untreated indication for drug therapy

Preventable DRM

- A DRM is defined as preventable if it has the following four attributes:
- The DRM was preceded by a *recognizable* DTP.
- The DRM was reasonably *foreseeable* under the circumstances,
- The cause of the DTP and resulting DRM was *identifiable*
- The identified cause of the DTP (and resulting DRM) was *controllable* within the context of therapy (i.e., without sacrificing essential therapeutic objectives).

PDRM Indicator

- Combines process and outcome information in the same indicator, i.e., matches the DRM to the DTP in the same patient
- Based on concept of preventability
- Example: hospital admission for asthma crisis in a patient who has asthma, overuses rescue meds, under-uses preventer meds
- Can be applied manually or by computerized search of an administrative or clinical database

Example of PDRM Indicator

Mackinnon & Hepler JMCP Vol. 9 March/April 2003

- This outcome has occurred after the pattern of care below: Second myocardial infarction
- This is the pattern of care:
  - History/diagnosis of myocardial infarction
  - No use of ASA or a beta-blocker (e.g.; metoprolol, etc.)

Status of Indicator Use

- Process indicators are in wide use in most developed nations and are becoming routine in management of health care quality.
- PDRM indicators are less widely used. They have been adapted, re-validated, and used to assess quality of medications use and to identify patients needing attention in 17 published studies from the US, UK, Canada, Portugal, Italy and Spain

Indicator Validation

Indicators have been consensus validated:

- Consensus (Delphi) Panel provides information about
  - face validity -- how well indicator matches the intended use
  - content validity -- how well indicator or set "covers" "fits" intended domain
- Criterion or concurrent validation by chart review or correlation with event related to indicator rationale
  - For example, how many positives for inhaler overuse were associated with asthmatic crisis, ED visit, hospitalization, etc.

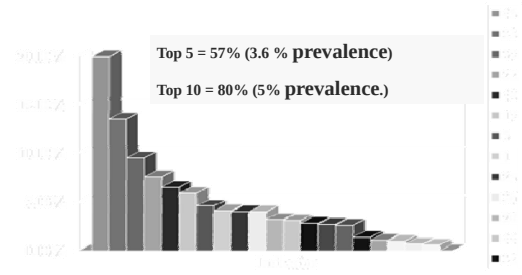
Uses of PDRM indicators (1)

- Provide evidence about performance of overall system (increase awareness, overcome denial of problem)
- Identify specific process and outcome problems through system analysis, avoid simplistic explanations (e.g., blame)
- Direct corrective actions e,g, gradual system construction
- Monitor effect of corrective action
- Possible basis of payment

Uses of PDRM Indicators

- Shows the adverse outcome (DRM) and the specific process failure (DTP)
- Identify and rank the most severe kinds of PDRM and system failures
- Indicators with high correlation between the outcome positives and process positives may help identify problem patients ("Trigger events") or providers

Frequency by Indicator (Top 20)



Large improvements in overall performance are possible by addressing selected problems

PINCER Study (1)

- PDRM indicators were used to identify about 60,000 patients at risk of specific, defined PDRM in 72 UK general practices with a combined list size of 480 942 patients.
- Practices were randomly assigned to PINCER or simple feedback.
- At 6 months' follow-up, patients in the PINCER group were significantly less likely
  - to have been prescribed a non-selective NSAID if they had a history of peptic ulcer without gastroprotection (OR 0.58, 95% CI 0.38–0.89)
  - a β blocker if they had asthma (0.73, 0.58–0.91)
  - or an ACE inhibitor or loop diuretic without appropriate monitoring (0.51, 0.34–0.78).
- Improved quality of medications use was also seen in 9 other "secondary" PDRM categories

PINCER Study (2)

- The authors concluded that the pharmacist (PINCER) intervention is an effective method for reducing a range of medication errors in general practices with computerised clinical records. Cost of avoiding serious PDRM in ambulatory care was £75 (at 6 month followup) or £85 (12 months) per error avoided.

Avery, AJ, et al. A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-eff ectiveness analysis *Lancet* 2012; 379: 1310–19

Conclusion (1)

- The information provided by PDRM indicators provide an essential ingredient – knowledge of the problem
- Perhaps we should conceive of the adoption of PhC and Medication Management Systems as a two-step process.
- First, we should work for the adoption of PDRM indicators so that an organization can have a realistic idea of the quality and safety of its medications use system

Conclusion (2)

- Second we should design MMS to address the problems and to fit the circumstances of the organization
- This could be a gradual approach using the methods of continuous quality improvement
- PDRM indicators could be used to monitor and guide the implementation of the MMS

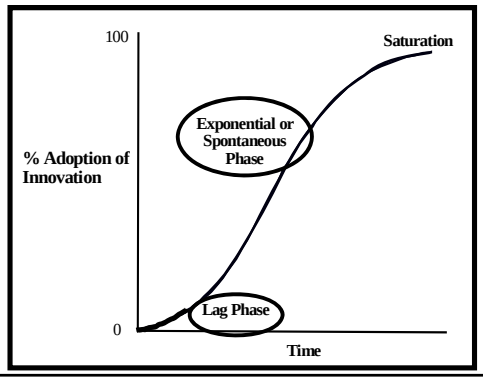
Thank You

Questions?

Short Discussion of Diffusion of Innovation

- Diffusion of Innovation (DoI) theory was developed by Everet Rogers about 60 years ago.
- It concerns the process of communicating new information within a society, via various media, over time. The society of interest can be an organization, occupation, culture, nation, etc.

Diffusion and Adoption Over Time



Diffusion of Innovations (2)

- DoI theory posits a social network through which information flows, for example the managers, professionals and patients in a health care enterprise. Diffusion concerns the aggregate of all individual decision processes and reflects the pattern and rate at which the social group learns about and adopts (or rejects) a new technique, product or idea..

Diffusion of Innovations (3)

- The theory of DoI proposes that prospective adopters -- here managers or professionals involved in health care delivery or payment -- go through a sequence of five stages when presented with an innovative product or idea such as Pharmaceutical Care or Medication Use Systems

Steps in Adoption - *Knowledge*

- Becoming aware of the innovation
- Learning how to use it (practices)
  - Many adopters with different practices
- Learning how it works (principles) == *this has been our focus*

Steps in Adoption - *Persuasion*

Awakening of interest (motivation to try) and actual trial (evaluation).

- Indicators may awaken interest and facilitate evaluation
- Each potential adopter (e.g., payer, patient, physician, pharmacist) evaluates adoption from his perspective. This substantially complicates this step, e.g., issues in developing cooperative relationships, authority, responsibility and details of payment.

Steps in Adoption - *Decision*

Decision whether to adopt the innovation (and relinquish the "defender")

Who should decide?

Implementation (possibly with modification, adaptation, re-invention before or immediately after adoption)

All adopters would have to implement new practices

Steps in Adoption -- ***Re-evaluation***

Re-evaluation (confirmation or dis-confirmation of adoption)

Followed by continued use, modification or relinquishment.

Issues in Adoption - *Individual*

- Ease with which potential adopter can see a problem or a need for the innovation. (+)
  - PDRM tend to be invisible or unrecognized as such. The cost of correcting PDRM is marked down to the disease
- Perceived risk of change (-)
  - Merely paying for PhC seems risky
  - Constructing a system is safer but more complex

Issues in Adoption – *Innovation Itself*

- *Relative* ***advantage*** — how much innovation is perceived as better than the status quo
- ***Compatibility*** with current beliefs/processes — how much the innovation is perceived as consistent with existing values, *experience*, and needs of potential adopters.

Issues in Adoption – *The Innovation*

- ***complexity*** — perception of how easy the innovation is to understand and use.
- ***divisibility*** -- perception of how easy it is to try without irreversible changes or major commitment.
- *observability* (communicablity) – how much the results of an innovation are visible to others and how easy it is to talk about the benefits. Some innovations involve practices perceived as private, e.g., trade secrets.

Issues – Type of Expected Result

- ***Incremental****:* Adopting an incremental innovation is expected to improve a familiar process, e.g., adoption of a new variety of seed or a new drug product.
- ***Preventative:*** A preventative innovation is intended to avoid the possible occurrence of some unwanted event in the future. (e.g., hygienic innovations, seat belts, family planning)

Issues in Innovation – Adaptive Potential

- **Adaptive potential (AP) is** consistency with social - cultural norms, values and beliefs (+) Early adopters of low AP innovations may seek prestige *outside* the network. Early adopters of high AP innovations may seek admiration of peers *within* network. Example – staying within usual professional role expectations (e.g., interprofessional cooperation as weakness)