

# Hospital Standardized Mortality Ratios (HSMR): The Canadian Journey

Jennifer Zelmer, National Workshop, Sydney, March 2009

# From Measurement to Action: Common Prerequisites ...

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- ▶ Is the problem significant?
- ▶ Has someone done something about the problem?
- ▶ Has someone like me done something about the problem?



# Emerging evidence that mortality can be changed, e.g. Henry Ford Hospital

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- ▶ **Fewer deaths**
  - ▶ More than 235 “lives saved” over 18 months
  - ▶ Overall mortality down 17%
  - ▶ Heart attack deaths down 22% since 2002
- ▶ **Other safety improvements**
  - ▶ Cardiac arrest outside the ICU down 30%
  - ▶ Surgical site infections down > 50%
  - ▶ Central line infections down 70%

# Saving More Lives

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- ▶ Not every hospital death is currently preventable but ...
- ▶ IHI: “Moving the dot” is about
  - ▶ Setting measurable goals for improvement
  - ▶ Listening to the stories, finding the opportunities
  - ▶ Taking responsibility to make change happen
  - ▶ Monitoring and relentlessly pursuing progress



# Measurement for Improvement

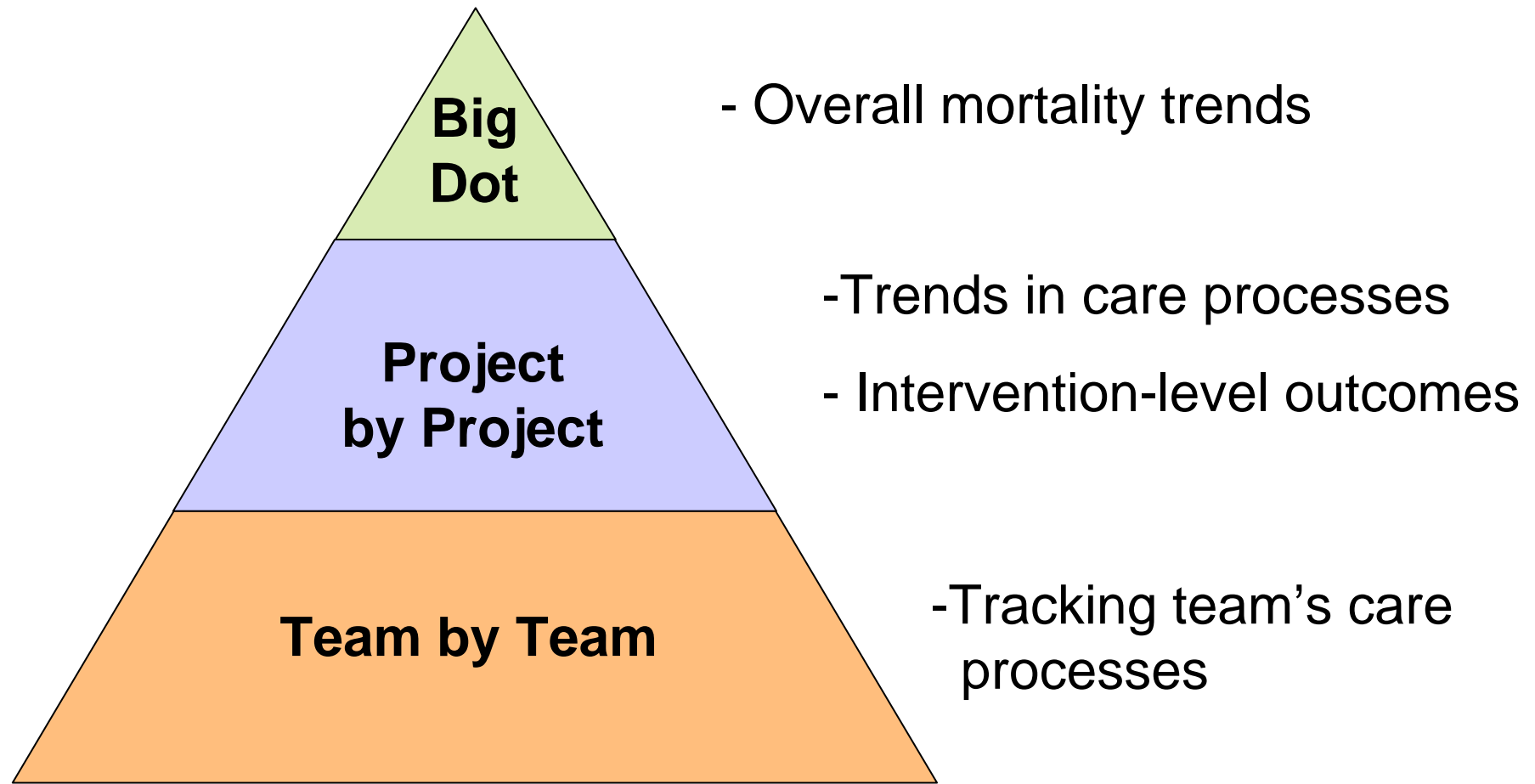
# Why “Big Dots”

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- ▶ Organizations can focus on a small # of important system-level measures
- ▶ Leaders & staff can understand these measures
- ▶ Opportunity to set specific “how good, by when” aims for improvement and build will for change
  - ▶ Some is not a number, soon is not a time
- ▶ Success means
  - ▶ More than just a few projects
  - ▶ Going beyond “islands of change”

# Tracking Progress: Vital Signs

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# What is HSMR?

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- ▶ Hospital Standardized Mortality Ratios (HSMR) track changes in hospital mortality rates in order to:
  - ▶ Reduce avoidable deaths in hospitals
  - ▶ Improve quality of care
- ▶ Developed in the UK in mid-1990s by Sir Brian Jarman of Imperial College
- ▶ Used in hospitals worldwide (i.e. UK, Holland and US)



# HSMR Explained

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$$\text{HSMR} = \frac{\text{Observed deaths}}{\text{Expected deaths}} \times 100$$

- ▶ Based on diagnosis groups that account for 80% of deaths
- ▶ Adjusted for factors affecting mortality (e.g. age, sex, length of stay)



# HSMR is easy to interpret

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- ▶ **Equal to 100**

- ▶ No difference between hospital's mortality rate and overall rate

- ▶ **More than 100**

- ▶ Hospital's mortality rate is higher than the overall rate

- ▶ **Less than 100**

- ▶ Hospital's mortality rate is lower than the overall rate



# What Does Average Mean? (Results from Baker/Norton)

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**9-23,000**

Deaths among patients with preventable adverse events



**1,100,000**

Extra hospital days associated with adverse events



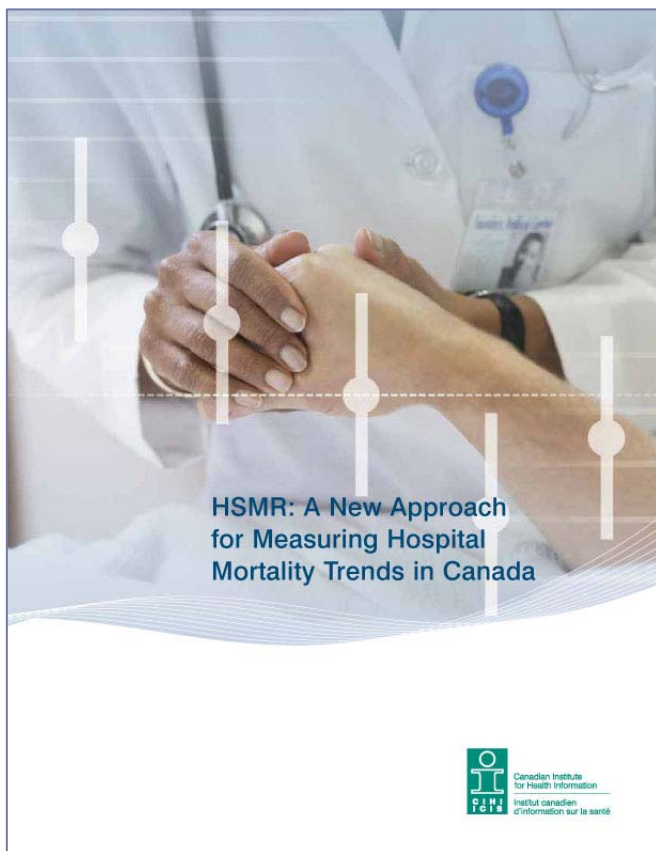
## What HSMR is Not

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- ▶ Not a measure of “preventable” deaths
- ▶ Not a perfect measure for comparisons
  - ▶ HSMR results are most helpful when used by individual hospitals and health regions to track their progress over time.
- ▶ Not the only measure that you need to understand quality of care

# HSMR in Canada: From Measurement to Action

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# How It Started

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- ▶ Requests from hospitals & patient safety experts led to work on HSMR in 2005
  - ▶ Pioneer group, expert panel
  - ▶ First briefing to governments
- ▶ 2 year validation process with hospitals/regions
  - ▶ Invitation to all hospitals/regions in fall of 2005
  - ▶ On-going communications, e.g.
    - ▶ Ministry liaison committee
    - ▶ Toolkit & presentation deck for use within facilities/regions
    - ▶ Presentations at key forums
    - ▶ Partners preparing members
  - ▶ Regular near real-time data & collaboration
- ▶ Profile grew in stakeholder community and with media



# Getting Started with HSMR (IHI)

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- ▶ Plot your dot
- ▶ Examine (& validate) your dot
  - ▶ Trends
  - ▶ Results by service
- ▶ Evaluate your dot
  - ▶ e.g. Hospital Mortality Review Tool – IHI
- ▶ Understand your dot
  - ▶ Potential improvement strategies
- ▶ Test changes
- ▶ Track your dot



# First Public Release, November 29, 2007

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- ▶ **Followed final validation of results/methods**
  - ▶ Review by hospitals, regions, government
  - ▶ Statistical review and fact checking
- ▶ **What was released**
  - ▶ Report, backgrounders, videoclips, etc.
  - ▶ Focus on trends, annual results for 03-04 to 06-07
    - ▶ Regional/hospital level
    - ▶ Overall results only (more detail in private reports, suppression of small #s & results with data quality issues)
    - ▶ Focus on 'all cases' results but also provided 'excluding palliative care'



# Objective: No Surprises

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- ▶ Presentations, letters, toolkit
- ▶ Distribution of data through validation process
  - ▶ Began fall 2005; concluded October 5<sup>th</sup>
- ▶ Local events & communications with partners
- ▶ Webcasts
- ▶ Connecting with patient safety experts & key stakeholders
- ▶ Communications roundtable
- ▶ Advance notification of press release and press conference



## Beyond November 29<sup>th</sup> ...

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“Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning”

- Sir Winston Churchill, 1942



# Next Steps

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- ▶ **Continue with outreach**
  - ▶ Focus on interpreting and using HSMR
  - ▶ Collaborating with partners on the use of HSMR
- ▶ **Tracking trends in HSMR for facilities/regions**
  - ▶ e-HSMR
  - ▶ Facilitating local analysis/use
  - ▶ Encouraging improvements in data quality
  - ▶ Continued development of methods (e.g. related to end of life), data quality and usefulness of reports
- ▶ **Evaluation of rollout plan**
- ▶ **Second public release in 2008**

# HSMR Results for Toronto LHIN

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	HSMR*		HSMR* 95% CI
2004–2005	96	§	93–100
2005–2006	97		94–100
2006–2007	97		94–100
2007–2008	97		94–101

**Hospitals included in the regional result:**

- 1 [Mount Sinai Hospital](#)
- 2 [St. Joseph's Health Centre Toronto](#)
- 3 [St. Michael's Hospital](#)
- 4 [Sunnybrook Health Sciences Centre](#)
- 5 [Toronto East General Hospital](#)
- 6 [University Health Network](#)

**Notes:**

- \* Previously referred to as HSMR All Cases.
- 95% CI 95 percent confidence interval.
- § The result is statistically different from the 2004–2005 baseline HSMR of 100 ( $p < 0.05$ ).

# How is HSMR Being Used?

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- ▶ A journey for each institution/region
- ▶ Identifying opportunities
  - ▶ Clinical/improvement teams doing mortality reviews & developing focused strategies (e.g. 2X2 matrix)
  - ▶ Data analysis (e.g. patients transferred in, program-specific results)
- ▶ Aligning with strategy
  - ▶ Board/senior team “big dot” indicator
  - ▶ Setting goals and tracking results
  - ▶ Accountability agreements



# Indicator Investigator: An Example

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Possible explanation	How would you know if this was true?	Result
My patients are older.	<ul style="list-style-type: none"><li>-Compare age distribution to overall</li><li>-Compare age-specific HSMR (eg +/- age 65)</li></ul>	
A lot of my patients are transferred in from elsewhere.	<ul style="list-style-type: none"><li>-Compare HSMR for local vs. transferred patients</li></ul>	
My patients are poorer.	<ul style="list-style-type: none"><li>-Does SES explain HSMR overall?</li><li>-Compare income area-specific HSMR</li></ul>	
etc ...		

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# Canadian Examples

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- ▶ “We aim to save 200 more lives in the next 18 months”
- ▶ “We will use HSMR to track the overall results of our patient safety program and to trigger investigation and action”
- ▶ “Tracking HSMR is part of our accountability agreements with government”
- ▶ ... But implementation of broad, system-wide initiatives takes time
  - ▶ ? How long to see changing trends



# The Road Ahead ...

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