

Moving Your Dot – Measuring Mortality in Hospitals

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Background

- Measuring health care performance and quality
 - accountability
 - more reliable and accessible with databases, computers
- Death is an effective measure
 - recorded by law
 - accuracy is high
 - easy outcome to understand
 - statistical methods have become robust
- Mortality is a “Big Dot” measure of quality
 - As much as 98,000 U.S.(2003) 16,000 (2004)Canadian preventable deaths
 - Hence reduce deaths means increased quality of care

Background

- International trends
 - 1999 Jarman in the UK
 - 2000 “Move your Dot” campaign in the US
 - 2004 CIHI Hospital Standardised Mortality Ratio

What is a Standardized Rate

- Crude mortality rate
 - Without regard to population characteristics
- Attribute specific
 - Calculated separately within categories of population variables (e.g. age)
- Adjusted or Standardized
 - Summary measure – weighted average across categories of population variables (e.g. age)
 - Direct and indirect standardization methods

Is the Mortality Rate the Same??

SEVERITY OF TRAUMA	<u>SURROUNDING HOSPITALS</u>		<u>REGIONAL TRAUMA CENTRE</u>	
	NO. OF CASES	NO. OF DEATHS	NO. OF CASES	NO. OF DEATHS
MILD	3734	37	687	3
MODERATE	1887	94	1238	37
SEVERE	1645	327	1429	172
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	7266	458	3354	212
Case Fatality Rate	458/7266 = 6.3%		212/3354 = 6.3%	

Is the Mortality Rate the Same??

- Standardize by calculating specific rates for each hospital and apply to total population of two sites.

Severity of Trauma	Standard Population	Surrounding Hospitals		Regional Centre	
		Mortality Rate	No. of Deaths	Mortality Rate	No. of Deaths
Mild	4,421	0.0099	44	0.0044	19
Moderate	3,125	0.0498	156	0.0299	93
Severe	3,074	0.1988	611	0.1204	370
	10,620		811		482
Mortality Rate Per 100 Patients		811/ 10,620	7.64	482/10,620	4.54

Hospital Standardized Mortality Rate

- HSMR = Observed Deaths/Expected Deaths
- Observed Deaths from Hospital Data
 - Source data systems
- Expected Deaths
 - using logistic regression models
 - standardized for
 - age,
 - sex,
 - type of admission, transfer
 - length of stay, diagnosis
 - Co-morbid diagnoses (Charlson Index)

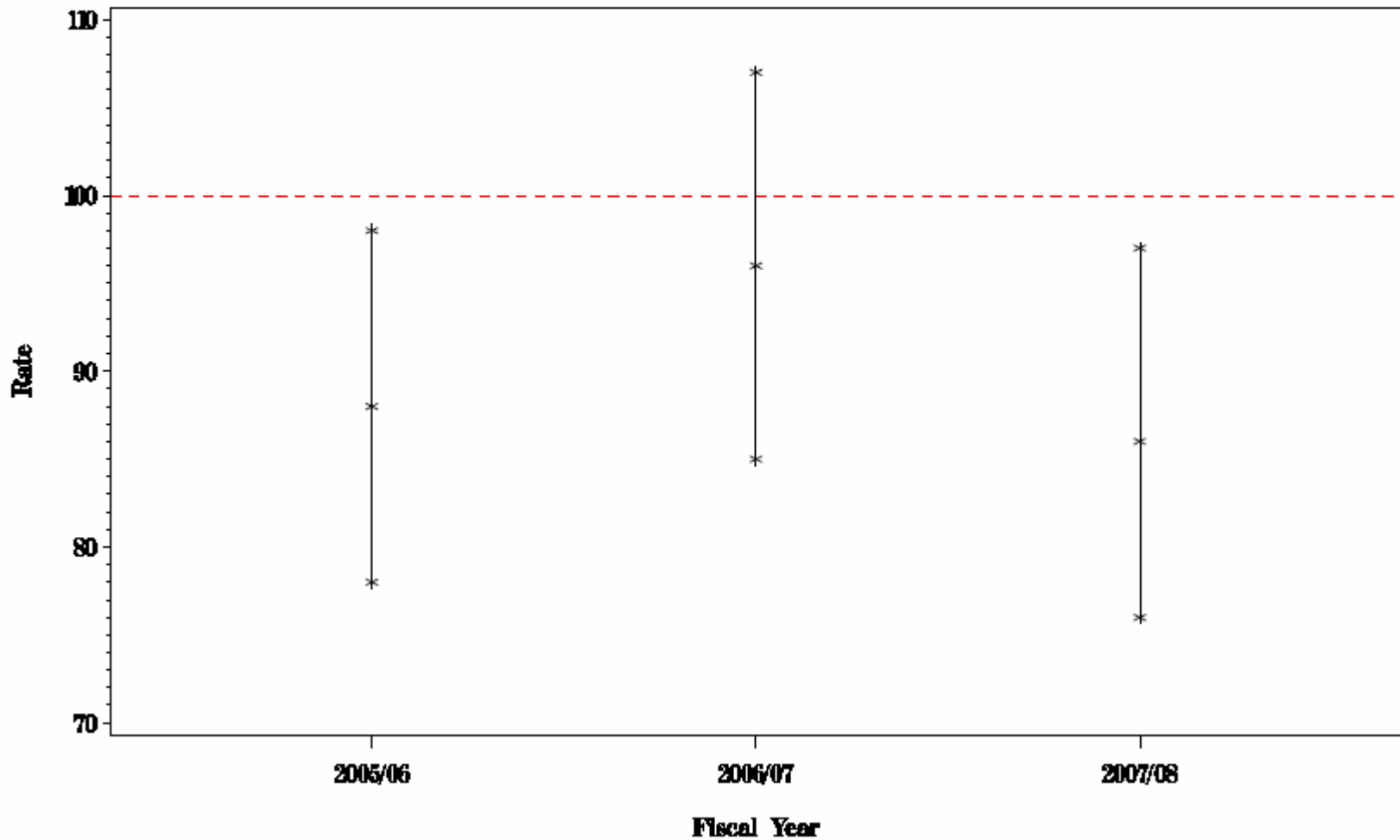
Where is the SAS?

- CIHI began publishing HSMR publically in 2007
 - front page news in Toronto Star
- Very difficult to calculate. What do we do?
 - wait for release and deal with public
 - try and calculate it ourselves
- Worked with CIHI to calculate our HSMR using SAS
 - CIHI gave us standard code and source data
 - Worked with CIHI staff to ensure reliability and accuracy
 - Produce our own measure
- We are ahead of the game!
 - strategic advantage
 - allows detailed analyses

Hospital Standardized Mortality Rate

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All Cases



Hospital Standardized Mortality Rate

Joseph Bront Memorial Hospital Fiscal Years 2003 to 2007

