

Moving Your Dot – Measuring Mortality in Hospitals

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What is the HSMR?

- Hospital Standardized Mortality Rate
- Ratio of observed deaths given our expected deaths expressed as a decimal or a percentage
- Rate is comparison with peer group – Canada
 - Comparison is made fair and relevant by standardization of calculation of expected deaths
- Value greater than 1 or 100% indicates that a facility has preventable deaths and a higher mortality rate than the national average
- ‘Big Dot’ measure of quality
 - Starting point for investigation

How is the HSMR Calculated?

- Source data comes from Canadian Institute of Healthcare Information (CIHI)
- Logistic regression used to calculate coefficients
- Encompasses only cases with diagnoses accounting for top 80% of deaths in Canada
- Standardized for
 - Age
 - Sex
 - Type of admission, transfer
 - Length of stay
 - Diagnosis
 - Co-morbid diagnoses
 - Charlson Index

How is SAS Helpful?

- Very large quantities of data used in calculation
- Arrays essential, as single visit can have up to 25 diagnoses and co-morbidities, and up to 20 interventions coded in chart
- Confidence limits for HSMR easily calculated using SAS
- Graphs and tables depicting results are always requested, and once coded, easy to update with new data

```

data worklib2.HSMR_data_Q3_2008;
set worklib2.HSMR_data_Q3_2008;
    /* Re-code MRDx for special cases, edited April 4/07 */
    array diagcde[25] diagcde1-diaqcde25; /* transposed ICD-10-CA diagnosis codes 1-25 */
    array diagtyp[25] diagtyp1-diaqtyp25; /* transposed diagnosis types 1-25 */
    array proccde[20] proccde1-proccde20; /* transposed intervention codes 1-20 */
    array atribstat[20] atribstat1-atribstat20; /* transposed intervention status attribute 1-20 */

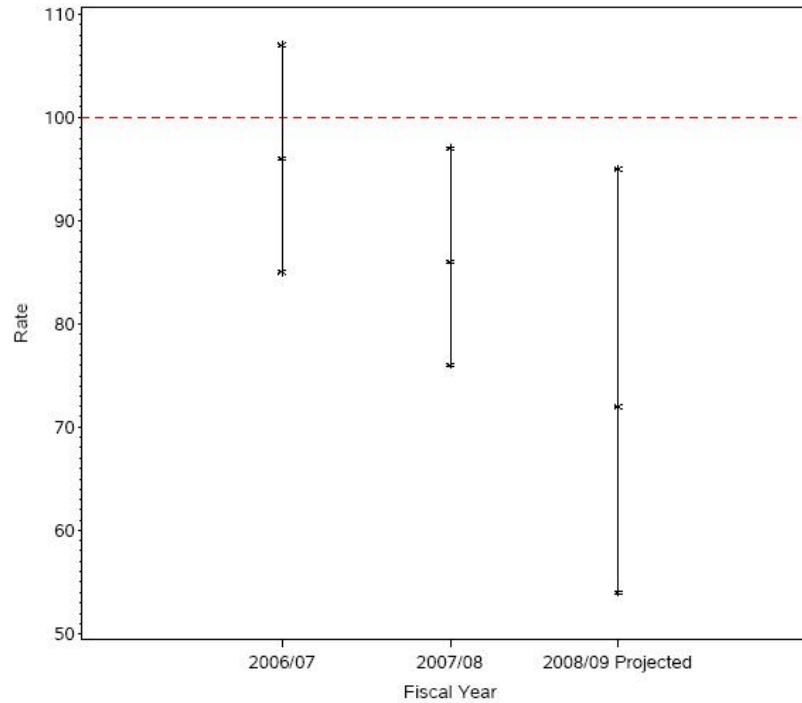
    /* for AMI patients */
    if diagcde1 in: ("I250", "I251", "I258", "I259") then CAD_MRDx=1;
        do i =2 to 25;
            if diagtyp[i] in: ('1', 'W', 'X', 'Y') and diagcde[i] in: ("I21")
                then AMI_type1_21=1;
            if diagtyp[i] in: ('1', 'W', 'X', 'Y') and diagcde[i] in: ("I22")
                then AMI_type1_22=1;
        end;

    do i=1 to 20;
        if proccde[i] in: ("1IJ76", "1IJ50", "1IJ57GQ") AND atribstat[i] not in ('A')
            then revasc_procedure = 1;
    end;

```

Hospital Standardized Mortality Rate

Joseph Brant Memorial Hospital
All Cases



Measurement	2006/07	2007/08	2008/09
LCL	85	76	54
HSMR	96	86	72
UCL	107	97	95

Questions?