RACMA

THE ROYAL AUSTRALASIAN COLLEGE OF MEDICAL ADMINISTRATORS

HSMR QUARTERLY REPORT

2016 (November) – Day 2, Q1 (Compulsory)

Medical Leader	
Medical Expert	✓
Communicator	
Advocate	✓
Scholar	
Professional	•
Collaborator	
Manager	✓

Your state / national health department has asked you to undertake a locum medical administrator role at ABC Hospital (a major provincial city hospital) for 3 months. During your second week in the role you receive the quarterly report from the Health Roundtable – the agency that does your health service's benchmarking. You thumb through the Executive and KPI reports and note the latest mortality statistical data for ABC Hospital. Five pages of the report hold particular interest. They are produced on the attached pages.

Please review the statistical reports and answer the following questions.

Questions:

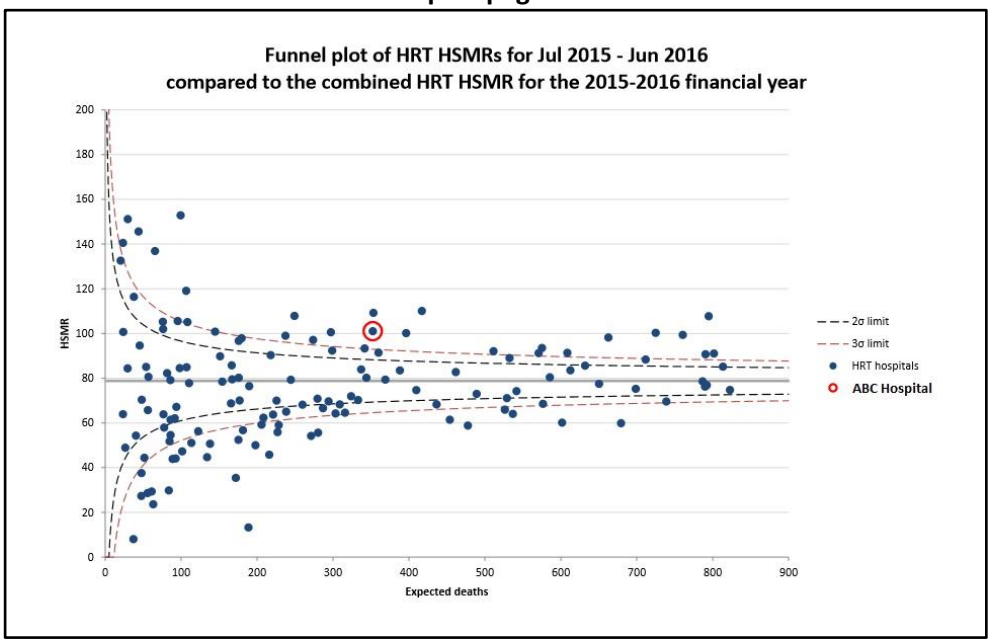
1. Please describe your understanding of Hospital Standardised Mortality Rate (HSMR) and why it is measured?

2. What do the attached reports say about the HSMR in your hospital?

3. If you believe there may be an issue with the report findings, what could you do to check the validity of the results/ data?

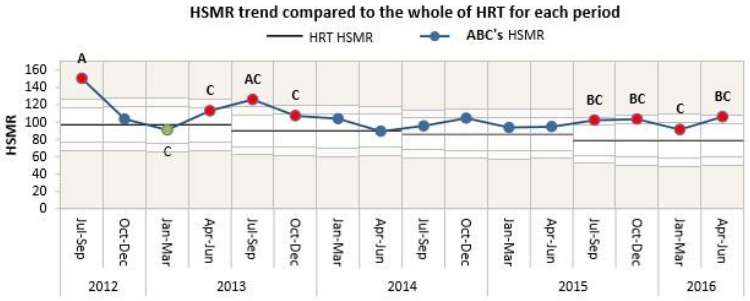
4. After checking the validity of the data, you confirm that the information is correct, what might you suggest should occur during the remainder of your locum?

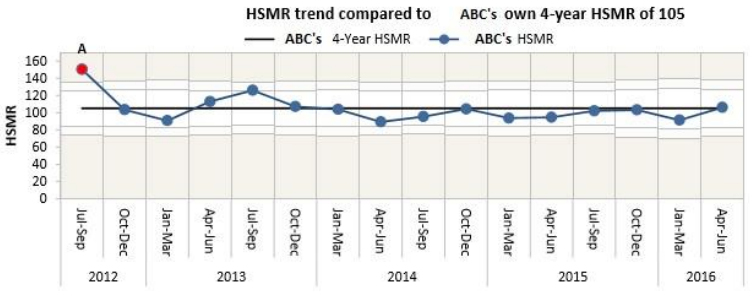
Report page 1.



Report page 2.

HSMR trend





Shaded bands correspond to 2 and 3 standard deviations from the target. The 1 σ line is not shown on the chart but is half way between the target line and the 2 σ line.

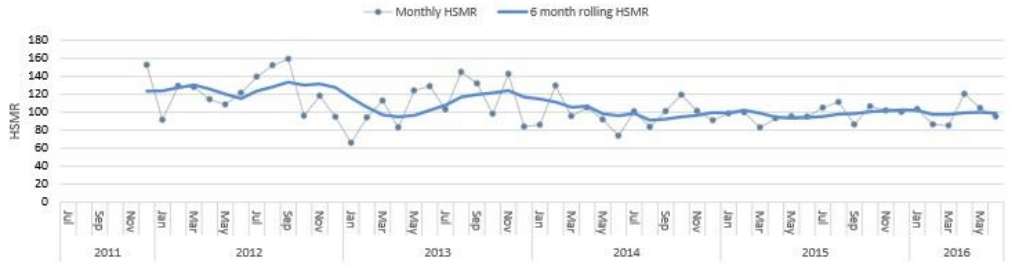
The bands will vary in width from period to period as a function of the expected number of deaths. Larger numbers of expected deaths will result in narrower bands.

Data points are coloured and labelled when they satisfy any of the following rules:
A - Any point beyond 3σ
B - 2 out of 3 in a row beyond 2σ
C - 4 out of 5 in a row beyond 1σ

Report page 3.

Mortality trends in detail

HSMR



Crude rates

Observed mortality rate includes only those episodes counted in the HSMR. Total mortality rate includes all episodes other than dialysis.

Report page 4.

HSMR breakdown by ICD10 chapter of principal diagnosis

Jul 2015 - Jun 2016

The graphic indicates the degree to which the ratio of your SMR to the target SMR is different to 1. The estimate of standard deviation takes into account possible variation in the target SMR as well as your own SMR.

Chapter	Episodes	Deaths	Expected deaths	SMR	HRT SMR	Compared to HRT SMR	Quarterly trend
1 Infectious and Parasitic Diseases	636	27	17.9	1.51	0.78		
2 Neoplasms	3,200	32	34.4	0.93	0.72		
3 Blood Diseases	968	4	4.6	0.87	0.67		
4 Endocrine, Nutritional Metabolic	673	6	6.2	0.97	0.76		
5 Mental & Behavioural Disorders	2,143	10	8.5	1.17	0.48		
6 Diseases of Nervous System	555	6	3.7	1.61	0.92		
7 Diseases of Eye and Adnexa	761	0	0.1	0.00	0.23	n/a	
8 Diseases of Ear and Mastoid	139	0	0.1	0.00	0.35	n/a	
9 Diseases of Circulatory System	2,989	63	73.3	0.86	0.81		
10 Diseases of Respiratory System	2,330	110	105.0	1.05	0.81		
11 Diseases of Digestive System	2,887	30	35.1	0.85	0.84		
12 Skin & Subcutaneous	730	11	2.3	4.88	1.00		
13 Musculoskeletal	1,496	5	5.0	1.00	0.63		
14 Genitourinary	2,529	18	13.6	1.32	0.72		
15 Pregnancy, Childbirth	2,095	0	0.0	0.00	1.17	n/a	
16 Perinatal	n/a	n/a	n/a	n/a	0.55	n/a	
17 Congenital	40	0	0.0	0.00	0.96	n/a	
18 Symptoms, Signs	3,378	16	13.2	1.21	0.67		
19 Injury Poisoning, External	3,105	18	28.6	0.63	0.84		
21 Factors Health Status (Z-Codes)	1,815	0	0.8	0.00	0.57	n/a	

Comparisons may not be available where there are insufficient episodes in the target group or your own episodes are a large portion of those episodes.
Note that the graphic is plotted on a log scale.

Report page 5.

Mortality of emergency patients admitted on a weekend

Jul 2015 - Jun 2016

Ratio of SMRs for emergency patients admitted on a weekend compared to weekday

Since the ratio of SMRs is subject to variation in both the weekday and weekend SMRs, there may be insufficient data in the current period to detect any difference. We have also provided the 4-year ratio for your hospital which is based on much more data. Note that a lack of significance (point within 2 sd) does not imply that there is no effect, it may simply be that there is insufficient data or the effect is small.

	Weekday				Weekend				
ABC's Ratio	Episodes	Expected deaths	Deaths	SMR	Episodes	Expected deaths	Deaths	SMR	SMR ratio
Current period (Jul 2015 - Jun 2016)	12,126	233	243	1.04	4,166	74	87	1.17	**1.12**
4-year period (Jul 2012 - Jun 2016)	48,092	1,005	1,060	1.06	16,673	342	397	1.16	**1.10**

The graphic compares your ratio (the diamond) to a ratio of 1 (the black line).

For comparison, in the 2015-2016 financial year the ratio for the whole of HRT was 1.08.

Quarterly trend

CENSOR NOTES

This is a question that seeks to understand the candidate's knowledge about inappropriate / unexpected mortality in a hospital and how it can be measured, investigated and managed. An understanding of why Hospital Standardised Mortality Rate measurement is essential and a lack of understanding should not result in a pass mark.

The five report elements show the following key points.

- **Report 1** shows on a funnel plot that ABC hospital has a HSMR that is outside the 3 standard deviation level and therefore warrants further consideration.
- **Report 2** shows that the higher than expected HSMR is not a 'one of' and has been present for some time.
- **Report 3** indicates that rolling six month actual and trends do fluctuate from reporting period to reporting period, but the overall improvement trend has been limited.
- **Report 4** shows the principal diagnoses where death rates are higher than expected and warrant early assessment.
- **Report 5** shows that there is a higher mortality rate for patients admitted on a weekend than on weekdays and that this higher rate has been present for the last four years.

Question 1:
To obtain a pass a candidate must be able to explain what HSMR is, and why it is measured. They should also know that there are different methods as to how it can be measured and those hospitals that have a HSMR greater than 3 standard deviations from the mean have an issue that should be investigated.

An acceptable definition of Hospital Standardised Mortality Ratio (or Rate) is the ratio of the observed to expected deaths, multiplied by 100, with expected deaths derived from statistical models that adjust for available case mix factors such as ICD10 Code for Principal diagnosis; Gender; Age; Admission type Emergency / planned; transfer status i.e. if a patient is transferred in from another acute hospital as opposed to a regular admissions; Charlson Comorbidity Index or other methods that account for the pre-existing patient disease. Candidates should be aware that there are several legitimate methods used in Australia and New Zealand. There should also be an understanding of whether patients receiving palliative care are included or excluded.

HSMR's are intended to be a screening tool that is an overall measure of deaths in a hospital, a number of which will be preventable. High ratios may thus suggest potential problems with quality of care. The figures can be broken down by diagnosis group, and any potential problems investigated by checking the data and analysing processes, often going as far as a case note review. This is considered the gold standard method for deciding whether an individual death was preventable but has inherent difficulties such as inter-rater reliability.

High performing candidates will know that issues which may affect the result include factors associated with: - the numerator, the denominator, coding, risk modelling and interpretation. They will also be able to explain that hospitals with high rates to the very left of the plot are probably small hospitals with very few deaths and that the rate might simply be due to random variation. High outlying points to the right of the plot are most likely due to actual issues and not random variation.

Question 2:

The attached reports are showing that ABC hospital has a higher than expected HSMR and that it has been present over the four year reporting period. There is continuing quarterly fluctuation but the trend is not improving significantly. The reports indicate that there are three ICD codes that appear to be higher than others (Infectious and parasitic, Respiratory system, and skin and subcutaneous) and these would be good areas to start looking at first.

Also of significance is the difference in death rates between admissions on a week day and those on a weekend – (a difference of approximately 12% higher for the current period and 10% over the last 4 year period). The candidate should be able to note that this is not a 'one of' occurrence and has been occurring for at least four years. Candidates should be aware that there is a growing collection of international evidence to suggest that mortality rates are higher for patients admitted on the weekend compared to those admitted during the week. There are several possible explanations for this difference but some studies suggest that at least part of the effect is due to variation in care between weekdays and the weekend.

Question 3:

The candidate should be able to describe a logical way in which they would investigate the data to check the validity of the results. An acceptable approach would involve the following elements:

i) Check that the data is correct – in particular, that there hasn't been coding errors. Ideally do a review of all deaths over the last year or at least a statistically significant sample of records. Better performing candidates will be aware that Health Roundtable Repots come with reports that allow drilling down to episode level.

ii) Do a desk audit of the data using an appropriate methodology (e.g. the DECS methodology)

iii) If one area seems to have a higher rate, obtain mortality data/reports for specific departments, units or clinicians.

High performing candidates will also know

iv) that sensitivity is required when doing mortality reviews and that relevant senior clinical staff should be involved / aware of the process.

Question 4:

The candidate should be able to suggest a reasonable course of action that could occur over the remainder of the locumship. Key elements would be: Develop an improvement project targeting identified specific problem areas; do it within existing quality improvement procedures of ABC hospital or develop a special procedure if required. Ensure it starts before the permanent medical administrator returns, and ensure an appropriate handover report.

Given the other elements required to answer this question, it is not intended that the candidate will give a lengthy answer to this question; however, the following are important issues to be considered.

i) The problem has been present for some time and it will require a concerted plan of action

ii) Situations like this often reflect systemic issues that need to be addressed as well as specific department or clinician issues,

High performing candidates will also know

iii) Diplomacy will be needed as the existing hospital executive either may not have appreciated the issue and/or not been able to address it effectively,

iv) An appropriate course of action should be outlined and a 'marketing plan' to enlighten senior staff to the issues and how they can be addressed.

The attached marking matrix indicates what would be required for a pass mark and the points that better performing candidates would mention.

Score:

		Knowledge Knows what to do	**Skills** Knows how to do	**Attitude/Behaviour** Shows s/he knows the consequences, leadership responsibility
Poor	1	Candidate cannot define what HSMR means and does not understand its significance.	Candidate cannot provide an explanation of the data in the reports and what it is showing.	Even if the candidate understands some of the basic data, does not appreciate this as significant issue for the hospital.
Limited	2	Only demonstrates a limited understanding of the data and the issues with or without prompting. No formal logic to the analysis.	Does not indicate with, or without, prompting that they have the skills to do more than the basic elements of what is required to investigate the situation / data.	Demonstrates some very basic understanding of the significance of the task that is being requested and how it will impact on the Hospital as a whole.
Borderline	2.5	In the answers to all 4 questions, provides most of the basic knowledge elements that are required but even with, or without, prompting still misses one or two issues that would impede a successful completion of the task.	Provides some reasonable evidence that they have, or know of, the skills to manage some of the more significant investigative tasks but misses one or two elements that would be needed to successfully plan a course of action in a real life situation.	Demonstrates with, or without, prompting more than a basic understanding of the significance of most issues but fails to understand one or two significant issues that will cause the task to be unsuccessful or create unnecessary problems for the Hospital.
Meets standard	3	Provides sufficient information that they understand the contents of the data, what it implies, and what follow up actions are required.	Provides sufficient information that they could gather the extra data and history that could reasonably be expected in 3 month locum period. Also demonstrates that they have the skills to put a plan of action into place.	Indicates that they understand the need to work with other hospital staff and the sensitivities that may be required if there have been inappropriate actions by senior staff. Appreciates that any initial proposed actions will have to be correctly developed and what some of the consequences could be for the hospital internally and externally (media, community, and political interest).
Good	4	In addition to providing the basic answers to all four questions, the candidate	As well as demonstrating they have the skills and/or understand the skills that are required to	Demonstrates they know of all the basic issues required for a pass but can elaborate in more detail. In particular, they explain that some

	demonstrates that there is a very clear logic to the analysis that can occur now and over the remainder of the locum. Understands that diplomacy will be needed in the explanation and handover to the permanent medical administrator on his/her return.	manage the core elements of this task, the candidate can demonstrate how they would work with other hospital executives and a clear understanding of what could reasonably occur during the locum period and what should be in place following the locum.	proposed actions will take time, possibly extra resources, and much diplomacy and marketing.
Outstanding 5	Candidate demonstrates an exceptional understanding of HSMR and the reasons why mortality may be higher for admissions on weekends than during weekdays. Can comment on the different ways HSMR is calculated and the limitations of each.	Demonstrates that they have, or understand, all of the skills that are required to effectively manage the complexities that this type of scenario presents. An exceptional balance of what can be realistically done during the locum and what needs to be done afterwards.	Demonstrates that they clearly understand and could manage all of the interrelated complexities that could arise in managing a scenario like this- especially how they would manage the interaction with existing executive staff and how they would engage departmental heads of problem areas.