Medical emergency team implementation: experiences from the Karolinska University Hospital

Åsa Bengtsson
RN, M.Sc., Research Nurse
Department of Anesthesiology and Intensive Care
Karolinska University Hospital, Solna, Sweden
asa.bengtsson@karolinska.se
Background

- The Karolinska University Hospital Solna is a teaching hospital in Stockholm (population of over 1 million)

- The hospital receives more than 74,000 acute admissions per year

- The hospital has more than 900 beds in total of which 40 are in four different intensive care units
Background

Working area for MET Karolinska University Hospital, Solna:

- All general wards excluding thoracic and pediatric units

- All together 45 wards (approximately 400 beds)
The Karolinska Experience

Development MET

• **Planning phase** 2002-2005
  – Critical care meeting in Stavanger 2002; METs were discussed
  – Our critical care department invited Dr Gillian Bishop - from Australia - to a staff meeting in 2002
  – A Swedish MET/RRT meeting was held in 2003
  – Representatives from the Karolinska ICU formed a group; planning the MET

• The Karolinska University Hospital **Prevalence study**

  Bell M et al, *Prevalence and sensitivity of MET-criteria in a Scandinavian University Hospital* Resuscitation 2006;70:66-73
The Karolinska Experience
- Prevalence Study

Aims of study:

• Make a preliminary estimation of the workload for a medical emergency team

• See if the patients fulfilling the study criteria (set of simplified MET-criteria) had an elevated mortality

• Test the sensitivity and specificity by altering the cut off levels of the calling criteria
The Karolinska Experience - Education

• Every single ward had at least two information/education sessions
  - Nursing staff
  - Doctors

• The education was focused on how the MET concept is supposed to function and a detailed lecture of the MET-criteria

• More than 75% of the relevant staff received education (mostly nurses)
## The Karolinska Experience - Education

### Calling criteria

<table>
<thead>
<tr>
<th>Acute changes in</th>
<th>Vital signs</th>
</tr>
</thead>
</table>
| **Breathing**    | Respiratory rate < 8/min  
                  | Respiratory rate > 30/min  
                  | Saturation < 90% with oxygen treatment |
| **Circulation**  | Systolic BP < 90mmHg  
                  | Heart rate < 40/min  
                  | Heart rate > 130/min |
| **Neurology**    | Sudden fall in level of consciousness  
                  | GCS fall > 2 |
| **Other**        | Any patient who does not fit the criteria above, 
                  | but whom you are seriously worried about (Intuition) |
Calling criteria - wards

- Intuition
- GCS
- BP <90
- HR >130
- HR <40
- SpO2 <90
- RR >30
- RR <8

8 Medical emergency team implementation: experiences from the Karolinska University Hospital
The Karolinska Experience - Implementation

March 2005

• Hospital-wide introduction, all 45 wards simultaneously

• 24/7 service

• Cardiac arrest team left unaffected
The Karolinska Experience - Implementation

Hrs 8-16: 43,4%
Hrs 16-24: 35,6%
Hrs 24-08: 18,7%
After hours: 63,9%

Timing of MET calls

- Hrs 8-16
- Hrs 16-24
- Hrs 24-08
- After hours
The Karolinska Experience - Implementation

Personnel involved in MET assignment:

- Intensivist
- ICU nurse
- Primary nurse at the ward
- Physician responsible at the ward
The Karolinska Experience - Implementation

MET responsible nurse in the wards:

- Responsible for overall coordination with the MET team
- Assist the MET organisation with follow-up data on MET calls
- Participation in the planning of education of new staff members in the ward
The Karolinska Experience - Implementation

Reporting of data

- MET call record form
- The ward as well as the MET team keeps a copy
- A member of the MET organisation enters data into a MET-database
The Karolinska Experience - Implementation

Follow up – general wards

• Meetings with MET responsible nurses, twice a year

• Follow up each wards’ MET calls, 1-2 times a year

• Continuous feedback regarding problems in individual MET calls

• Staff questionnaires
Challenges

Still get to some of the patients too late!

Possible explanations:

- The ward staff need more knowledge concerning early identification and basic treatment of deteriorating vital signs
- Insufficient level of monitoring of vital signs, especially during nighttime
- Still need permission from the parent medical unit doctor before calling MET
- Fear of criticism
Challenges

• Difficult to reach out to all wards with the information
• Difficult to get a MET responsible nurse on each ward
• Difficult to reach all doctors with the information
• Lack of an assigned ICU nurse just for MET
Recommendations

• Have clearly stated goals and guidelines

• Continuous education for ward staff

• Coordinate with the ward to ensure that they have the necessary resources to manage the MET procedure that has been decided

• Give your own ICU staff feedback