

CLINICAL SAFETY-RAISING THE BAR : RAPID RESPONSE TEAM

DR JAICOB VARGHESE
RAJAGIRI HOSPITAL
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Rapid Response Systems

Programs that are designed to improve the safety of hospitalized patients whose condition is deteriorating rapidly

Prospective Identification of high risk patients

Early notification of a team of responders – preselected & trained

Rapid intervention by the response team

Ongoing evaluation of the performance

Terms Used

Rapid Response Team

Nurse led team

Medical Emergency Team

Physician led team

Critical care Outreach

Table 1. Comparison between a Traditional Code Team and a Rapid-Response Team.*

Feature	Traditional Code Team	Rapid-Response Team
Typical criteria for calling the team	No recordable pulse, no recordable blood pressure, absence of respiratory effort, unresponsive	Low blood pressure, rapid heart rate, respiratory distress, altered consciousness
Typical conditions that the team assesses and treats	Cardiac arrest, respiratory arrest, airway obstruction	Sepsis, pulmonary edema, arrhythmias, respiratory failure
Typical team composition	Anesthesia fellow, ICU fellow, internal-medicine house staff, ICU nurse	ICU fellow, ICU nurse, respiratory therapist, internal-medicine house staff
Typical call rate (no./1000 admissions)	0.5–5	20–40
Typical in-hospital mortality (%)	70–90	0–20

* ICU denotes intensive care unit.

NEJM 2011; 365 : 139-146

“ Failure to Rescue”

Patients with sudden, critical abnormalities in vital signs

- Failure to react promptly
- Fail to escalate care



Serious Adverse
event

- SAE expose patient to increased risk of disability & death
- Multiple clinical conditions are associated with failure to rescue

Epidemiology of SAE

Events occur after failure to rescue

Iatrogenic also

Warning Signs

Failure to Monitor

Failure to Escalate

Failure to Monitor

Failure to Escalate

Table 2. Reasons for Failure to Rescue.

Monitoring technology is used only in the intensive care unit or step-down units.

Hospital-ward monitoring is only intermittent (vital-sign measurements).

Intervals between measurements can easily be 8 hours or longer.

Regular visits by a hospital-ward nurse vary in frequency and duration.

Visits by a unit doctor may occur only once a day.

When vital signs are measured, they are sometimes incomplete.

When vital signs are abnormal, there may be no specific criteria for activating a higher-level intervention.

Individual judgment is applied to a crucial decision.

Individual judgment varies in accuracy according to training, experience, professional attitude, working environment, hierarchical position, and previous responses to alerts.

If an alert is issued, the activation process goes through a long chain of command (e.g., nurse to charge nurse, charge nurse to intern, intern to resident, resident to fellow, fellow to attending physician).

Each step in the chain is associated with individual judgment and delays.

In surgical wards, doctors are sometimes physically unavailable because they are performing operations.

Modern hospitals provide care for patients with complex disorders and coexisting conditions, and unexpected clinical deterioration may occur while nurses and doctors are busy with other tasks.

Principles Underlying Rapid Response Systems

Deficiencies in identifying and responding to patient in crisis

→ Rationale for Rapid response system

JCI

“ A suitable method that enables health care staff members to directly request additional assistance from a specially trained individual(s) when the patient’s condition appears to be worsening.”

→ Rapid response Systems address this goal

Goals of Intervention

Identify Patients at risk

Communicate change in patient status

Provide effective & timely interventions

Avoid delays in ICU transfer

Components of Rapid Response Systems

1# Afferent Limb

Identify clinical deterioration in patients and trigger a response

Criteria for calling the RRT

Mechanism of activation

Personnel who trigger system activation

Subjective Criterion

“Staff member is worried about the patient”

Bypass traditional , unit based, hierarchical & stepwise less to more skilled approaches to care

Call RRT.....*6559 or Code Purple



Modified Early Warning Signs (MEWS)

PATIENT ASSESSMENT, OBSERVATION AND INFUSION MONITORING CHART

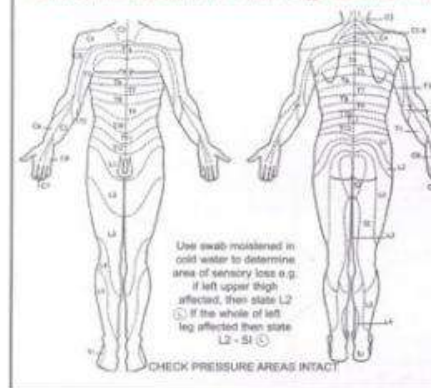
PATIENT I.D. LABEL

CONSULTANT :
WARD :

SPECIAL INSTRUCTIONS:

AREA OF NUMBNESS EPIDURALS ONLY

* Contact Pain team/Anaesthetist on call if unable to wriggle toes/feet knees off bed



PAIN SCORE (On Movement)



RESPIRATORY RATE

Whilst patient is at rest, count respiratory rate for 1 minute and record

NAUSEA & VOMITING SCORE

- 0 No Nausea
- 1 Nausea
- 2 Vomiting & Retching

MEWS (Modified Early Warning System)

	3	2	1	0	1	2	3
Respiratory Rate per minute		Less than 8		9-14	15-20	21-29	More than 30
Heart Rate per minute		Less than 40	40-50	51-100	101-110	111-129	More than 129
Systolic Blood Pressure	Less than 70	71-80	81-100	101-199		More than 200	
Conscious level (AVPU)	Unresponsive	Responds to Pain	Responds to Voice	Alert	New agitation Confusion		
Temperature (°C)		Less than 35.0	35.1-36	36.1-38	38.1-38.5	More than 38.6	
Hourly Urine For 2 hours	Less than 10mls / hr	Less than 30mls / hr	Less than 45mls / hr				

EARLY WARNING SCORING SYSTEM FOR DETECTING ADULT PATIENTS WHO HAVE OR ARE DEVELOPING CRITICAL ILLNESS
IS THE SCORE FOR YOUR PATIENT 1-2? PERFORM 2 HOURLY OBSERVATIONS AND INFORM NURSE IN CHARGE
IS THE SCORE FOR YOUR PATIENT 3? PERFORM 1-2 HOURLY OBSERVATIONS AND INFORM NURSE IN CHARGE
IF THE MEWS SCORE IS DETERIORATING : THE WARD S.H.O. OR DUTY DOCTOR MUST ATTEND
IS THE SCORE FOR YOUR PATIENT 4 OR MORE? PERFORM OBSERVATIONS AT LEAST 1/2 HOURLY, ENSURE MEDICAL
ADVICE IS SOUGHT AND CONTACT OUTREACH TEAM (see below)

2 # Efferent Limb

Response to the call

Personnel and equipment mobilization

Diagnose, Stabilize & Transfer

3 # Patient Safety & Quality Improvement

Feed back Loop

Collecting and analyzing data

Review the calls and outcomes

Improving response & Prevention

Develop strategies

Composition of the Responding Team

Tailored to institutional goals & resources

Same or different team for Arrest situations

Mostly nurse or respiratory therapist led

MET vs RRT

No comparative data

POTENTIAL DISADVANTAGES

Reliance on Rapid Response System may induce a decreased sense of responsibility on the part of the hospital ward team : “de-skill” the ward staff

Implementation of rapid response systems can be expensive and divert resources

Unclear about optimal activation criteria to prevent unnecessary evaluation and ICU transfer

Implementation of a rapid response system is, in essence, creating a system of rescue for patients who have been mis-triaged to lower levels of care.

George Priestley
Wendy Watson
Arash Rashidian
Caroline Mozley
Daphne Russell
Jonathan Wilson
Judith Cope
Dianne Hart
Diana Kay
Karen Cowley
Jayne Pateraki

Introducing Critical Care Outreach: a ward-randomised trial of phased introduction in a general hospital

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G. Priestley · W. Watson · A. Rashidian ·
C. Mozley (✉) · J. Wilson · J. Cope ·
D. Hart · D. Kay · K. Cowley · J. Pateraki

Abstract *Objective:* The purpose of the study was to investigate the effects of introducing a critical care outreach service on in-hospital mortality and length of stay in a general acute hospital. *Design:* A pragmatic ward-randomised trial design was used, with intervention introduced to all wards in sequence. No blinding was possible. *Setting:* Sixteen adult wards in an 800-bed general hospital in the north of England. *Patients and participants:* All admissions to the 16 surgical, medical and elderly care wards during 32-week study period

outcome measures were in-hospital mortality and length of stay. Outreach intervention reduced in-hospital mortality compared with control (two-level odds ratio: 0.52 (95% CI 0.32–0.85). A possible increased length of stay associated with outreach was not fully supported by confirmatory and sensitivity analyses.

Conclusions: The study suggests outreach reduces mortality in general hospital wards. It may also increase length of stay, but our findings on this are equivocal.

Introduction of the medical emergency team (MET) system: a cluster-randomised controlled trial



MERIT study investigators*

Summary

Background Patients with cardiac arrests or who die in general wards have often received delayed or inadequate care. We investigated whether the medical emergency team (MET) system could reduce the incidence of cardiac arrests, unplanned admissions to intensive care units (ICU), and deaths.

Methods We randomised 23 hospitals in Australia to continue functioning as usual (n=11) or to introduce a MET system (n=12). The primary outcome was the composite of cardiac arrest, unexpected death, or unplanned ICU admission during the 6-month study period after MET activation. Analysis was by intention to treat.

Findings Introduction of the MET increased the overall calling incidence for an emergency team (3.1 vs 8.7 per 1000 admissions, $p=0.0001$). The MET was called to 30% of patients who fulfilled the calling criteria and who were subsequently admitted to the ICU. During the study, we recorded similar incidence of the composite primary outcome in the control and MET hospitals (5.86 vs 5.31 per 1000 admissions, $p=0.640$), as well as of the individual secondary outcomes (cardiac arrests, 1.64 vs 1.31, $p=0.736$; unplanned ICU admissions, 4.68 vs 4.19, $p=0.599$; and unexpected deaths, 1.18 vs 1.06, $p=0.752$). A reduction in the rate of cardiac arrests ($p=0.003$) and unexpected deaths ($p=0.01$) was seen from baseline to the study period for both groups combined.

Interpretation The MET system greatly increases emergency team calling, but does not substantially affect the incidence of cardiac arrest, unplanned ICU admissions, or unexpected death.

Lancet 2005; 365: 2091-97

Correspondence to:
Prof Ken Hillman, University of
New South Wales, Division of
Critical Care, Liverpool Hospital,
Locked Bag 7103, Sydney 1871,
Australia
K.Hillman@unsw.edu.au

*Investigators listed at end of
report

Post hoc analysis
Linear decrease
in poor
outcomes as
MET team
responses
increased

Rajagiri Rapid Response Team (RRT)

IMPLEMENTED FROM 2016

Team Dynamics & Composition

4 member team from Medical ICU

Trained ICU nurses

Selected from Critical care nursing pool

Additional training in identifying & handling emergencies

BLS & ACLS trained & Instructors

Governed by Nursing & Dept of Critical care Medicine

Key features of RRT team

Always available to respond immediately

Always onsite and accessible

Possess critical care skills necessary to assess and respond

Roles & Responsibilities

CODE PURPLE

CODE BLUE/CARDIAC ARREST team

- Scheduled visits : Tracheostomy & ICU shifted out patients
- Transportation of Critically Ill patients (Except ER patients)
- Gathers information of patients in distress communicates to the intensivist and facilitates shifting to ICU
- Difficult ward procedures & sampling
- End of life care support

CAT (CARDIAC ARREST/CODE PURPLE Analysis Team)

Medical team (Doctors) from 3 specialties

Critical care Medicine, Anesthesiology, Emergency Medicine

Daily reporting by RRT in a what's up group each shift

Major issues will be sorted out within 24 hours

Debriefing sessions in detail with one of the medical team

Code blue sheet evaluation

Quarterly committee meeting

Quality/safety improvement plan implementation



Code Purple data (2021 in Rajagiri hospital)

169 Code Purple were activated in 2021

13 deteriorated to Code Blue

156 Code Blues could have been averted i.e., 92.3 % of Code Blues were averted

Out of 13 Code Blues 10 achieved ROSC i.e., CPR:ROSC was 76.9%

Recent Data...

MONTH	CODE PURPLE	ICU SHIFT	CODE BLUE	ROSC
November	16	8	5	4
December	19	10	10	10
January	23	8	14	9
February	31	20	7	5

Critical Care Outreach

In Hospital & Out of Hospital

Quality Improvement Programs

In Hospital training : BLS & ACLS

Mock Drills

Community training



SAFE I V CANNULATION ESCALATION MATRIX

ADULT PATIENT

PAEDIATRIC PATIENT

NEONATE PATIENT



NB:-I V CANNULATION ONLY EXPERTS

- Immunocompromised patients
- Patient with AV Fistula/Plan for AV Fistula and Post mastectomy
- Patient with generalized edema/Lower limb edema
- Prolonged Medications Administration and Long stay patients

NB:-AREAS SHOULD BE AVOIDED FOR I V CANNULATION

- ❖ Avoid joints as far as possible
- ❖ Areas of broken, bruised or erythematous skin
- ❖ Areas in which two veins join (avoid valves)

Prepared By:-

NB:-VEIN SELECTION

Three main Veins of the antecubital Fossa

- ✓ Cephalic
- ✓ Basilic
- ✓ Median Cubital
- ❖ **Dorsal hand veins in Paediatrics (Below wrist joint)**

Approved By:-



Rajagiri Academy for Advanced Life Support

A Rajagiri Hospital Initiative

3 clinical Departments along
with HR & Nursing

In house training program

RRT members in pivotal role

COMMUNITY TRAINING

Total Institutions Covered: > 50 Institutions

Beneficiaries

Total head count : > 3000 Nos. (External)

Hospital
Health Centers
Colleges
Corporate companies
Government Sector
Community



ROAD SAFETY
ADVOCACY
PROGRAM



हिन्दुस्तान पेट्रोलियम



MAR BASELIDS MEDICAL MISSION HOSPITAL



MCS HOSPITAL



KKR



Obstetric Rapid Response Team (ORRT)

Prompt response resulting in survival of patient with Amniotic Fluid Embolism

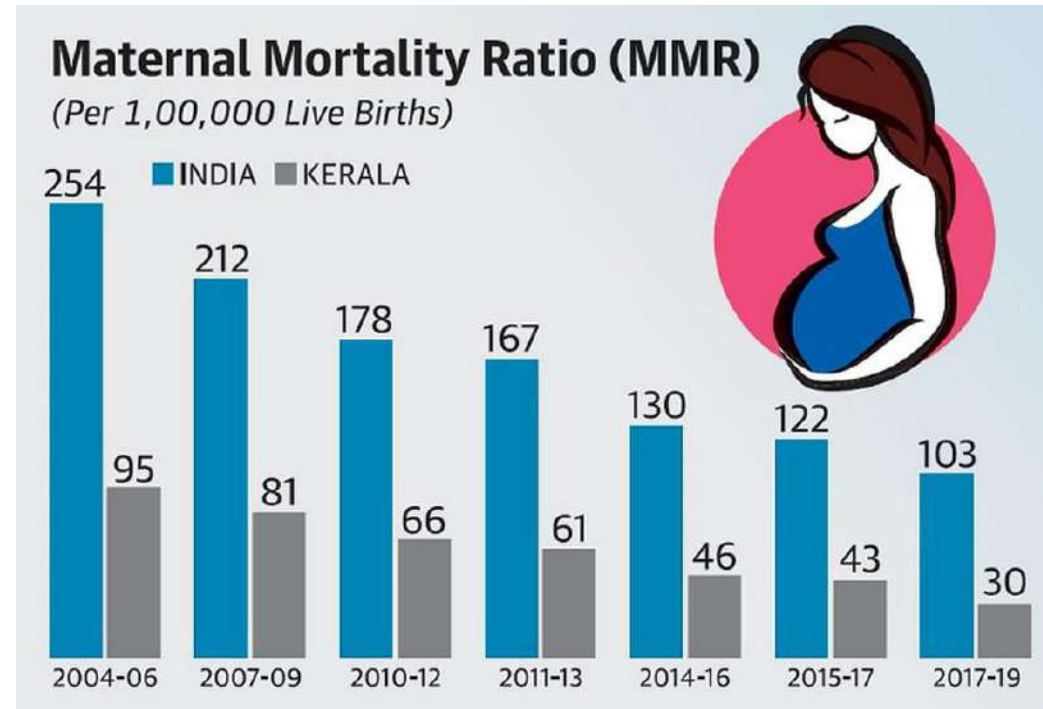
Establish ORRT in every hospital with obstetric service

Launched January 2019

Well defined curriculum with quick reference guide

18 training programs covering all districts

1256 trainees (Doctors & Nurses)



Rapid Response Systems

To save patient lives and eventually improve quality of hospital care and patient safety

Decreased the number of cardiopulmonary arrests that occur outside critical areas

Increase patient , family and staff satisfaction

Decrease hospital mortality rate

Critical care outreach

In Hospital & Community benefit

Rapid Response Systems

Foster a patient focused
& safety conscious
hospital environment



Thank
you.