Sepsis Kills: The challenges & solutions to reducing mortality

Kevin Rooney, Ahmed Labib & Brent Foreman
Who are we?
Declaration of Conflict of Interest

We have no financial conflict of interest in presenting this topic.
Agenda 10:30-11:35am / 1:00pm-2:05pm

- What is Sepsis and why is it important?
- Variations in Sepsis care
- Why Sepsis care is difficult?
- HMC Approach to Sepsis Care
- Nursing Role in Sepsis
- Business Case for Quality
- Questions and discussion
Learning Objectives

• Identify barriers to improving frontline implementation of key elements of the sepsis bundles
• Develop new processes that improve recognition and decrease delays in the care of patients with sepsis
• Identify the nurses role in early detection of Sepsis
• Realise a business case for improving sepsis care through return of investment
Sepsis 3.0 Definitions

- Life-threatening organ dysfunction caused by a dysregulated host response to infection.
- Organ dysfunction can be identified as an acute change in total SOFA score ≥2 points.
- qSOFA (Quick SOFA) Criteria
  - Resp Rate ≥22/min
  - Altered Mentation
  - Systolic blood pressure ≤100mmHg
- Septic Shock
  - Persisting hypotension requiring vasopressors to maintain MAP ≥65mmHg
  - Serum lactate level >2 mmol/L despite adequate volume resuscitation
A U.K. Perspective

Annual UK mortality (2003), thousands

© Ron Daniels 2010

Lung\(^1\) Colon\(^2\) Breast\(^3\) Sepsis\(^4\)

1,2,3 www.statistics.gov.uk, 4 Intensive Care National Audit Research Centre (2006)
Surgical Sepsis

Moore, Laura; Moore, Frederick; Todd, S; Jones, Stephen; Turner, Krista; Bass, Barbara


Copyright 2010 by the American Medical Association. All Rights Reserved. Applicable FARS/DFARS Restrictions Apply to Government Use. American Medical Association, 515 N. State St, Chicago, IL 60610. Published by American Medical Association.
Acute MI & Trauma

• 3% Mortality

• 5% Mortality
Sepsis deaths
Lives saved
The Surviving Sepsis Campaign: results of an international guideline-based performance improvement program targeting severe sepsis

15,022 Patients
165 Hospitals
Median of 14 Months

Mortality Decreased from 37 to 30.8 Percent
6.2% Absolute
16% Relative
Sepsis Management in Scotland

- Signs of sepsis < 2 days
- 2% of emergency admissions (~5000)
- 71% had a EWS
- 34% had severe sepsis
- 21% blood cultures
- 32% IV Antibiotics
- 70% IV fluids

Scottish Defect Rate was 18-74%

What are the barriers to good Sepsis care?
What are the solutions to these barriers?
Type of physiological abnormality at time of ED patient inclusion in audit (first signs of sepsis)

Diagnose the System
What is clinical deterioration?

The Slippery Slope

'Between the Flags' intervention on the 'Slippery Slope' of patient deterioration.
Intervention on the Slippery Slope

- Prevention
- Clinical Review
- Rapid Response
- Advance Life Support

Outcomes:
- Continued Treatment Plan
- Revised Treatment Plan
- Referral
- Clinical Pathway
- High care unit / facility
- End of Life care
- Usual Residence / Rehabilitation
HMC Case studies
HMC Sepsis Program: Challenges and Achievements

Dr Ahmed Labib FRCA FFICM and HMC Sepsis Team
Hamad General Hospital, Doha-Qatar
Objectives

• Understand current status of sepsis across HMC
• Understand HMC sepsis strategy
• Understand and learn from barriers/risks
• The future of HMC sepsis program
Thousands dying of sepsis because of poor NHS care: Delays in diagnosis means chances to save lives are being missed

The delays are causing almost 13,000 deaths a year, say experts
They also cost the health service money through longer stays
Health ombudsman said 'it is time for the NHS to act'
What about Qatar?

You can’t control what you can’t measure!
Baseline Sepsis Data

HMC Corporate Mortality Review Jan-to-Dec 2016

340 out of 1077 (31.6%) HMC deaths are sepsis-related.
HMC and Sepsis

- Multiple simultaneous initiatives across HMC
  - IHI/Best Care Always
  - CCITP
  - Facility
  - Department
  - Unit-based
HMC Healthcare Improvement Strategy

Foundations
- Leadership
- Organizational vision and strategy
- Operational & governance systems
- Performance measurement & benchmarking
- Information to support decision-makers
- Staff engagement

Culture Change
- Humanizing Healthcare Program
- Best Practice Models
- High-reliability Patient Care Teams
- Safety Systems
- Capacity and Capability Building

PRIORITY IMPROVEMENT STRATEGIES

FOUNDATION STRATEGIES
The Slippery Slope of Deterioration

Sepsis Pathway

Patient Condition

Prevention

Clinical Review

QEWS

Rapid Response

ALS

Death

Time

Deteriorating patient

Adapted from Between the Flags, Education Strategy & Implementation Guide 2012
The HMC Sepsis Program

• Objective:
The ultimate goal is to reduce sepsis death-to-case ratio from 30% in 2016 to less than 25% by end of 2018; by increasing the compliance to the S6 Bundle to 80% by end 2018

• Principles:
  – Standardized and timely identification, management, and escalation of sepsis care
  – Simple to use and easily integrated into daily clinical practice
  – Collaborative effort between clinicians
  – Optimized care transition and communication
HMC Sepsis Program

Governance

- Policy and Governance Structure
- Cerner
- QEWS
- ISBAR
- Local Care Protocols

Standard Tools

- Sepsis Care Pathway
- Order set
- Sepsis Kit

Systems Integration

- Program Awareness
- Sepsis Recognition & Response

Education

Evaluation

Key Performance Indicators

Adapted from Between the Flags, Education Strategy & Implementation Guide 2012
HMC Sepsis Program Implementation

– Stage 1: Foundation *(ongoing)*
  • Establish governance structures
  • Agree program tools and measures
  • Identify Program clinical leads and champions

– Stage 2: Progressive implementation *(2017)*
  • Awareness education for all staff
  • Commence implementation in all facilities
  • Performance monitoring and improvement

– Stage 3: Strive for excellence *(5 years)*
  • Consolidate program with continual cycles of education
  • Refine system for failures
  • Publish evaluation and contribute to improvement science
Where is the Problem?

- Organisation level
- Facility level
- Interdepartmental and Departmental Units
- Health care providers
- Patients
- The natural history of the illness!!
Challenges

Barriers & challenges

• Unclear leadership and governance

Solutions

• Joint sponsorship
  – CMO
  – CNO
  – CQO
  – Critical Care Center
• Clinician-led
• Promote collaboration
No one size fits all

Risks & Barriers

• Diverse patient groups

• Interdepartmental
  — Too many experts!

Solutions

• Separate work streams and development of Adult, Maternity, Pediatric, and Neonate pathways

• Engage all relevant stakeholders in the specific working groups to ensure every relevant clinical expertise is utilized
Too much of a good thing

**Risks & Barriers**

- Different facilities, different patient populations
- Various sepsis initiatives owned across HMC

**Solutions**

- Ensure each facility and patient population has a voice in corporate steering committee and work stream committees
- Brought all ideas together in one pathway; highlighting successful tactics and improving on others
### Challenges...

#### Risks
- Poor engagement from leaders and clinical staff
- Lack of standardization and guidelines on identification, management, and escalation of sepsis care

#### Solutions
- Rigorous awareness campaigns and stakeholder engagement
- Created corporate policy and clinical practice guidelines (Adult, Maternity, Pediatrics, Neonates)
Poor compliance

Challenges

• System in general is not allowing compliance to sepsis bundle

• Too many outdated sepsis order sets in EMR that are hardly utilized

Solutions

• Bring antibiotics at unit level

• Pre-prepare diagnostic kits

• Standardize care pathway

• Unify order set and make easier to use

• Collaborative effort between program team, CIS, NI and HICT
Challenges

• Introduction of new program/system

• Standardization of usual care practices

Solutions

• Extensive stakeholder engagement and involvement

• Alignment of sepsis care pathway with other existing systems
  – QEWS
  – ISBAR
  – Antibiotic Stewardship
  – Infection Control
Education challenges

Challenges

• Too many staff to train!
  – Physicians
  – Nurses
  – Allied Health Professionals
  – Dispersed in various locations/facilities
  – Different work schedules

Solutions

• Facilitate collaboration between Medical Education, MSO, NMER, HITC, CIS, and NI to develop a comprehensive education program to be delivered in multiple formats and repeated sessions to cover as much as staff in the shortest possible time
Antibiotic preparation

Challenges

• Lack of nursing competency and protection to reconstitute antibiotics at bedside

Solutions

• Corporate reconstitution policies and JCI standards reviewed and nurses empowered to reconstitute first dose of antibiotics at bedside
• NMER to ensure all nurses have competency required
Data collection

Challenges
• Manual vs Electronic Data Collection

Solutions
• Extensive review and collaboration with HIM and Informatics teams on a unified data extraction and reporting mechanism
• Corporate dashboard developed for program reporting and monitoring
Next steps

• Progressive implementation across HMC
• A test run
• Other pathways
• Pre-hospital and PHCC
• Private centres
• Sustainability
• The deteriorating patient pathway
Qatar National Sepsis Program

- Public engagement media, internet...etc
- Public health improvement vaccination programs
- WSD 2017 September 16th
Thank you.

I’m very grateful to HMC Sepsis Delivery Team and Sponsors without whom no progress could have been achieved!!
HMC Sepsis Program: Nursing Role and Responsibilities

Mr. Brent Foreman RN, MAM-H
Assistant Executive Director – Practice and Policy
Corporate Nursing - Hamad General Hospital, Doha-Qatar
At the conclusion of this presentation, you will be able to:

- Recognize the need for robust data collection, analysis and benchmarking
- Identify the 6 root causes of failures in healthcare systems
- Identify elements of high reliable patient care teams
- Describe the nursing interventions required to prevent and treat sepsis
- Describe the six critical elements contained within the sepsis 6 bundle
HMC Sepsis Program: Nursing Role and Responsibilities

Session Contents

1. Infection Control: How do we measure up?
2. Delivering High Reliability Care: Leadership & Governance
3. Delivering High Reliability Care: Care Planning and Delivery
4. Next Steps
HMC Sepsis Program: Nursing Role and Responsibilities
Session Contents

1. Infection Control: How do we measure up?

2. Delivering High Reliability Care: Leadership & Governance

3. Delivering High Reliability Care: Care Planning and Delivery

4. Next Steps
HMC Sepsis Program: Nursing Role and Responsibilities
Infection Control – How Do We Measure Up?

HMC Corporate Mortality Review Jan-to-Dec 2016

340 out of 1077 (31.6%) HMC deaths are sepsis-related

Average Death-to-Case Ratio 2016 = 31.1
Death-to-Care Ratio 2016 = 29.5*
Range: 15.9 - 49.3
*per 100 cases

Average Proportionate Mortality Rate = 32.4
Proportionate Mortality = 31.6*
Range: 24.4 - 37.2
*per 100 total deaths
HMC Sepsis Program: Nursing Role and Responsibilities
Infection Control – How Do We Measure Up?

Hand Hygiene Rates:  > 98%
Bundle Compliance:  > 92%

Cost to Organization over three years:  $15,268,692 USD
HMC Sepsis Program: Nursing Role and Responsibilities
6 Universal Root Causes of Failure in Health Systems

- **Culture** – punitive, blaming system, which is tribal, and disengages crucial groups, particularly the clinicians

- **Clinical governance** – ambiguities about who is responsible for what in healthcare, and lack of clear lines of accountability for safety and quality

- **Communication** – poor exchange of essential information among healthcare providers and with patients and their families

- **Teamwork and coordination of care** – poor multi-disciplinary collaboration, care planning and delivery in a fragmented system of care

- **Capacity and capability** – mal-distribution of human resource and skills, both geographically, and over time (daily, weekly and seasonally)

- **Appropriateness of care** – failure to deliver an appropriate level of service to patients when it is needed or failure to escalate care to a service that can meet patients’ needs.

**Source:** The Clinical Excellence Commission - advisory body on patient safety and quality in the New South Wales health system, Australia.
HMC Sepsis Program: Nursing Role and Responsibilities

Session Contents

1. Infection Control: How do we measure up?
2. Delivering High Reliability Care: Leadership & Governance
3. Delivering High Reliability Care: Care Planning and Delivery
4. Next Steps
HMC Sepsis Program: Nursing Role and Responsibilities
Delivering High Reliability Care

10 Essential Functions of High-Reliability Patient Care Teams

- **Leadership and Governance**
  - Without good leadership and clarity about who is responsible to whom for what, teams are less effective.

- **Care Planning, Coordination and Delivery**
  - An essential function of the team is to plan the individual care of each patient, beginning with setting clear objectives for care. Care then needs to be coordinated between the various team members and other providers of care.

- **Patient and Family Engagement**
  - Teams must focus specifically on managing patient experiences and establishing procedures for doing this. This is a function that goes beyond delivering good clinical care.

- **Standard Protocols and Procedures**
  - Standardisation of core ward or unit procedures ensures greater efficiency and effectiveness, although it is important that the right balance is struck to avoid overburdening units with regulation. Some standards will need to be imposed across organisations but others need to be determined by the team themselves, as appropriate to the nature of their clinical service.

- **Patient Safety and Quality Systems**
  - These systems ensure that performance is reviewed and lessons are learned and acted upon.

- **Education, Training and Supervision**
  - All members of the team need to be appropriately educated and trained for the roles they perform. Effective supervision within the team to ensure learning opportunities are taken and individuals practice within the scope of their competence is essential.

- **Workforce Management**
  - Effective workforce management means having the optimal balance of people with the right knowledge and skill in the right places at the right time, within the available resources. Succession planning within the team is also essential to its long term performance.

- **Information Management**
  - Good care depends on good decisions, which depends on having the right information at the right time as a foundation for those decisions.

- **Support Services and Equipment**
  - These are essential for the delivery of good care and systems in place to manage them are required to ensure that they support clinical teams effectively.

**Best Care Always**

*Based on a model developed by Fain Car and Whitby S, 2007*
HMC Sepsis Program: Nursing Role and Responsibilities
Leadership and Governance

HMC Sepsis Program: Nursing Role and Responsibilities
Session Contents

1. Infection Control: How do we measure up?
2. Delivering High Reliability Care: Leadership & Governance
3. Delivering High Reliability Care: Care Planning and Delivery
4. Next Steps
HMC Sepsis Program: Nursing Role and Responsibilities

Session Contents

1. Infection Control: How do we measure up?
2. Delivering High Reliability Care: Leadership & Governance
3. Delivering High Reliability Care: Care Planning and Delivery
4. Next Steps
HMC Sepsis Program: Nursing Role and Responsibilities

Next Steps

- Support nursing to work to the full scope of their practice.
- Agree measures to be included on the nursing and midwifery dashboard.
- Through established governance, ensure unit level responsibility and accountability for improvements.
- Support full interprofessional collaboration, recognizing the role each of us plays in patient safety and care.
- Support the implementation, integration and optimization of the sepsis bundle.
Thank-you

Mr. Brent Foreman RN, MAM-H
Assistant Executive Director – Practice and Policy
Corporate Nursing - Hamad General Hospital, Doha-Qatar

@brent_foreman  bforeman@hamad.qa
Experience of Care  

Health of a Population  

Per Capita Cost  

Triple Aim
Business case for quality

Scotland

ALOS for patients with ICD-10 codes A40 & A41 with stay over 2 days

Median - 23.5
2nd Median - 21.5

% 30 day mortality of ICD-10 A40/ A41

Mean 1: 24.8%
Mean 2: 19.5%

24.8% to 19.5% is a 21% reduction post collaborative launch
Save Money

• Every year
  – Treat more patients
  – More complex disease
  – Ever decreasing budget / efficiency savings

• Reduce waste providing time:
  – To listen to our patients
  – To examine our patients
  – To think, interpret and explain to our patients
  – To comfort our patients
In Summary

• **Sepsis is a Medical Emergency**

• Awareness, Screening, Recognition and Prompt Treatment is the Key to Reliable Rescue
Presenter Contact Information

Dr. Ahmed Labib  
@  
AShehatta@hamad.qa

Mr. Brent Foreman  
@brent_foreman  
bforeman@hamad.qa

Prof. Kevin Rooney  
@kevindrooney  
Kevin.Rooney@uws.ac.uk