Improving care in Sepsis
Session outline

• National context
  – SPSP programme
    • Sepsis and Deteriorating patient

• A local case study
  – How QI helped
  – Change ideas we used

• Our learning and achievements
  – Local and National
SPSP is a network

120 SPSP Fellows
150 Improvement Advisors
15 Programme Managers
1,000 + at Learning Sessions
Breakthrough Series Collaborative Model

Select Topic
Recruit Faculty

Develop Framework and Changes

Enroll Participants

Prework

LS1: Learning Session
AP: Action Period
P-D-S-A: Plan-Do-Study-Act

Supports:
Email • Visits • Phone Conferences • Monthly Team Reports • Assessments

LS1: Learning Session
LS2: Learning Session
LS3: Learning Session
Summative Cogresses and Publications
Connecting, energising, supporting
Further improve the safety of people in Acute Adult Healthcare

Reduce Harm:
- 95% of people in acute adult health care free from harms in SPSI:
  - Cardiac Arrest
  - CAUTI
  - Pressure Ulcers
  - Falls

Reduce HSMR by 20%

By December 2015

Strategic Priority
- Ensure safety and quality are organisational priorities
- Provide leadership & oversight to ensure delivery of programme
- Actively develop your safety culture
- Essentials of Safety are comprehensively implemented

Point of Care
- Reliable person centred response to deteriorating patients
- Reliable recognition & care delivery for patients with Sepsis
- Reliable care delivery for patients with Heart Failure
- Prevent avoidable Pressure Ulcers
- Reduce SSI
- Reliable risk assessment to prevent VTE
- Prevent CAUTI
- Reduce Falls
- Safer Use of Medicines

Infrastructure
- Develop & utilise local capacity & capability in QI
- Effective measurement systems
- Programme Management
- Effective Communications
- Manage transitions of care
How - Sepsis Driver Diagram

**AIM**

To improve the recognition and timely management of Sepsis in acute hospitals

**Outcome:**
Reduction in mortality in pilot population from Sepsis

- 5% by December 2012
- 10% by December 2014

**PRIMARY DRIVERS**

- Reliable Recognition & Assessment
- Reliable Care Delivery
- Education & Awareness
- Culture of safety and Quality Improvement
- Patient & Family Centred Care

**SECONDARY DRIVERS**

- Reliable Sepsis screening (EWS + SIRS)
- Ensure reliable communication across clinical teams of at risk patients
- Ensure timely rescue of deteriorating patient by competent teams
- Ensure reliable delivery of Sepsis Six within 1 hour
- Source Control
- Ensure reliable escalation of septic patients to higher level of care
- Improve Antimicrobial stewardship - 2 day review
- Education on burden of illness & current performance
- Provide training to staff on clinical knowledge and improvement skills
- Executive Sponsorship
- Clinical Leadership
- Multidisciplinary team working
- Develop measurement frameworks to guide improvement
- Involve patients & families in treatment process and care planning
Measures - process

- Sepsis screening
- The sepsis six
  - 6 elements alone

<table>
<thead>
<tr>
<th>Extranet Identifier</th>
<th>Measure Name</th>
<th>Operational Definition</th>
<th>Data Collection Guidance</th>
</tr>
</thead>
</table>
| SSP1                | ACUTE & SPECIALTY Percent of patient with elevated EWS score who had documented SIRS score | **Numerator:** The total number of patients who had elevated EWS (>4 or local trigger) and had documented SIRS score  
**Denominator:** The total number of patients with elevated MEWS (>4 or local trigger)  
**Compliance:** (Numerator / Denominator) * 100 | **Inclusion Criteria:** Patients who score 4 or more on EWS (or locally defined trigger)  
**Data Collection:** Sample 5 patients weekly per ward/department or include all patients if numbers less than 10/month  
**Primary data source:** The patient’s medical notes, medication chart, EWS chart, and fluid balance chart.  
**Documents:** Use the Sepsis Six Data Collection and Data Aggregation form available on the Community website. |
GG&C core population of 1.2 M. Specialist services to more than half the country’s population
STAG Sepsis Management in Scotland

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

Scottish Defect Rate was 18-74%

doi:10.1136/emj-2012-201361
Hospitalisations

Crude rate (%) of deaths within 30 days of admission - Scotland

Scotland

2013 Q1 (Jan-Mar)
Number of patients: 2,353
Number of deaths: 712
Acute MI & Trauma

8% Mortality  3% Mortality
Patient Story
A New way of thinking

Here is Edward Bear, coming downstairs now,

bump,
bump,
bump,

on the back of his head, behind Christopher Robin. It is, as far as he knows, the only way of coming downstairs, but sometimes he feels that there really is another way, if only he could stop bumping for a moment and think of it.
The Typical Approach...

Conference Room

DESIGN → DESIGN → DESIGN → DESIGN → APPROVE

Real World

IMPLEMENT
The Quality Improvement Approach

Conference Room

Design

Real World

Test & Modify

Test & Modify

Test & Modify

Approve if necessary

Start to implement
First Steps

Learning session with nurses and doctors on the ground
They know the problems and the solutions
– Tests of change in the wards
Know your processes!
Know your processes
ROOT CAUSE ANALYSIS – ASKING 5 “WHYs”

BOTTLENECK AFTER 5 PM

PEOPLE
- Fatigue
- Access to wards
- Acute physician

PROCESS
- Less junior doctors
- GP visit time
- Senior review system

EQUIPMENT
- OOH/Radio issues
- Emergency attendance

COURSE
- Management
- Transport

Effect
- Posturing
- Ambulance arrival time
- Relatives
HOW - THE MODEL FOR IMPROVEMENT

1. Improve the care of patients with sepsis in acute hospitals
2. Mortality of patients with sepsis
3. Implement the sepsis 6

1st test of change – one patient in 1 ward,

The Improvement Guide, API
Basic concepts

Effect on balancing measures

Increasing knowledge and data

Monitor

Spread the gains

Sustained successful outcome (hopefully)

Yet more tests of change

Small test of change
Challenges

Opportunities

Complexity

Time

P = Plan  D = Do  
S = Study  A = Act

= Barrier  = Direct flow of impact
= Lingering background impact  = Feedback or feedforward

Different sizes of letters and cycles and bold letters = denotes differences in importance/impact
Spreading Ink blot Strategy

- Based on military tactics
  - Small area of “Good Practice” across site
  - As expand will join up
    - MAU ED Surgical
  - Hospital At Night
  - Medical wards
  - DOME
Rescue is a complex system requiring a sequence of events and interactions to occur reliably, linked by pivotal reliance on communication between and within teams.

If each step is 80% reliable, the reliability for the whole system is \( 0.8^4 = 41\% \).

Only the final step adds value for the patient.
AIM

RAH Improvement Group

PRIMARY DRIVERS

- Flow
- Capacity
- Quality
- Safety
- Staff

Improved Quality and safety of the RAH
Engagement

Identified Key People in each area tasked them to engage others

– Emergency Department
  • Consultant and junior Staff

– Surgical Unit
  • Consultant and registrar

– Acute Medical Unit
  • Lead, nursing staff with FY2/ Reg’s
Test’s of Change (PDSA’s)

- **Stickers “Pinch with Pride”** then alter
- **Staff engagement** “asking nurses and Juniors what the barriers are at our safety huddle”
- **Nurse “Champions”**:- Local ownership and responsibility at peer level
- **Nurse Education:**
  - Structured Education Program
- **Doctor education**:- Ward Rounds and safety Huddle
MAU
MAU Nursing Team
Staff Change Over

- Talks for new students before start of job
- Induction talks
- 1st “unit” education meeting about sepsis/deterioration
• Presentation to Junior Doctors / Nurses
  – Focusing on the personal stories focusing on “real people” and how they can make a difference.

  – Constant engagement on ward rounds with education of all staff

  – A few key slides post ward round
Flash teaching sessions

• Key “high impact” slides on the ward round

• Leadership: stop the ward round and give Abx/fluids myself
The Saltire of Death

Septic shock: the golden hour

Acknowledgement to Anand Kumar
Septic shock: the golden hour

- Shock threshold
- Antimicrobials
- Organ injury
- Inflammatory response
  - Toxic load
- Microbial load

Acknowledgement to Anand Kumar
Running average survival in septic shock based on antibiotic delay (n=2154)

For each hour’s delay in administering antibiotics in septic shock, mortality increases by 7.6%
Guerilla tactics

- Went round every ward and placed stickers on blood culture bottles
- Charge nurses do it now
A Medical Emergency
Stickers at triage
Sepsis 6 trolley
### Admissions Board

- **News Score**

<table>
<thead>
<tr>
<th>Name</th>
<th>Score</th>
<th>NEWS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>57</td>
<td>10:45</td>
<td>3</td>
</tr>
<tr>
<td>Patient 2</td>
<td>89</td>
<td>1125</td>
<td>0</td>
</tr>
<tr>
<td>Patient 3</td>
<td>72</td>
<td>75</td>
<td>8</td>
</tr>
<tr>
<td>Patient 4</td>
<td>78</td>
<td>63</td>
<td>7</td>
</tr>
<tr>
<td>Patient 5</td>
<td>73</td>
<td>55</td>
<td>7</td>
</tr>
<tr>
<td>Patient 6</td>
<td>72</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Patient 7</td>
<td>68</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Patient 8</td>
<td>9</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Patient 9</td>
<td>39</td>
<td>79</td>
<td>6</td>
</tr>
<tr>
<td>Patient 10</td>
<td>77</td>
<td>81</td>
<td>112</td>
</tr>
<tr>
<td>Patient 11</td>
<td>98</td>
<td>59</td>
<td>1</td>
</tr>
<tr>
<td>Patient 12</td>
<td>73</td>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>Patient 13</td>
<td>59</td>
<td>52</td>
<td></td>
</tr>
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</table>

**NEWS>4**

**NEWS<4**
### Examples

<table>
<thead>
<tr>
<th>NEWS all obs</th>
<th>0-0-0-10</th>
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<tbody>
<tr>
<td>BM</td>
<td>5-3-540</td>
</tr>
<tr>
<td>Pain</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Nausea</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Urine output</td>
<td>✓ X ✓</td>
</tr>
<tr>
<td>Obs due</td>
<td>4° 4° 4°</td>
</tr>
<tr>
<td>Initials</td>
<td>CC 90° 90° 90°</td>
</tr>
</tbody>
</table>
## Structured Handover

### On-call/receiving team structured A.M. handover

**Week commencing 17/05**

<table>
<thead>
<tr>
<th>Day team present</th>
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<tbody>
<tr>
<td>x</td>
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<table>
<thead>
<tr>
<th>Night team present</th>
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</thead>
<tbody>
<tr>
<td>x</td>
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<table>
<thead>
<tr>
<th>Unwell Patients handed over</th>
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<tbody>
<tr>
<td>x</td>
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<table>
<thead>
<tr>
<th>Receiving Issues</th>
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</table>

<table>
<thead>
<tr>
<th>Outstanding Jobs/Procedures</th>
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<tr>
<td>x</td>
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</table>

<table>
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<tr>
<th>Psychiatry Referrals</th>
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<tr>
<td>x</td>
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</table>

<table>
<thead>
<tr>
<th>HDU/CCU issues to beware of</th>
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</thead>
<tbody>
<tr>
<td>x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sepsis/VTE/DD-6/ Structured response</th>
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</thead>
<tbody>
<tr>
<td>x</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Allocation of tasks</th>
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</thead>
<tbody>
<tr>
<td>x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Death cert/Crem forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
</tr>
</tbody>
</table>
NEWS

- Low tech
- Updated real time on all wards
- Medical/ DME and surgical
Different Bundles
This is my Bundle. There are many like it, but this one is mine

Look for Signs of Systemic Inflammation in every patient with an elevated NEWS (>4) OR where infection is likely

Signs of Systemic Inflammation Criteria:
1. Respiratory rate >20
2. Temperature <36 or >38°C
3. Heart rate >90
4. White cell count <4 or >12
5. Acute altered mental state (AMT <8 or <A on AVPU)
6. Bedside glucose >7.7 mmol/L without diabetes

If SSI 2 or more AND infection suspected: THIS IS SEPSIS
Commence the Sepsis Six immediately and make a rapid assessment for the presence of ANY organ dysfunction.

Place Sepsis Six Sticker in notes
Sepsis Six: Aim to complete within 1 hour of arrival in hospital (OR for inpatients: within 1 hour since SSI criteria reached)
1. Oxygen to achieve Saturations >94%, ≤ 98% (Caution COPD)
2. IV fluids (≥500ml/hr OR 20ml/kg stat if organ dysfunction)
3. Blood Cultures
4. Intravenous antibiotics as per local guidelines
5. Measure Lactate and FBC
6. Catheterise if organ dysfunction apparent

Look for sign of organ dysfunction (laboratory tests should be requested as emergencies, and results must be available and acted upon within 1 hour)

Signs of organ dysfunction:
- Urine <0.5 ml/kg/hr for 2 hours
- Creatinine >177 mmol/L
- Bilirubin > 34 micromol/L
- INR >1.5 or aPTT >60s
- Platelets <100 x 10^9/L

ANY organ dysfunction:
THIS IS SEVERE SEPSIS
Phone Team Leader and inform Patient consider transfer to HDU

Reassess frequently in first hour. Consider other investigations and management. Look for septic shock:
- Lactate >4
- Hypotensive after after 20ml/kg fluid
(≥Systolic BP <90 or MAP < 70 or systolic >40 below baseline)

THIS IS SEPTIC SHOCK.
Immediately contact Senior if not already present.
If possible, move to high dependency area.
Immediately commence 6-hour resuscitation bundle

EXIT/MODIFICATION OF GUIDELINE:
Not all patients with a high SSI/SIRS score have sepsis. OR there may be additional problems requiring different management (Current CCF, OWA, MI, Co-bleed, etc.) OR patients may be palliated.
Sepsis 6 (give 3 take 3)

1. Administer high flow oxygen.
2. Take blood cultures
3. Give broad spectrum antibiotics
4. Give intravenous fluid challenges
5. Measure serum lactate and haemoglobin
6. Measure accurate hourly urine output

Aim to undertake this treatment in the 1st hour from when sepsis is spotted
Data Collection

• “KISS” method
  – Keep It Simple Stupid

• Easy to use Excel dash boards in each area
  – charts median time and percentage compliance
    • Shows progress in real time
Benefits

• Encouragement with feedback
  – “HOT FEEDBACK” to staff

• Good for foundation/CMT/ST training as part of Audit and Quality Improvement therefore fulfils many curriculum domains as per GMC

• write up for presentations and posters for publication.
SO WHAT

The results
Time to Antibiotic

SEPSIS SIX RAH

time from time zero to administration of IV antibiotics
Sepsis six all or nothing

SEPSIS SIX MAU
SSP9 - Percent of patients with Sepsis Six performed within 1 hour of time zero

Month

Original Diagnosis

Central Line

no data
Royal Alexandra Hospital / Vale of Leven

30 day % mortality in patients with ICD-10 codes A40 & A41

Baseline Median 32

Current Median 17
Results so far......

NHS Scotland

% of patients who are commenced on IV antibiotics within 1 hour of time zero for all reporting locations

% compliance

number of pts reviewed

NHS Scotland

% of patients with Sepsis Six performed within 1 hour of time zero for all reporting locations

% compliance

number of pts reviewed

sep-11  nov-11  jan-12  mar-12  maj-12  jul-12  sep-12  nov-12
jan-13  mar-13  maj-13  jul-13  sep-13  nov-13  jan-14  mar-14
maj-14  jul-14  sep-14  nov-14  jan-15  mar-15  maj-15  jul-15  sep-15
Sepsis deaths crude

Has there been significant variation in the outcomes for patients diagnosed with sepsis since 2011?

Select Hospital: Scotland
Select Indicator: Mortality

Crude rate (%) of deaths within 30 days of admission - Scotland
24.8% to 19.5% is a 21% reduction post collaborative launch
THERE ARE KNOWN KNOWNS
THERE ARE THINGS THAT WE KNOW
THAT IS TO SAY, THERE ARE
THINGS THAT WE NOW KNOW
BUT THERE ARE ALSO
UNKNOWN UNKNOWNS
THERE ARE THINGS
WE DO NOT KNOW
WE DON’T KNOW
AND EACH YEAR WE DISCOVER
A FEW MORE OF THOSE
UNKNOWN UNKNOWNS
UNKNOWN UNKNOWNS
Staph Aureus Bacteraemia Rate

Source: Health Protection Scotland
MRSA Bacteraemia Rate

Source: Health Protection Scotland
Quarterly rates of Clostridium difficile per 100,000 bed days (65+, 15-64 and 15+)

Source: Health Protection Scotland
qSOFA (Quick SOFA) Criteria

• Respiratory rate ≥22/min

• Altered mentation

• Systolic blood pressure ≤100mmHg
qSOFA = simplified NEWS score

<table>
<thead>
<tr>
<th>PHYSIOLOGICAL PARAMETERS</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tbody>
<tr>
<td>Respiration Rate</td>
<td>≤8</td>
<td>9-11</td>
<td>12-20</td>
<td>21-24</td>
<td>≥25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Saturations</td>
<td>≤91</td>
<td>92-93</td>
<td>94-95</td>
<td>≥96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Supplement Oxygen</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>≤35.0</td>
<td>35.1-36.0</td>
<td>36.1-38.0</td>
<td>38.1-39.0</td>
<td>≥39.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic BP</td>
<td>≤90</td>
<td>91-100</td>
<td>101-110</td>
<td>111-219</td>
<td>≥220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate</td>
<td>≤40</td>
<td>41-50</td>
<td>51-90</td>
<td>91-110</td>
<td>≥131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Consciousness</td>
<td></td>
<td></td>
<td>A</td>
<td></td>
<td>V, P, or U</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

qSOFA score:
- Altered mental status
- Respiratory rate ≥22
- Systolic blood pressure ≤ 100
Response from the Clinical Community

Statement Regarding the New International Consensus Definitions of Sepsis

Last week a revised set of definitions were released by the Sepsis International Consensus Definitions Task Force (SICDTF).

The Global Sepsis Alliance provides high level support, communication advice and guidance to professional bodies, healthcare organizations and individuals health professionals across the globe. We include representation from low, middle and high income countries and have a duty to represent the interests of all our members.

We welcome these evidence-based definitions, in particular:

- The SICDTF’s view that the Systemic Inflammatory Response Syndrome (SIRS) criteria are poorly specific to sepsis and should not be used in its formal diagnostic criteria.
- The adoption of a change in sepsis-related Organ Failure Assessment (SOFA) score as a better tool to formally identify sepsis-associated organ dysfunction than the organ dysfunction criteria proposed in 2001 by Levy et al.
- The simplification of language such that we will now only use the terminologies “Infection”, “SIRS” and “Sepsis Check”.

Mindful of the need for a “bedside” test for likely sepsis, the SICDTF propose the “optimal” adoption of a simplified set of criteria called “quickSOFA” or “qSOFA”. This tool, retrospectively derived as a predictor of death or a prolonged Intensive Care stay, requires that at least two of these possible parameters breach a threshold to initiate a search for organ dysfunction which, if present, leads to a formal diagnosis of sepsis.

While highly relevant from the perspective of clinical research within hospitals in high income countries, clinicians within and working with the Global Sepsis Alliance have expressed concern around issuing recommendation to immediately adopt the new international definitions across healthcare systems for a number of reasons:

1. There is an oversimplification of risk stratification and decision prompting. To define sepsis formally by a change of 3 points in SOFA scores, or as a sepsis surrogate, 1 component of quickSOFA to define sepsis is likely to select a more severely ill population. Patients who are, for example, hypotensive (less profoundly so) but have a respiratory rate of 21 and preserved mental function will be deemed to have only infection and not require urgent assessment in transfer to hospital.

2. In low and middle income countries, which are far less encountered by oversensitivity in access to healthcare than by delayed access, SOFA files in the face of efforts to educate the public and rural practitioners in life-saving efforts which are about identifying the potentially sick patient with likely infection and any physiological derangement.
We have something that works!

% 30 day mortality of ICD-10 A40/ A41

24.8% to 19.5% is a 21% reduction post collaborative launch
Spread / Future
Has the Time for Advanced Pre-Hospital Care of Severe Sepsis Finally Arrived?

Severe Sepsis in Pre-Hospital Emergency Care
Analysis of Incidence, Care, and Outcome

Christopher W. Seymour1-3, Thomas D. Rea4-5, Jeremy M. Kahn2-5, Allan J. Walkey6, Donald M. Yealy7, and Derek C. Angus2,8

The epidemiology of adults with severe sepsis and septic shock in Scottish emergency departments

Alasdair Gray,1 Kirsty Ward,2 Fiona Lees,2 Colin Dewar,3 Sarah Dickie,4 Crawford McGuffie,5 On behalf of the STAG steering committee

Abstract
Background
Severe sepsis is a condition with a high mortality rate, and the majority of patients are first seen by Emergency Medical Services (EMS) personnel.

Objective
This research sought to determine the feasibility of EMS providers recognizing a severe sepsis patient, thereby resulting in better patient outcomes if standard EMS treatments for medical shock were initiated.

Methods
We developed the Sepsis Alert Protocol that incorporates a screening tool using point-of-care venous lactate meters. If severe sepsis was identified by EMS personnel, standard medical shock therapy was initiated. A prospective cohort study was conducted for 1 year to determine if those trained EMS providers were able to identify 112 severe sepsis patients before arrival at the Emergency Department. Outcomes of the sample of severe sepsis patients were examined with a retrospective case control study.

Results
Trained EMS providers transported 67 severe sepsis patients. They identified 32 of the 67 severe sepsis patients correctly (47.8%). Overall mortality for the sample of 112 sepsis patients transported by EMS was 26.7%. Mortality for the...
Serum Lactate as a Predictor of Mortality in ED Patients with Sepsis

Shapiro et al. Ann EM 2005;45:524
Can a Point of Care (PoC) analyser aid the timely treatment of patients with Sepsis in Scottish Hospitals?
VELPS Study

Patient meets inclusion criteria

Patient assessed as normal. NEWS & Sepsis screening undertaken automatically by ePRE

Patient assessed as normal. NEWS & Sepsis criteria +

YES
Convey patient to hospital and include details of NEWS & Sepsis Screening in handover

NO
Convey patient to hospital as normal practice

NEWS >= 4 and/or Sepsis criteria +

YES
Undertake POC lactate

Lactate <2 mmol/l
Convey patient to hospital as normal practice

Lactate >= 2mmol/l
Pre-alert hospital and convey patient to hospital

NO

Patient meets inclusion criteria

Patient assessed as normal. NEWS & Sepsis screening undertaken automatically by ePRE

Phase 3. Introduction of Point of Care Lactate testing
Rapid triage of suspected sepsis patients at SBU

Consider discharge

Falling

Repeat POC in 90 min

Admit

Suspected infection and SIRS criteria

ED TRIAGE

Stable

POC Lactate

Acute ED bed

2-4

Unstable

Critical care

Rising

>4

031523 Rev A 07/13 For In Vitro Diagnostic Use Only
Courtesy of Adam Singer
What has been more challenging?

- **TIME**
- Ownership/Leadership
- Maintaining improvements
- Evolving process in line with the changing face of the deteriorating patient workstream
Key things for other groups

• Multi professional, evidence based
• External help at set up
• Leadership
• Dedicated time
• IT
• Bespoke arrangements
  – One size doesn’t fit all
OPTIMIST:
SOMEONE WHO FIGURES THAT TAKING A STEP BACKWARD AFTER TAKING A STEP FORWARD IS NOT A DISASTER, IT'S MORE LIKE A CHA-CHA
Questions?
Do you have a problem in your life?  
  
  Yes.  
  
  Then don't worry.  
  
  No.  
  
  Can you do something about it?  
  
  Yes.
<table>
<thead>
<tr>
<th>Physiological Parameter</th>
<th>NEWS – NHS Early Warning Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Respiration Rate</strong></td>
<td>≤8</td>
</tr>
<tr>
<td><strong>Oxygen Saturations</strong></td>
<td>≤91</td>
</tr>
<tr>
<td><strong>Supplemental Oxygen</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>≤35.0°</td>
</tr>
<tr>
<td><strong>Systolic BP</strong></td>
<td>≤90</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>≤40</td>
</tr>
<tr>
<td><strong>Conscious Level</strong></td>
<td>V, P or U</td>
</tr>
</tbody>
</table>

**NEWS should not replace sound clinical judgement. Any concerns regarding the patient’s condition should be appropriately escalated and documented in the Nursing Notes.**
When Charts go wrong
NEWS (National Early Warning Score) – Action Reference Tool RAH/IRH

Calculate the aggregate NEWS on admission/transfer to clinical area.
- Refer to the chart below for the recommended MINIMUM frequency of observations. This should be advised by a senior clinician such as a charge nurse or medic and documented on the NEWS Patient Observation Chart.
- For additional information refer Standard for Adult Patient Observation and DNR/CRP policy.
- NEWS should not replace sound clinical judgement. Any concerns regarding a patient’s clinical condition should be appropriately escalated.

Patient at risk of deterioration? – What is the NEWS?

Score 0
Minimum 12 hourly observations
- Inform Trained Nurse
- Trained nurse assessment:
  - Assess the patient
  - Review frequency of monitoring required
  - Assess need for escalation of clinical care and direct as appropriate
  - Inform Nurse In Charge

Aggregate score of 1 – 4
Minimum 4 hourly observations
- Trained Nurse assessment
- Inform Nurse In Charge

NEWS 3 in one parameter
Aggregated score of 5
Minimum 4 hourly observations
- Trained Nurse assessment
- Inform Nurse In Charge
- Call appropriate FY2
- Out of Hours 2100 till 0900/Weekends:
  Alert On Call / HaW / HaN Team.

Team/FY1 unable to attend within 1 hour or NEWS increase by 2 or more points?
- Call appropriate FY2

Low Clinical Risk

Aggregate 7 or more
Continuous monitoring of vital signs
- Trained Nurse assessment
- Inform Nurse in Charge
- Call appropriate FY2

High Clinical Risk

FY2 unable to attend within 30 minutes or NEWS increase by 2 or more points?
- Discuss with patient’s Consultant – CONSIDER contacting ITU/HDU

Medium Clinical Risk

Clinical Emergencies
Cardiac Arrest/Peri Arrest?
- By-pass NEWS – Contact 2222
Hypotension and Lactate

Fig. 1 28-day in-hospital mortality risk stratified by blood pressure and serum lactate level.

<table>
<thead>
<tr>
<th>Lactate (mmol/L)</th>
<th>Systolic Blood Pressure (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2.5</td>
<td>&lt; 70</td>
</tr>
<tr>
<td>2.5 - 4.0</td>
<td>70 - 90</td>
</tr>
<tr>
<td>≥ 4.0</td>
<td>≥ 90</td>
</tr>
</tbody>
</table>
Elevated NEWS is associated with increased levels of adverse outcomes.
ProCESS Trial

.... identifies **early recognition of sepsis**, **early administration of antibiotics**, **early adequate volume resuscitation**, and **clinical assessment of the adequacy of circulation** as the elements we should focus on to save lives.
GG&C HAI C diff cases per month

New antibiotic policy introduced in June/July 2008

Number of C diff cases
Jan 2007 to June 2008 = 2038
Jan 2009 to June 2010 = 644
Total reduction = 1394

80% Reduction in CDI