

Guidelines for Emergency Laparotomy

James Aitken

Sir Charles Gairdner Hospital, Perth

Chair, ANZELA-QI Working Party

Victoria Perioperative Consultative Council

Workshop on Emergency Laparotomy Outcomes and
Performance

10 November 2022

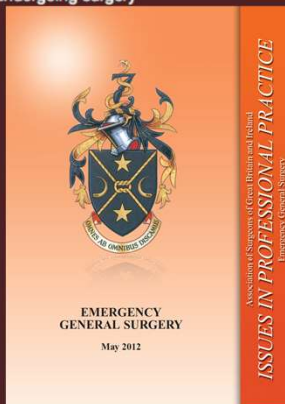
Competing interests

- Chair, Working Party
Australian and New Zealand Emergency
Laparotomy Audit – Quality Improvement
- Clinical Director
Western Australian Audit of Surgical Mortality
- Contributing member
Emergency Laparotomy Guidelines,
International ERAS Society



An Age Old Problem

A review of the care received by elderly patients undergoing surgery



NCEPOD

Emergency Admissions: A journey in the right direction

A report of the National Confidential Enquiry into Patient Outcome and Death (2007)

Special Commission of Inquiry
Acute Care Services in NSW Public Hospitals

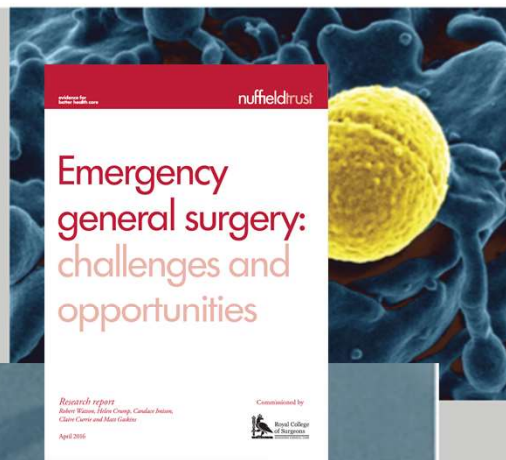
Final Report of the Special Commission of Inquiry Acute Care Services in NSW Public Hospitals

Volume 1

Peter Garling SC
27 November 2008

Just Say Sepsis!

A review of the process of care received by patients with sepsis



Knowing the Risk

A review of the peri-operative care of patients



Emergency Surgery

Standards for unscheduled surgical care

Guidance for providers, commissioners and service planners

February 2011

Who Operates When?

A report by the
National Confidential Enquiry into
Perioperative Deaths
1 April 1995 to 31 March 1998



Department of Health

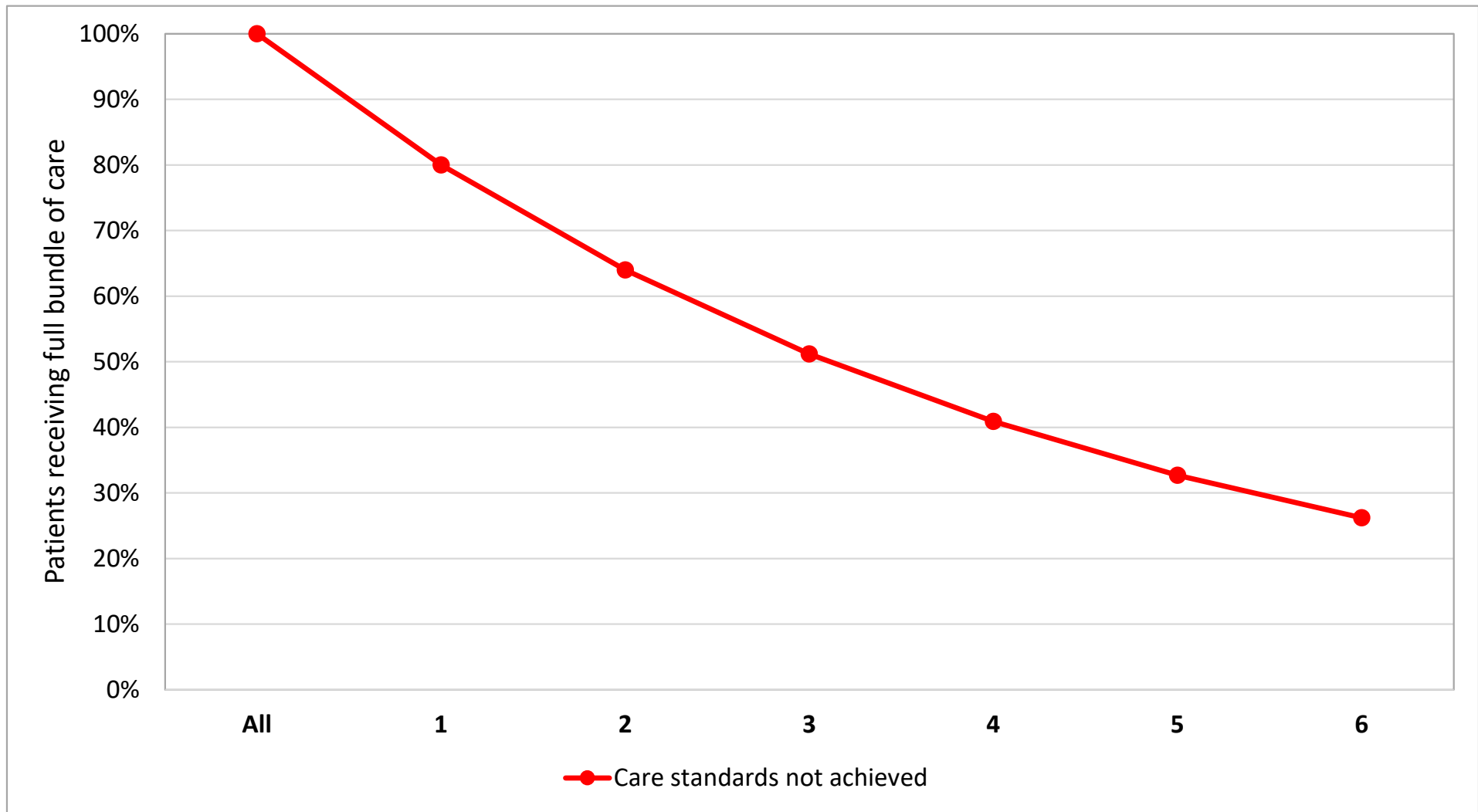
health

A framework for emergency surgery in Victorian public health services

Victoria

Bundle of care

80% compliance with care standard



Emergency Laparotomy – bundle of care studies

Original article

Multicentre trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation

M. H. Møller¹, S. Adamsen², R. W. Thomsen³ and A. M. Møller¹ on behalf of the Peptic Ulcer Perforation (PULP) trial group

- Mortality 27.0% -> 17.1%

Original article

Multidisciplinary perioperative protocol in patients undergoing acute high-risk abdominal surgery

L. T. Tengberg¹, M. Bay-Nielsen¹, T. Bisgaard¹, M. Cihoric¹, M. L. Lauritsen¹ and N. B. Foss², for the AHA study group

- Mortality 21.8% -> 15.5%

Original article

Use of a pathway quality improvement care bundle to reduce mortality after emergency laparotomy

S. Huddart¹, C. J. Peden², M. Swart³, B. McCormick⁴, M. Dickinson¹, M. A. Mohammed⁵ and N. Quiney¹ on behalf of the ELPQuiC Collaborator Group

- Mortality 15.6% -> 9.6%

JAMA Surgery | Original Investigation

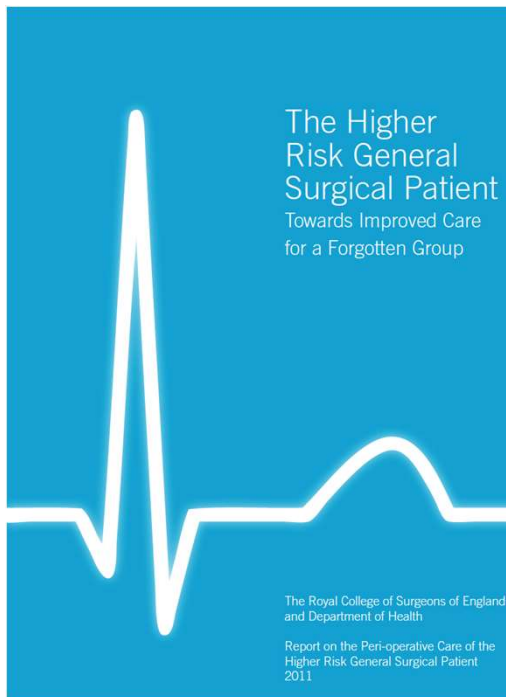
Evaluation of the Collaborative Use of an Evidence-Based Care Bundle in Emergency Laparotomy

Geeta Aggarwal, MBBS; Carol J. Peden, MD; Mohammed A. Mohammed, PhD; Anne Pullyblank, MD; Ben Williams; Timothy Stephens, MSc; Suzanne Kellett, MBBS; James Kirkby-Bott, MBBS; Nial Quiney, MBBS; for the Emergency Laparotomy Collaborative

- Mortality 9.8% -> 8.3%
- Length of stay 20.1 -> 18.9
- Increased compliance with 5 of 6 care standards

Emergency Laparotomy guidelines

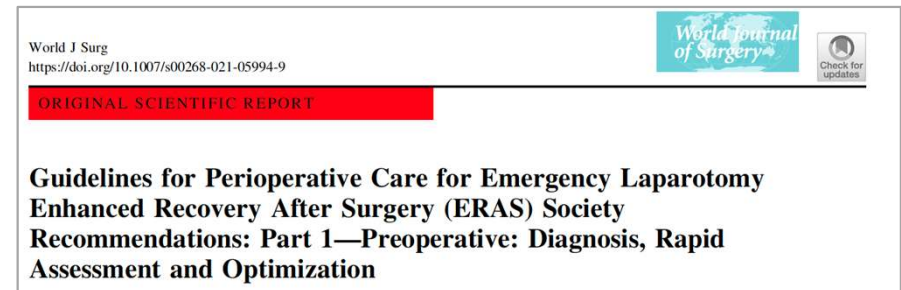
2011



2018



2021



'it is the opinion of this expert group that implementation of the new key recommendations should be mandatory in all acute hospitals with adult general surgical services and that doing so would save lives and make further appreciable differences to patient outcomes'.

OFFICIAL

ANZELA-QI standards (KPI's)

Initial run charts

- Consultant radiologist reporting of CT scan
- Pre-op risk assessment
- Timely access to theatre
- Consultant supervision
 - Surgeon and anesthetist
- Timely access to ICU
- Review by care of elderly physician (age >65 years)

Added run charts

- Frailty
- Lactate measurement in ED

RAG dashboard (hospital)

ANZELA-QI | KEY PERFORMANCE INDICATOR RESULT FOR 1 JUNE 2018 TO 31 JANUARY 2020

Hospital	KPI 1 CT scan reported by a Consultant pre-surgery	KPI 2 Pre-operative documentation of risk	KPI 3 Arrival in theatre within timescale appropriate to urgency <=18 hrs	KPI 4 Consultant surgeon and anaesthetist in theatre when risk of death >=5%	KPI 5 Consultant surgeon in theatre when risk of death >=5%	KPI 6 Consultant anaesthetist in theatre when risk of death >=5%	KPI 7 Direct critical care admission when risk of death >=10%	KPI 8 Post-op review by Elderly Medicine team where age >=65
Hospital A 35 cases	31/33 (94%) Incomplete = 1	17/34 (50%) Incomplete = 1	18/31 (58%) Incomplete = 4	7/8 (88%) Incomplete = 0	7/8 (88%) Incomplete = 0	8/8 (100%) Incomplete = 0	6/6 (100%) Incomplete = 0	1/16 (6%) Incomplete = 2
Ballarat Health Service 56 cases	23/37 (62%) Incomplete = 11	6/44 (14%) Incomplete = 2	18/35 (51%) Incomplete = 10	2/3 (67%) Incomplete = 0	2/3 (67%) Incomplete = 0	3/3 (100%) Incomplete = 0	3/3 (100%) Incomplete = 0	1/28 (4%) Incomplete = 3
Canberra Hospital 272 cases	212/239 (89%) Incomplete = 22	39/263 (15%) Incomplete = 12	146/215 (68%) Incomplete = 11	14/30 (47%) Incomplete = 0	14/30 (47%) Incomplete = 0	25/30 (83%) Incomplete = 0	17/23 (74%) Incomplete = 0	6/147 (4%) Incomplete = 17
Fiona Stanley Hospital 217 cases	94/160 (59%) Incomplete = 51	139/177 (79%) Incomplete = 0	101/135 (75%) Incomplete = 7	40/71 (56%) Incomplete = 5	44/71 (62%) Incomplete = 4	60/71 (85%) Incomplete = 7	25/45 (56%) Incomplete = 9	7/104 (7%) Incomplete = 44
Gold Coast University Hospital 144 cases	50/122 (41%) Incomplete = 52	87/136 (64%) Incomplete = 0	77/117 (66%) Incomplete = 1	23/43 (53%) Incomplete = 0	30/43 (70%) Incomplete = 0	35/43 (81%) Incomplete = 0	16/27 (59%) Incomplete = 0	3/70 (4%) Incomplete = 4
Hospital B 1 case	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0
Logan Hospital 106 cases	80/87 (92%) Incomplete = 5	32/90 (36%) Incomplete = 0	50/70 (71%) Incomplete = 4	14/15 (93%) Incomplete = 0	15/15 (100%) Incomplete = 0	14/15 (93%) Incomplete = 0	4/7 (57%) Incomplete = 0	31/39 (79%) Incomplete = 0
Hospital C 43 cases	25/27 (93%) Incomplete = 1	24/35 (69%) Incomplete = 1	18/33 (55%) Incomplete = 8	10/10 (100%) Incomplete = 0	10/10 (100%) Incomplete = 0	10/10 (100%) Incomplete = 0	6/6 (100%) Incomplete = 0	0/19 (0%) Incomplete = 0
Nepean Hospital 98 cases	37/79 (47%) Incomplete = 21	63/82 (77%) Incomplete = 3	45/61 (74%) Incomplete = 4	23/33 (70%) Incomplete = 0	24/33 (73%) Incomplete = 0	30/33 (91%) Incomplete = 0	12/18 (67%) Incomplete = 1	18/46 (39%) Incomplete = 9
Hospital D 9 cases	2/8 (25%) Incomplete = 5	0/9 (0%) Incomplete = 0	6/9 (67%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/5 (0%) Incomplete = 1
Rockhampton Base Hospital 68 cases	28/40 (70%) Incomplete = 11	13/42 (31%) Incomplete = 2	17/24 (71%) Incomplete = 0	5/5 (100%) Incomplete = 0	5/5 (100%) Incomplete = 0	5/5 (100%) Incomplete = 0	4/4 (100%) Incomplete = 0	5/20 (25%) Incomplete = 5
Royal Adelaide Hospital 287 cases	172/235 (73%) Incomplete = 32	94/260 (36%) Incomplete = 20	105/225 (47%) Incomplete = 33	52/66 (79%) Incomplete = 1	58/66 (88%) Incomplete = 0	57/66 (86%) Incomplete = 1	31/45 (69%) Incomplete = 0	12/141 (9%) Incomplete = 15
Hospital E 46 cases	25/35 (71%) Incomplete = 1	2/42 (5%) Incomplete = 1	17/30 (57%) Incomplete = 4	1/1 (100%) Incomplete = 0	1/1 (100%) Incomplete = 0	1/1 (100%) Incomplete = 0	1/1 (100%) Incomplete = 0	7/16 (44%) Incomplete = 0
Royal Hobart Hospital 196 cases	138/158 (87%) Incomplete = 8	21/177 (12%) Incomplete = 15	71/131 (54%) Incomplete = 19	12/14 (86%) Incomplete = 0	12/14 (86%) Incomplete = 0	14/14 (100%) Incomplete = 0	7/9 (78%) Incomplete = 0	25/104 (24%) Incomplete = 8
Sir Charles Gairdner Hospital 434 cases	217/321 (68%) Incomplete = 27	325/382 (85%) Incomplete = 3	189/276 (68%) Incomplete = 7	122/140 (87%) Incomplete = 1	126/140 (90%) Incomplete = 1	133/140 (95%) Incomplete = 1	68/98 (69%) Incomplete = 2	48/207 (23%) Incomplete = 13
Hospital F 5 cases	2/4 (50%) Incomplete = 2	1/4 (25%) Incomplete = 0	4/4 (100%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/0 (%) Incomplete = 0	0/1 (0%) Incomplete = 0
St Vincents Hospital Sydney 84 cases	39/69 (57%) Incomplete = 6	20/79 (25%) Incomplete = 0	41/64 (64%) Incomplete = 4	7/10 (70%) Incomplete = 0	10/10 (100%) Incomplete = 0	7/10 (70%) Incomplete = 0	8/9 (89%) Incomplete = 0	11/36 (31%) Incomplete = 6
Western Health 261 cases	122/192 (64%) Incomplete = 17	15/221 (7%) Incomplete = 3	100/198 (51%) Incomplete = 22	5/10 (50%) Incomplete = 0	6/10 (60%) Incomplete = 0	9/10 (90%) Incomplete = 0	5/9 (56%) Incomplete = 0	31/106 (29%) Incomplete = 9

Standard achieved

Green ≥80%; **Amber** ≥50% but <80%; **Red** <50%; **Grey** no records

OFFICIAL

ANZELA-QI - *patient level dashboard*

ID number	Admission date	Age	NELA risk score (%)	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6	KPI 7	KPI 8
7-342	15/09/2019	64	44.0	No	Yes	Yes	Yes	Yes	Yes	Yes	n/a
7-344	12/09/2019	75	5.7	No	Yes	No	No	Yes	No	n/a	No
		46	6.8	No	Yes	No	No	Yes	No	n/a	n/a
		67	2.7	No	Yes	Yes	n/a	n/a	n/a	n/a	No
		53	2.0	Yes	Yes	No	n/a	n/a	n/a	n/a	n/a
		44	0.6	Yes	Yes	No	n/a	n/a	n/a	n/a	n/a
		57	6.2	No	Yes	n/a	Yes	Yes	Yes	n/a	n/a
		93	10.7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
		57	0.9	Yes	Yes	Yes	n/a	n/a	n/a	n/a	n/a
		49		n/a	Yes	No	n/a	n/a	n/a	n/a	n/a
		62	8.1	n/a	Yes	No	Yes	Yes	Yes	n/a	n/a
		67	1.0	Yes	Yes	Yes	n/a	n/a	n/a	n/a	No
		66	0.8	No	Yes	Yes	n/a	n/a	n/a	n/a	No
		65	35.5	No	Yes	No	No	No	No	No	No
		66	1.2	Yes	Yes	Yes	n/a	n/a	n/a	n/a	No
		78	4.8	Yes	Yes	Yes	n/a	n/a	n/a	n/a	No
		39	1.1	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a
		51	1.5	n/a	Yes	Yes	n/a	n/a	n/a	n/a	n/a
		81	11.1	n/a	Yes	No	No	No	No	No	No

Sepsis Clinical Care Standard
**Lactate in the deteriorating
patient and sepsis**

Key messages

1. Measure blood lactate in all patients with a potential or suspected serious infection
2. Lactate can be a marker of emerging or actual critical illness, and increased levels are associated with elevated morbidity and mortality
3. Escalate care for all patients with a lactate of 2.0 mmol/L or more and treat promptly where indicated
4. Treat any patient with a lactate of 4.0 mmol/L or more as a medical emergency
5. Lactate levels below 2.0 mmol/L do not exclude sepsis in patients with other signs

Who this resource is for

This resource informs clinicians about the significance of elevated serum lactate levels in both adults and children. Recognition of elevated lactate and rapid escalation of care can avoid patient harm and potentially death.

What is lactate?

Lactate is a non-specific marker of illness severity in acutely ill patients.¹ Lactate is usually present in low levels in the blood, and elevated levels can indicate either a protective or a maladaptive response to shock.

Elevated lactate levels and failure to clear lactate can help identify patients who are in early stages of deterioration, with reduced organ perfusion, but who are maintaining their blood pressure and whose vital signs and behaviour may otherwise be deceptively reassuring.²

Elevated lactate levels have been shown to predict outcomes following sepsis in deteriorating adult patients.³

Lactate may also be affected by other causes of shock (for example, cardiogenic or haemorrhagic shock), or other catecholamine responses such as hyperthermia and seizures. Medications such as adrenaline infusions, salbutamol, metformin and antiretroviral (HIV) therapies can also increase lactate.⁴

Point-of-care devices

Point-of-care lactate devices enable rapid assessment and should be used whenever possible. The device needs to be readily available for clinicians to use when and where a patient deteriorates.

Lactate in the deteriorating patient and sepsis | 1

Sepsis
Clinical Care Standard

June 2022

1

**Quality statement 1 –
Could it be sepsis?**

A diagnosis of sepsis is considered in any patient with an acute illness or clinical deterioration that may be due to infection. A clinical support tool that includes assessment of vital signs and lactate is used to help recognise sepsis early and escalate care when required.

2

**Quality statement 2 –
Time-critical management**

Sepsis is a time-critical medical emergency. Assessment and treatment of a patient with suspected sepsis are started urgently according to a locally approved clinical pathway, and their response to treatment is monitored and reviewed. The patient is reviewed by a clinician experienced in recognising and managing sepsis, and is escalated to a higher level of care when required.

3

**Quality statement 3 –
Management of
antimicrobial therapy**

A patient with suspected sepsis has blood cultures taken immediately, ensuring that this does not delay the administration of appropriate antimicrobial therapy. When signs of infection-related organ dysfunction are present, appropriate antimicrobials are started within 60 minutes. Antimicrobial therapy is managed in line with the *Antimicrobial Stewardship Clinical Care Standard*, including a review within 48 hours from the first dose.

Sepsis Clinical Care Standard
**Lactate in the deteriorating
patient and sepsis**

Key messages

1. Measure blood lactate in all patients with a potential or suspected serious infection
2. Lactate can be a marker of emerging or actual critical illness, and increased levels are associated with elevated morbidity and mortality
3. Escalate care for all patients with a lactate of 2.0 mmol/L or more and treat promptly where indicated
4. Treat any patient with a lactate of 4.0 mmol/L or more as a medical emergency
5. Lactate levels below 2.0 mmol/L do not exclude sepsis in patients with other signs

Who this resource is for

This resource informs clinicians about the significance of elevated serum lactate levels in both adults and children. Recognition of elevated lactate and rapid escalation of care can avoid patient harm and potentially death.

What is lactate?

Lactate is a non-specific marker of illness severity in acutely ill patients. Lactate is usually present in low levels in the blood, and elevated levels can indicate either a protective or a maladaptive response to shock.

Elevated lactate levels and failure to clear lactate can help identify patients who are in early stages of deterioration, with reduced organ perfusion, but who are maintaining their blood pressure and whose vital signs and behaviour may otherwise be deceptively reassuring.

Elevated lactate levels have been shown to predict outcomes following sepsis in deteriorating adult patients.

Lactate may also be affected by other causes of shock (for example, cardiogenic or haemorrhagic shock), or other catecholamine responses such as hyperthermia and seizures. Medications such as adrenaline infusions, salbutamol, metformin and antiretroviral (HIV) therapies can also increase lactate.

Point-of-care devices

Point-of-care lactate devices enable rapid assessment and should be used whenever possible. The device needs to be readily available for clinicians to use when and where a patient deteriorates.

Was sepsis suspected at time of initial hospital admission?

- ☒ Yes
☐ No
☐ Other diagnosis suspected requiring antibiotics
☐ Unknown

reset

If sepsis suspected at time of initial hospital admission, by what criteria?

- ☐ Clinical assessment only
☐ EWS (any score)
☐ qSOFA
☐ Lactate
☐ Other

reset

Date of sepsis assessment

Today D-M-Y

☐ Date unknown

reset

☐ Not done

reset

What was the date of the first dose of IV antibiotics following presentation to hospital?

Today D-M-Y

☐ Date unknown

reset

☐ Not administered

reset

Was the lactate level available to the surgeon at the time of surgical referral?

☐ Yes ☐ No ☐ Unknown

reset

What was the most recent pre-operative value for blood lactate - may be arterial or venous (mmol/L)

1

Quality statement 1 – Could it be sepsis?

A diagnosis of sepsis is considered in any patient with an acute illness or clinical deterioration that may be due to infection. A clinical support tool that includes assessment of vital signs and lactate is used to help recognise sepsis early and escalate care when required.

2

Quality statement 2 – Time-critical management

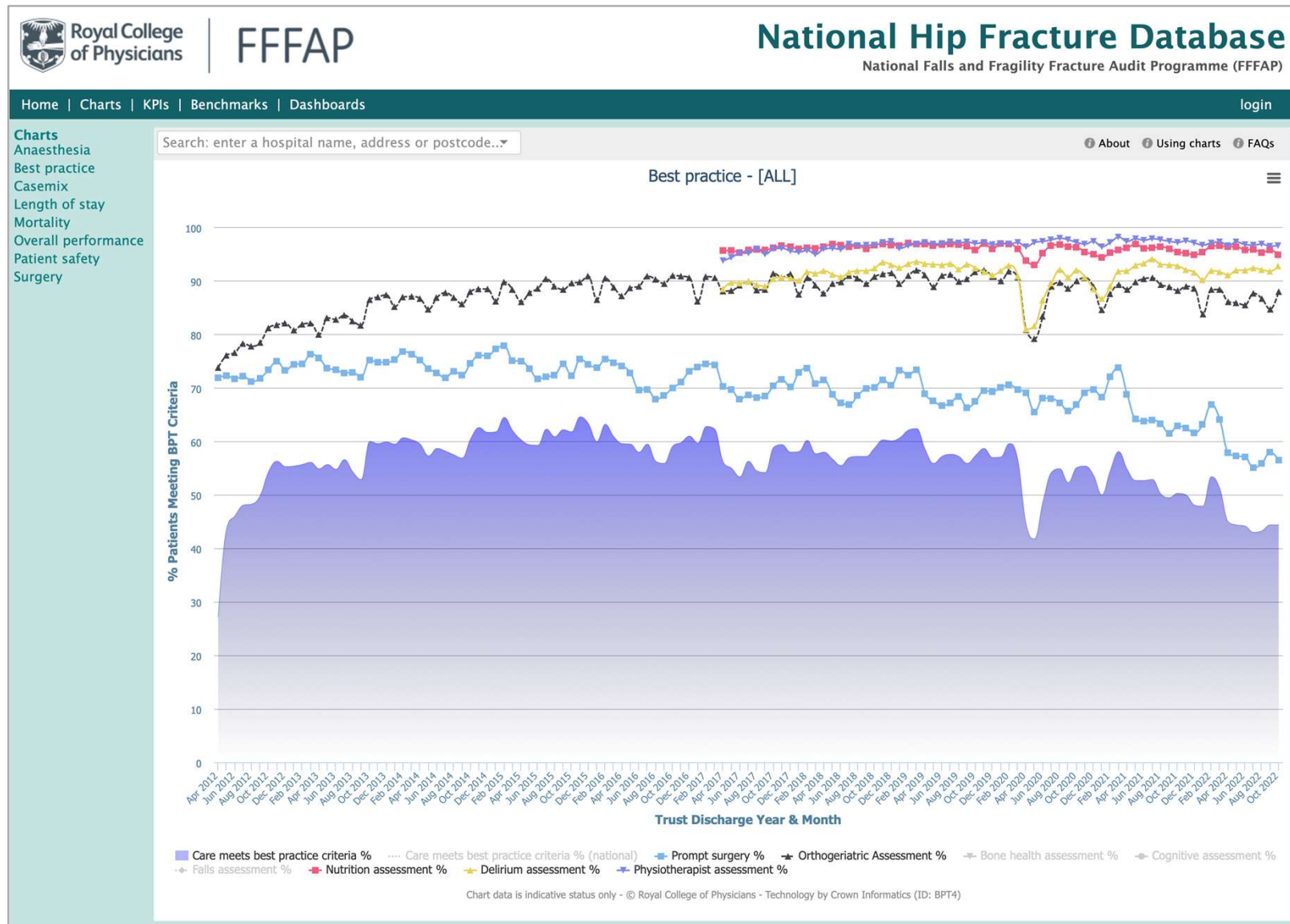
Sepsis is a time-critical medical emergency. Assessment and treatment of a patient with suspected sepsis are started urgently according to a locally approved clinical pathway, and their response to treatment is monitored and reviewed. The patient is reviewed by a clinician experienced in recognising and managing sepsis, and is escalated to a higher level of care when required.

3

Quality statement 3 – Management of antimicrobial therapy

A patient with suspected sepsis has blood cultures taken immediately, ensuring that this does not delay the administration of appropriate antimicrobial therapy. When signs of infection-related organ dysfunction are present, appropriate antimicrobials are started within 60 minutes. Antimicrobial therapy is managed in line with the *Antimicrobial Stewardship Clinical Care Standard*, including a review within 48 hours from the first dose.


The future is real time Quality Improvement



OFFICIAL

Conclusion

- Focus will be on clinical standards
- The future is Quality Improvement
- Days of annual QA data dump gone
- Better to have contemporaneous near real time QI data, albeit imperfect, than delay and later report perfect QA data



...trust me
I'm a doctor

...God I trust,
everyone else
provides data!