

Learning from the Scottish Patient Safety Programme

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• SPSP

- Cardiac Arrest Improvement
- Our future work

HERE'S TAE US; WHA'S LIKE US? GEY FEW' AND THEY'RE A' DEID'

Patient Deterioration







"Heal the sick, comfort the dying, and don't get the two mixed up"



Historically challenging times

- Everything else has changed:
 - Sepsis
 - Overdose
 - Acute Coronary Syndrome
 - Major Trauma
 - Delerium
 - Frailty





Our landscape has changed!





Our landscape has changed!





A recent case:

Bill

-Aged 63 -PMH of Schizophrenia, well managed with community support over several years -Mental health deteriorated over lockdown

-Commenced on Clozapine trial July 2021







Healthcare Improvement Scotland

- Bill is increasingly drowsy
- Bill is brought to the Emergency Department by his wife

NEW score of 5 or more? Think sepsis!

In a patient with a NEW score of S or more and a known infection, signs and symptoms of infection, or at risk of infection, think "Could this be sepsis?" and escalate care immediately.

Chart 1: The NEWS scoring system											
Physiological personator	3 2		50m			1 1					
Requisition rate (per minute)	-		9-11	12-20		23-24	a25				
Sp0 ₂ Scale 1 (K)	491	92-93	94-95	296							
$SpO_2ScaleZ(\mathbf{X})$	#83	84-85	86-87	88-92 293 on air	93-94 on oxygen	95-96-on oxygen	aft7 on oxygen				
Air or oxygen?		Oxygen		Ar.							
Syntolic bilood pressure (mmilitigi	#80	91-100	101-110	111-219			a220				
Pulse (per minute)	=40		41-50	\$5-90	91-110	111-130	a131				
Consciousness				Alet			CVPU				
Temperature (*C)	#35.0		35.1-36.0	36.1-38.0	38.1-39.0	a39.1					

- Temp 39.1, Sats 96% on air,
- BP 126/67, Pulse 96, Unresponsive,
- GCS 12

NEWS2: 6 15:00





- Bill's bloods show neutropenia, clotting deranged
- CXR shows bilateral consolidation
- Diagnosis of neutropenic sepsis made

NEWS2: 5 17:00

The NEWS2 is actually 8!

NEW score of 5 or more? Think sepsis!

In a patient with a NEW score of 5 or more and a known infection, signs and symptoms of infection, or at risk of infection, think "Could this be sepsis?" and escalate care immediately.

Physiological				Store			
porumeter	3	2	•	•	•	1	3
Requisition rate (per minute)	-		9-11	12-20		23-24	825
Sp0 ₂ Scale 1 (K)	481	92-93	94-95	296			
SpO ₂ Sede 2 (X)	#83	84-85	86-87	88-92 293 on air	93-94 on oxygen	95-96-on oxygen	whit or oxyger
Air or oxygen?		Oxygen		At .			
Syntolic biood pressure (mmHg)	#80	91-100	101-110	111-219			a220
Pulse (per minute)	940		41-50	\$5-90	91-110	111-130	a131
Consciousness				Alet			CVPU
Temperature (10)	s35.0		35.1-36.0	36.1-38.0	38.1-39.0	a39.1	







Chart 1: The NEWS scoring system

- SEPSIS 6, Lactate checked and less than 2
- IV access was difficult
- FY2 unable to obtain blood cultures
- No senior review of Bill is recorded
- Bill's NEWS2 remained high, errors in scoring occurred







- NEWS2 remained high on transfer to admission ward varying between 8-9
- Bill has now been in hospital for 7 hours
- Nursing staff escalate to medical staff immediately
- "Patient commenced on oxygen..
 Patient not tolerating oxygen"







- Bill's nurse has a sense of urgency:
 - Call the family
 - Cant get in touch
 - What are their wishes?
- 23.00 NEWS2 remains 9
 Bill is seen by junior and discussed with Registrar
 Plan to "escalate to ITU if deteriorates"
- 01.00 Not keeping oxygen on so given sedation
- 02.00 Registrar attempted to attend but multiple emergencies occurring at once









- Bill's sats are now dropping
- Bill vomits
- Medical emergency call is put out
- $\frac{\frac{1}{120}}{\frac{120}{50}}\frac{99}{99}}{\frac{120}{50}}$

- Bill enters Cardiac Arrest
- CPR is commenced





• Reducing Cardiac Arrests Saves lives



- Recognition of Acute Deterioration Saves Lives
- Standardised Response to Deterioration Saves Lives
- Safe Communication across Care pathways Saves Lives
- Leadership to support a culture of safety at all levels Saves Lives



"to enable the people of Scotland to experience the best quality of health and social care"

- Regulation of independent hospitals and clinics
 - Improvement Hub(iHub)
 - Community Engagement
- Health Technologies
- Clinical Guidelines (SIGN)
- Scottish Medicine Consortium
- Scottish Antimicrobial Prescribing Group
- Scottish Patient Safety Programme (SPSP)



Launched in 2008

Expanded to support improvement across a range of Healthcare settings

Acute, Primary Care, Mental Health, Maternity, Neonatal, Paediatric and Medicines Safety



Improve the safety and reliability of care and reduce harm

Acute Adult healthcare setting first

Initial aim to reduce hospital mortality by 15% (16.5% achieved by 2015)



Acute Adult Collaborative:

- Falls
- Deteriorating Patient





Local SPSP Programme Manager

Clinical Lead

Local steering group

Latest Collaborative launched September 2021





What are we trying to achieve	We need to ensure	Which requires
A reduction in	Recognition of acute deterioration Standardised structured response to acute	Observations using NEWS 2 Clinical concern Timely review by appropriate decision maker Screening for causes of acute deterioration Treatment escalation planning Regular review and triage
Resuscitation rate, in acute care, by September 2023	Safe communication across care pathways*	Anticipatory care planning Patient and family inclusion in decision making* Communication between primary and acute care Use of standardised communication tools* Management of communication in different situations*
Essentials of Safe Care	Leadership to support a culture of safety at all levels	Psychological safety* Staff wellbeing* Safe Staffing* System for learning*

Patient Deterioration: Measurement



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cottish Patient Safety Programme		
Acute Adult Deteriorating Patient	Readiness for change and identifyin Readiness for change and priori	tisation assessment
giandar XXI	Regular case note review to iden Outcome Measures	Cardiac arrest rate
	Process Measures	 Recognition of acute deterioration – NEWS2 Sepsis screening Sepsis response Delirium screening Delirium response Score to door time: Mean time from NEWS2 trigger to Critical Care admission Generic response Treatment escalation planning Review of cardiac arrest/2222 calls
	Balancing Measures	 Critical care admission rate Overall hospital standardised mortality ratio Patient and family experience of 'end of life' discussions (Qualitative) Staff experience (Qualitative)

Patient Deterioration: Measurement





















How did we know there was a problem



Cardiac Arrest Rate per 1000 Discharges RIE (excludes A&E, ITU, CCU, Daycase, Reason for Admission = Out-Patient, Obstetric)

SPSP outcome measures showed that we were not improving, with wide variation in data.

Other boards were improving





A Quality Management System

- Quality Planning Phase
- Quality Improvement Phase
- Quality Control Phase
- Further Quality Planning



Understanding the system, using Deming's Lens of Profound Knowledge

SCOTTISH PATIENT SAFETY POCCOVER

Quality Planning

Appreciation of a System

Clinicians conducted a large-scale review of all cardiac arrests to identify potential themes for learning

Theory of Knowledge

• Subject expert group of advisors, including a Clinical Lead (Consultant Intensivist, Resuscitation Officers, Clinical Education Team)

Human Behaviour

- Staff questionnaires fishbone of barriers, psychological safety, knowledge base, suggestions for improvement
- Observations of practice

Understanding Variation

- Ward-based work to measure variation in process measures to obtain baselines
- SPC charts
- ✓ Key learning from the review informed an improvement plan

Deming's Concept of the Lens of Profound Knowledge



Learning informed the Driver Diagram



Deteriorating Patients Improvement Programme – Driver Diagram

Findings

- Wide variation in process measures e.g. observation frequency, escalation, response and reviews
- Knowledge base variable



National AIM	Primary Drivers	Secondary Drivers	Change Ideas **separate list of change ideas available
"95% of people with physiological deterioration in acute care will have a structured response and person centred care plan"	Reliable Anticipatory care	 Standardised and robust communication of Anticipatory Care through multidisciplinary lines and patients / families Documentation of Anticipatory Care Increased Goals of care opportunities Staff confidence to hold inclusive, realistic 'good' conversations 	"KIS [tool]" Key Information Summary at the interface The Hospital Anticipatory Care Plan (H-ACP) – adapted for use from the Oncology ACP "EC4H" Effective Communication for Healthcare (<u>http://www.ec4h.org.uk/</u>) "My Anticipatory Care Plan [tool]" in comunity (<u>http://ihub.scot/media/2204/acp-guidance-for-health- professionals-1-0.pdf</u>) Use Deteriorating Platient Group as a forum to share learning around ACP
50% reduction** in CPR attempts*** in general ward setting by March 2019 ** Based on 2009 baseline of 1.91 (currently 1.76) ***chest compressions and / or	Reliable Recognition & response	Standardised and robust communication of deteriorating pts within and outside team Documentation of each step Reliable NEWS frequency, increased as applicable to condition Reliable NEWS frequency, particularly overnight Escalation and clear responsibility for each patient Senior medical review Medical re-review Maximise emergency response e.g. CA team Examine electronic solutions	MOE tools Structured Response Tool Structured Critical Care Review tool Structured Ward Round Revision of Site Huddle script to highlight deterioration Redevelop Deteriorating Patient Group to drive change and improvement in multiple different areas Team training Simulation Electronic Early Warning Score recording
defibrillation and attended by the hospital-based resuscitation team – or equivalent – in response to the 2222 call	Learning for improvement	 Rapid feedback from an event on ward to service Establish robust learning and feedback from an event Establish robust mechanism for monitoring Cardiac Arrests 	Standardised Case Review Tool 'Hot' debriefs at emergency call Outlined responsibilities and process to review / report / M&M RO 2222 call data sheet updates Weekly site-based 2222 reports Local reviews & thematic analysis and rapid feedback to teams Safety Huddles Explore electronic solutions to build system reliability

Quality Improvement : Ward-based



- Using Model for Improvement
- Quality Directorate provided ward-based improvement coaching and data interpretation with individuals and teams to address any identified areas for improvement

NHS

Project Charters per ward

WGH ward 54 Quality Improvement Project Charter

arter

Wards developed improvements in line with their data – regular feedback

Ward – scale No.	Anticipation	Recognition	Recognition Escalation		Communication / Documentation
8 Scale: 2.5	 Areas of conc individuals wh ToC's include: charts; lamina including over rather than rur 	WS charts correctly. SCN ticularly frequency and cr ividual patients next set o ata displayed on ward - o	I discussing with arrect completion of observations, display data as a %		
Scale: 2.5	 New Deteriora ToC's include: successfully h highlighted at observations f positive feedb SCN attended 	ting Patient Champion id Resuscitation Officer w eld for Band S's and 2's (Safety Brief, laminated p for individual patients and ack from staff, potential F SPSP National Deterior	ientified and data collectio ard-based training on NEV barly November. Further s osters at bays highlighting i guidance on conducting vatient at a Glance Board; rating Patient Event in Dec	n recommenced, support VS2, ABCDE for all nursi essions organised); patie 4 hourly observations, fr observations – posters w and SRT tool for one pat cember 2019	ed by QIST ng staff (first session ints with high NEWS requency of orking well and tient
40			-		

List of change ideas







Quality Improvement: System-wide



- Quality Academy
- eQI sessions
- Capacity & QI Coaches

QI

Capability

- Coaching Clinics
 - Excellence in Care
- Quality Improvement Teams

Revised and standardised system for learning, theming, sharing and reporting



Robust Programme Management

	Gantt on the management of the Deteriorating Patient Improv	/ement	Plan fo	r RIE, V	GH & S.	JH from	Septer	nber 201	17 (Jan	Aug 2017	Gantt e	complet	:e)
1.0	PLANNING	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	Mag-18	Jun-18	Jul-18	
1.1	Executive Team leading												
1.2	Healthcare Governance Committee and Acute Hospitals Committee Assurance Reports								dano				
1.3	Acute Services Clinical Management Group commitment and updates	dano	verbal	verbal	verbal	verbal	verbal	dano	verbal	vorb-al	Site Rpt	Site Rpt	•
1.4	Site Clinical Management Groups										due	Site Rpt	\$
1.5	Driver Diagram update following further learning					updato						update	
1.6	Measurement Framework update following further learning					update					updato		Г
1.7	Communications Plan	dano								updata			Г
1.8	Programme Charter (original Feb 2017)								update				Г
1.9	Improvement wards - Project Charters (x14)								1/14	2/14	3/14	7/14	
2	Develop Det Pat Site Reports										dane	dano	Γ
2.1	Develop Ward Dashboards									duo	dane	danu	Γ
	LEARNING for IMPROVEMENT	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	
2.1	2222 call "yellow forms" - reliable completion and extraction to NHS Lothian's database								dano				
2.2	Learning from 2222 database collated and shared - at site Huddles by ROs and an excel summary sheet for QIST								dano				
2.3	Consistent Site Huddle reporting by RDs on a Friday								dane				
24	Conisistent reporting of high NEWS and pts of concern at daily site huddles, includion plan escalation stane and review stane, and DIMACPB									duo	dane		Γ

2 monthly Site Reports on outcome and process measures, progress and plans

NHS Lothian Cardiac Arrest Rate



LothianQuality

Cardiac Arrest Rate per 1000 Discharges NHS Lothian (RIE, WGH, SJH *Liberton included until Jun '17) (excludes A&E, ITU, CCU, Daycase, Reason for Admission = Out-Patient, Obstetric)



Further Planning: Measuring and Monitoring Safety





Measuring & Monitoring Safety - DET PAT v2.0 CSwift NMaran

https://health.org.uk/publications/a-framework-for-measuring-and-monitoring-safety



What did the QMS approach mean to the clinicians on the ground?



Quality Planning: Review of Cardiac Arrests





Recognition & Response THEME 2: all emergency calls across RIE, SJH & WGH



-Greater knowledge of the system across Lothian and on individual sites

-Highlighted areas which could be improved and also areas where performance was better

Quality Improvement: Clinical Data: Clinical Engagement



- Deteriorating Patient Group brought together key clinical stakeholders
- Resus Officers collected data that informed change
- Consultants were engaged in Cardiac Arrest Review Process

NHS Lothian 2222 Form	NHS
To be completed by the leader of the resuschation attempt	utia
Section 1 - Nation	(Office use only) Database ID No.
Date of 2000 Call	Off No:
Time of 2112 call.	DOB:
Site of 2002 Call	Apr
Location of 2122 Call	Name
	Gender: Male Female
Date of admission:	NEWS-4 or more in previous 24 hours?
Reason for administra	NEWL scored correctly prior to event?
Boarding patient? Descialty:	NEWS-frequency musicited?
Consultant	NEWS-comments:
her her hilt	Ter No
Anticipatory planning documented?	Medical review within target time?
("required pinase provide additional commonts on	Semiors involved prior to event?
revenue of form	Decive medical re-review?
	Concern noted about the patient?
Please tick if event was: Medical Emergency*	Respiratory Arrest Cardiac Arrest
The set of	re resident verself on season and season
MILLION INCOMENTATION OF THE OWNER	AND DOCUMENT
Artickey:	
V# VT	Australer C PGA C
Section 4 - OUTCOME ***NOXC = Return of Spontaneous	Devulation
SUMMER	RESUSCITATION STOPPED
ROSC	No ROSC** Diversities described
menediate per 200 mandre to	Date of Death
Community	Disk/III and entral
	Ligned.
	Respectors News
Service & acons." No Dete	of discharge from hospital
Dest women by some strands	
PULAGE RETURN TO LOCAL B	RESUSCITATION OFFICER

Cheveloper, Newson 21 No. 810, 81 11	XOL	Life	CARDIAC ARREST REVIEW	TOOL.		
Patient ID Label Name of Reviews	·		A transmission of Description of Description	-		
Patient Name: Ranieser Grade			A Assessment of Recognition of Deteniora	Colors .	1	
CHB						-
DOB:			STAR events if an intern or term entit			-
			Press passe specty if any of the following apply		_	_
Situation			Benderi de Ubarde Diserteit attaines anno 1978	Conceptual of	Collect L.4	_
and Admission Date			Cantinuous alta PhiliPH? ar maraj			_
dmission Time Date of Cardiac A	net		Last documented NEWS (chase whe soles)			_
ime of Centries: Arrest						
ature chost: Respiratory arrest/Cardiac.Arrest/MedicalEnerg	pency		Date and time of and documented NEWS	Cane		
ardiac Arrest Outcome Died immediately / Survived "arrest" but	not to head	itel dis dherge i		1.04		
Events he spital discharge				-		-
ee of Death / Olscharge			AAssessment of Recognition of Deteriora	tion (co	ntinue	d)
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Quality Improvement: System-wide



Site Huddles were used to share learning and drive change: Focus on NEWS2 escalation and ACP



We used the introduction of NEWS2 to complete SOPs, clinical guidelines, widespread ward-based clinical education package, relaunch Escalation Boards and policy



Quality Improvement & Quality Control: System-wide





QMS: Additional clinical benefits













NHS Lothian Cardiac Arrest Rate



.othianQuality Cardiac Arrest Rate per 1000 Discharges NHS Lothian (RIE, WGH, SJH *Liberton included until Jun '17) (excludes A&E, ITU, CCU, Daycase, Reason for Admission = Out-Patient, Obstetric) 5.00 Increase noted 4.50 from May 16. Sustained Median is now improvement **Further sustained** 1.76 4.00 noted from Apr (8% reduction improvement '18. Revised 12 from baseline) month median = from April '19. 17% reduction in CA rate 1.07 (44% 3.50 from January '13. reduction from **Revised 12 month** Baseline median (12 months) = 1.91 baseline) 3.00 Discharges 12 month median = 1.58 median = 0.86(reduction of 55%) Rate per : 00 1.50 1.00 0.50 Target Median = 50% 0.00 Jan-09 Apr-09 Out-09 Out-09 Jan-10 Jul-10 Jul-11 Jan-11 Jul-11 Jul-13 Apr-12 Jan-13 Apr-12 Jan-13 Jul-13 Jul-14 Jul-14 Jul-14 Jul-14 Jul-15 Oct-14 Jul-15 Jan-13 Oct-14 Jul-15 Ju Jan-16 Apr-16 ⁻ Jul-16 ⁻ Oct-16 ⁻ Jan-17 Apr-17 Jul-17 Oct-17 Jan-18 Apr-18 Jul-18 ' Oct-18 ' an-19 Apr-19 Jul-19 Dct-19 an-20 Apr-20 Jul-20 ⁻ Oct-20 ⁻ Jan-21 ⁻



What are we trying to achieve	We need to ensure	Which requires
	Recognition of acute deterioration	Observations using NEWS 2 Clinical concern Timely review by appropriate decision maker
A reduction in Cardiopulmonary Resuscitation rate, in acute care, by	Standardised structured response to acute deterioration Safe communication across	Screening for causes of acute deterioration Treatment escalation planning Regular review and triage Anticipatory care planning Patient and family inclusion in decision making* Communication between primary and acute care
Essentials of Safe Care	care pathways Leadership to support a culture of safety at all levels*	Use of standardised communication tools* Management of communication in different situations* Psychological safety* Staff wellbeing* Safe Staffing*



- Reliability of data
- Structured Response
 - Treatment Escalation Planning
 - Sepsis
 - eObs

Patient Deterioration: Reliability of Data





Structured Response







Structured Response











Structured Response









SIGN 139 - Care of deteriorating patients

Consensus recommendations

May 2014



Improving safety through a Structured Response



Toolkit components:

-Recognise-Respond and Review-Reassess



Treatment Escalation / Anticipatory Care Planning





R^øSPECT

Recommended Summary Plan for **Emergency Care and Treatment**



Sepsis: Changing Targets



The Academy of Medical Royal Colleges' (AoMRC) Position Statement on:

- Initial Antimicrobial Treatment in Sepsis
- Published May 2022

/al	Mee	dical l leges	Royal			Date: 2 Scotti public			
Vital	Figure 1: Clinical Dec Vital signs: NEWS-2 'Physiology first'	iaion Support fram	nwork for initial evaluation of a	epolo in adulta x18 yearo 5-6	27				
enment	History, examination, Jab results	If clinical or ca evidence of org	rer concern about a serious d on dysfunction, including elev	liagnosis, continuing deterioral rated serum lactate, upgrade a	tion, neutropaenia, or blood gas / utions at least to next NEWS-2 le	/lob vel →			
initial ass	Comorbid disease, fraility, patient preferences?	Consider influ	vence of comorbid disease, fra inte	ilty and ethnicity on NEWS-2, a ensity, limits, end-of-life care	nd patient preferences for treatm	ent			
neric) actions	Monitoring and escalation plan	Standard observations	Registered nurse review <1 h Obs 4-6 hrly if stable. Escalate if no improvement	Obs hourly: Review <1 hr by clinician competent in acute illness assessment Escalate if no improvement	Obs every 30 mins. Review <30 min by clinician compe acute illness assessment. Senior doctor review <3 hr if no improvement; refer to Outreach or	nent in r ICU			
Initial (ge	Initial treatment of precipitating condition	Standard care	<6 hr	d M	<114				
Clons	Unlikely	Standard care Review daily and reconsider infection if diagnosis remains uncertain							
A specific a	Possible	Review at least daily	< 6 h - Source identification & control plan.	 4 3 h: Microbiology tests Antimicrobials; administer or revise 	41 h: • Microbiology tests • Antimicrobials: administer or revise spectrum if causative organism unc	(broad- entain).			
Likelihood of infection	Probable or definite	<6h Diagnostic tests & R plan	< 6 h = Microbiology tests = Antimicrobiols: administer or revise = Source identification & control plan. = D/W ID/micro.if uncertain, & review	Source identification & control plan. 48 – 72 h Review antimicrolitals with ID/micro/venior clinician	< 3 h + Source identification & control plan 48 – 72 h: + Review antimicrobials with ID/micro clinician	o/senior			

Accelement of



for adults with possible sepsis without shock, SSC suggest a time-limited course of rapid messignition and if concern for infection persists, the administration of antimicrobials within 3 he from the time when sepsis was first recognized.





-eObs implementation









Learning from the Scottish Patient Safety Programme



- SPSP
- Cardiac Arrest Improvement
- Our future work



