RCGP Sepsis Summit Consensus Report 2017

Introduction

Sepsis presents a huge burden to patients, families, healthcare and society. This document focuses on the awareness, identification and access to treatment for people who become unwell in Out-of-Hospital settings. It recognises the lack of robust evidence relating to the identification and management of patients developing sepsis within the community. It seeks to define the elements of an integrated sepsis aware community and healthcare system, and outlines how various stakeholders can contribute to this.

Background

Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection, with Septic Shock being defined as sepsis with persisting hypotension requiring vasopressors to maintain MAP ≥65 mm Hg and having a serum lactate level >2 mmol/L (18 mg/dL) despite adequate volume resuscitation.[1] Septic shock by this definition carries a high mortality (40%) and is a hospital definition. Out of hospital septic shock should be suspected when the Systolic BP is below 90mmHg in adults, raised respiratory rate (≥22bpm), low blood pressure (≤100mmHg) and altered mentation (confusion, reduced consciousness) have been identified as the three most consistent features of organ dysfunction that can be identified at the bedside[2].

It is estimated that there were 123,000 cases of sepsis in England in 2014[3], with approximately 37,000 deaths attributed to it. 70% of those cases arise in the community, with the remainder developing as a consequence of a hospital stay or intervention[4]. These are predominantly made up of respiratory, urinary tract and lower GI infections and affect the very young and elderly disproportionately. This large number of sepsis cases deriving from the community needs to be seen in the context of the many millions of episodes of infection that occur, the vast majority of which do not present to any form of recognised healthcare. Sepsis is the presenting condition in only a tiny fraction of the infections that present to community healthcare professionals and GPs and it is this rarity both for the individual and the healthcare practitioner which presents one of the greatest challenges in improving outcomes.

There have been several high-profile reports and enquiries[5-8] into sepsis cases and missed opportunities to intervene. These have criticised various elements of care both in and out of hospital and challenge all stakeholders to improve. Ministers and NHS England have taken up this challenge[9]. Hospital care has been directed towards the prompt assessment of patients with infection and the rapid administration of intravenous antibiotics, fluids and oxygen[10]. The challenges Out-of-Hospital are greater and involved the coordination of multiple stakeholders, the RCGP with the support of NHS England hosted a stakeholder summit to explore the various elements of this challenge and identify how they might be addressed and coordinated.

Current Position

There are a large number of stakeholders in Out-of-Hospital care who are working to develop better sepsis care. Currently there is little coordination between these various elements and there is a diversity of approaches and interpretation of evidence and guidance, the Summit was clear that this was far from ideal and the various elements of a "Sepsis Aware System" require a consistency of approach. The Summit identified five key areas for development, collaboration and consistency

- Education and Awareness
- Integration and Connectivity
- IT and Technology
- Measuring Success
- Leadership and accountability

Education and Awareness

There is an increasing amount of educational activity being undertaken around sepsis, using a range of modalities[11]. It does not yet include all the groups who might need access and it is not mandatory for any, though individual service providers are requiring it for some staff and roles, notably out of hours and urgent care GPs. There was discussion as to whether sepsis training should become mandatory for all GPs but there was no consensus at the summit given the range of GP activities and roles. Currently sepsis training and its frequency remains an individual decision for the GP and any employer. If however sepsis awareness is to increase within any of the groups it is essential that they become aware of the benefit to them and the people they care for in undertaking such training. As such training must take into account the human factors that interact in our response to managing people with infections and sepsis. There is a diversity of approaches to how patient assessment is taught and reflects the current plurality of views regarding the current NICE guidance and the application of NEWS to the Out-of-Hospital environment. It was felt that National Early Warning Scores [12](NEWS) were an adjunct to patient assessment but not a replacement for clinical assessment and judgement. The use of NEWS scores alone for triggering any particular decision or action in General Practice and many other hospital arenas lacks an evidence base and their use as triggers should be as part of a governed system that is able to assess their utility for the circumstance they are used. It was felt that there needed to be a consistency of message and approach across all Out-of-Hospital services, and that the number and range of people accessing training needed to increase. Links to training can be found on the RCGP Sepsis Toolkit, and links will be added to as more appropriate training resources become available.

Groups identified as needing training

- General practitioners
- Nursing (GP, community and residential care)
- Practice Team
- Health Care Support workers
- Patients/Carers
- Pharmacists
- Ambulance paramedics and clinicians

It was recognised that there may be advantages in linking training and awareness to existing campaigns such as seasonal influenza and antimicrobial stewardship.

Key Points

- Develop consistent and training for all stakeholders
- Encourage awareness and training uptake for all stakeholders

Integration and Connectivity

Developing an integrated multi-service system for the early identification and response to sepsis was identified as important. Concern regarding sepsis can occur at many points in the community and involves patients, carers and families as well as health professionals. Each must understand the features of potentially worsening infection and have appropriate pathways to follow to have those concerns assessed and addressed appropriately. Recent reports and serious incidents suggest that this is not being delivered consistently and that the system is fragmented. It was agreed that we need to develop a common language of concern and escalation. It was suggested that the phrase "Suspicion of Sepsis" was appropriate, and that this could reasonably be augmented by NEWS scores in communication between organisations. The use of "Red Flag Sepsis" may or may not be appropriate in the Out-of-Hospital setting due to a lack of evidence of sensitivity or specificity in this arena. It is recognised however that the more extreme the abnormality of any individual physiological variable, particularly respiratory rate, low blood pressure and mentation, the greater the level of concern/suspicion may be.

A repeated theme from the RCGP sepsis educational workshops has been a lack of understanding by GPs of the ambulance service's prioritisation of response to medical emergencies and life-threatening conditions. It is noted that some ambulance services and hospitals are requesting NEWS scores from GPs arranging urgent transport and/or admission with the aim of being able to prioritise resources better. There is as yet no evidence to suggest this is better than the current systems of prioritisation, which are largely based upon the time at which the call was received and the priority an individual clinician put to that call. It is therefore suggested if NEWS is used for prioritisation in novel ways, that it is reviewed regularly for its effectiveness by the clinical governance systems of the requesting organisation(s). Pre-alerting hospitals to the presence of Septic Shock is common place for ambulance admissions via the emergency department, yet facilities for GPs to communicate concerns regarding patients to either the Emergency Department or a senior clinician in the admitting hospital team were reported at the workshops as ad hoc or unavailable. This seems inconsistent with good communications particularly when the hospital approach to sepsis includes the early involvement of senior clinical decision makers in the care of the sickest patients\.

It is recognised that there are a large number of points of access to hospital care for GPs, Out-of-Hours, and Urgent Care services to refer patients who are unwell with suspicion of sepsis, these include a wide range of specialities and the Emergency Department. It is similarly recognised that it is not always possible for the GP to correctly identify the source of a significant infection whilst still being suspicious of sepsis. Potentially this may lead to confusion and delay in accessing appropriate resuscitation and assessment, consideration should be given to reducing the assessment options and access points with the aim of streamlining access to prompt treatment wherever the source of infection may be. There should be developed pathways for "suspicion of sepsis" for GPs referring to hospital, with access to senior clinicians and it may be appropriate that these are cross-speciality.

Safety netting of patients by GPs as to what would indicate a deterioration or abnormal progress of their illness requiring reassessment by a clinician has been reported as variable or unhelpful in some of the serious case reviews[6-8]. It was felt that safety-netting for patients with presumed infection should include description of the signs of sepsis, and should align with any public health awareness literature, with particular focus on respiratory rate, pallor/clammy/low BP, and confusion.

Patients, parents and carers access healthcare at a variety of points for advice and/or assessment all of which need to understand the features of worsening infection and sepsis. The summit is aware that the 111 service are reviewing their systems in this regard in the light of recent cases. The summit identified that there is a gap in our knowledge as to what GP reception staff and call handlers should question and respond to patients who present with symptoms that might fit with sepsis. The number of cases of infection or possible infection means it cannot be sufficiently

discriminating to allow prioritisation on that basis alone, other symptoms similarly lack the sensitivity to be useful. This lack of highly specific red flag unlike heart attack and stroke makes training staff a challenge, but needs to be addressed in a sepsis aware healthcare system and community. It was felt that this should be an area for further work. Similarly, Community pharmacists are a common source of public advice on health matters and need training and guidance to support this role.

Key Points

- Common Language for raising concern
    - "Suspicion of Sepsis, NEWS score, Red Flag features"
- Streamlined pathways of assessment and care
    - Receptionist/Call Handlers training
    - Community Pharmacist
    - Strategy for Hospital alerting (Senior Clinician to Clinician)
    - Reduced number of Hospital assessment point
    - Improved safety-netting of patients with infection aligned with public health messaging

IT and Technology

GP clinical systems offer facilities to support GPs in recording information where assessing patients, some systems have tried to encourage/support GPs when assessing patients with infection. The GPs attending the Summit and RCGP Sepsis workshops have expressed concern that although potentially helpful the current offerings need further work to avoid them being an irritation rather than a benefit. A frustration are the pop-ups mandating specific action based on abnormal physiology alone as these make no allowance for clinical judgement which is often at variance with the advice being given by the system. All recognised the potential benefit from clinical systems that can support without intrusion but felt that more work was required to improve their utility and uptake.

Utilisation may improve with

- Less intrusion
- NEWS Calculation facility
- Education and awareness
- Additional features
    - Patient Leaflets
    - Self-populating admission letters
    - Safety netting
    - Facilitated Audit

The use of pulse oximetry in adult patient assessment has increased within general practice over the last 10 years and is well established if not yet universal. The summit felt that access to oximetry for all age groups was important for clinicians assessing patients with infection. Paediatric oximetry however remains a challenge both in terms of access to appropriate and validated equipment and the time and skill to obtain reliable readings in an out-of-hospital setting.

It was noted that there are a wide-range of adult and paediatric oximeters available on the market varying in price from tens to hundreds of pounds but little to guide unfamiliar users as to which might be appropriate. Individual out-of-hospital clinicians are unlikely to be able to make a judgement and central guidance and/or evaluation would be welcomed.

The place of lactate near patient testing in the evaluation of patients in an out-of-hospital setting was discussed and remains uncertain, there is no evidence as to its sensitivity or specificity in this arena. One out of hours' provider described how it was being used in their service prior to the administration of intravenous antibiotics by clinicians. This service and system has not been formally evaluated and although interesting it is not possible to recommend blanket use of lactate near patient testing in the assessment or management of sepsis out-of-hospital.

The summit recognised the importance of multiple sources of information regarding health and sepsis available to patients, carers and parents, and that NHS resources are not necessarily the first choice of the public when considering how to manage and assess infection. Consequently, a range of resources and modalities needs to be employed in supporting dissemination of information, video information for parents on the web and in app form was felt to be particularly desirable and but is currently unavailable. This would also have value to clinicians who do not regularly assess sick children or adults.

Key Points

- All Clinical systems to support the clinician with sepsis appropriate assessment tools.
- Systems should facilitate audit across primary and secondary care
- Oximetry needs to be available for all age groups
- Paediatric Oximetry needs facilitation and support in General Practice
- Lactate near patient testing remains of unproven value in most circumstances
- Improved materials and media to support patients, carers and parent

Leadership and Accountability

The disparate nature of services and patient access points to those health services for the assessment of patients with infection/sepsis in the Out-of-Hospital arena means that no organisation has control or oversight with the partial exception of the Commissioners of Services; even then Care homes lie outside of their control. Stakeholders need to be encouraged to address issues within their own services but also to ensure that there is integration of approach. Ideally this should closely follow National Guidance and where available Out-of-Hospital evidence so that it can be supported by existing national training resources.

The creation of a shared vision between stakeholders at a local level is important and should reflect what is practical and achievable. Services and stakeholders may benefit from identifying key sepsis leads within their organisation who can work together to create a shared local vision. The Hampshire model for a shared approach is a strong example of this. (Appendix Two)

It is a challenge for individual practices to ensure integration of approach across a whole locality and it may be necessary to facilitate a lead for GPs across an area. There was concern that GPs in general practice services may lack the time to record full sepsis aware consultations and that there may need to be a different in approach between regular General Practice and that undertaken services with higher risk or higher volumes of infections i.e. Out-of-Hours or Urgent Care.

Key Points

- Stakeholders to identify a lead individual
- Commissioners have a key role in coordination and facilitation
- GPs need a locality lead and practice lead to facilitate consistency

Measuring Success

Key to delivering a sepsis aware system is an ability to measure success and improvement. It is unlikely that we will be able to measure reduction in sepsis deaths related to any individual services actions within the foreseeable future. Proxy measures for improved sepsis care are therefore required at almost all levels of out-of-hospital care. The following were considered as potential measures of progress towards a sepsis aware community and system

Training and awareness

- Access to appropriate training
- Uptake of training
- Recording of physiological values/template use
- Pre-alert to hospital
- Uptake of event analysis and reflective practice related to sepsis
- Immunisation uptake

IT and Technology

- Template utilization
- Template features
- Facilitated audit features
- Oximetry availability

Integration and Connectivity

- Local multi-stakeholder plans
- Training of stakeholders to the plan
- Evidence of Cross-system working at a local level
- Data sharing for governance purposes
- Shared safety netting and patient awareness materials

Leadership and Accountability

- Service lead identified
- Measured proxy indicators of improved care
- Collaborative working undertaken
- Shared vision of a sepsis aware system

It was identified that for some services who do not hold a registered list such as Out of Hours, Urgent Care, and Walk-in Services reflective practice can be challenging as it requires access to outcome information and feedback. The sharing of this information is often limited by confidentiality concerns but needs to be overcome.

Currently we do not know how long it takes from a patient consulting the healthcare system and receiving definitive treatment/assessment and it is not clear if this has an impact on outcome. Measuring this should therefore only be undertaken as part of research and should not form part of any system assessment currently.

Key Points

- Measurable outcomes need to be identified for all areas of development
- Proxy measures need to be considered in the absence of objective outcomes
- Lack of outcome data sharing arrangements is a block to governance and learning in some areas

Areas for further research and development

The summit recognised several areas of patient care that required further research or development, priorities included

- Education for GPs and clinicians regarding ambulance prioritisation systems
- Evaluation of the use of NEWS in prioritising patients for admission by ambulance
- Evaluation of the sensitivity and specificity of physiological variables/news score in a general practice setting for the identification of sepsis and deteriorating illness of all causes.

Recommendations

A consistent approach needs to be developed across communities to the identification and treatment of possible sepsis. This requires multiple stakeholder collaboration and patient, carer and parental involvement. GPs and other Out-of-Hospital stakeholders need to collaborate to develop a shared strategy and language to ensure a consistency of approach both locally and nationally. This shared approach should include Training/Awareness, use of IT and technology, leadership and measurable outcomes of improvement. Commissioners of services have a role to play in the development of a Sepsis aware community by ensuring this collaborative approach and facilitating improvement.

Summary of recommendations

- Consistent training needs to be available for all stakeholders
- Uptake of training in these groups should be monitored

- Clinical systems need further work to improve the utility and uptake of Sepsis tools
- A common language of “Suspicion of Sepsis” augmented where appropriate by NEWS scores should be adopted.
- GPs need access to pulse oximetry for all age groups
- Identification and access to appropriate paediatric pulse oximetry devices

- Communities need a shared vision and approach to the improvement of Out-of-Hospital sepsis care
- Commissioners and Stakeholders to identify lead individuals to facilitate delivery of this

- Measurable outcomes that indicate progress towards the shared vision to be identified
- Development of cross-system data sharing arrangements

Appendix One References

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Out of Hospital NEWS- Sepsis & Deterioration

Matt Inada-Kim, National Clinical Advisor, Simon Stockley RCGP Clinical Champion for Sepsis

Introduction

There is national acceptance in hospital and ambulance environments that standardising the physiological language of sickness with NEWS is best for improving the quality of care across the whole care pathway and in all environments[1,2]. Whilst this is particularly important at the interfaces of care- at geographical, chronological and silo handovers; the value of having a single way of describing risk as a baseline to help inform clinicians, in all areas, when there has been physical deterioration cannot be understated.

National Early Warning Score (NEWS)

Validated tool widely used in acute care comprising six biological measurements:

- Respiration Rate
- Oxygen Saturations
- Temperature
- Systolic Blood Pressure
- Heart Rate
- Level of Consciousness (defined by AVPU)

NEWS can be used for both initial assessment of acute-illness severity and as a track-and-trigger to identify acute clinical deterioration and response

Organisations using non-NEWS based protocols need to think very carefully about the impact this has on the quality of care delivered in the regions and communities of care they work within; and their colleagues working at the interfaces of care where the perils of non-standardisation are all to evident.

NEWS, Sepsis and Out of Hospital Care

National reports on community derived sepsis cases have found that Out-of-Hospital complete observations sets are often lacking[3]. Respiratory rate, blood pressure and mentation are the greatest predictors of Sepsis and poor outcomes yet remain the poorest recorded in the GP notes of patients who had sepsis. NEWS is not validated as a tool for the detection of Sepsis or serious illness in General Practice but it offers an adjunct to that assessment process and reminds clinicians of the abnormal values of physiological signs.

NCEPOD Sepsis cases: Out-of-Hospitals observations

Vital signs recorded	GP (n = 129)	%	Paramedic (n=163)	%
Temperature	34	26.4	146	89.6
Blood pressure	32	24.8	157	96.3
Heart Rate	40	31.0	163	100
Respiratory	8	6.2	159	97.5
AVPU	8	6.2	144	88.3

> "An early warning score, such as the National Early Warning Score (NEWS) should be used in both primary care and secondary care for patients where sepsis is suspected. This will aid the recognition of the severity of sepsis and can be used to prioritise urgency of care"
>
> NCEPOD 2015

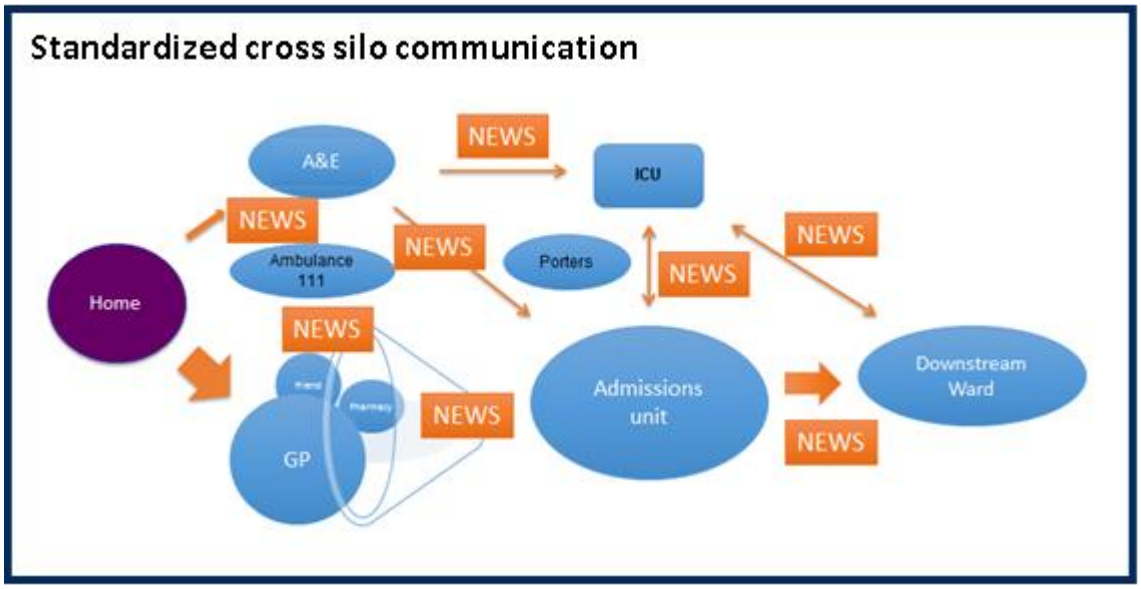
There is increasing evidence that NEWS translates well into areas outside of acute hospitals[4] and national guidance on a number of causes of deterioration are now based around the uptake of NEWS[5]. The experiences of countries that have standardised to NEWS has been extremely positive (Wales[6], Scotland[7]), and we now have an opportunity to fully embed NEWS across all environments, use a common language and optimise communication.

National Early Warning Score

- Graded scoring system (0-20), an aggregate score of the total predicts mortality
- Based on aggregated scores and extreme variation in single parameters (the red flag)
- The greater the deviation from the norm, the greater the potential for acute illness
- Estimated could save 6,000 lives per year if everyone used NEWS
- It is an adjunct not a replacement for clinical judgement

Physiological Parameters	3	2	1	0	1	2	3
Respiration Rate (BPM)	≤8		9-11	12-20		21-24	≥25
Oxygen Saturations (%)	≤91	92-93	94-95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature (°C)	≤35		35.1-36.0	36.1-38.0	38.1-39.0	≥39.1	
Systolic Blood Pressure (mmHg)	≤90	19-100	101-110	111-219			≥220
Heart Rate (BPM)	≤40		41-50	51-90	91-110	111-130	≥131
Level of Consciousness				A			V, P or U

Escalation plans based around news could be constructed for use in all environments. Currently there is no evidence-base for the use of NEWS alone to trigger specific actions and it is suggested they form part of a clinical judgement and assessment process. The assessment process must take account of the patient's wishes regarding escalation of care to prevent burdensome and unnecessary escalation.

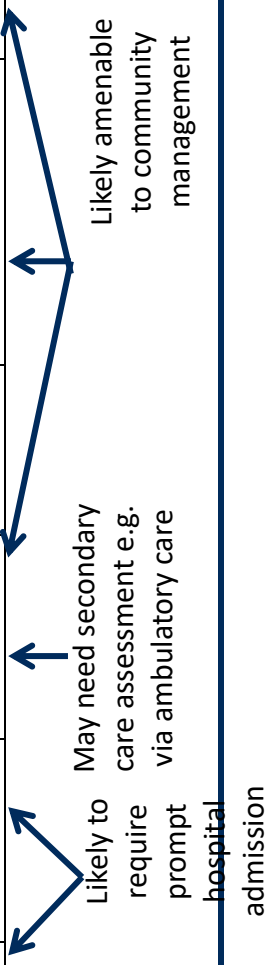

Standardized cross silo communication
A&E
NEWS
ICU
NEWS
NEWS
Ambulance 111
Porters
NEWS
NEWS
Home
NEWS
Admissions unit
Downstream Ward
NEWS
GP
NEWS
NEWS

NEWS and Assessing Deterioration within Care Homes

Knowledge of baseline observations at times of health in all environments (care homes, General practice, community nursing) that care for sicker, frailer adults with chronic illness can be used to assist and prompt escalation decision making. In care homes looking after such patients, it is not unusual for up to 30% of the residents to have abnormal baseline NEWS.

NEWS in Care Homes

NEWS ABOVE Baseline	Suggested Actions (Always refer to anticipated care plan)	Observation
0 Above Normal Baseline	Observe – likely stable enough to remain at home Escalate if any clinical concerns / gut feeling	**At least 12 hourly until no concerns**
1 Above Normal Baseline	Immediate senior staff review, escalate if concerned. Repeat observations within **6 hours**. If next observations = **NEWS + 1 above normal baseline or more with no obvious cause** arrange GP review within 24 hours. If NEWS is worsening	**At least 6 hourly**
2 Above Normal Baseline	If no Improvement in NEWS (or the same) within 2 hours, seek GP telephone assessment within 2 hours +/- GP review within 6 hours. If NEWS is worsening	**At least 2 hourly**
3-4 Above Normal Baseline	Repeat observations within **1 hour**. If observations = **NEWS +3 above normal baseline or more**, seek urgent GP review within 2 hours. If NEWS is worsening	**At least 2 hourly**
5-6 Above Normal Baseline	Urgent transfer to hospital within 1 hour Refer to GP or use NHS 111 to contact Out of Hours (if consistent with advanced care plan)	**Every 30 minutes**
7+ Above Normal Baseline	Blue light 999 call with transfer to hospital (15 minutes) follow guidance of call handler, (if consistent with advanced care plan)	



Prior knowledge of escalation directives would lead to a seismic shift in the quality of care delivered to the frailer residents, and may prevent unrequired and/or burdensome treatments. These might include:

1. Resuscitation status/Ventilation,
2. Suitability for emergency admission
3. Future appropriateness for antibiotic administration (PO/IV)
4. Assisted feeding

The documentation of these decisions in a standardised format that is both electronic and written[8] (on a care home observation chart and on transfer documentation) would reduce the avoidable harms of admitting and potentially over treating those who would not want or benefit from aggressive interventions.

When frail residents become unwell, soft signs of deterioration[9,10] & NEWS could be used to signal both mortality risk, and provide guidance for who should be reviewed, by whom (carer, nurse, doctor), in which environment and over what time course. It could also give a plan for the frequency of observations so deterioration can be tracked and reviews carried out.

Soft Signs of Deterioration in the Elderly (Grade urgency 1-3)

FUNCTION (scores 1)

Reduced Independence

Ability to Stand / walk / transfer

BEHAVIOUR (scores 1)

Altered, Lethargy, ↕routine

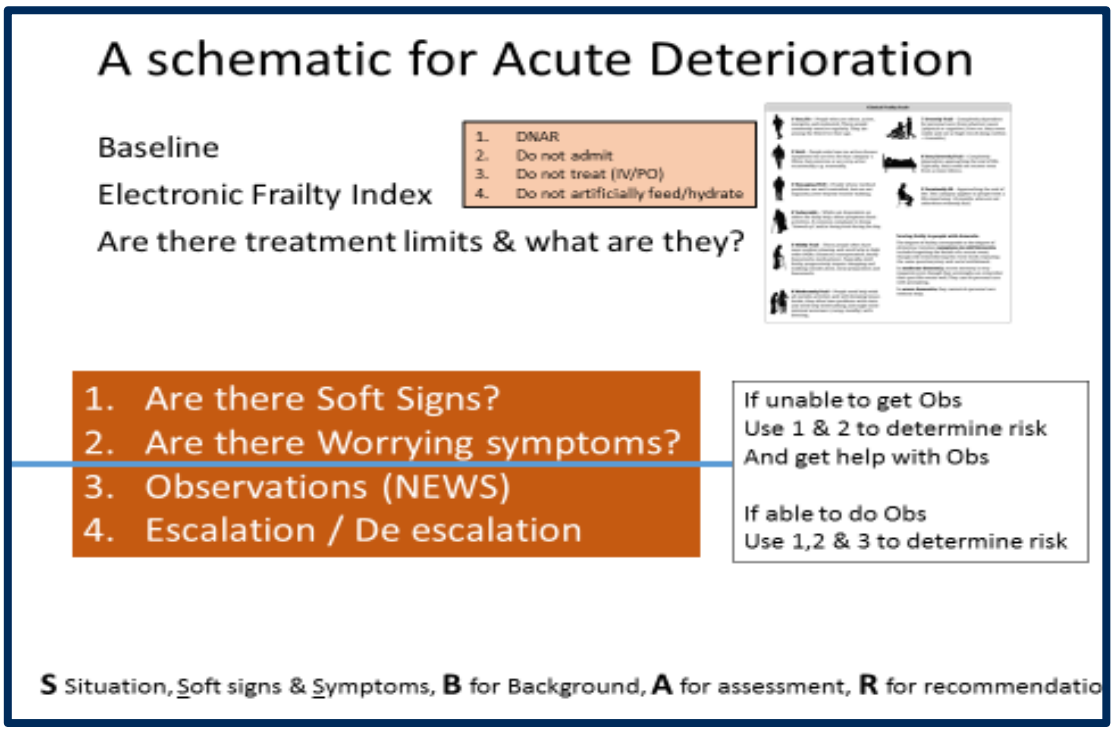
CONCERN (scores 1)

Patient, carer, Nurse

Including eating/drinking, toileting

(Kellett, Bookcvar, Douwe)

The presence and persistence of these soft signs could be tracked, handed over and communicated in Out-of-Hospital environments. When patients require discussion across the interfaces of care, these soft signs and NEWS should be communicated as well as an indication of what the baseline NEWS is normally.



If the undertaking of physiological observations (and a NEWS) is not possible, then the sustained presence of soft signs of deterioration should prompt escalation for an assessment by someone who can perform a clinical assessment. The aim being to escalate care at the timeliest point ideally before hospital admission is required.

This is particularly important for community referrals to GPs, ambulance services and in-patient medical teams. Better informed medical teams in hospitals will be more likely to deliver appropriate interventions and see patients most at risk first. When the baseline NEWS is known, they can be useful in helping determine when patients are medically fit for discharge and at what trigger points review is required.

The evidence-based for the use of NEWS scores within the Out-of-Hospital arena is severely limited. It is therefore recommended that any service or system to trigger any response does so within a system of clinical governance or evaluated pilot. This is important to ensure that benefits, disadvantages and unexpected consequences are learned and responded to appropriately.

NEWS, Sepsis and All-Cause Deterioration

Infection is a very common reason for deterioration and it is vital that suspected sepsis is not managed along a different pathway to all cause physical deterioration. There is strong evidence of the role NEWS should play in the diagnosis of sepsis and general deterioration[11,12,13].

The Operational Adult Definition of Sepsis is based on NEWS (RCPL NEWS2)
Suspicion of Infection + NEWS ≥ 5 = Consider Sepsis

When ambulance services are required, NEWS could play a very important role in highlighting the most at risk patients in community settings, and prioritising their urgency (including ambulance disposition for GP or care home assessed patients) against those with lower physiological scores and lower mortality risk. The use of NEWS to determine pre-

alerts to Emergency Department resuscitation rooms will also enable senior decision makers to be on standby for the arrival for particularly unwell patients[4].

Summary

Ideally, the transfer of NEWS from one environment to another should be seamless, to enable a clear interpretation of the trends of either improvement or deterioration against a well-recognised and documented baseline.

Currently, pan-regional implementation of NEWS is occurring to embed their use in all Out of-Hospital, Ambulance and hospital environments, and represents a great opportunity for national alignment around a single language of sickness.

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Appendix Three Summit Attendees 27-1-17

Name	Job title	Place of work
Dr Simon Stockley	RCGP Sepsis Clinical Lead	Eaglescliffe Medical Practice
Dr Adnan Ali	GP and Regional Medical Director	Care UK
Dr John Caldwell	Medical Lead OOH	Urgent Care 24, Liverpool
Dr Vicki Chalker	Clinical Fellow	NHS England
Dr Ron Daniels	Chief Executive	UK Sepsis Trust
Dr Steven Dykes	Deputy Medical Director	Yorkshire Ambulance Service
Tim Edwards	Consultant Paramedic	London Ambulance Service
Dr Jeanne Fay	Senior Interface Medicine GP, EMU	Witney Community Hospital
Dr Suzanne Fletcher	Salaried GP OOH UC24	Urgent Care 24, Liverpool
Janet Flint	National Programme Lead, Population Health and Prevention	Health Education England
Rose Gallagher	Professional Lead for Infection Prevention and Control	Royal College of Nursing
Dr Gail Hayward	Deputy Director NIHR Oxford Diagnostics Evidence Cooperative	University of Oxford
Dr Richard Healicon	Programme Lead, Audit for Improvement Team	Quarry House
Philip Howard	Consultant Pharmacist / AMR Project Lead	NHS Improvement
Dr Matthew Inada-Kim	National Clinical Advisor Sepsis	NHS England Hampshire Hospitals
Dr Imran Jawaid	GP (RCGP AMR Representative)	Kent
Dr David Jewell	Locum GP	Horfield Health Centre, Bristol
Dr Jeremy Lade	Medical Director	Berkshire Healthcare NHS Foundation Trust
Dr David McCartney **Apologies*	GP/Clinical Research Fellow	Oxford
Dr Gerry Morrow	Medical Director	Clarity Informatics
Dr Maud Nauta	GP	Camden Health Improvement Practice
Mohamed Sadak	Clinical Lead and Programme Manager, Antimicrobial Resistance and Sepsis	Health Education England
Dr Cathleen Schulte	Policy Manager	Department of Health
Dr Sophie Stevens	Clinical Fellow to Professor Sir Mike Richards	CQC
Dr Alison Tavare	GP	West of England AHSN
Sally Wellsteed **Apologies*	Team leader infection prevention	Department of Health
Helen Wilkinson	Improvement Manager	NHS England
Dr Rosanne Wrench	Sessional GP	Over 4 Surgeries in CB24