

# Safety-II in Healthcare: A Systems Analysis of Sepsis Survivor and Tribute stories



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# Introduction – Why Signals?

## Why Sepsis?

- Safety-II: Success under varying conditions (Hollnagel, 2014) requires understanding the current status of the system.
- Signals:
  - Sensed information regarding emerging events (Ansoff & McDonnell, 1990)
  - Indicators or cues from the environment (Rasmussen, 1983)
  - Requires interpretation and sense-making (Weick, 1995)
  - Allows for pro-activeness: address issues in a cost-effective & timely manner (Vogus & Sutcliffe, 2007)
- Sepsis:
  - Major healthcare issue worldwide (Lang and Tasker, 2017; Namas et al., 2012).
  - A systems problem (Lang and Tasker, 2017).

# Research Objectives

1. Identify opportunities, missed or **utilised**, in the treatment and diagnosis of sepsis using a systems approach.
2. Identify signals associated with sepsis that may assist early diagnosis and treatment.
  - Work towards developing a systematic framework for the analysis of weak signals in healthcare.

Safety-I  
&  
Safety-II

Safety-II

Signals

Work-as-done

# Method

- 99 Survivor and tribute stories - UK Sepsis Trust website ([www.sepsistrust.org](http://www.sepsistrust.org))
  - 55 survivor stories – focused on “what went right”
  - 44 Tribute stories – focused on “delays and what went wrong”
- Qualitatively analysis
- Analysis: SEIPS 2.0 Model (Holden et al., 2013)



# Sample Characteristics

Number of Survivor and Tribute Stories

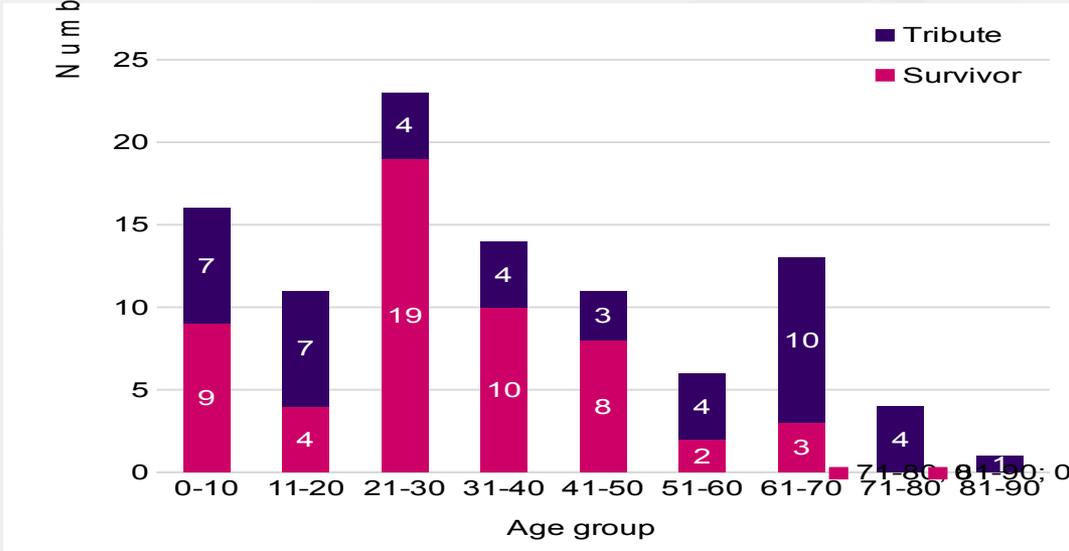


Figure 2: The number of stories analysed per age group for the survivor and tribute stories in the sample.

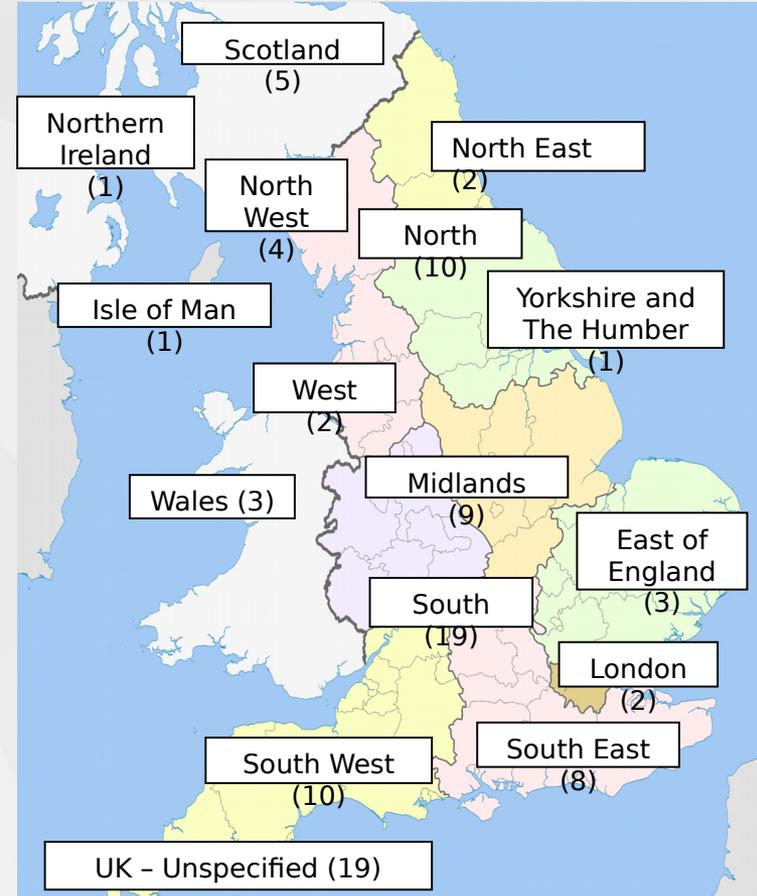
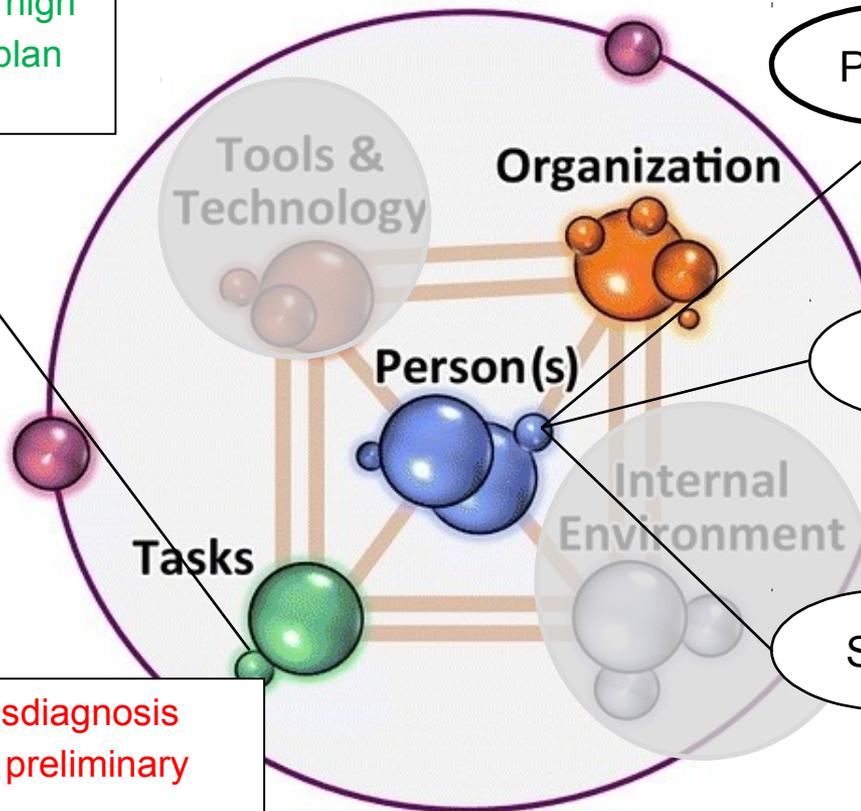


Figure 3: The number of stories per region.

# Results – Proximal System Components

## WORK SYSTEM

+ Early scans & antibiotics  
+ Despite not scoring high for sepsis, treatment plan still followed



Patient

+ Awareness of sepsis

Family

+ Advocate for patient  
+ Intercept and get healthcare involved

- Rationalise symptoms away

Staff

+ Advocate for patient  
+ Quick reaction of staff

- Not recognise the urgency of the situation

- Delay or misdiagnosis  
- Fixation on preliminary diagnosis

# Results – Person Component

- **Tribute Stories:**
  - Not recognising the urgency of the situation
- **Survivor Stories:**
  - + Patient advocating for themselves
  - + Quick reactions of staff
  - + Staff ensuring shorter waiting times
- **Both:**
  - + Family/Staff advocating for the patient
  - + Family seeking medial attention for the patient
  - Symptoms being rationalised away
  - Delay in seeking medical treatment
- **Signals:**
  - Physiological signs & symptoms
  - Out of character behaviour
  - Patient history

*“It was there that I collapsed after trying to convince the GP that there was something terribly, terribly wrong with me”.*

*“I was so fortunate that the Junior Doctor pushed and pushed for me to be taken to the ICU in spite of others who wanted me to stay put”.*

*“all...[our] girls caught chickenpox consecutively”*

# Results – Task Components

- **Tribute Stories:**

- delays in receiving scans, antibiotics & diagnoses
- Being inappropriately triaged

- **Survivor Stories:**

- Not monitoring the patient's vital signs
- + Receiving scans early and in a timely manner,
- + Early administration of antibiotics (IV)
- + Immediate medical treatment (e.g. surgery).

- **Both:**

- Being misdiagnosed or incomplete diagnosis/a fixation on the preliminary diagnosis

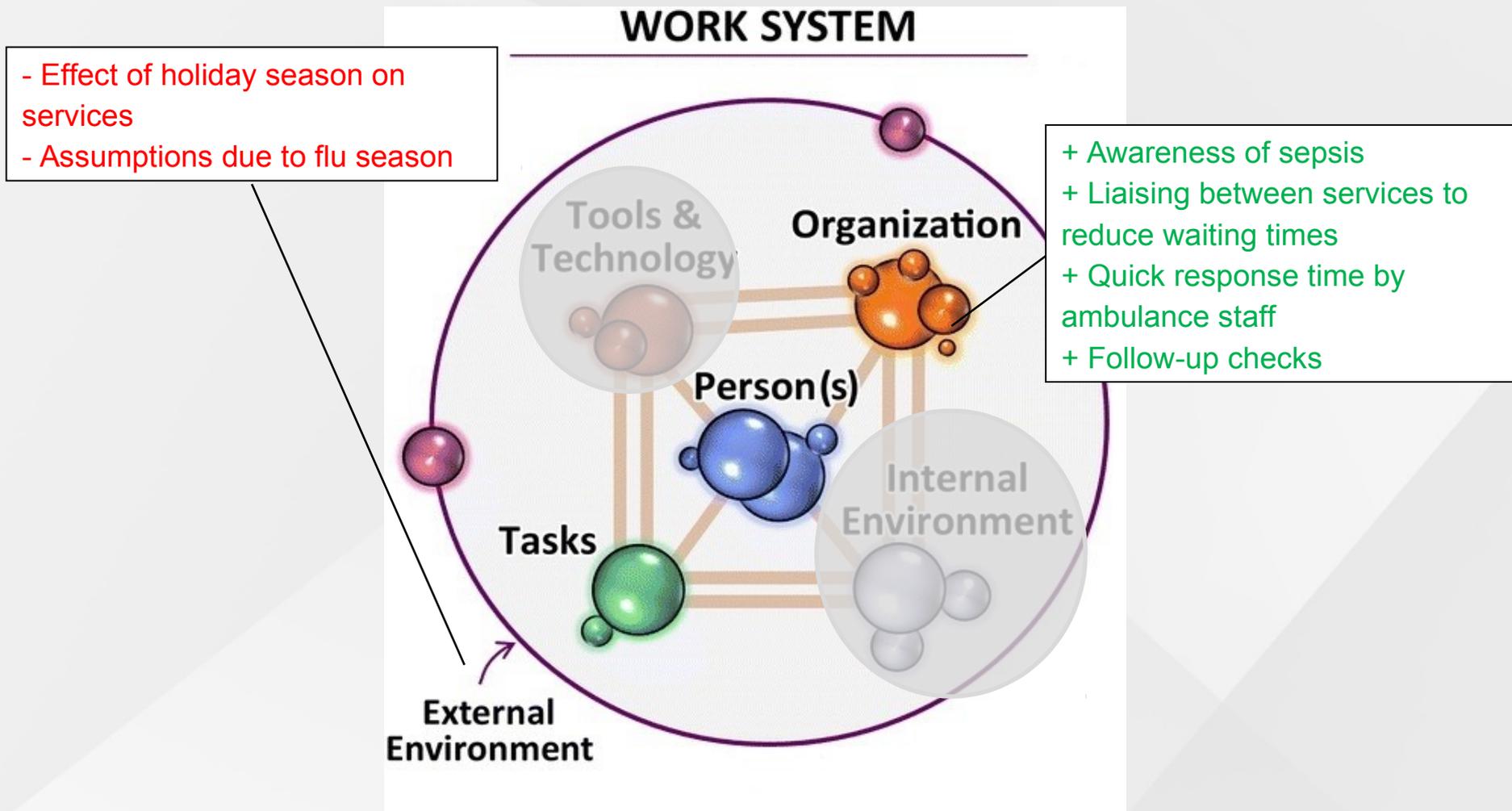
- **Signals:**

- Seeking medical advice on numerous occasions
- Physiological tests & scoring tests
- Unable to conduct medical tests

*“whilst I apparently didn't initially score too high for sepsis they treated me with IV fluids and antibiotics, painkillers and various X-rays and scans”.*

*“the GP put down to being muscular. I kept returning with the pain and was just given stronger painkillers and told to rest”.*

# Results – Distal System Components



# Results - Organization

- **Survivor Stories:**

- miscommunication between services
- + an organisational awareness of sepsis
- + quick response time by ambulance staff
- + liaising between systems to reduce waiting times

- **Both:**

- Numerous services and wards involved
- a lack of availability of services, and poor response times

*“The nurse liaised with ... Hospital and arranged for me to ... get to A&E – armed with a letter saying I wasn’t to wait in reception to be seen, and had to go straight through”.*

# Work-As-Done Examples

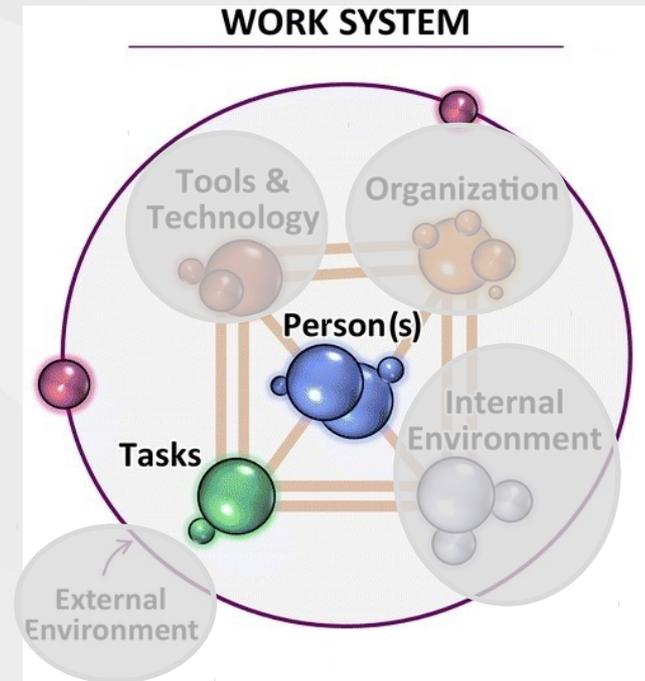
## Staff Behaviours:

- Speaking up and challenging supervisors
- Improvisation
- Workarounds and shortcuts
- Staff awareness

## Patient/Family as resource

## Task-Related:

- Action before complete diagnosis
- Attempts to reduce waiting/treatment time
- Flagging patient files
- Rerouting to other wards/services



# Summary

- This case study highlights the following key areas:
  - High degree of uncertainty associated with this medical syndrome
  - Problems associated with quick diagnosis and access to treatments
  - Communication between system elements (Transfer of Knowledge)
  - Attempts to reduce treatment time are not always successful

# Limitations and Conclusion

- Limitations of study:
  - 1 type of method (secondary source analysis)
  - Hindsight bias
- Strengths of the study
  - 99 stories were included, both tribute and survivor
  - A unique perspective of the work system (patient and families' perspectives)

Signals provide insight into work-as-done and may provide a practical means for promoting Safety-II.

**THANK YOU FOR YOUR  
ATTENTION.**

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# Framework

