Optimising the management of septicaemic patients

Helena Parsons, Lisa Tilley and colleagues

Department of Microbiology, Laboratory Medicine, Sheffield Teaching Hospitals NHS Foundation Trust

Sheffield Teaching Hospitals NHS
NHS Foundation Trust

Background

STH receives ~32 000 blood culture sets per year. Patients with septicaemia are amongst the sickest patients in the hospital. Although most patients are treated with antibiotics at the point sepsis is recognised, as antibiotic resistance increases and the numbers of Clostridium difficile infections, optimal antibiotic prescribing is essential. Early identification of the pathogen causing the patient's infection is vital in advising the clinician which antibiotic is appropriate in terms of activity and narrowest spectrum.

In 2012 the two microbiology laboratories at STHFT merged onto one new purpose built site. This led to more blood cultures being managed on one lab bench and extension of the working day resulted in fewer staff per specimen at any one time. Subsequently the blood culture results were being delivered to the medical staff office at 10:30-11:00. At 11:00 the medical staff have critical care ward rounds and other commitments making work load stressful.

DOH!: Sort out problem statement first — problem is not solely contamination
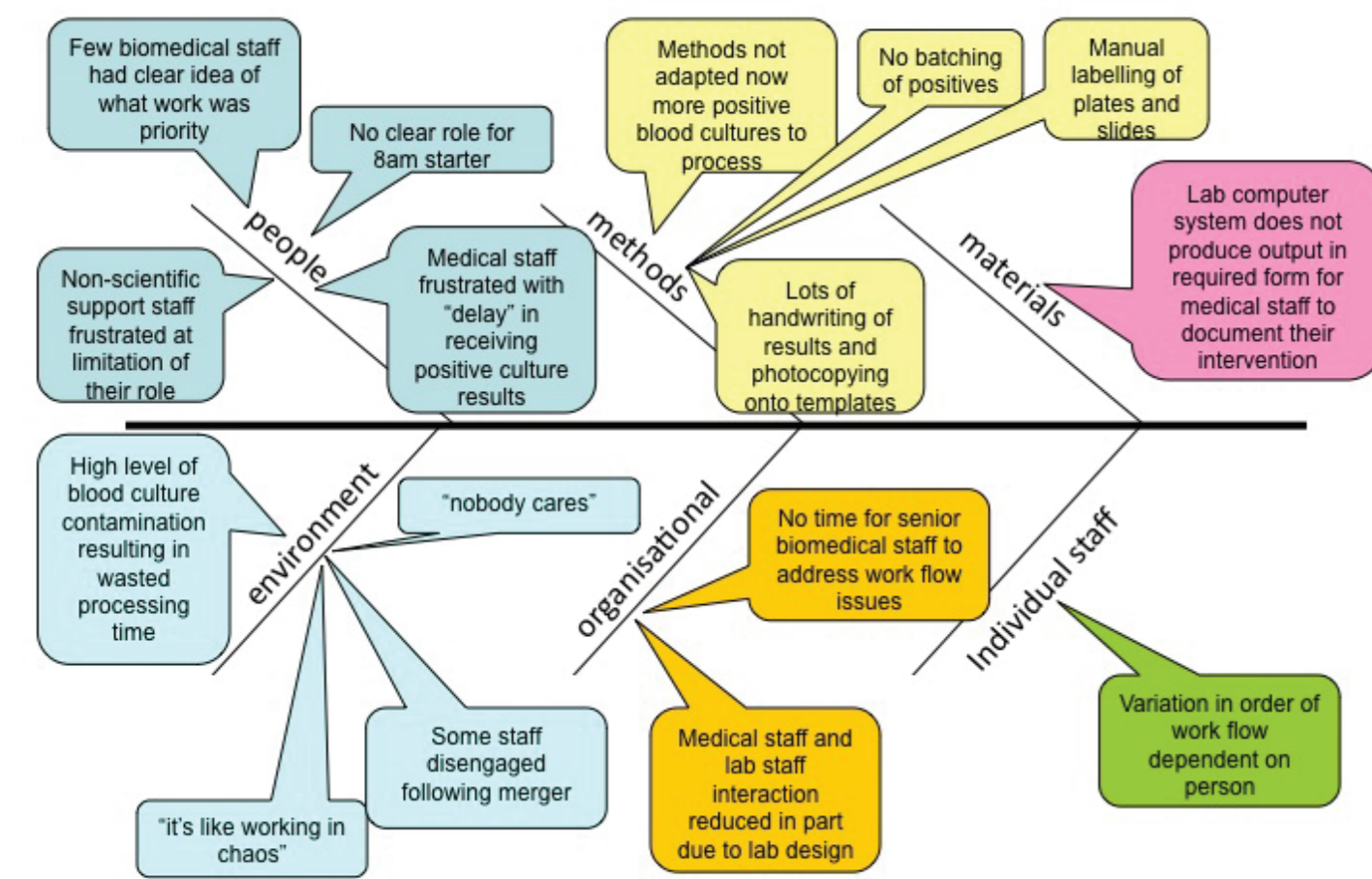
Delay in receipt of blood culture results RCA

Previous State

Blood culture results to medical staff at 10:15 on average
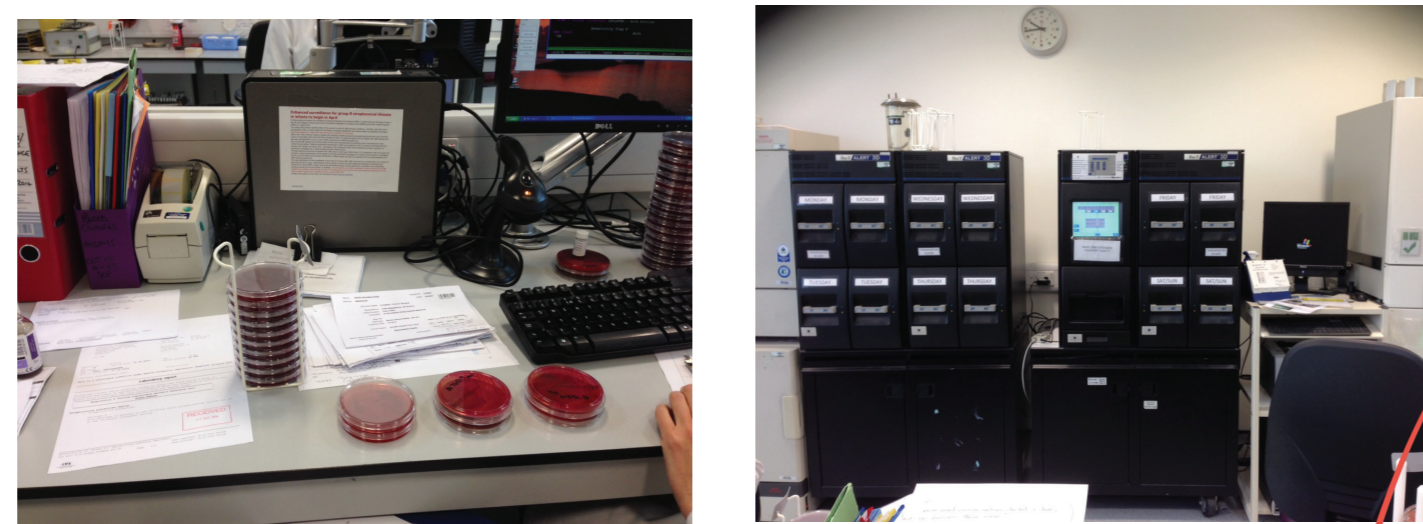
**DOH! No pre-intervention data
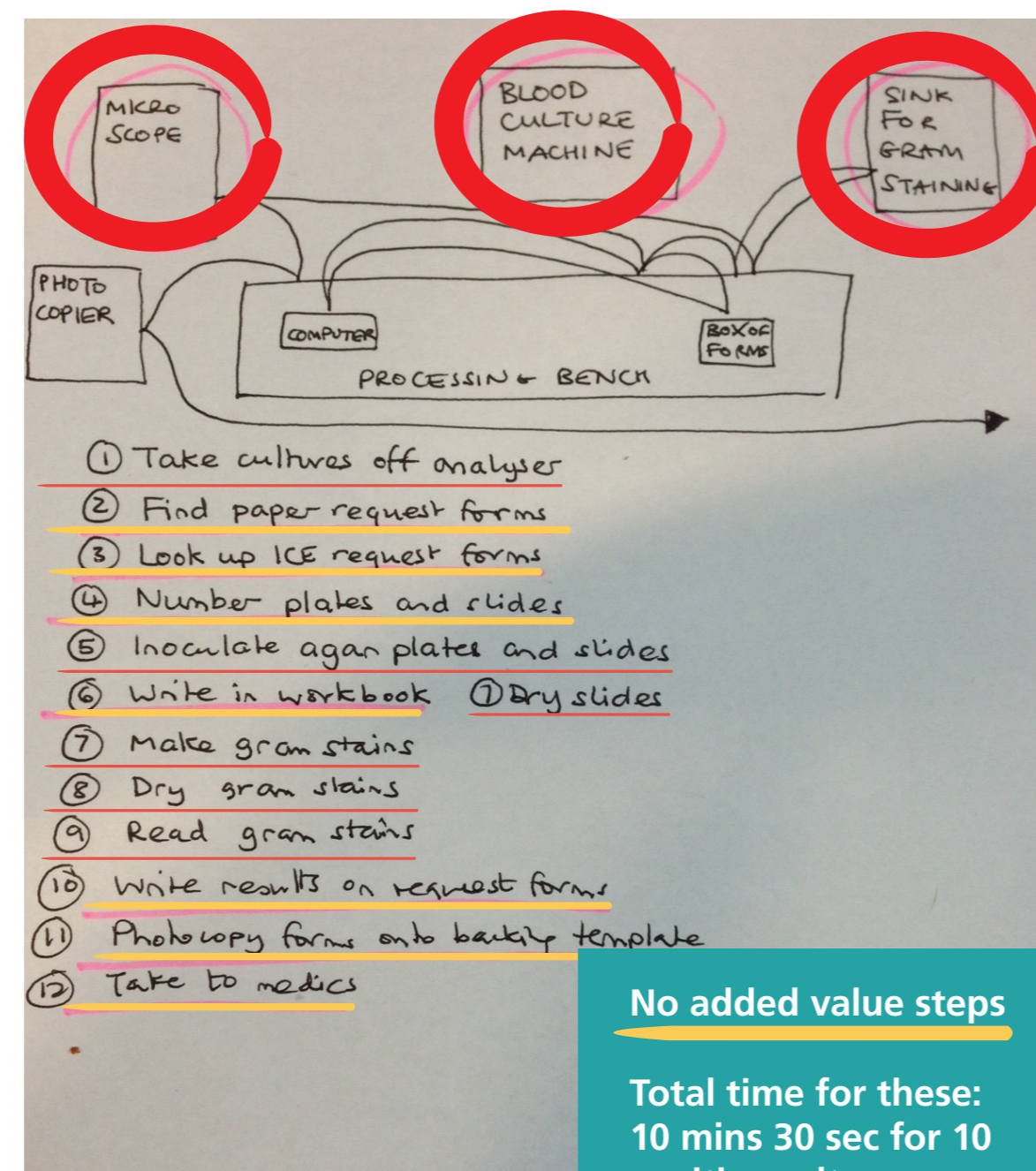To Learn: spend time (but not ages!) measuring current state**

BMS staff disengaged from process
Learned point: spend time with lab staff; engage in each others roles

MLA staff frustrated by limited roles
Learned point: There's no-one masterminding the system!

Working environment is "disorganised"
50% of positive blood cultures are contaminated
~10% of all blood cultures are contaminated


Value stream mapping

① Take cultures off analyser
② Find paper request forms
③ Look up ICE request forms
④ Number plates and slides
⑤ Inoculate agar plates and slides
⑥ Write in workbook ⑦ Dry slides
⑦ Make gram stains
⑧ Dry gram stains
⑨ Read gram stains
⑩ Write results on request forms
⑪ Photocopy forms onto bactxlg template
⑫ Take to medics

No added value steps

Total time for these: 10 mins 30 sec for 10 positive cultures

Vital for the process

Contamination RCA
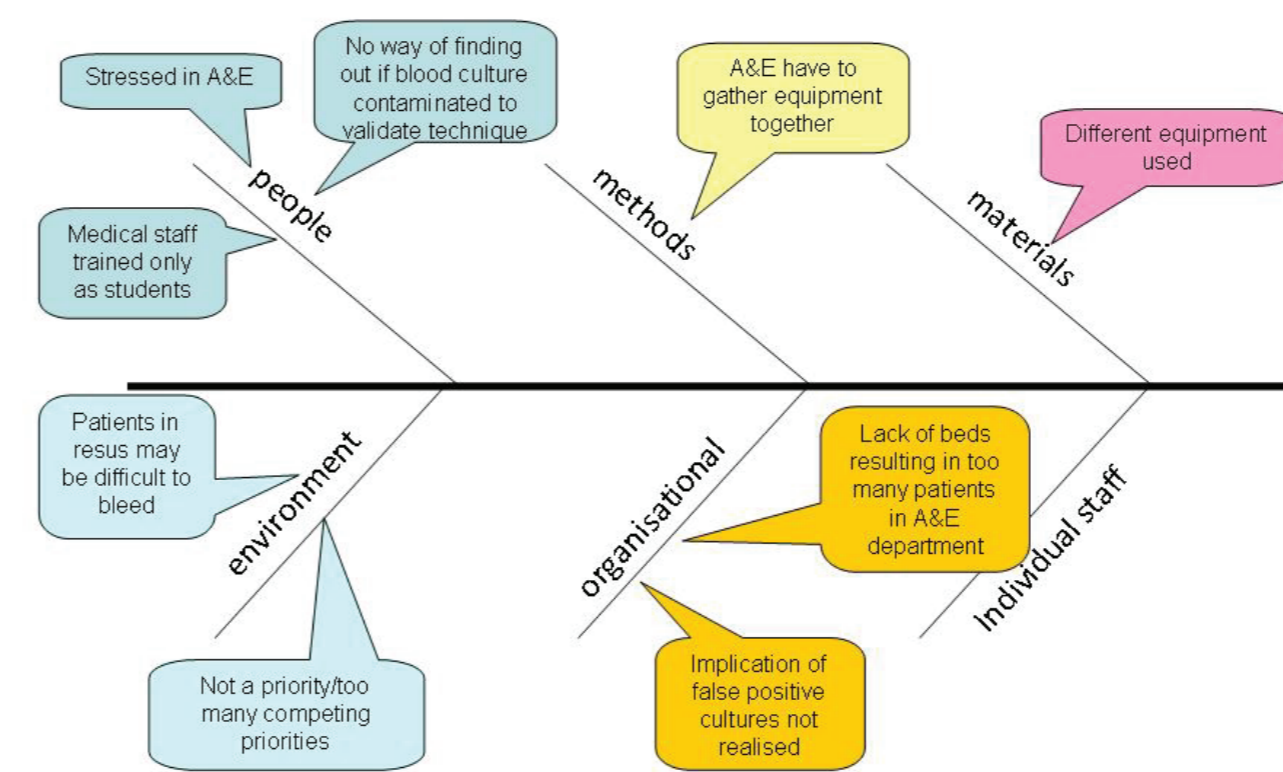
Countermeasures

1. Project group meeting with lab staff from varying grades ✓
   Clarify roles and responsibilities ✓
   Clarify priorities at 8 am start ✓
   Make laminated A4 cards for some roles ✓

2. Develop IT solution to handwriting and photocopying paper ✓

3. Identify which areas produce most contaminated specimens ✓
   Walk the walk with phlebotomists (90% of BCs on MAUs) ✓
   Try to engage ED

4. Ask staff taking cultures to label request forms/ICE stickers with unique identifier to enable feedback as to contamination rates ✓

5. Pilot blood culture-taking packs in ED post education sessions ✓

No intervention in ED therefore no changes seen

Work in progress

DOH!: Don't set up a system which is time-consuming to maintain

Future state

GOAL: Blood culture results to medical staff by 09:30

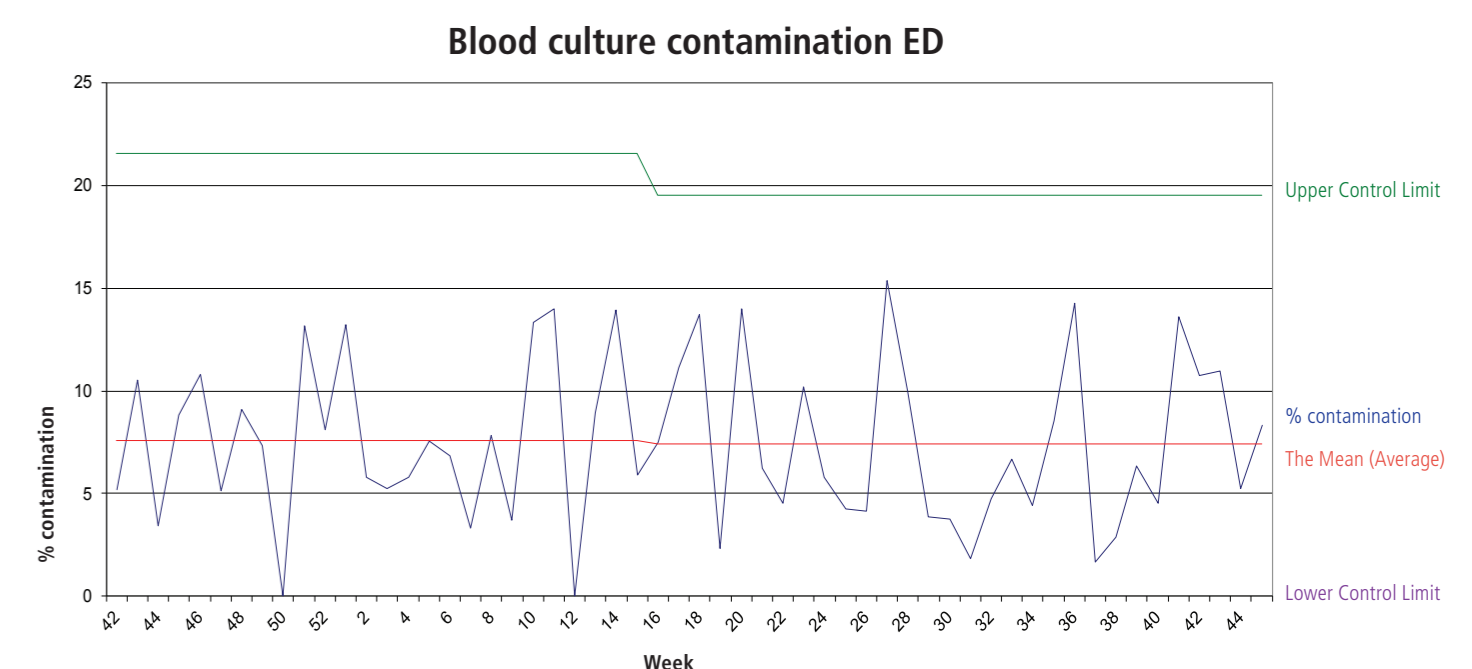*Medics can go to wards to review patients*

Added value: engagement of clinical teams; no misinformation; appropriate and timely investigations and antibiotics

BMS staff understand this is a first-job priority and MLA staff extend their roles in sample processing
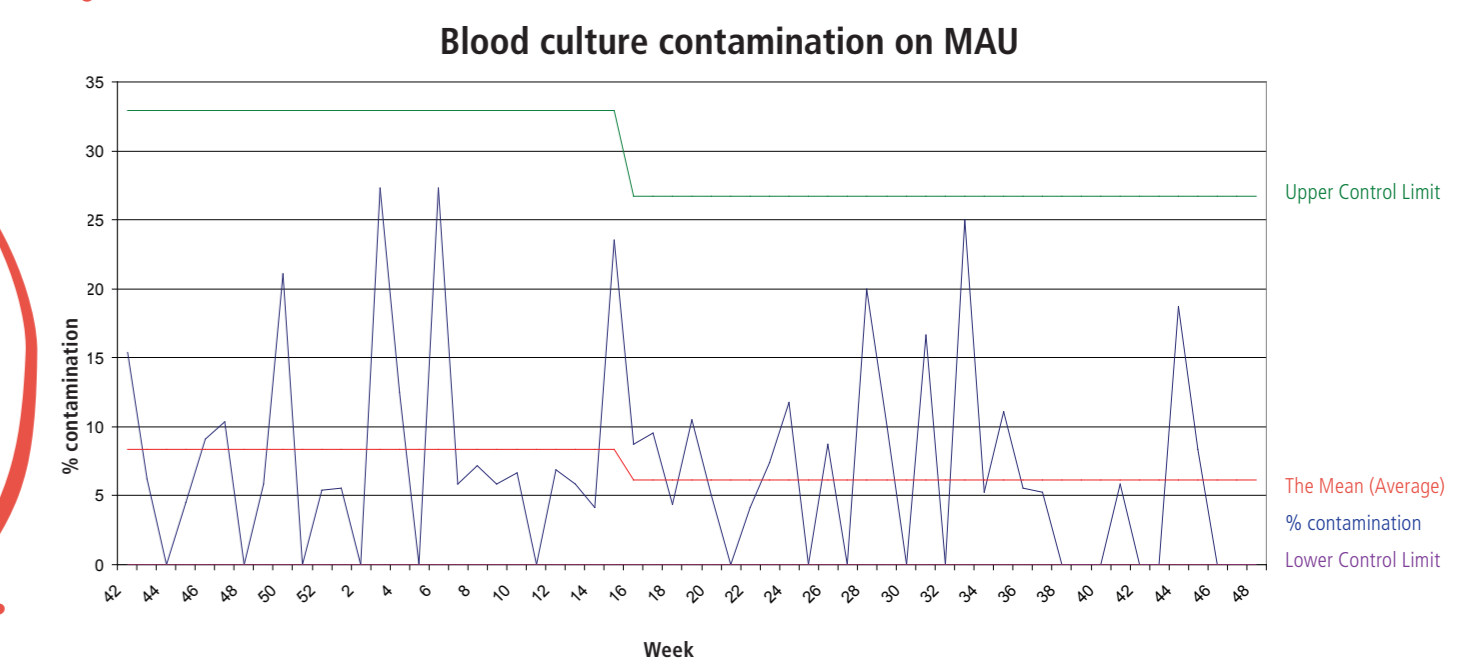
Electronic recording of results minimises duplication

Working environment is organised

<3% of all blood cultures are contaminated

Blood culture contamination ED

Blood culture contamination on MAU

Where we are now

Blood culture results to medics by 9:30 Mon-Friday

Blood culture contamination rates from MAU down from 8.3% to 6.1%

Blood culture packs and education to ED for pilot Nov 2014

Development of bacteraemia ward rounds – awaiting delivery of portable IT and designing strategy