Lean, Trauma and Geriatrics

The Introduction of a Trauma Stabilisation Unit

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BICS
Bolton Improving Care System

100k lives Campaign
SOME IS NOT A NUMBER. SOON IS NOT A TIME.

What was wrong?

- **#NOF mortality = Unavoidable + Avoidable mortality**
- *Delay to theatre*
- *Length of stay*
- *Readmission*

Why?

- Everyone thinks they know the reason
- Lots of different things have been tried
  - More anaesthetic input
  - Fast tracking
  - ICP
  - A bit more input from the geriatrician
- Nothing had made a difference!

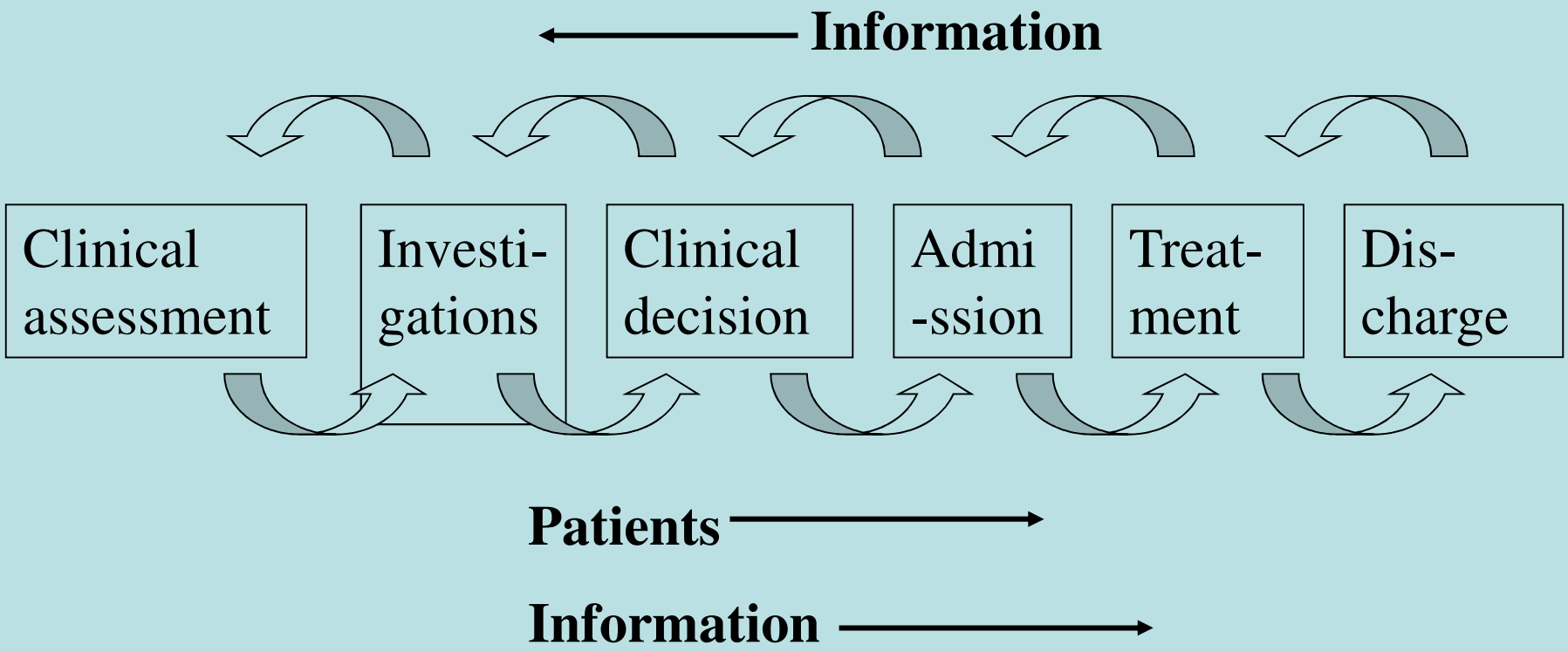
How do you find out?

- A. Do an audit
  - Too blunt
  - We seem to do well vs. peers
  - Examines value not waste
- B. Guess and ask for some money to put it right
  - Usually results in a polite “no”
- C. Try some Lean methodology
  - It worked for Toyota
  - ..and the Royal Navy
  - In industry the results have been astonishing
  - The IHI and our CEO are keen on it too

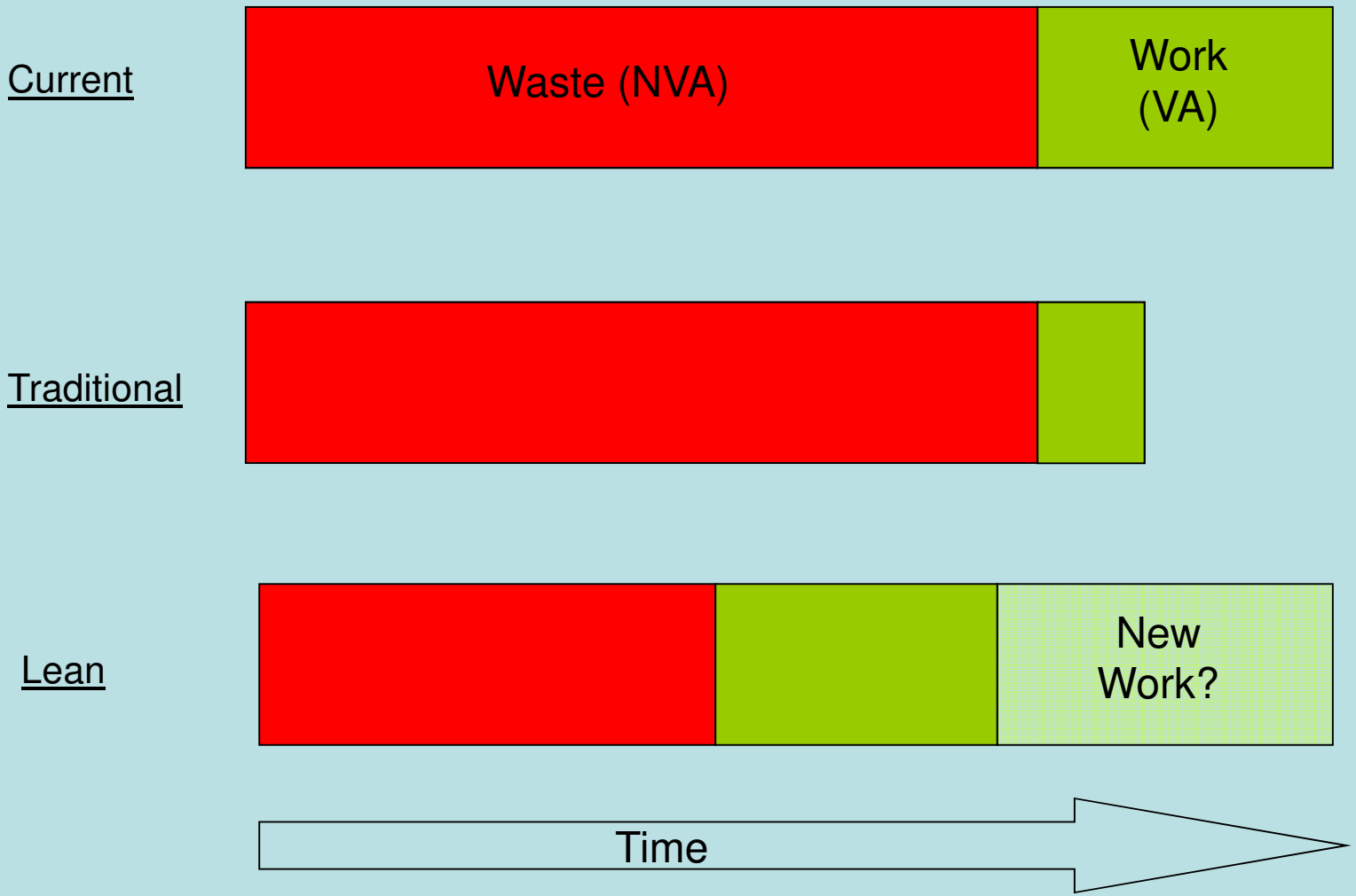
What does “Lean” mean?

- A philosophy
- A set of tools to examine and change *processes*
- Focuses on finding and eliminating *waste*…
- …leaving the *value* added steps in place and in the right order

All work is a process...this is true of hospitals too



What does “Lean” mean?



Seven Wastes in Healthcare

- **Transport** movement of patients and equipment
- **Inventory** unneeded stocks and supplies
- **Motion** movement of staff and information
- **Waiting** delays in diagnosis and treatment
- **Over production** unnecessary tests
- **Over burden** stressed, overworked staff
- **Defects** medication errors, infections

What did we do?

- Value Stream Mapping
  - Find out what *really* happens
  - Find out the things you didn't know you didn't know
- Value Stream Analysis
  - Find the waste
- Plan a future state model of care and a series of Rapid Improvement Events to move the service towards that state
  - Design the waste out of the system
  - Sort out the environment (6S)


A BLOCK
THEATRE SUITE
GROUND FLOOR
FIRST FLOOR
SECOND FLOOR
N4
RECOVERY
Post-op

Current State Map 2005 Headlines

Total gross steps	-	47
Value added steps	-	16.5
Flow time	-	84 days
Touch time	-	3 days
Pure value added time	-	7 days
Patients in process	-	24

So there's Lots of Waste. Where to start?

- Just Do Its
- Rapid Improvement Events (RIEs)
- Projects

So there's Lots of Waste. Where to start?

- Admission to theatre-Two work streams
- A&E
- Pre-operative stabilisation
  - Get the basics standardised
  - Reduce delay
  - Will also benefit post-op patients
  - Greatest chance of early impact on mortality
  - Central hub of the future state for "complex" i.e. medically unstable trauma patients

Rapid Improvement Event

(The closest you'll get to Rome being built in a day)

- 5 working days
- Set yourself some aims and know about some Lean principles — Pre RIE
- Value stream map in detail the peri-operative management of the sick elderly trauma patient
- Look for the waste and create new models of care that would eliminate that waste.
- Evaluate the models using standard lean tools — Day 1 & 2
- Create it (this is known as "JF*DI" and is a bit alien to us in the NHS) — Day 3-5

*insert when required

Quad of Aims

The Purpose

To create a Pre- Operative Stabilisation Area on G3 for 'complex' non elective adult trauma patients who are not able to proceed to theatres immediately.

Scope: arrival of 'complex' patient on G3 to departure of patient to theatres

Customer / Impact

Patients – Reduced hospital mortality by more intensive pre-operative stabilisation and treatment

Trauma MDT staff – greater time spent on value adding work, and greater efficiency

The Deliverables

RIE 22-26 Aug 2005

- Plan the Pre-op patient flow cell in detail.
- Determine the cell layout, and the patient and information flows.
- Develop ideal staffing, line balance and standard work
- Follow up support during implementation

Success Criteria

Decrease overall touch time by the MDT by 10% from arrival onto the ward to entry to theatres

Decrease in pre op stabilisation time (flow time) to 5 days max and mean 2.5 days

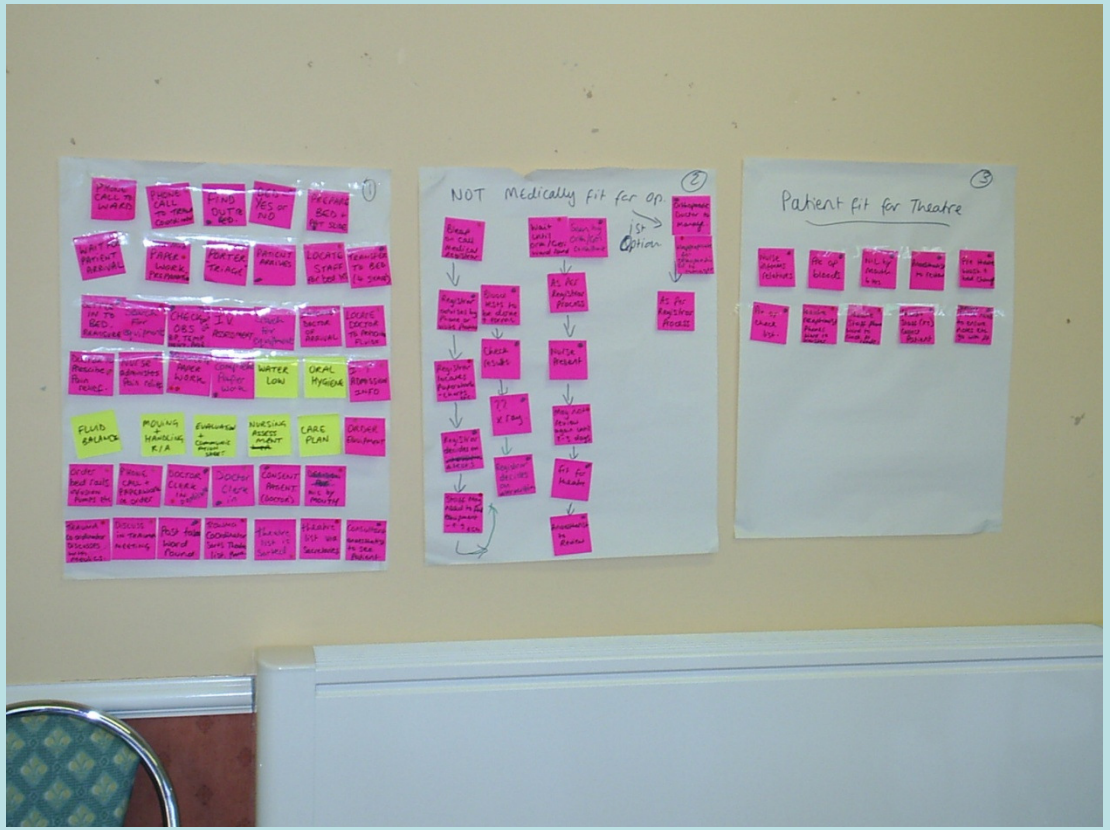
Decrease steps in the process by 50%

Long term measure – not RIE week

60% improvement in TROR hospital mortality at 28 days post admission.

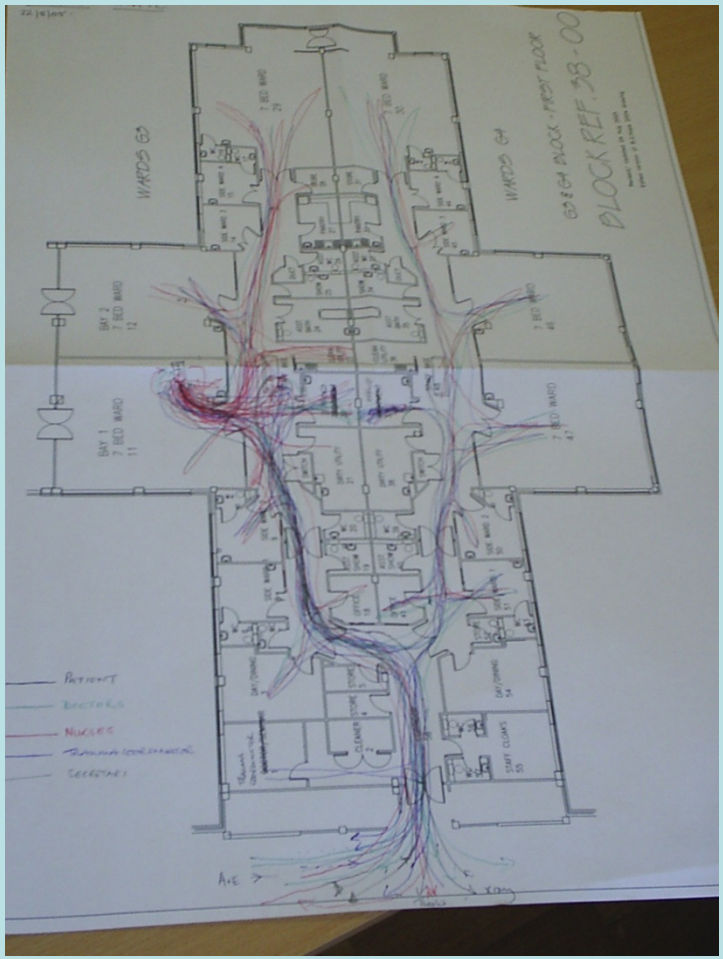
What did we find?

- Value Stream Map
- 54 steps to get an *uncomplicated* patient from the ward to theatre
- **Delays** in:
  - Analgesia
  - Fluids and oxygen
  - Recognition of deterioration
  - Acting on deterioration
  - Senior input
  - Timely surgery



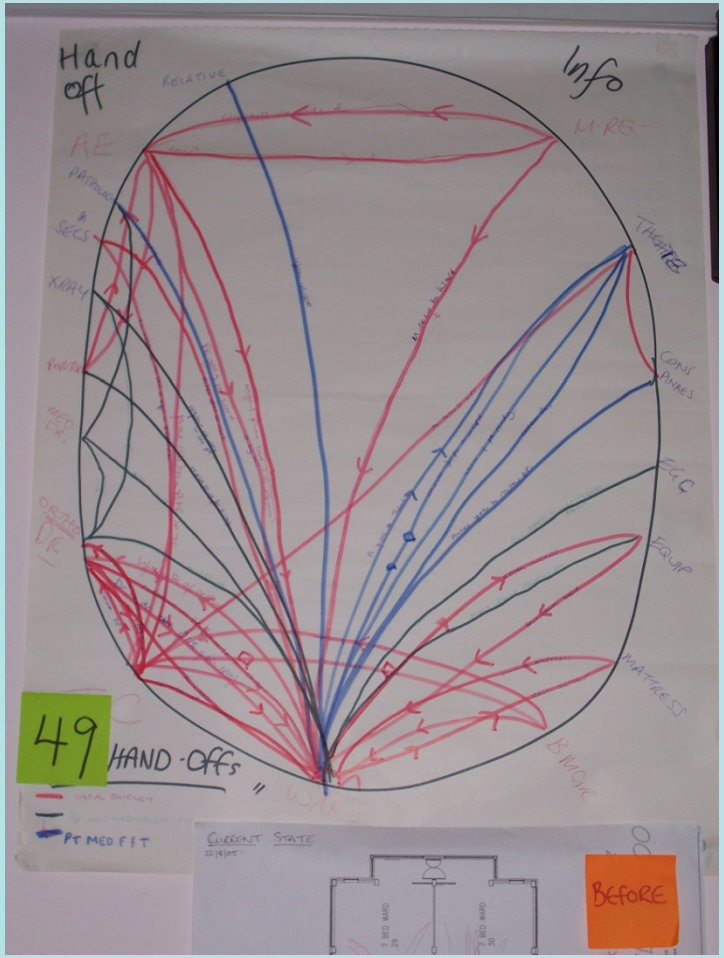
What did we find?

- Spaghetti Diagram
- We walk miles when we shouldn't have to
- Things are not where they are needed (if they are even there at all)
- We have to look for the sick patients and they can be anywhere



What did we find?

- Hand Off Chart
- 49 separate pieces of communication about each patient
- Duplication
- Huge source of potential error



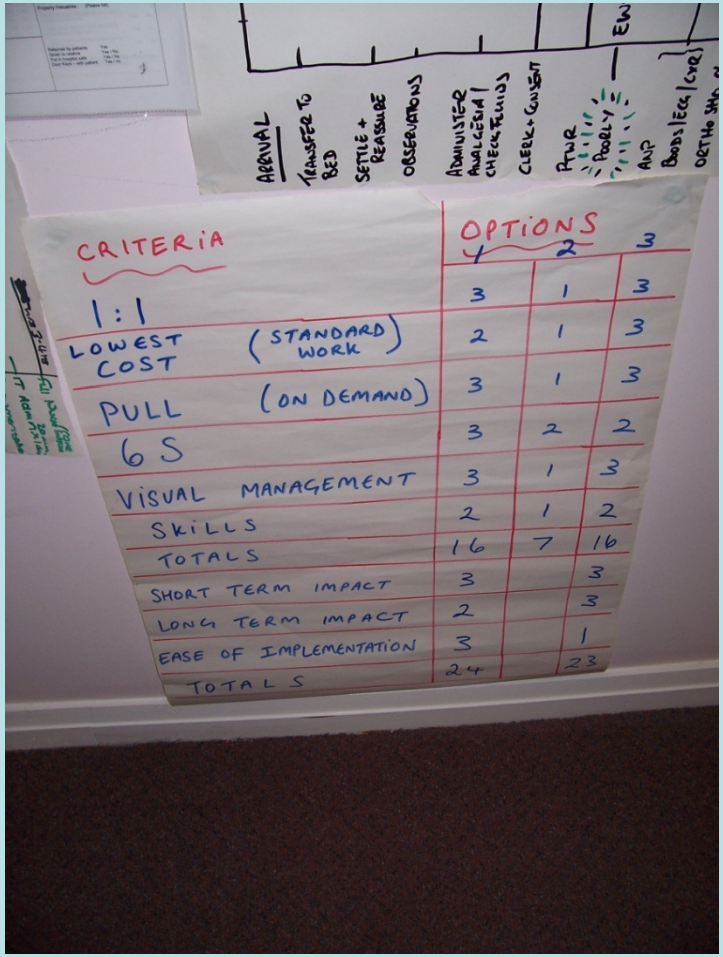
What did we find?

- **Value Stream Analysis**
- Half of the steps were waste
- It is possible to standardise work
- Less time is then spent chasing and duplicating
- Tools to recognise deterioration exist but are wasted
- The problem patients are too dispersed
- It's no use waiting for a twice weekly ward round if you're dying

Not the right way!

“Design Out” the Waste

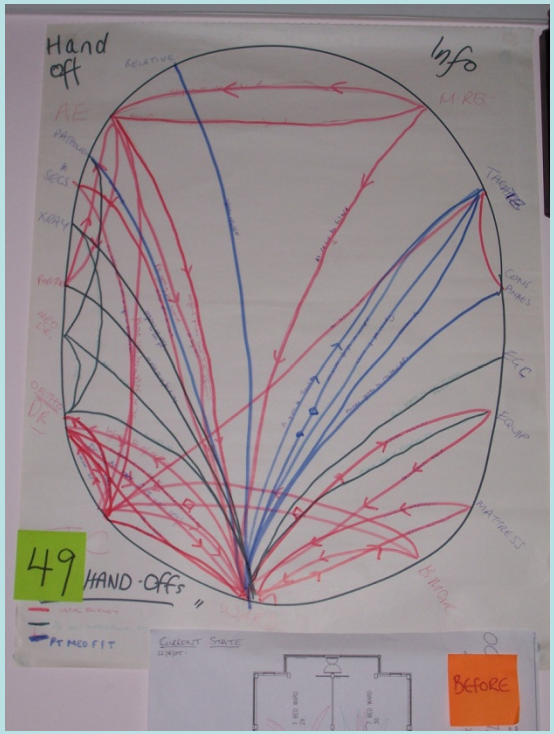
- 3 Models suggested
- TSU
- Trauma stabilisation team
- Ground up redesign and training

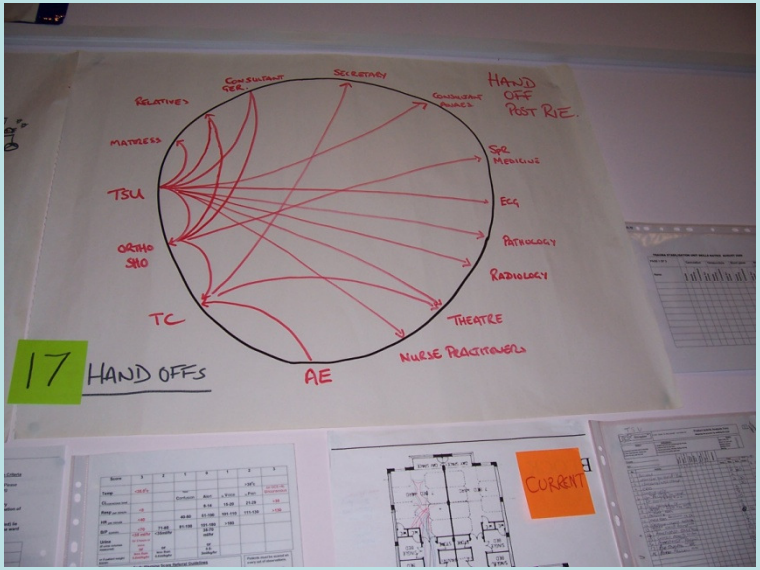


The Winner? TSU

- G3 Bay3. Existing capacity
- 6 beds
- 6S the environment
- Work out admission criteria
- Step down criteria
- Staffing
- Medical and orthopaedic input

Hand-Off Chart post RIE





6S

•Sort	-	Separate needed from not needed
•Straighten	-	A place for everything…
•Shine	-	Clean and wash
•Standardise	-	Build into accepted routines
•Sustain	-	Discipline to ensure maintained
•Safety	-	Checking for hazards and defects

A first go at 6S

TSU-Staff and Support

- 2 Nurses and 1 AP
- Core of enthusiastic talented nursing staff
- Daily (Mon-Fri) Consultant Geriatrician ward round
- ST1 GP trainee (hybrid post)
- Nurse Practitioner support

TSU General Principles

- Nothing very fancy
- Education
- Physiological observations +++
- Oxygen and fluid management
- Sickest patients “pulled” into the unit
  - EWS
  - Admission/Step-up criteria
- First fit, first out

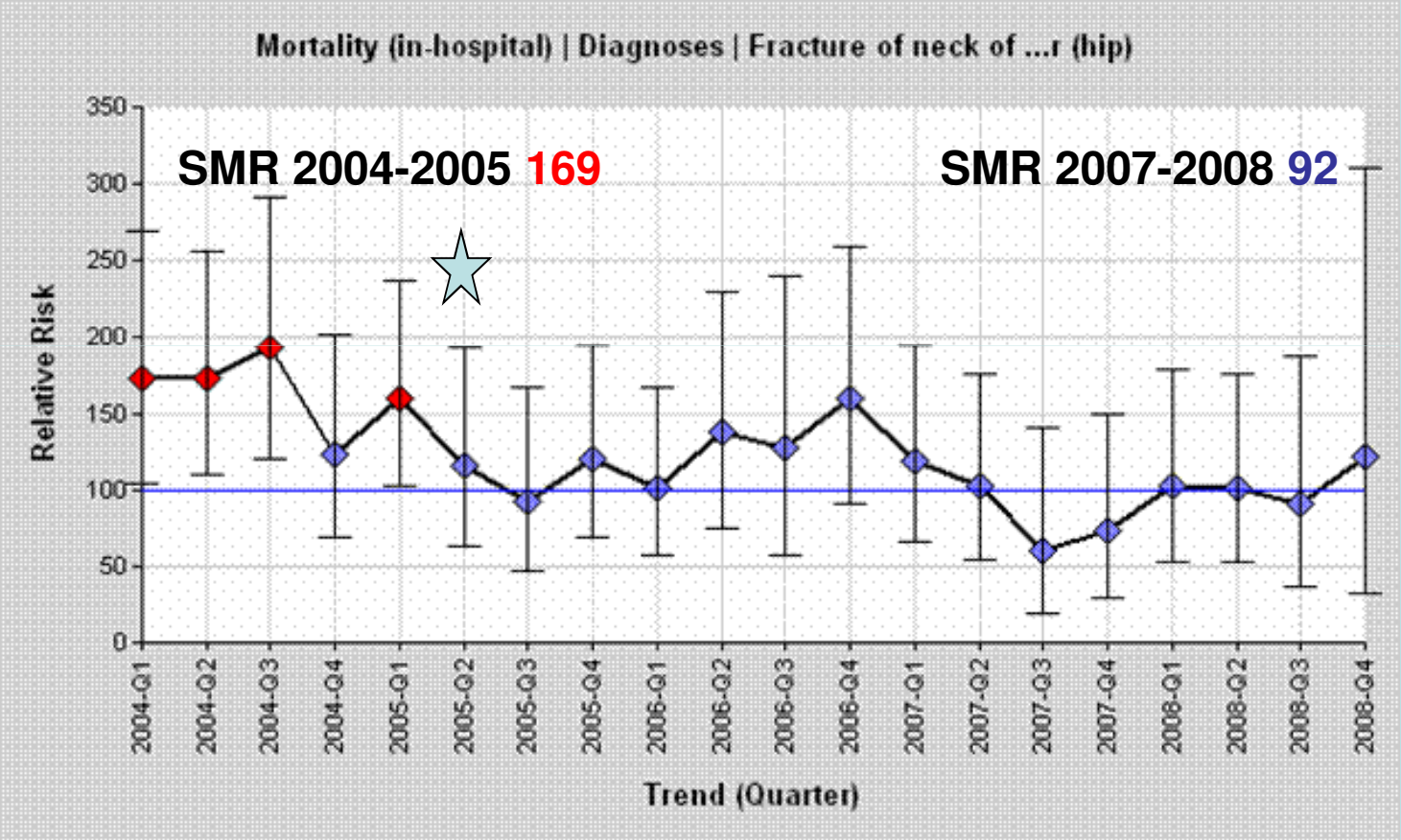
Other Changes

- Daily “board” rounds
- Discharge traffic lights
- Milestones/Gateways and bedside handover
- Near patient analgesia storage
- Document review
- COPS

What have we achieved?

- Reduced time to theatre in medically *unfit* patients from 5 to a mean of 3 days
- Overall time to theatre reduced by 30%
- Length of stay reduced by 32% (13 days current)
- 42% Reduction in paperwork
- 50% reduction in pain scores

What have we achieved?



#NOF mortality = Unavoidable + <u>Avoidable</u> mortality

Why did it need Lean?

- You don't *really* know what can be improved without seeing the waste
- Patient centred
- No "badge" required
- Engage demoralised frontline staff in changing the things that bother them
- Change is rapid *and* tangible

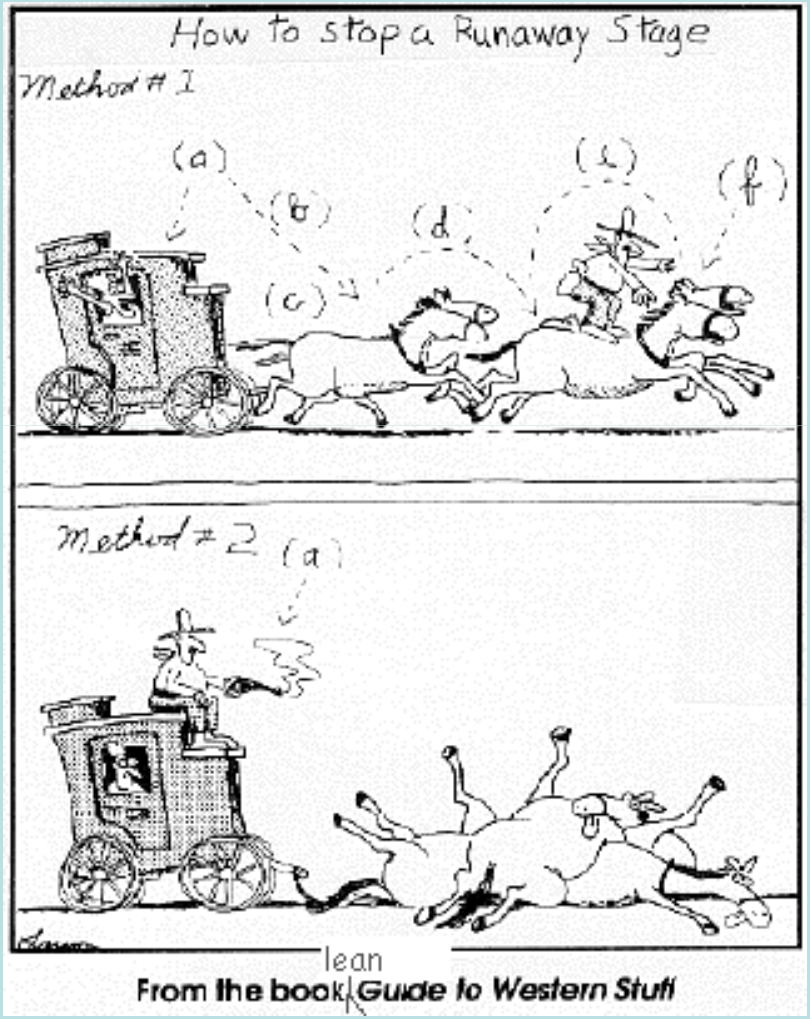
Problems and Lessons

- It's not always easy-sustaining change
- Cynicism will be rife "We're not Japanese"
- Engaging senior clinicians is vital
- Promote your successes widely
- Choose your first projects wisely
- Quality improvement is like an onion

What Really Changed?

- Culture
- Less waste=more time to do things right
- Concentrate on quality and safety
- Surveillance-physiology
- Early intervention
- Principles of geriatric medicine; frequent senior specialist input

Questions?


How to stop a Runaway Stage
Method # 1
(a)
(b)
(c)
(d)
(e)
(f)
Method # 2
(a)
Jean
From the book Guide to Western Stuff