The Lean journey towards patient safety.

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Why Lean?

Flinders Medical Centre is a medium sized, cradle to grave, teaching general hospital in the Southern Suburbs of Adelaide.

In 2003, as Director of Clinical Governance, I declared that our Emergency Department was systematically unsafe.

(Extreme congestion, increasing rate serious adverse events, staff resignations, increasing in-unit mortality plus other indicators)

- We were already doing everything that we knew how to do.
- We needed to do something that we did not know how to do.

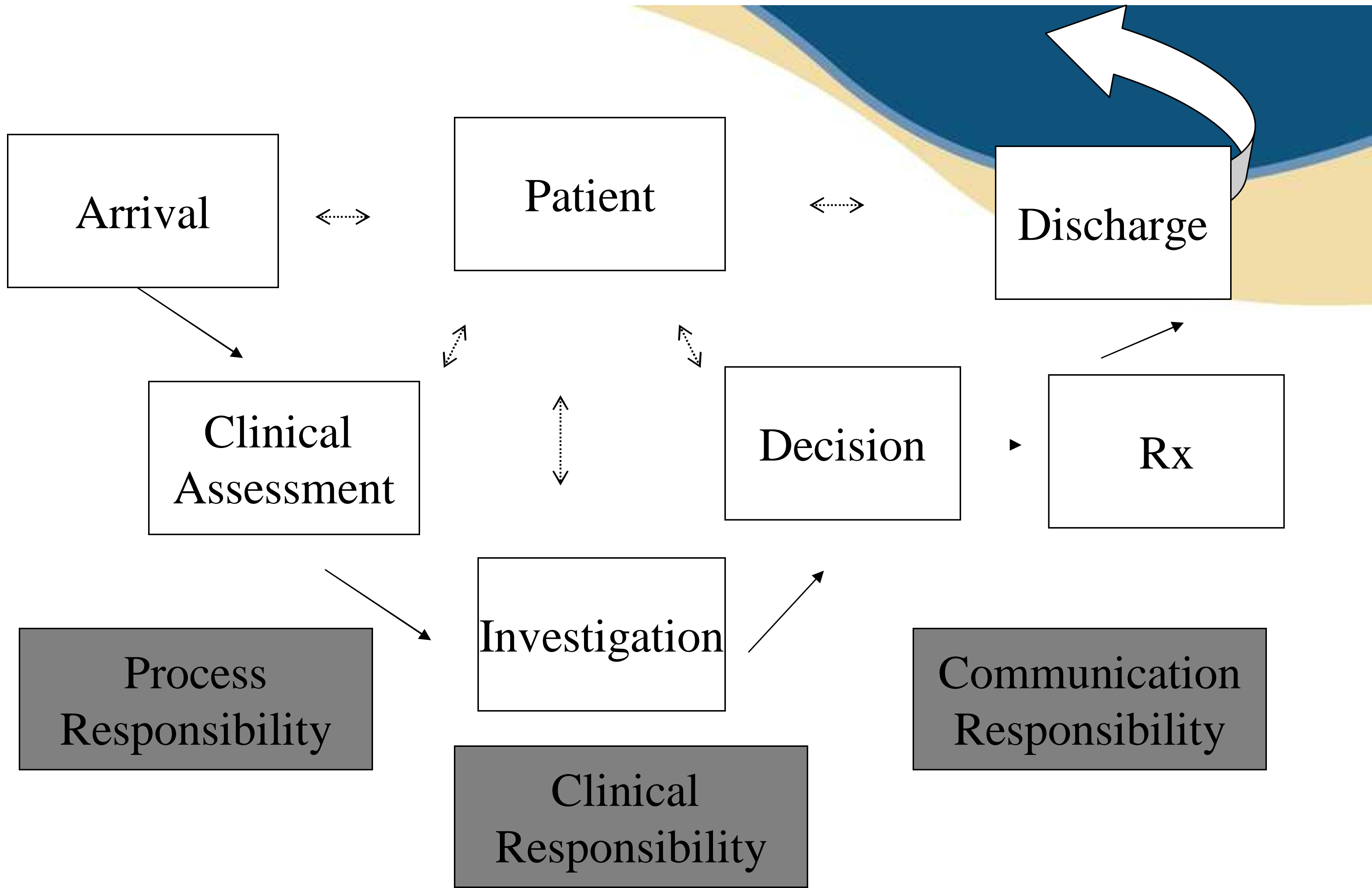
We turned to Lean thinking, an organisational philosophy first identified in the car industry.

The two car family.

Mortality in Australia-1996

*Causes	Number
Isch. Heart Disease	32,800
*Hospital adverse event	18,000
Cancer	17,800
Stroke	12,800
COPD	6,100
Dementia	4,000
Diab Mellitus	3,000
Suicide	2,500

*** Australian Burden of Disease study**
***Epidemiology of Medical Error, BMJ, 2005**



The patient journey

Lean thinking: five simple principles

- **Specify value from the standstill of end customer.**
- **Identify the value stream for each product family.**
- **Eliminate waste**
- **Make the product flow.**
- **So the customer can pull.**

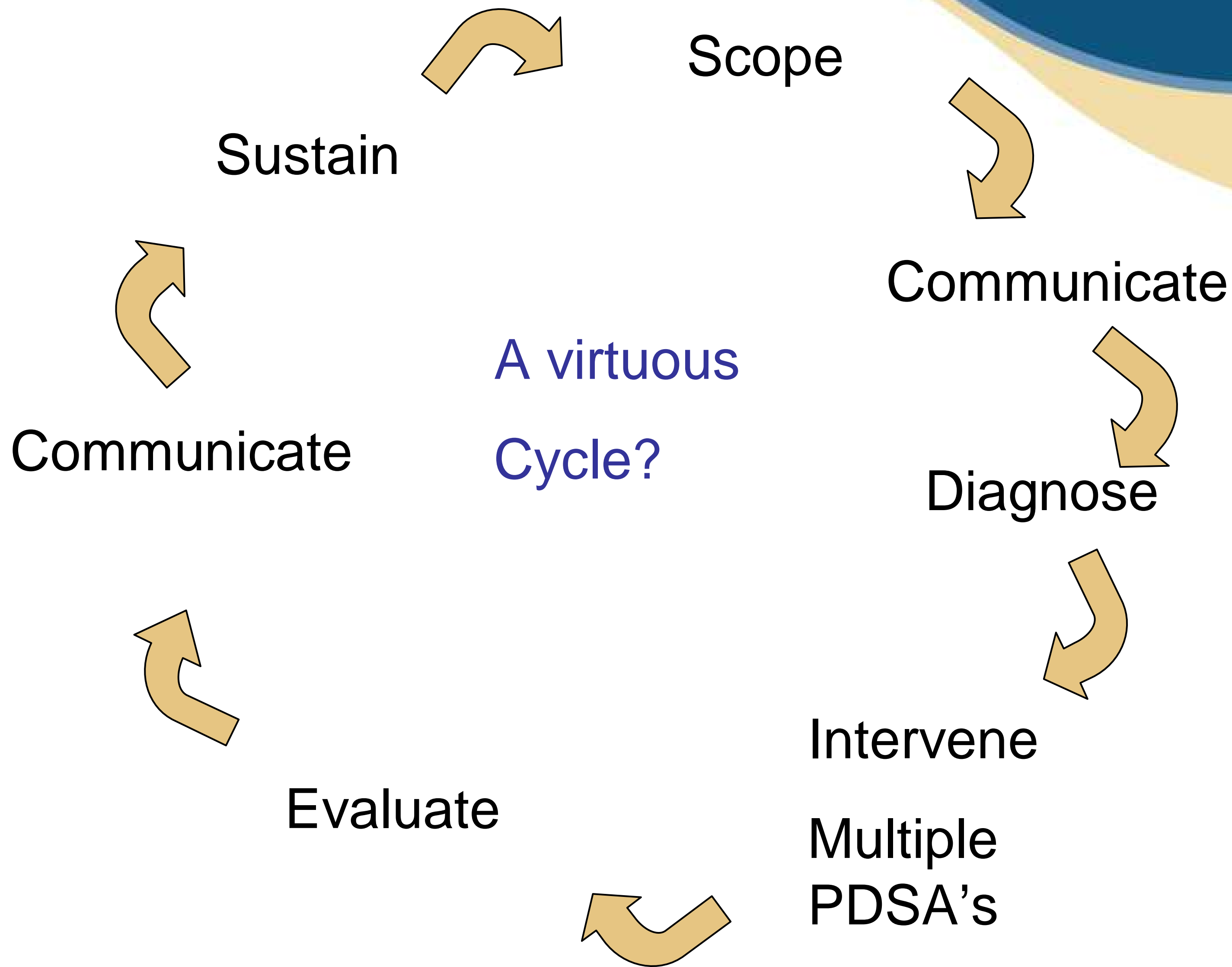
As you manage toward perfection.

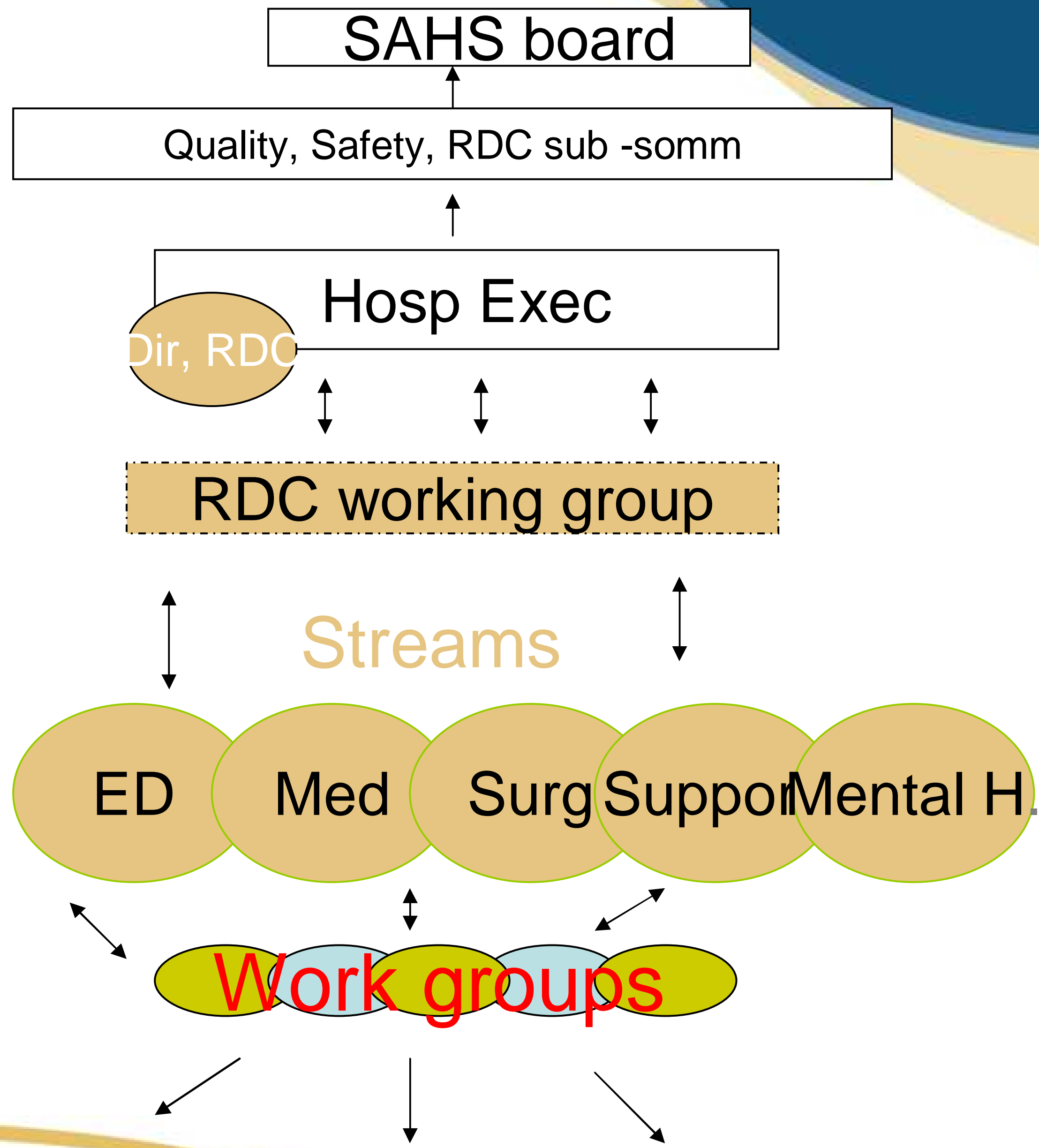
Making Invisible work visible.

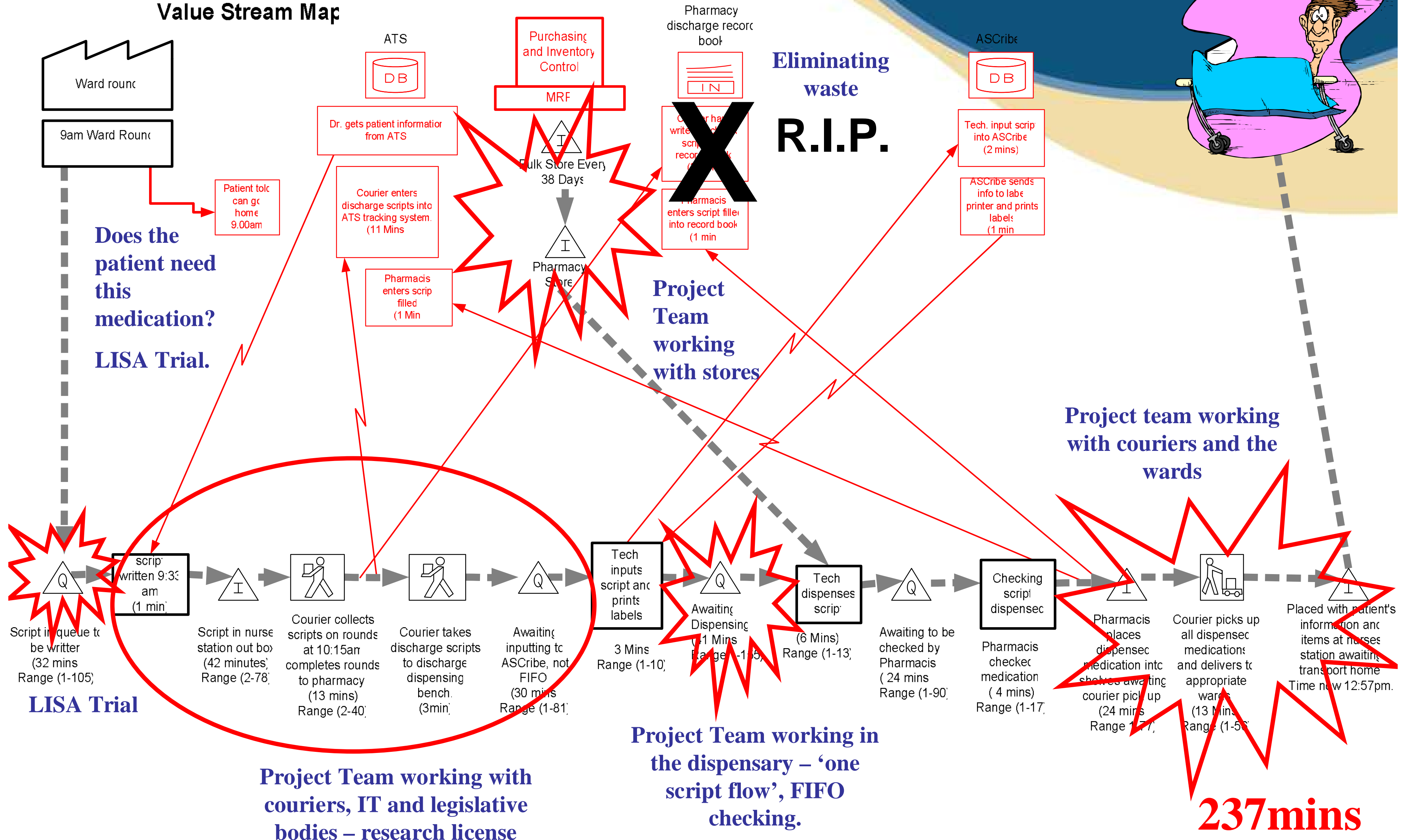
If we consider patient journeys as taking place along de-facto production lines that weave their way through the hospital,

Then much of crucial work at key stations is cognitive, and invisible to external observers.

Mapping is the key to making invisible work visible.


Scope
Communicate
Diagnose
Intervene
Multiple PDSA's
Evaluate
Communicate
Sustain
A virtuous
Cycle?


SAHS board
Quality, Safety, RDC sub -somm
Hosp Exec
Dir, RDC
RDC working group
Streams
ED
Med
Surg
Suppor
Mental H.
Work groups



Discharge Script
Value Stream Map
Ward round
9am Ward Round
Patient told can go home 9.00am
ATS
DB
Dr. gets patient information from ATS
Courier enters discharge scripts into ATS tracking system. (11 Mins
Pharmacist enters script filled (1 Min
Purchasing and Inventory Control
MRF
Bulk Store Every 38 Days
Pharmacy Store
Pharmacy discharge record book
IN
Pharmacist enters script filled into record book (1 min
Eliminating waste
R.I.P.
ASCribe
DB
Tech. input script into ASCribe (2 mins)
ASCribe sends info to label printer and prints labels (1 min
Does the patient need this medication?
LISA Trial.
Project Team working with stores
Project team working with couriers and the wards
Script in queue to be written (32 mins Range (1-105)
script written 9:33 am (1 min)
LISA Trial
Script in nurse station out box (42 minutes) Range (2-78)
Courier collects scripts on rounds at 10:15am completes rounds to pharmacy (13 mins) Range (2-40)
Courier takes discharge scripts to discharge dispensing bench. (3min)
Awaiting inputting to ASCribe, not FIFO (30 mins Range (1-81)
Tech inputs script and prints labels
3 Mins Range (1-10)
Awaiting Dispensing (41 Mins Range (1-135)
Tech dispenses script
(6 Mins) Range (1-13)
Awaiting to be checked by Pharmacist (24 mins Range (1-90)
Checking script dispensed
Pharmacist checked medication (4 mins) Range (1-17)
Pharmacist places dispensed medication into shelves awaiting courier pick up (24 mins Range 1-77)
Courier picks up all dispensed medications and delivers to appropriate ward (13 Mins Range (1-55)
Placed with patient's information and items at nurses station awaiting transport home Time now 12:57pm.
Project Team working with couriers, IT and legislative bodies – research license
Project Team working in the dispensary – 'one script flow', FIFO checking.
237mins
32 mins
1 min
42 mins
13 mins
3 mins
30 mins
3 mins
41 minutes
6 mins
24 mins
4 min
24 mins
13 mins
222 minutes NVA
15 minutes VA
1 min ATS
Ratio 1 VA : 15 NVA
Redesigning Care Improving the patient journey

Discharge Script Value Stream Map JULY 2005 n=70

Ward round

ATS

DB

Dr. gets patient information from ATS

Purchasing and Inventory Control

MRP

Bulk Store Every 38 Days

Pharmacy Store

ASCribe

DB

Dispensary staff input script into ASCribe

ASCribe sends info to label printer and prints labels

Dispensary Staff enters discharge scripts into ATS tracking system

Pharmacist enters script filled. (1 Min)

Courier Enters Script to be delivered into the ATS

Script in queue to be written (32 mins) Range (1-105)

script written 9:33 am (1 min)

Script electronically transmitted to dispensary

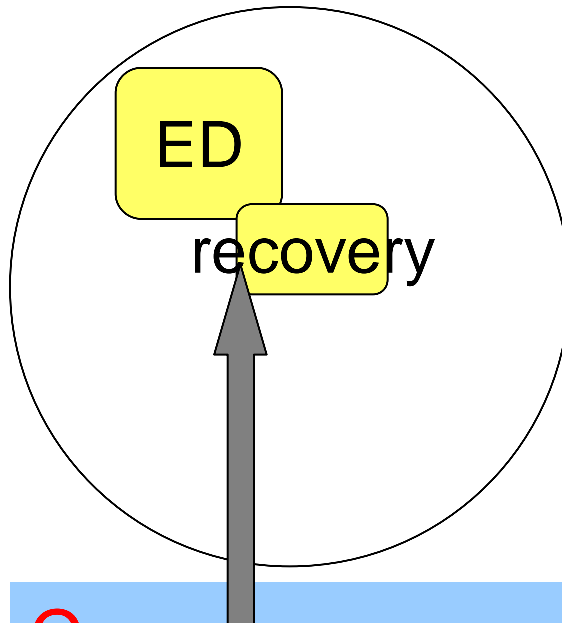
Awaiting inputting to ASCribe. (27 mins Range (1-102)

FIFO - Inputting and dispensing and checking of Script (28 mins) Range (5-81)

Pharmacist places dispensed medication into shelves awaiting courier pick up (25 mins) Range 2-83)

Courier picks up all dispensed medications and delivers to appropriate wards (13 Mins) Range (1-56)

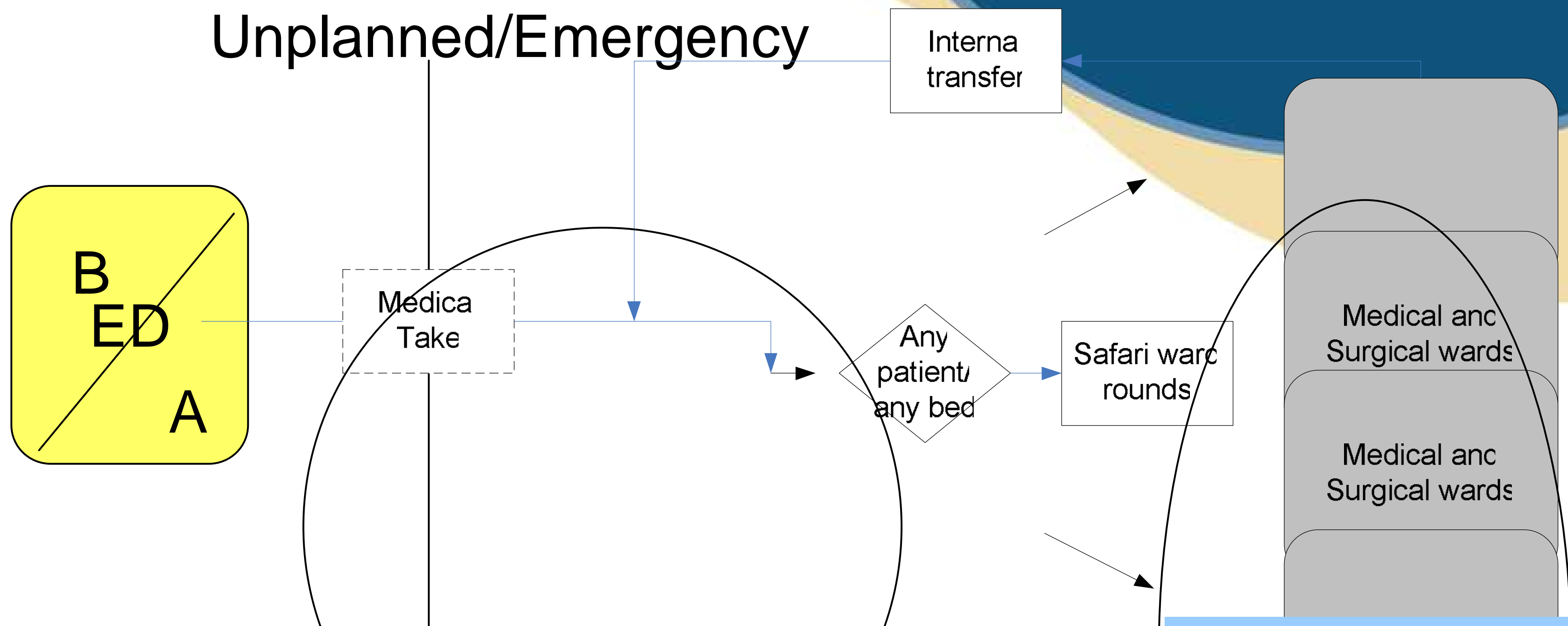
Unplanned/Emergency



Complex queues related to 5 cli... ...s; chaotic pr... ...easing delays; inc... ...ality.

Stream patients into dischargeable and likely-to-be-admitted. Use First-in, First-out for both

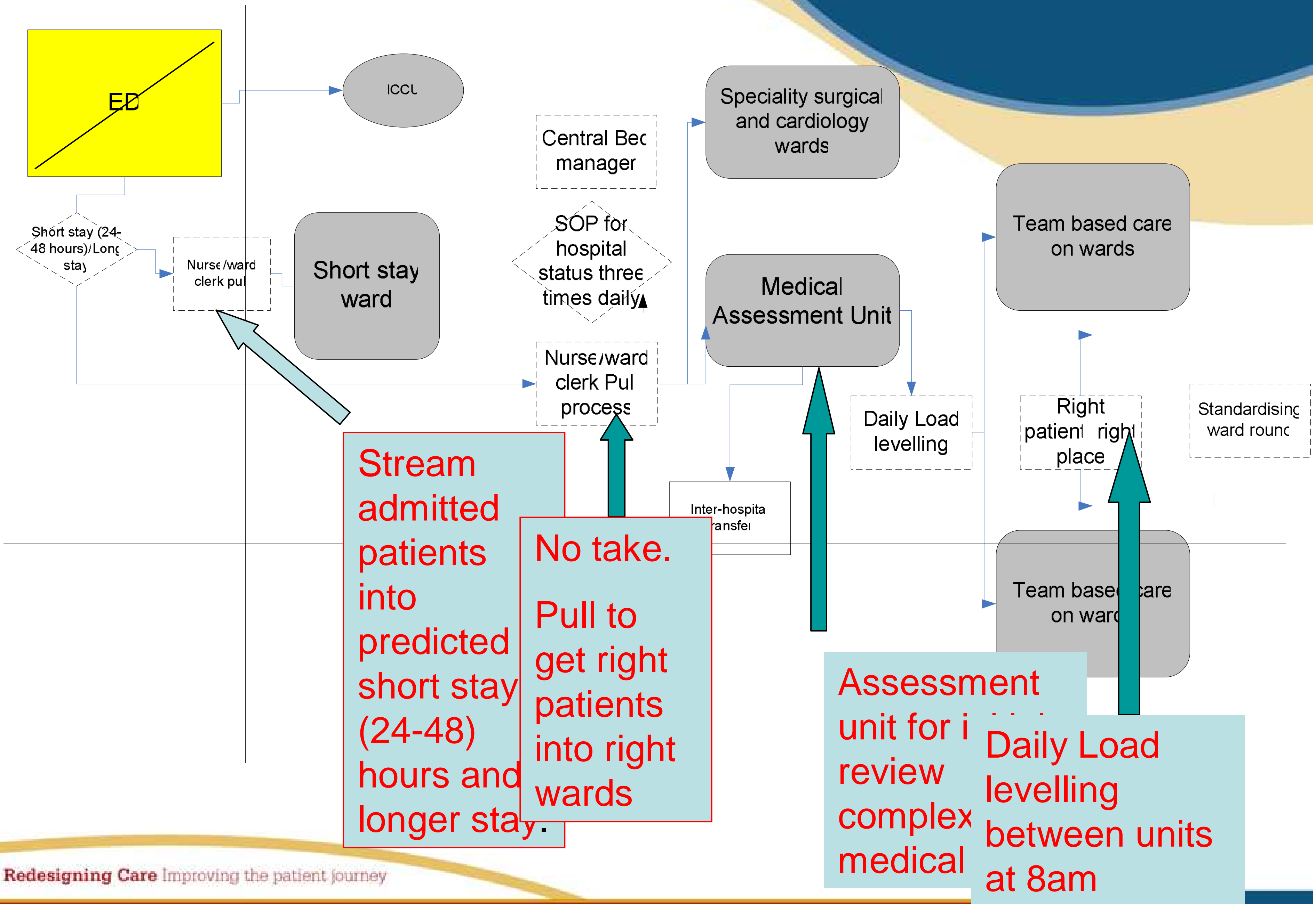
...ned/Elective

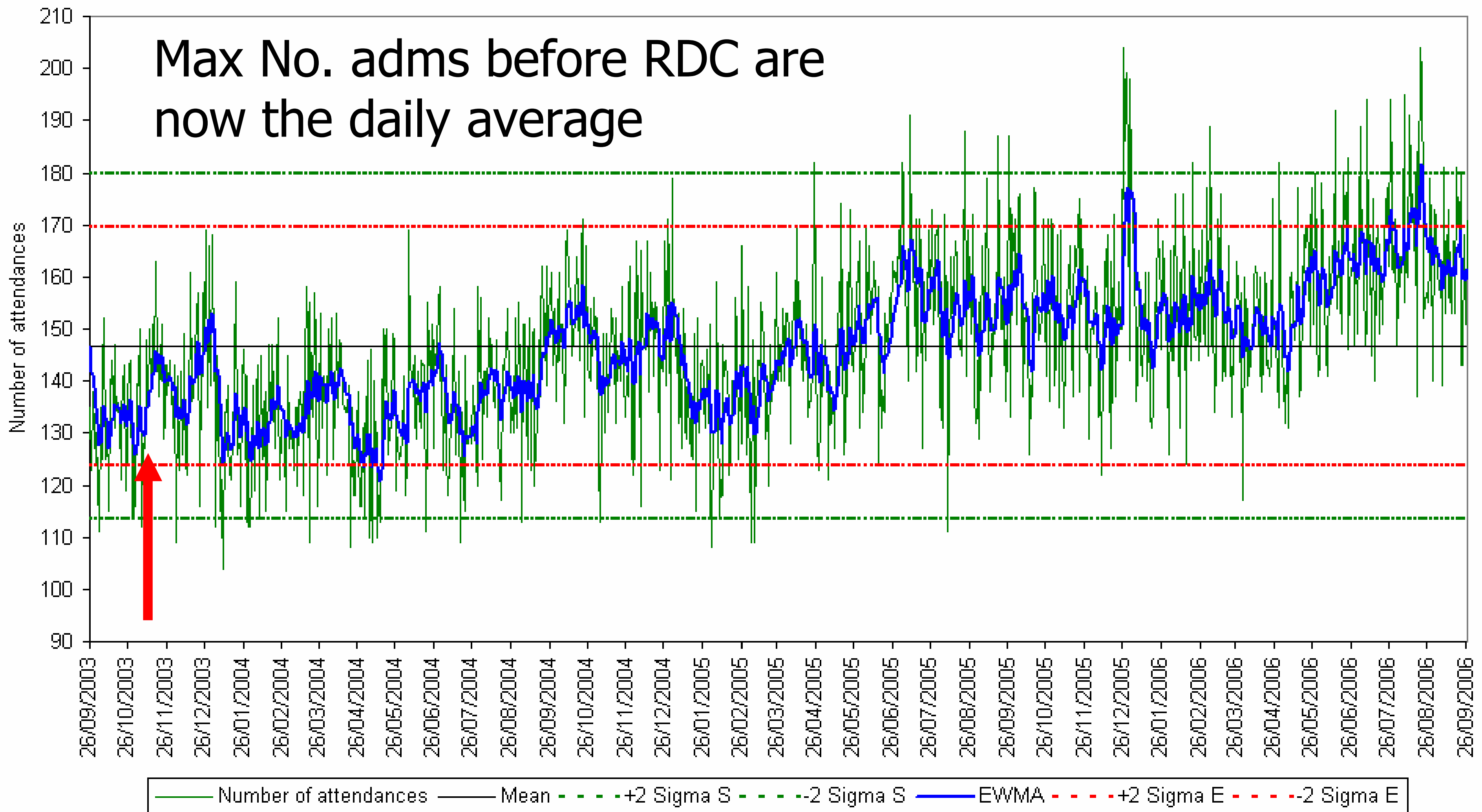


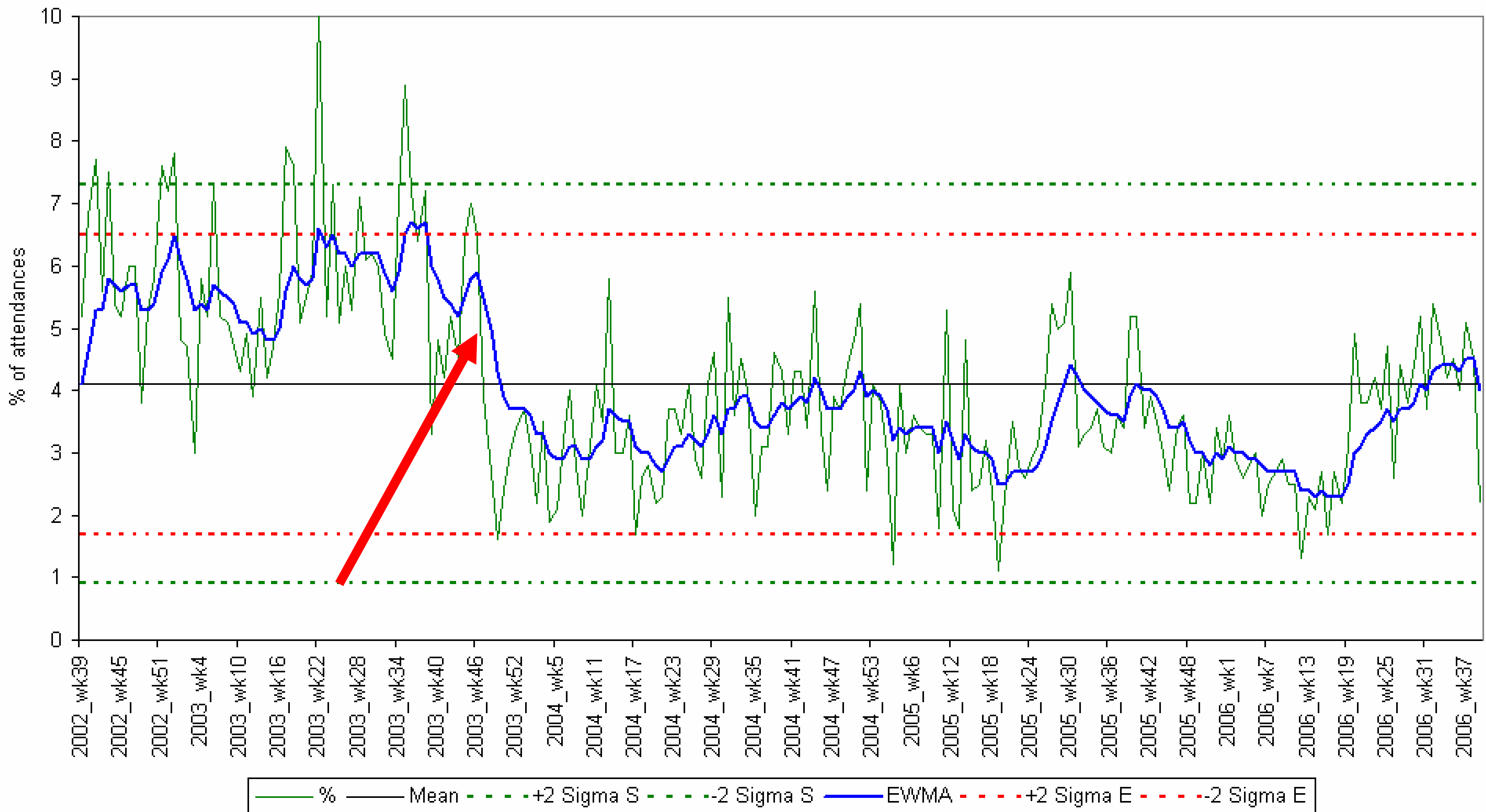
“take’ system; variability in demand over 4-5 day cycle; central dispatcher over-rides clinical needs.

Loss of ward differentiation; excessive motion and transportation of staff, patients and supplies

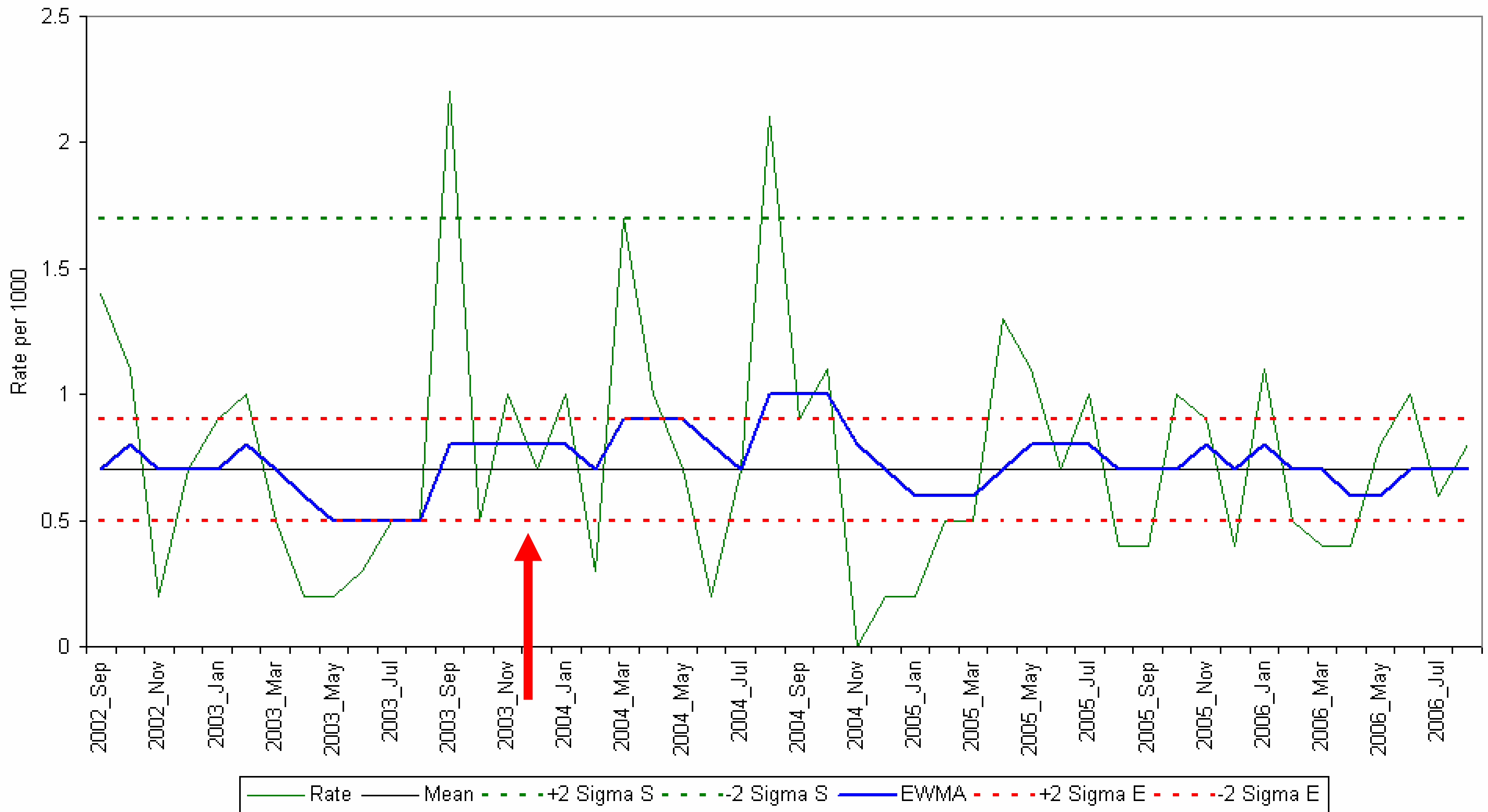
Planned/Elective


ED
ICCU
Short stay (24-48 hours)/Long stay
Nurse/ward clerk pul
Short stay ward
Central Bed manager
SOP for hospital status three times daily
Nurse/ward clerk Pull process
Speciality surgical and cardiology wards
Medical Assessment Unit
Inter-hospital transfer
Daily Load levelling
Team based care on wards
Right patient right place
Standardising ward round
Team based care on wards
Stream admitted patients into predicted short stay (24-48) hours and longer stay.
No take.
Pull to get right patients into right wards
Assessment unit for review complex medical
Daily Load levelling between units at 8am


ED Attendances (excluding priority 6 cases)
Max No. adms before RDC are now the daily average
Number of attendances
210
200
190
180
170
160
150
140
130
120
110
100
90
26/09/2003
26/10/2003
26/11/2003
26/12/2003
26/01/2004
26/02/2004
26/03/2004
26/04/2004
26/05/2004
26/06/2004
26/07/2004
26/08/2004
26/09/2004
26/10/2004
26/11/2004
26/12/2004
26/01/2005
26/02/2005
26/03/2005
26/04/2005
26/05/2005
26/06/2005
26/07/2005
26/08/2005
26/09/2005
26/10/2005
26/11/2005
26/12/2005
26/01/2006
26/02/2006
26/03/2006
26/04/2006
26/05/2006
26/06/2006
26/07/2006
26/08/2006
26/09/2006
Number of attendances
Mean
+2 Sigma S
-2 Sigma S
EWMA
+2 Sigma E
-2 Sigma E


EWMA chart ED weekly % of "did not wait"
% of attendances
10
9
8
7
6
5
4
3
2
1
0
2002_wk39
2002_wk45
2002_wk51
2003_wk4
2003_wk10
2003_wk16
2003_wk22
2003_wk28
2003_wk34
2003_wk40
2003_wk46
2003_wk52
2004_wk5
2004_wk11
2004_wk17
2004_wk23
2004_wk29
2004_wk35
2004_wk41
2004_wk47
2004_wk53
2005_wk6
2005_wk12
2005_wk18
2005_wk24
2005_wk30
2005_wk36
2005_wk42
2005_wk48
2006_wk1
2006_wk7
2006_wk13
2006_wk19
2006_wk25
2006_wk31
2006_wk37
%
Mean
+2 Sigma S
-2 Sigma S
EWMA
+2 Sigma E
-2 Sigma E

EWMA chart monthly ED death rate



Serious adverse events

Dec 02-Nov 03

15 events in the Emergency Departments, ***7*** patient deaths.

Dec 03- Nov 04

4 events in the Emergency Department, **1** patient death.

Dec 04-Nov 05

5 events in the Emergency Department, **0** deaths.

Severe adverse events whole hospital

- 2001/02 1.78 events per 1,000 seps
- 2002/03 1.98 events per 1,000 seps
- 2003/04 0.90 events per 1,000 seps
- 2004/05 1.27 events per 1,000 seps
- 2005/06 0.41 events per 1,000 seps

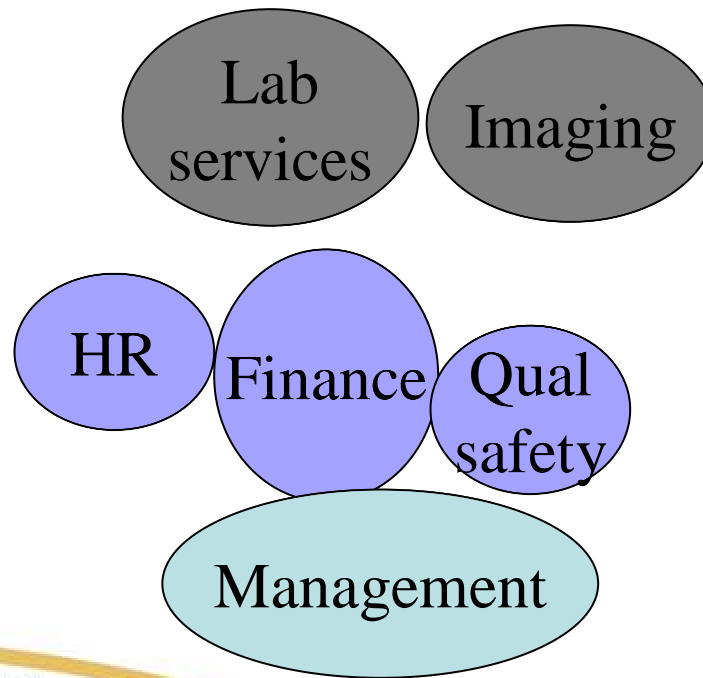
- Readmission and hospital mortality rates stable.
- Staffing stable and FMC able to recruit.
- 10,000 bed days saved since onset RDC program.
- FMC sufficiently cost effective to invest from recurrent budget into equipment and other programs.

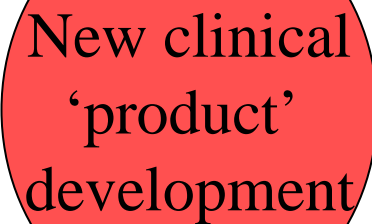
Does Lean thinking represent the next step in patient safety?

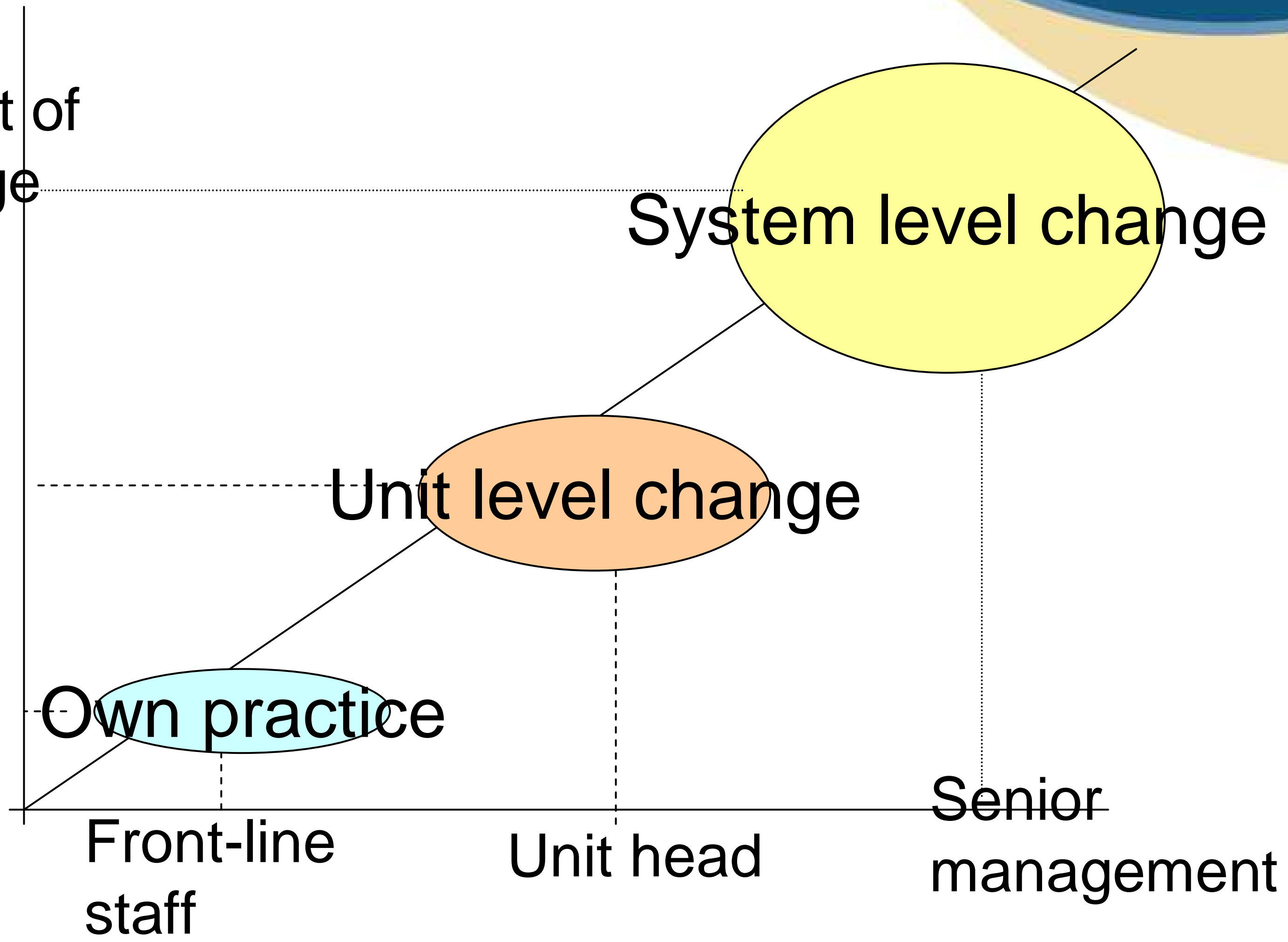
- Lean thinking sees error and rework as waste.
- It provides a detailed implementation strategy.
- It embeds safer care in a whole of service program that also addresses access, workforce and cost-efficiency issues.
- The value-stream approach allows for prospective testing of weaknesses and improvements in first-time quality.

What does the hospital make?.

Clinical Process Engineering







Extent of change
System level change
Unit level change
Own practice
Front-line staff
Unit head
Senior management

CONSTANCY

OF

PURPOSE