

9.30-10.00

Lean Thinking in Healthcare

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Key question:

- Does a disruptive technology allow us to deliver **better value** to the patient:
 - right care,
= 'feeling better'
 - on time,
 - every time,
 - in full,
 - at a cost the patient can afford?
 - £
 - time is money

Patient Story

- 82 year old, previously well and very active
- Mild heart failure, on diuretic for 9 years
- Lives at home carers 'popping-in' every day
- Increasing lethargy, loss of appetite and weakness over 5 days.
- Apyrexial
- Not responded to rehydration and rest

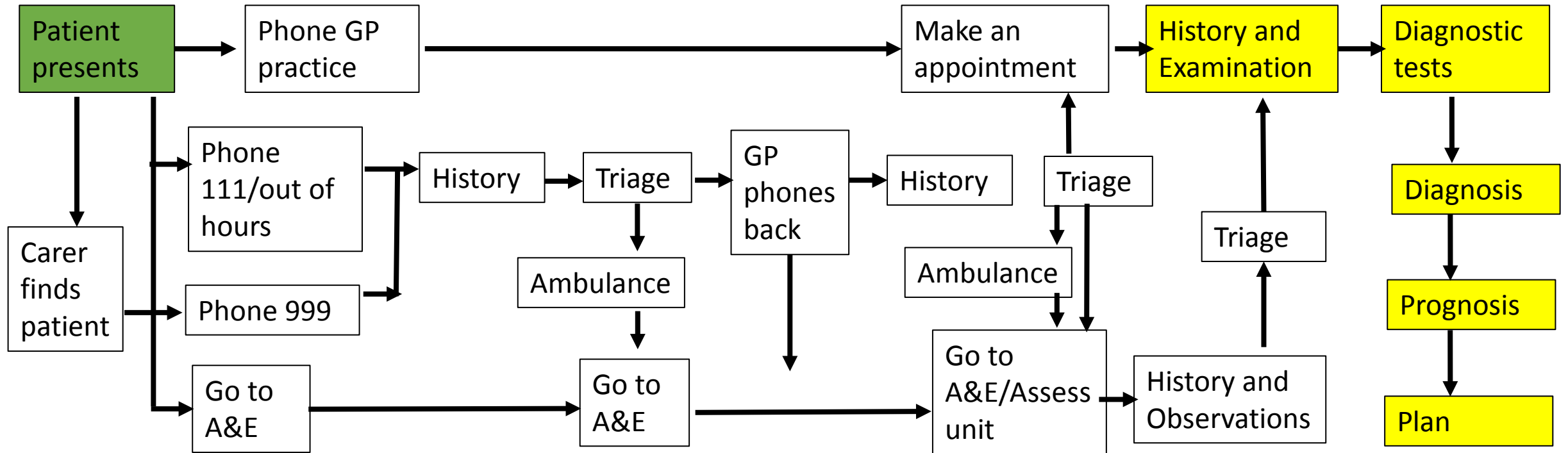
What do the patient and carer need?

- Diagnosis
- Prognosis
- Plan

- (Treatment
- Monitoring
- Maintenance)

What is the process for getting this at 08:00?

Process for getting a diagnosis, prognosis and plan



Which route would you take?

Lean = no waste in the process

- Value-adding: 'activity that will make the patient feel better'
- Non-value adding activity (waste)
 - Transport = moving patient and information
 - Inventory = patients, information, supplies stacked up waiting
 - Motion = moving the staff and resources
 - **Waiting**
 - Over-production – making (taking) too much
 - Over-processing – repeating work
 - **DEFECTs: failure to produce right care, on time, every time, in full**
 - Defects/patient
 - Defects/100 patients
 - (1/yield)

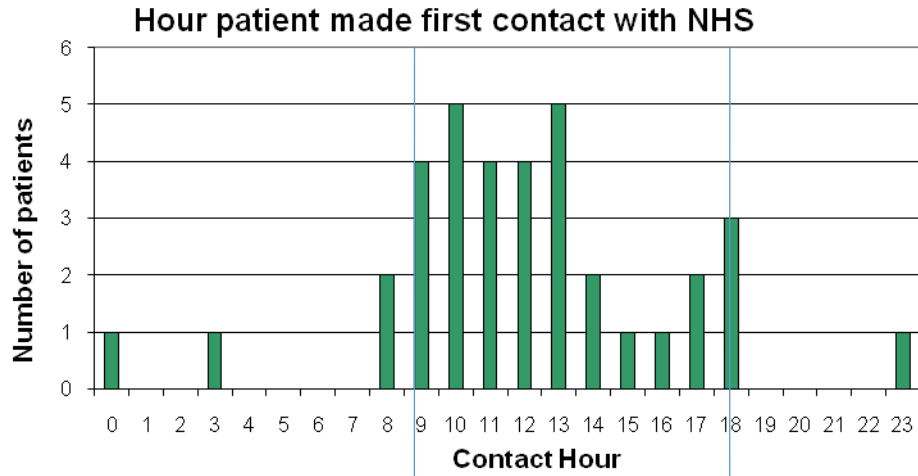
Right care, on time?

- Patient is at risk of delays
 - Sepsis: Every hour of delay to antibiotic = 7% increase in death rate
 - Hyponatraemia
 - Immobility = physical and mental decompensation
- Carer can't delay:
 - Other patients to care for,
 - Has to get to work,
 - or back to family.
- What is the cost of delay to the patient, carer and taxpayer?

Which route?

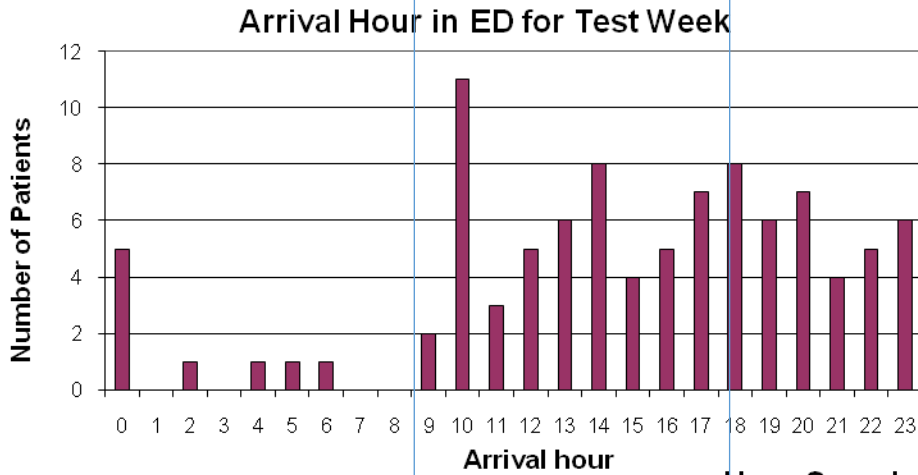
- GP route
 - GP stymied by lack of diagnostics.
 - Delays +++
- 111/out of hours:
 - No value to patient or carer
- QED = A&E

Impact of delays on patients 80 years + in Sheffield 2009



Issues for patients & carers

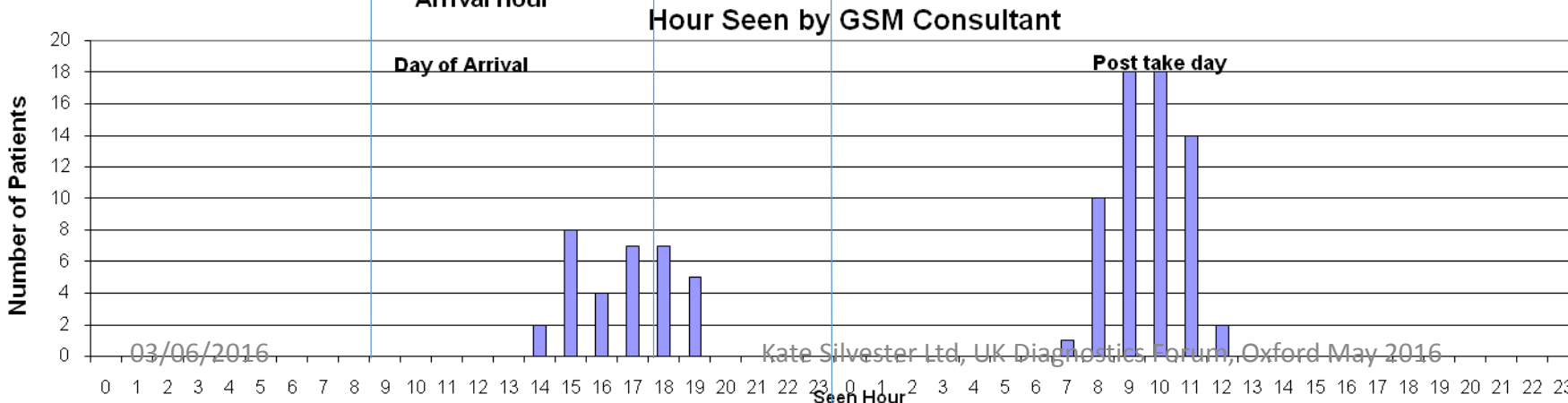
- Getting through to GP
- Lunchtime visits
- Waiting for transport.
- Default: dial 999



Test of change

GPs responding to calls in real time
+ 'floating GP = home visits'

Ambulance
No triage: 'transport patient now'

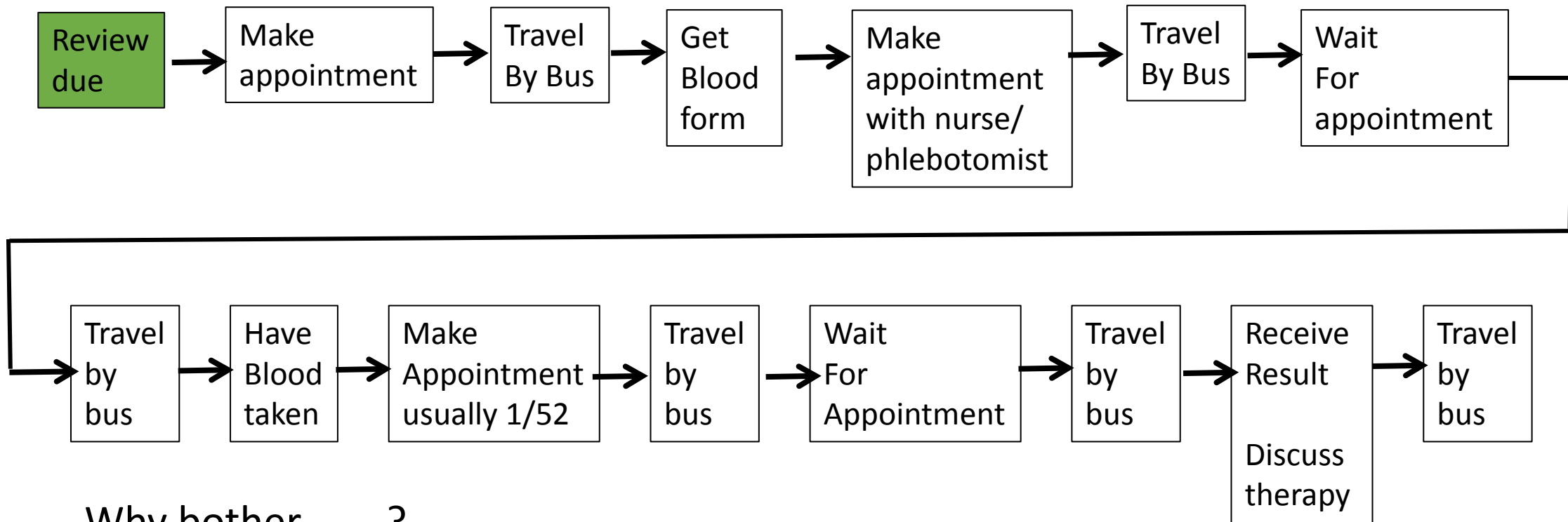


03/06/2016

Kate Silvester Ltd, UK Diagnostics Forum, Oxford May 2016

Monitoring and Maintenance

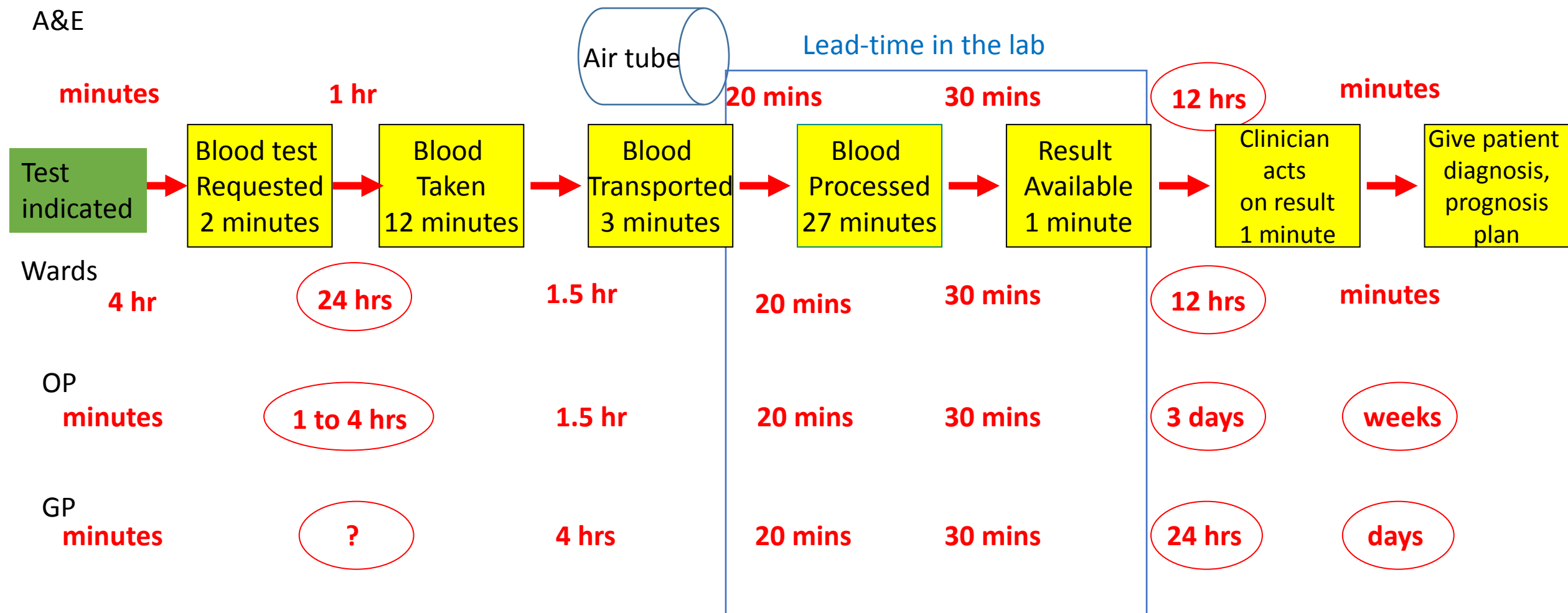
- 68 year old diabetic (type 2)



Why bother.....?

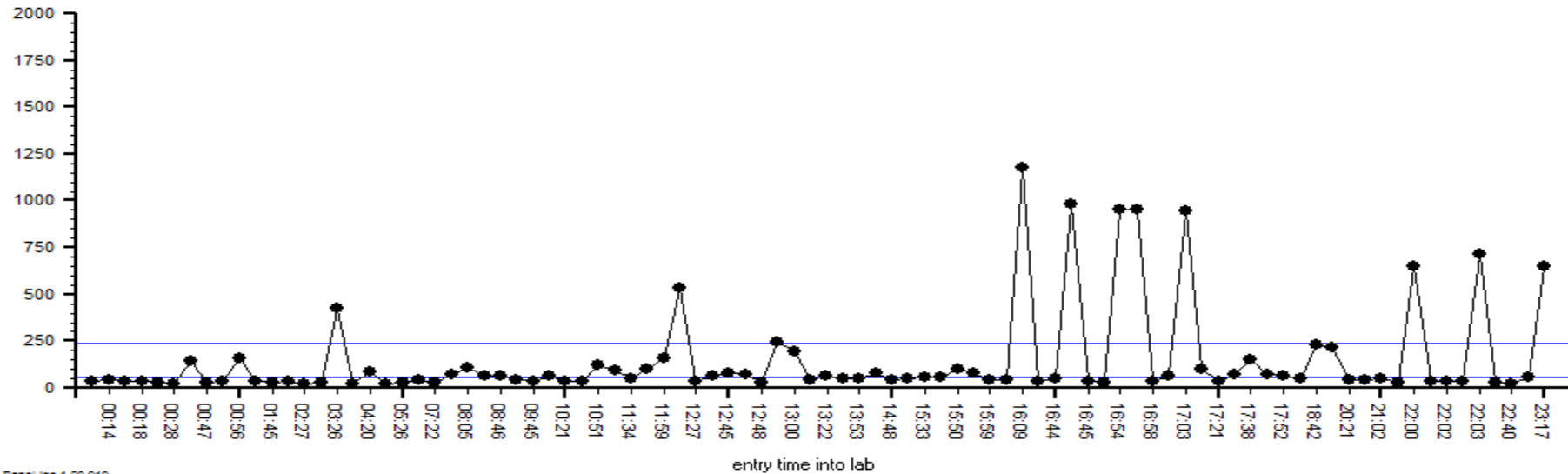
Blood Tests

Process for Basic Chemistry tests



Lead times in Lab: basic chemistry: 'urgent' only

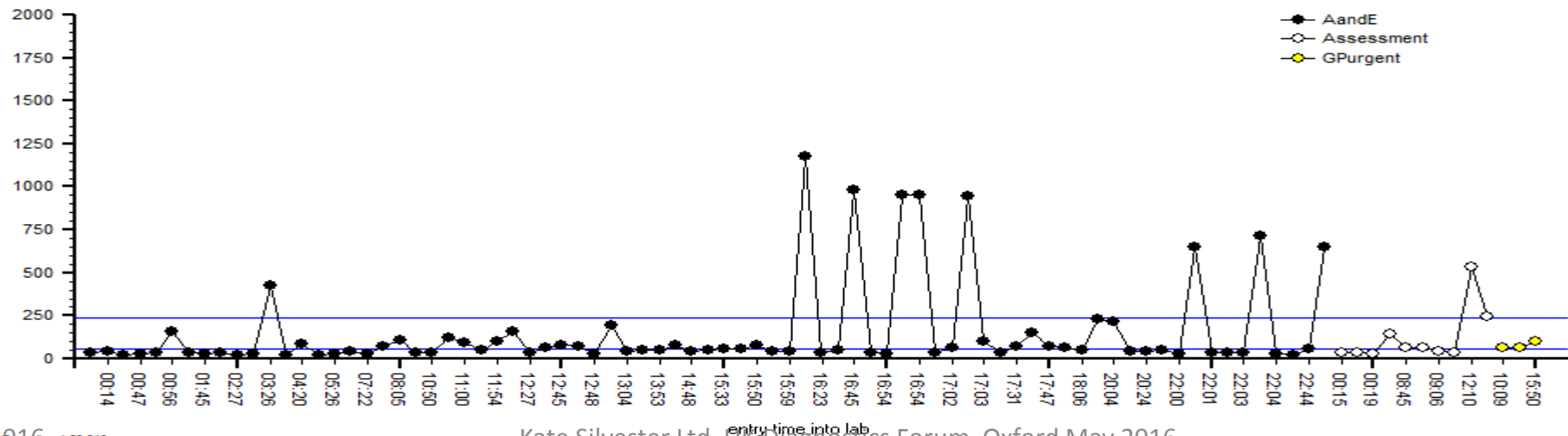
lead time from entry to lab to result available on ICE MINUTES



4 hours
60 minutes

BaseLine 1.20.010

lead time from entry to lab to result available on ICE MINUTES



4 hours
60 minutes

Issues with this process:

- **WASTE:**
 - Transport
 - Inventory: lots of samples waiting, lots of patients waiting – some in hospital beds....
 - Motion:
 - **WAITING:** lots of patients, carers and clinicians waiting
 - Over-production: 10 mls when only μ l needed....
 - Over-processing:
 - Tests requested and blood taken before history and examination....
 - Lab's nightmare is request for 'add-on'....
 - **Defects:**
 - Right test, on time, every time, in full?
 - Delays: what is happening to the K+ ?
- Decisions made on out-of-date tests.
- Big implications for safety
- Is the end-to-end process effective or efficient?

Definitions

- Efficiency =
 - Resource Hours used doing **value-adding** work / Resource hours available
 - Cost of hours available / value-adding activity = unit cost?
- Productivity = yield x efficiency.
- What is the yield from this process?
 - How many tests help deliver the ***right care, on time, every time, in full?***
- So the current process is neither efficient or productive.

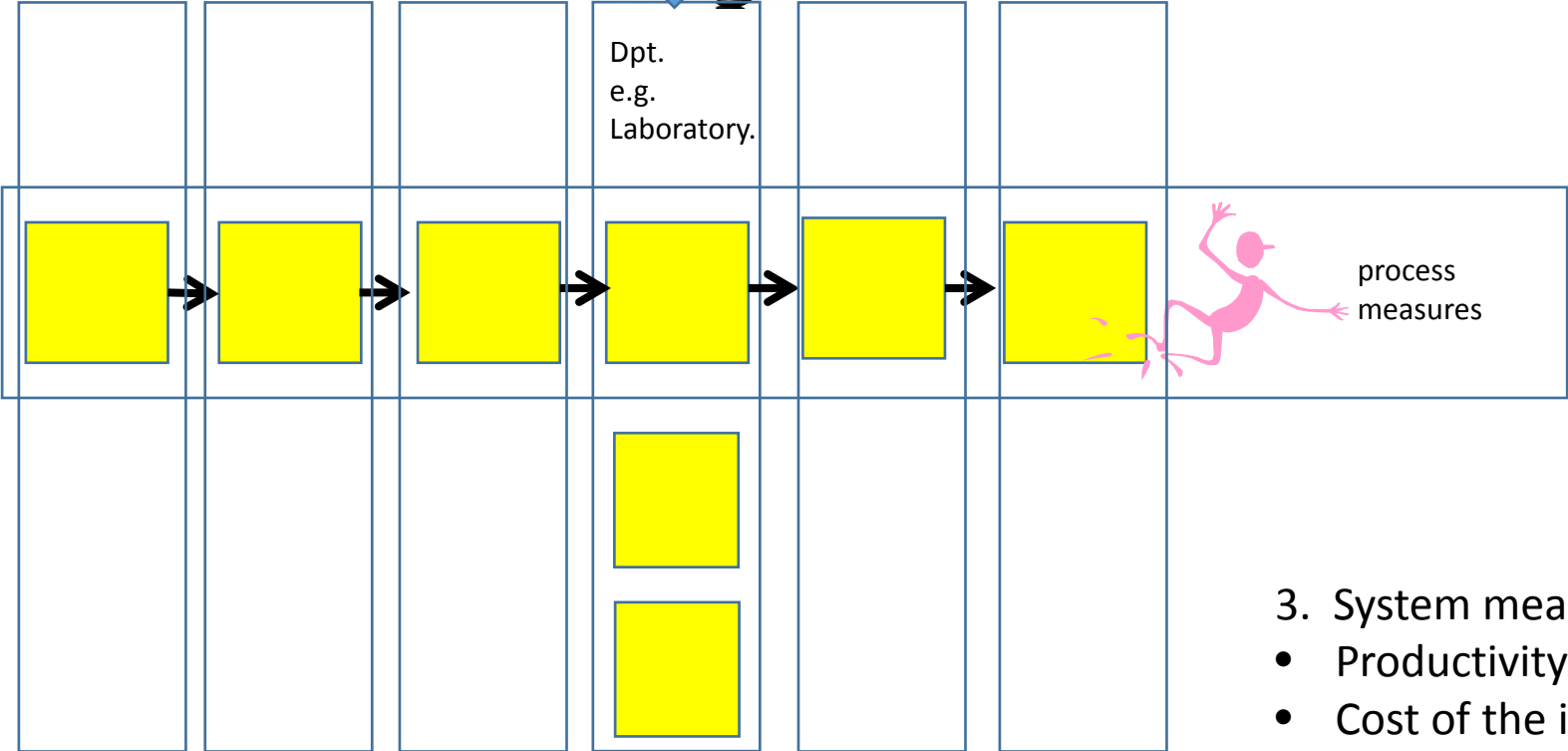
Key learning: Measures: 3 views

2. What the staff, department or organisation measures:



Dpt. cost / value-adding activity = unit cost
 Efficiency: $\frac{\text{Resource hours used doing value-adding work}}{\text{Resource hours available}}$

1. What the patient measures



Yield and lead time
 Right care
 On time
 Every time
 In full

3. System measure
- Productivity: yield x efficiency
 - Cost of the inventory or waiting

Point of Care testing



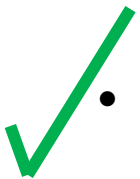
- Potential to remove the waste of transport and waiting therefore
 - reduce defects in care (right care, on time, every time, in full)
= increase healthcare system productivity



- Challenge: diagnosis:
 - Wide range of tests needed including imaging:
 - Symptom and signs define 'Panel of tests'
 - Abdo' pain: basic chemistry, LFTs, amylase, FBC, US, CT
 - Chest pain: basic chemistry, cardiac enzymes, ECG, CXR
 - ? DVT/PE: D-dimer (+/- US, CTPA)
 - STDs



- Value in monitoring and maintenance:
 - Only a small range of disease specific tests required
 - Diabetes: glucose, HbA1C, (renal function?)
 - Rheumatoid conditions (blood panel and ultra sound)
 - Neutropenic sepsis
 - Recurrent UTIs



- Calibration: data transfer to patient, GP, Lab, monitoring variance
 - Time series data for each patient & machine = statistical process control: very effective and efficient
 - Group data variance POCT v Lab v National = comparative statistical tests e.g. ANOM, ANOVA etc.