**Dr Govindan Raghuraman, Northampton General Hospital**

# Improvements in AEC- Heart of England NHS Trust

# Improvements in AEC- Heart of England NHS Trust

Dr. G.Raghuraman
Deputy Medical Director (currently)
Northampton General Hospital

# Topics

- Context of the need for Redesign
- Measurements used with CQUIN agreement
- Pre and post redesign progress
- Financial impact of the redesign
- Learning from this Change

# AEC needs no further evidence of its effectiveness

- **Congestion in the Emergency Care Pathways are the biggest risk to NHS**
- **About one quarter of the unplanned attendances to EDs are admitted into the hospitals. This is expected to rise in the years to come.**
- **20% of these admissions stay in the hospitals for < 48 hours. If alternate models of care are facilitated, it would pave way for appropriate management of these patients without the need to occupy hospital beds that are expensive to manage.**
- **These alternate care models should incorporate the recommendations proposed by external bodies such as the Royal College of Physicians and NHS England to enable seamless and comprehensive care for these patients 24 hours of the day, 7 days of the week.**
- **AEC model, lends itself to facilitate these requirements in a cost effective manner.**

# Local Context

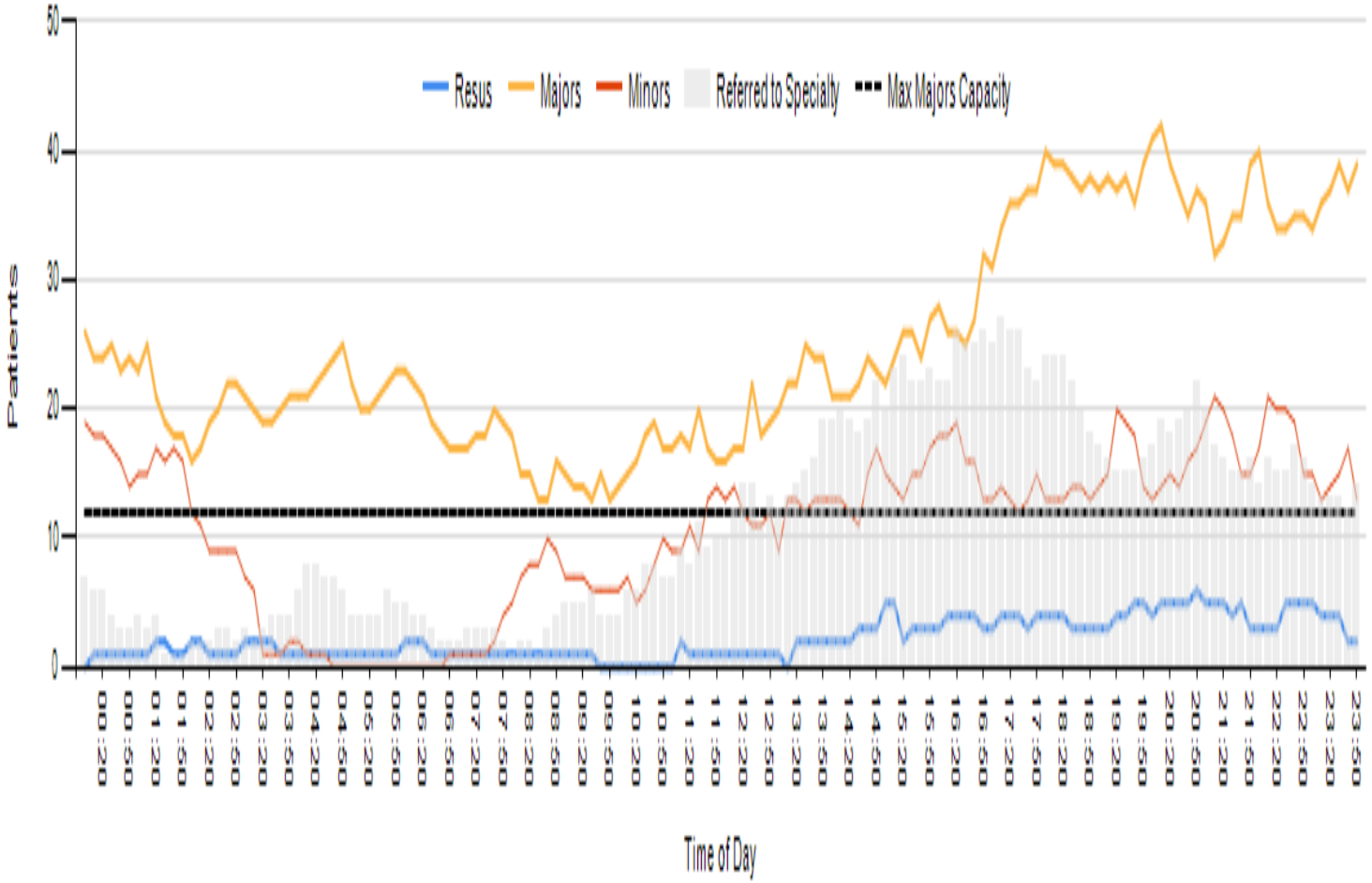
- HEFT struggled with 4 hour target since 2010 and has failed to achieve for > 4 years in a row!!
- Compounded by Increased Mortality -HSMR-123-2013/14, increased 8 hour and 12 hour trolley waits (Silverman-2014)
- SUIs relating to congestion in the front door and explicit link to adverse patient outcomes!

# Local Context

- Senior Medical Cover- 11 hours (4 days)
  - 9 hours on Friday
  - Weekends managed through GIM rota.
- Heavy reliance on Locums to cover AMU/AEC
- Significant inability to manage front door demand

- It was time for CHANGE

# ED Occupancy (Resus, Majors, Minors and Referred Patients)



- **The first diagnosis for the issue was to enable appropriate medical staffing model to support the flow of patients coming into the hospital. The medical cover required extension till 10 PM in the night**

- **Who would we need to manage this demand ?**
  - **Senior Decision Makers**
  - **Appropriate Experience and Skills**

- Onerous workload
  - Diluting the intensity of work through contribution from all able staff

# *"What keeps me going is goals." - Muhammad Ali*

Key ingredients for this model

1. Stable clinical workforce
2. Experienced, senior decision makers
3. Model should operate on "pull" as well as "push"
4. Referral Criteria that enables appropriate referrals.
5. Constant review of processes

# Time Scales

- The First email -17th December 2014
- Co-located AEC-5th January 2015
- 1st meeting with Consultants-17th Jan 2015
- Models of Care presented-April 2015
- Debate-6th May 2015
- Final implementation -1st October 2015

# Data Collected

- Total Number of patients seen between the two periods:
- Patient Characteristics-Age and Sex:
- Diagnosis at attendance.
- Cycle Time: Time from Attendance to eventual discharge/admission to hospital
- Admitted:
- Readmission within 28 days:
- Number of days before readmission:
- Total admissions per day:
- % of total take seen via AEC:

# Aims of this Audit

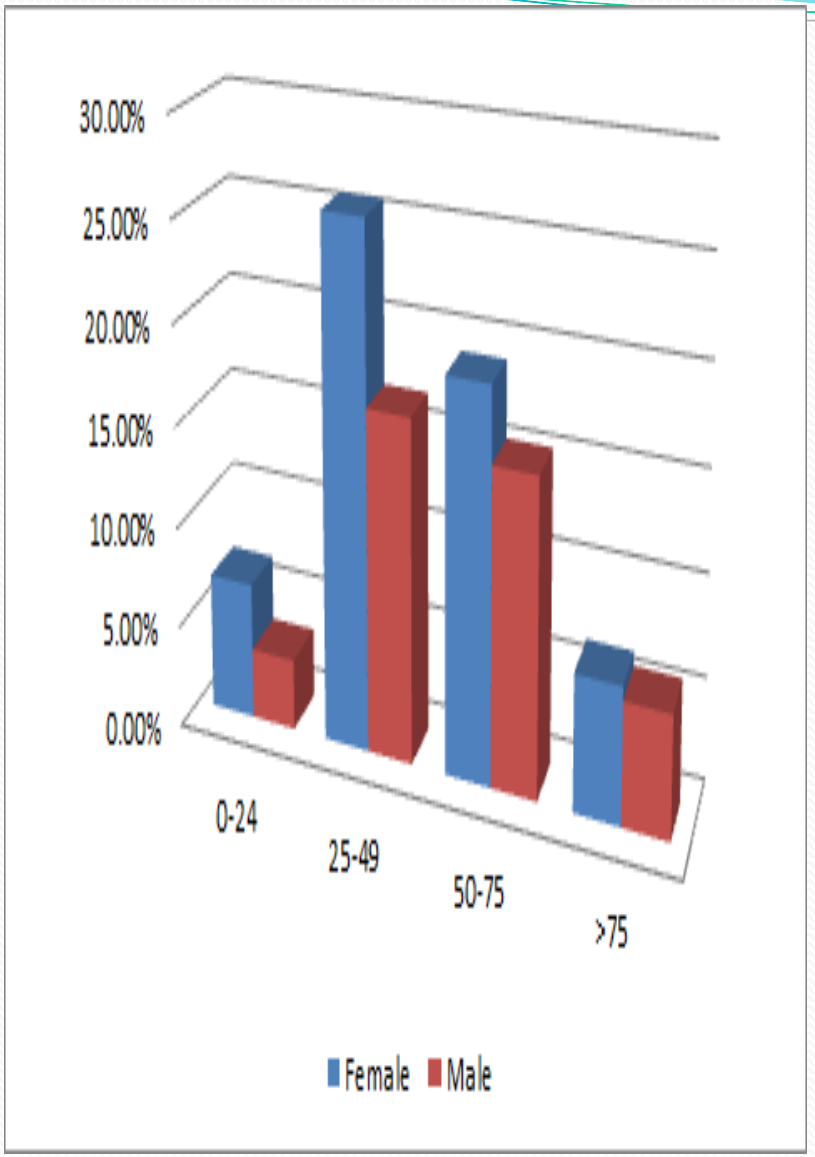
- Primary Outcome
  - Did the redesign increase flow within AEC
    - % of Medical Take (referrals from ED)
      - 21% CQUIN target- £3M value
      - Total Patients reviewed in AEC between the study periods.
- Secondary Outcomes
  - % of admissions
  - Cycle Time
  - Financial balance (Income: Expenditure)

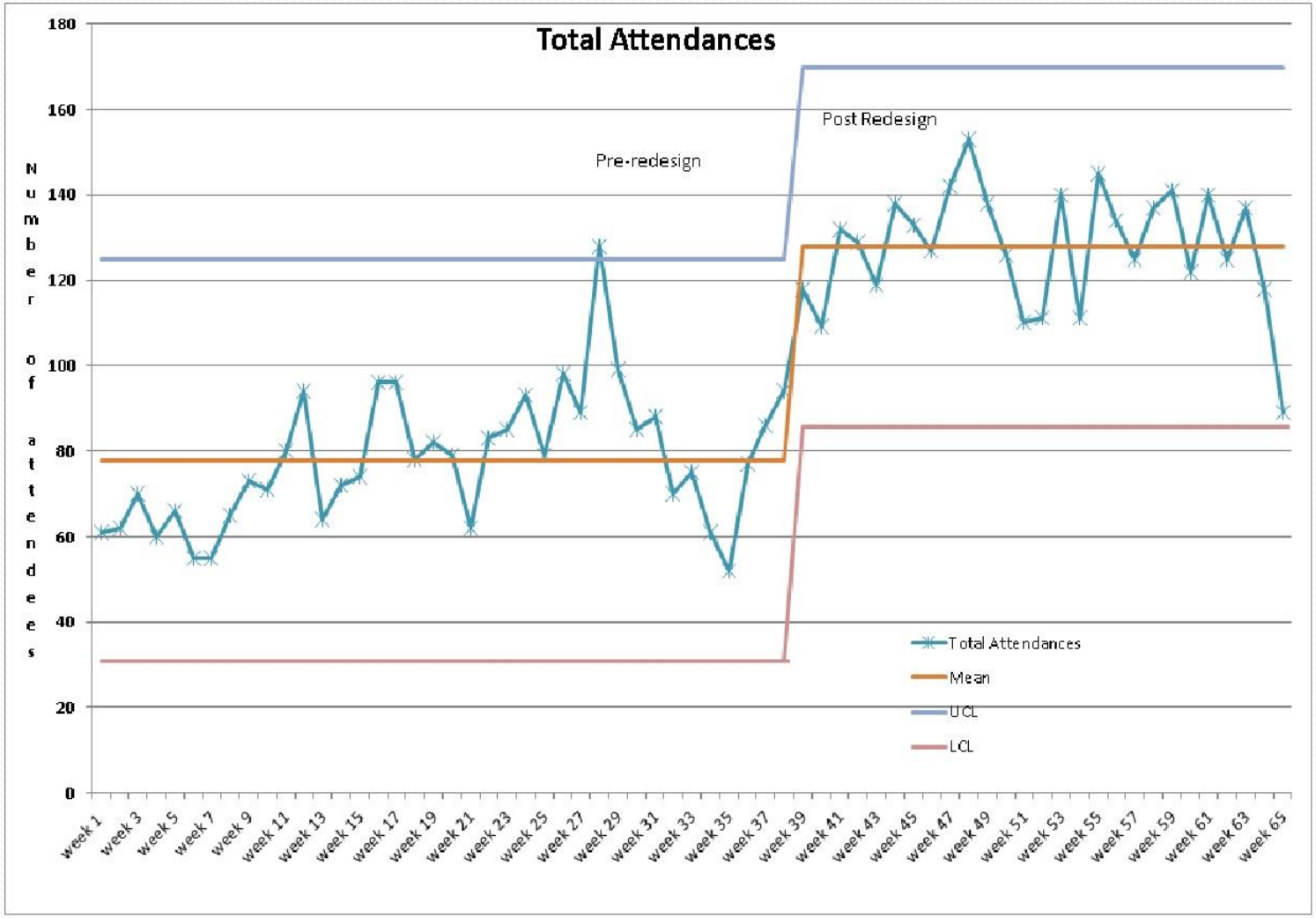
# MSS

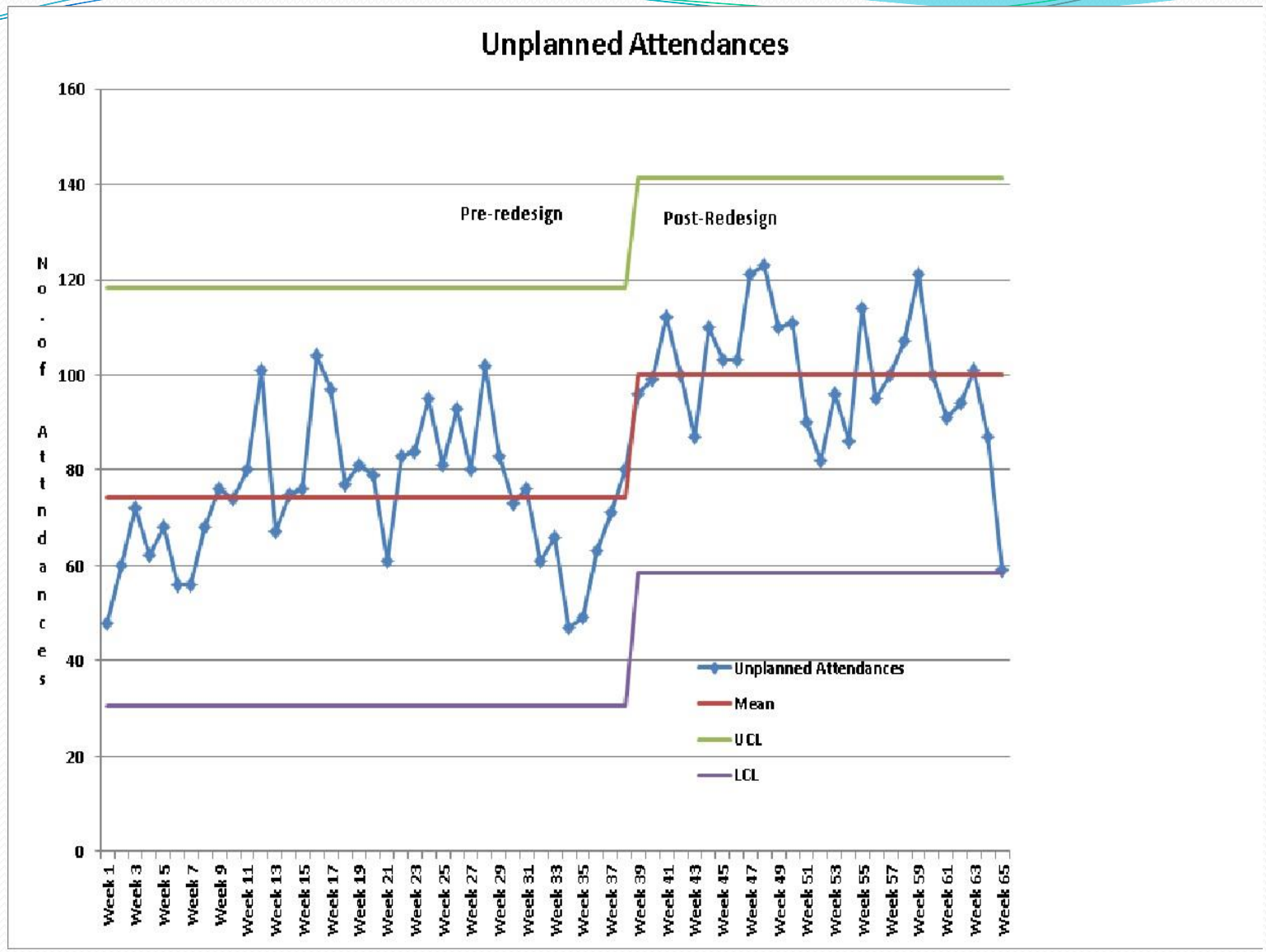
| | |
|---|---|
| Emergency Department | 630 |
| Emergency services | 635 |
| G.P. no letter | 305 |
| G.P. with letter | 1858 |
| Health care provider: same or other | 39 |
| Self Referral | 1183 |
| Walk in Centre | 58 |
| Other | 815 |
| Total | 5523 |

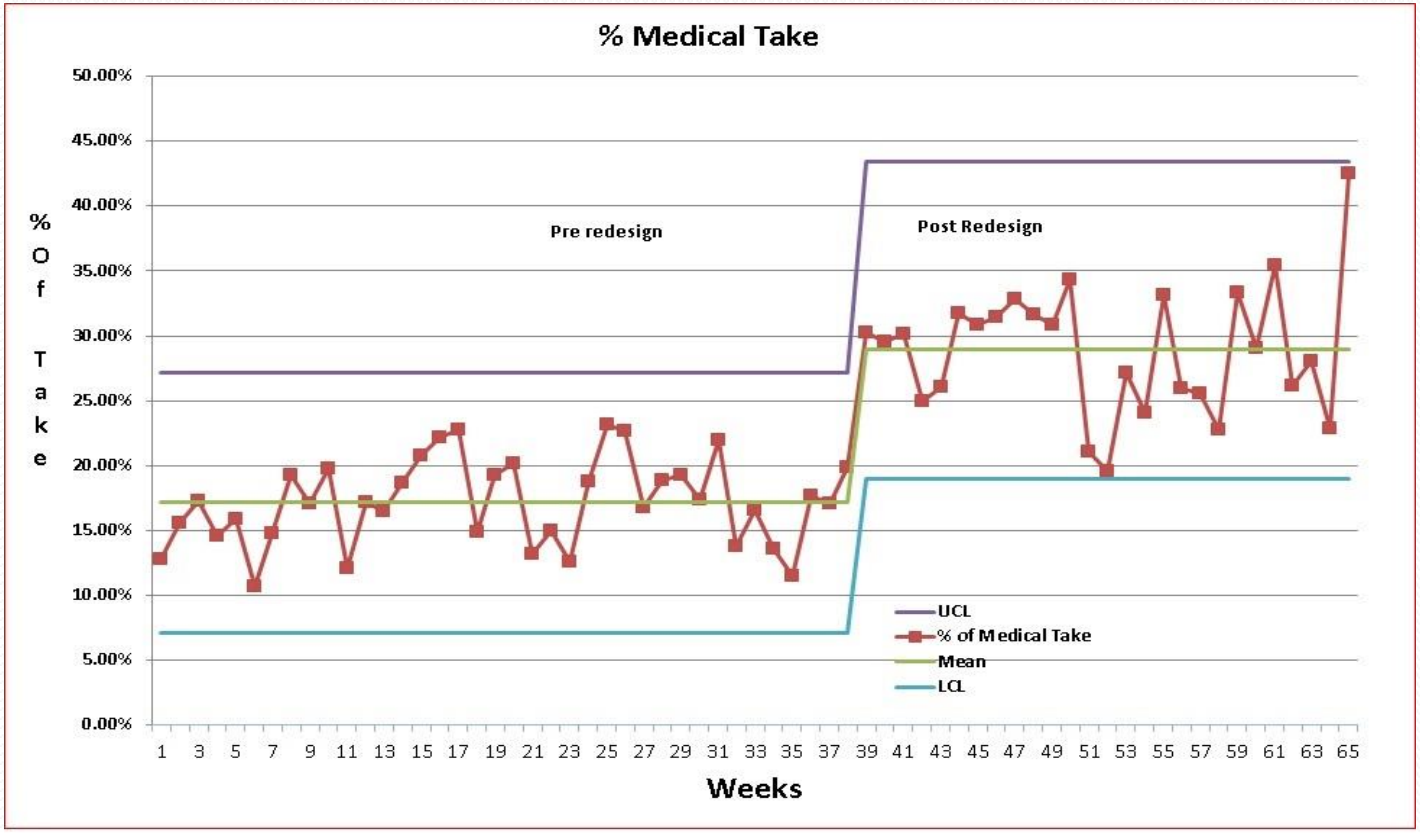
**Characteristics of unplanned AEC attenders**

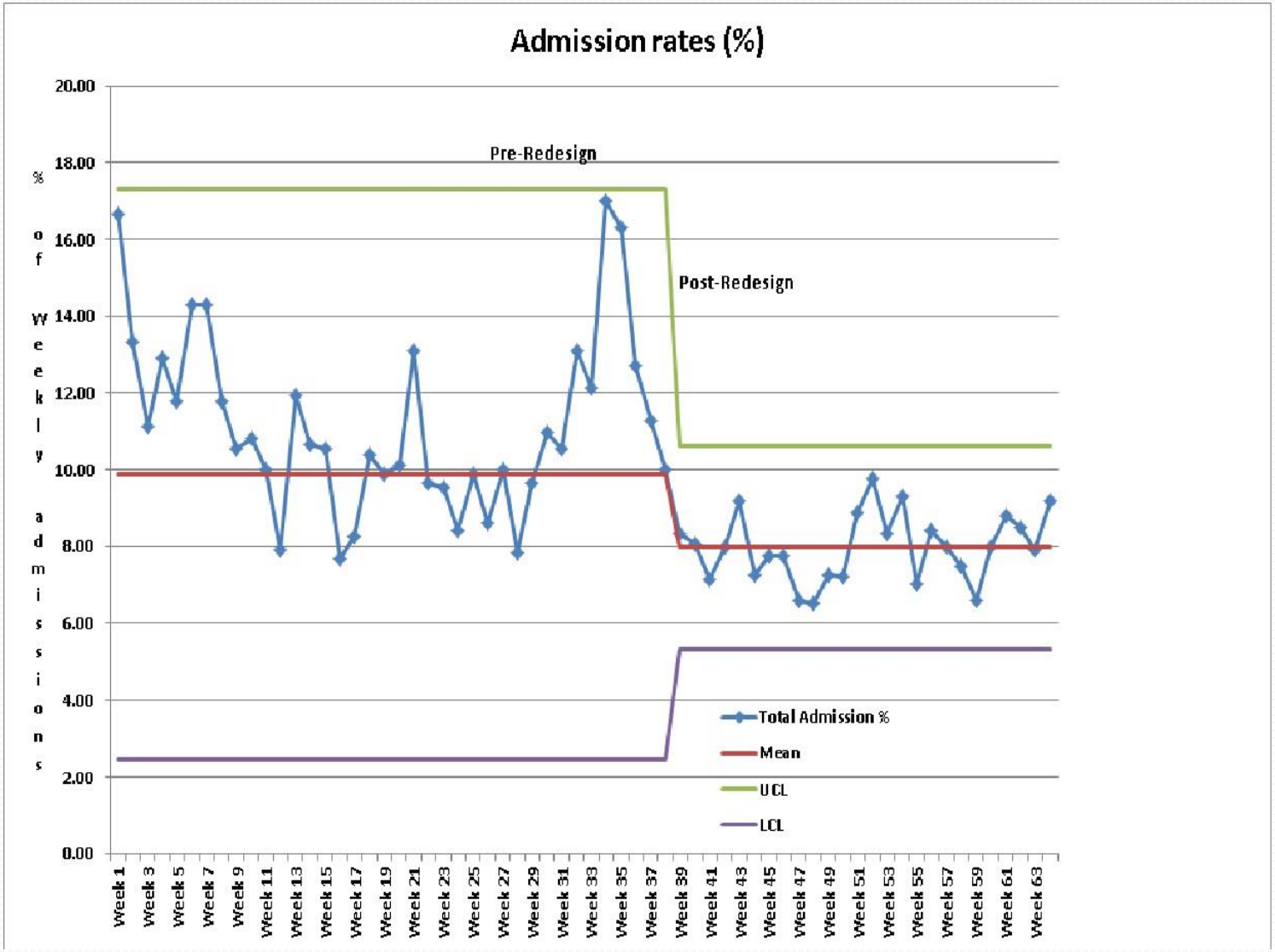
| Unplanned Attendances | Values |
|---|---|
| Total unplanned Attendances (N) | 5523 |
| Sex Count (N) (M/F) | 2301/3222 |
| Attendances/week N -Mean (SD), (95% CI) | 84.97<br>(19.05), (80.34-89.60) |
| Cycle Time mins Mean<br>(SD), (95% CI) | 192.75<br>(84.09), (172.31-213.19) |
| % of Medical Take -% Mean<br>(SD), (95% CI) | 22%<br>(7.56%) (20%-23.7%) |
| Admissions from AEC as a % of total unplanned Attendances<br>Mean<br>(SD), (95% CI) | 9.95%<br>(2.47%) (9.34%-10.55%) |
| Readmissions % of total Attendances | 2.31% |

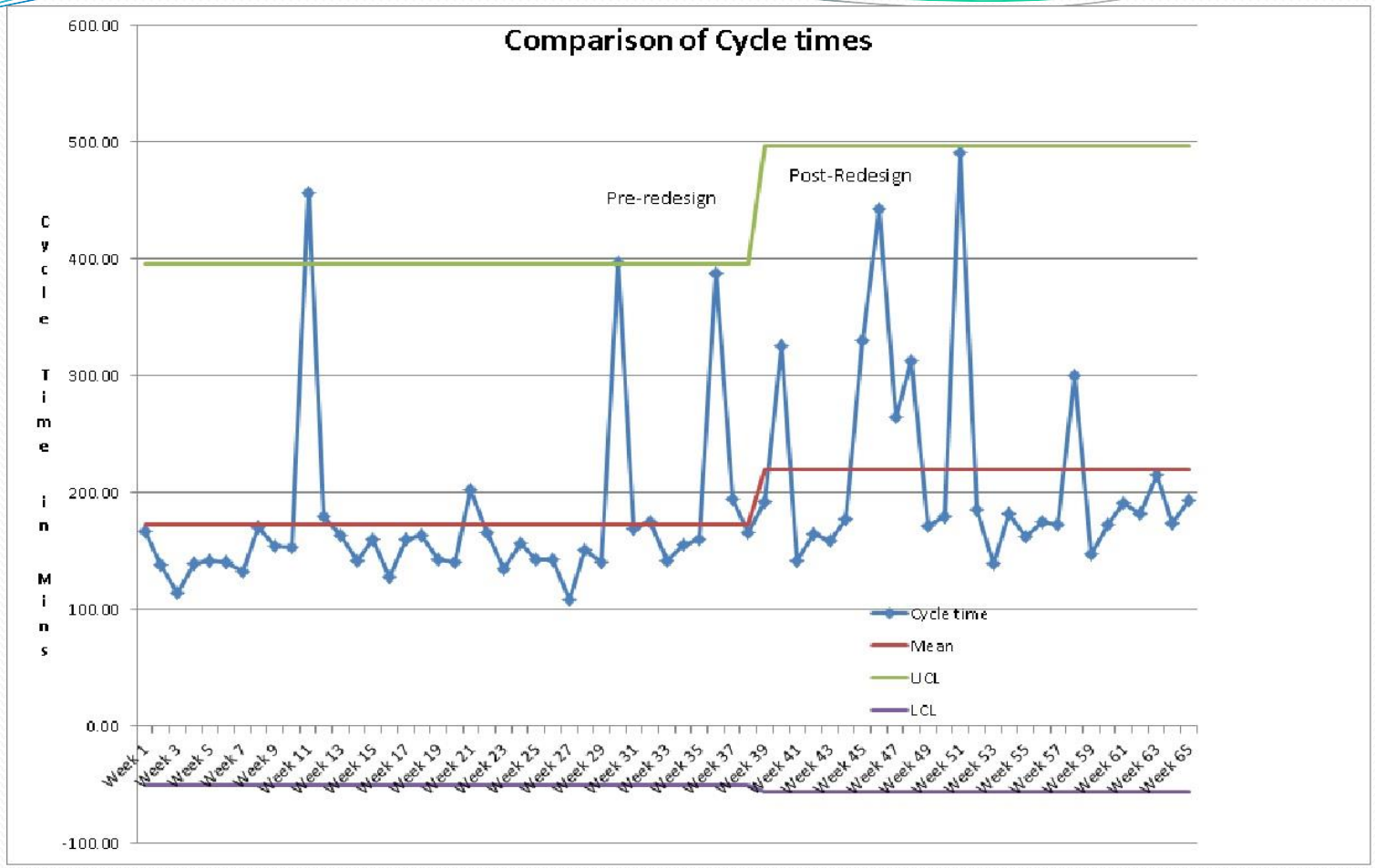

30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
0-24
25-49
50-75
>75
Female
Male


Total Attendances
Pre-redesign
Post Redesign
Number of attendees
180
160
140
120
100
80
60
40
20
0
Total Attendances
Mean
UCL
LCL
week 1
week 3
week 5
week 7
week 9
week 11
week 13
week 15
week 17
week 19
week 21
week 23
week 25
week 27
week 29
week 31
week 33
week 35
week 37
week 39
week 41
week 43
week 45
week 47
week 49
week 51
week 53
week 55
week 57
week 59
week 61
week 63
week 65


Unplanned Attendances
No. of Attendances
160
140
120
100
80
60
40
20
0
Pre-redesign
Post-Redesign
Unplanned Attendances
Mean
UCL
LCL
Week 1
Week 3
Week 5
Week 7
Week 9
Week 11
Week 13
Week 15
Week 17
Week 19
Week 21
Week 23
Week 25
Week 27
Week 29
Week 31
Week 33
Week 35
Week 37
Week 39
Week 41
Week 43
Week 45
Week 47
Week 49
Week 51
Week 53
Week 55
Week 57
Week 59
Week 61
Week 63
Week 65


% Medical Take
50.00%
45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
% Of Take
Pre redesign
Post Redesign
UCL
% of Medical Take
Mean
LCL
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65
Weeks


Admission rates (%)
% of Weekly admissions
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Pre-Redesign
Post-Redesign
Total Admission %
Mean
UCL
LCL
Week 1
Week 3
Week 5
Week 7
Week 9
Week 11
Week 13
Week 15
Week 17
Week 19
Week 21
Week 23
Week 25
Week 27
Week 29
Week 31
Week 33
Week 35
Week 37
Week 39
Week 41
Week 43
Week 45
Week 47
Week 49
Week 51
Week 53
Week 55
Week 57
Week 59
Week 61
Week 63


Comparison of Cycle times
Cycle Time in Mins
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
Pre-redesign
Post-Redesign
Cycle time
Mean
UCL
LCL
Week 1
Week 3
Week 5
Week 7
Week 9
Week 11
Week 13
Week 15
Week 17
Week 19
Week 21
Week 23
Week 25
Week 27
Week 29
Week 31
Week 33
Week 35
Week 37
Week 39
Week 41
Week 43
Week 45
Week 47
Week 49
Week 51
Week 53
Week 55
Week 57
Week 59
Week 61
Week 63
Week 65

**Comparison of Data between Pre and post Redesign Periods on unplanned and planned attendances**

| Attendances | Pre-Redesign (38 Weeks) | Post Redesign (27 weeks) | p-value |
|---|---|---|---|
| Age- Years Mean (SD) (95% CI) | 50.39 (19.49)(49.6-51.04) | 48.45 (19.49)(47-49.18) | 0.0003 |
| Sex Count (N) (M/F)(Unplanned) | 1619/1206 | 1603/1095 | 0.10 |
| Total unplanned Attendances (N) (5523) | 2825 | 2698 | - |
| Total Attendances (N) (6413) | 3001 | 3412 | |
| Total Attendances/week N Mean (SD), (95% CI) | 77.82 (15.66)(72.84-82.8) | 127.74 (14.05)(122.4-133) | <0.000*** |
| Unplanned Attendances/week N – Mean (SD), (95% CI) | 74.34 (14.64)(69.69-79.00) | 99.92 (13.80)(94.72-105.13 | < 0.0000*** |
| Cycle Time mins Mean (SD), (95% CI) | 173.18 mins (74.36) (149.54-196.82) | 220.3 mins (88.81) (186.80-253.8) | 0.02* |
| % of Medical Take -% Mean (SD), (95% CI) | 16.78% (4.28%)(15.41-18.14) | 28.94 % (5.09%)(27.02-35.86) | <0.0000*** |
| Admissions from AEC as a % of total unplanned Attendances Mean (SD), (95% CI) | 11.23% (2.38%) (10.46%-12%) | 8.05% (0.95%)(7.69-8.41%) | <0.0000*** |
| Readmissions % of total Attendances | 1.98% | 2.6% | 0.12 |

## Income : Expenditure

£££s

| | | |
|---|---|---|
| Consultant Costs | 348000 | |
| Nursing Costs | 500000 | |
| Junior Doctor | 218025 | |
| Non Pay | 319807.5 | |
| Total Expenditure | 1385832.5 | |
| Income | 2623500 | |
| Corporate Premium | 787050 | |
| Net Income | 1836450 | |
| Net Profit | 450617.5 | 17.18% |

# Contributory Factors

- Stable senior workforce
- Co-located
- “pull” and “push” model
- “observer Bias” –possibly- but currently the AEC is continuing to perform following expansion.

# “Be Careful”

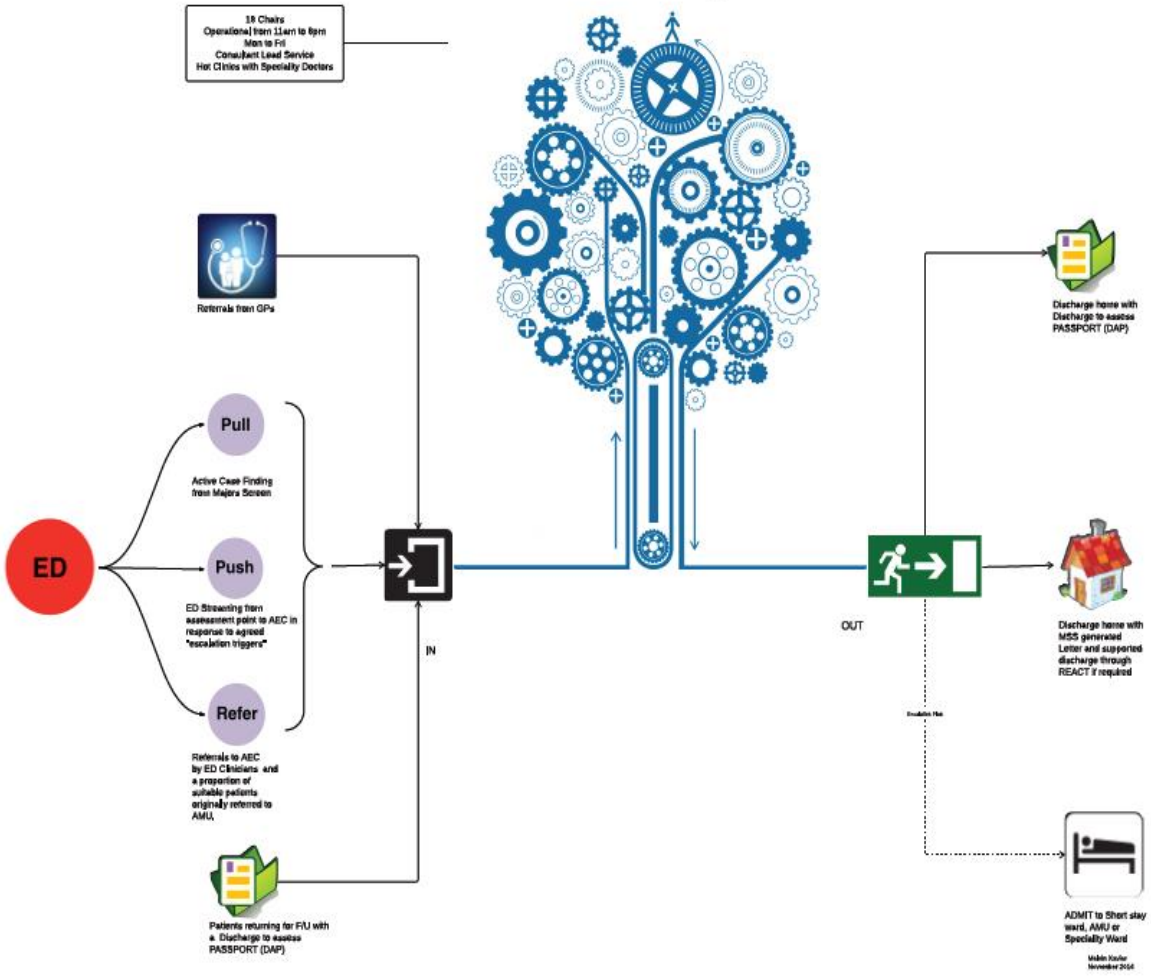
- Results cannot be generalised but principles of the design could be used to develop and improve this useful service

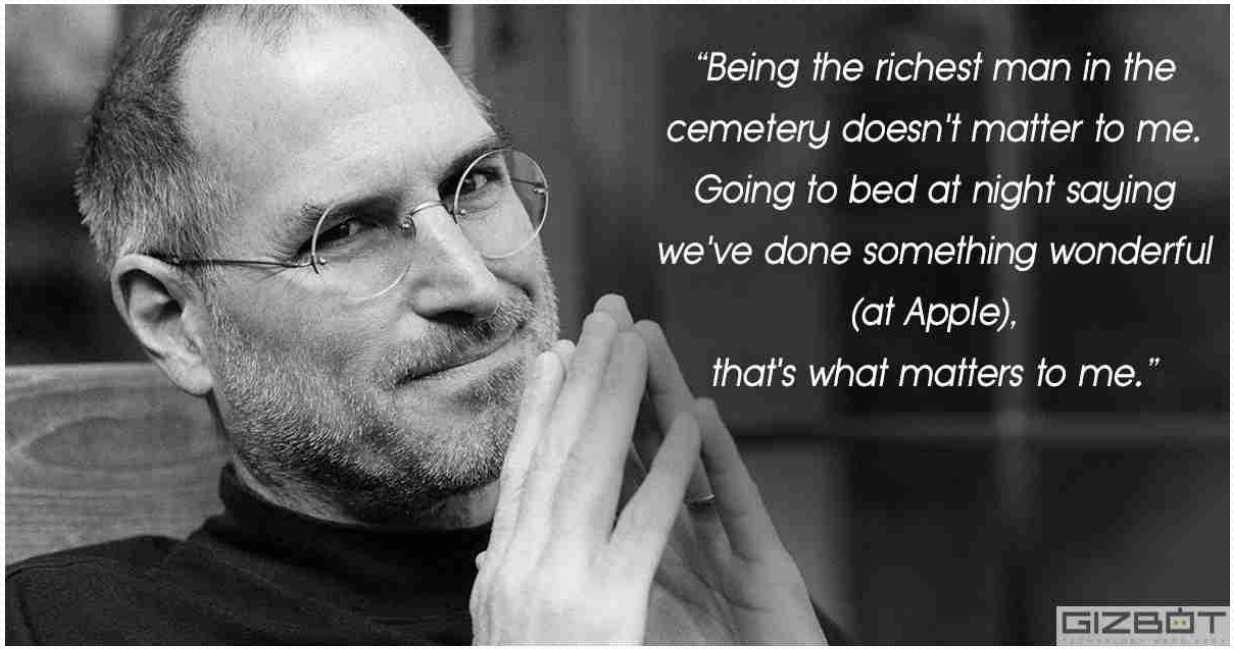
# Take home message

- Planning and constant measurement of key indicators
- Use of appropriate clinical staff
- Motivated and engaged teams
- Clarity of referral

# AEC Hub

## Heartlands Hospital ED




"Being the richest man in the
cemetery doesn't matter to me.
Going to bed at night saying
we've done something wonderful
(at Apple),
that's what matters to me."
GIZBOT