

Reducing Scheduling Variation

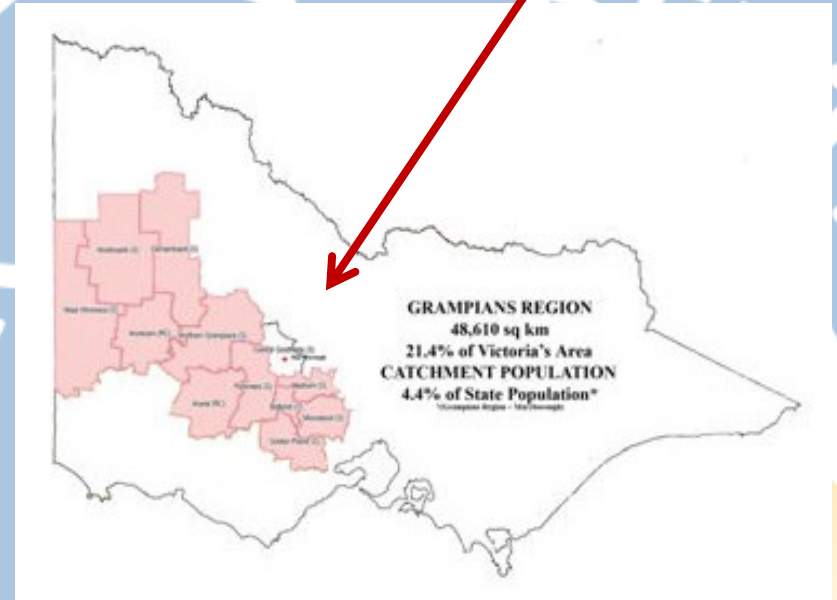
Laura Martin,
Manager Redesign & Innovation,
Ballarat Health Services
Ballarat, Victoria Australia
lauram@bhs.org.au





Ballarat Health Services

- Principal referral hospital – 48,000 square kilometres
- 230,000 people – 4.4% of Victorian population
- BRICC – Ballarat Regional Integrated Cancer Centre
- Day Oncology Unit – 14 chairs, 2 beds – Monday to Friday
- Over 6,500 treatments p/year





Overview

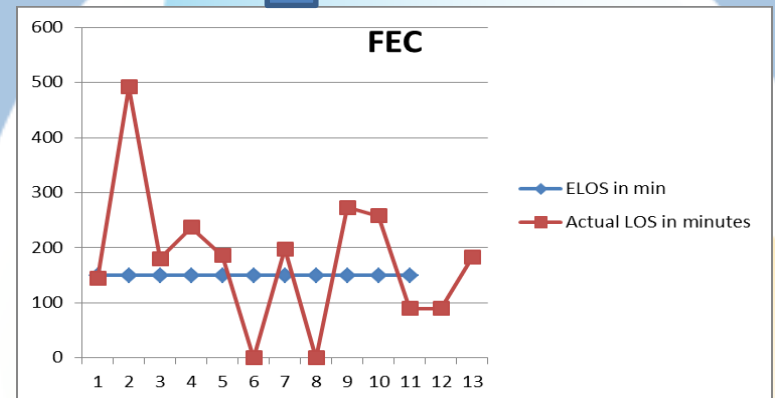
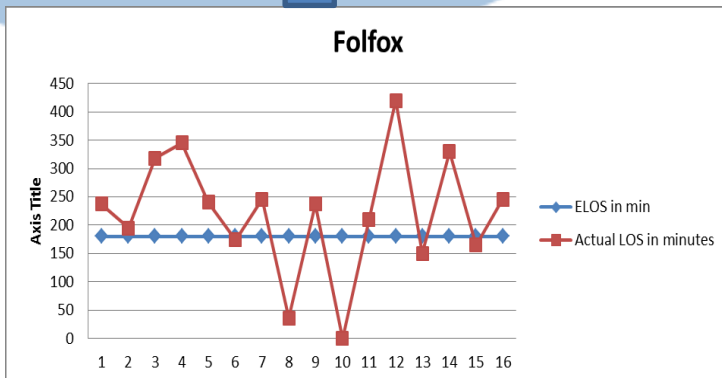
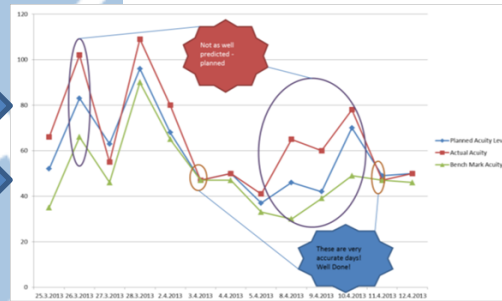
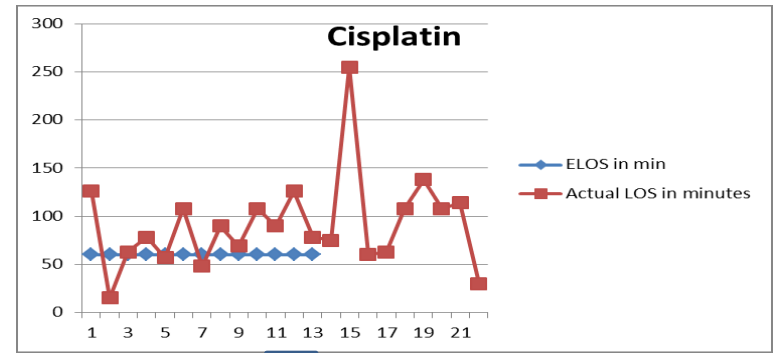
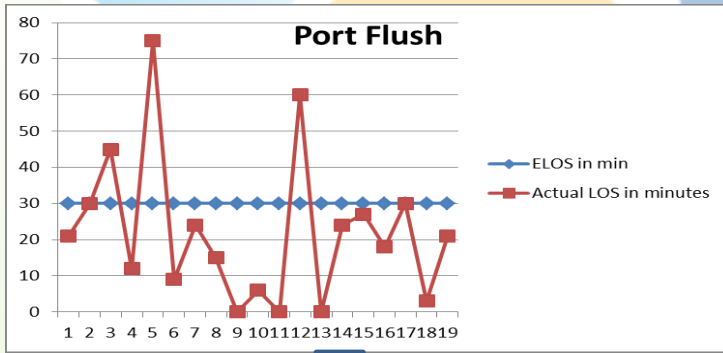
- Start at the beginning - Where are we now?
- The good, the bad and the ugly – understanding variation
- How do we get there? – Plan-do-study-act
- Where to next? Sustainability

Start at the Beginning



| On-Time Length of Stay | | | | |
|------------------------|--------|--------|--------|--------|
| Apr-13 | 37.93% | 44.44% | 47.83% | 62.50% |
| 28.57% | 44.44% | 50.00% | 57.14% | 61.11% |
| 58% | 59% | 53% | 38% | 69% |
| 45% | 35% | 11% | | 56.52% |
| 40% | 37.50% | | | |

The good, the bad & the ugly



How do we get there?



| UR Number/ Insert Bradma Sticker | Scheduled Tx /Procedure | Procedure Cancelled? | Med review today | Blood test today | Sched Appt Time | Nurse Assess/ Patient Prep Start Time | Authority to make chemo (today) Time | Chemo arrive CDL Time | Chemo /Tx or Procedure Start Time | End Time | D/C from chair Time |
|--|-------------------------|----------------------|------------------|------------------|-----------------|---------------------------------------|--------------------------------------|-----------------------|-----------------------------------|----------|---------------------|
| <p>Oncrelatec Tx? [] Nc [] Yes [] Nc [] Nc</p> <p>Tx or /Tx or Procedure cause only today? [] Yes [] Nc [] Nc</p> <p>Toxic? [] Yes [] Nc [] Nc</p> <p>Chemo/MA [] Inpatient [] BM Biops [] Blood/IVIG [] CVAD Car [] Patient failed to attend [] Bphosphinat [] Iron Infusic [] Othe</p> <p>Yes (? main cause on today) [] Yes [] Nc [] Nc</p> <p>Was Nursin/ Patien Assess start time delayed? [] No [] Yes [] Nc [] Nc</p> <p>Was treatment start time delayed? [] No [] Yes [] Nc [] Nc</p> <p>Was D/C delay? [] No [] Yes [] Nc [] Nc</p> | | | | | | | | | | | |

| Level | Non Chemo activity | | |
|-------|--|--|--|
| 1 | < 30 mins | <20 mins nursing time | |
| | IV access Any dressings Dr review (well) | CVAD care/ access SC / IM injections Patient education | CADD/BAXTER pumps Pre- treatment bloods |
| 2 | Platelet infusion 1hr | Dr Review (unwell) | |
| 4 | Electrolyte replacement | 3-4 hrs | BMBX 3hrs |
| 5 | Blood transfusion | 3-6.5 hrs | Iron infusion 6 hrs |

| Level 2 = <30-90 mins | Level 3 = 1-2 hours | Level 4 = 2-4 hours | Level 5 = > 4 hours |
|-----------------------|---------------------|---------------------|---------------------|
| <Nursing: 45 mins | Nursing: 60 mins | Nursing: 90 mins | Nursing: 180 mins |

| Level | Chemotherapy regime | Time | Level | Chemotherapy regime | Time |
|-------|---|------|-------|---|------|
| 2 | Abraxane | 1.5 | 4 | Docetaxel / Carboplatin/ Trastuzumab C3 | 3 |
| 3 | Abraxane/ Trastuzumab C2 | 1.5 | 2 | Docetaxel / Prednisolone | 1.5 |
| 4 | Abraxane/ Trastuzumab C1 | 3 | 3 | EC or AC | 2 |
| 4 | Abraxane/ Trastuzumab / Zometa | 4 | 5 | ECF | 6 |
| 4 | ABVD | 3.5 | 5 | ECK | 6 |
| 4 | AMG 386/ Bevacizumab D1 (trial) | 2.5 | 2 | Etoposide | 1 |
| 3 | AMG 386/ Bevacizumab D15 (trial) | 2 | 4 | FEC 100 | 2.5 |
| 4 | Astelles Trial | 5 | 5 | FCR D1 C1 | 6 |
| 5 | BEP D1 | 5.5 | 4 | FCR D1-2 | 4 |
| 2 | Bevacizumab C2 +/- Capecitabine | 1.5 | 4 | Folfox (2/24 oxaliplatin) | 3.5 |
| 4 | Bevacizumab / Folfiri | 4 | 5 | Folfox (4/24 oxaliplatin) | 5.5 |
| 4 | Bevacizumab / Folfox | 4 | 5 | Folfox + Calcium/ Magnesium | 4.5 |
| 2 | Bortezomib | 1 | 4 | Folfiri | 3.5 |
| 2 | Carboplatin / SFU | 1.5 | 4 | Folfiri /Bevacizumab C2 (C1 = 4.5 hrs) | 4 |
| 3 | Carboplatin / etoposide | 2 | 2 | Gemcitabine usually 2.5 hrs? | 1 |
| 4 | Carboplatin /Caelyx C2 | 2.5 | 4 | Irinotecan | 2.5 |
| 4 | Carboplatin / Docetaxel | 2.5 | 2 | Mitomycin / SFU | 1 |
| 3 | Carboplatin / Gemcitabine D1 | 2 | 2 | Mitoxantrone | 1.5 |
| 3 | Carboplatin/ Pemetrexed | 2 | 4 | OCA | 2.5 |
| 5 | Carboplatin / Taxol | 5 | 4 | Oxaliplatin/ Capecitabine | 2.5 |
| 3 | Caelyx | 2 | 4 | Oxaliplatin/ Capecitabine /Bevacizumab | 3.5 |
| 3 | Cetuximab D8 | 2 | 2 | Pemetrexed | 1 |
| 5 | Cetuximab C1 | 4 | 3 | Panitumumab (trial) | 1 |
| 5 | Cetuximab / Folfiri C1 | 6 | 5 | R- Chop C1 or RCVP C1 | 6 |
| 5 | Cetuximab / Folfiri C2 | 4.5 | 5 | R- Chop C2 or RCVP C2 | 5 |
| 5 | Cetuximab / Irinotecan C1 | 5 | 5 | Rituximab C1 | 5 |
| 4 | Cetuximab / Irinotecan C2 | 4 | 4 | Rituximab - Rapid | 2.5 |
| 4 | Chop | 2.5 | 4 | TAC | 3 |
| 5 | Cisplatin Wk 1, 4, 7 | 5 | 5 | TCH C1 | 4.5 |
| 5 | Cisplatin SFU | 5.5 | 4 | TCH C2 (C1 3 > = 3hrs) | 3.5 |
| 5 | Cisplatin / etoposide | 5.5 | 2 | Temisrolimus (Soliris) | 1.5 |
| 3 | CVP | 2 | 3 | Trastuzumab C1 | 2 |
| 2 | De Grammont | 1.5 | 2 | Trastuzumab C2 (C1 3 > = 1hrs) | 1.5 |
| 3 | Docetaxel / Capecitabine | 1.5 | 2 | Trastuzumab / Vinorelbine C3 > | 1.5 |
| 5 | Docetaxel / Carboplatin/ Trastuzumab C1 | 4 | 2 | Vinorelbine / Capecitabine | 1 |
| 3 | Docetaxel / Carboplatin/ Trastuzumab C2 | 3.5 | 2 | Zoledronic acid (zometa) | 1.5 |

| | |
|----------|--------------------|
| Level 10 | Nursing = 240 mins |
| | TPE RCE |
| Level 20 | Nursing = 480 mins |
| | PBSCC WCD |

Appendix A

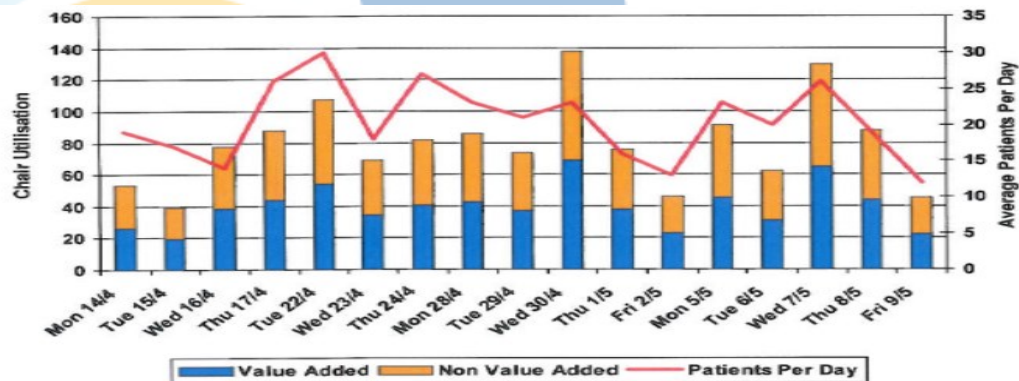
Note initial treatments will be written into the diary by the nurses. Below is only a brief guide of the most common treatment regimes. Nursing staff should give you a reasonable indication in time allocation required when the patient is to be rebooked for their next treatment. Please ask the nursing staff for any other assistance. Team work is strongly promoted in the day oncology unit.

Please match treatment times with clinic appointments.

Intragram 4 level, 2.5 hours?

| Drug Regime. | Diary Block out Time length. | Best time slot for treatment. |
|-------------------------------|------------------------------|---|
| Abraxane | 1 hour | Best after 11 am as it is a short expiry drug and arrives to pharmacy morning of treatment. |
| Abraxane/ Trastuzumab | 2.5 hrs | After 11am |
| ABVD | 2-4 hrs Level 4 | Morning |
| BEP | 2-4 hrs Level 4 | 0930 |
| Bevacizumab | 30-90 minutes | Mid morning vs > 102 minutes |
| Bevacizumab/ Capecitabine | 1 hour | Mid morning |
| Caelyx | 30-90 minutes | Mid morning |
| Carboplatin/ Gemcitabine | 08-2.5 | Any time slot |
| Carboplatin/ Cyclophosphamide | 08-1 hour | Any time slot |
| Carboplatin/ Docetaxel | 2.5 hours | Any time slot |
| Carboplatin/ Etoposide | D1-2 hours | Preferably morning |
| Carboplatin/ Etoposide | 30-90 min | Preferably morning |
| Carboplatin/ SFU | D 2 & 3-1 hour | Late afternoon (22hrs post D1) |
| Carboplatin/ Pemetrexed | 2hrs | Any time slot |
| Carboplatin/ Taxol | 2 hours | Any time slot |
| Cetuximab | 2.5 hours | Any time slot |
| Cetuximab/ Irinotecan | 4 hours | Any time slot |
| Cetuximab/ Folfiri | D1-4.5 hours | Any time slot |
| Cisplatin Week 1, 4, 7 | All day | 0930 |
| Cisplatin/ Etoposide | D1- all day | 0930 |
| Cisplatin/ SFU | D2-5-1 hour | Late afternoon |
| Cisplatin/ SFU | D1- all day | 0930 |
| Cisplatin/ SFU | D3 & D5-1 hour | Mid afternoon |
| Cisplatin/ SFU | D3 & D5-1 hour | Mid afternoon |
| CHOP | 2.5 hours | Mid morning/ afternoon |
| CVP | 2 hours | Mid morning/ afternoon |
| Docetaxel/ Prednisolone | > 1-2 hours | 2 hours |
| Docetaxel/ Capecitabine | > 1-2 hours | 2 hours |
| Bortezomib | 30-90 min | Palliative 1-2 hours 1st 4 hours Level 5 |
| Etoposide | 30-90 min | Irinotecan 1-2 hours |
| Doxorubicin | 30-90 min | |
| Docetaxel | 30-90 min | |
| Methotrexate | 30-90 min | |
| ... | ... | |

Plan-do-study-act



"Value Added" time includes the time the patient is in the treatment chair and actively having treatment. i.e the duration of the nursing assessment, and the duration of the procedure added together.

"Non Value Added" time includes the time the patient is in a treatment chair, but no active treatment is being administered. This includes the time between the end of the nursing assessment and the beginning of the scheduled procedure(s), and any delay between the end of the procedure and discharge.

Note: if there are delays during a chemotherapy infusion, i.e. waiting for next product to arrive, this time is not captured in this report

| Monday | Tuesday | Wednesday | Thursday | Friday |
|--------|---------|-----------|----------|--------|
| May-13 | | 41.18% | 55.00% | 63.16% |
| 33.33% | 44.00% | 43.75% | 27.27% | 36.52% |
| 63% | 67% | 38% | 50% | 76% |
| 41% | 36% | 57% | 33% | 67% |
| 45% | 77% | 50% | 63% | 71% |

| Monday | Tuesday | Wednesday | Thursday | Friday |
|----------------|---------|-----------|----------|--------|
| Jun-13 | | | | |
| 28.41% | 68.57% | 71.43% | 47.62% | 55.00% |
| | | | | |
| Public Holiday | 52% | 50% | 67% | 62% |
| 57% | 62% | 58% | 72% | 62% |
| 50% | 59% | 50% | 70% | 70% |

| Monday | Tuesday | Wednesday | Thursday | Friday |
|--------|---------|-----------|----------|--------|
| Jul-13 | | | | |
| 70% | 77% | 71.70% | | 64.13 |
| 51.64% | 56.52% | 66.67% | 40.00% | 58.33% |
| 60% | 67% | 72% | 50% | 60% |
| 40% | 63% | 50% | 50% | 70% |
| 50% | 61% | 65% | 70% | 55% |

| Monday | Tuesday | Wednesday | Thursday | Friday |
|--------|---------|-----------|----------|--------|
| Aug-13 | | | | |
| | | | 62.50% | 71.43% |
| 80.00% | 75.00% | 64.29% | 65.00% | 77.78% |
| 67% | 59% | 63% | 61% | 67% |
| 70% | 67% | 64% | 63% | |
| | | | | 71.56% |



Where to next?

Reduction in non-value added chair time for patients

Improved 'on-time' length of treatment for all regimes

Improved chair utilisation – improved access to care for patients

Reduction of staff overtime

Reduction in staff sick leave (reflection of staff satisfaction)

Sustainability



Provide direction, guidance and support to the individuals managing the change as well as those who have to adopt, and adapt to, change

Revised scheduling method used to create electronic scheduling

Accountability and culture change

6 month and 12 month sustainability report showed a maintained level of improvement

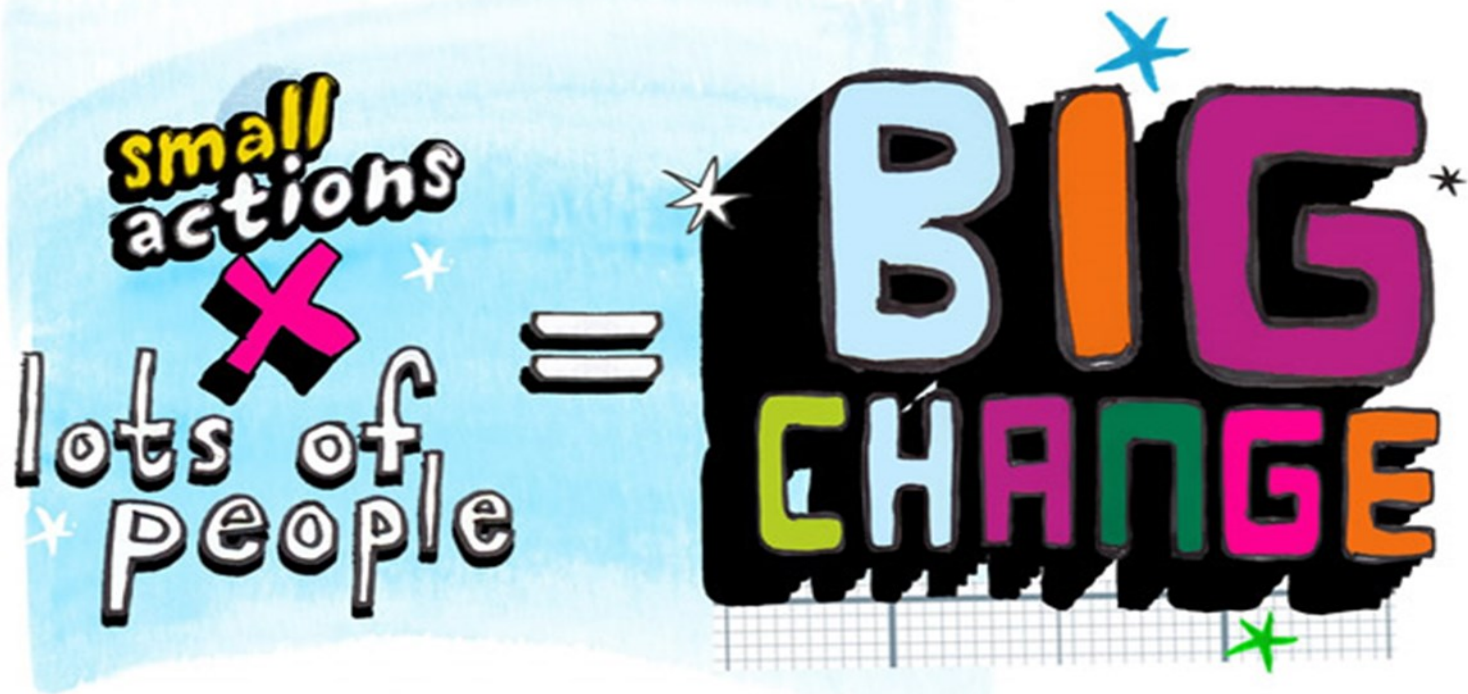
Rinse & Repeat



HEALTHIER

SAFER BETTER

Questions



lauram@bhs.org.au