Hinchingbrooke Hospital Ophthalmology Theatre Efficiency Improvement – Autumn 2013

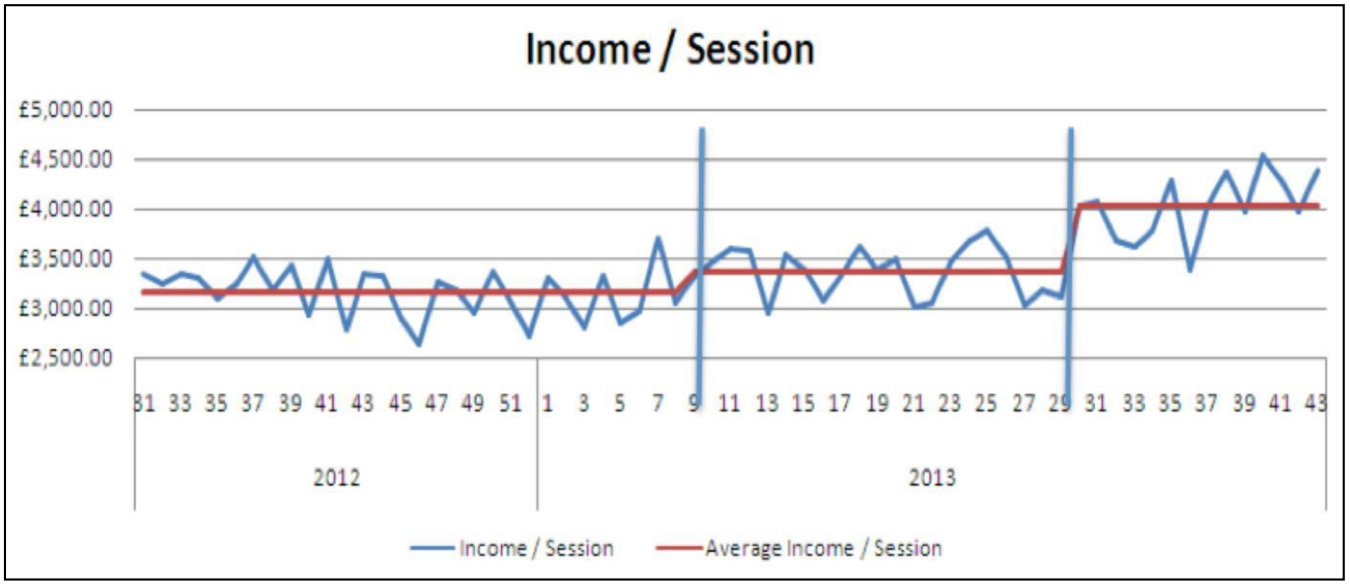
Summary:

This document illustrates how the implementation of the Alturos Theatre Optimisation Method (ATOM) was utilized to create:

- A higher quality service for Cataract patients;
- Patients arriving for individual appointments (Reduced Waiting Times)
- Patients being accompanied by the Surgeon into and out of Theatre;
- Smoother, more predictable working for Theatre teams;
- Less Stress placed on Staff, Better working conditions;
- 10 Cataracts completed per list;
- Surgeons working as pairs, seeing each other's work and planning lists together

Overview:

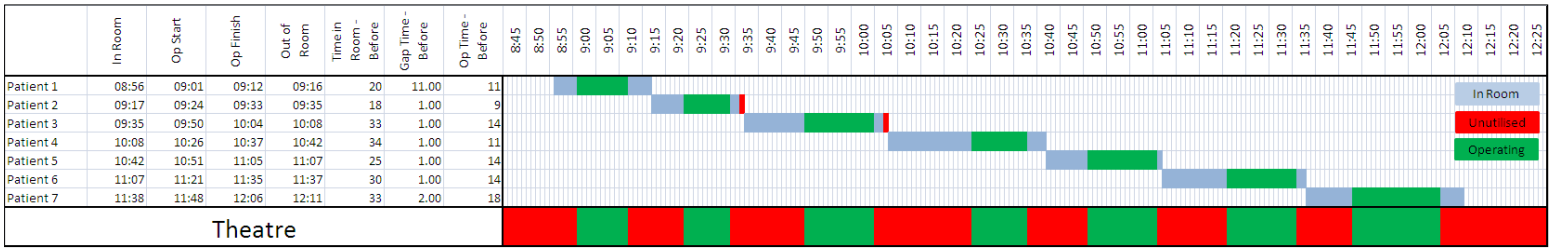
After implementing the ATOM scheduling model and achieving an increase of 17% more income per theatre list (shown in the adjacent Graph), the team then decided to focus on Local Anesthetic Cataract Lists. The team had been working with 7 cataract lists prior to this change. There were a number of ideas about how to get an increased number of cataracts on a list, and the team wanted to get a clear overview of what the current situation was in order to decide on the right trial, and how to run it.



Method Used:

An observation of the theatre was completed, with detailed recording of all the activities conducted, the patient flow and the theatre use. This was completed in conjunction with the Staff, in order for there to be an understanding of the purpose of the observation and what would be done with the information collected. The observations were then collated into a variety of graphical tools and printed onto large pieces of paper to create the basis of a discussion.

The first graphical discussion document was a Gantt chart showing the activity for each individual patient. This showed that the patient movements in and out of the theatre were very fast. It also showed that the total time operating was a small percentage of the total list.



	In Room	Op Start	Op Finish	Out of Room	Time in Room - Before	Gap Time - Before	Op Time - Before
Patient 1	08:56	09:01	09:12	09:16	20	11.00	11
Patient 2	09:17	09:24	09:33	09:35	18	1.00	9
Patient 3	09:35	09:50	10:04	10:08	33	1.00	14
Patient 4	10:08	10:26	10:37	10:42	34	1.00	11
Patient 5	10:42	10:51	11:05	11:07	25	1.00	14
Patient 6	11:07	11:21	11:35	11:37	30	1.00	14
Patient 7	11:38	11:48	12:06	12:11	33	2.00	18

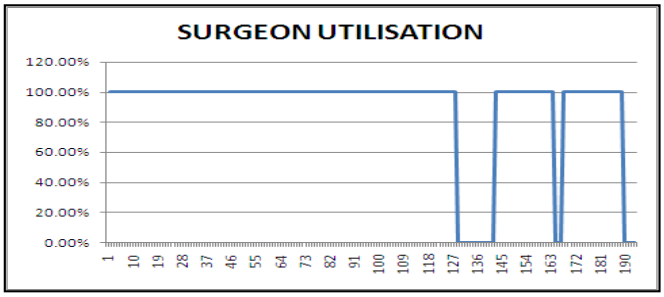
The team then reviewed the detailed observations taken, and discussed about how stressed the team feel, trying to get through the patients, but knowing that they are always pushing and don't seem to be able to do any more just with effort.

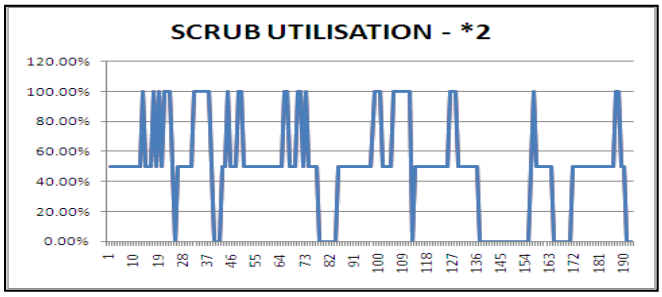
The detailed observations show the different types of activity in and around the theatre

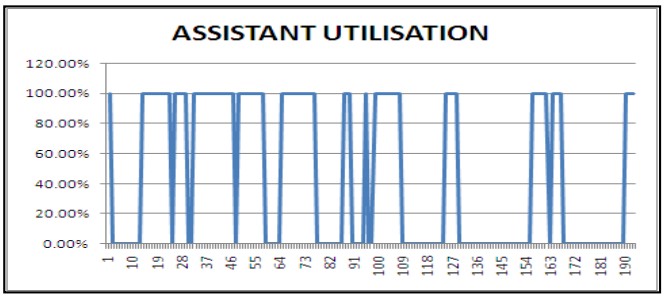
Role / Team Me	Activity	From	To
ASST	POSITIONING PATIENT	08:59	09:00
SURGEON	SCRUBBING UP - Surgeon	08:58	08:59
SCRUB	WHO CHECKLIST	08:58	09:01
SURGEON	DRAPING / IODINE PATIENT	09:00	09:01
SURGEON	PROCEDURE	09:02	09:12
SCRUB	PROCEDURE	09:02	09:12
SURGEON	OUT OF SCRUBS / COMPLETING NOTES	09:13	09:17
SCRUB	SCRUBBING DOWN / CLEARING WASTE	09:12	09:16
ASST	UPDATING PC / PAPERWORK	09:12	09:13
ASST	CLEARING AWAY WASTE	09:14	09:14
ASST	HELPING PATIENT OUT OF THEATRE	09:15	09:16
SCRUB	COLLECTING NEW SET	09:16	09:18
ASST	UPDATING PC / PAPERWORK	09:17	09:17
ASST	BRINGING NEXT PATIENT IN	09:18	09:18
SURGEON	UPDATING PC / PAPERWORK	09:18	09:22
SCRUB	PREPARING TROLLEY	09:18	09:22
ASST	UPDATING PC / PAPERWORK	09:19	09:19
ASST	POSITIONING PATIENT	09:20	09:21
SCRUB	CHANGING MACHINE OVER	09:20	09:22
ASST	HELPING PREP MACHINE	09:22	09:22
SCRUB	DRAPING / IODINE PATIENT	09:23	09:23
SURGEON	DRAPING / IODINE PATIENT	09:23	09:23
SURGEON	WHO CHECKLIST	09:24	09:24
SURGEON	PROCEDURE	09:25	09:37
SCRUB	PROCEDURE	09:25	09:37
ASST	UPDATING PC / PAPERWORK	09:24	09:26

From this detailed Gantt, showing the individual tasks and which member of the team is completing them, it is clear to see that there are a few areas that can be looked at to allow an increase in the number of patients treated.

Conclusions from the Current State:







- The Surgeon is 100% Utilized and is the Constraint to the overall flow;
- The Surgeon loses time when patients are late due to transport issues, as they have to go back out to consent when the patient arrives;
- Due to the need to consent and mark all patients prior to the list starting, and the demographic of Cataract patients, then the chance of having one or two patients late due to transport will always be an issue;
- The theatre team are in at 8:30, and spend the time preparing whatever they can prior to the list starting, this is while the Surgeons are seeing all the patients for consent and marking;
- Once the list is running, even though the team have pre-prepared what they can, as the Surgeon is the constraint then this will not speed up the flow;
- As per the Theory of Constraints, the flow is dictated by the constrained resource, and therefore the other members of the team are doing what they can, but they cannot increase the flow themselves.

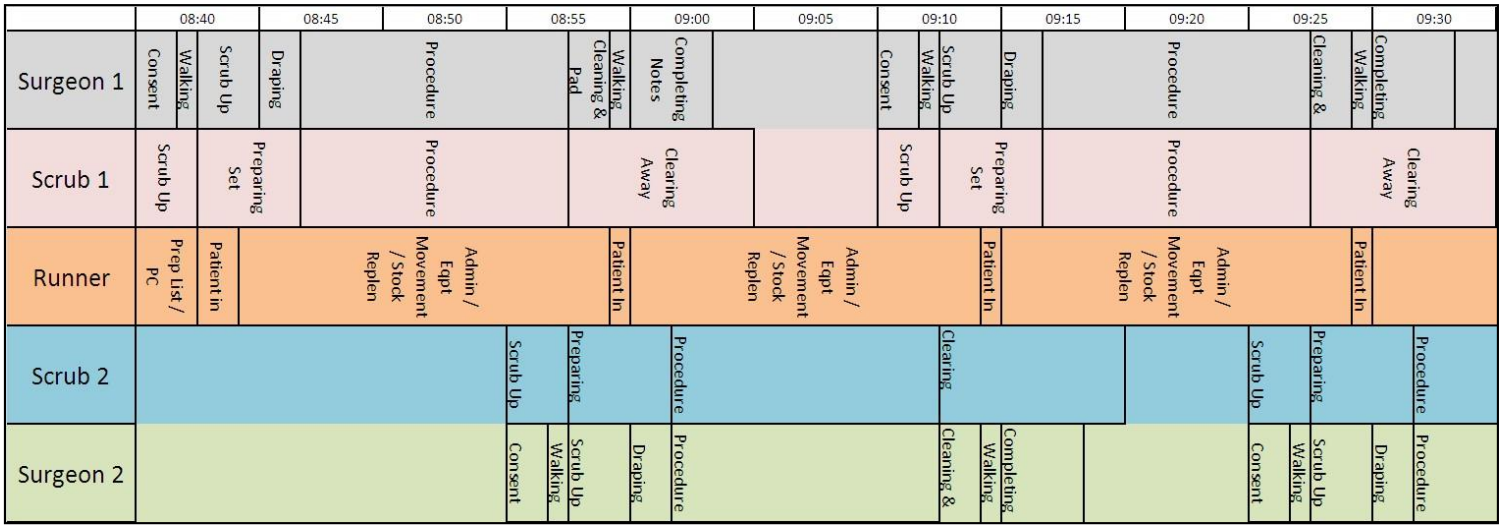
How to Increase the total numbers?

A session to decide on a different way of working, focused on elevating the constraint. Key Questions when elevating a Constrained Resource are:

- Is there anything that the Constrained Resource is currently doing that could be moved to another resource?
- Is there any non-value added activity being conducted by the Constrained Resource?
- Is there anything that could be moved to another time (after the list)?
- Is the increase in flow more beneficial than the cost of increasing the Constrained Resource?

The team used these questions and then decided that the best option would be to run the List with 2 Surgeons. The team then used the same method for reviewing the current state to then discuss the tasks, who would do what and how the list would work with 2 Surgeons sharing the same theatre.

The new process (in a Swim Lane chart)



The agreed method involves:

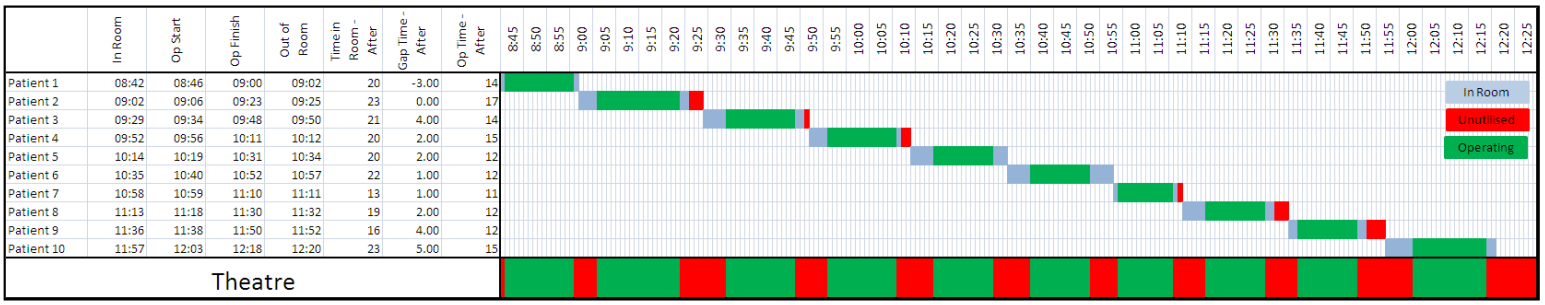
- Removing the batch of Consent, as with 2 Surgeons it is possible for each Surgeon to consent and mark their next patient in between operating;
- Surgeon A completes patients 1,3,5,7,9;
- Surgeon B completes patients 2,4,6,8,10

The Experiment:

Almost immediately upon starting the list, it became apparent that the chairs would need to be swapped. Both Surgeons were unaware that they used different chairs. The answer came back – "we don't mind which you use – don't bother moving them around for us"

A little later on the list, the Clinical Director was pushing her patient out of Theatre in a Wheelchair – and the patient was talking to her. What great service! Due to the removal of the batching of consent, it soon became clear that the Nurses in reception were initially being caught out on the Dilation times. This, in combination with patient 3 being Sub-Tenons, caused the list to get behind plan in the first few patients, however the process appeared to be robust, and soon caught up. The list finished 15 minutes early, and all 10 patients were treated.

The 10 cataract list illustrated graphically:



	In Room	Op Start	Op Finish	Out of Room	Time in Room - After	Gap Time - After	Op Time - After
Patient 1	08:42	08:46	09:00	09:02	20	-3.00	14
Patient 2	09:02	09:06	09:23	09:25	23	0.00	17
Patient 3	09:29	09:34	09:48	09:50	21	4.00	14
Patient 4	09:52	09:56	10:11	10:12	20	2.00	15
Patient 5	10:14	10:19	10:31	10:34	20	2.00	12
Patient 6	10:35	10:40	10:52	10:57	22	1.00	12
Patient 7	10:58	10:59	11:10	11:11	13	1.00	11
Patient 8	11:13	11:18	11:30	11:32	19	2.00	12
Patient 9	11:36	11:38	11:50	11:52	16	4.00	12
Patient 10	11:57	12:03	12:18	12:20	23	5.00	15

Quotes:

- At 8:40 am – "I'm beginning to like this!" - Scrub Nurse 1;
- "It felt like I was on holiday" – Surgeon 1;
- "It felt like a Breeze Today" Scrub Nurse 2;
- "It ran so smoothly" – Runner;
- "It didn't feel like it was work" – Surgeon 2

Conclusion:

- The changes to the process have moved the constraint to be the Theatre itself – and not any member of staff. As the Theatre itself sits on the shoulders of many Trust staff – it is, in reality, the highest cost resource we have, and therefore should be the constraint to patient flow. When the highest cost resource is the constraint, then it is never waiting for any other lower cost, non-constrained resources – and therefore is the best cost solution;

- When the Theatre itself is the constraint, then the individual staff resources working around the theatre will feel less stressed – as they have the time to be able to ensure the Theatre is running at a maximum level of output;
- The patient experience has been much improved. There is no waiting due to the Consent batch at the beginning, and the Surgeon is directly involved with the entire patient experience than before.

Cost Calculations:

- When all of the indirect costs are apportioned then the total cost per theatre minute can be quite high. The NHS Institute for Innovation published a figure of £15 / minute;
- The additional cost for a Surgeon is £416 per session (Half Day). This was a half-day session – and so the costs are £3,150 for the session before the addition of an extra Surgeon. With the Addition this is now £3,566. This is an increase of 13% in terms of costs;
- The increase in income is 10/7 = 42%;
- But, the costs of £15 per minute may not be widely accepted. However, if we accept that the increase in income is 42%, what would the cost per session need to be before the improvement was not financially viable? This is £416 (the extra Surgeons cost) / 0.42 = £990. On a per minute basis this would be £4.71;
- Understanding the financial aspects of income / expenditure are key to being able to work differently.