

cancer
institute
NSW



***NSW Radiotherapy
Business Process
Improvement
Program***

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***Change Champions – Improving the Delivery of
Services for Outpatients:***

NSW Radiotherapy Context

- 18 NSW Radiotherapy units;
- 39 linear accelerators; Increasing to 43 by end 2007;
- Cancer incidence expected to increase by over 30% in the next decade;
- Delivery of radiotherapy is a complex multi-step team effort; and
- ~ 90% of treatment delivered in outpatient setting.

NSW Radiotherapy Business Process Improvement Project

Aims & Endpoints:

- Develop, implement and sustain smarter models of care in radiotherapy clinical practice;
- Facilitate processes to implement changes in these practices;
- Develop business models to improve business efficiency statewide;
- Improve patient access to radiotherapy as compared against individual Centre's findings of the review and their baseline data.

Opportunities

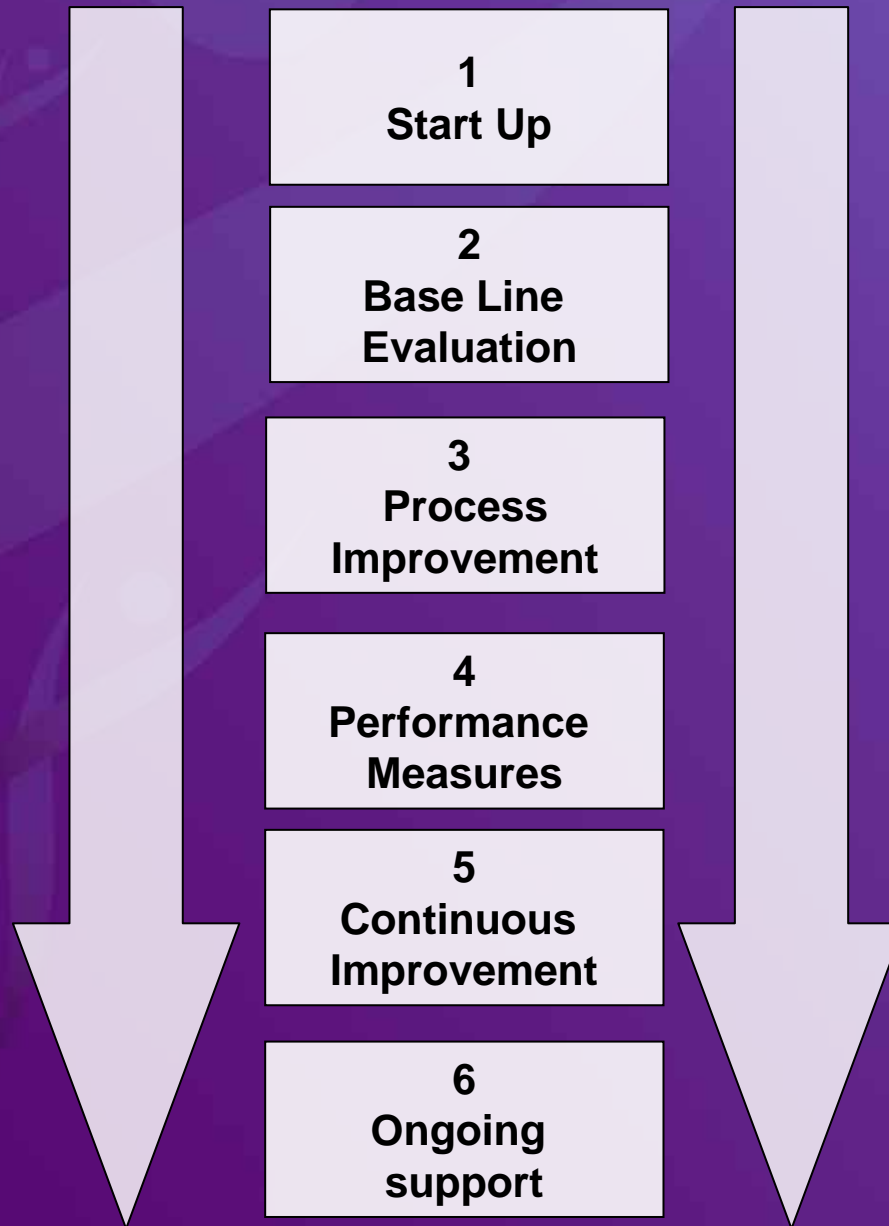
- Increased patient satisfaction;
- Increased access, utilisation and improved patient flows;
- Reduced waiting times;
- Sustainable smarter models of care;
- Enhanced quality & capacity;
- Increased professional development opportunities;
- Facilitation of skills transfer and communication; and
- Development of a team approach.

How Does The Program Work?

External business process improvement experts engaged to:

- Work directly with local teams;
- Describe & map the existing patient pathways;
- Identify opportunities for improvement;
- Facilitate implementation of change; and
- Training of local staff in process improvement methodologies.

Process of Improvement



Standard Key Performance Indicators

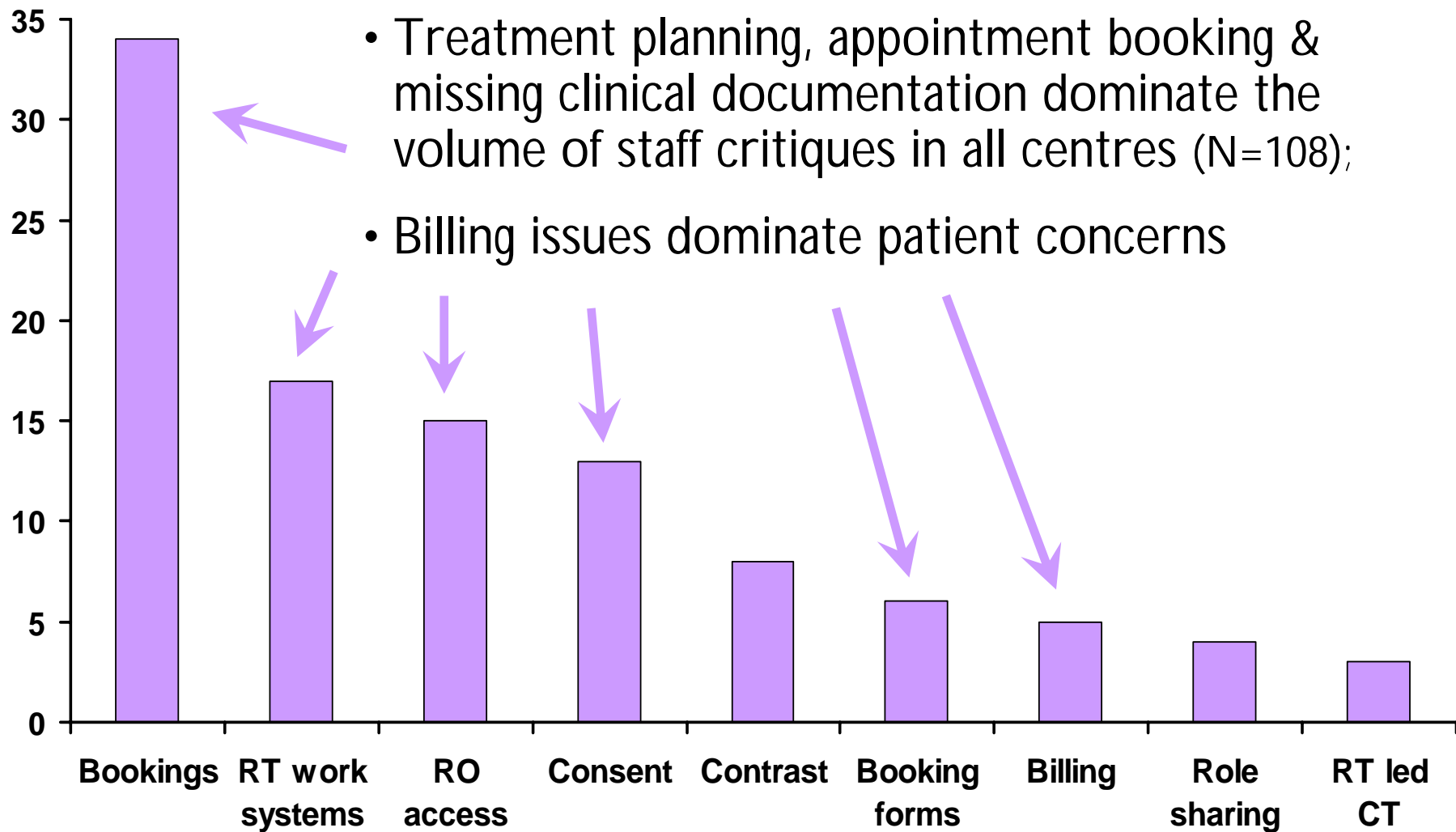
- Attendances per linear accelerator per day;
- Treatment plans completed;
- New and re-treatment consultations;
- Number of patients started, finished and under treatment;
- Number of unbilled files;
- Linear accelerator availability; and
- Waiting list status,
 - average waiting time by triage category; and
 - numbers of patients by triage category.

Workflow Mapping & Critiquing



- Image courtesy Liverpool/Macarthur Cancer Therapy Centres

Issues Raised During Workflow Critique Process



Appointment Booking Issues

Enter the following information:

| | | |
|---------------------------|---|------------|
| RFC: | <input type="text" value="8/1/07"/> | (dd/mm/yy) |
| Triage: | <input type="text" value="Priority"/> | ▼ |
| Advanced | <input type="text"/> | (dd/mm/yy) |
| Fractions | <input type="text" value="20"/> | |
| Complexity | <input type="text" value="Complex"/> | ▼ |
| Treatment Modality | <input type="text" value="Mixed"/> | ▼ |
| Preferred Time | <input type="text" value="12:00 -14:00"/> | ▼ |
| Transport | <input type="text" value="VT"/> | ▼ |
| Interpreter | <input type="text" value="Yes"/> | ▼ |
| ECOG Status | <input type="text" value="ECOG 2+"/> | ▼ |
| Contrast | <input type="text" value="Yes"/> | ▼ |

Theoretical Target Capacity Tool

Linac Scheduling Tool

Linac Capacity

Baseline Data

LSI Team

About

| Variable | Value | Units |
|------------------------------|-----------------------------------|---------|
| No of days per year | <input type="text" value="240"/> | Days |
| Working hours per day | <input type="text" value="9"/> | Hours |
| No Fractions Per Course | <input type="text" value="30"/> | Number |
| BTE Value (Minutes) | <input type="text" value="10"/> | Minutes |
| Planned Maintenance per year | <input type="text" value="6.67"/> | Days |
| Unplanned Down Time per year | <input type="text" value="0"/> | Days |
| Planned buffer time per day | <input type="text" value="0"/> | Minutes |
| Unbooked time per day | <input type="text" value="0"/> | Minutes |
| Machine Capacity % | <input type="text" value="100"/> | Number |

Liverpool M1-3 Average

| | |
|-----------------------------|--------------------------------|
| Referral to treatment ratio | <input type="text" value="3"/> |
| Consult to treatment ratio | <input type="text" value="2"/> |

CAPACITY

| | Day | Month | Year |
|--------------|-----------------------------------|-----------------------------------|------------------------------------|
| No Courses | <input type="text" value="1.75"/> | <input type="text" value="35"/> | <input type="text" value="420"/> |
| No Fractions | <input type="text" value="52"/> | <input type="text" value="1050"/> | <input type="text" value="12600"/> |

Required Per Day

| | |
|-------------|----------------------------------|
| No Consult | <input type="text" value="3"/> |
| No CT Scan | <input type="text" value="2"/> |
| No Plan | <input type="text" value="1.7"/> |
| No Referral | <input type="text" value="5"/> |

Operating Hours Per day = 525 97.22 %

No of Machine

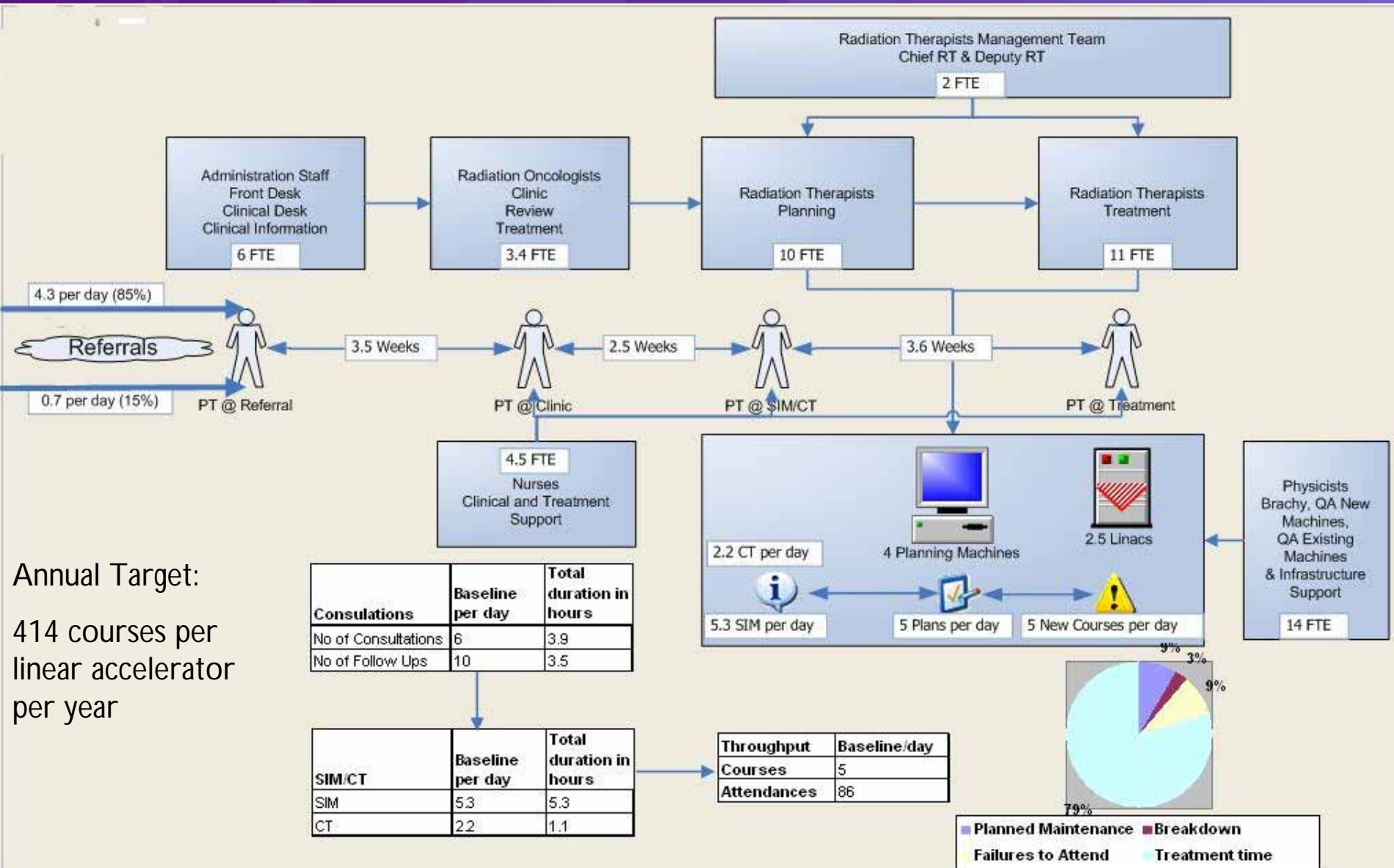
Calculate Linac Capacity

| Linac KPI | Baseline/day |
|----------------------------|-----------------------------------|
| No Courses | <input type="text" value="1.72"/> |
| No Fractions | <input type="text" value="52"/> |
| Planned DownTime (minutes) | <input type="text" value="15"/> |
| Breakdowns (minutes) | <input type="text" value="0"/> |
| Unbooked/buffer (minutes) | <input type="text" value="0"/> |
| Unfilled (minutes) | <input type="text" value="0"/> |
| Site BTE (minutes) | <input type="text" value="10"/> |

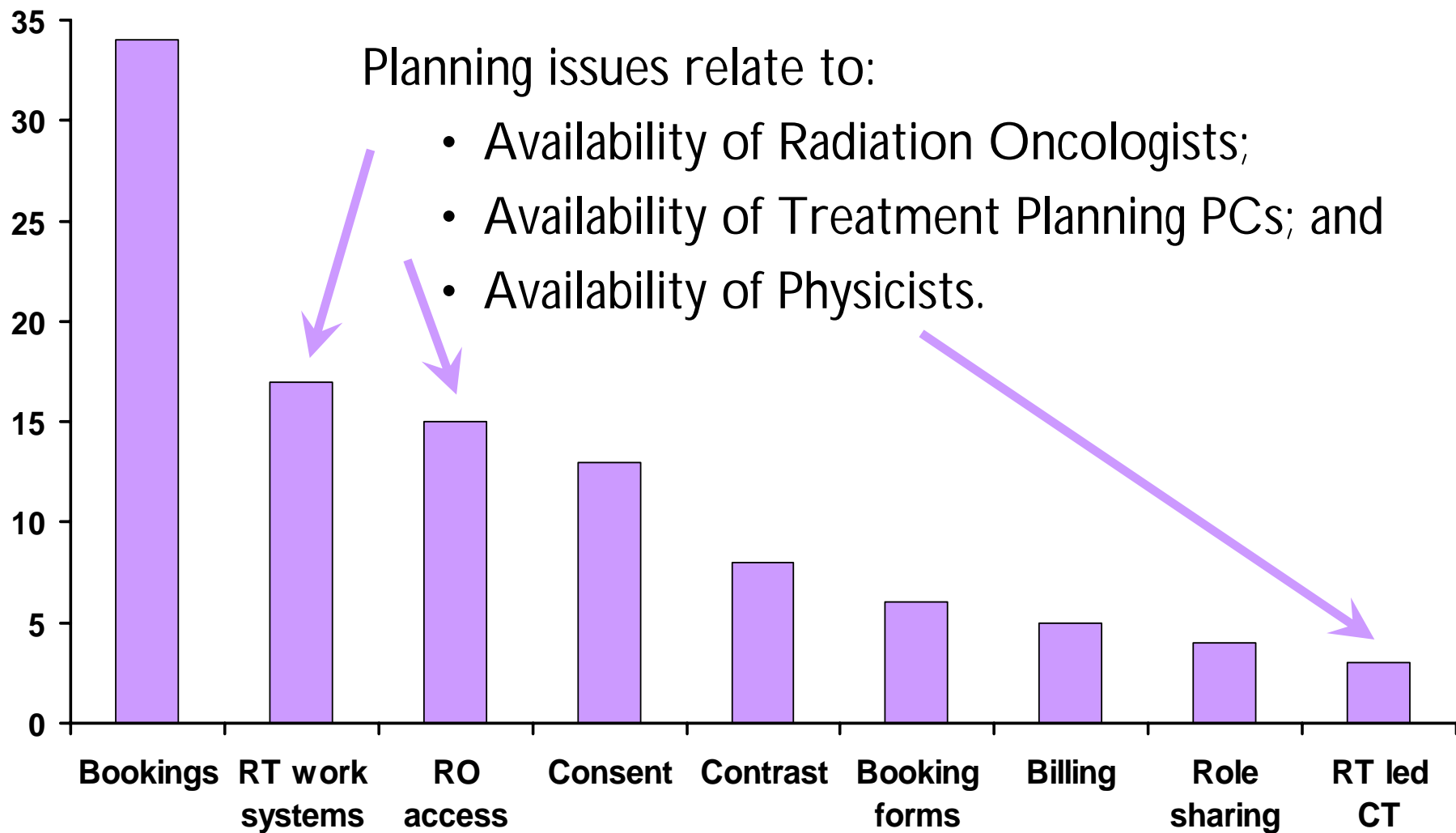
NSW Benchmark

Select Machine

Capacity vs. Demand

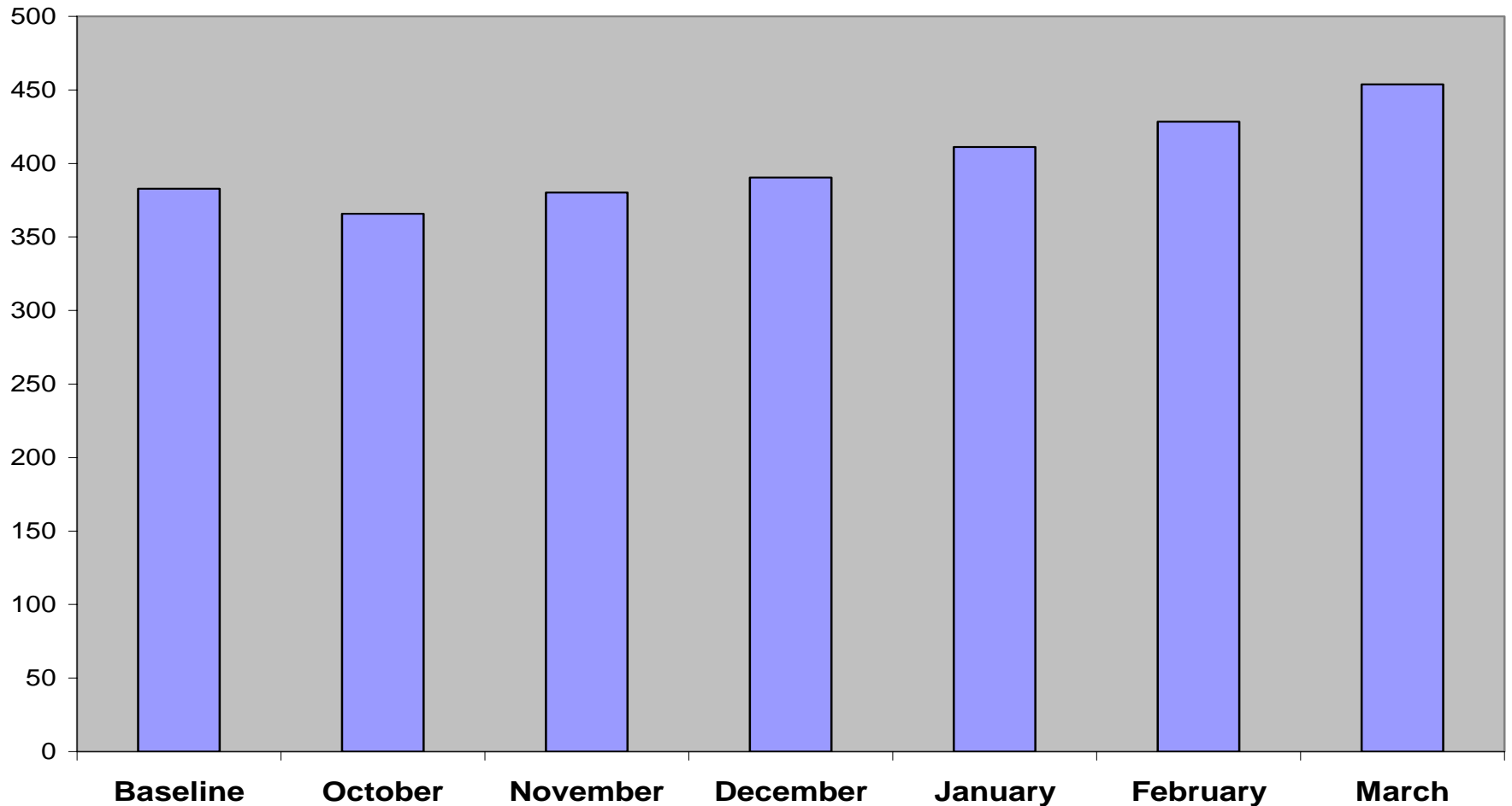


Treatment Planning Issues

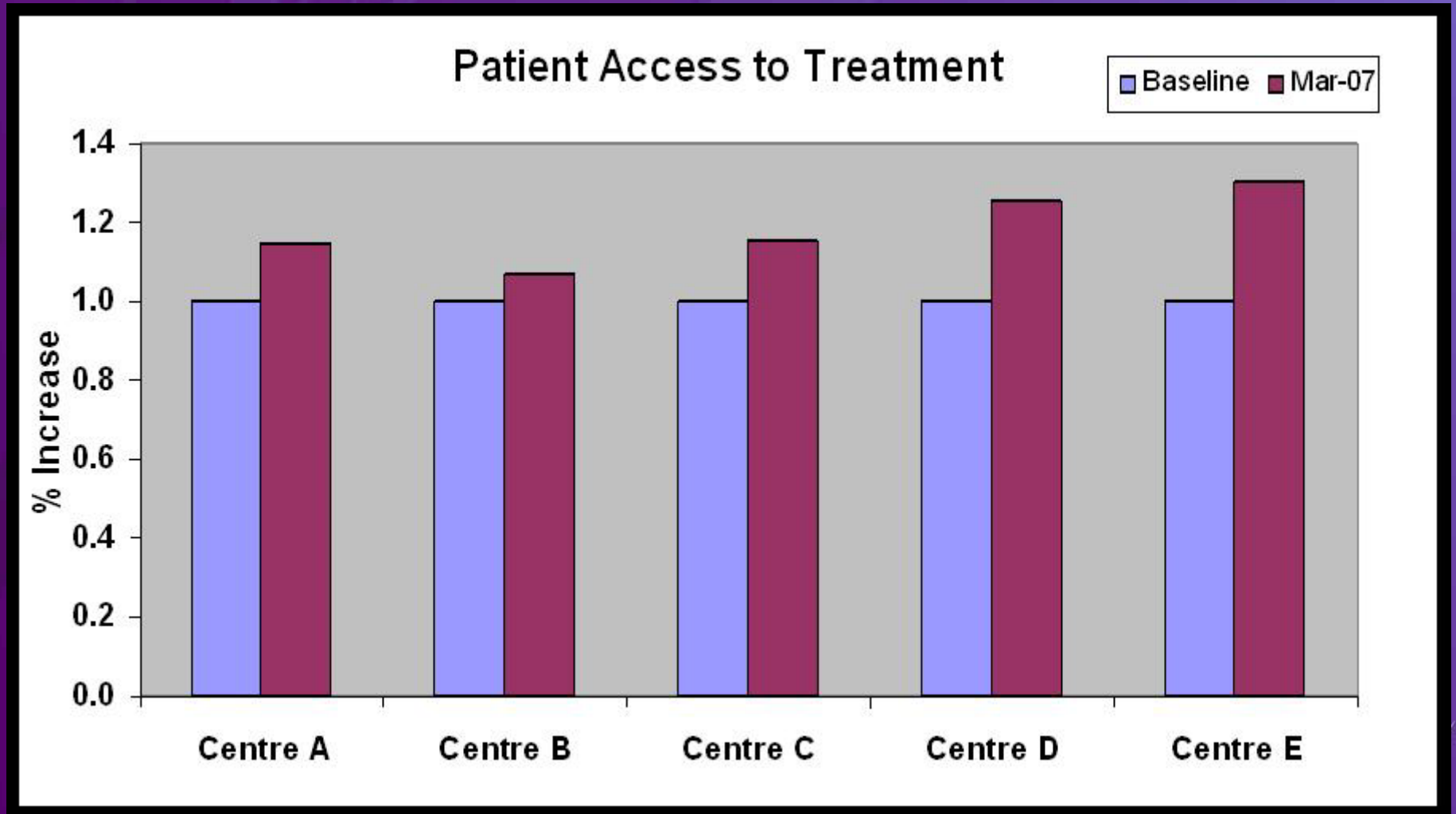


Patient Access Improvement

■ Courses Per Linac



Baseline vs. Final Month of Project



Outcomes

- 12 of 13 public units involved in project;
 - Project complete in 8 units;
 - Currently running in 2 units (completion November 2007);
 - 2 brand new units engaged;
- Reduction in:
 - The time between consultation, planning and treatment (averaging < 10 days);
 - Overall waiting times;
 - The numbers of patients on the waiting list;
- Better understanding of capacity and the impact of referral patterns;
- Identification of inefficient billing practices;
- Improved systems of data collection for key operational data;
- Establishment of operational management systems.

Key Drivers of Success

- Strong governance model:
 - Executive sponsorship;
 - Active involvement of all staff;
- Monitoring of key operational data;
- External facilitation;
- Change takes time;
- Responsive to patient needs; and
- Ongoing data collection/analysis with ongoing monitoring.

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