Learning from Demand & Capacity for Diagnostic Imaging

Debbie Jones
Radiology Care Group Manager
16th April 2015
Overview

Princess Royal Hospital (PRH)  
Royal Shrewsbury Hospital (RSH)

- Two Medium sized Acute Hospital Trusts
- 17 miles apart
- Rural Location
- 500,000 population
- Four Radiology Departments, two at each site
Overview - Management Structure

• One Medical Director
• 18 Radiologists
• One Care Group Manager
• Two Lead Superintendents – one each site
• 10 Modality Lead Superintendents – five each site
• 104 Radiographic staff mainly part time.
• 32 Healthcare assistants including porters
• 23.6 Administrative staff – no data analysts
• Four Tier Career Structure – Assistant Practitioners, Radiographers, Advanced Practitioners and Consultant Radiographer
Overview – Reporting Structure

- Radiologists
- Reporting Radiographers and Sonographers
- At present - Mainly Digital Dictation
- Implementing Voice Recognition, electronic vetting
- Implementing Electronic Requesting
Background – the Trigger

- NHS IMAS, Intensive Support Team (IST) Cancer Service Review
- The perception of the Trust – Radiology had a detrimental impact on Cancer targets.
- 20 year old Radiology Information System (RIS) no Demand &Capacity (D&C) work undertaken previously.
- No ability by Radiology to counter the perception.
- 2013 new RIS implemented compatible with national data requirements.
- IST D&C diagnostic tool - Ability to define the service.
IST D&C Review

- Radiology provides diagnostic capacity at both sites for cancer patients, so a review of the key areas of the service was undertaken.
- Initially D&C for the whole Trust, secondly site specific.
- Reconfiguration – impact on service provision.
- Magnetic Resonance Imaging (MRI), Computerised Tomography (CT), Ultrasound (U/S), Plain films
D&C Model

• IST Diagnostic Imaging tool – Pilot site
• Key outputs – Calculation of sustainable capacity range (65th & 85th percentiles)
• Provides anticipated level of demand and if there is a backlog how it will take to clear
• Review of core capacity and ad hoc capacity
• Define parameter in weeks as 1:2:4
Pre D&C work – Essential

• Pre work interviews with staff to identify areas to review
• Inability to identify patients with cancer in the stats lead to full D&C review
• Poor data quality/no ownership by staff
• Identification of data required to provide D&C data. Save the ‘Key’
• Time consuming and no resource allocation
• Don’t assume anything!!
• To be consistent write every rule down!
• Check that what you said is what they think you have said
• Always sense check at every step.
• Be patient – Clear repetitive communications.
• Get buy in from the staff
Methodology – Applicable to all Modalities

- Chose the four most requested examination in the relevant modality
- All other examinations were grouped together
- Classified patients (emergency, urgent, routine).
- Defined and agreed the scan time!
- Removed all referrals not given an appointment.
- Included planned patients and Did Not Attend (DNA) referrals
- Weekly capacity
Data Entry

Active Waiting List Size should include all current inpatient and daycase patients (in minutes) waiting for an investigation, excluding planned. You may find it easier to use the patients/minutes converter at the bottom for this.

### Waiting List And Emergency Data

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<tr>
<th>Week</th>
<th>MSKUH</th>
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<th>MIAMB</th>
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Other Waiting List Removals
Enter how many patients were removed from the waiting list for reasons other than treatment.
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### Waiting List Minutes Calculator

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Capacity

- Identify time taken per procedure in minutes
- Actual core capacity in minutes
- Ad Hoc capacity in minutes
- Split capacity into emergency, urgent and elective
- Remove lost capacity – servicing and downtime
Capacity Data

Calculate Your Capacity

Shrewsbury And Telford Hospital NHS Trust

Your capacity can be reduced to account for emergency activity on a per-list or per-week basis.

Your capacity will not be reduced to account for planned diagnostic activity as you have chosen to include these patients in your demand (see the Parameters tab to change).

Enter your core capacity in minutes below. Exclude weekend activity where it is only normally used for waiting list initiatives and other additional weekday sessions if these are significant.

Core Capacity

<table>
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<th>List Description 1 e.g. scanner/camera name</th>
<th>Monday AM</th>
<th>Monday PM</th>
<th>Tuesday AM</th>
<th>Tuesday PM</th>
<th>Wednesday AM</th>
<th>Wednesday PM</th>
<th>Thursday AM</th>
<th>Thursday PM</th>
<th>Friday AM</th>
<th>Friday PM</th>
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<th>Sunday AM</th>
<th>Sunday PM</th>
<th>Weekly Total</th>
<th>Weeks / Year</th>
<th>Annual Total</th>
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Mean Core Capacity Per Week: 7800
Outcomes - Demand

Shrewsbury And Telford Hospital NHS Trust

Net Wt. Change (Core Capacity): 303

Current Capacity

Each service needs to establish the necessary capacity so that the normal variation in demand can be managed within the desired maximum waiting list size. Capacity required will need to be between the

Proud To Care
Make It Happen
We Value Respect
Together We Achieve

15
Outcomes – Current Capacity

Current Capacity

<table>
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<td>Used For Planned Diagnostic</td>
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<td>Mean Additional Capacity</td>
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<td>Mean Available Capacity</td>
<td>7828</td>
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<td>Mean Total Capacity</td>
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Each service needs to establish the necessary capacity so that the normal variation in demand can be managed within the desired maximum waiting list size. Capacity required will need to be between the 65th and 85th percentile in order to ensure that this variation does not create a queue i.e. an unsustainable increase in the number of patients waiting. Setting capacity between these levels can be thought of as saying "we will have enough capacity to see all patients added to the waiting list around 65%-85% of the time."

Sense Check!
Factors which might **reduce** the amount of capacity needed to meet demand (i.e. allow setting capacity nearer to the 65th percentile):
- A good distribution of appointments (low median waiting time);
- Pooling of requests and the size of the service;
- The ease with which you can flex capacity, for example:
  - Flex the timing of lists (e.g. annual contract);
  - If additional lists can be provided quickly and easily (agreement for overbooking or implementing ad hoc lists).

Factors which might **increase** the amount of capacity needed to meet demand (i.e. require setting capacity nearer to the 85th percentile):
- High variation in demand;
- High variation in capacity e.g. no absence cover, bank holidays;
- ‘Carve-out’ e.g. different hospital sites, specific lists for each specialty;
- High levels of rebookings, DNAs and cancellations on the day;
- Not offering patient choice;
- Inflexible working practices e.g. poor or lengthy escalation/authorisation processes to put on additional capacity.

<table>
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<tr>
<th>Indicator</th>
<th>Week</th>
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<td>Mean DNAs Rebooked</td>
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<td>65th Percentile (minus ROTT)</td>
<td>9057</td>
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<td>85th Percentile (minus ROTT)</td>
<td>9566</td>
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You have 304 fewer minute(s) available than requests per week plus DNAs minus ROTT
You have 1229 fewer minute(s) than required to sustain the service at a minimum level (65th percentile)
You have 1738 fewer minute(s) than required to sustain the service at a comfortable level (85th percentile)
MRI – D&C results

- MRI – head, lumbar spine, Inter Auditory Meatus (IAM), whole spine, others
- Urgent = 23%
- DNA 2%
- Urgent waiting time one week
- Routine attendances commenced two weeks
- Ideal Routine maximum wait four weeks
- Waiting list 274 hours
- Capacity deficiency of between - 20.5 hours and – 29 hours (excluding ad hoc)
- No backlog
CT – D&C Findings

- CT – head, chest/abdomen/pelvis, abdomen/pelvis, chest/abdomen, others
- Urgent = 30% (Royal Shrewsbury Hospital 41%)
- DNA 1.6%
- Urgent waiting time one week
- Routine attendances commenced two weeks
- Ideal Routine max wait four weeks
- Waiting list 104 hours
- Capacity deficiency between -19 hours to - 29 hours (excluding ad hoc)
- No backlog
Ultrasound – D&C findings

- U/S – abdomen, pelvis, renal, Pelvis + Transvaginal, others
- Urgent = 33%
- DNA 0%
- Urgent waiting time one week
- Routine attendances commenced two weeks
- Ideal Routine maximum wait four weeks
- Waiting list 574 hours
- Capacity between +9 hours to - 36 hours (excluding ad hoc)
- No backlog
Plain Films – D&C outcome

- D&C Model does not fit
- 90% patients are walk-in
- Capacity required 374 hours per week
- Actual capacity 476 hours per week including A&E
Findings

• The Outcomes are only as good as the Data
• Essential Data Analyst with a knowledge of Radiology.
• Constantly sense check with staff
• Check the ‘stats key’ has not been changed
• Log all decisions
Reporting Capacity

• This tool is not suitable for reporting capacity
• Weekly variance in reporting capacity
• Daily variance in reporting profile
• CRIS data not reliable – too many process steps in Digital Dictation.
• Voice Recognition not robust
Summary

• Greatly improved confidence in Data Quality
• Important - staff understand the implications of incorrect data.
• No backlog clearance was identified providing reassurance for Cancer Services
• The IST model is not compatible for all Radiology D&C work
• Useful tool to support Business Cases
• Referral demand at granular level not possible
Next Steps

• Repeat the exercise six monthly
• Implement Electronic Requesting
• Review services where capacity deficit has been identified
• Review the actions from the Radiology Review
• Integration of outcomes in Radiology Strategic Plan
• As Pilot site for Radiology Model asked to support a workshop at IST summit
Any Questions?