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Flow – negotiating the rapids

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Overview

• Health care is complex

• Recognising complexity is a fundamental to getting it right
  – Avoid oversimplification
  – Avoid complication

• Use local data
  – Context specific
  – Real-time

• Avoid (stop) using average times for performance or outcome measures.
Overview

- Occupancy data poorly understood and often misrepresented
  - All understand overcrowding and boarding (outliers)

- Flow and capacity/demand management are not new to health
  - Often poorly applied

- Better understanding of inter and intra departmental flow
  - 24/7 and 7/7
  - Elective flow, unplanned and unplanned to planned.

- Relate to outcomes including experience.
St E Action Effect Diagram

Outline of shared aim, contributing factors, actions and measures developed through staff dialogue and visit team feedback. Represents cause and effect relationships and intended to support conversations and planning in regards to improvement.

Embrace positivity and empower staff to deliver high quality care to patients: improving patient experience and outcomes and working with family and carers

* timely, patient centred care, safe, evidence-based, equitable, efficient

1. Health outcomes
2. Patient experience/ quality of life
3. Staff satisfaction
4. Readmissions
5. Compliance to 4 hour standard
6. Admission trend data
7. Boarding
8. Discharge trend data (day of week, time of day)

1.2.3.4.5.6.7.8.

Priority (based on impact & ability to deliver in short time)
Potential valuable impact but may take longer

1. Publication in press: Reed J, McNicholas C, Woodcock T, Bell D Designing quality improvement initiatives: the action effect method, a structured approach to identifying and articulating programme theory
BMJ Qual Saf.
Flow (F) = Quantity (Q) gas liquid vapour/Time (t)

Patients?

Particulate flow?

Managing flow is essential to high quality care
Understanding flow can help diagnose the system and processes
Hospital Y: ED attendances

Average daily type-1 ED attendance, n; weekly 4 hr ED LoS compliance (type-1), %

Sources: WSitAE Unify2-derived publications covering unscheduled activity for ED' sites w/e 7 Nov 2010 to w/e 14 Sep 2014

Notes: (i) ED' refers to EDs, MIUs and WICs; (ii) unadjusted, XmR-based process control limits recalculated against Wheeler rules 1,4 and 24-pt baseline; (iii) results are intended for management information only and are subject to change
More information needed
Schematic of flow characteristics across hospital system

Number of patients, volume

Duration in system, time

ED

AMU

Downstream Ward

Needs related = benefit

Transition

ED

AMU

Downstream Ward

Transition

Duration in system, time

8 hours

2-3 days

4 days - weeks

4 hours

5

2
St E: ED' LoS distribution for unscheduled ED' attendances, 14 Apr to 8 Jun 2014

Unscheduled ED' attendance, n; ED' LoS in 15 min bins to 8 hr, 8-12 hr, > 12 hr
Notes: (i) ED' includes EDs, MIUs, WICs; (ii) results are intended for management information only and are subject to change

Processes
- internal and external to ED

Resilience of system
AAU spell LoS distribution, 17 Feb to 13 Apr 2014*

stays for *all patients discharged from hospital 17 Feb to 13 Apr 2014, n; AAU spell LoS in 4 hr bins to 168 hr, ≥168 hr

Notes: (i) AAU spell LoS calculated in minutes and excludes transit areas; (ii) results are intended for management information only and are subject to change

AAU LoS, hr (4 hr bins to 168 hr, ≥ 168 hr)

- Transfer to 'other' ward
- Hospital discharge from 'AMU'/'SAAU'
- Total
AAU spell LoS distribution, 14 Apr to 8 Jun 2014*

stays for *all patients discharged from hospital 14 Apr to 8 Jun 2014, n; AAU spell LoS in 4 hr bins to 168 hr, ≥168 hr

Notes: (i) AAU spell LoS calculated in minutes and excludes transit areas; (ii) results are intended for management information only and are subject to change.
St E: hospital LoS distribution for admitted patients*, 14 Apr to 8 Jun 2014

*Hospital discharges excl. same-day non-emergency, 14 Apr to 8 Jun 2014, n; hospital LoS in 8 hr bins to 7 d, 7 d bins to 28 d, ≥ 28 d

Notes: (i) LoS calculated in minutes, incl. trolleyed ED LoS and excl. transit areas; (ii) results are intended for management information only and are subject to change

Hospital LoS, d (8 hr bins to 7 d, 7 d bins to 28 d, > 28 d)

Discharge from:
- AMU"SAAU"
- CDU"AECU"
- 'other' ward (emergency)
- 'other' ward (non-emergency)
- All discharges
Feeder systems

Interrelated
- Reservoirs
- Locks
- Vessels

Rapids vs. regular flow reduce unnecessary overnight moves
St E: AAU spell LoS distribution, 14 Apr to 8 Jun 2014

Stays for all patients discharged from hospital 14 Apr to 8 Jun 2014, n; AAU spell LoS in 4 hr bins to 168 hr, ≥168 hr

Notes: (i) AAU spell LoS calculated in minutes and excludes transit areas; (ii) results are intended for management information only and are subject to change
St E: cumulative hourly hospital inpatient discharge profile, 14 Apr to 8 Jun 2014

Proportion of hospital discharges completed (excl. same-day non-emergency admissions and non-admitted ED' attendances), %, by hour of day,

Note: results are intended for management information only; transit areas considered out of hospital wrt discharge
St E: cumulative hourly hospital inpatient discharge profile, 14 Apr to 8 Jun 2014

Proportion of hospital discharges completed (excl. same-day non-emergency admissions and non-admitted ED' attendances), %, by hour of day. Note: results are intended for management information only; transit areas considered out of hospital wrt discharge.
St E: daily hospital inpatient arrival and discharge profile, 14 Apr to 8 Jun 2014

Avg daily hospital arrivals and discharges (excl. same-day non-emergency admissions and non-admitted ED' attendances), by day of week, n

Note: results are intended for management information only; transit areas considered out of hospital wrt discharge
St E A&E: weekly 4 hr emergency access performance, 1 Nov 2010 to 29 Dec 2013

Weekly overall 4 hr ED LoS compliance, by patient flow group, %

Notes: (i) excludes planned reviews, UCC attendances and ED ward stays; (ii) results are intended for management information only and are subject to change.
St E A&E: weekly Mon 4 hr emergency access performance, 1 Nov 2010 to 29 Dec 2013

Weekly Monday 4 hr ED LoS compliance, by patient flow group, %

Notes: (i) excludes planned reviews, UCC attendances and ED ward stays; (ii) results are intended for management information only and are subject to change.

Flow 1 - Non-admitted minors
Flow 2 - Non-admitted majors
Flow 3 - Medical admissions
Flow 4 - Surgical admissions

4 hr ED LoS compliance, %
St E Hospital
High level system overview and balance measures (8 weeks)

Ambulance
- Ramping hours: 7.5 (average per day)

Emergency Department
- Re-pres 48h: 5.2%
- Re-pres 7d: 10.4%
- Avg LOS: 03:27
- 4 h: 78%
- Outliers: 22%
- Mortality: 0.2%

Medical Acute Unit
- Re-pres 7d: 3.0%
- Re-pres 28d: 9.5%
- Avg LOS: 1:05:43
- 4 h: 69%
- Outliers: 33%
- Mortality: 0.9%

Surgical Acute Unit
- Re-pres 7d: 4.2%
- Re-pres 28d: 7.6%
- Avg LOS: 2:07:10
- 4 h: 61%
- Outliers: 51%
- Mortality: 0.0%

Other Wards
<table>
<thead>
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<th>Ward</th>
<th>Re-Ad</th>
<th>Avg LOS</th>
<th>Outliers</th>
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<tbody>
<tr>
<td>Specialty Surgery</td>
<td>?</td>
<td>?</td>
<td>15%</td>
</tr>
<tr>
<td>Specialty Medicine</td>
<td>?</td>
<td>?</td>
<td>21%</td>
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<tr>
<td>Intensive/CCU</td>
<td>?</td>
<td>?</td>
<td>14%</td>
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<tr>
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<td>?</td>
<td>?</td>
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<tr>
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<td>?</td>
<td>?</td>
<td>50%</td>
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<tr>
<td>Orthopaedics</td>
<td>?</td>
<td>?</td>
<td>9%</td>
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<tr>
<td>Geriatric Medicine</td>
<td>?</td>
<td>?</td>
<td>18%</td>
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<tr>
<td>Mental Health</td>
<td>?</td>
<td>?</td>
<td>2%</td>
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St E: emergency readmission within 7 days, w/e 8 Apr 2012 to 18 May 2014

Proportion of inpatient discharges* readmitted as an emergency %; avg daily inpatient discharges*, n

Notes: (i) ED’ refers to EDs, MIUs and WICs; (ii) *excludes same-day non-emergency stays, in-hospital deaths and hospital transfers; (iii) **unadjusted, XmR-based process control limits recalculated against Wheeler rules 1, 4 and 24

(iii) changes in rates may be the result of a number of factors, incl. shifts in underlying case-mix and clinical practice; (iv) results are intended for management information only and are subject to change.
Schematic of Demand and capacity per day by clinical department

Most headroom needed – and when

- ED
- AMU
- Specialty Wards
- Rehabilitation
Summary

- Improve patient flow – securing links in the chain
- Flow and capacity are dynamic
- Influenced by system and processes
  - By hour by day by week
  - In day capacity
  - Weekend capacity
- Optimise admission between ED and AMU/ASU and AMU to sub-specialty inpatient wards
- Improve continuity of patient care
- Optimise physical and staff capacity – doing today’s work today
- Move from TGIF – Happy Mondays
St E: hourly AAU admission and discharge profile, 14 Apr to 8 Jun 2014

Avg hourly T01(AMU)/T6AU(SAAU) bed admissions and discharges/transfers, n, by hour of day

Note: results are intended for management information only; transit areas considered out of hospital wrt discharge

St E: hourly AAU admission and discharge profile, 14 Apr to 8 Jun 2014

Avg hourly T01(AMU)/T6AU(SAAU) bed admissions and discharges/transfers, n, by hour of day

Note: results are intended for management information only; transit areas considered out of hospital wrt discharge
St E: hourly hospital bed occupancy, 4 Feb to 8 Jun 2014

Hospital admitted patient occupancy at start of each hour, n

Notes: (i) *excludes ED and transit areas, e.g. discharge lounge; (ii) results are intended for management information only and are subject to change
London: hospital admissions from ED'

Average daily admissions from ED', n; weekly 'decision to admit' to admission: ≤ 4 hr, %; and > 12 hr, n

Sources: WSitAE Unity2-derived publications covering unscheduled activity for ED' sites w/e 7 Nov 2010 to w/e 31 Aug 2014

Notes: (i) ED' refers to EDs, MIUs and WICs; (ii) unadjusted, XmR-based process control limits recalculated against Wheeler rules 1, 4 and 24-pt baseline; (iii) results are intended for management information only and are subject to change.
St E: hourly hospital **inpatient** arrival and discharge profile, 17 Feb to 13 Apr 2014

Avg hourly hospital arrivals and discharges (excl. same-day non-emergency admissions and non-admitted ED* attendances), by hour of day, n

**Note:** results are intended for **management information** only; transit areas considered out of hospital wrt discharge
St E: weekly 4 hr emergency access performance, 5 Jan 2009 to 8 Jun 2014
Weekly 4 hr ED* LoS compliance, by patient flow group, %
Notes: (i) ED* includes EDs, trolleyed assessment units and MIUs; (ii) results are intended for management information only and are subject to change.

Flow 1 - Non-admitted minors
Flow 2 - Non-admitted majors
Flows 3 & 4 - Admissions from ED*