Reducing Medication Errors in Practice: Improving reporting and learning systems

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Clinical Director
Leeds Teaching Hospitals NHS Trust
Session content

- How do we reduce, and monitor the reduction in Medication Errors in an NHS Trust

- Priority areas: where should efforts be focused?

- Improving reporting and learning systems

- What are the root causes of medication error: our experience and learning
3 really important tings

- Clinical leadership and culture
- Eliminating variation and waste
- Continuous improvement – the voice of the “customer”
Leeds Teaching Hospitals NHS Trust

- Leeds Teaching Hospitals NHS Trust, April 1998 after the merger of two previous smaller NHS trusts to form one city-wide organisation
- The Trust has approximately 2,500 inpatient beds together with critical care and day case beds.
- Services for the population of Leeds and surrounding areas, regional centre for cancer, neurosurgery, heart surgery, liver and kidney transplantation employs over 14,000 staff on six main sites.
Medicines Management and Pharmacy Services

Our vision:
**MMPS will provide the best pharmacy service to our patients**

Our ‘strap line’:
**Know your patient, Know their medicines, Meet their needs**

Our team:
**One of the largest and busiest pharmacy services in the UK: 500 staff**
- registered pharmacists, pharmacy technicians and nurses
- non-registered workforce of pharmacy assistants, admin staff and clinical scientists

Our approach:
**The Leeds Way – every day**
Partnerships and Collaborative Working
Medication Safety Officer (MSO)

- The Lead Governance Pharmacist is the MSO for the Trust. This role is supported by a team of pharmacy staff who have nominated responsibility for reducing risk with medicines.
- Key focus on reducing errors with high risk medicines and responding to themes
- Support local and national initiatives
- Ensure feedback and learning from medication errors
Medicines Risk Management Group (MRMG)

- Multidisciplinary group that meets every two months
- Ensures learning is communicated in relation to Medication Related Incidents (MRIs)
- Focus on the implementation and completion of national initiatives to improve medication safety
- Focus on trust wide communications – eg screen savers, newsletters
- Registers Medicines Policies & Procedures
- Responsible for the management of Patient Group Directions (PGDs) and bespoke Prescription Stationery
Medicines Incident Review Group (MIRG)

- Sub-group of the MRMG – multidisciplinary with pharmacy, nursing and medical input

- Focus on detailed reviews of all MRIs each month

- Develops themes that are incorporated into the MSO report

- Also reviews specific incidents that are identified as requiring follow up or may provide learning that should be shared with a wider audience.
Medication related incidents (MRIs)

- The number of reports being recorded on Datix where an incident has involved a medicine remains relatively stable, between 180-200 per month.

- An action tracking tool has been developed for use within the Medicines Incident Review Group. This will record identified themes, action taken and outcomes.

- Work has also started on the production of specific reports to provide CSUs with information on MRIs occurring locally and how that relates to the Trust wide picture.
Local compared to national data

Incidents at LTHT compared to all acute Trusts
Data from October 14 to Mar 15 - NRLS

- Patient accident
- Implementation of care and ongoing...
- Treatment, procedure
- Medication
- Access, admission, transfer, discharge...
- Documentation (including records,...
- Infrastructure (including staffing, facilities,...
- All others categories
- Clinical assessment (including diagnosis,...
- Consent, communication, confidentiality
- Medical device / equipment

Percentage of total reported incidents

Total incidents for acute trusts
LEEDS TEACHING HOSPITALS NHS TRUST

The Leeds Teaching Hospitals NHS Trust
Medication related incidents (MRIs)

Number of MRIs Trust wide per month

- 2013 Total number of MRIs
- 2013 Number causing death or severe harm
- 2014 Total number of MRIs
- 2014 Number causing death or severe harm
Medication related incidents by degree of harm at LTHT compared to national average

<table>
<thead>
<tr>
<th>Severity</th>
<th>Number of incidents at LTHT Oct 13 - Sep 14</th>
<th>Number Q1 2015/16 at LTHT</th>
<th>NRLS figures for MRIs Oct 13 - Sep 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic or death</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Severe or permanent injury</td>
<td>3 (0.1%)</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Moderate injury</td>
<td>14 (0.5%)</td>
<td>5 (0.7%)</td>
<td>2%</td>
</tr>
<tr>
<td>Minor injury</td>
<td>68 (2.6%)</td>
<td>15 (2.2%)</td>
<td>10%</td>
</tr>
<tr>
<td>No injury / harm prevented</td>
<td>2502 (96.7%)</td>
<td>661 (97.1%)</td>
<td>88%</td>
</tr>
</tbody>
</table>
The Trust reporting rate for MRIs is comparable with other acute trusts

LTHT has an established and embedded reporting culture in relation to MRIs

There was a 13% rise in incidents reported between 13/14 and 14/15 (2147 - 2422). The top five incident types reported were as set out in the table below. There is no national data available through the NRLS to assess how our reporting pattern compares with other Acute Trusts. What we do know is that we are in the top 25% of reporting Trusts for medication incidents.
Reported Incidents:

<table>
<thead>
<tr>
<th>Incident Type</th>
<th>13/14</th>
<th>14/15</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration of medicines</td>
<td>757</td>
<td>976</td>
<td>29%</td>
</tr>
<tr>
<td>Prescribing Errors</td>
<td>385</td>
<td>464</td>
<td>20.5%</td>
</tr>
<tr>
<td>Supply of Medicines</td>
<td>283</td>
<td>347</td>
<td>23%</td>
</tr>
<tr>
<td>Pt discharged with incorrect/incomplete drugs</td>
<td>51</td>
<td>114</td>
<td>123.5%</td>
</tr>
<tr>
<td>Supply from Aseptics</td>
<td>62</td>
<td>102</td>
<td>64.5%</td>
</tr>
</tbody>
</table>
Improving reporting and reducing harm

Medication incidents (Apr-06 to Sep-15): increased total reporting, reduced harm

- No Harm
- Low Harm
- Moderate Harm
- Severe Harm
- Death
- Linear (No Harm)
- Linear (Low Harm)
Improving reporting and reducing harm

Medication incidents (Apr-06 to Aug-15)

- harm
- No Harm
- Linear (harm)
- Linear (No Harm)
Improving reporting

Medication incidents each year (2006 - 2014)
Strategies for learning from incidents

Themes
- Identified (Mr. Green, national campaigns etc.)
- Ways of learning identified (publications, verbal etc.)
- Multi-disciplinary Team approach (nursing and medical input)
  - Paracetamol
  - Allergies

Lessons learned
- Trust wide, multi-disciplinary group
- Tasked by the board to promote learning from incidents
- Medicines have two members on the group
  - Insulin
  - Pumps

Follow up
- Internally
  - Tracking system developed to ensure incidents reviewed appropriately
- Externally
  - Tracking system to ensure MRI investigation are complete
  - Ensure learning is shared

Strategies

CSU governance
- Working with CSU governance groups to ensure lessons learned are shared
- Using technology to make data on incident reports more accessible
- Medicines Risk Team producing overarching reports for each CSU

Publications
- NHS England
  - Permits
- NICE guidance
- Medicines optimisation
Sharing learning
1. MSO report
   - To provide an overview of the Medication Related Incidents and initial learning identified from analysis of these.
   - To provide a summary of Serious Incidents and Never Events involving medicines.
   - Summarises the work done in supporting the MSO role
   - Reviews the issues raised at the national webinar and documents whether local action is required
   - Presents a summary of the findings and work or MIRG

2. MMPS CSU dashboard
   - The overall Trust information on MRIs is included in an easily accessible way
   - Linked to the MMPS governance report for further information
Measuring it

- More difficult
- Aim for more reports (demonstrates good safety culture)
- That needs balancing with decreasing the harm to patients

- Example of an approach by LTHT Lessons Learned Group
  - Campaign was run on correct patient identification
  - Datix codes identified prior to the campaign and a baseline measured
  - Same group of codes used to monitor in the months after the campaign
  - Full results are not available yet
  - The results from the first few weeks after the campaign showed a spike in reporting (as expected as the campaign promoted awareness) followed by a fall. The full results will show whether this fall has been sustained.
Measuring it

**MMPS Performance Dashboard 2015/2016: Reporting month AUGUST**

<table>
<thead>
<tr>
<th>Medicine Related Incidents</th>
<th>Medicine Related Never Events</th>
<th>MNI causing serious harm</th>
<th>Formal complaints</th>
<th>Unaccounted CO Losses in Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ No incidents this year</td>
<td>✓ No incidents this year</td>
<td>✓ No incidents this year</td>
<td></td>
<td>⚠ 1 loss this year: Apr(1)</td>
</tr>
<tr>
<td>The target is zero per year. Failure if more than 1 incident in a year.</td>
<td>The target is zero per year. Failure if more than 1 incident in a year.</td>
<td>The target is zero per year. Failure if more than 3 incidents in a year.</td>
<td>Baseline to be determined.</td>
<td>The target is zero per year. Failure if more than 1 incident in a year.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>260</td>
<td>287</td>
<td>272</td>
<td>250</td>
<td>242</td>
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<td>235</td>
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**Medicine related incidents - Trust wide v MMPS**

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
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<tr>
<td>25</td>
<td>31</td>
<td>29</td>
<td>27</td>
<td>19</td>
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**% Medicines Reconciliation by Pharmacy < 24 hrs admission**

- 73%  
- 73%  
- 73%  
- 81%

**Trustwide Controlled Drugs Incidents**

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
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</table>

**% eOAN Preparation times in less than 2 hours**

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<tbody>
<tr>
<td>84%</td>
<td>87%</td>
<td>87%</td>
<td>85%</td>
<td>87%</td>
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<td></td>
<td></td>
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</tbody>
</table>

**# of incorrectly dispensed items from MSS / # of incorrectly released items from aseptics**

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<tbody>
<tr>
<td>13</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>8</td>
<td>4</td>
<td></td>
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</table>

**Clinical trial response days**

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td></td>
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</table>
An example project 1  – CD patches

- CQC Annual Report of Safer management of CDs (2011) highlighted potential errors for fentanyl patches
- Campaign at LTHT
- Production of a Medication Safety Alert focusing on incidents related to prescribing, dispensing and administration of patches
- Chart shows incident reports before and after the bulletin was published.
Reported incidents involving CD patches
An example project 2 - Insulin

- To help staff with the prescribing and administration of insulin there are four insulin charts for adult patients and four insulin charts for use in paediatric patients registered for use at LTHT

- National drivers – Patient Safety Alerts
- Standard presentation of 50 units soluble insulin in 50ml pre-prepared in pharmacy
- Multiple campaigns to highlight the risks associated with prescribing, dispensing and administration of insulin
Insulin

Insulin MRIs on Datix

Insulin MRIs as a percentage of all MRIs
An example project 3 - Allergies

- Patients having medication prescribed or administered to which they are allergic
- Ongoing issue that has received focus from multiple methods and recently subject of NICE guidance.
- Potential for catastrophic outcomes for patients

**DRUG ALLERGY**

When the solution... medication... becomes the problem...
Number of MRIs related to allergies to medicines per month

The Leeds Teaching Hospitals
NHS Trust
### Ward Health Check

#### September 2015 WARD HEALTHCHECK DATA - Wards in Escalation October 2015

*September 2015 Data Summary (Active Inpatient Wards)*

<table>
<thead>
<tr>
<th>Ward ID</th>
<th>Ward Name</th>
<th>CSU Name</th>
<th>Overall (Core)</th>
<th>HCAIs &amp; MRSA Acquisition</th>
<th>Patient Experience</th>
<th>FFT</th>
<th>Free From New Harms (%)</th>
<th>Staff Sickness</th>
<th>Number of Red KPIs</th>
<th>Metrics Score</th>
<th>Overall Metrics Colour</th>
<th>St 1</th>
<th>St 2</th>
<th>St 3</th>
<th>St 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>J14</td>
<td>Elderly Medicine</td>
<td>AM</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>82.9%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J15</td>
<td>Elderly Medicine</td>
<td>AM</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>89.3%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J49</td>
<td>Renal Inpatient</td>
<td>AMS</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>64.9%</td>
<td>R</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C02</td>
<td>Dermatology</td>
<td>CA</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>84.1%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J12</td>
<td>Respiratory</td>
<td>CR</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>89.3%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L23</td>
<td>ENT/Maxillo-facial</td>
<td>HN</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>80.9%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J93</td>
<td>NSO In-Patient</td>
<td>IO</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>81.1%</td>
<td>A</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L15</td>
<td>Vascular Ward</td>
<td>TRS</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>85.6%</td>
<td>A</td>
<td>√</td>
<td></td>
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</tr>
</tbody>
</table>

- Metrics identify wards requiring escalation
- Multidisciplinary team awareness
- Presentation of data
Innovation - safe use of medicines – changing the way we provide our service

- Bring your Medicines into Hospital campaign
- eMeds
- Our partnership with Boots to provide outpatient service
- Redesigned Anticoagulant Service
- Dynamic pan city medicines formulary – updated daily
- COMET project (care by optimising medicines for elderly on care transfer) – leading onto the…
- ROMEPAD project (review of medicines in elderly patients after discharge – aim is to improve medicines optimisation and reduce medicines related re-admissions)
- OPAT project (treating patients with infections at home rather than in hospital – 261 patients, 2592 patient bed days saved in 2014/15)
- Oxygen prescribing
Transfer of care in elderly patients

IMPACT: The Integrated Medicines Optimisation on Care Transfer project

Passing on the ‘Baton of Care’ at Discharge:
Acute Elderly Model at the Leeds Teaching Hospitals NHS Trust

Background:
The Integrated Medicines Optimisation on Care Transfer (IMPACT) project aimed to enhance assessment of post-discharge needs for patients on the acute older people admission wards at Leeds Teaching Hospitals NHS Trust. Communication across boundaries was improved. Post-discharge needs were communicated to healthcare professionals in primary care e.g. clinical follow up or medicines support and referrals to appropriate professionals were made to improve the post-discharge support offered to patients.

IMPACT patients who were re-admitted within 30 days of discharge had their cases reviewed by a Consultant Physician for Older People and a Consultant Pharmacist to determine if IMPACT prevented patients from being re-admitted to hospital with medicine-related problems.

<table>
<thead>
<tr>
<th>Medicine causing admission</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic</td>
<td>1</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>2</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>3</td>
</tr>
<tr>
<td>Anticoagulant</td>
<td>1</td>
</tr>
<tr>
<td>Antihypertetic</td>
<td>1</td>
</tr>
<tr>
<td>Anti-inflammatory</td>
<td>2</td>
</tr>
<tr>
<td>Anti-infective</td>
<td>1</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>1</td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>1</td>
</tr>
<tr>
<td>Calcium channel blocker</td>
<td>1</td>
</tr>
<tr>
<td>Diuretic</td>
<td>1</td>
</tr>
<tr>
<td>Laxative</td>
<td>1</td>
</tr>
<tr>
<td>Lithium</td>
<td>1</td>
</tr>
</tbody>
</table>

Evaluation:
Of the 33 cases reviewed, 11 patients were admitted due to a medicine-related problem. Of the 30 patients who were re-admitted within 30 days, 6 were re-admitted with medicines-related problems.

The overall 30-day re-admission rate for the older people admission wards was 20% over the 6 month project. The re-admission rate for IMPACT patients was 17%.

Outcome from IMPACT:
3% reduction in IMPACT patient re-admission rate compared to Non-IMPACT acute elderly patients at 30 days post discharge

Gillian Fox, Consultant, Care of the Elderly; Heather Smith, Consultant Pharmacist; Ismail Khan, Clinical Pharmacist; Chris Acomb, Clinical Pharmacy Manager; Una Laverty, Medicines Risk Manager;
Poster at 16th International Falls and Postural Stability Conference, Sept 2015

Working across boundaries to prevent falls in Leeds; A quality improvement collaborative

Introduction
Falls are a major cause of disability and the leading cause of mortality resulting from injury in people aged >75.

We describe the benefit of working as a multidisciplinary team across professional boundaries to test and implement falls reduction interventions using quality improvement methodology.

Through integrated working, involving frontline primary and secondary care teams, our overall aim was to identify and address key factors contributing to the incidence of falling and fractured neck of femur for people living in their own home.

Method
This innovative work facilitated by Leeds Institute for Quality Healthcare in partnership with the University of Leeds involved a physiotherapist, elderly care registrar, GP, pharmacist, practice nurse, falls manager and community matron (Figure 1).

Results
The mean age of patients in the cohort was 77 years; 16 patients (60%) said they had fallen or stumbled in the last 12 months; however, only 4 patients (8%) had a fall documented in their electronic GP records. This indicated that in order to reliably identify patients who are at high risk of falls the patient record alone is not sufficient and tools such as the eFI can be useful.

All 49 patients were on at least one high-risk medication for falls (Figure 3) the mean number of medications per patient was 9 (range 4-24). No patients had lying/standing blood pressure (BP) documented in their electronic records.

Of patients attending the workshop 44% had a significant lying/standing BP drop and 78% required interventions to reduce their falls risk such as medication changes, referral to secondary care etc. (Figure 4).

Conclusion
In primary care patients with a moderate level of frailty, poly-pharmacy is common, falls are under-reported and consequently infrequently documented. Instead, the eFI can be used to identify patients who are at risk of falls. High-risk patients can be assessed with lying/standing BP recording and medication review. Interventions targeted to that individual to reduce falls are often required and a multidisciplinary, integrated approach can be useful to establish an action plan.

This work has made progress towards our goal of all moderately frail patients at the practice having a ‘falls risk’ assessment, to have attended a falls workshop (if appropriate) and has a falls action plan implemented. The long-term plan is to evaluate how this affects falls rates and after development, implement this fall prevention work, using quality improvement methodology, across South and East Leeds.

References
Session content

• How do we reduce, and monitor the reduction in Medication Errors in an NHS Trust = “Listen to the low level noise” – report + report and learn

• Priority areas: where should efforts be focused? Use metrics to identify wards in difficulty, high risk medicines, places where pharmacists don’t go

• Improving reporting and learning systems It’s everyone’s business, handover huddles

• What are the root causes of medication error: our experience and learning Work arounds, “helpful people”, pumps
Culture and leadership

• Make it easy to do the right thing
• How can we help you?
• Ethic of continuous improvement / learning
• Openness and Transparency
• Staff experience and engagement
The future

- New ways of monitoring our activity
  - Data manager post – better analysis and reporting
  - MSO pan organisational integration in each CSU – governance groups
  - Ownership of medicines safety incidents by all Clinical Directors
  - Work in partnership with patients learning from their experiences

- New ways of working
  - Use Quality Improvement methodology to measure our work
  - Attendance at huddles and hand overs
  - Fully engage all staff, especially front line - candour

- Patient safety – continuous culture change
  - Maximise opportunity of Virginia Mason partnership