Reducing prescribing errors in a large HIV outpatient clinic using feedback strategies to improve prescribers’ awareness of their prescribing behaviour

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Background

- Prescribing errors reach the patient despite the defenses in place and prescribers rely on these defenses

- Prescribers impressions (prior to the study)
  - “Prescribing errors surely must be few in number – its only 3 long-term drugs!”
  - “It must be the SpR’s... we need to help them prescribe better” – said after 1st month of data
  - “It’s everyone else making the errors”
Swiss Cheese Model of Defense
(Adapted from Reason, J. BMJ 2000;320:768-770)
Aims

1. Creating awareness of current individual prescribing errors and patterns
2. Modify prescribing behaviour through feedback
3. Reduce prescribing errors to improve patient safety
Method
Data Collection

- Database created utilising MS Excel
- Prospectively collected by HIV Pharmacists in a dedicated satellite HIV Pharmacy
- Data entered for prescriptions screened between Jan – Dec in 2015
Types of errors recorded

• **CLINICAL INTERVENTIONS**
  – Drug interactions, disease interactions, renal, liver, genotype, VL, HLA-B*5701

• **PRESCRIBING**
  – Missing/wrong drug, dose, frequency, allergies

• **LEGALITIES**
  – Signature, date, duration, CD requirements

• **PATIENT IDENTIFIER**
  – Patient name, hospital number, date of birth

• **OPERATIONAL**
  – Missing local ART audit form, supply amendment
Harm Prevented

- Each sub-category had been pre-assigned a harm rating as defined by National Patient Safety Agency (NPSA)
  - Insignificant, low/minor, moderate, severe/major, catastrophic
  - 5 HIV pharmacists + Trust Medication Safety Officer independently of each other

**NPSA DEFINITIONS:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insignificant</td>
<td>Minimal injury requiring no/minimal intervention</td>
</tr>
<tr>
<td>Low/Minor</td>
<td>Minor injury requiring extra observation or minor treatment</td>
</tr>
<tr>
<td>Moderate</td>
<td>Injury requiring increase in treatment no permanent harm</td>
</tr>
<tr>
<td>Severe/Major</td>
<td>Results in permanent harm</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>Results in death</td>
</tr>
</tbody>
</table>
Prescribing errors

Time

Feedback via Learning Cycle

Unconscious incompetence

Conscious incompetence

Conscious competence

Unconscious competence

June to August: no data reported to test if prescribers were actively seeking to reduce their errors without being prompted i.e. ingrained into practice

September: Data reported as before with warning that data will no longer be anonymous across the dept

October-December: Open data reported
Results
Prescribing Demographics

- 7970 prescriptions screened in 2015
- Written by:
  - 23 Doctors
  - 4 P’cists
  - 3 Nurses
- Analysing January and December only

Average % prescribers each month

- 81%
- 12%
- 8%

Division of prescribing between professions

- Doctor
- Pharmacist
- Nurse

Number of Prescriptions

- 7000
- 6000
- 5000
- 4000
- 3000
- 2000
- 1000
- 0
Prescription Errors

- End of Jan: 47% prescriptions written had errors
- Jan-Feb: 43% ↓ prescriptions with errors
  24% ↓ total no. errors
- Jan-Dec: 64% ↓ prescriptions with errors
  52% ↓ total no. errors
**PREScriBinG (without allergies)**

- **Wrong Drug**: 17.1%
- **Missing Drug**: 12.2%
- **Missing Dose**: 14.8%
- **Wrong Dose**: 25.8%
- **Wrong Frequency**: 18.9%
- **Missing Frequency**: 11.8%

**CLINICAL INTERVENTIONS**

- **Drug Interaction**: 52.2%
- **Disease Interaction**: 9.0%
- **CrCl Dosing**: 0.0%
- **VL/GT/HLA-ve/LFT/Tropism**: 23.8%
- **HLA +ve & ABC Rx**: 11.9%
- **Wrong Drug**
- **Wrong Dose**
- **Wrong Frequency**
- **VL/GT/HLA-ve/LFT/Tropism**
- **HLA +ve & ABC Rx**
Potential harm reduction

Number of errors

- Insignificant
- Low/Minor
- Moderate
- Severe/Major

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
% harm prevented from all prescriptions with errors

- % Insignificant Harm
- % Low/Minor Harm
- % Moderate Harm
- % Severe/Major Harm
DISCUSSION
Key findings

• Feedback strategies clearly worked, reducing total number of errors by 52% and number of prescriptions by 64% after one year.

• Errors continued to fall in the period when data was not reported for three months
  – Sept 74% reduction in number of prescriptions with errors
  – a culture of prescribing behaviour awareness may have been ingrained into practice
Key findings

• Reporting with and without anonymous data at end of the year did not appear to affect error rates

• Reduction in errors hit a plateau for all three professions

• The extent of harm risk reduced as the number of errors reduced but the % of each harm within the errors remained the same
In closing…

• 2016–Continue to collect and report data–Make bids for having clever database created–Greater access to tools such as dispensing records, GP SCR is being given to all prescribers–Prescribers can have a 1- to 1 review of their 2015 data and trends with an HIV pharmacist–Electronic prescribing–Roll out to other outpatient departments

• As a unit, we have done very well already to make significant changes to improve patient safety.
One final word, I have...

...Mastery is not achieved overnight!
QUESTIONS?

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Electronic Prescribing – coming soon!

- Could eliminate errors associated with legality, legibility, patient identifiers, allergies (55% of total errors)
  - 98% insignificant harm
  - 2% low/minor harm

- Theoretically, prescribing errors could increase
  - Drug/dose selection, instant prescribing
  - Increase in low/minor and moderate harm

- Theoretically in-built clinical decision support could reduce DDIs and have pop-up warnings from pharmacists before prescribing
  - Reduction in moderate harm