Clinical Pharmacy Services in the Vienna General Hospital

Evolution – Current State – Perspective

PaSQ Exchange Mechanism + High 5s Event
MEDICATION SAFETY – MEDICATION RECONCILIATION
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One activity of hospital pharmacy practice

Patient-oriented pharmacy

Optimisation of pharmacotherapy in an interdisciplinary context

Using various methods or tools (e.g. ward round participation, medical chart reviews, medication reconciliation, TDM of specific drugs)

Rather a bundle of measures than a single, discrete intervention

Services also provided in other care settings (e.g. nursing homes)

The pharmacist takes responsibility for outcome achievement.
‘...addition of **clinical pharmacist services** in the care of inpatients generally resulted in **improved care**, with no evidence of harm.’ Kaboli PJ et al. 2006

‘Clinical pharmacists on the ward significantly contribute to a **reduction in medication errors**.’ Krähenbühl-Melcher A et al. 2007

‘...increasing evidence that participation and interventions of **clinical pharmacists** in health care positively influence clinical **practice**.’ Viktil KK et al. 2008

‘If implemented on a population basis, the addition of pharmacists to health care teams would lead to **major reductions in morbidity and health care costs**.’ Gillespie U et al. 2009

‘...evidence that **pharmacist interventions** provide substantial **cost avoidance** to the healthcare payer.’ Gallagher J et al. 2014
Recommendations for the **Prevention of Medication Errors** in Hospital Care

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**Recommended Practice**

- Interventions Utilizing Clinical Pharmacists
  - Have a central pharmacist supply high-risk IV medications and pharmacy-based admixture systems
  - Include a pharmacist during rounds of patient care units
  - Utilize pharmacist counseling of patients
  - Have a pharmacist available on call after hours of pharmacy operation
  - Have a pharmacist review all medication orders before first doses
Evolution

Current state

Perspective
Provision of medicines information in the VGH

- Project on wards for patients with highly specific pharmacotherapy-needs (e.g. neonatology, ICUs)
- Regular attachment to wards, ward rounds, drafting of in-hospital guidelines and/or recommendations etc.
Implementation of QM system in VGH hospital pharmacy

• Standardisation and systematic documentation of medicines information
• Rather generic and informational contributions than patient-specific interventions
• Rather reactive than proactive services
Evolution

Current state

Perspective
Independent and discrete clinical pharmacy process

- Drug-related problems (DRPs): detection, resolution, prevention
- Clinical pharmacists’ interventions
- New categorisation (Allen et al. 2006)
- Evaluation of feasibility and outcome measurement (Stemer et al. 2012)
- Continuous monitoring and yearly reports
22-week **clinical pharmacists’ intervention** study

Service evaluation on 7 wards, 7 pharmacists, with ward round participation (1-3/week)

**Main outcomes:**

- Type and frequency of DRPs and clinical pharmacists’ interventions and contributions (i.e. related to provision of information or organisational issues)
- Physicians’ acceptance rate
- Self-assessment of interventions’ significance
478 DRPs in 138 ward rounds

0.3 (±0.4) DRPs per patient seen

3.5 (±1.5) DRPs per ward round

86.4% solved immediately

<p>| Non-conformity to guidelines or contraindication | 17 (3.6) |
| Untreated indication                           | 36 (7.5) |
| Subtherapeutic dosage                          | 20 (4.2) |
| Supratherapeutic dosage                        | 32 (6.7) |
| Drug without indication                        | 33 (6.9) |
| Drug interaction: to be taken into account      | 21 (4.4) |
| Drug interaction: use with caution             | 16 (3.3) |
| Drug interaction: combination to be avoided    | 6 (1.3)  |
| Drug interaction: combination contra-indicated |          |
| Adverse drug reaction                          | 10 (2.1) |
| Improper administration                        | 16 (3.3) |
| Failure to receive drug                         | 4 (0.8)  |
| Drug monitoring                                 | 6 (1.3)  |
| Medical chart error                            | 38 (7.9) |
| Specific information and therapy discussion    | 144 (30.1)|
| Literature search                              | 11 (2.3) |
| Others                                         | 68 (14.2) |
| Total                                          | 478 (100)|</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition of a new drug</td>
<td>64</td>
<td>13.4%</td>
</tr>
<tr>
<td>Drug discontinuation</td>
<td>56</td>
<td>11.7%</td>
</tr>
<tr>
<td>Drug switch</td>
<td>29</td>
<td>6.1%</td>
</tr>
<tr>
<td>Change of administration route</td>
<td>16</td>
<td>3.3%</td>
</tr>
<tr>
<td>Drug monitoring</td>
<td>24</td>
<td>5.0%</td>
</tr>
<tr>
<td>Administration modalities optimisation</td>
<td>24</td>
<td>5.0%</td>
</tr>
<tr>
<td>Dose adjustment</td>
<td>60</td>
<td>12.6%</td>
</tr>
<tr>
<td>Others</td>
<td>205</td>
<td>42.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>478</td>
<td>100%</td>
</tr>
</tbody>
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Bar chart showing the distribution of acceptance, consideration, and rejection: 93.5% accepted, 38.80% considered, 6.5% rejected.
Pt. with rosuvastatin 10mg twice daily in medical chart
  • Statins dosed once daily  
  • **Transcription error/overdose** emerges (i.e. paper-based medical chart and manual transcription of all drugs)

Pt. on haemodialysis with ranitidine 300mg/day for ulcer prophylaxis
  • Prior: Pantoprazole discontinued due to interstitial nephritis
  • **Dose adjustment omitted** when switched to ranitidine; 150mg/day max. recommended dose in HD
Pt. on paracetamol i.v. 1000mg Q6h
- Fixed prescribed i.v. dose in paper-chart
- At the same time also paracetamol by mouth 500mg Q8h PRN
- **Overdose** due to therapeutic duplication

Pt. with naso-gastric tube and multiple medicines
- When seen by the pharmacist all oral medicines are paused, including psychotropic drugs and antihypertensives.
- Advice not to abruptly stop certain medicines and the possibility of crushing and administering them via the gastric tube

Unpublished data
Pt. with cyclosporine after HTX with indication for a RAAS-blocking agent

- Aliskiren prescription considered by medical team as samples from company available on the ward
- Advice not to prescribe due to anticipated drug-drug interaction
- Contraindication due to pGP interaction, increased plasma level and risk of side effects of aliskiren
Scale for Recommendations’ Potential Impact on Patient Care

- Adverse significance: Recommendation may lead to adverse outcomes
- No significance: Recommendation is informational (not specifically related to patient in question)
- Somewhat significant: Benefit of recommendation to patient could be neutral, depending on professional interpretation
- Significant: Recommendation would bring care to more acceptable and appropriate level
- Very significant: Recommendation qualified by potential or existing major organ dysfunction
- Extremely significant: Information qualified by life-and-death situation

Figure 4  Percentage of overall significance categories of interventions. -1, adverse significance; 0, no significance; 1, somewhat significant; 2, significant; 3, very significant; 4, extremely significant.
Development plan for clinical pharmacy services
Expansion of existing services, new services (i.e. admission check, discharge management) in planning; launch expected in 10/2014
• Government-funded project within the scope of the Austrian health care reform and its federal agreements
Major **challenges**

- Sustainability and promotion of continuous service provision
- Meaningful outcome measures for evaluation
- Little e-support facilitating this process
- The economics behind?
- Visibility: What’s in it for the individual patient?
- Not a single, definable, discrete and well characterized intervention, rather a bundle of measures
References


Gillespie U, et al. A comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older: a randomized controlled trial. Arch Intern Med. 2009;169(9):894-900