The impact of medication review – does it work?
Structured discussion on the effect of medication review in different settings

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University of Basel, Switzerland
Agenda

▶ Update of what is published on the impact of medication reviews (MR) in various settings
  ▪ Published intervention studies
  ▪ Economic studies
  ▪ Meta analysis
  ▪ Grey literature

▶ Reflect issues when investigate pharmacist-led MR
  ▪ Discuss presented data
  ▪ Highlight conclusions and study issues
Various perspectives to discuss impact of MR

► **Patient**
- Individual therapy management
- Safety, drug related problems
- Understanding of medication treatment

► **Health care provider**
- Responsibility, roles
- Counselling opportunities, acceptance of intervention
- Collaboration with other health care providers

► **Society / Payer**
- Costs (effectiveness, utility, benefits)
- Morbidity, mortality, (re-) hospitalization, ...
Medication review is an evaluation of all the patient’s medicines with the aim of optimizing medicines use and improving health outcomes. This entails detecting drug-related problems and recommending interventions.

Comments:
- «Medicines Use», according to the PCNE definition of PhC 2013, which refers to the WHO definition of «responsible use of medicines». This covers effectiveness, quality of life, efficiency and safety (1)
- Medication review is part of the patient’s medication management

(1) www.who.int/medicines/publications/responsible_use/en/index.html
### Types of medication review (PCNE)

<table>
<thead>
<tr>
<th>Information source</th>
<th>Medication history</th>
<th>Patient</th>
<th>Clinical data</th>
</tr>
</thead>
<tbody>
<tr>
<td>„Simple“</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type 1</strong>) Based on the medication history in the pharmacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>„Intermediate“</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
| **Type 2a**) Medication history + patient interview  
  • MUR, Polymedication-Check  
  • „Brown Bag“-Method | +                  | +       | +             |
| **Type 2b**) Medication history + clinical data  
  • In hospital pharmacies  
  • In Dutch community pharmacies | +                  |         | +             |
| „Advanced“           | +                  | +       | +             |
| **Type 3**) Medication history + patient interview  
  + clinical data (clinical medication review) | +                  | +       | +             |
Goal and aims of a medication review
PCNE Malta 2014

1. ‘detecting drug-related problems’
2. ‘recommending interventions’
3. ‘optimizing medicines use’
4. ‘improving health outcomes’
Various possible settings for medication reviews

<table>
<thead>
<tr>
<th>Advanced pharmaceutical services (improved care)</th>
<th>Basic pharmaceutical services (usual care)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication reviews and structured pharmaceutical care in collaboration with the patient and / or medical personnel</td>
<td>Validation of prescriptions, counselling and instruction, delivery process of the medication</td>
</tr>
</tbody>
</table>

Patient’s path on chronic medication
A practical example 1/2

Mrs. B, aged 59, a well-known patient with chronic polypharmacy after a myocardial infarction.

During a patient oriented medication review she proves to be well informed and organized with her medicines use.

The pharmacist’s last question detects an issue related to almost every medication she takes: swallowing difficulties.
A practical example 2/2

- The disorders are related to every tablet she takes and cause intense complaints and globus sensations.

- The pharmacist asks her to show the swallowing technique and suggests some adaptations. [Schiele J. et al., Ann Fam Med, 2014]

- Is there a measurable impact as a result of this medication review? Is it clinical relevant?
Is there an impact in this practical example?

- Patient?
- Health care provider?
- Society / Payer?
**Number Needed to Review (NNR) vs Number Needed to Treat (NNT): 2\textsuperscript{nd} intervention matters!**

<table>
<thead>
<tr>
<th>Setting</th>
<th>MR type</th>
<th>Patient</th>
<th>DRP</th>
<th>Event?</th>
<th>Care?</th>
<th>Survival?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>I</td>
<td>Elderly</td>
<td>Anticoagulated</td>
<td>Yes</td>
<td>Pharmacy</td>
<td>Death</td>
</tr>
<tr>
<td>Community pharmacy</td>
<td>IIa</td>
<td>Anticoagulated</td>
<td>Polypharmacy</td>
<td>No</td>
<td>Physician</td>
<td>Survived</td>
</tr>
<tr>
<td>Nursing home</td>
<td>IIb</td>
<td>Polypharmacy</td>
<td>Renal insufficient</td>
<td></td>
<td>Hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>III</td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**1\textsuperscript{st} intervention**

**Screening**

**Outcomes**

\[ \text{NNR} = X \]

\[ \text{NNT} = Y \]
Published intervention studies
Personal selection 2005 - today
Holland et al., 2005

Primary care

Does home based medication review keep older people out of hospital? The HOMER randomised controlled trial

Richard Holland, Elizabeth Lenaghan, Ian Harvey, Richard Smith, Lee Shepstone, Alistair Lipp, Maria Christou, David Evans, Christopher Hand

The intervention was associated with a significantly higher rate of hospital admissions and did not significantly improve quality of life or reduce deaths.
Description of the intervention provided by study pharmacists:
‘Initial referral to a review pharmacist included a copy of the patient’s discharge letter. Pharmacists arranged home visits at times when they could meet patients and carers. Pharmacists assessed patients’ ability to self medicate and drug adherence, and they completed a standardised visit form.

Where appropriate, they educated the patient and carer, removed out of date drugs, reported possible drug reactions or interactions to the general practitioner, and reported the need for a compliance aid to the local pharmacist.’
‘Over 98 % of residents of aged care facilities had at least one DRP. Most (83.8%) recommendations made by accredited pharmacists to resolve DRPs were accepted by general practitioners. Chronic kidney disease (CKD) was prevalent in 48% of residents, and inappropriate prescribing of renally cleared medications was identified in 28 (16 %) residents with CKD.’
Large scale implementation of clinical medication reviews in Dutch community pharmacies: drug-related problems and interventions

Thomas G. H. Kempen · Caroline H. P. A. van de Steeg-van Gompel · Petra Hoogland · Yuqian Liu · Marcel L. Bouvy

‘4,579 Clinical medication reviews were analyzed. On average, 2.9 (SD 2.1) DRPs per review were identified. 4,123 (31%) of the DRPs led to medication changes. Stopping a drug (16%) was more frequent than starting a drug (8.1%).’
### Table 1 Proposed interventions and the degree of implementation of these proposals

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Proposed n (% of total)</th>
<th>Implemented n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication change</td>
<td>8,072 (60)</td>
<td>3,401 (42)</td>
</tr>
<tr>
<td>Stop drug</td>
<td>2,604 (20)</td>
<td>1,220 (47)</td>
</tr>
<tr>
<td>Change dosage (regimen)</td>
<td>1,994 (15)</td>
<td>889 (45)</td>
</tr>
<tr>
<td>Start drug</td>
<td>1,911 (14)</td>
<td>671 (35)</td>
</tr>
<tr>
<td>Substitute drug</td>
<td>1,563 (12)</td>
<td>621 (40)</td>
</tr>
<tr>
<td>Other</td>
<td>5,299 (40)</td>
<td>2,887 (54)</td>
</tr>
<tr>
<td>Perform monitoring</td>
<td>2,345 (18)</td>
<td>1,241 (53)</td>
</tr>
<tr>
<td>Provide information/advice</td>
<td>1,483 (11)</td>
<td>1,026 (69)</td>
</tr>
<tr>
<td>Other</td>
<td>834 (6.3)</td>
<td>146 (17)</td>
</tr>
<tr>
<td>Synchronise medication</td>
<td>404 (3.0)</td>
<td>335 (83)</td>
</tr>
<tr>
<td>Change dosage form</td>
<td>210 (1.6)</td>
<td>132 (63)</td>
</tr>
<tr>
<td>Unknown</td>
<td>18 (0.1)</td>
<td>7 (39)</td>
</tr>
<tr>
<td><strong>Total n = 13,366</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2 Drug classes most frequently related to DRPs

<table>
<thead>
<tr>
<th>Drug class</th>
<th>DRPs n (% of total)</th>
<th>DRPs leading to a medication change n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipid modifying agents</td>
<td>1,046 (7.8)</td>
<td>325 (31)</td>
</tr>
<tr>
<td>Antithrombotics</td>
<td>934 (7.0)</td>
<td>298 (32)</td>
</tr>
<tr>
<td>H2 receptor inhibitors and PPIs</td>
<td>732 (5.5)</td>
<td>314 (43)</td>
</tr>
<tr>
<td>Oral antidiabetics</td>
<td>559 (4.2)</td>
<td>183 (33)</td>
</tr>
<tr>
<td>Beta blockers</td>
<td>530 (4.0)</td>
<td>178 (34)</td>
</tr>
<tr>
<td>ACE inhibitors</td>
<td>397 (3.0)</td>
<td>112 (28)</td>
</tr>
<tr>
<td>Vitamin A and/or D</td>
<td>388 (2.9)</td>
<td>148 (38)</td>
</tr>
<tr>
<td>Loop diuretics</td>
<td>349 (2.6)</td>
<td>90 (26)</td>
</tr>
<tr>
<td>Calcium</td>
<td>341 (2.6)</td>
<td>162 (48)</td>
</tr>
<tr>
<td>Inhaled sympathomimetics</td>
<td>333 (2.5)</td>
<td>123 (37)</td>
</tr>
</tbody>
</table>

Total n = 13,366

*PPI* proton pump inhibitor, *DRP* drug-related problem
Perera et al., 2011

Evaluation of Prescriber Responses to Pharmacist Recommendations Communicated by Fax in a Medication Therapy Management Program (MTMP)

Prasadini N. Perera, MS; Mignonne C. Guy, PhD; Ashley M. Sweaney, PharmD Candidate; and Kevin P. Boesen, PharmD

A medication therapy management program provided to approximately 5’000 high-risk patients yielded 1,548 pharmacist-initiated medication recommendations faxed to 1,163 prescribers for 1,174 patients in a 5-month period. Of the 3 categories of interventions, the majority of the medication recommendations were related to guideline adherence (58.3%), followed by cost savings (33.3%) and safety interventions (8.5%).

The overall prescriber approval rate for recommendations was 47.2%; 255 recommendations were denied (16.5%); and 562 (36.3%) had no response. Approval rates ranged from 41.4% for guideline adherence to 58.2% for cost-saving recommendations.
Krska et al., 2007

‘The majority of issues and recommendations noted by pharmacists related to coronary heart disease, although pharmacists recorded only a minority of the issues identified by reviewers.

Variation between pharmacists in the completeness of reviews was not explained by review or other relevant experience.’
Krska et al., 2007

Table 4
Frequency of issues noted and not noted by study pharmacists in 169 cases

<table>
<thead>
<tr>
<th>Issue type</th>
<th>By study pharmacists</th>
<th>Additionally by reviewers</th>
<th>Total</th>
<th>Percent of total noted by study pharmacists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>168</td>
<td>385</td>
<td>553</td>
<td>30</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>77</td>
<td>141</td>
<td>218</td>
<td>35</td>
</tr>
<tr>
<td>Potentially ineffective therapy</td>
<td>67</td>
<td>90</td>
<td>137</td>
<td>49</td>
</tr>
<tr>
<td>Indication for therapy</td>
<td>66</td>
<td>83</td>
<td>149</td>
<td>44</td>
</tr>
<tr>
<td>Inappropriate use of medicine</td>
<td>41</td>
<td>51</td>
<td>92</td>
<td>45</td>
</tr>
<tr>
<td>Potential/suspected ADR</td>
<td>37</td>
<td>62</td>
<td>99</td>
<td>37</td>
</tr>
<tr>
<td>Potential/actual compliance</td>
<td>24</td>
<td>45</td>
<td>69</td>
<td>35</td>
</tr>
<tr>
<td>Need for education</td>
<td>25</td>
<td>31</td>
<td>56</td>
<td>45</td>
</tr>
<tr>
<td>Repeat medicine no longer needed</td>
<td>12</td>
<td>34</td>
<td>46</td>
<td>26</td>
</tr>
<tr>
<td>Repeat record not accurate</td>
<td>10</td>
<td>17</td>
<td>27</td>
<td>37</td>
</tr>
<tr>
<td>Quantities not aligned</td>
<td>9</td>
<td>55</td>
<td>64</td>
<td>14</td>
</tr>
<tr>
<td>No indication for medicine</td>
<td>7</td>
<td>8</td>
<td>15</td>
<td>47</td>
</tr>
<tr>
<td>Drug–disease interaction</td>
<td>8</td>
<td>31</td>
<td>39</td>
<td>21</td>
</tr>
<tr>
<td>Cost</td>
<td>5</td>
<td>59</td>
<td>64</td>
<td>10</td>
</tr>
</tbody>
</table>

‘In the subsample of 169 patients (23% of the total), the reviewers identified 1539 potential issues, of which pharmacists identified an average of 33.8% (95% CI, 30.1-36.4).’
Hatah et al., 2013

General practitioners' views of pharmacists' current and potential contributions to medication review and prescribing in New Zealand

Ernieda Hatah MClInPharm,1,2 Rhiannon Braund FNZCP, RegPharmNZ, PhD1 Stephen B Duffull PhD1 June Tordoff RegPharmNZ, PhD1

METHODS
Semi-structured interviews were carried out in two localities with GPs whose patients had and had not undergone a pharmacist-led adherence support Medication Use Review (MUR).

GPs were asked their opinions of pharmacists' provision of MUR, clinical medication review and prescribing. Data were analysed thematically using NVivo 8 and grouped by strengths, weaknesses, opportunities and threats (SWOT) category.
FINDINGS
Eighteen GPs were interviewed. GPs mentioned their own skills, training and knowledge of clinical conditions. These were considered GPs' major strengths. GPs' perceived weaknesses were their time constraints and heavy workloads. **GPs thought pharmacists' strengths were their knowledge of pharmacology and having more time for in-depth medication review than GPs. Nevertheless, GPs felt pharmacist-led medication reviews might confuse patients, and increase GP workloads.** GPs were concerned that pharmacist prescribing might include pharmacists making a diagnosis.

CONCLUSION
GPs perceived their own skills were well suited to reviewing medication and prescribing, but thought pharmacists might also have strengths and skills in these areas. In future, GPs thought that working together with pharmacists in these services might be possible in a collaborative setting.
Economic studies
Desborough et al., 2011

A cost-consequences analysis of an adherence focused pharmacist-led medication review service

James A. Desborough\textsuperscript{a}, Tracey Sach\textsuperscript{b}, Debi Bhattacharya\textsuperscript{a}, Richard C. Holland\textsuperscript{b} and David J. Wright\textsuperscript{a}

\textsuperscript{a}School of Pharmacy and \textsuperscript{b}Norwich Medical School, University of East Anglia, Norwich, UK

‘The mean cost per patient of prescribing and hospital admissions in the 6 months prior to the intervention was £2190 and in the 6 months after intervention £1883. \textbf{This equates to a mean cost saving of £307 per patient (95\% CI: £1269-£655).} The intervention reduced emergency hospital admissions and increased medication adherence but no significant change in health-related quality of life was observed.’
Meta analysis
Holland et al., 2008

‘Pharmacist-led medication review interventions do not have any effect on reducing mortality or hospital admission in older people, and can not be assumed to provide substantial clinical benefit.’
Holland et al., 2008

Potentially relevant publications identified and titles screened (n=17,272)

- Excluded on basis of title alone as not primary research or inappropriate intervention (n=16,383)

Abstracts of potential RCTs screened (n=889)

- Excluded because: not RCT, not pharmacist-led intervention, or mean age of study population < 60, or focused in one disease area alone (n=747) [based on abstract]

Potentially appropriate studies for review of paper (n=124)

- Excluded because:
  - Not RCT = 21
  - Mean age < 60 = 7
  - Duplicate reporting of data or sub-group analysis = 16

RCTs of appropriate interventions for further review (n=80)

- Excluded because:
  - Not medication review = 38
  - Intervention provided by team = 10

RCTs included in review (n=32)

- 17 all-cause re-admission data
- 22 all-cause mortality data
- 15 medication data
## Table 1

**Description of studies and interventions**

<table>
<thead>
<tr>
<th>Study author</th>
<th>Date</th>
<th>Country</th>
<th>No. of patients</th>
<th>Mean age, years</th>
<th>% male</th>
<th>Type of pharmacist</th>
<th>No. of pharmacists</th>
<th>Intervention</th>
<th>Patient data</th>
<th>Ability to enact advice</th>
<th>Contact with prescriber</th>
<th>Setting</th>
<th>Extent of patient contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beal [1]</td>
<td>1997</td>
<td>UK</td>
<td>222</td>
<td>82</td>
<td>39.4</td>
<td>Research pharmacist</td>
<td>Unclear</td>
<td>Home visits and counselling by a pharmacist after hospital discharge</td>
<td>Discharge letter</td>
<td>Unable to enact</td>
<td>Unclear</td>
<td>Own home</td>
<td>Four detailed visits over a year</td>
</tr>
<tr>
<td>Bernsten [18]</td>
<td>2001</td>
<td>Europe</td>
<td>2454</td>
<td>74</td>
<td>42.4</td>
<td>Community pharmacist</td>
<td>104</td>
<td>Community pharmacy assessment of drug-related problems and implementation of a pharmaceutical care plan</td>
<td>Repeat prescribing data</td>
<td>Unable to enact</td>
<td>Unclear</td>
<td>Pharmacy</td>
<td>Unclear</td>
</tr>
<tr>
<td>Bolas [34]</td>
<td>2004</td>
<td>Northern Ireland</td>
<td>243</td>
<td>74</td>
<td>39.5</td>
<td>Hospital/clinical pharmacist</td>
<td>1</td>
<td>Full history, preparation of discharge letter. Medication review (stated in abstract but not method)</td>
<td>Full notes</td>
<td>Unable to enact</td>
<td>Close contact</td>
<td>Hospital</td>
<td>Inpatient ward visit plus discharge plan</td>
</tr>
<tr>
<td>Bond [17]</td>
<td>2000</td>
<td>UK</td>
<td>3074</td>
<td>66</td>
<td>41.6</td>
<td>Community pharmacist</td>
<td>62</td>
<td>Pharmacist-controlled repeat prescription system where pharmacist checked if medication needed. Review of side-effects and interactions</td>
<td>Repeat prescribing data</td>
<td>Unable to enact</td>
<td>Contact by letter</td>
<td>Pharmacy</td>
<td>Limited contact, mainly review of repeat scripts</td>
</tr>
<tr>
<td>Carter [35, 36]</td>
<td>1998</td>
<td>USA</td>
<td>1054</td>
<td>66.7</td>
<td>96.3</td>
<td>Hospital/clinical pharmacist</td>
<td>&gt;4</td>
<td>Medication assessment and adherence, change of nonformulary to formulary drugs, and education</td>
<td>Full notes</td>
<td>Partly enact</td>
<td>Close contact</td>
<td>Primary care or clinic</td>
<td>Detailed review, mean 3.5 visits over a year</td>
</tr>
<tr>
<td>Furniss [37]</td>
<td>2000</td>
<td>UK</td>
<td>330</td>
<td>81.2</td>
<td>27</td>
<td>Research pharmacist</td>
<td>1</td>
<td>Medication review with patient</td>
<td>Drug chart in nursing home</td>
<td>Unable to enact</td>
<td>Unclear</td>
<td>Nursing home</td>
<td>Detailed review, with second brief visit at 8 months</td>
</tr>
</tbody>
</table>
Christensen et al., 2013

‘We identified 4647 references and included five trials (1186 participants). Follow-up ranged from 30 days to one year.

We found no evidence of effect on all-cause mortality (risk ratio (RR) 0.98; 95% CI 0.78-1.23) and hospital readmissions (RR 1.01; 95% CI 0.88-1.16), but a 36% relative reduction in emergency department contacts (RR 0.64; 95% CI 0.46-0.89).’
### Medication review compared with standard care for hospitalised adult patients

**Patient or population:** Hospitalised adult patients  
**Intervention:** Medication review  
**Comparison:** Standard care

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Illustrative comparative risks* (95% CI)</th>
<th>Relative effect (95% CI)</th>
<th>No. of Participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assumed risk</td>
<td>Corresponding risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard care</td>
<td>Assumed risk</td>
<td>Corresponding risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality (all-cause)</td>
<td>Low risk population</td>
<td>RR 0.98 (0.78 to 1.23)</td>
<td>1002</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>200 per 1000¹</td>
<td>196 per 1000 (156 to 246)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 per 1000¹</td>
<td>392 per 1000 (312 to 492)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High risk population</td>
<td>392 per 1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RR 1.01 (0.88 to 1.16)</td>
<td>956</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>Hospital readmission (all-cause)</td>
<td>Low risk population</td>
<td>300 per 1000 (264 to 348)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year</td>
<td>600 per 1000¹</td>
<td>606 per 1000 (528 to 696)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*No evidence of effect on all-cause mortality and hospital readmission.*
### Study inclusion and exclusion criteria defined patient population as a high risk population (e.g. elderly patients, patients with multiple co-medications).
Christensen et al., 2013

‘It is uncertain whether medication review reduces mortality or hospital readmissions, but medication review seems to reduce emergency department contacts.

However, the cost-effectiveness of this intervention is not known and due to the uncertainty of the estimates of mortality and readmissions and the short follow-up, important treatment effects may have been overlooked.

We recommend that future trials focus on high risk populations, ensure that the team performing the medication review includes members that are allowed to change patient medications, use well described methods when conducting the medication review, have long-term follow-up and randomize on a cluster level.’
Hatah et al., 2013

A systematic review and meta-analysis of pharmacist-led fee-for-services medication review

Ernieda Hatah,1,2 Rhiannon Braund,1 June Tordoff1 & Stephen B. Duffull1

1School of Pharmacy, University of Otago, Dunedin, New Zealand and 2Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

‘The majority of the studies (57.9%) showed improvement in medication adherence. Fee-for-service pharmacist-led medication reviews showed positive benefits on patient outcomes.

Interventions that include a clinical review had a significant impact on patient outcomes by attainment of target clinical biomarkers and reduced hospitalization.’
Significant results favouring pharmacists’ intervention were found for blood pressure (1) (OR 3.50, 95% CI 1.58-7.75, P=0.002) and low density lipoprotein (2) (OR 2.35, 95% CI 1.17-4.72, P=0.02).

Outcomes on hospitalization (3) (OR 0.69, 95% CI 0.39-1.21, P=0.19) and mortality (4) (OR 1.50, 95% CI 0.65-3.46, P=0.34) indicated no differences between the groups.
**Sensitivity analysis ‘hospitalization’**

‘Significant favouring the intervention group when Holland et al. was removed (OR 0.60, 95% CI 0.37-0.95, \( P = 0.03 \)).’
Hohl et al., 2015

The effect of early in-hospital medication review on health outcomes: a systematic review


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‘This systematic review failed to identify an effect of pharmacist-led medication review on health outcomes.

Our review was limited by the quantity and quality of the available evidence. Only few studies have been published on the effect of pharmacist-led medication review in the hospital setting.’
The results of the meta-analysis indicate a statistically insignificant 40% reduction in emergency department re-visits for patients receiving the intervention.
Grey literature
WHO High 5 Project ‘Medication reconciliation’

Australia: Rates for the percentage of eligible patients with medications reconciled within 24 hours of admission ranged from 16% to 96% across participating hospitals with an average of around 51%. The trend is stable. Hospitals with higher ratios of clinical pharmacists/beds tended to have higher rates.
Impact of ‘stand alone interventions’ vs ‘continuous pharmaceutical care process’

= Single medication review

= Medication review followed by continuous pharmaceutical care process [Cipolle, Strand, Morley, 1998]
Outlook: Study proposal Wouters H., et al.

Discontinuing Inappropriate Medication in Nursing Home Residents (DIM-NHR Study): protocol of a cluster randomised controlled trial

Hans Wouters,1 Elise H Quik,1 Froukje Boersma,2 Peder Nygård,3 Judith Bosman,3 Wendelien M Böttger,3 Hans Mulder,4 Jan-Gerard Maring,3 Linda Wijma-Vos,5 Tim Beerden,5 Jasperien van Doormaal,5 Maarten J Postma,6 Sytse U Zuidema,2 Katja Taxis1

Study objective
To examine the efficacy and cost-effectiveness of the Multidisciplinary Multistep Medication Review (3MR) that is aimed at optimising prescribing and discontinuing inappropriate medication.
Methods

A cluster randomised controlled trial will be conducted. Elderly care physicians and their wards (clusters) will be randomised. Data will be collected at baseline and 4 months after the 3MR has taken place. Six hundred nursing home residents will be recruited of whom more than half are expected to suffer from dementia. The 3MR will be based on consensus criteria and the relevant literature and will be performed by the patient’s elderly care physician in collaboration with a pharmacist.

Analysis

Primary outcomes: the difference in proportion of residents who successfully discontinued inappropriate medication between the intervention and control group at follow-up.

Secondary outcomes: under-treatment, exposure to anti-cholinergic and sedative medicines, neuropsychiatric symptoms, cognitive function, falls, hospital admission, quality of life and cost-effectiveness.
NICE Medicines and prescribing centre

Medicines optimisation

Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes

Clinical Guideline
Methods, evidence and recommendations
October 2014

Recommendations and research recommendations

Medication review can have many different interpretations and there are also different types which vary in their quality and effectiveness. In this guideline medication review is defined as 'a structured, critical examination of a person's medicines with the objective of reaching an agreement with the person about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste'.

27. Consider carrying out a medication review for some patient groups when a clear purpose for the review has been identified. These groups may include:
   • people taking multiple medicines (polypharmacy)
   • people with chronic or long-term conditions
   • older people.

28. Determine locally the most appropriate health professional to carry out a medication review, based on their knowledge and skills, including all of the following:
   • technical knowledge of processes for managing medicines
   • therapeutic knowledge on medicines use
   • effective communication skills.

The medication review may be led, for example, by a pharmacist (professional led) or by an appropriate health professional who is part of a multidisciplinary team.

29. During a medication review, take into account:
   • the person's (and/or the family members or carers, as appropriate) views and understanding about their medicines
   • the person's (and/or their family members' or carers') concerns, questions or problems with the medicines
   • all prescribed over-the-counter and complementary medicines that the person is taking or using, and what these are for
   • how safe the medicines are, how well they work, how appropriate they are, and whether their use is in line with national guidance
   • any monitoring tests that are needed.
Do you agree...?

▼ Pharmacists-led medication reviews (MR) do have an impact on detecting drug related problems (DRP) in community and clinical setting.

▼ Only **addressed issues and solved problems** may have an impact on clinical outcomes.

▼ To solve detected DRP in daily practice **tailored, standardized and validated interventions are needed**.

▼ **Complex interventions should be provided to patients at risk only** to ensure effectiveness and efficacy.
Many thanks for your attention