Evidence for clinical pharmacy services in inpatient care

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1. Comprehensive pharmacist interventions’ effects on hard clinical patient outcomes:

• Typical example: Do medication reviews in a hospital setting reduce hospital readmissions?

What evidence do we have that clinical pharmacy adds value?
Comprehensive medication review with clinical pharmacists as team members:

- Hospital admission
  - Medication reconciliation
  - Patient interview

- Hospital discharge
  - Medication review followed by discussion with physician
  - Drug monitoring
  - Patient education

- Follow-up phone call(s)

- Discharge counseling to patient
- Discharge information and medication referral to primary care physician

Electronic medication referral to GP – example:

<table>
<thead>
<tr>
<th>Remissdatum</th>
<th>2017-09-27</th>
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<tbody>
<tr>
<td>Kontakttill</td>
<td>Utford, Vårdhälso, 2017-09-24 - 2017-09-26, Medicinsavdelning 1 - Lasarettet i Enköping</td>
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<td>Friläggning</td>
<td>Lasarettets arluten hertajulkvård - Lasarettet i Enköping</td>
</tr>
<tr>
<td>Friläggning från</td>
<td>Gillespie, Ulrike, apotekare, gus0056, Läkemedelsdelenheten</td>
</tr>
<tr>
<td>Referralnummer</td>
<td>Lasarettets arluten hertajulkvård (LAH) LE - vårdbegäran</td>
</tr>
<tr>
<td>Länkare</td>
<td>2017-09-25</td>
</tr>
<tr>
<td>Frågeställning</td>
<td>Läkemedelsgenombildning genomförd under vårdets (269), kort diskussion med avdelningsläkarna om de frågeställningar som jag tar upp i den läkarens jurnalantafranvaxningen. De hänsynade till er och därmed skickar jag denna remiss. Med vänliga hälsningar, Ulrika Gillespie</td>
</tr>
<tr>
<td>Allmänna uppgifter*</td>
<td>Självfallet: Ja, patienten samähryster till att rekommendera och reseminnogivande. Genom så kallad sammanhållen jurnalantafranvaxning, får ta del av relevant vårddata hos respektive vårdgivare.</td>
</tr>
<tr>
<td>Brötgnissamnr:</td>
<td>Ej utfört</td>
</tr>
<tr>
<td>Ställningstagande begränsad behandling:</td>
<td>Ej aktuellt</td>
</tr>
</tbody>
</table>
Patienten har fått muntlig och skriftlig information samt lämnat skriftligt samtycke till deltagande i MedBridge-studien.

Fördjupad läkemedelsgenomgång
- Ordinationslista verifieras utifrån läkemedelsamta
- Solveig verifierar användning av samtliga läkemedel på listan, hon använder doser och har ej problem med att följa ordinationerna.
- Avläsare Innovane 5 mg varje kväll och Osacard i princip varje dag pga oro. Vet att hon bör försöka hålla användningen så låg som möjligt.
- Funderingar kring läkemedelsbehandlingen (endast kort diskuterat med av läkarna)
- Kronisk hyponatramie som man konstaterar förbättras då patienten står på kortisone, nästan gör det helvetet genom åren vid KOL exacerbationer. Enligt journalantecning kan det vara sekundärt.

Svarsdatum: 2017-10-05

Svarstyp: Slutvar.

Remissvar: Åtgärdsresultat: Tack för information. Vi fyller ut det på BälstaDottom enl önsknäm. Vänligen
Guilla Liöjedahl speg i allmänmedicin
BälstaDottom
Comprehensive medication review with clinical pharmacists as team members:

- Hospital admission
  - Medication reconciliation
  - Patient interview

- Hospital discharge
  - Follow-up phone call(s)

- Medication review followed by discussion with physician
- Drug monitoring
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Systematic reviews and meta analyses:

"Publications involving The Cochrane Collaboration tend to receive world-wide attention, the word Cochrane is thought by many to be synonymous with high scientific quality and their reports are cited frequently."

Inclusion criteria:
- Randomised controlled trials
- Comprehensive medication reviews in hospital setting
- Elderly patients
- Effects on mortality and hospitalisation reported
AUTHORS' CONCLUSIONS:

We found no evidence that medication review reduces mortality or hospital readmissions, although we did find evidence that medication review may reduce emergency department contacts.

High-quality trials with long-term follow-up are needed to provide more definitive evidence for the effect of medication review on clinically important outcomes such as mortality, readmissions and emergency department contacts…

Therefore, if used in clinical practice, medication reviews should be undertaken as part of a clinical trial with long-term follow-up.

However:

1. Were the authors aware of the definition of a medication review?

   - Two studies included only the use of screening instruments (STOPP and START) applied to the patients' drug lists.
   - One study included only medication review at discharge → only a few drug changes were made.

2. None of the included studies used mortality as an outcome measure.

3. Acceptance rates ranged from 18% to 94%
Editorial: No evidence or evidence of no effect

"…what can seem like evidence that something does not work can often be just a lack of evidence."

"…they could also have looked for other types of studies such as interrupted time series or controlled before and after studies. These are particularly useful when making changes to service delivery”

“…pharmacists cannot be complacent in assuming the services they run will go on forever. We have to demonstrate effectiveness and value.”

Phil Wiffen
Pharmacist, professor at the Pain Research Unit, Oxford, UK
Editor in Chief of the European Journal of Hospital Pharmacy (EJHP)

Other systematic reviews and meta analyses:

  7 RCTs included
  CONCLUSIONS: …This systematic review failed to identify an effect of pharmacist-led medication review on health outcomes.

- 20 RCTs included; 16 for older people in general and 4 for older people with heart failure
  CONCLUSIONS: …evidence suggests that interventions led by hospital pharmacists reduce unplanned admissions in (only) older patients with heart failure
Other systematic reviews and meta analyses:

Medication Reviews by Clinical Pharmacists at Hospitals Lead to Improved Patient Outcomes: A Systematic Review

Trine Graabak1 and Lene Jøl Kjeldsen2
1Department of Quality, Hospital South, West Jutland, Esbjerg, Denmark and 2The Research Unit for Hospital Pharmacy, Aarhus University, Copenhagen, Denmark

(Received 30 November 2012; Accepted 14 February 2013)
Basic & Clinical Pharmacology & Toxicology, 2013, 112, 359–373

31 studies included in the review: 21 descriptive studies and 10 controlled studies, of which 6 were randomized controlled trials.

In conclusion, the reviewed studies generally showed positive effects on medication use, health service use and costs. Large variability in design, methodologies and outcome measures of the studies!

Several outcomes were non-significant. These were often associated with low sample sizes or low acceptance rates of the pharmacists’ recommendations.

What evidence do we have that clinical pharmacy adds value?

Studies with specific interventions, targeting specific diagnoses or outcomes:

• Medication error rate
• Drug related problems
• Appropriateness of prescribing (according to MAI, STOPP/START, Beers...)
• Blood glucose control (and BP, lipids, INR...)
• Adherence to treatment
• Satisfaction (patients, physicians, nurses...)
• Cost savings/avoidance
• Etc, etc, etc, etc...

Many studies showing positive results!
When can we stop trying to prove that we should be involved in patient centered care?

So that we can focus on...

...how our services best benefit the patients

...developing, refining and evaluating our services

...finding and defining our roles and responsibilities in the multiprofessional team

Using small, serial, (student) projects to expand practice

• Is there a problem and how big is it? Measure!
• Introduce solution/intervention/service.
• Assess satisfaction and take on board suggestions
• Measure effect on problem after service is in place
• Ensure funding – implement service
• Repeat in new clinic!
Show benefit  expand your practice!

Clinical pharmacy in the Uppsala region

Phil Wiffen again… Research waste?

Questions relevant to clinicians and patients?
- Low priority questions addressed
- Important outcomes not assessed
- Clinicians and patients not involved in setting research agenda

Appropriate design and methods?
- Over 50% of studies designed without reference to systematic reviews of existing evidence
- Over 50% of studies failed to take adequate steps to reduce bias—e.g., unrandomized treatment allocation

Accessible full publication?
- Over 30% of studies never published in full
- Over 50% of studies never reported under- or over-reporting of study with disappointing results

Unbiased and usable report?
- Over 30% of critical interventions not sufficiently described
- Over 30% of planned study outcomes not reported
- Most new research not interpreted in the context of systematic assessment of other relevant evidence

Chalmers and Glasziou.
Lancet 374: pp86-88 2009
Research waste?

Interesting only for the researchers/pharmacists?

Preliminary fieldwork not carried out?

Isolated pharmacist researchers?

Surrogate endpoints with no proven correlation with patient outcomes.

Examples: number of DRPs before and after intervention, number of drugs.

Research waste?

Student projects, audits…

Medication review was performed on admission – how?
Protocol fidelity?

“A major limitation of many pharmacy practice research studies is that *most do not provide many details of the intervention*. This is important because it limits the reproducibility of the findings. **Tell us what you did!**

*In addition, the “dose” of the intervention is not well reported* in pharmacy practice research studies. Dose refers to adherence to the protocol including follow-up, education, and any other component of the intervention. **Tell us if you actually did it!**

“Not reporting the above is like if a pharmaceutical company would perform a clinical trial in which a *unknown* drug is administered at an *unknown* dose - in a randomized, controlled fashion”

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**Research waste?**

And my personal number 1 (not mentioned!): Important question addressed, good outcomes chosen…

But: intervention tested *before* it has become established practice within the team.
The 80+ study – Uppsala University Hospital (2005-2007)

Study population:
– Patients 80 years or older admitted to two internal medicine wards: 400 patients (201+199)

Study aim:
– To investigate the effectiveness of interventions performed by ward-based pharmacists

Intervention steps:

- Hospital admission
- Medication reconciliation
- Patient interview
- Follow-up phone call(s)
- Hospital discharge
- Medication review followed by advice to physician
- Drug monitoring
- Patient education
- Discharge counseling to patient
- Discharge information and referral to primary care physician
The 80+ study

Results (12-months follow-up):

- Reductions in hospital visits (16%), drug related readmissions (80%) and visits to ED (46%) for the intervention group.
- €200 lower cost per patient, when cost of intervention included

Drug-related re-admissions as outcome measure...

Pros:
- Our special field – we are the best at identifying and preventing them!
- Probably our best chance of showing effects on hard outcomes

Cons:
- They always include grades of subjectivity
- No standardised, quick (cheap) way to measure them
The 80+ study, what did we miss?

- Only 3 pharmacists involved (and extremely likeable… ; - )
- Randomization at patient level: contamination bias!
- Under-powered
- Only very old patients
- Intervention not well described...

New attempt 2017: the MedBridge study!

Medication Reviews Bridging Healthcare:
A multicentre, cluster-randomised,
three treatment crossover trial
The MedBridge study

**Eight wards in four hospitals within three regions:** Uppsala, Gävle, Enköping, Västerås

**Total number of patients:** >2300 patienter

**Prerequisite:** established multiprofessional teams including clinical pharmacists performing medication reviews

**Inclusion criteria:**
- ≥ 65 years, admitted to study ward

**Exclusion criteria:**
- Palliative patients
- Previous medication review within 30 days
- Less than 24 hour-admission
- Residing outside the three regions
The MedBridge study

Aim: To study the effects of hospital-initiated medication reviews, including active follow-up, on elderly patients healthcare consumption.

Design: Multicentre, three-treatment, cluster-randomised, crossover trial with study periods of 8 weeks.

Interventions:
1. Comprehensive medication review during hospital stay
2. Same as 1 with the addition of active follow-up into primary care.
3. Usual care – no pharmacist in the team.
The MedBridge study

**Primary outcome:** Incidence of unplanned hospital visits (re-admissions + emergency department visits) within 12 months.

**Secondary outcomes:**
- Unplanned hospital admissions
- Emergency department visits
- Drug-related re-admissions
- Unplanned primary care contacts after 30 days, 3, 6 and 12 months.
- Total costs of hospital based care, 12 months


October 2017: nearly 1000 included patients

Thank you for your attention!