Medication Reviews Bridging Healthcare (MedBridge)
A pragmatic cluster-randomised controlled trial in Swedish hospitals

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Clinical pharmacy

“Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.” – ACCP

• Collaboration with other healthcare professionals or as part of multiprofessional team

• In all healthcare settings
Medication reviews

“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” – NICE
Comprehensive medication review by ward-based pharmacist

**Admission**
- Patient interview
- Medication reconciliation

**Discharge**
- Medication review followed by discussion with physician
- Drug monitoring
- Patient education
- Discharge counseling to patient
- Discharge information and medication referral to primary care physician

- Follow-up phone call(s)
The 80+ study (2005-2007)

Study population:
• 400 patients, 80 years or older, admitted to two internal medicine wards at Uppsala University Hospital

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

Study design:
• Prospective RCT
The 80+ study results (2009)

• Reductions in hospital visits (16%), drug related admissions (80%) and visits to ED (46%)
• €200 lower cost per patient
How do we make best use of our clinical pharmacy resources?
**MedBridge**: A pragmatic cluster-randomised controlled trial

**Aim**: To study the effects of hospital-initiated comprehensive medication reviews incl. post-discharge follow-up on older patients' healthcare utilisation, compared to

- solely hospital-based reviews
- usual care (control)

→ Gain knowledge on how to make the best use of clinical pharmacy resources in a hospital setting
Methods: Setting

- 4 hospitals
- 2 wards per hospital:
  - geriatric, internal medicine, stroke, neurology and nephrology
  - clinical pharmacists “integrated” in ward team
Methods: Participants

Inclusion criteria
- ≥65 years admitted to study ward

Exclusion criteria
- medication review within 30 days
- residing in another than the hospital's county
- being in a palliative
- one-day admission
Methods: Interventions

Study group

Control: Usual care (n=892)

Intervention 1: CMR (n=922)

Intervention 2: CMR with post-discharge follow-up (n=823)

Interventions during hospitalisation

Usual care without a clinical pharmacist involvement

Comprehensive medication review:
- Medication reconciliation with patient upon admission
- CMR and monitoring during hospital stay
- Medication reconciliation upon discharge

Interventions after discharge

Usual care without a clinical pharmacist involvement

- Medication referral by clinical pharmacist to general practitioner, if needed

Usual care without a clinical pharmacist involvement

- Telephone call to patient or carer after 2-7 days
- Telephone call to patient or carer after 1-2 months
Outcome measures

- **Primary**: Incidence of unplanned hospital visits during a 12-month follow-up period

- **Secondary**: Medication-related admissions, mortality, time-to-event and costs of hospital-based care

- Data-analysis currently ongoing! Results available in mid-2020…

- **Process outcomes**
Process outcomes: Identified medication discrepancies

- 1.1 (range 0-12) discrepancies per patient (n=652)
- 50% at least one discrepancy
- 79% corrected
Process outcomes: Identified drug-related problems (DRPs)

- 2.0 (range 0-14) DRPs per patient (n=652)

Bar chart showing the percentage of patients with each type of DRP:
- Medication without indication: 18% (n=233)
- Improper medication selection: 17% (n=224)
- Non-compliance: 13% (n=168)
- Failure to receive medication: 10% (n=130)
- Drug-drug interaction: 9% (n=119)
- Overdose: 8% (n=112)
- Subtherapeutic dosage: 8% (n=101)
- Adverse drug reaction: 7% (n=93)
- Contraindication: 4% (n=57)
Process outcomes: Actions to solve DRPs

- 2.1 (range 0-14) recommendations per patient (n=652)

![Bar chart showing number of recommendations and implemented recommendations for different actions.]

- Stop medication: 213/293 (73%)
- Dose adjustment: 189/274 (69%)
- Medication monitoring: 180/257 (70%)
- Switch medication: 142/200 (71%)
- Start medication: 80/129 (62%)
- Information to patient: 116/116 (100%)
- Optimisation of administration: 43/54 (80%)
- Other: 43/57 (75%)

Colors in the chart indicate recommendations in blue and implemented recommendations in light blue.
Process outcomes: Qualitative analyses

Patient and healthcare professional perspective
- 15 semi-structured interviews with patients (and carers)
- 23 semi-structured interviews with physicians and pharmacists

Collaboration between physicians and pharmacists is appreciated and there is a need for medication reviews

“Yes, it becomes more thorough when a pharmacist does it and a pharmacist has maybe better knowledge about pharmacology, a broader knowledge than we, I think. We learned once [...] but then you only work with specific number of drugs and then you forget about the others.” Physician7
(2/4) Patients want to be informed, but recalling information is problematic

“Nowadays you get more information than you got before [...] It seems that they have started to wake up, so you can actually question certain things and ask about it as a patient, which I think is very important.” Patient6

“I think I've forgotten everything.” Patient4
(3/4) Pharmacist not fully integrated part of the ward team, unclear role of the pharmacist

“It didn’t really feel integrated in practice, but more like, you’ve seen their notes and then sometimes the pharmacist came by and made some suggestions […] In the beginning I didn’t really understand how to react on it. ” Physician15

“It wasn’t really clear in the beginning what to do at discharge, even other parts of the intervention were not always clear.” Pharmacist7
(3/4) Pharmacist not fully integrated part of the ward team, unclear role of the pharmacist

“If you want to continue [with medication reviews], I think you should develop it further so that it becomes a more integrated part in the daily work flow. I think you would use the resources much better than we do now.“ Physician15

“When she [the pharmacist] left me, I didn't really understand what the conversation was about.“ Patient10
(4/4) The interventions should be adapted to setting and to the individual patient

“It might be better to do it [a medication review] in primary care […] When you make many drug changes at once, then you might not know what’s causing a side effect.” Physician9

“The phone calls themselves were good for follow-up I think, but to phone every single patient feels completely unnecessary and very inefficient.” Pharmacist3
What have we learned from the MedBridge trial so far?

• High proportion of patients with medication changes (77%) as a result of multiprofessional medication reviews, but also almost a quarter without any change

• Clarification and further integration of the pharmacist's role in the ward team is needed to increase effectiveness

• Patient involvement during hospital stay is challenging: discharge process and post-discharge follow-up is essential
Thank you for listening

More information: www.akademiska.se/medbridge
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Collaborating institutions: