PRoF Award abstract – Call 2016

PrimaryCaPSule – Patient Safety in Primary Care: implementing Electronic Medication Monitoring Systems

1. Research Outline

Acronym	PrimaryCaPSule
Project name in English	A nurse-led patient-centered intervention: tailored pillboxes to improve patients' quality of life while enhancing medication adherence as an outcome of quality of care.
Pitch (1 sentence)	In order to improve quality of care (defined as medication adherence) of patients taking chronic medication, without compromising their quality of life, a pillbox that can easily be integrated in their daily life is distributed to them: this can either be a conventional or an electronic (with audio alarm, programmed opening and computerized registration) pillbox, depending on patients' lifestyle and preferences observed by or reported to nurse practitioners in primary care.
Executive summary (max. 10 lines)	
To improve quality of care in terms of adherence to medication therapy, it is necessary that it fits into patients' lives, presuming minimal interference with their lifestyle thus their quality of life. In particular, patients taking multiple drugs (during a long period of time), are at risk of medication nonadherence. This potentially causes complications, hospital admissions or death, consequently leading to increasing	

health care costs as well. Pillboxes minimally interfering with daily routines can help maintain patients' quality of life while adhering to their medication therapy. In this research patients' preferences and characteristics are examined to see which are predetermined in terms of patients' quality of life and medication adherence for designating either a conventional or an electronic (with alarm and programmed times of opening) pillbox.

2. Cause and context of the research

Research shows that patients often experience difficulties to adhere to medication therapy. According to the World Health Organisation, in developed countries only 50% of patients with a chronic diseases adhere to treatment recommendations (1). Nonadherence to medication causes illness, potentially resulting in hospital admissions and sometimes even death, which consequently leads to increased morbidity and mortality and also affects (increasing) cost of healthcare. Nonadherence can result in adverse drug events (ADE's): ADE's are well-examined and acknowledge in hospital settings (2). Although similar research in primary care settings is scarce (3), it is (maybe even more) crucial to examine and prevent these ADE's from happening as, in contrast to a hospital setting, primary care settings are typically relying on people without medical training (patient, family members, other informal caregivers). Nonadherence can be attributed to not understanding (complex) medication regimens, for instance because of the numerous drugs, varying doses or different ways or moments medication has to be administrated, but also by simply forgetting to take medication. Patients with multiple, chronic conditions or elderly patients often experience difficulties to adhere to their medication therapy. Medication management devices can help patients manage these complex medication tasks. One tool to support medication therapy is a conventional pillbox. Recently, more advanced ones are designed: when fitted with Medication Event Monitoring Systems (MEMS) - which allows a programmed opening and audio signal - patients are alerted to take their medication and their adherence is automatically registered. To improve medication adherence, it is necessary to minimalize interference of medication therapy (and its supporting tools) with patients' daily life. A crucial factor to achieve good results is the patient-centeredness of the tool that is introduced to support patients in the self-management of their disease. Chances on success are increased when patients' lives are not - or at least minimally - affected by the intervening treatment (4–6). Nurse practitioners working in primary care are well-positioned to oversee the allocation of pillboxes. Nurses are used to take into account patients' preferences and to tailor interventions in the best interest of their patients. This projects aims to objectify the underlying, intuitive judgement nurse practitioners' make of patient characteristics as a base for the allocation of (tailored) pillboxes.

References

1. Organization WH. Adherence to long-term therapies . Evidence for action. 2003.
2. Marquet K, Claes N, De Troy E, Kox G, Droogmans M, Schrooten W, et al. One Fourth of Unplanned Transfers to a Higher Level of Care Are Associated With a Highly Preventable Adverse Event: A Patient Record Review in Six Belgian Hospitals. Crit Care Med. 2015;43(5):1053–61.
3. Sears N, Baker GR, Barnsley J, Shortt S. The incidence of adverse events among home care patients. Int J Qual Health Care [Internet]. 2013;25(1):16–28. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23283731
4. Williams GC, Lynch M, Glasgow RE. Computer-assisted intervention improves patient-centered diabetes care by increasing autonomy support. Heal Psychol [Internet]. 2007;26(6):728–34. Available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=18020845
5. Tsapas A, Matthews DR. N of 1 trials in diabetes: Making individual therapeutic decisions. Diabetologia. 2008;51(6):921–5.
6. Kuntz JL, Safford MM, Singh J a., Phansalkar S, Slight SP, Her QL, et al. Patient-centered interventions to improve medication management and adherence: A qualitative review of research findings. Patient Educ Couns [Internet]. Elsevier Ireland Ltd; 2014;97(3):310–26. Available from: http://linkinghub.elsevier.com/retrieve/pii/S0738399114003711

3. Innovation results achieved

Nurse practitioners working in primary care are accustomed to the use of pillboxes as a medication management device. This project aims at remodeling an existing health care process. Minor adjustments to a commonly used intervention (pillboxes to support medication therapy) can have great impact and be very beneficial for both patients as well as for the health care system. Fine-tuning the allocation of pillboxes based on patient preferences and characteristics can result in a significant improvement in quality of care, defined as medication adherence, while safeguarding patients' quality of life.

Innovative aspects of this projects are the patient-centeredness of the intervention as well as the acknowledgment of nurses' expertise, resulting in them taking the lead in the allocation of the most optimal pillboxes. This research is a collaboration between academia (Hasselt University) and a local department of a nursing organization (Wit-Gele Kruis Limburg): the former ensuring scientific guidance, the latter providing insight into the feasibility of the intervention based on their experiences in daily nursing care. The design and implementation of this project is done in close collaboration between both organizations. Patients are indirectly involved in the design of the project, as they are asked to express their preferences and to evaluate (the feasibility of) the intervention assigned to them.

Finally, this projects aims at gaining insight into a process that was based on nurse practitioners' intuition. The intention is to objectify the allocation of pillboxes, taking into account the outcome measures of this study: medication adherence, patients' preferences, patients' quality of life and concerns raised by nurse practitioners about patients' characteristics and daily nursing care.

4. Link to the PRoF values

This project focuses on a tailored intervention to support patients in their medication therapy. Because chronic medication therapy can be a burden for patients, devices can give them the necessary support to adhere to their treatment. This project links strongly to **'flexibility'** as pillboxes can easily be integrated in patients' life: depending on patients' lifestyle and preferences one might prefer an electronic pillbox with an alarm that can be programmed in accordance with patients' daily and preferred routine. Moreover, it relates to patients' **security** as monitoring medication intake enhances patient safety by reducing complications and unplanned hospital admissions. Because patients are the focal point of this project, ensuring their **comfort** - referred to as 'quality of life' - is obviously the main goal. Moreover, patients and nurse practitioners will make a shared decision about the settings and will come to an agreement on the use of pillboxes. In their shared decision making, patients' preferences and concerns are taken into account, which assumes mutual **respect**. Although this project will be carried out in people of older age, findings should provide insight. These insights should allow translation to follow up interventions in a broader, '**intergenerational'** population.

5. Applicable IPR rules

X

6. Information on the partners

Hasselt University, faculty of Medicine and Life Sciences, research groups Patient Safety and Family Medicine

Professor Neree Claes

- (inter)national scientific publications
- teaching (BSc Medicine)
- promotor doctorats
- Research topics:
    - Patient Safety (Hospitals and Primary Care)
    - Cardiology
- Relevant research

- Vitalink: “Implementing an electronic medication overview in Belgium” – ISQua 2014; Storms, Hannelore; Marquet, Kristel; Nelissen, Katherine; Hulshagen, Leen; Lenie, Jan; Remmen, Roy & Claes, Neree (2014) Implementing an electronic medication overview in Belgium. BMC research notes, 7, p. 915.
- Storms, Hannelore; Claes, Neree; Hulshagen, Leen; Conings, Stefanie & Nelissen, Katherine (2014) Bevindingen van zorgverleners bij de implementatie van een papieren medicatieschema. Farmaceutisch Tijdschrift voor België, 94, p. 24-29.
- “Prevalence of drug-related problems in residential care facilities for the elderly: a systematic review” - WONCA 2016
- MARQUET, Kristel; CLAES, Neree; DE TROY, Elke; KOX, Gaby; DROOGMANS, Martijn; SCHROOTEN, Ward; Weekers, Frank; VLAYEN, Annemie; VANDERSTEEN, Marjan & VLEUGELS, Arthur (2015) One Fourth of Unplanned Transfers to a Higher Level of Care Are Associated With a Highly Preventable Adverse Event: A Patient Record Review in Six Belgian Hospitals. CRITICAL CARE MEDICINE, 43 (5), p. 1053-1061.

Doctoranda Hannelore Storms

- (inter)national scientific publications
- teaching (BSc Medicine)
- Research projects
  - Accesibility of primary care (focus on general practice)
  - Demands of care of vulnerable groups
- Relevant research
  - Vitalink: “Implementing an electronic medication overview in Belgium” – ISQua 2014; Storms, Hannelore; Marquet, Kristel; Nelissen, Katherine; Hulshagen, Leen; Lenie, Jan; Remmen, Roy & Claes, Neree (2014) Implementing an electronic medication overview in Belgium. BMC research notes, 7, p. 915.
  - Storms, Hannelore; Claes, Neree; Hulshagen, Leen; Conings, Stefanie & Nelissen, Katherine (2014) Bevindingen van zorgverleners bij de implementatie van een papieren medicatieschema. Farmaceutisch Tijdschrift voor België, 94, p. 24-29.
  - “Prevalence of drug-related problems in residential care facilities for the elderly: a systematic review” - WONCA 2016

Wit-Gele Kruis, Limburg

Marie-Jeanne Vandormael

Kwaliteitsmanager
Ombudsdienst

Wit-Gele Kruis Limburg
Welzijnscampus 25
3600 Genk

marie-jeanne.vandormael@limburg.wgk.be

Note:

If your project is selected as laureate for the Award Symposium, a powerpoint presentation that reflects the project as suggested will be required (in advance), including a future plan how the funding will be used.

If your project is selected as the winner of the Award, you will be invited to present the results achieved thanks to the award during the Award Symposium of the next year.

Addendum: Contact information

Professor Neree Claes

Universiteit Hasselt, faculteit geneeskunde en levenswetenschappen

Patiëntveiligheid in ziekenhuizen en huisartsgeneeskunde

Agoralaan Gebouw D, D55

3590 Diepenbeek