Appendix A: Program description of the interdisciplinary pharmacotherapy quality program

For performing the program a seven-step protocol was applied (Figure A1):

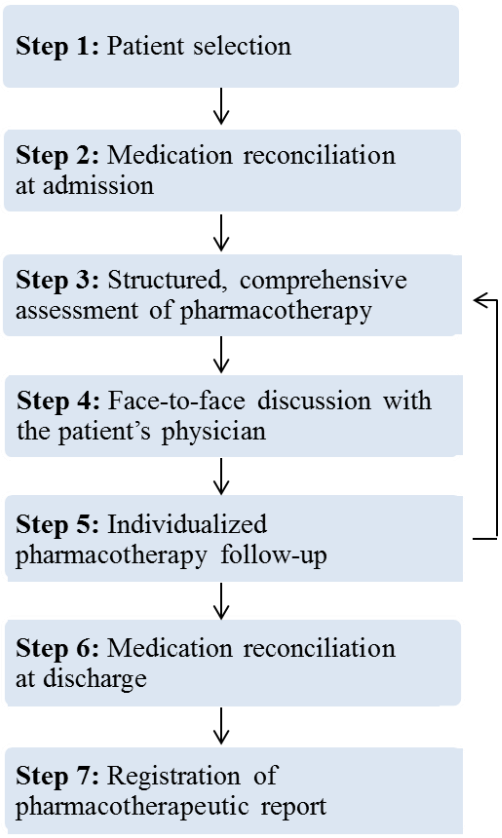

Figure A1. Flowchart describing seven-step protocol of the interdisciplinary pharmacotherapy quality program

Step 1: Patient selection. Eligible patients were identified prospectively on admission to the long-term care hospital. Then, the physician ordered a treatment considering the discharge medication list from an acute care hospital and the initial interview with the patient and/or primary caregiver.

Step 2: Medication reconciliation at admission. Within 24 hours of admission, pharmacist: 1) reconciled inpatient treatment by comparison of three medication lists (discharge medication list from acute care hospital, current admission order, and chronic ambulatory medication list); 2) conducted a semi-structured interview with the patient and/or primary caregiver to obtain and verify the patient's medication history (based on "brown-bag medication review" and/or patient home medication list), as well as any drug-related problem (DRP) experienced or perceived by the patient; 3) created a reconciled medication list -including drug name, dosage regimen and route-, after

checking medical records and, if needed, clarified and resolved discrepancies (e.g. inadvertent drug omission, dosage or frequency discrepancies) with the physician.[1]

Step 3: Structured, comprehensive assessment of pharmacotherapy. Regarding to diagnostic and clinical information, the pharmacist developed a structured medication review to ensure the appropriateness of prescribing in polymedicated elderly patient. The following interventions were systematically carried out, if required, to identify medication errors and DRPs, and make associated pharmacotherapy recommendations according to IASER method®:[2, 3]

3.1 Monitoring of biochemical, haematological and clinical parameters.

3.2 Therapeutic drug monitoring of drugs with a narrow therapeutic index.

3.3 Ensuring the "ten rights" of each prescribed medication: right patient, right medication, right indication, right dosage regimen, right dosage form, right route of administration, right length of therapy, right patient information, right response and right assessment. Recommendation for dose-adjustment (if dosage is too high or too low), addition (if additional drug is needed) and/or suspension (if drug is unnecessary) of medication.

3.4 Identifying and avoiding therapeutic duplications.

3.5 Withdrawal of low therapeutic utility drugs as acetyl cysteine, glucosamine or pentoxifylline.[4]

3.6 Adding a potentially highly beneficial medication to patient suggested by START criteria, focused on identifying potentially prescribing omissions, and discontinuing potentially inappropriate medications detected by STOPP criteria.[5]

3.7 Detecting significant drug interactions as contraindications, major and moderate drug interactions based on the Micromedex® Solutions database.[6]

3.8 Registering medication errors, DRPs and associated pharmacotherapy recommendations in an individualized pharmacotherapeutic monitoring form.

Step 4: Face-to-face discussion with the patient´s physician. The identified medication errors, DRPs and associated pharmacotherapy recommendations were discussed with the physician in charge, and with the nurse, patient and/or primary caregivers, if needed. Then, pharmacotherapy recommendations were proposed and implemented after an agreement between the pharmacist and the physician. The physician held the final decision whether medication changes should be performed or not.

The result of this interview was a pharmacotherapeutic optimization plan (initiation, maintenance, dose adjustment or suspension of drugs) in order to generate a reconciled, individualized and appropriate medication list to the patient's clinical condition.

Step 5: Individualized pharmacotherapy follow-up. During hospital stay, the pharmacist verified the medical prescriptions, followed-up the implemented pharmacotherapy recommendations and, if needed, conducted new interventions specified in *step 3* to ensure the appropriateness of prescription to the patient´s clinical evolution. When necessary, the pharmacist was also available to answer prescribe or administration queries about specific medications or interventions.

Step 6: Medication reconciliation at discharge. The pharmacist: 1) reconciled inpatient treatment by comparison of three medication lists (chronic ambulatory medication list, current prescribed medication and discharge medication list from the long-term care hospital); 2) created a discharge reconciled medication list, after checking medical records and, if needed, clarified and resolved discrepancies with the physician; 3) conducted an semi-structured educational interview with the patient and/or primary caregiver to provide and explain the discharge reconciled medication list with patient-friendly language -including drug name, active ingredient, dosage regimen, medication schedule, route of administration, duration of treatment and important observations- and health measures. Then, the pharmacist answered questions from patient and/or primary caregiver and certified they understood all provided information.

Step 7: Registration of pharmacotherapeutic report. Upon completing the above steps, the pharmacotherapeutic report was documented with concerns and/or interventions in a note template created to facilitate this documentation process in the clinical history.

References

1 Roure C, Aznar T, Delgado O, et al. [Consensus document on terminology and classification in medication reconciliation]. Barcelona: Ediciones Mayo 2009. ISBN 978-84-9905-044-7

2 Climente Martí M, Jiménez Torres N. [Manual for pharmaceutical care]. Valencia: AFAHPE. Dr. Peset University Hospital 2005. ISBN 6893347-3

3 Cipolle RJ, Strand LM, Morley PC. Pharmaceutical Care Practice: The clinician´s guide. New York: The McGraw-Hill Companies, Inc. 2004. ISBN 0-07-012046-3

4 [Therapeutic subgroups considered as low therapeutic utility drugs]. Valencian pharmacotherapeutical bulletin. http://publicaciones.san.gva.es/cas/prof/dgf/farmacia/pdf/1mayo.pdf (accessed 20 Nov 2017).

5 Gallagher P, Ryan C, Byrne S, et al. STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment). Consensus validation. *Int J Clin Pharmacol Ther* 2008;46:72-83.

6 Micromedex® Healthcare Series: interactions. www.micromedexsolutions.com (accessed 20 Nov 2017).