# **Supplementary table 1 - Checklist for medication review**

The overall medication treatment:

• Is the medication treatment in accordance with the patient's clinical status?

• Is the treatment of the patient's diagnosis following treatment guidelines?

• Are there diagnoses/conditions/diseases that are not being treated?

• Is the drug treatment unnecessarily complicated for the patient? Is the treatment feasible for the patient?

The specific medications:

• Is there an indication for treatment with the medication?

• Is the medication effective for the disease/disorder for which it is prescribed?

• Is the prescribed medication appropriate for the disease/disorder for which it is prescribed?

• Is the medication effective for the disease/disorder for which it is prescribed?

• Is the dose too low, correct, or too high?

• Is the dosage regimen appropriate?

• Is the patient compliant with the medication?

• Is there information that indicates that the patient is using the medicine on the wrong way?

• Are there unnecessary double medications?

• Is there information to suggest that the patient is experiencing side effects? Which medication can cause side effects?

• Does the medication treatment present a risk for medication interactions?

• Is the medication contraindicated? Are there special precautions that are important to be aware of?

• Is the medication the cheapest alternative compared to others with the same effect?

**Supplementary table 2 - DRP Causes according to PCNE classification**

[N.B. One problem can have more causes]

**Main category**

1. **Medication selection**

The cause of the (potential) DRP is related to the selection of the med. (by patient or health professional)

**Prescribing & selection**

1. **Medication form**

The cause of the DRP is related to the selection of the med. form

1. **Dose selection**

The cause of the DRP is related to the selection of the dose or dosage

1. **Treatment duration** The cause of the DRP is related to the duration of treatment
2. **Dispensing**

The cause of the DRP is related to the logistics of the prescribing and dispensing process

**Disp**

1. **Med. use process** The cause of the DRP is related to the way the patient

gets the drug administered ***by a health professional or other carer***, despite proper dosage instructions (on label/list)

1. **Patient related**

**Use**

The cause of the DRP is related to the patient and his behaviour (intentional or non- intentional)

**Code**

**C1.1 C1.2 C1.3**

**C1.4 C1.5 C1.6 C2.1**

**C3.1 C3.2 C3.3 C3.4 C3.5 C4.1 C4.2**

**C5.1 C5.2**

**C5.3 C5.4 C6.1**

**C6.2 C6.3 C6.4 C6.5 C6.6**

**C7.1**

**C7.2 C7.3 C7.4 C7.5 C7.6 C7.7 C7.8**

**Sub-category**

Inappropriate med. according to guidelines/formulary No indication for med.

Inappropriate combination of med., or med. and herbal remedies, or med. and dietary supplements

Inappropriate duplication of therapeutic group or active ingredient

No or incomplete med. treatment in spite of existing indication

Too many different med./active ingredients prescribed for indication

Inappropriate med. form/formulation (for this patient)

Med. dose too low

Med. dose of a single active ingredient too high Dosage regimen not frequent enough

Dosage regimen too frequent

Dose timing instructions wrong, unclear or missing Duration of treatment too short

Duration of treatment too long

Prescribed med. not available

Necessary information not provided or incorrect advice provided

Wrong med., strength or dosage advised (OTC) Wrong med. or strength dispensed

Inappropriate timing of administration or dosing intervals by a health professional

Med. under-administered by a health professional Med. over-administered by a health professional Med. not administered at all by a health professional Wrong med. administered by a health professional Med. administered via wrong route by a health professional

Patient intentionally uses/takes less med. than prescribed or does not take the med. at all for whatever reason

Patient uses/takes more med. than prescribed Patient abuses med. (unregulated overuse) Patient decides to use unnecessary med

Patient takes food that interacts

Patient stores med. inappropriately Inappropriate timing or dosing intervals

Patient unintentionally administers/uses the med. in a wrong way

**C7.9** Patient physically unable to use med./form as directed

**C7.10** Patient unable to understand instructions properly

**8. Patient transfer related**

The cause of the DRP can be related to the transfer of patients between primary, secondary and tertiary care, or transfer within one care institution.

**C8.1**

Medication reconciliation problem

**9. Other**

**C9.1** No or inappropriate outcome monitoring

**C9.2** Other cause; specify

**C9.3** No obvious cause

**Seamless**

**Distribution of DRP causes by subcategories in the study**