Steps of the CR processes according to Charlin et al. (2012)		**Emerging differences of the CR processes during longitudinal management of patients suffering of multimorbidity**
 *Detect the early cues*	Analysis of the different aspects of the patient and the context from the very beginning to perform an initial representation of the problem (e.g., in the waiting room).	Management of multiples issues: • GPs prioritise patient's problems beforehand, because he knows his or her patient's medical history. (Prioritising) • GPs try to make links between the new symptoms or problem observed and the chronic diseases. (Articulation) • GPs evaluate from the beginning the opportunity to discuss certain issues with his or her patient. (Anticipation) • Depending the opportunity and first cues, some problems are already set aside by GPs. (Anticipation) Patients' involvement: • GPs integrate these clues according to the characteristics of his or her patient. ➢ **Key message** : *Because of the GP's knowledge of his or her patient, this step becomes more important.*
 *Determine the objectives of the encounter*	Clarification of patient, other healthcare professionals and physician requests to establish priorities depending on urgency, relevance and effectiveness.	Management of multiples issues: • Patients and GPs discuss and share the priorities including other healthcare professional requests. (Prioritising) • Problems are not analysed separately and GPs make links between new problem and chronic illnesses. (Articulation) • Some problems are definitively set aside and rescheduled according to priorities. (Anticipation) • Some chronic problems have to be regularly discussed (e.g. treatment burden). (Anticipation) Patients' involvement: • Including patients' choices and request is essential ➢ **Key message**: *This step is a key to the management reasoning regarding the various problems of multimorbid patient.*
 *Categorise for the purpose of action*	Detailed analysis of the selected problem using clinical reasoning processes: intuitive and analytical processes. * It focuses on knowledge for action (illness scripts). **	Analysis of selected problem using CR path: • Both the analytical and intuitive approaches seem to be involved in the management reasoning. • Selected problem is set from a new perspective to identify a new disease, but GPs also make link between the problem and chronic illnesses. (Articulation) • Priorities between patients' problems have to be re-establish according to the degree of urgency and feasibility of solving the selected problem analysed. (Prioritising) ➢ **Key message**: *In contrast to understanding and identifying a new problem (e.g. diagnosis), this step is mainly used to analyse aspects of chronic problems.*
 *Select the purpose of action*	After selecting the hypothesis to be explored, a plan of action is decided upon.	Management of multiples issues: • Different actions are possible to investigate or act on the selected problem. (Prioritising) • GPs try to coordinate the actions of the different problems to be more effective. (Articulation) • Wherever possible, urgent actions should be used to carry out future actions (e.g. annual blood tests). (Anticipation) Patients' involvement: • Multiple ways to solve problems required to obtain patients' opinion to decide on the appropriate action. ➢ **Key message:** *The selection of an action plan and its ongoing implementation might represent a large part of the management reasoning.*

 *Implement alternative strategies*	If categorisation is not suitable for purposeful of action, alternative strategies can be implemented (e.g. review medical literature, ask advice to specialists etc.).	Management of multiples issues: • A shared management of the care between health professionals and caregivers is often necessary and promoted by GPs • GPs sometimes have to use their internal resource by analysing those problems from different perspectives (psychosocial, anatomical, etiological). • "Non-drug treatment" or "wait and see" actions are often used regarding the chronicity and to avoid treatment burden Patients' involvement: • Analyse require to involve patient's standpoints ➢ **Key message**: *Faced with the multiplicity of problems and actions needed, the implementation of an alternative strategy which integrates the patient as well as healthcare professionals, specialists and caregivers seems to be essential.*
 *Evaluate the result*	If the results of the treatment or interventions are satisfactory, the care of the clinical situation comes to an end.	• Our results do not particularly highlight this part of the model however when it comes to patients suffering from multimorbidity the key message is: ➢ **Key message**: *As this process is never ending, it mirrors the longitudinal process and complexity of multimorbidity follow-up.*
 *Metacognition*	Metacognition regulates the influence of physicians' personal factors on clinical reasoning.	• According to dynamic representation which never end, GPs "rethink" the clinical reasoning and "reset priorities" to correct or complete it. (Prioritising) • Sometimes GPs "repeat the reasoning form the beginning" to identify and reduce some influent factors which could impact the reasoning. ➢ **Key message**: *Faced with the large amount of information to be processed to manage multimorbid patients, it may be essential to regularly take a step back and develop their metacognition processes.*
 *Dynamic representation of the problem*	The dynamic representation of the problem is a process which continuously evolves throughout the clinical reasoning.	• GPs have a representation not just of a clinical problem but of the patient as a whole (e.g. illnesses, context of life). • As chronic illnesses never end, this representation constantly evolves and is enriched by new information. • Therefore, the aim of the GPs might be to stabilise the representation at one point in time. • GPs make a representation of their patient in the future to better anticipate problems. (Anticipation) ➢ **Key message:** *Longitudinal care makes this dynamic process continuously evolving and constantly adjusting.*

Figure S2. Comparison between the diagnostic reasoning and the management reasoning processes according to the model (graphical representation) of Charlin. (6)
CR = clinical reasoning, GP = general practitioner.
* Intuitive process is the clinical reasoning path which is involved an immediate recognition of the problem. Analytical process is the clinical reasoning path where hypotheses have to be confirmed or invalidated afterwards.
** Clinical scripts are a specifically organized knowledge of clinical tasks.