Routine data analysis tools: The earlier, the better both for patients and health-care systems.

What is your role in the project?

The earlier, the better both for patients and for healthcare systems.

Our main aim is to contribute to improving the early identification of chronic patients with palliative care needs. It is essential to consider diseases and symptomatology but also prognosis accuracy when defining early palliative care intervention. In this way, the final output will be an automatic tool aimed at the identification of individuals who may benefit from an early palliative care approach. The tool could be used both for classifying patients in different levels of complexity and also as a clinical support tool.

How do you plan to do that?

The first step on the tool development is **to summarize the current trends** on the identification of older patients with chronic conditions who are at risk of death or facing advanced stages of an illness. For that purpose, we gather information from relevant studies and literature related to that topic. The information collected is organized in different levels of detail. The most specific level belongs to outcomes or variables of interest on the stratification tool development.

Based on the results of the previous task, **the researchers will agree on the relevant variables to be introduced on the predictive models.** The consensus about the variables will be reached considering the current evidence, the opinion of a panel of experts and the information available in the database of each partner. The collaboration of the partners in this part is crucial. The more data we have, the better will be the robustness of the models.

At this point, we are able to **prepare the final dataset**. This stage is called data processing and includes the aggregation, transformation, normalization and creation of variables. Once the data is in the right shape, it is time to create mathematics models that will learn from the examples present in the data.

What are the challenges you could be facing?

Currently, palliative care is usually provided at the very last stage of life to patients with a life-threatening condition. The practice is explained by limited healthcare resources and a reactive, instead of proactive, approach to healthcare. These are the challenges that our work is focusing on.

Clinical practice might benefit from the support of an automatic tool that could identify systematically patients at an earlier stage. For example, case finding initiatives promote proactive care and could integrate the use of the tool. Those initiatives are suitable for InAdvance target population who is especially vulnerable to a wide range of 'triple fail' outcomes (costly, unpleasant, low-quality events).

Also, as a health planning tool it could enable a detailed picture of a concrete population.

How does your work contribute to the overall objectives of the project?

Our contribution to the project is the analysis of the vast amounts of data from the medical electronic records with the aim of improving health care pathways. In other words, we will use the application of artificial intelligence and machine learning to improve health care provision.

While we recognise concerns or little trust regarding the use of this kind of analysis in health care, we are motivated to go beyond these silos through research. In real-life conditions, the tools we are developing are not replacing the human decision-making, but rather support the clinician. It is basic to separate prediction/stratification output from recommendation and action; therefore, these tools should be construed as clinical decision support aids rather than a mandatory or autonomous rule. Indeed, the most common benefits of a strong/robust model are quick interpretation of information, practice standardization, better accuracy or case finding in a large pool of patients. In this sense, under the context of InAdvance, the tool developed could be applied at the intervention modelling (WP3) and along the clinical trial development (WP5).

How do you think the project will improve the quality of life of older people with complex chronic conditions?

Earlier recognition of decline leads to earlier anticipation of likely needs, better planning, fewer crisis, hospital admissions and, more importantly, care tailored to peoples' wishes (Gold Standards Framework - GSF).

The above lines from de GSF reflect the overall aim of the project. The challenge is big and probably unreachable in a short period of time, but the path is made by walking. Improving care for older people with complex chronic conditions who are on advance stages of the illness starts with enhancing knowledge on case identification.