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**advantAGE**  
MANAGING FRAILITY

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## Objective

To determine the epidemiology of frailty (prevalence, incidence, transitions and trajectories) in Europe and to examine the evidence for its screening, monitoring and surveillance at population-level. The main conclusions of the reviews developed by the WP are described below.

### *Frailty is prevalent in the ADVANTAGE JA Member States (MS).*

The prevalence of frailty reported in multiple studies on community samples ranges from 2% to 60%, contingent on factors such as the age of the population studied, and the frailty assessment instrument or classification used to define frailty. Most community-based studies reviewed, report prevalence rates below 30%, with a median of 10.8%. The ADVANTAGE meta-analysis examining studies in EU JA member states, showed an overall estimated prevalence of 18% (O’Caoimh et al., 2018a), 12% among community-based studies. This is consistent with the global weighted prevalence of 11% reported among community-dwellers over 65 years old (Collard et al., 2012).

Few studies were found from other (non-community) settings. They indicate that frailty is more frequent ( $\geq 30\%$ ) in primary care and outpatient settings, reaching more than 50% of inpatients in hospital wards and over 60% of residents in long-term care facilities. The pooled estimate resulting from the ADVANTAGE meta-analysis is four times higher in non-community settings (45%) than in community dwellers (O’Caoimh et al, 2018a).

Not all ADVANTAGE JA MSs were equally represented in the studies reviewed. Most of them were conducted in just five countries (France, Germany, Italy, the Netherlands and Spain), while another five (Bulgaria, Croatia, Cyprus, Lithuania and Malta), did not have any published information available at the time.

### *The incidence of frailty is expected to increase in the ADVANTAGE JA MS parallel with an ageing population.*

As frailty is strongly associated with age, we can expect an increase in the absolute number of new cases (incidence) of frailty as the European population gets older. Despite the dynamic nature of frailty, there is a remarkable paucity of longitudinal data about how frailty develops and progresses over time.

The results of the few incidence studies retrieved as part of the ADVANTAGE systematic review of literature (Galluzzo et al., 2018) show considerable heterogeneity because of differences in age, sample size and length of follow-up. Among the European studies (3 out of 6) available, the proportion of new cases of frailty ranged from 3.9% of older adults aged over 65 years in Germany to 7.5% of those aged over 60 in Spain. Published data show a substantial lack of analysis of the basic socio-economic characteristics potentially influencing the development of new cases of

frailty. The adoption of incidence proportions, rather than person-time rates, is a further obstacle to the comparability of results because highly influenced by the duration of follow-up.

A study in Italy investigating factors associated with frailty transitions and mortality found the following risk factors for becoming frail: older age, female gender, obesity, cardiovascular disease, diabetes, osteoarthritis, low vitamin D, hyperuricemia, smoking, loss of vision, reduced independence in activities of daily living, cognitive impairment; and poor physical performance (Trevisan et al., 2017). Diabetes was also associated with an increased risk of frailty in a study carried out in Spain (Garcia-Esquinas et al., 2015).

*Frailty is not static, it is a dynamic and complex condition changing over time: while frailty often progresses, a frail person may improve his/her situation (become less frail).*

Frailty is a dynamic and potentially reversible condition that can in some circumstances regress to a robust (non-frail) state, especially in its early stages (pre-frailty), although little is known about how frequently this can happen, particularly without intervention.

Few studies examining frailty trajectories or transitions over time are available from EU ADVANTAGE JA MSs (O’Caoimh et al., 2018b). Findings on frailty transitions appear roughly similar in two European cohorts, both reporting frailty transitions in terms of the proportion of participants with at least one change in discrete frailty states over time (non-frail, pre-frail, frail and back). The reported proportion is 32.6% in the Italian study Pro.V.A vs. 34.3% in the Dutch PERSSILAA, however the follow-up duration varies markedly ranging from 4.4 to 2 years, respectively, thus limiting comparability of findings.

In a sub-study conducted in the Netherlands as part of the FP7-funded PERSSILAA project, among a sample of 169 participants, 25% of frail participants transitioned back to pre-frail, while 25% of pre-frail participants transitioned to robust after two years follow-up. Other studies in the USA have reported similar transitions from frailty to pre-frailty (23%) but smaller ones from pre-frailty to robust (non-frail) states (11.9%) (Gill, 2006).

Being overweight, having a low-moderate alcohol consumption, a higher educational level and living alone appear to be associated with improvements in frailty status, while some chronic conditions like diabetes or chronic obstructive pulmonary disease (COPD) are associated to a poor evolution (Trevisan et al., 2017; Pollack et al., 2017), although this has to be confirmed with other studies.

Physical activity and physical exercise have a role in reversing frailty: moderate physical activity reduced frailty progression in some age groups (particularly those aged over 65 years) and vigorous activity significantly reduced the trajectory towards frailty. However, mild physical activity was insufficient to slow progression (Rogers et al., 2017).

*Programs to screen for frailty at population level are urgently required in Europe.*

Screening for frailty in older populations could provide the opportunity to intervene at earlier stages when treatments are more likely to reverse or at least delay the progression of the condition. Nevertheless, to date there is little empirical evidence on the feasibility, acceptability

and effectiveness of population screening programmes in EU countries (Rodríguez-Laso et al., 2018).

General practitioners have been identified as the preferred healthcare professional to identify physical health problems and risks (Lette et al., 2015) and therefore seem very appropriate to screen and monitor for frailty at population level.

There are both ongoing and completed EU funded projects and initiatives showing the feasibility and acceptance of screening approaches for frailty in primary care or the community in ADVANTAGE JA MSs. They are based on a two-step approach, consisting of the use of a short screening instrument to identify possible frail individuals followed by a more comprehensive evaluation to confirm the diagnosis. Different approaches to the first step have been tried, including the use of questionnaires, an Electronic Frailty Index (eFI) to be used with patient's primary care records, or scales administered by healthcare professionals or even the individual him/herself. The second step is always a more structured assessment using validated diagnostic tools.

In Spain, the Ministry of Health, in agreement with all regional ministries and professional associations, developed in 2014 a common protocol to screen for frailty in primary care. Furthermore, the region of Andalusia has implemented a programme to screen and manage/monitor frailty at population-level, on-going since 2008. In the United Kingdom, the routine use of an eFI in primary care has been promoted since 2017. None of these strategies have been evaluated yet.

Challenges in the uptake of screening programs remain, with concerns raised about inconsistencies in the definition of frailty; difficulty in eliciting psychosocial issues through questionnaires compared to home visits; overlapping of preventive initiatives between services; the weak evidence-base of many initiatives; ill-defined target groups and limited consideration of how to follow-up the detected problems.

There is a need to pilot such programs throughout Europe, particularly those in primary care using a two-step strategy, and to evaluate existing programmes in countries like Spain and the United Kingdom, to build the evidence base for future routine screening.

*There is a need for monitoring and surveillance of frailty in Europe.*

As frailty is highly prevalent in Europe and is very much associated with disability, monitoring its evolution seems a reasonable way to proceed.

Longitudinal studies across Europe (Survey of Health, Ageing and Retirement in Europe-SHARE) and in specific countries (Germany, Italy, Spain) and the recent inclusion of an assessment of frailty into the English National Health Service primary care contracts show that identifying and monitoring frailty is feasible and useful to provide information on its prevalence, incidence and outcomes. This may help healthcare providers calibrate the extent to which appropriate interventions are provided and to assess their impact over time.

Despite this, no country in Europe has adopted a systematic process for the surveillance or monitoring of this condition (Rodríguez-Laso et al., 2018). Cross-national experiences like the

SHARE project can serve as basis to establish these programmes. Furthermore, monitoring would be much easier if the next review of the International Classification of Diseases includes a specific code for frailty.

## Recommendations to be considered by the European Commission

1. Introduce awareness campaigns and policy dialogues, addressed to key policy- and decision-makers, to highlight the importance of knowing the epidemiology of frailty in an ageing Europe, in order to tackle the problem in a timely, cost-effective and targeted way.
2. Advocate for the inclusion of questions for the detection of frailty in older people in the European Health Survey and ongoing and planned longitudinal studies; more such research is required to develop a better understanding of the epidemiology of frailty in Europe.
3. Ensure the publication of research calls focusing on ageing that cover:
  - the frequency of frailty (prevalence, incidence) in different populations and settings; to identify groups at higher risk to guide resource planning and prioritize intervention strategies
  - the longitudinal investigation of the major health and socioeconomic factors potentially involved in the development of frailty and its progression over time (transition, trajectories); to identify evidence-based interventions to prevent and manage frailty
  - the development and evaluation of public health interventions aimed at screening, monitoring and surveillance of frailty in older adults

## Recommendations to be adopted by national/regional authorities.

1. Inclusion of frailty assessment within national/regional representative health and social care guidelines or policies. These should focus on:
  - case-finding including the opportunistic identification of suitable older adults
  - providing information on frailty prevalence, incidence and transitions in frailty status over time based on appropriate samples of individuals selected from different settings (including community dwelling and hospitalized/institutionalized individuals) with detailed analysis of different risk groups (i.e. by age, sex, socioeconomic status, etc.) and frailty level of severity
  - developing biobanks to identify frailty biomarkers
2. Development and evaluation of systematic and opportunistic screening initiatives for early detection of frailty carried out in primary care and based on a two-step approach, consisting of the use of a short and validated screening instrument to identify possible frail individuals followed by a more comprehensive evaluation to confirm the diagnosis (CGA).
3. Development of frailty observatories or registries.

4. Advocate for the inclusion of a specific code for frailty in the International Classification of Diseases.
5. Facilitate the creation of multidisciplinary and extended research networks devoted to the study of frailty determinants, pathways and management, taking advantage of pre-existing and well-established consortia, partnerships and other valuable experiences on aging research.

## Recommendations to be adopted by health and social professionals

These should:

1. Promote and embrace initiatives to code for the screening, diagnosis and management of frailty in everyday health and social care activities.
2. Evaluate outcomes of interventions and public health measures, in all settings, in terms of older people's quality of life and risk reduction (impact evaluation) utilising predefined indicators such as hospitalization, institutionalization, mortality, utilization of preventive and curative pathways (PAI), health-care costs, service self-satisfaction, etc.
3. Advocate for the inclusion of a specific code for frailty in the International Classification of Diseases.

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