

1 **Research letter**

2 **Sarcopenia in acute care patients: Protocol for the European Collaboration of Geriatric**

3 **Surveys: Sarcopenia EAMA9+ project**

4 *To the Editor:*

5 Sarcopenia is a disease characterized by a progressive loss of skeletal muscle mass and
6 strength, and related to physical impairment, disability, worse clinical outcomes and mortality
7 in all healthcare settings (1). Importantly it is also reversible, with tailored exercise and
8 nutritional support (1)(2). Sarcopenia prevalence varies widely depending on the criteria,
9 measurement methods, and cut-off points used for its assessment (1)(2); to date few studies
10 addressed the issue of sarcopenia in hospitalized older patients, rendering it an under-
11 recognized clinical entity (3)(4)(5). In 2015 the European Geriatric Medicine Society
12 (EuGMS) founded the Special Interest Group on Sarcopenia, which aims to bridge the gaps
13 between clinical practice and research (“Action-Research Philosophy”) by promoting
14 collaborations between international scientific societies and institutions, and launching, in
15 2018, the revised European consensus on the definition and diagnosis on sarcopenia
16 (EWGSOP2) (1).

17 We **aim** to prospectively evaluate the prevalence and incidence of sarcopenia (as defined by
18 the EWGSOP2 criteria) in hospitalized patients across Europe (Belgium, Denmark, Germany,
19 Italy, the Czech Republic, Poland, Portugal, Spain, and the United Kingdom), to assess risk
20 factors associated with its presence or incidence, and to assess sarcopenia-related adverse
21 clinical outcomes.

22 **Study participants** are patients aged ≥ 70 years admitted to acute medical units. Exclusion
23 criteria are anticipated length of hospital stay < 24 hours, and inability to perform the hand-
24 grip test. Each study partner will collect data for first 100 consecutive patients meeting the

25 entry criteria. By including 900 participants we will be able to detect 10% incidence of
26 sarcopenia with an error of approximately 2% (the exact 95% confidence interval ranging
27 from 8.04 to 11.96%).

28 **Primary outcomes** include: 1) Prevalence of sarcopenia on admission (± 48 h) and 2)
29 Incidence of sarcopenia between admission (± 48 h) and discharge (± 24 h). **Secondary**
30 **outcomes** are: 1) Risk factors for the development of sarcopenia 2) In-hospital sarcopenia
31 associated adverse outcomes (incidence of hospital-acquired infections, falls, delirium,
32 length-of-stay, and mortality), and 3) Post-discharge adverse outcomes (institutionalization,
33 hospital readmissions, falls, disability, and mortality) at 3- and 12-month follow-up.

34 The new EWGSOP2 sarcopenia diagnostic criteria will be followed (1)(6)(7). These include,
35 assessment of muscle strength with isometric hand-grip test (cut-off points < 27 kg, men;
36 < 16 kg, women) (1); gait speed (4-m walk, < 0.8 m/s) (1), and calf-circumference (< 31 cm) (1).
37 The SARC-F questionnaire (8) will be used on admission, 3- and 12-month telephone follow-
38 up. We will assess malnutrition (Global Leadership Initiative on Malnutrition (GLIM)
39 criteria) (9)(10), physical frailty (FRAIL scale, Fried phenotype), functional status (Barthel's,
40 basic (ADL), and instrumental (IADL) activities of daily living), and cognition (Mini-Mental
41 State Examination, Confusion Assessment Method, Geriatric Depression Scale) (**Figure 1**).

42 The study was registered in ClinicalTrials.gov (2018/8355/I) and is being approved by local
43 ethics committees. Data will be treated in accordance with the General Data Protection
44 Regulation of the European Parliament and Council (GDPR 2016/679).

45 **Conclusions and implications:** The overall goal is to establish an epidemiological base for
46 future geriatric research in Europe, in the previously largely overlooked area of sarcopenia in
47 older hospitalized patients. Sarcopenia increases with age, especially after the age of 80 years,
48 due to accumulation of both age-dependent and independent risk factors. Inflammaging,

49 inactivity, and malnutrition may play particularly significant roles (1). Sarcopenia can be
50 prevented, and when developed can be a target for therapeutic actions. However, at present,
51 there is limited knowledge of its prevalence and incidence in a real-world hospital population.
52 The new EWGSOP2 guidelines offer a pragmatic approach which is more applicable to
53 patients in an acute medical setting, and we intend to establish prevalence and incidence data,
54 as well as important insights into risk factors for sarcopenia. We foresee that our results will
55 have crucial implications for future research, clinical practice, and policies for optimal aging.

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57 **Conflicts of interests:** All authors declare no conflicts of interest.

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