

## COMMENTARY

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# The giants of education in geriatric medicine and gerontology

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## Abstract

In 2014, the European undergraduate curriculum in Geriatric Medicine was published to cover the minimum requirements that a medical student should achieve by the end of medical school. In 2019, the European postgraduate curriculum in Geriatric Medicine outlined the minimum recommended training requirements to become a geriatrician at specialist level in the EU. The postgraduate dimension of Geriatric Medicine education is a highly relevant topic for all, since most physicians— independently of their specialty—are inevitably involved in the care of older patients, but for most physicians, geriatrics is not part of their postgraduate generalist or specialty training. A key area for postgraduate education remains the provision of Geriatric Medicine competencies to all specialties outside geriatrics. There is also need for wider educational initiatives to improve the gerontological education of patients and the public. Bernard Isaacs famously coined the expression 'geriatric giants' or the four clinical I's: Intellectual impairment, Incontinence, Immobility, and Instability. However, non-clinical giants exist. In education, we face challenges of Investment, Inspiration, Integration, and Interprofessionality; and in research, we need to attract Interest and Income, and generate Innovation and Impact. Without strengthening the links between all giants, we will not be able to achieve the ambition of age-attuned societies. A key goal for gerontological education is to enhance everyone's understanding of the wide diversity underlying the 'older people' demographic label, which will ultimately promote services and societies that are more responsive and inclusive to the needs of all older adults, irrespective of their health status.

**Keywords:** Older people, Geriatrics, Gerontology, Curricula, Europe

## Key Points

- The European undergraduate curriculum in Geriatric Medicine was published in 2014
- The European postgraduate curriculum in Geriatric Medicine was published in 2019
- A key area remains the provision of Geriatric Medicine competencies to all specialties outside geriatrics
- We need to strengthen the links between clinical, education, and research agendas. A key goal is to enhance everyone's understanding of the diversity in ageing

## Introduction

In 2019, the Science Advice for Policy by European Academies (SAPEA) report *Transforming the Future of Ageing* [1] stated: ‘In Europe and around the world, people are living longer than ever before. This is one of the greatest achievements of the past century, but it also brings challenges for European societies and the EU as a whole.’ Among many other recommendations, the report noted that: ‘Education improvements at a young age are vital not only to improve individual health, but also to equip our future workforce with the skills it needs to support an ageing population in a rapidly changing society’ [1].

In this commentary piece on Education for *Age and Ageing* 50<sup>th</sup> anniversary, we outline the main educational trends and challenges in Geriatric Medicine starting with developments in the undergraduate and postgraduate medical curricula. We outline the need for wider educational initiatives for all healthcare professionals as well as strategies for improving the gerontological education of patients and the public. In view of the pressing ageing demographics, we argue that wider efforts to gerontologically attune all professionals and citizens will result in a better understanding of the wide diversity underlying the ‘older people’ demographic label, and will promote services and societies that are more responsive and inclusive to the needs of all older adults, irrespective of their health status. We argue that strengthening the links between the clinical, educational and research agendas is essential to achieve the ambition of fully age-attuned societies.

## Undergraduate

In European countries, formal attention to the development of undergraduate medical curricula in Geriatric Medicine started from the realisation that even though geriatrics and ageing were taught at most medical schools, and professional societies (such as the British Geriatrics Society in 2008 [2]) had provided specific recommendations, the structure and quality in geriatric pregraduate training were highly variable among centres, in part due to differences in the availability of medical educators interested in core geriatric topics [3]. Therefore, it was felt that rather than relying on an *ad hoc* approach to Geriatric Medicine teaching, it was important to develop curricula that once formally embedded in medical schools, would motivate students to become self-directed and lifelong learners [3]. In this fashion, in 2014 the European undergraduate curriculum in Geriatric Medicine was developed by consensus among geriatricians and experts affiliated to the European Union of Medical Specialists (UEMS) to cover the minimum requirements that a medical student should achieve by the end of medical school [4]. The curriculum outlined ten broad learning domains (Table 1). Overall, this curriculum represented a first step to help structure teaching of geriatrics in medical schools, although it was noted that major efforts would

**Table 1.** The 10 overarching learning outcomes in the European undergraduate curriculum in geriatric medicine [4]

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1. Graduates should respect patients regardless of their age.
  2. Graduates should know about and understand normal and abnormal structure and function, including the natural history of human diseases, the body’s defense mechanisms, disease presentation and responses to illness.
  3. Graduates should know about common medical conditions in older people.
  4. Graduates should have the special skills needed to conduct a history and perform an assessment in an older patient.
  5. Graduates should know about and understand the principles of treatment including the effective and safe use of medicines as a basis for prescription.
  6. Graduates should recognise the importance of responses to illness, providing support for recovery and reducing or managing impairments, disabilities and handicaps.
  7. Graduates should know about and understand the main ethical and legal issues in the international and national context in which they will encounter them.
  8. Graduates should know about, understand and respect the roles and expertise of other health and social care professionals.
  9. Graduates should know about care of older patients in different settings.
  10. Graduates should know about specific aspects relevant for health and social care for older persons in their region/country.
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be needed to implement those requirements [4]. Today, as evidenced by the recent SAPEA document [1], those efforts are still very much needed; indeed, the Global Europe Initiative group within the European Geriatric Medicine Society (EuGMS) continue to note discrepancies concerning educational and other dimensions of geriatrics, particularly in countries where Geriatric Medicine is still emerging [5]. Even in countries with a long Geriatric Medicine tradition such as the UK, variation is still noted regarding how relatively newer geriatric topics (e.g. frailty) are being interpreted and approached by medical schools [6]. As any other medical specialty, Geriatric Medicine continues to evolve and consequently, there are ongoing efforts to update the European undergraduate curriculum with emerging or evolving topics (e.g. frailty, delirium, sarcopenia, appropriate prescribing, gerotechnologies, and ethical and legal aspects, among others).

## Postgraduate

In 2015, Singler *et al.* noted that Geriatric Medicine was recognised as an independent postgraduate specialty in 61% (19/31) and as a subspecialty in 29% (9/31) of European countries surveyed, but in 5 countries it was not recognised at all [7]; and although they noted a consistent

improvement in the recognition of Geriatric Medicine as an independent specialty over the last decade, wide variation in length [8] and standards [7] have been noted in postgraduate geriatrics programmes across Europe. As recently as 2019, the European postgraduate curriculum in Geriatric Medicine was developed under the auspices of the UEMS-Geriatric Medicine Section, the EuGMS and the European Academy of Medicine of Ageing (EAMA) [9]. The curriculum includes four domains (Table 2) encompassing the minimum recommended training requirements to become a geriatrician at specialist level in EU member states.

An area of postgraduate geriatric education that concerns universities is the development of formal postgraduate taught programmes, in the form of standalone modules or micro-credentials, postgraduate certificates (P.G.Cert.), and/or Masters (MSc) courses. Crucially, the development of such activities requires both enthusiastic university faculty with dedicated time and resources, and students who have the time and funding to attend [10]. In the US, it was suggested that where more specific faculty were recruited, some academic programmes emerged with strong education, research, and clinical initiatives in Geriatric Medicine [11]. In 2008, a Europe-wide survey revealed that only six countries had an established chair of Geriatric Medicine in each of their medical schools [12]; while the survey has not been repeated, the number of established chairs and tenured academic positions in Geriatric Medicine has not increased to keep up with societal changes. The British Geriatrics Society keeps a map of centres of academic excellence in ageing research around the UK (<https://www.bgs.org.uk/resources/research-centres>); many of those centres offer formal postgraduate taught programmes in Geriatric Medicine, and a renewed European survey of academic geriatric units should be helpful to better identify the growing number of formal postgraduate taught opportunities in other countries and monitor trends in the number of established academic units.

### Continuous professional education and development

The postgraduate dimension of Geriatric Medicine education is a highly relevant topic for all, since most physicians—independently of their specialty—are inevitably involved in the care of older patients, but for most physicians, geriatrics is not part of their postgraduate generalist or specialty training. In 2006, Crome *et al.* reviewed the curricula for all 27 adult medical specialties in the UK focusing on entries pertaining to the needs of older patients, and found that 13 did not include anything specific for older people [13]. Whilst specialist training in Geriatric Medicine has evolved and become more formalised, the number of geriatricians working in hospitals and health services remains insufficient to cover the rising demographic demands [14].

Lack of knowledge and competencies in Geriatric Medicine can have devastating consequences for the management of older patients outside geriatrics; for example, negative perceptions of ageing and geriatrics [15] coupled with a poor understanding of frailty and falls syndromes can lead to systematic underprescribing of anticoagulants for atrial fibrillation in older people [16]; in addition, non-geriatric physicians may underappreciate the benefits of systematically measuring and evaluating geriatric syndromes in the acute hospital, as these metrics can promote better risk stratification and improve care pathways [17].

As far back as 1996, Nicholas Coni reflected that ‘Geriatrics is too important to be left to geriatricians’ and predicted that all specialists would be practicing geriatrics in the future, underpinned by his vision that ‘geriatric medicine should be like a caretaker government, self-appointed to instruct others how to do it, and then to preside over its own demise’ [18]; yet, still in the present day, many non-geriatric specialists do not routinely implement some of the basic geriatric competencies in their day-to-day interactions with older patients, and quickly resort to geriatric consultation systems, the structure and processes of which are heterogeneous and not always effective [19]. Geriatric consultations can remove the opportunity for referrers to learn the skills needed to solve common geriatric problems, and consultation-based educational models of competency acquisition could be useful for embedding essential geriatric skills in all areas of professional practice, where a non-geriatric professional would, through geriatrician-delivered training, become proficient in the resolution of the question asked, and be subsequently expected to undertake it independently [20].

A key area for postgraduate education remains the provision of Geriatric Medicine competencies to all specialties outside geriatrics, as a necessary way to address the public health needs of ageing populations [7]. An example of what can be achieved is the development of the European curriculum for Geriatric Emergency Medicine, a collaboration between geriatricians and Emergency Medicine specialists with the aim of improving unscheduled care for older people [21]. Joint efforts between geriatrics and dentistry are also emerging aiming to develop dedicated postgraduate Gerodontology courses [22]. A further example is the curriculum for Advanced Nurse Practitioners working with older people with frailty in the acute hospital [23].

In some countries, professional organisations (e.g. College of Physicians) have developed courses and Diplomas in Medicine for the Older Person that regularly attract interested medical professionals. For all health professionals, Ireland has pioneered a model of gerontological education called the National Frailty Education Programme, which is a collaboration between the health service and a higher academic institution aiming to provide an enhanced understanding of frailty and frailty assessments, thereby ensuring earlier recognition, improved healthcare management and better health outcomes for all older adults [24].

**Table 2.** Recommendations of the European postgraduate curriculum in geriatric medicine [9]

Domain I: General considerations. A syllabus/curriculum should be clearly dated, have a recommended reading list, named editors/national contact point, named institutions/societies responsible for content cited, clearly outlined aims, and explicit quality control/accreditation/structural requirement mechanisms.

Domain II: Knowledge in patient care

1	Biology of ageing
2	Acute and Chronic Disease in Old Age, their clinical presentation including atypical presentation and their effect on organ function and functionality
3	Falls
4	Dizziness and Vertigo
5	Syncope
6	Gait disorders
7	Parkinson's Disease and Syndromes
8	Other Movement disorders
9	Stroke
10	Dysphagia
11	Malnutrition and fluid imbalance
12	Osteoporosis and bone health
13	Sarcopenia
14	Frailty
15	Continence (urinary and faecal)
16	Pain (acute and chronic)
17	Dementia and cognitive impairment
18	Delirium
19	Sleep disorders
20	Depression
21	Other psychiatric disorders in old age
22	Tissue Viability including pressure ulcers
23	Ethical issues including ageism and elder abuse
24	Legal aspects for older people (country specific)
25	Social and Health inequalities
26	Health promotion and healthy ageing ( <i>Please not here that the learning objective includes here the following aspects: physical activity, keeping active, avoiding smoking and excessive alcohol, life-style interventions, vaccination, Vit. D, loneliness, nutritional aspects</i> )
27	Pharmacological issues associated with ageing and in geriatric care
28	Iatrogenic and care delivered disorders
29	Sexuality in older adults
30	Comprehensive Geriatric Assessment
31	Content and principles of geriatric rehabilitation and its multi-professional aspects
32	Multidisciplinary and interdisciplinary approach in the management of geriatric patients (e.g. orthogeriatrics, oncogeriatrics, perioperative care, cardiology, nephrology, emergency medicine and others)
33	Role of family and other care givers
34	Management of patients in long-term care including residential and nursing care homes
35	Palliative and Hospice Care in older patients
36	Gerotechnology and eHealth—appropriate housing, ambient assisted living, interventions to support an autonomous life

Domain III: Additional skills and attitudes required for geriatricians

1	Educational and teaching skills
2	Interpersonal and communication skills
3	Development of geriatric services (country specific)
4	Quality improvement competencies
5	Interprofessional team management
6	Advocacy of patients' requirements and wishes
7	Leadership competencies
8	Life-long learning and continuous professional development
9	Integration of holistic skills and attitudes for an individualised person-centred care

Domain IV: Assessment of postgraduate education: which items are important for the transnational comparison process

1	National medical specialist exam (format and timing)
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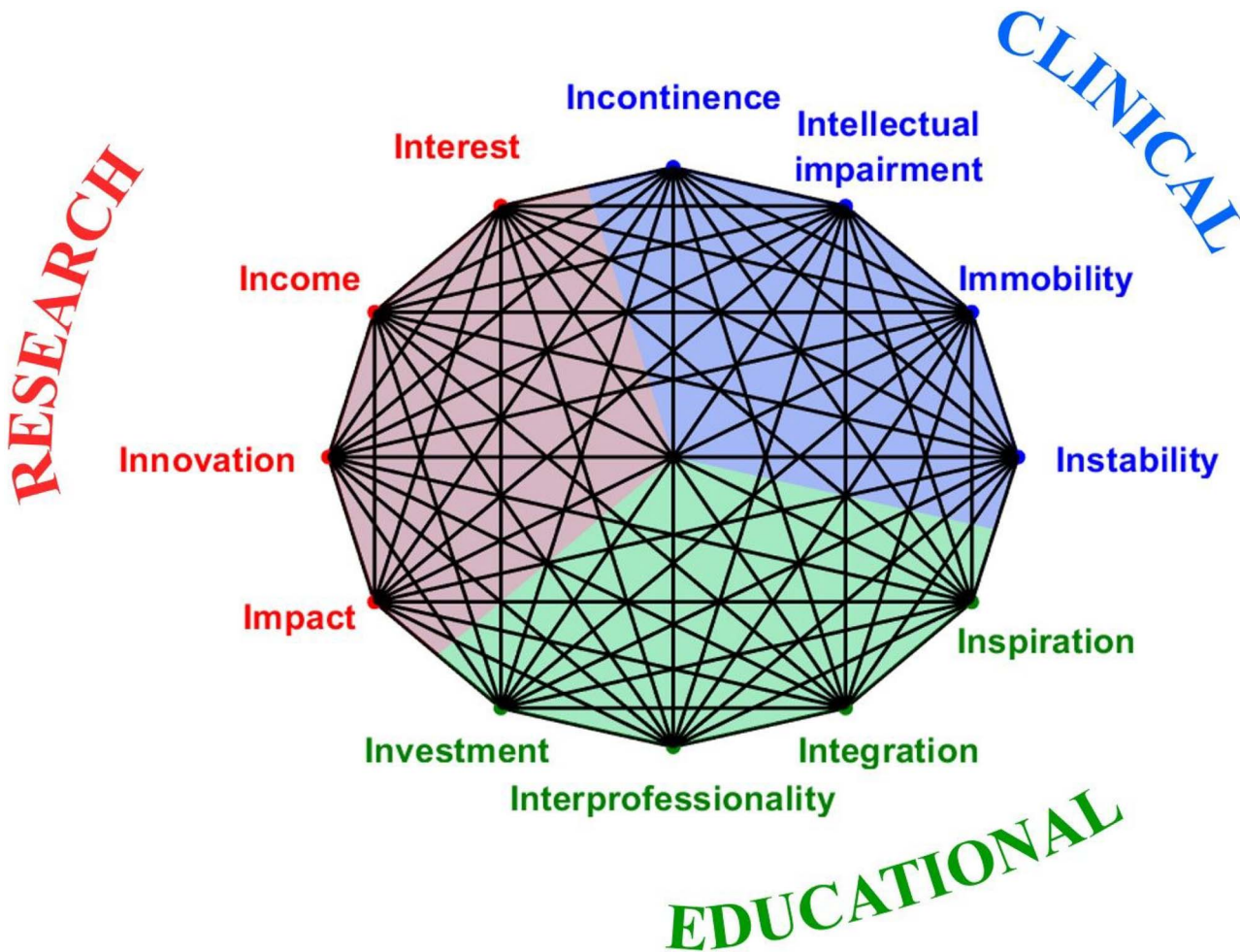


Figure 1. The geriatric giants revisited: clinical, educational and research.

### Education for patients, carers, and the public

As exemplified by the dementia literature, training interventions can be effective in improving carer knowledge and communication skills [25]. During the COVID-19 pandemic, the emergence of public education webinars and other online events has shown that it is possible for academics, professionals and policy makers to provide wide-ranging, free-of-charge outreach educational activities. Future research should evaluate such initiatives against patient- and carer-centered outcomes.

### The geriatric giants revisited

Bernard Isaacs famously coined the expression ‘geriatric giants’ or the four clinical I’s: *intellectual impairment*, *incontinence*, *immobility* and *instability* [26]. However, geriatric giants also exist in education and research, and without strengthening the links between all those (Figure 1), we will not be able to achieve the ambition of fully age-attuned societies.

The geriatric giants of education are *investment*, *inspiration*, *integration* and *interprofessionalism*. As for *investment*, effective and sustainable gerontological education requires a much higher number of dedicated academic geriatricians and funding to make opportunities widely accessible to students of all backgrounds. In terms of *inspiration*, a national survey among French postgraduate medical students reported that factors that exerted a professional attraction to the clinical giants were the rewards of working with older adults; positive personal encounters with older adults in the past; the appeal of interprofessional teamwork; the challenge of cases involving complex diagnostic and therapeutic decisions; and the challenge of patients with chronic conditions [27].

The *integration* challenge in geriatric education refers to the need to vertically integrate the clinical and basic science aspects of ageing into curricula [28], so that ageing and geriatrics can be introduced to students during many pre-clinical and clinical courses, rather than confining it to a single ‘geriatric block’ in a given year. Additionally, horizontal integration can engender core geriatric medicine competencies amongst non-geriatricians [29]. The latter can be facilitated by *interprofessional education*, which is a

collaborative approach whereby students of two or more health or social care professions learn interactively together with the aim of providing high-quality, patient-centered care. An interprofessional geriatric education framework can be more conducive to attaining the competencies required for the management of frailty in older adults [30], as it easily replicates the processes involved in comprehensive geriatric assessment.

Attraction to the clinical giants can be helped by strong educational role models, but at the same time many minds feel excited by knowledge gaps and the possibility to generate new knowledge through research. Yet, research in Geriatric Medicine is also subject to the giants of *interest*, *income*, *innovation* and *impact*. Many universities do not prioritise ageing and/or geriatrics in their official research strategies, contributing to a false impression that there is ‘nothing new’ in geriatrics and hence driving scientific *interest* away. In terms of *income* to conduct high-level research in Geriatric Medicine, available funding streams tend to be modest and variable in comparison to ‘mainstream’ biomedical specialties, despite the enormous societal and economic relevance of many ageing research topics. Generation of research-driven *innovations* to age-old problems and achievement of *impact* through high-quality academic publications inevitably pays back into education, allowing for curricula to be regularly updated with new evidence-based developments and constantly attracting students who register for new courses motivated by keeping themselves up to date with the latest research developments. Conversely, this model of research-based education can also engender further interest in research, and ultimately revert into better care for patients through a higher level of evidence-based practice. In conclusion, we need to integrate the clinical, education and research giants to achieve the ambition of fully age-attuned societies.

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## References

1. Science Advice for Policy by European A. Transforming the Future of Ageing. Berlin; 2019 978-3-9820301-1-1.
2. Forrester-Paton C, Forrester-Paton J, Gordon AL *et al.* Undergraduate teaching in geriatric medicine: mapping the British geriatrics society undergraduate curriculum to Tomorrow's doctors 2009. *Age Ageing* 2014; 43: 436–9.
3. Singler K, Sieber CC, Biber R, Roller RE. Considerations for the development of an undergraduate curriculum in geriatric medicine. *Gerontology* 2013; 59: 385–91.
4. Masud T, Blundell A, Gordon AL *et al.* European undergraduate curriculum in geriatric medicine developed using an international modified Delphi technique. *Age Ageing* 2014; 43: 695–702.
5. Soulis G, Kotovskaya Y, Bahat G *et al.* Geriatric care in European countries where geriatric medicine is still emerging. *Eur Geriatr Med* 2021; 12: 205–11.
6. Winter R, al-Jawad M, Wright J *et al.* What is meant by "frailty" in undergraduate medical education? A national survey of UK medical schools. *Eur Geriatr Med* 2021; 12: 355–62.
7. Singler K, Holm EA, Jackson T, Robertson G, Muller-Eggenberger E, Roller RE. European postgraduate training in geriatric medicine: data of a systematic international survey. *Aging Clin Exp Res* 2015; 27: 741–50.
8. Stuck AE, Jonsdottir AB, Singler K, Roller RE, Holm EA, Masud T. The length of postgraduate training for geriatric medicine in European countries: an update for the year 2015. *Aging Clin Exp Res* 2016; 28: 169–70.
9. Roller-Wirnsberger R, Masud T, Vassallo M *et al.* European postgraduate curriculum in geriatric medicine developed using an international modified Delphi technique. *Age Ageing* 2019; 48: 291–9.
10. Bhat S, Baker P, Eyres R. Twelve tips for a successful workplace-based masters programme in geriatric for specialist registrars and specialty trainees. *Med Teach* 2008; 30: 237–42.
11. Bragg EJ, Warshaw GA, Meganathan K, Brewer DE. The development of academic geriatric medicine in the United States 2005 to 2010: an essential resource for improving the medical care of older adults. *J Am Geriatr Soc* 2012; 60: 1540–5.
12. Michel JP, Huber P, Cruz-Jentoft AJ. Europe-wide survey of teaching in geriatric medicine. *J Am Geriatr Soc* 2008; 56: 1536–42.
13. Crome P, Jones S, Panayiotou B. Postgraduate training in geriatric medicine - a British perspective. *J Am Geriatr Soc* 2007; 55: 805–6.
14. Pitkala KH, Martin FC, Maggi S, Jyvakorpi SK, Strandberg TE. Status of geriatrics in 22 countries. *J Nutr Health Aging* 2018; 22: 627–31.
15. Singh I, Hubbard RE. Teaching and learning geriatric medicine. *Reviews in Clinical Gerontology* 2011; 21: 180–92.
16. Induruwa I, Evans NR, Aziz A, Reddy S, Khadjooi K, Romero-Ortuno R. Clinical frailty is independently associated with non-prescription of anticoagulants in older patients with atrial fibrillation. *Geriatr Gerontol Int* 2017; 17: 2178–83.
17. Romero-Ortuno R, Forsyth DR, Wilson KJ *et al.* The Association of Geriatric Syndromes with hospital outcomes. *J Hosp Med* 2017; 12: 83–9.
18. Coni N. The unlikely geriatricians. *J R Soc Med* 1996; 89: 587–9.
19. Deschodt M, Claes V, van Grootven B *et al.* Structure and processes of interdisciplinary geriatric consultation teams in acute care hospitals: a scoping review. *Int J Nurs Stud* 2016; 55: 98–114.
20. Leipzig RM, Sauvigné K, Granville LJ *et al.* What is a geriatrician? American Geriatrics Society and Association of Directors of geriatric academic programs end-of-training entrustable professional activities for geriatric medicine. *J Am Geriatr Soc* 2014; 62: 924–9.
21. Bellou A, Conroy SP, Graham CA. The European curriculum for geriatric emergency medicine. *Eur J Emerg Med* 2016; 23: 239.

22. Kossioni A, McKenna G, Muller F, Schimmel M, Vanobbergen J. Higher education in Gerodontology in European universities. *BMC Oral Health* 2017; 17: 71.
23. Goldberg SE, Cooper J, Blundell A, Gordon AL, Masud T, Moorchilot R. Development of a curriculum for advanced nurse practitioners working with older people with frailty in the acute hospital through a modified Delphi process. *Age Ageing* 2016; 45: 48–53.
24. Lang D, Lang D, Hoey C, O'Shea D, Whitty H. National Clinical Programme for older people: National Frailty Education Programme: "fundamentals of frailty". *Int J Integr Care* 2018; 18: 44.
25. Morris L, Horne M, McEvoy P, Williamson T. Communication training interventions for family and professional carers of people living with dementia: a systematic review of effectiveness, acceptability and conceptual basis. *Aging Ment Health* 2018; 22: 863–80.
26. Felstein I. A giant of geriatric medicine - Professor Bernard Isaacs (1924-1995) Post 1. Available online: <https://www.bgs.org.uk/a-giant-of-geriatric-medicine-professor-bernard-isaacs-1924-1995-post-1> (accessed 19 September 2021). 2009.
27. Prud'homme J, Corvol A, Aguilon A, Olivieri M, Rousseau V, Somme D. Why choose geriatric medicine? A national survey among French postgraduate medical students. *Age Ageing* 2020; 49: 1028–33.
28. Wijnen-Meijer M, van den Broek S, Koens F, Ten Cate O. Vertical integration in medical education: the broader perspective. *BMC Med Educ* 2020; 20: 509.
29. Fisher JM, Masud T, Holm EA *et al.* New horizons in geriatric medicine education and training: the need for pan-European education and training standards. *European Geriatric Medicine* 2017; 8: 467–73.
30. Roller-Wirnsberger R, Lindner S, Liew A *et al.* European collaborative and Interprofessional capability framework for prevention and Management of Frailty-a consensus process supported by the joint action for frailty prevention (ADVANTAGE) and the European geriatric medicine society (EuGMS). *Aging Clin Exp Res* 2020; 32: 561–70.

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