NEW HORIZONS

Equipping tomorrow’s doctors for the patients of today

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Abstract

As the proportion of older patients with frailty presenting to health services increases, so does the need for doctors to be adequately trained to meet their needs. The presentations seen in such patients, the evidence-based models of care and skillsets required to deliver them are different than for younger patient groups—so specific training is required. Several research programmes have used detailed and explicit methods to establish evidence-based expert-validated curricula outlining learning outcomes for undergraduates in geriatric medicine—there is now broad-consensus on what newly qualified doctors need to know. There are, despite this, shortcomings in the teaching of undergraduates about geriatric medicine. National and international surveys from the UK, EU, USA, Canada, Austria and the Netherlands have all shown shortcomings in the content and amount of undergraduate teaching. Mechanisms to improve this situation, aside from specifying curricula, include developing academic departments and professorships in geriatric medicine, providing grants to develop teaching in geriatric medicine and developing novel teaching interventions to make the best of existing resources. Under the last of these headings, innovations have been shown to improve outcomes by: using technology to ensure the most effective allocation of teaching time and resources; using inter-professional education as a means of improving attitudes towards care of older patients; focusing teaching specifically on attitudes towards older patients and those who work with them; and trying to engage patients in teaching. Research areas going forward include how to incentivise medical schools to deliver specified curricula, how to choose from an ever-expanding array of teaching technologies, how to implement interprofessional education in a sustainable way and how to design teaching interventions using a qualitative understanding of attitudes towards older patients and the teams that care for them.

Keywords: undergraduate medical education, geriatrics, curricula, interprofessional relations, computer assisted instruction, older people

Introduction

The number of people aged over 60 years worldwide is projected to rise from 605 million in 2000 to almost 2 billion by 2050, while those over 80 years will quadruple to 395 million [1]. This demographic transition has already affected the work of doctors. Two-thirds of UK acute hospital admissions are over 65 [2], the highest consultation rate in general practice is in those aged 85–89 [3] and the average age of elective surgical patients is increasing [4].

There is substantial evidence that older people with frailty benefit from assessment and intervention which is multimodal, multidisciplinary, iterative and case-managed—this is Comprehensive Geriatric Assessment (CGA) [5]. Physiological function, pharmacokinetics and responses to acute insult and injury change with age. The syndromes frequently presenting in older cohorts—cognitive impairment, stroke, fragility fractures, falls, syncope and incontinence—are different from those in younger populations. The corollary of this is that specific training is required to meet the medical needs of older patients.

This article presents current recommendations about what medical undergraduates ought to be taught about ageing, considers whether these are being met and then describes teaching innovations that might close the gap
between aspiration and current practice. It explores the role of new technologies, inter-professional education (IPE), patients’ involvement in teaching and education to improve attitudes towards care of older patients.

**What should we be teaching undergraduates about ageing and geriatric medicine?**

A number of international curricula outline consensus about what medical undergraduates ought to be taught about geriatric medicine [6]. The International Association of Geriatrics and Gerontology, through consultation with its 73 member organisations representing 65 countries, produced a guideline comprising 15 statements specifying minimum requirements for geriatric medical education in 2008. These guidelines are no longer available in print or online. There are, however, English language curricula specified by specialist societies from the USA [7], Canada [8], Australasia [9], UK [10] and the European Union [11].

Three research groups have gone beyond basic consensus, undertaking more involved developmental programmes to structure curricula in geriatric medicine, one each in the USA, UK and European Union.

In the USA, a consortium of geriatrician educators used an iterative multi-stage approach to develop a list of core competencies for foundation-level doctors called the ‘keeping granny safe’ competencies [7]. Starting from a literature review of US curricula in geriatrics, they identified 52 non-mutually exclusive geriatric competency domains. They then conducted an iterative process with four stages: experts and broader stakeholders in geriatric medicine were asked to score domains in order of importance and the top eight were selected; core competencies were written by the steering group to match the selected domains; an electronic survey further reduced the list prior to; final agreement on 26 competencies at a national stakeholder conference.

In the UK, a literature review identified English language curricula in geriatric medicine and gerontology, which were then presented at a consensus conference involving the national societies for geriatric medicine, biogerontology and social gerontology, and a research collaboration representing gerontologists [12]. A core curriculum was agreed and then mapped to the core-specifications stipulated in ‘Tomorrow’s Doctors’—the generic statutory guidance about undergraduate medical training in the UK. The resulting curricular map became the Recommended Curriculum for Undergraduate Teaching specified by the British Geriatrics Society (BGS). The stage of mapping specialist recommendations to generic guidance is potentially important in a climate where medical curricula are under increased pressure, every specialty is vying for space and some factions within the medical profession continue to dispute the core nature of learning outcomes in geriatric medicine. Tomorrow’s Doctors was redrafted in 2009 [13] and a second mapping exercise, undertaken in 2013 [14], resulted in the current BGS Recommended Curriculum [10].

The European Union of Medical Specialists (UEMS) used the BGS curriculum as the basis for a modified Delphi consensus procedure in 2013 [11]. Three Delphi rounds were conducted, involving 49 experts from 29 countries, and complete agreement was reached following the third round. The final curriculum consisted of detailed objectives grouped under 10 overarching learning outcomes.

By nature of their evolution, the UK and EU curricula map closely to each other, and to previously published guidelines from Australasian and US specialty societies. Work has yet to be undertaken to compare these to the more recent 26 US competencies, or to the Canadian curriculum. It may be, though, that the basis of international consensus lies in comparing the EU and US recommendations and identifying core overarching themes.

**What are we teaching undergraduates about ageing and geriatric medicine?**

There is evidence that undergraduate teaching in the UK about ageing and geriatric medicine is improving but still falls some way short of the aspirations stated in the BGS recommendations. A 2008 survey of undergraduate teaching in geriatric medicine [15] collated responses from 17/31 UK medical schools and demonstrated shortcomings in the teaching of pressure ulcers, elder abuse, bio- and social gerontology. There was also widespread failure to adequately assess learning outcomes related to ageing.

Amidst a national scandal surrounding the quality of health care for older people [16], the survey was repeated in 2013 [17]. With responses from 19 of 31 schools, improvement was seen in most domains. The majority of schools (95–100%) taught about delirium, dementia, stroke, falls, osteoporosis, extra-pyramidal disorders, polypharmacy, incontinence, ethics and mental capacity. The proportion teaching about elder abuse increased from 47 to 68% and teaching about recognised classifications of the health domains used in CGA increased from 12 to 37%. More schools taught about bio- and social gerontology than at the previous iteration. The amount of time devoted to specific learning outcomes in geriatric medicine, however, remained low, with the median (range) time increasing from 49 (4.5–95) h in 2008 to 55.5 (26–192) h in 2013.

Similar programmes of work undertaken elsewhere have yielded similar results. A Canadian national survey in 2010 [18]
found the mean (range) time spent on mandatory geriatrics content of undergraduate curricula was 82 (10–299) h. A US survey of 93 medical schools in 2005 [19] found the median time devoted to be 14.4 h. Coverage was, as in the UK, biased towards teaching about common presentations in older people but a greater proportion of US schools taught bio- and social gerontology. Elsewhere, 33% of German and Austrian medical schools surveyed in 2012 did not specify learning outcomes related to ageing [20]. Six of eight medical schools in the Netherlands surveyed in 2011 had core practical teaching in geriatric medicine, but learning outcomes in the specialty comprised only 2.2% of total teaching delivered [21].

Closing the gap between what we ought to do and what we do

The overall picture is one of consummate mismatch between the proportion of the medical workload made-up by diagnosis and management of frail older people and the amount of undergraduate teaching devoted to it. A narrative review conducted by Mateos-Nozal and Beard in 2011 [6] identified four possible mechanisms whereby the situation might improve (Box 1). These are not mutually exclusive and how the mechanisms might interact to increase the quantity or quality of teaching remains unclear. Further research is needed.

That developing specific curricula in geriatric medicine would act as a catalyst to improve teaching is a core assumption underpinning the work already described. The evidence that this has positive impact is, however, at best circumstantial. It is difficult to say whether improvements in the coverage and duration of teaching in the UK and Canada over time [17,18] is related to the availability of well-developed curricula in those countries, whether it is a response to policy change in response to demographic shift, or whether it simply represents a secular trend.

A challenge to implementing specialty-specific curricula is that many medical schools now teach integrated or problem-based curricula, where individual learning outcomes can be difficult to map or tease out. Detailed mapping is required to consider whether specified teaching is delivered or examined. Such mapping, once complete, can be used to justify a longitudinal theme of ageing running through the curriculum and some medical schools have implemented these [22]. Longitudinal themes act as a mechanism for organising and tracking teaching related to ageing but whether they act to increase quality or quantity of teaching is unclear. They might act as an incentive for students to consider ageing from a life-course perspective if ageing processes are mapped to longitudinal themes and taught as proceeding from birth.

Developing academic departments in geriatric medicine is often stated as a mechanism to improve teaching [23]. It clearly has a role to play where the specialty is in its infancy and has been reported as instrumental in establishing structured training in Turkey [24] and Nepal [25]. Its role in driving up standards in countries where the specialty is more established is less clear. In a pan-European study in 2006 [26], France had geriatric medicine professorships in all 32 medical schools but devoted an average of 30 h to teaching the specialty across undergraduate curricula. Serbia and Montenegro, with one professor, spent twice as long teaching geriatrics. There is also evidence that chairs can be difficult to establish even in countries where the specialty is highly developed—only 13 UK medical schools had professorships when surveyed in 2006 [27].

Focused investment in geriatric medicine teaching can improve outcomes, but there is less evidence that such change, once implemented, is generalisable or sustained. The AAMC-John A. Hartford Foundation [28] funded 40 US medical schools to develop programmes in geriatric medicine in 1999 and the Donald W. Reynolds Foundation [29] funded 30 US medical schools in three sets (2001, 2003 and 2006). Of these, the Reynolds Foundation conducted a more rigorous evaluation, which reported structural changes to the delivery of teaching, including newly developed or revised geriatric rotations or courses, in all schools. Following the programme, students at Reynolds schools reported higher levels of geriatrics education and more exposure to expert geriatric care by the attending faculty compared with students at non-Reynolds schools.

For developed health economies where geriatric medicine is an established presence and consensus curricula are in place, any future development of academic units or clinical professorships is likely to be incremental. The likelihood of allocation of large benevolent funds will, for many, seem remote. Developing novel teaching interventions to deliver teaching more effectively within existing resources is a more tangible possibility. These are considered next under four main headings: harnessing technology; IPE; teaching to change attitudes and the role of patients in structured teaching.

Harnessing technology

New technologies have been used to maximise staff time and resources; facilitate more consistent student experiences and provide insights into the ageing experience to encourage empathy and compassion.

Learning using electronic media—‘eLearning’—is increasingly popular as a way of taking core information-dense subjects out of lecture format and allowing students to learn in their own time and at their own pace. It may result in improved learning and may be cheaper in the longer term, although resource development requires up-front investment [30]. In the context of geriatric medicine, eLearning can free-up time for face-to-face teaching on conceptually challenging topics—such as mental capacity or medical ethics—or allow students to spend more time on clinical placements where they can see CGA role-modelled by multi-disciplinary teams. A Consortium of E-Learning in Geriatric medicine (CELG) was established in the USA to exploit these opportunities [31] and the Association of Directors of Geriatric Academic Programs (ADGAP) have developed a free online portal of geriatric medicine resources—the Portal of Online Geriatrics education (POGOe) [32]—which presents evidence-based teaching resources and curricula.
The main disadvantage of eLearning is the potential isolation of the learner and some courses have sought to mitigate against this by using interactive discussion boards or blended learning approaches (eLearning combined with more traditional techniques). A UK study [33] considered blended learning—traditional ward based and didactic teaching combined with a computer-aided learning (CAL) package—and demonstrated improvement in geriatric medicine exam results, when compared with traditional teaching methods. Despite the initial time burden of setting up CAL, it freed up time for teachers longer term. The CALs developed as part of this study comprise a suite of freely available open-source learning objects available online [34] and are now in use in four UK medical schools.

Technology has been used to reduce variability in student experience in domiciliary visits. These represent an opportunity for students to see patients in their home environment and to consider interactions between environment, social supports and physical, mental and functional impairments. Teaching structured around them can improve student attitudes to older patients [35]. It is, however, difficult to accommodate large numbers of students within existing community geriatrics services and to deliver consistent learning experiences in the context of highly variable clinical encounters. A collaborative of Australian and Canadian researchers developed a video game to overcome these difficulties. The game simulated a patient’s house that students were able to explore, looking for hazards to health and wellbeing. This provided a fun and standardised learning experience, student satisfaction levels were high and their knowledge improved following the intervention [36].

Simulation, using computer-enhanced simulation mannequins or actors as patients, is another way to provide students with a safe and reproducible clinical experience [37,38] and has been exploited for some time to teach about high-stakes critical care scenarios. It has only recently been explored in the context of geriatric medicine. A recent study developed and delivered a simulation session on delirium, falls, elder abuse and breaking bad news—scenarios which can be managed inconsistently in ward settings and which students can find threatening. Teachers used a combination of simulation mannequins, professional role-players and simulated clinical documentation. Students showed improved knowledge and perceptions of geriatric medicine [39].

Instant ageing—a form of simulation, but this time focusing on reproducing the patient experience—has been cited as a technological innovation [22], although many teachers who use it, do so in a decidedly ‘low tech’ way. It simulates what it might feel like to have functional impairments and asks students to reflect on how these would impact daily living. Joints might be bandaged to reproduce stiffness, glasses smeared with petrol jelly to simulate visual impairment and rubber gloves donned to simulate peripheral neuropathy. Modern suits can reproduce the same effects with less preparation and effort but at greater expense [40]. A group based in Minnesota [41] packaged instant ageing into a game, with different ‘rounds’ comprising managing medication, independent living and living in an institutional setting. A cohort of 77 students were asked to wear instant ageing equipment and were asked to conduct tasks appropriate for each setting, followed by a period of reflection. They showed improvement in attitudes towards older patients.

An ever-expanding array of technological innovations continues to open up new educational possibilities. Particular areas of enthusiasm, given the increasing portability of computers and the rise of smart-phones, are podcasts and the use of social media as discussion fora. Although innovative packages related to ageing and geriatric medicine have been developed for these platforms, they are yet to be subjected to rigorous evaluation—a possible area for future research.

Inter-professional education

IPE has been defined as two or more professions learning with, from or about each other to improve collaboration and quality of care [42]. It has intuitive appeal in the context of geriatric medicine because CGA is multi-disciplinary and collaborative. The most widespread, concerted and sustained effort to roll-out IPE in the context of care of older people was through the Geriatric Interdisciplinary Team Training programmes funded by the Donald A. Hartford Foundation in the USA. These delivered training across eight centres teaching medical undergraduates alongside masters students in nursing and social work [43]. They showed that IPE was feasible in the context of care of older people and that student attitudes towards other professions and patients improved as a consequence. Skills in interdisciplinary working also improved.

Given the intuitive advantages of such programmes, it is striking that they are not used more widely. However, the organisational challenges of establishing IPE are considerable, have been well described and should not be underestimated [43]. They include differential commitment between the professions, perceived differences in status between professions leading to conflict, competition for resources between professional groupings historically organised in silos and practical considerations about timetabling students and faculty. There is a role for implementation research in describing the strategic and operational measures required to overcome these barriers in individual institutions, as well as establishing overarching lessons that can allow widespread and rapid implementation at regional and national levels.

Teaching to change attitudes

There is strong evidence from both lay and scientific literature of ageism within the healthcare sector [44]. Negative attitudes towards older patients among healthcare professionals are believed to contribute to this. The constructs underpinning negative attitudes are relatively poorly explored and are likely to be complex. Negative views might be as much to do with the perceptions about the work of looking after older patients, as they are about the patients themselves. A survey of 1,193 UK medical students in 2010 [45] found that 76% associated geriatric medicine with a positive impact on the lives of older people, 54% considered it to involve contact with likeable patients and 52% to be intellectually stimulating. But 39% associated the specialty with low earning potential.
and 52% with low prestige. A detailed interview study conducted in 25 UK doctors and medical students with assorted specialty backgrounds [46] found that their perceptions, both positive and negative, regarding health care for older people were clearly separated into two discrete domains—attitudes towards older patients and attitudes towards the work of caring for older patients. In teaching to encourage attitudinal change, it is likely that both need to be considered.

Attitudinal change was the most common outcome measure used in a systematic review of teaching interventions in geriatric medicine published in 2010 [47]. Although this found that teaching can improve attitudes towards care of older people, it also found that a 9 of 19 interventions targeting attitudes failed to make a difference; this was a significantly lower success rate than in studies which aimed to improve knowledge as an outcome. A more detailed review [48], focusing only on the studies that aimed to improve attitudes, considered why some might work while others did not. It found success to be more likely where teaching involved empathy-fostering experiential learning which delivered insights into the lives of older patients—senior mentoring and ageing simulation were cited as examples.

An important observation from review of the literature about teaching to change attitudes is that educators have tended to use ordinal attitude scales to measure change [46]. There has been relatively little work to describe in qualitative detail the nature of negative attitudes towards older patients and the work of caring for them, and to design evidence-based teaching interventions in response. The scope for research here is considerable.

Work to develop rationally designed interventions to improve attitudes will be encouraged if medical schools emphasise the centrality of positive attitudes towards older patients and their care in curricula. In this context, it is perhaps disappointing that 33% of medical schools responding to a UK national survey describing teaching about dementia, did not specify learning outcomes about attitudes towards patients with cognitive impairment [49].

### Involving patients in teaching

Given the importance of experiential learning to generate insights into the lives of older patients, it is striking that teaching involving older patients is not more widespread. An important feature of the AAMC-John A. Hartford Foundation programme was a senior mentor programme matching all students with an individual or couple aged 65 years and older. This was reported to drive attitudinal change [50]. Although innovative programmes of this type have been explored elsewhere [22], they remain underused and under-evaluated. The challenges of engaging more frail and cognitively impaired patients in prolonged contact with undergraduates as part of a structured educational intervention have yet to be explored.

### Conclusion

There is, however, growing international consensus about what ought to be taught to doctors regarding ageing. It is likely that the growing number of evidence-based curricula from individual countries, and international collaborations, could be integrated to produce an international position statement laying down clear specifications about what medical schools ought to be teaching.

The traditional retort, that ‘there’s not enough space’ in curricula, can be countered with an increasing body of evidence that existing teaching time can be used more effectively by appropriate integration of technology, by engaging patients in teaching and by designing teaching based upon a more detailed understanding of desired learning outcomes, particularly with regard to attitudinal change.

A number of areas of uncertainty remain—how best to incentivise medical schools to engage with specified curricula, how to choose from an ever-expanding array of technologies, the implementation science around IPE, how to design interventions based upon more detailed qualitative data about attitudes and how to engage the frailest and most dependent patients in structured teaching programmes. These areas represent the new horizons of research into teaching in geriatric medicine. Exploring them is important if we are to equip the doctors of tomorrow for the patients they are increasingly seeing today.

### Conflicts of interest

None declared.

### References


34. http://www.nottingham.ac.uk/medicine/study/learningresources/geriatrmedicine.aspx (22 May 2014, date last accessed).


