sessions over 12-18 weeks) have better survival than those who leave the program prematurely.3

Balady et al4 have outlined several strategies to increase completion of cardiac rehabilitation programs, including policy initiatives to support alternative delivery models that center on the patient. Such patient-centered approaches include selective use of home-based exercise programs coupled with smartphone applications to track heart rate, blood pressure, glucose, lipids, body weight, and daily activity levels, along with Internet or mobile phone and/or text-based coaching and motivational strategies. Social media adds another layer of communication to optimize patient adherence and may provide a platform for friendly competition among participants who keep track of their weekly step counts outside of the program. In contrast to intensive rehabilitation programs at centers supervised by physicians, nurses, exercise physiologists, and case managers can oversee many aspects of personalized rehabilitation programs, thus lowering costs. Although discussed, it is unlikely in our view that cardiac rehabilitation can be offered to patients with a qualifying diagnosis free of charge, as some have recommended for the provision of essential medications following AMI. Current reimbursement policies do not account for the potential downstream cost savings associated with reduced readmissions. Current reimbursement policies are also generally inadequate to cover expenses associated with the infrastructural requirements of a center-based program and require direct hospital or health system support. Whether new payment mechanisms in the era of Accountable Care Organizations will alter this dynamic remains to be seen.

Several early lines of evidence point to the success of home-based and digital and/or e-health strategies. For example, a Cochrane review of 12 randomized clinical trials comprising 1938 patients found no difference in short- or intermediate-term outcomes (including death, recurrent AMI, QOL, and cost) between center- and home-based cardiac rehabilitation.5 A meta-analysis of 9 trials that compared telehealth and center-based cardiac rehabilitation showed no significant differences between groups in body weight, blood pressure, smoking, lipid profiles, QOL, or mortality.6 Blasco et al7 reported improved risk factor, blood pressure, hemoglobin A1c, and body mass index outcomes for patients randomized to lifestyle counseling plus mobile phone-enabled messaging compared with patients who received lifestyle counseling alone. Varnfield et al8 randomized patients after AMI to traditional cardiac rehabilitation or a smartphone-based home delivery program including exercise monitoring, motivational and educational material delivery, and weekly monitoring consultations. The smartphone-based program had significantly higher rates of participation and completion, and was associated with significant improvements in patient emotional status and QOL. Several ongoing trials are evaluating the effectiveness of web- or smartphone-based interactive tools and comprehensive cardiac telerehabilitation.9

Cardiac rehabilitation is a tremendously important component of the care of patients after AMI and/or coronary revascularization. The path forward to improve utilization involves novel approaches that center on the patient. We have seen only glimpses of what can be accomplished with digital and e-health strategies. Wide-scale change will require patients, clinicians, insurers, and health systems to adopt and catch up with what is already digitally achievable.

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Comparison of the Expression and Granting of Requests for Euthanasia in Belgium in 2007 vs 2013

Belgium legalized euthanasia in 2002.1 Between 2007 and 2013, the prevalence of euthanasia in Flanders, the Dutch-speaking part of Belgium, increased from 1.9% to 4.6% of all deaths.2 Here we describe the shifts (overall and in specific groups of patients) in the expression and granting of euthanasia requests during this period and the reasons that physicians granted or denied these requests.

Methods | Approval was obtained from the Ethical Review Board of the University Hospital of the Vrije Universiteit...
Results | Questionnaires were returned for 3751 of the 6871 deaths (55%). For 683 deaths, we determined that a response was impossible because of issues with access to the patient’s medical records or patient identification. Therefore, the response rate was 60.6% (3751 of 6188 eligible cases) compared with 58.4% (3623 of 6202 eligible cases) in 2007.

The prevalence of euthanasia increased in all patient groups and in all health care settings (Table 1). There were significant increases in the number of requests (from 3.4% to 5.9%; \( P < .001 \)) and the proportion of requests granted (from 55.4% to 76.7%; \( P < .001 \)). The most pronounced increases in the frequency of requests were in those who were 80 years or older (2.0% to 4.6%; \( P < .001 \)), those with a college or university education (4.5% to 12.9%; \( P = .008 \)), or those with a diagnosis of cardiovascular disease (0.8% to 3.0%; \( P < .001 \)).

The largest increases in the rates of granting requests were among women (45.7% to 76.4%; \( P < .001 \)) and those who were 80 years or older (38.1% to 75.4%; \( P < .001 \)), had less
In 2013, physicians reported that the most important reasons for granting a euthanasia request were the patient’s request (88.3%; 95% CI, 82.5%-92.4%), physical and/or mental suffering (87.1%; 95% CI, 81.7%-91.1%), and the lack of prospects for improvement of their condition (77.7%; 95% CI, 71.6%-82.8%) (Table 2). The most important reasons for not granting the request were that the patient died before the decision (58.5%; 95% CI, 44.8%-71.0), the request was revoked (17.9%; 95% CI, 9.9%-30.2%), and legal criteria were not met (19.6%; 95% CI, 10.8%-33.0).

The percentage of cases in which the physician reported denying the request for reasons external to the patient (restrictive institutional policy, personal objections, or fear of legal consequences) decreased from 23.4% in 2007 to 2.0% in 2013 (P = .003).

Discussion | Previous research3 has suggested that the euthanasia law in Belgium created a context of increased openness about end-of-life care and decision making in which patients could more freely discuss their wishes. Between 2007 and 2013, there were substantial increases in the proportion of euthanasia requests across various patient groups in Flanders, including groups whose requests were formerly less prevalent. These increases reflect continuing attitudinal and cultural shifts; values of autonomy and self-determination have become more prominent, and acceptance of euthanasia continues to increase in the population at large.4 In our opinion, physicians, as part of the overall society, share this overarching perspective, which may in part explain their greater willingness to grant euthanasia requests. Additional reasons are growing familiarity with the practice, reassurance of nonprosecution when legal criteria are met, and the diminished reluctance of some health care institutions to allow euthanasia. Moreover, euthanasia is perceived as part of the palliative care continuum, as formally expressed in a position statement from the Federation of Palliative Care Flanders.5 Although the prevalence of euthanasia remains highest in patients with cancer, those with a college or university education, and those who die before 80 years of age, there are increasing numbers of requests and granted requests in patients with diseases other than cancer.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Deaths, % (95% CI)a</th>
<th>2007</th>
<th>2013</th>
<th>P Valueb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most important reasons for granting the requestc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient’s request</td>
<td>93.4 (87.2-96.7)</td>
<td>88.3 (82.5-92.4)</td>
<td>.36</td>
<td></td>
</tr>
<tr>
<td>Physical and/or mental suffering</td>
<td>91.2 (85.7-94.7)</td>
<td>87.1 (81.7-91.1)</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>No prospect of improvement</td>
<td>83.9 (76.6-89.2)</td>
<td>77.7 (71.6-82.8)</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>Expected further suffering</td>
<td>55.2 (46.3-63.8)</td>
<td>48.3 (41.5-55.2)</td>
<td>.39</td>
<td></td>
</tr>
<tr>
<td>Low expected quality of life</td>
<td>55.2 (44.0-66.0)</td>
<td>45.1 (38.4-52.1)</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Loss of dignity</td>
<td>49.9 (41.0-58.8)</td>
<td>52.1 (35.5-49.0)</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>Life not to be prolonged needlessly</td>
<td>40.8 (30.2-52.3)</td>
<td>30.7 (24.6-37.5)</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Being tired of life d</td>
<td>NA</td>
<td>25.3 (19.8-31.6)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Family’s request</td>
<td>26.5 (17.5-37.9)</td>
<td>23.4 (18.0-29.8)</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Situation unbearable for family</td>
<td>17.6 (11.9-25.2)</td>
<td>13.8 (9.6-19.4)</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>Other reasons</td>
<td>0</td>
<td>0.4 (0.1-2.6)</td>
<td>&gt;.99</td>
<td></td>
</tr>
<tr>
<td>Most important reasons for not granting the requestc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient died before decision</td>
<td>44.3 (31.0-58.5)</td>
<td>58.5 (44.8-71.0)</td>
<td>.16</td>
<td></td>
</tr>
<tr>
<td>Patient revoked request</td>
<td>15.6 (8.0-28.1)</td>
<td>17.9 (9.9-30.2)</td>
<td>&gt;.99</td>
<td></td>
</tr>
<tr>
<td>Legal criteria were not met</td>
<td>21.1 (13.3-31.9)</td>
<td>19.6 (10.8-33.0)</td>
<td>&gt;.99</td>
<td></td>
</tr>
<tr>
<td>Suffering was not unbearable</td>
<td>9.0 (4.3-17.8)</td>
<td>12.6 (5.6-25.9)</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>Patient was not terminally ill e</td>
<td>1.5 (0.2-9.9)</td>
<td>7.5 (2.5-20.7)</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>No well-considered request</td>
<td>10.4 (4.9-20.9)</td>
<td>10.1 (4.2-22.2)</td>
<td>.40</td>
<td></td>
</tr>
<tr>
<td>Condition was not without prospect of improvement</td>
<td>5.8 (2.3-13.7)</td>
<td>4.8 (1.2-17.4)</td>
<td>&gt;.99</td>
<td></td>
</tr>
<tr>
<td>No voluntary request</td>
<td>1.3 (0.3-5.2)</td>
<td>0</td>
<td>&gt;.99</td>
<td></td>
</tr>
<tr>
<td>Reasons external to the patient</td>
<td>23.4 (12.7-39.0)</td>
<td>2.0 (0.3-13.0)</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>Institutional policy</td>
<td>6.0 (1.7-18.7)</td>
<td>2.0 (0.3-13.0)</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Personal objections</td>
<td>10.2 (3.8-24.6)</td>
<td>0</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Fear of legal consequences</td>
<td>7.2 (1.4-28.9)</td>
<td>0</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>Other reasons</td>
<td>10.0 (5.3-18.1)</td>
<td>15.1 (7.1-29.2)</td>
<td>.56</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: NA, not applicable.

a Weighted percentages.
b Bivariate P values based on Fisher exact test.
c The physicians could choose several reasons.
d Being tired of life was not included in the 2007 questionnaire.
e Terminal status is not a legal prerequisite for euthanasia but is sometimes viewed as such by Belgian physicians.
those who die after 80 years of age, and those who reside in nursing homes.

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Study concept and design: All authors.

Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: Dierickx, Cohen, Chambaere.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Dierickx, Deliens.

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Study supervision: Deliens, Cohen, Chambaere.

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Diversity in Graduate Medical Education in the United States by Race, Ethnicity, and Sex, 2012

Diversification of the physician workforce in the United States remains an ongoing goal,1,2 yet assessments of graduate medical education (GME) diversity, overall and across specialties are lacking. We assessed GME diversity by race, ethnicity, and sex in 2012.

Methods | Our study used publicly reported data to assess differences in representation by female and historically underrepresented minority groups in medicine (URMs) for the total GME pool3 compared with the US population,4 US practicing physicians,5 medical school graduates,6 and 20 largest residency training specialties4 (excluding transitional year). Categories evaluated were race, Hispanic ethnicity, and sex, defined as consistent with the US Census.4 American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders (AI/AN/NH/PI) were grouped together. The University of Pennsylvania granted

Figure 1. Distribution in the 2010 US Population, 2012 Medical School Graduates, 2012 Practicing Physicians, and the 2012 Graduate Medical Education (GME) Trainee Pool

When comparing the total GME percentage representation for each demographic with the other groups, representation was significantly different for all groups (P <.001 for all comparisons, except for the Hispanic medical school graduates and trainees [P = .88]). Not shown are the male sex, non-Hispanic ethnicity, “other” race, and white race categories. AI indicates American Indian; AN, Alaska Native, NH, Native Hawaiian; PI, Pacific Islander; URM, underrepresented minorities in medicine (non-URM category is not shown).