

A profile of physiotherapy clinical education

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Abstract

The purpose of the study was to examine clinical education placement data to generate a profile of providers and examine the students' exposure to health care and educational factors during clinical education. A retrospective audit of clinical placement rosters was undertaken for 3 calendar years (2001–2003). Data were analysed overall and by clinical school for sites and placements, public or private sector and type of placement. Over the 3-year period, 209 sites provided 3475 clinical placements, with the number of placements increasing from 1066 placements in 2001 to 1133 in 2002 and to 1276 in 2003. Overall, 72.2% of placements were located in metropolitan Sydney. The proportion from regional providers increased over the 3 years from 11.8% to 15.1%. Overall 85.8% of placements were delivered by public providers. The profile indicated that a considerable number of clinical sites were utilised with an emphasis on large public hospitals. The challenge for curriculum development is to reduce the clinical education demands on current providers while ensuring graduates meet entry-level standards of physiotherapy.

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PHYSIOTHERAPY EDUCATION programs aim to equip graduates with the required knowledge, skills and attributes to work safely and competently as physiotherapists. In addition, Australian physiotherapy education programs must comply with *Standards for accreditation of physiotherapy education programs at the level of higher education awards* and the *Australian standards for physiotherapy*.¹ Clinical education is an integral part of physiotherapy programs and is reliant on strong relationships with clinical providers in a variety of health care settings.

The challenge of securing sufficient high-quality clinical education placements to meet the

What is known about the topic?

Clinical education is an integral part of physiotherapy programs and is reliant on major contributions and strong relationships with clinical providers in health care settings. Health care and educational environments have been changing over the last decade, and securing sufficient high-quality clinical education placements to meet the needs of physiotherapy students is increasingly difficult.

What does this paper add?

This study establishes a profile of clinical education providers for one of the largest educational institutions training physiotherapists. From 2001–2003 the demand increased by 210 placements (16.5%). The major providers were large public hospitals who provided 85.8% of placements. It was found that aside from experience in the private sector the students had a wide range of exposure to a variety of clinical sites, locations and health care sectors.

What are the implications for practitioners?

The study highlights that graduates not only meet entry-level standards but also have exposure to a range of health care and educational factors. However, the contribution of the private sector in physiotherapy clinical education needs to increase.

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needs of physiotherapy students is global.²⁻⁵ Contributing to the challenge are the dramatically changing health and education environments worldwide.⁶ In Australia, there has been a shift toward community-based care and self-management, rather than extended hospital care,⁷ and a rapid expansion in the number of physiotherapy programs.⁸ The challenge of securing clinical placements has grown in New South Wales over the last decade, with the number of universities offering physiotherapy programs increasing from one to three and a national shortage of physiotherapists in 9 of the last 10 years.⁹

The University of Sydney's physiotherapy clinical education program uses a mixture of models of clinical education with variable ratios of students to educators, ranging from 6:1 to 1:1. This is a reflection of tradition and pragmatism where delivery of clinical education needs to be flexible to match the complexity of providers and health care delivery. While a recent systematic review¹⁰ found that no model of clinical education was superior, it was noted that there was a paucity of high-quality research. Descriptive studies, such as this study, provide information which can enhance the design of high-quality research to improve the evidence base for clinical education.

Clinical site variety, location and health care sector are health care factors, and learning group size is an educational factor of clinical programs that can vary among students. Clinical site variety and location may influence students' future career choices. At The University of Sydney, we aim for students to attend a different clinical site for each placement, to give students exposure to different workplaces. While this aim places burdens on the provider to orientate students and accommodate the settling-in period, we feel that wide exposure better prepares graduates for the workforce. In addition, given that the NSW health system currently has an allocation system for new physiotherapy graduates, students report anecdotally that greater exposure to clinical sites assists them to rank their allocation preferences.

Location is also varied. We aim to provide students with experience in metropolitan Sydney and in regional and rural NSW. We know that rural and

regional providers are essential to our clinical education program to ensure that we meet the number of placements required. Students are informed on enrolment that they will be required to undertake at least one placement in a rural and/or regional setting. The strategy of exposing students to a variety of sites and locations was designed not only to give students an insight into health delivery in different settings and sites but also to allow them to contemplate different sites and locations when considering future work options. While it is known there has been a national shortage of physiotherapists in Australia for 9 out of the last 10 years, the shortage has been worst in rural areas.⁹ Exposure to the rural setting may also help alleviate the rural workforce shortage.

In Australia, a significant proportion of health care is provided in the private sector.¹¹ In NSW, 58.6% of registered physiotherapists work in the private health care sector.¹² We aim to provide students with experiences in the private sector, however, given only 14% of clinical placements are provided by the private sector, it is unlikely all students will have an experience in this sector.

Learning group size is an educational factor which is also varied. Our students complete placements in groups ranging from one (ie, alone) to six. In the absence of clear data about which model of clinical education is superior,¹⁰ we aim to provide students with experiences of different learning group sizes. Grouping students allows for the utilisation of peer learning, collaborative learning and teamwork,^{3,6} whereas being on a placement without others gives the students opportunity to develop independence and autonomy, which are also important professional attributes.

Exposure to these four factors is limited by two constraints. The first constraint is mandatory adherence to the prescribed curriculum in terms of type of placement (eg, neurology placement), which has been designed to ensure graduates meet all entry-level standards for physiotherapy. The second constraint is the availability of placements offered by clinical providers.

The purpose of this study was to examine clinical education placements for The University

of Sydney to generate a profile of clinical education providers in 3 calendar years and determine how successful the placement allocation is in providing undergraduate students with wide exposure to clinical sites, locations, health care sectors and learning group sizes. Generating such a profile provides information about clinical education, enables identification of inequities in clinical education provision across the health care system and can guide the development of future physiotherapy clinical education curricula.

Methods

Organisation of clinical education

The University of Sydney, which is located in New South Wales, Australia, is among the largest providers of physiotherapy education worldwide. There are two entry-level programs for physiotherapy: a 4-year undergraduate bachelor degree and a 2-year graduate-entry masters degree. Both programs have integrated academic and clinical components.

In 1998, the University of Sydney implemented a “clinical schools” model. The clinical education program is organised into five clinical schools. Each school covers a geographic region of Sydney as well as regional and rural areas. The five schools are Central, Northern, Southeastern, Southwestern and Western. Clinical providers are allocated to a clinical school based on geographic regions and students are allocated to a school based on a preferential ballot. Each clinical school has a clinical coordinator and administrative support provided by the university, however direct student supervision is provided by clinical educators working in the health care settings. Each clinical school has a steering committee, made up of the providers and the university clinical coordinator, to facilitate placement and support of students and educators. The Clinical Education Advisory Committee oversees the development and implementation of the clinical education program. Members of this committee include academics, clinical educators, physiotherapy managers and students. The membership of the Clinical Education Advisory Committee reflects the strong collaboration

between key stakeholders in development and implementation of clinical education.

Each year between 2001 and 2003, undergraduate students completed six full-time clinical placements totalling 29 weeks. The undergraduate and graduate programs run concurrently so that in any calendar year there are 29 weeks of clinical education organised in six placement periods. In the period studied, all students completed a general placement, a cardiopulmonary, a neurology and two musculoskeletal placements. The undergraduate students had an additional elective placement.

Data collection

A retrospective audit of the clinical education placement rosters generated from a Microsoft Access database (Microsoft Corporation, Redmond, Wash, USA) was undertaken for 3 calendar years (2001–2003) which included data from both entry-level programs and for three cohorts of undergraduate students between 1998 and 2003 (cohort 1, 1998–2001 [195 students]; cohort 2, 1999–2002 [159 students]; cohort 3, 2000–2003 [193 students]). Data from the three cohorts were pooled, resulting in a total of 547 undergraduate students who completed six full-time clinical education placements. Any inconsistencies in the dataset were identified and corrected by reviewing student assessment records which confirmed the details of the clinical education placements.

Data analysis

Data were analysed overall and by clinical school for 2001, 2002 and 2003 for the number of providers and placements, location of providers, health care sector (public or private), type of placement and learning group size. A small number of placements were provided interstate or overseas and these placements were analysed separately. Number of providers was defined as the number of clinical sites, whereas placement was defined as the number of student placements. For example, one site may provide 65 placements in a year, made up of 20 neurology placements, 30 musculoskeletal, 12 cardiopulmonary and 3 elective placements. Provider

I Number of placements in each type of location

| No. of placements | No. of students (%) | | | | |
|-------------------|---------------------|--------------|-------------|-------------|-------------|
| | Metropolitan Sydney | Regional NSW | Rural NSW | Interstate | Overseas |
| None | 1 (0.2%) | 327 (59.8%) | 170 (31.1%) | 506 (92.5%) | 510 (93.2%) |
| 1 | 5 (0.9%) | 113 (20.6%) | 320 (58.5%) | 38 (6.9%) | 37 (6.8%) |
| 2 | 20 (3.7%) | 75 (13.7%) | 51 (9.3%) | 3 (0.6%) | 0 (0) |
| 3 | 61 (11.2%) | 23 (4.2%) | 5 (0.9%) | 0 (0) | 0 (0) |
| 4 | 162 (29.6%) | 6 (1.1%) | 1 (0.2%) | 0 (0) | 0 (0) |
| 5 | 271 (49.5%) | 3 (0.6%) | 0 (0) | 0 (0) | 0 (0) |
| 6 | 27 (4.9%) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |

2 Type of placement in each location for 2001, 2002 and 2003

| | 2001 | | | 2002 | | | 2003 | | |
|-----------------|--------------|-------|----------|--------------|-------|----------|--------------|-------|----------|
| | Metropolitan | Rural | Regional | Metropolitan | Rural | Regional | Metropolitan | Rural | Regional |
| Cardiopulmonary | 146 | 3 | 21 | 145 | 6 | 22 | 171 | 11 | 29 |
| Elective | 128 | 29 | 23 | 139 | 15 | 24 | 168 | 25 | 21 |
| General | 134 | 45 | 25 | 157 | 36 | 35 | 141 | 30 | 28 |
| Musculoskeletal | 238 | 67 | 37 | 239 | 79 | 56 | 274 | 86 | 77 |
| Neurology | 123 | 27 | 20 | 153 | 15 | 12 | 153 | 24 | 38 |
| Total | 769 | 171 | 126 | 833 | 151 | 149 | 907 | 176 | 193 |

location was classified as Metropolitan (defined as providers located in greater metropolitan Sydney), Regional (defined as large cities outside Sydney and including the Central Coast, Hunter and Illawarra regions as well as the interstate and overseas large cities) or Rural (defined as locations not classified as Metropolitan or Regional). Providers were classified as private or public according to funding source. Where there was a mix of funding (ie, charitable organisations and support groups) the provider was classified as private. Type of placement was classified according to the curriculum as general, musculoskeletal, cardiopulmonary, neurology and elective. Common electives included paediatrics, private practice, sleep disorders, rehabilitation, pain clinics, Indigenous health, rural health and occupational health. The data were analysed descriptively using Microsoft Excel software (Microsoft Corporation, Redmond, Wash, USA).

Ethical approval was not sought for this project as the audit involved the review of publicly available placement rosters and the clinical providers agreed to the project.

Results

Over the 3 calendar years, 3475 placements were provided by 209 different clinical sites, with a maximum of 170 clinical sites used in any single year. Over the 3-year period the demand increased by 210 placements (16.5%) from 1066 in 2001 to 1133 in 2002 and to 1276 in 2003.

Almost all undergraduate students (99.1%) went to four or more different sites for their six placements, with 47.9% attending a different clinical site for every single placement. The majority of students completed at least four metropolitan Sydney placements (84%), with a small number undertaking all six placements in metropolitan Sydney (4.9%). One or more rural NSW

3 Type of placement in the public and private sectors for 2001, 2002 and 2003

| Type of placement | 2001 | | 2002 | | 2003 | |
|-------------------|--------|---------|--------|---------|--------|---------|
| | Public | Private | Public | Private | Public | Private |
| Cardiopulmonary | 170 | 0 | 173 | 0 | 211 | 0 |
| Elective | 109 | 71 | 119 | 59 | 131 | 83 |
| General | 195 | 9 | 201 | 27 | 176 | 23 |
| Musculoskeletal | 297 | 45 | 315 | 59 | 363 | 74 |
| Neurology | 160 | 10 | 171 | 9 | 191 | 24 |
| Total | 931 | 135 | 979 | 154 | 1072 | 204 |

4 Learning group sizes experienced by students during clinical placements

| No. of placements | No. of students (%) per learning group | | | | | |
|-------------------|--|-------------|-------------|-------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| None | 152 (27.8%) | 32 (5.9%) | 337 (61.6%) | 140 (25.6%) | 405 (74.0%) | 367 (67.1%) |
| 1 | 258 (47.2%) | 122 (22.3%) | 175 (32.0%) | 181 (33.1%) | 139 (25.4%) | 141 (25.8%) |
| 2 | 99 (18.1%) | 155 (28.3%) | 32 (5.9%) | 110 (20.1%) | 2 (0.4%) | 33 (6.0%) |
| 3 | 34 (5.9%) | 138 (25.2%) | 3 (0.5%) | 69 (12.6%) | 1 (0.2%) | 5 (0.9%) |
| 4 | 4 (0.7%) | 64 (11.7%) | 0 (0) | 40 (7.3%) | 0 (0) | 1 (0.2%) |
| 5 | 0 (0) | 32 (5.9%) | 0 (0) | 7 (1.3%) | 0 (0) | 0 (0) |
| 6 | 0 (0) | 4 (0.7%) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |

placements were completed by 68.9% of students. Regional NSW placements were undertaken by a total of 39.8% of students, whereas interstate and overseas placements made up only a small percentage (7.5% and 6.8% respectively). Results for location of placements are summarised in Box 1.

Over the 3-year period, metropolitan clinical sites provided 2509 placements (72.2 %). Both metropolitan and regional sites increased the number of placements over the 3-year period, whereas the rural sites had a decrease of placements in 2002, which were regained in 2003. The proportional contribution from regional providers increased from 11.8% in 2001 to 15.1% in 2003. Rural sites were more likely to provide musculoskeletal and general placements, whereas regional and metropolitan sites provided the range of placements, with at least twice as many musculoskeletal placements compared with the other type of placements (Box 2).

The public health sector provided 2982 placements (85.8%) over the 3-year period, and the 554 cardiopulmonary placements were provided exclusively by the public sector (Box 3). Over time, the private sector provided more placements, the number rising from 135 (12.7%) in 2001 to 204 (16.0%) in 2003 (Box 3). The private sector predominantly provided elective (213) and musculoskeletal (178) placements (Box 3). The vast majority of undergraduate students (99.6%) attended three or more of their placements in publicly funded sites, and 43.9% attended all of their placements in the public sector. The private sector provided placements to a total of 56.1% of students, of whom only 17.2% completed more than one placement in the private sector.

The analysis of individual clinical school data illustrated that the Western and Southeastern clinical schools provided the most, and South-western school the fewest, placements. Seven

5 Individual clinical school analysis: percentage of students experiencing each characteristic

| Characteristic | Clinical school | | | | |
|-----------------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| | Central | Northern | Southeastern | Southwestern | Western |
| Different clinical sites | 4 sites, 26.9% | 4 sites, 0.9% | 4 sites, 12.4% | 4 sites, 3.8% | 4 sites, 17.8% |
| | 5 sites, 52.8% | 5 sites, 21.2% | 5 sites, 54.0% | 5 sites, 30.2% | 5 sites, 36.4% |
| | 6 sites, 16.7% | 6 sites, 77.9% | 6 sites, 32.7% | 6 sites, 66.0% | 6 sites, 45.8% |
| Location | Metro, 100.0% | Metro, 100.0% | Metro, 100.0% | Metro, 99.1% | Metro, 100.0% |
| | Rural, 85.2% | Rural, 34.5% | Rural, 74.3% | Rural, 72.3% | Rural, 89.7% |
| | Regional, 9.3% | Regional, 90.3% | Regional, 15.9% | Regional, 78.3% | Regional, 6.5% |
| | Rural 2+, 12.0% | Rural 2+, 4.4% | Rural 2+, 1.8% | Rural 2+, 6.6% | Rural 2+, 28.0% |
| | Regional 2+, 0.0 | Regional 2+, 53.1% | Regional 2+, 1.8% | Regional 2+, 42.5% | Regional 2+, 0.0 |
| Health care sector | Public, 100.0% | Public, 100.0% | Public, 100.0% | Public, 100.0% | Public, 100.0% |
| | Private, 50.9% | Private, 81.4% | Private, 46.9% | Private, 47.2% | Private, 53.3% |
| Learning group size (top 3) | 4 students, 97.2% | 2 students, 100.0% | 2 students, 91.2% | 2 students, 99.1% | 2 students, 93.5% |
| | 2 students, 87.0% | 1 student, 88.5% | 4 students, 86.7% | 4 students, 69.8% | 1 student, 84.1% |
| | 1 student, 63.9% | 4 students, 51.3% | 6 students, 74.3% | 1 student, 60.4% | 4 students, 67.3% |

2+ = two or more placements.

public hospitals provided over 100 placements each in the 3-year period. One public hospital consistently provided the most placements, providing 306 placements over the 3-year period, which was 8.8% of the total placements.

Learning group sizes ranged from students attending placements on their own to being in a group with five other students (Box 4). The majority (94.1%) of students experienced at least one placement in a pair, 72.2% attended at least one placement alone and 74.4% had at least one placement in a group of four. Group sizes of three, five or six students were less common.

There were differences between the five clinical schools in terms of the four factors: clinical site variety, location, health care sector and learning group size (Box 5).

The percentage of students attending a different site for each of the six placements varied from 77.9% for the Northern School to 16.7% for the Central School. The percentage of students experiencing a rural setting varied from 89.7% for the Western School to 34.5% for the Northern School. Over 12.0% of the students in the West-

ern and Central Schools went rural for two or more placements. The percentage of students experiencing a regional setting ranged from 90.3% for the Northern School to 9.3% for the Central School. Over 40.0% of students from the Northern and Southwestern schools experienced a regional setting on two or more placements. Students were more likely to experience the private sector if they were from the Northern School and least likely if they were from the Southwestern and Southeastern Schools. Working in pairs (groups of two) was the most common learning group size for all schools except the Central School, whose most common group size was 4. A high percentage (74.3%) of students from the Southeastern school experienced the maximum group size of six.

Discussion

This descriptive study provides useful information for physiotherapy clinical education and curriculum design. Over the 3-year period, an additional 210 clinical placements were needed.

During the audit period the curricula for the entry-level programs did not change, and this increase in placements resulted from increased student intake, particularly the graduate-entry masters program.

Need for additional placement sites

Although meeting the demand for placements in the period audited, the continuing yearly increase in clinical placement requirements is not sustainable for the providers.^{13,14} The clinical school data enables planning for further placement development. For example, the Central clinical school should increase elective placements, whereas the Southwestern school needs to further develop all types of placements. Information about inequities between clinical schools has also been utilised by the Clinical Education Advisory Committee in its role to oversee the development and implementation of clinical education.

This study demonstrates that the vast majority of clinical education provision is undertaken by the public sector, particularly hospitals. While the private sector increased its contribution over the 3-year period, its average contribution was only 14%. Given that in 2001 58.6% of registered physiotherapists in NSW worked in the private sector,¹² the contribution from the private sector is inadequate. This challenge has also been documented in medicine.¹⁵ Barriers to increased private involvement need to be identified and solutions developed and implemented.

While the public sector provides 85.8% of clinical education, there were inequities between public hospitals. For example one site provided 306 placements over the 3-year period while two other similarly sized hospitals provided 101 and 80 placements respectively. The hospitals more likely to take a greater number of placements appeared to be those with designated clinical educator positions. Such positions allow a physiotherapist to take 4–6 students at one time. During placement periods, these designated clinical educators' primary role is educating students.

Given the location of The University of Sydney, not surprisingly all but one student completed at

least one placement in metropolitan Sydney. Placements in Sydney are preferred by students as they impose the lowest financial burden. Rural placements are included in an attempt to help with the well known shortage of health care workers in rural areas.⁹ While the majority of students gained experience working in a rural area at least once, there remained a small percentage who attended regional sites instead or who remained in metropolitan sites for all clinical placements. The main reasons for this were the relatively small number of offers by rural sites and students applying for "special consideration" to stay in metropolitan Sydney for specific, approved reasons (eg, family illness, primary carer duties or elite-level sporting commitments).

Need for placement sites representative of the Australian health care system

Our finding that most clinical education takes place in large public hospitals is at odds with the changes in Australian health care. It is recognised that there has been a policy shift toward community-based care and self-management rather than extended hospital care.⁶ If students undertake the majority of their clinical education in large public hospitals they may be ill-prepared for the workforce, with a mismatch between their skills and experience and Australian health care. Development of physiotherapy clinical education placements in both public and private community-based health care settings is essential. The shift of health care from the public to the private sector, and the associated challenges for clinical education programs, has been recognised not only in specialist circles but also within the mainstream national broadsheets.^{8,15}

The changes in Australian health care have implications not only for the educational institutions in the delivery and development of curricula but also for the regulatory authority, the Australian Physiotherapy Council, which accredits entry-level programs. The requirement that educational institutions must demonstrate that their graduates meet the Australian Standards for Physiotherapy in all key areas of physiotherapy (including musculoskeletal, neurology, cardiopul-

monary and electrophysical agents across all ages and from acute and community contexts)¹ has effectively driven the division of placements into neurology, musculoskeletal and cardiopulmonary physiotherapy. However, such placements are at odds with how current health care is delivered and also the professional roles of physiotherapists today. Ongoing and open dialogue between the Australian Physiotherapy Council and educational institutions guided by health providers is necessary to ensure curriculum development is reflective of current health care. It may be more prudent to align placements with health care delivery — that is, divide placements into acute care, rehabilitation, ambulatory care and community health. Subsequent to this study, curriculum development along these lines has been implemented.

With a national shortage of physiotherapists,⁹ the challenge for the profession is to reduce the clinical education demands on current providers while ensuring graduates meet entry-level standards and match current health care practices. An increased contribution from the private sector is warranted as well as development of placements in community health care. Alternatively, there may be solutions within curriculum development, with the reduction of placements utilising technologies such as telehealth,¹⁶ virtual reality¹⁷ and patient simulations.¹⁸ There may also be efficiencies to be gained by utilising interprofessional placements.¹⁹ High-quality research is needed that evaluates the effect of different technologies and simulated learning environments on professional competency and cost effectiveness.

Our study indicates that most students gained experience in learning groups of variable sizes. The group size offered is dependent on the clinical provider and frequently reflective of their staffing and space resources. Larger learning groups (4–6 students) are exclusively provided by large public hospitals with designated clinical educators, whereas private providers and other public facilities without designated educator positions typically offer placements for 1–2 students. We argue that a variety of learning group sizes is beneficial. Working in pairs allows for collabora-

tive learning and peer support,³ whereas larger groups allow for teamwork. Teamwork is an essential skill for physiotherapy graduates, as health care delivery has become increasingly interprofessional.²⁰ Physiotherapists need to work well in health care teams and need to be able to interact with a range of clients and colleagues.⁶ With 85.8% of all placements provided by the public sector and the majority provided by large public hospitals we are confident that the clinical education program exposes students to multidisciplinary teams in a number of placements. Placements with only one student may also be beneficial, as increasing numbers of new graduates take up positions in settings where they are forced to make critical clinical decisions without a network of support from senior physiotherapists.⁸ Placements without other students may assist students to develop confidence, independence and autonomy.

Limitations

The major limitation of this study is that it was a descriptive study examining data retrospectively from only one Australian educational institution. However it provides useful background information for the design of future studies. For example, it may be useful to set up targets for private sector involvement, implement strategies for its contribution and to monitor providers regularly as a means of addressing the inequity between the public and private sectors. Examination of the relationships between exposure to the different factors and student and graduate employer satisfaction, and graduate work choices is needed. In the area of curriculum development, study of the effect of learning-group size on clinical performance is also warranted.

Implications

The audit was useful in establishing a profile of clinical education providers and describing the variation in placement experiences between clinical schools. The information highlighted inequities between public and private health care sectors in clinical education. The information can

also be used to drive curriculum developments to ensure clinical education programs match current health care practice. This study demonstrated that we need more clinical education providers, particularly providers outside the public hospital system. Given the importance of clinical education and the challenges in providing it, further work is urgently needed.

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Competing interests

The authors declare that they have no competing interests.

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