Factors influencing the choice of specialty of Australian medical graduates

Mary G Harris, Paul H Gavel and Jeannette R Young

ABSTRACT

Objective: To identify the relative importance of extrinsic determinants of doctors' choice of specialty.

Design: A self-administered postal questionnaire.

Setting: Australian vocational training programs.

Participants: 4259 Australian medical graduates registered in September 2002 with one of 16 Australian clinical colleges providing vocational training programs.

Main outcome measures: Choice of specialist vocational training program; extrinsic factors influencing choice of program, and variation by sex, age, marital status and country of birth.

Results: In total, 79% of respondents rated "appraisal of own skills and aptitudes" as influential in their choice of specialty followed by "intellectual content of the specialty" (75%). Extrinsic factors rated as most influential were "work culture" (72%), "flexibility of working arrangements" (56%) and "hours of work" (54%). We observed variation across training programs in the importance ascribed to factors influencing choice of specialty, and by sex, age and marital status. Factors of particular importance to women, compared with men, were "appraisal of domestic circumstances" (odds ratio [OR], 1.9), "hours of work" (OR, 1.8) and "opportunity to work flexible hours" (OR, 2.6). Partnered doctors, compared with single doctors, rated "hours of work" and "opportunity to work flexible hours" as more important (OR, 1.3), while "domestic circumstances" was more important to doctors with children than those without children (OR, 1.7). In total, 80% of doctors had chosen their specialty by the end of the third year after graduation.

Conclusions: Experience with discipline-based work cultures and working conditions occurs throughout medical school and the early postgraduate years, and most doctors choose their specialty during these years. It follows that interventions to influence doctors' choice of specialty need to target these critical years.

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In Australia, as in other developed countries, some clinical specialties are more attractive to doctors than others.[1,2] This is particularly so for female medical graduates who favour general practice, public health medicine, paediatrics and child health, and psychiatry, but not surgery.[3-6] About one in two medical graduates now entering the workforce are women.[7-9] Furthermore, current graduates tend to be older than previous graduates, which may also influence choice of specialty.[8,10,11]

In September 2002, the Australian Medical Workforce Advisory Committee (AMWAC) undertook a survey of Australian medical graduates registered with a training program of an Australian clinical college. The aim was to provide a snapshot of the views and career plans of these doctors, and to establish baseline data for monitoring doctors' career decisions.[12] We describe here the outcomes for determinants of specialty choices.

In our survey we sought answers to:

- What are the most influential intrinsic determinants (factors such as age, sex, dependent children, location of birth, and personal attributes and preferences), and extrinsic determinants (factors such as influence of significant others, actions of training programs and employing organisations) of choice of specialty?
- What is the influence of demographic characteristics?
- When are decisions about choice of specialty made?

Our study assumed that choice of specialty by a doctor in the early postgraduate years is a multifactorial process, largely determined in the years following graduation.[13,14] Two surveys in the United Kingdom identified "appraisal of own skills and aptitudes", "enthusiasm for or commitment to the specialty", "domestic circumstances", "hours and working conditions", and "experience of jobs in training", as factors having the greatest influence on the career choices of doctors.[15,16] These surveys also revealed differences among male and female doctors in the weighting ascribed to each of these factors.

Before undertaking our study, a review of the literature confirmed that there was greater opportunity for governments, health authorities and the medical profession to influence extrinsic determinants of choice of specialty.[17] Hence, an important objective of our study was to identify and weight the extrinsic determinants of choice of specialty.

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METHODS

Questionnaire development

We conducted a postal survey in September 2002 of the 7906 medical graduates (Australian citizens and permanent residents) registered with a clinical college training program. Questionnaires were mailed to each doctor, together with a covering letter from their clinical college. Two follow-up mailings were sent (in October and November) to those who had not returned a completed questionnaire.

The content and design of the questionnaire were informed by:

- four focus groups of Australian doctors in various stages of vocational training that took place in Adelaide, Melbourne and Sydney during 2001–02;

1 Specialty and demographic characteristics of doctors in vocational training in Australia in 2002

Specialty training program	Response rate	Percentage of total	Average age (years)	Female	Married/ partnered	Dependent children	Medical school overseas
Adult medicine*	795/1571 (50.6%)	18.7%	32.2	46.0%	71.1%	29.2%	11.8%
General practice	754/1390 (54.2%)	17.7%	33.1	65.6%	71.1%	36.9%	19.5%
Surgery	677/1346 (50.3%)	15.9%	30.9	18.5%	61.3%	26.8%	9.5%
Anaesthesia†	510/940 (54.3%)	12.0%	32.3	37.0%	70.1%	29.1%	10.4%
Emergency medicine	408/646 (63.2%)	9.6%	33.2	43.6%	72.7%	34.2%	22.1%
Psychiatry	361/698 (51.7%)	8.5%	35.9	55.7%	72.6%	38.8%	24.7%
Paediatrics and child health	275/466 (59.0%)	6.5%	32.0	66.4%	72.0%	35.4%	14.5%
Radiology	153/264 (58.0%)	3.6%	30.9	42.1%	65.6%	19.7%	7.8%
Obstetrics and gynaecology	129/203 (63.5%)	3.0%	31.9	66.7%	62.8%	23.4%	15.5%
Pathology	128/237 (54.0%)	3.0%	32.7	50.4%	73.2%	35.4%	12.5%
Ophthalmology	69/90 (76.7%)	1.6%	32.6	29.4%	66.7%	26.1%	0.0
Total	**4259/7851 (54.2%)**	**100.0%**	**32.5**	**46.4%**	**69.3%**	**31.5%**	**14.6%**

* "Adult medicine" includes trainees with the Royal Australasian College of Physicians Adult Medicine Division (response rate, 666/1342), Australasian Faculty of Occupational Medicine (response rate, 24/51), Australasian Faculty of Public Health Medicine (response rate, 30/45), Australasian Faculty of Rehabilitation Medicine (response rate, 58/101) and Royal Australasian College of Medical Administrators (response rate, 17/32).

† "Anaesthesia" includes trainees with the Australian and New Zealand College of Anaesthetists (response rate, 484/729) and the Joint Faculty of Intensive Care Medicine (response rate, 26/211). ◆

- similar international surveys; and
- a review of the literature.

Keywords used to search for articles from Canada, the United States, the UK, Europe and Australia included "medical practitioners", "physicians", "junior doctors", "career plans", "career trends", "career choice", "career decision-making", and "choice of specialty". Over 250 articles were retrieved, of which 150 were considered relevant. A total of 22 factors influential in doctors' choice of specialty were identified and were listed in the questionnaire. In addition, the questionnaire provided opportunity for participants to list "other" factors of importance. Participants rated, on a five-point Likert scale (0–4), the influence of each factor on their choice of specialty.

For the analysis, 17 specialties were grouped into 11 categories (Box 1). Four specialties (public health medicine, rehabilitation medicine, occupational medicine and medical administration) with small numbers and closely aligned with adult medicine were merged with adult medicine. Intensive care respondents were merged with anaesthesia, and dermatology was excluded because of small numbers (adjusted baseline number of doctors, 7851).

Intrinsic characteristics included age, sex, marital status, dependent children, and location of medical school (Australia or overseas). Extrinsic factors included hours of work and full-time/part-time training program status. These were examined because they were considered to be an indication of the working conditions and availability of flexible training arrangements.[5,6]

The questionnaire was tested in a pilot study involving 66 participants from three vocational training programs.

Statistical analysis

In addition to descriptive analysis, ordinal logistic regression modelling using Stata statistical software, release 8.2 (Stata Corporation, College Station, Tex, USA) was used to explore variation in factors influencing choice of specialty across training programs and trainee characteristics.

Ethics approval

Ethics approval was obtained through the Australian Institute of Health and Welfare.

RESULTS

Of 7851 doctors, 4259 (54%) returned completed questionnaires. The age, sex, medical school and specialty training program profile of respondents was consistent with that of the target population(s).[12]

Specialty and background characteristics

Specialties with the largest representation were adult medicine, general practice, surgery and anaesthesia (Box 1) and these profiles were similar to those of the target population.[18] Respondents' average age was 32.5 years, 31.5% had dependent children, almost 70% had partners, and 15% graduated from an overseas medical school. Not surprisingly, across specialty groups there was a significant variation in the demographic characteristics of respondents ($P < 0.01$ for all variables). Of the 625 respondents who graduated from an overseas medical school, 603 (96%) were born overseas.

Full time/part-time training status and hours of work

In total, 9.7% of respondents were training on a part-time or job-share basis, and across training programs there was wide variation in the proportion of doctors training part-time ($P < 0.01$) and in the number of hours worked on average per week by full-time trainees (Box 2).

Timing of decision on specialty training program

Respondents were asked to indicate at what stage they chose their current specialty (eg, before entry to medical school, by the end of medical school, or the postgraduate year when this decision was made). In total, 37% of doctors had made their choice by the end of postgraduate year 1 (PGY 1), 43% during PGY 2 or 3, while a further 9% made this decision during PGY 4 or 5. For 11% of

2 Training program, by full-time/part-time training status and average hours worked per week, by doctors in vocational training in Australia, 2002

Specialty training program	Number (%) part-time or job-share doctors*	Average number of hours worked per week (range) by full-time trainees*
Adult medicine	59/779 (7.6%)	51.6 (5–110)
General practice	142/725 (19.6%)	44.8 (5–120)
Surgery	13/668 (1.9%)	61.2 (8–120)
Anaesthesia	19/499 (3.8%)	50.3 (24–120)
Emergency medicine	58/399 (14.5%)	46.6 (30–100)
Psychiatry	63/359 (17.5%)	49.3 (24–100)
Paediatrics and child health	34/266 (12.8%)	48.6 (6–80)
Radiology	4/153 (2.6%)	49.5 (4–100)
Obstetrics and gynaecology	3/129 (2.3%)	57.4 (20–101)
Pathology	9/126 (7.1%)	45.5 (4–90)
Ophthalmology	0/69 (0.0)	51.2 (40–80)
Total	**404/4171 (9.7%)**	**51.6 (4–120)**

* The questions asked were "Are you in full-time or part-time or job-share training?" and "During the past month, on average, how many hours have you worked per week?" ◆

doctors, choice of specialty did not occur until 6 or more years after completion of their basic medical degree (Box 3). Trainee surgeons tended to choose their specialty earlier than other trainees. No differences were observed between male and female trainees in the timing of the decision about a specialty training program, while more recent graduates (eg, those graduating in 1996–2000) tended to decide on their specialty earlier in their career than graduates before this time ($P < 0.01$).

Determinants of specialty choice

Respondents rated on a scale of 0–4 their estimate of the influence of each of the factors listed in Box 4 on their current choice of specialty (0 = not at all; 4 = a great deal). Three intrinsic factors were rated as having the greatest influence: "appraisal of own skills and aptitudes", "the intellectual content of the specialty", and "interest in helping people". These were followed by seven extrinsic factors, the most important of which were the "atmosphere/work culture typical of the specialty", "work experience since graduation" and "opportunity to work flexible hours".

Differences across training programs in the weighting ascribed to the 23 factors influencing choice of training specialty, controlling for sex, age, marital status and other background characteristics, are shown in Box 4 and Box 5. The first of two sets of analyses explored differences between general practice trainees and trainees in the other specialties (as a group), while the second examined differences among specialties, excluding general practice trainees. These analyses indicated that general practice trainees, compared with other trainees, ascribed greater importance to "interest in helping people", "appraisal of own domestic circumstances", "opportunity to work flexible hours", "number of years required to complete training", and "experience of specialty as a medical student".

Trainees in emergency medicine, anaesthesia, psychiatry, pathology and ophthalmology were more likely to ascribe importance to "opportunity to work flexible hours", while this factor was of less importance to trainees in obstetrics and gynaecology and adult medicine. Trainees in surgery ascribed greater importance to the influence of consultants/mentors than trainees in the other nine training programs. Not surprisingly, "opportunity to do procedural work" was of greater importance to trainees in surgery, obstetrics and gynaecology, ophthalmology, anaesthesia and emergency medicine than to trainees in the other programs.

Differences were observed between male and female doctors in the weighting ascribed to the various extrinsic factors influencing choice ($P < 0.01$). Factors of particular importance to women compared with men were "opportunity to work flexible hours" (67% [1307/1951] of women rated this factor as important compared with 45% [1003/2253] of men; OR, 2.6), and "hours of work" (61% [1193/1952] of women, 47% [1066/2255] of men; OR, 1.8). Differences in rankings were also observed based on age, marital status and dependent children (or not). Of greater importance to younger trainees (< 30 years v ⩾ 30 years) was "experience as a medical student" (respectively, 50% [678/1363] and 35% [1018/2939]; OR, 1.6), while factors of more importance to partnered doctors than to single doctors were "hours of work" and "opportunity to work flexible hours"

3 Timing of decision on specialty training program of doctors in vocational training in Australia, by training program, 2002

Training program	By end of medical school	Postgraduate year				Total
		1	2–3	4–5	⩾ 6	
Adult medicine ($n = 793$)	13.4%	16.0%	47.2%	10.1%	13.3%	100.0%
General practice ($n = 743$)	24.5%	22.2%	37.1%	7.0%	9.1%	100.0%
Surgery ($n = 674$)	40.7%	28.5%	23.7%	3.6%	3.6%	100.0%
Anaesthesia ($n = 507$)	7.9%	10.5%	58.0%	12.6%	11.1%	100.0%
Emergency medicine ($n = 408$)	4.7%	11.5%	55.9%	13%	14.9%	100.0%
Psychiatry ($n = 359$)	16.7%	7.2%	40.7%	7.2%	28.1%	100.0%
Paediatrics and child health ($n = 273$)	28.9%	13.2%	45.1%	9.5%	3.3%	100.0%
Radiology ($n = 153$)	11.1%	11.1%	51.6%	17.6%	8.5%	100.0%
Obstetrics and gynaecology ($n = 128$)	25.8%	13.3%	47.7%	7.0%	6.3%	100.0%
Pathology ($n = 126$)	15.1%	12.7%	39.7%	13.5%	19.1%	100.0%
Ophthalmology ($n = 69$)	31.9%	14.5%	44.9%	2.9%	5.7%	100.0%
Total ($n = 4233$)	**20.1%**	**16.7%**	**43.0%**	**9.0%**	**11.2%**	**100.0%**

4 Extrinsic and intrinsic factors influencing choice of specialty of Australian doctors in vocational training, by general practice trainees and trainees in other clinical specialties, 2002

Factors influencing choice of specialty	Total rating factor as influential (ie, 3 or 4 on a Likert scale of 0–4)	General practice trainees		Trainees in other specialties		Odds ratio†
		No. of trainees	Mean score (Likert scale)*	No. of trainees	Mean score (Likert scale)*	
Extrinsic factors						
Work culture typical of the specialty	3051/4229 (72.1%)	744	2.8	3451	2.9	1.0
Work experience since graduation	2715/4228 (64.2%)	742	1.8	3452	2.8	0.6§
Opportunity to work flexible hours	2347/4220 (55.6%)	741	3.4	3445	2.2	1.8§
Influence of consultants/mentors	2331/4222 (55.2%)	740	1.5	3449	2.6	0.7§
Hours of work typical of the specialty	2290/4223 (54.2%)	745	3.3	3444	2.2	0.8
Opportunity to do procedural work	2204/4229 (52.1%)	744	1.8	3451	2.3	1.2
Type of patients	2173/4212 (51.6%)	740	2.4	3438	2.3	1.2
Experience as a medical student	1721/4224 (40.7%)	740	1.9	3450	1.9	1.3‡
Availability of training placement	1342/4214 (31.8%)	739	2.0	3441	1.7	0.9
Opportunity for research/teaching	1272/4225 (30.1%)	742	1.4	3449	1.8	0.9
Years required to complete training	874/4220 (20.7%)	742	2.7	3444	1.1	3.1§
Risk of litigation/insurance costs	480/4224 (11.4%)	743	1.3	3447	1.0	0.8
Cost of training in the specialty	234/4224 (5.5%)	741	0.9	3449	0.6	1.6
Intrinsic factors						
Appraisal of own skills and aptitudes	3340/4219 (79.2%)	742	3.0	3443	3.0	0.8
Intellectual content of the specialty	3156/4223 (74.7%)	743	2.3	3447	3.1	0.6§
Interest in helping people	3122/4216 (74.1%)	740	3.2	3442	2.9	1.6§
Job security prospects	2004/4224 (47.4%)	742	2.4	3448	2.2	0.9
Domestic circumstances	1828/4201 (43.5%)	738	3.0	3429	1.9	1.3‡
Advancement prospects	1373/4218 (32.6%)	744	1.4	3440	1.9	0.8
Prestige of discipline	716/4208 (17.0%)	740	0.9	3434	1.3	1.0
Financial prospects	693/4219 (16.4%)	743	1.1	3442	1.3	0.9
Parents/relatives	288/4261 (6.8%)	740	0.9	3451	0.6	1.3
Other factors	359/1031 (34.8%)	192	1.8	831	5.1	1.1

* Mean score on a Likert scale of 0–4.

† The odds ratios (OR) are derived from ordinal regression analysis after controlling for sex, age, marital status, children, rural background and visa status (Australian citizen/Permanent resident). The OR provides a close approximation of the "relative risk". An odds ratio of "1.0" indicates no difference between GP trainees and trainees in the other specialist training programs; a score > 1 indicates that GP trainees are more likely to give the factor a higher rating than trainees in the other programs, while a score < 1 indicates the reverse.

‡ Statistical significance, $P < 0.05$; § Statistical significance, $P < 0.01$. ◆

(respectively, 55% [1607/2911] and 50% [602/1198]; OR, 1.3; and 57% [1650/2910] and 51% [609/1195]; OR, 1.3). Not surprisingly, "appraisal of own domestic circumstances" was of greater importance to doctors with children than to doctors without children (respectively, 54% [701/1306] and 38% [1103/2873]; OR, 1.7).

DISCUSSION

Our findings confirm that choice of specialty is a complex decision, strongly influenced by personal attributes and preferences (intrinsic factors) followed by contact with the work environment (extrinsic factors), and, for women in particular, their domestic circumstances. Extrinsic factors of greatest importance are the work culture typical of the specialty, work experience since graduation, opportunity to work flexible hours, influence of consultants/mentors, and hours of work typical of the specialty. For 80% of doctors, the decision about choice of specialty is made by the end of PGY 3.

Strengths and weaknesses of the study

The strengths of our study include an acceptable response rate, with just over half of the target group responding, and these respondents shared the most salient characteristics of the target population (ie, completed medical training, registered with an Australian clinical college training program, and a similar specialty and sex profile).[18] The validity of the questionnaire was strengthened through the use of focus groups, and it was pilot tested to inform and test its contents and design. The study's weaknesses include that the reasons for non-response are not known, plus problems known to be associated with the use of structured questionnaires.[19]

Strengths and weaknesses of the study in relation to other studies

The findings of our study are strengthened by the fact that they are similar to those of Davidson et al who reported that career choices of UK medical graduates were influenced by appraisal of their own skills and aptitudes and enthusiasm for the specialty.[16] As in our study, these researchers noted that women doctors were more influenced by domestic circumstances and hours of work and working conditions than were male doctors. Our study extends knowledge about factors influencing choice of specialty by paying particular attention to factors amenable to change and to variation in these factors across disciplines.

Implications for medical education and workforce policy

Our findings suggest that, for training programs and teaching facilities with recruitment problems, there should be a review of the work culture typical of the specialty, the opportunity for trainees to work flexible hours, the quality of supervision/mentoring provided to trainees, and trainee satisfaction with the hours they are required to work. Given the importance that women ascribe to being able to work flexible and reasonable hours, it is hardly surprising that several specialties are presently attracting a comparatively greater proportion of women into their training programs. These specialties have training programs that provide real opportunities for part-time training and, on average, trainees work about 45 hours per week. Our findings also suggest that these factors gain in importance as doctors grow older and have partners. Hence, these factors may become increasingly important to male doctors in the future, given the increasing age at which students now commence their medical studies.[8,11]

Our findings confirm that observations during medical school and PGY 1 are of great importance in medical graduate decisions about choice of specialty. Variation across specialties in the timing of specialty decision suggests that some disciplines, such as surgery and, to a lesser extent, general practice, ophthalmology and paediatrics and child health, may have developed more effective strategies during the medical school and PGY 1 years than other disciplines in assisting graduates to select their specialty.

Unanswered questions and future research

While our study answers some questions it raises others. Unanswered questions include what other factors are influential in choice of specialty (eg, training program information and recruitment processes), what factors lead doctors to change specialty, and why does the age and

5 Extrinsic factors influencing choice of specialty of Australian doctors in vocational training, by clinical specialty excluding general practice, 2002. Data are odds ratios*

	Adult medicine†	Surgery	Anaesthesia‡	Emergency medicine	Psychiatry	Paediatrics and child health	Radiology	Obstetrics and gynaecology	Pathology	Ophthalmology
Work culture typical of the specialty (n = 3485)	1.0	0.7§	1.5¶	1.0	0.6§	1.5	1.0	0.6	0.8	3.8
Work experience since graduation (n = 3486)	1.1	1.2	1.1	2.1¶	0.9	1.0	0.6	0.9	0.4¶	0.6
Opportunity to work flexible hours (n = 3479)	0.7¶	0.4	1.6¶	3.3¶	1.5§	1.1	1.0	0.4¶	0.6§	5.8§
Influence of consultants/mentors (n = 3482)	1.2	1.6¶	0.9	0.8	0.8	0.9	0.7§	0.8	1.5	0.4
Hours of work typical of the specialty (n = 3478)	0.9	0.7§	1.1	1.1	1.0	0.5¶	1.5	0.6	2.3¶	1.7
Opportunity to do procedural work (n = 3485)	0.5¶	3.8¶	2.3¶	2.8¶	0.2¶	0.6¶	1.1	3.5¶	0.3¶	15.0§
Type of patients (n = 3472)	1.0	0.9	0.5¶	1.4¶	0.9	2.6¶	1.1	1.4	0.9	1.9
Experience as a medical student (n = 3484)	0.8¶	1.2	0.9	0.9	1.4§	1.2	0.7§	1.4	1.0	1.0
Availability of training placement (n = 3475)	0.8§	0.8	1.2	1.2	1.3	0.8	1.0	1.8§	1.1	0.1§
Opportunity for research/teaching (n = 3483)	1.2§	0.9	1.1	0.7§	0.8	1.0	1.2	1.1	1.6§	1.4
Years required to complete training (n = 3482)	1.6¶	1.1	0.8	0.9	1.0	1.4	1.0	0.7	0.3¶	5.2
Risk of litigation/insurance costs (n = 3481)	1.1	1.1	1.0	1.5§	0.9	1.0	0.7	1.1	1.3	0.2
Cost of training in the specialty (n = 3482)	1.0	1.3	1.0	1.2	1.1	1.6	1.2	3.4§	2.3¶	1.5
Other factors (n = 838)	0.9	0.9	1.0	1.1	1.2	0.8§	1.0	0.9	1.0	1.4

* The odds ratios (ORs) are derived from ordinal regression analysis after controlling for sex, age, marital status, children, rural background and visa status (Australian citizen/Permanent resident). The reference category used in regression modelling to generate the ORs was the pooled score for trainees in all the above specialty training programs.

† The category "Adult medicine" includes trainees with the Royal Australasian College of Physicians — Adult Medicine Division (n = 666), Australasian Faculty of Occupational Medicine (n = 24), Australasian Faculty of Public Health Medicine (n = 30), Australasian Faculty of Rehabilitation Medicine (n = 58) and Royal Australasian College of Medical Administrators (n = 17).

‡ The category "Anaesthesia" includes trainees with the Australian and New Zealand College of Anaesthetists (n = 484) and the Joint Faculty of Intensive Care Medicine (n = 26).

§ Statistical significance, $P < 0.05$; ¶ Statistical significance, $P < 0.01$.

The mean scores on a Likert scale of 0–4 for each factor can be obtained from the authors. ◆

medical school profile of trainees vary across training programs? These are areas for future research, together with evaluations of the effectiveness of interventions to influence doctors in their choice of specialty.

Conclusions

For the first time, health workforce policy makers in Australia have information about factors influencing doctors' choice of specialty that are amenable to change. Of greatest significance are work culture, hours of work and flexibility of working arrangements.

Experience with discipline-based work cultures and working conditions occur throughout medical school and the early postgraduate years, and the majority of doctors choose their specialty during these years. It follows that any interventions to influence doctors' choice of specialty need to target these critical years.

For many female medical graduates, decisions about choice of specialty are tempered by their domestic circumstances. Hence, it is not surprising that they rate flexible work arrangements and reasonable work hours as highly influential.

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COMPETING INTERESTS

None identified.

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