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Variability in breast cancer surgery training across Europe: An ESSO-EUSOMA international survey

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ABSTRACT

Background: At present there is a lack of standardization of training in breast cancer surgery across Europe. The aim of this survey was to assess current practice in Europe regarding training in breast cancer (BC) surgery.

Material and methods: General surgeons, surgical oncologists, gynecologist, and plastic surgeons in Europe were invited to participate in this bespoke survey including 19 questions.

Results: The survey was sent to 3.000 surgical oncologists across Europe. A total of 671 physicians (387 general surgeons, 152 gynecologists, 126 surgical oncologist, 31 plastic surgeons) answered the survey (23% response rate). Four hundred and sixty-eight physicians devoted between 50% –100% of their job to treating breast cancer. 45% worked in a community/University hospital within a dedicated Breast Unit. Specific additional breast surgery training was not universal: 20% had undertaken an accredited breast fellowship, 30% in a Breast Unit as a trainee, 21% had done additional courses, masters or diploma and 8% had not done any additional training. The majority (61%) of respondents worked in Units treating >150 BC cases per year, while 26% of the responders treat >120 new primary cases per year, and 23% less than 50 new cases a year. Multivariate analysis showed that breast surgeons working in a Breast Unit and treating more than 50 cases/year significantly performed oncoplastic procedures.

Conclusion: There is a great variability in breast cancer surgery training in Europe. It is imperative to develop quality standards for breast cancer surgery training to ensure that patients get standardized and certified surgical management regardless of the country in which they are treated.

Introduction

Breast cancer is the most common cancer in women both in the developed and less developed world. Evidence has shown that multidisciplinary specialist team evaluation and management for breast cancer (BC) results in better patient outcomes [1]. The majority of breast cancer patients have some type of surgery as part of their treatment for breast cancer. In the last few decades, there has been a paradigm shift from primarily surgical management to the incorporation of multimodality therapy and personalized care [2].The role of the breast surgeon has changed from performing simple breast conservative surgery or mastectomy plus universal

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axillary clearance to a multidisciplinary approach with a need to understand the interaction with systemic and radiation therapies that will influence the timing and type of surgery. Modern breast surgery is also much more complex and nuanced with a huge array of oncoplastic techniques to facilitate breast conservation, pedicled and perforator flaps for partial or total breast reconstruction and lipomodelling to correct deformities [3–5]. In addition, axillary surgery has seen a huge shift towards conservative management with the advent of sentinel node biopsy and radiotherapy for the low risk positive axilla [6,7]. A modern breast surgeon must have all of these management strategies available to ensure optimal patient care. In addition, breast surgeons are also involved in breast cancer prevention and hereditary risk assessment and management with a rapidly changing field of research as genetic knowledge and gene testing availability expands. Acquisition of this complex skill set requires dedicated specialist training and can no longer be adequately served just by generic surgical training [8].

In surgical oncology, training is extremely variable worldwide so the European Society of Surgical Oncology (ESSO) and the Society of Surgical Oncology (SSO) has issued a statement on a global core curriculum for surgical oncologist with the intention to provide a set of requirements for training surgical oncologists globally [9].

Similarly, additional training in breast surgical oncology is desirable for those specialists pursuing a career in the management of breast cancer patients. The sub-specialization of breast surgical oncology in the USA has resulted in more favorable outcomes and higher patient satisfaction [8,10].

In Europe, the European Society of Breast Cancer Specialists (EUSOMA) has set the standards for the minimal theoretical and practical knowledge required to be certified as a specialist health professional in the field of breast cancer [11]. In addition the European Union of Medical Specialists (UEMS) provide candidates wishing to take the European Breast Surgery exam a set of detailed Training Requirements for Breast Surgery (https://www.uemssurg.org/divisions/breast-surgery). Despite the existence of these training standard for breast specialists, there is currently no mandatory pan European standard against which to validate or certify training in breast surgical oncology. Examples of training variation between some European countries is shown in Table 1. Dedicated time in specialist training in breast surgery, as fellowships for example, is desired by the majority of trainees in surgery [12] but fellowships, degrees and diplomas are costly, both of time and expenses and may require a period of training away from home or even abroad which limits access. Such training is valuable and is thought to have contributed to the increased rates of reconstruction surgery seen in the UK following the introduction of the National Oncoplastic Training scheme in 2003 [13].

With the rapid increase in the incidence of breast cancer globally and the increasing number of surgeons dedicating their practice to breast cancer patients, there is a need to standardize training in breast surgical oncology. The aim of this survey was to assess current practice across Europe regarding training and practice in breast cancer surgery in Europe. It is hoped this will provide an impetus towards European harmonization and quality improvement.

Material and methods

A bespoke questionnaire was developed to explore the provision of breast services and the training of breast service providers across Europe. The questionnaire was developed initially by an expert consensus of a group of senior breast surgeons and oncologists (Board members of ESSO and EUSOMA). A draft questionnaire was then piloted on a group of European Breast surgeons to ensure face and content validity and minor modifications were made based on feedback. The resulting questionnaire had 19 questions, within 5 domains: surgeon demographics, unit details, training in breast surgery, current reconstruction offered and quality indicators (Table 2).

Between January 2017 and July 2018 the questionnaire was sent out by e mail to 3000 surgical oncologists who were identified by their membership of surgical societies, (ESSO, EUSOMA, and National breast surgical societies). For non-breast specific societies, breast practice was identified by declared specialist interest. The questionnaire was closed on July 2018. Data were analysed using simple descriptive statistics, Chi square and Fisher's exact probability test. A p value of lower than 0.05 was taken to indicate statistical significance. The statistical analysis software used was SPSS for Mac OS (SPSS v16.0; SPSS, Stanford, CA, USA).

Results

A total of 671 physicians with an interest in breast surgery (387 general surgeons, 152 gynecologists, 126 surgical oncologist, 31 plastic surgeons) responded to the survey (23% response rate).

Demographics of the cohort

By age, 63% of responders were between 40 and 60 years of age and 58% were males. Four hundred and fifty (67%) have been

Table 1
Certification in Breast surgery in Europe.

COUNTRY	Specialties performing breast surgery[a]	Unde-graduate breast training	Post-graduate breast training	Mandatory examination to obtain title (oncoplastic breast surgeon)
SPAIN	GS, G	NO	NO	NO
UK	BS, GS, PS1	NO	YES (OPS training advised but not mandatory)	YES
PORTUGAL	GS, G	NO	NO	NO
ITALY	GS, PS1	NO	NO	NO
SWEDEN	BS, GS, PS1	NO	YES-UEMS	YES
NETHERLAND	GS, PS	NO	NO	NO
POLAND	GS,SO,G, PS	NO	NO	NO
DENMARK	GS,PS	NO	YES (UEMS optional)	NO
ICELAND	GS, PS1	NO	NO	NO
FRANCE	GS,G, PS	YES	YES	NO
HUNGARY	GS,G, PS1	NO	NO	NO
SWITZERLAND	GS, G, PS1	NO	YES	In progress
FINLAND	GS, G, PS	YES	YES (not official)	NO
GERMANY	G	YES	YES	NO
TURKEY	GS	YES	YES	NO

[a] BS=(Oncoplastic) Breast Surgeon; GS = General Surgery; G = Gynecologist; PS = plastic surgery (1 usually/predominantly reconstruction) ; SO= Surgical Oncologist.

Table 2
Questionnaire.

Q1. What is your age?
Q 2. What is your gender?
Q 3. How much time do you devote to breast cancer surgery
Q 4. Where do you practice?
Q 5. In which country do you practice?
Q 6. What is your primary specialist discipline?
Q 7. How long is the duration of surgical training in your country (from medical school graduation to the end of specialization)?
Q 8. How long have you been performing breast cancer surgery as a consultant/fully trained surgeon/attending surgeon?
Q 9. Have you done any additional training in Breast Surgery after your specialization?
Q 10. For how long have you been training in breast surgery after finishing your specialty?
Q 11. Did your additional breast surgical training include reconstructive/oncoplastic surgery?
Q 12. If yes, for how long was the training in oncoplastic breast surgery?
Q 13. Do you perform oncoplastic breast procedures?
Q 14. Do you perform breast reconstructions?
Q 15. If yes, what type?
Q 16. How many new primary breast cancers are treated in your Breast Unit per year?
Q 17. How many new primary breast cancers do you treat per year?
Q 18. Is MDT discussion of all breast cancer cases mandatory in your Unit?
Q 19. Does your Unit have routine quality assurance of guideline concordance practice or other quality assurance audit?

performing breast cancer surgery for more than 6 years. The cohort demographics are presented in Table 3. Most of the respondents were from Germany, Spain, the UK, Italy, Portugal, Sweden and Turkey as shown in Fig. 1.

The majority of the cohort (475/671, 71%) devoted 50%–100% of their time treating breast cancer, while 196/671 (29%) spend less than 50% of their time.

Of the 671 responders, 45% worked in a community/University hospital within a Breast Unit (Fig. 2). Less than 38% work wholly or partly in a university teaching hospital, the rest working in community hospitals or within the private sector. Surgeons who spend at least 50% of their time devoted to breast surgery performed significantly more reconstruction/oncoplastic procedures ($p = 0.001$), as do those working in a designated Breast Unit. ($p = 0.001$).

Table 3
Table showing the characteristics of the cohort of respondents.

Characteristic		N	%
Age group	25–29	6	0.8
	30–34	36	5.37
	35–40	115	1.14
	41–45	106	15.8
	46–50	105	15.65
	50–60	225	33.53
	>60	78	11.62
Gender	Male	383	56.74
	Female	286	42.37
	Not stated	5	0.89
% job in breast surgery	<25	83	12.35
	25–50	113	16.82
	50–75	230	34.23
	75–100	246	36.61
Duration of practice as a breast surgeon	years		
	0–1	39	5.86
	1–5	139	20.87
	6–10	143	21.47
	11–15	97	14.56
	16–20	102	15.32
	21–25	53	7.96
	≻ 25	55	8.26
Primary specialism breast	Yes (devote ≥ 50%)	476	70.83
	No (<50%)	196	29.16

Training

Duration of surgical training (from medical school graduation to the end of specialization) was 4–6 years in 315/671 (47.2%) responders, 6–8 years in 182/671 (27%) responders and over 8 years in 132/671 (20%) responders. The difference in training duration is in line with data on National variation in training and examination of the data shows consistent results from individuals within the same country and specialist discipline.

Additional breast surgery training after specialization was acknowledged by the majority in some form or another. An accredited breast fellowship had been undertaken by 127/671 (20%), 219/671 (33%) had undertaken a period of training in a dedicated Breast Unit as a trainee and 161/671 (24%) had undertaken additional courses or a masters degree or diploma. Only 36/671 (8%) had not done any additional specific breast training.

For those with additional training, 70% had undertaken additional breast surgery training for more than a year and 10% from 6 months to a year.

When comparing time of additional breast surgery training by countries, there is no standard duration of breast training either, with responders showing different durations within the same country.

Oncoplastic and reconstructive practice

When evaluating oncoplastic and reconstructive training, 509/671 responders (77%) have had additional training in oncoplastic procedures. And 1/3 of them (35%) have had additional oncoplastic training for less than 6 months while 25% for more than two years. Interestingly, 578/671 (86%) perform oncoplastic procedures in their clinical practice. Of the 8% who have not undergoing any form of specialist training, 22/46 (47%) undertake reconstructive and oncoplastic procedures.

Three hundred and ninety five (59%) perform breast reconstructions, and among the responders who perform reconstruction techniques, 42% perform implant-based reconstruction and 46% both implant plus autologous flap reconstructions without microsurgery. Thirty-one responders (7%) perform all types of reconstruction and these are all surgeons whose primary specialty is plastic surgery.

On multivariate analysis, trained in a fellowship program or in a Breast Unit has an odds ratio (OR) of 1.8 (95%CI 1.22–3.03) for working in a Breast Unit and an OR of 4.2 (95% CI 1.55–11.4) for performing OPS procedures.

Breast cancer caseload

Regarding how many new breast cancers are treated in each Breast Unit, 413 (62%) treat more than 150 cases per year, while 30% of Breast Units treat less than 120 new BC cases a year. To the question on how many cases per breast surgeon per year, 26% of the responders treat >120 new primary cases per year, and 23% less than 50 new cases a year (Fig. 3). For 89% of responders a multidisciplinary team meeting is mandatory to discuss all BC cases.

A comparison was performed to assess differences between breast surgeons who have commenced practice in the last 5 years with those appointed more than 5 years ago. In the 137/671(20%) responders appointed within the last 5 years, there are statistically significantly more females, more surgeons have undertaken at least 6 month of breast surgical training and perform more oncoplastic/reconstruction procedures. ($p = 0.001$). Surprisingly, significantly more breast surgeons devote less than 50% of their time to treating BC in this group.

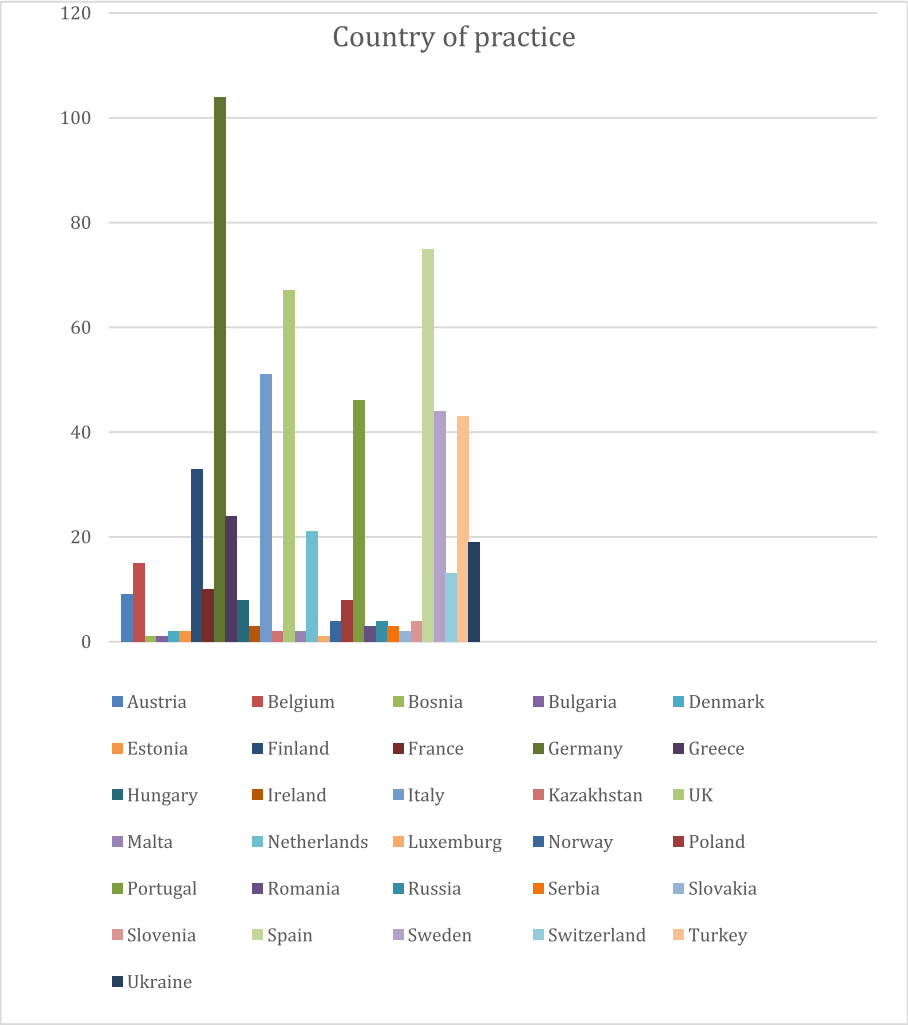


Fig. 1. Country of practice.

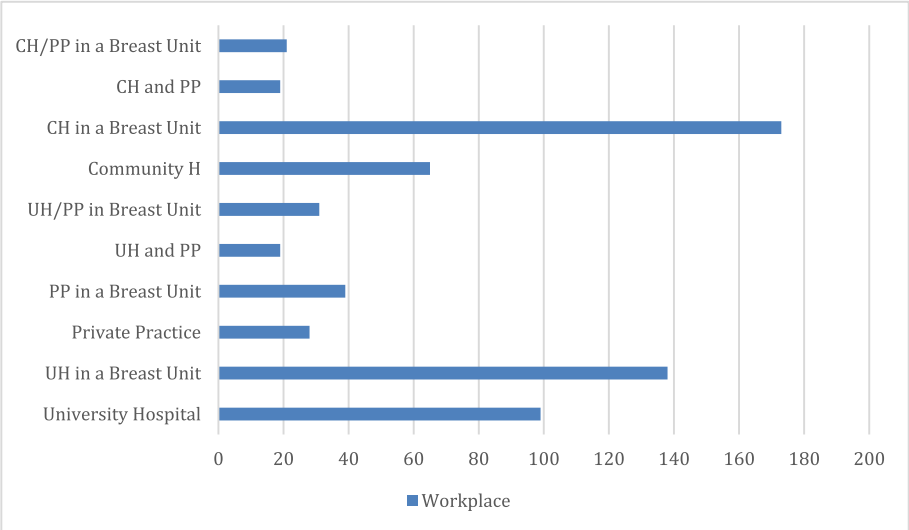
Discussion

This is the first European survey to investigate breast surgical training and practice. At present there is a lack of standardization of training in breast surgery across Europe, with variation in the duration of training, whether oncoplastic skills are part of this training and what quality standards are applied. This survey is the first step towards establishing the current provision of breast care. It is known that surgical technique and indications for surgery vary among surgeons, driven by surgical training and in the last few years, by the incorporation of patient's preferences into the decision making process [14].

Most of the responders in the survey are general surgeons, in keeping with the predominant specialism of most ESSO members. It also reflects the fact that in most European countries breast surgery is performed by general surgeons, although 1/3 of the responders are gynecologist, who provide breast surgery in other countries, (for example Germany, Switzerland, France and occasionally elsewhere). Only a small proportion of responders are plastic surgeons, as in the majority of Europe they are predominantly involved in breast reconstructions but not necessarily breast oncology surgery.

It has been almost two decades since EUSOMA published a position paper entitled 'The requirements of a specialist Breast Unit', which set the standards for establishing high-quality Breast Units across Europe [15]. The European Union subsequently published written declarations on breast cancer in 2010 and 2015 which called on member states to ensure that all women and men in the European Union have access to treatment in dedicated Breast Units (https://ec.europa.eu/jrc/en/publication/european-guidelines-breast-cancer-screening-and-diagnosis-european-breast-guidelines). Since then, several reports have shown that breast cancer patients treated by a multidisciplinary team have a lower breast cancer mortality [1]. But even though the 2006 Breast Units model is widely recognized as a valid and innovative instrument to address breast cancer care [16], its implementation in European countries remains a challenge. And this is clearly reflected in the survey, while 71% of responders devote between 50% and 100% of time to treat breast cancer, only 45% work in a Breast Unit whether in a University, Community or Private Hospital.

Surgical training is apparently more harmonised across countries with the majority of responders receiving more than 6 years of surgical training. Striking differences are shown in this survey regarding the diversity of breast surgical training. Only a minority of responders received an accredited breast fellowship, 1/3 has worked in a Breast Unit as a trainee and ¼ has attended Breast courses, or a diploma degree. The duration of breast surgical training not only differs between countries, but also within the



UH- University Hospital

CH-Community Hospital

PP-Private practice

Fig. 2. Figure showing the type of hospital surgeons practice in.
UH- University Hospital.
CH-Community Hospital.
PP-Private practice

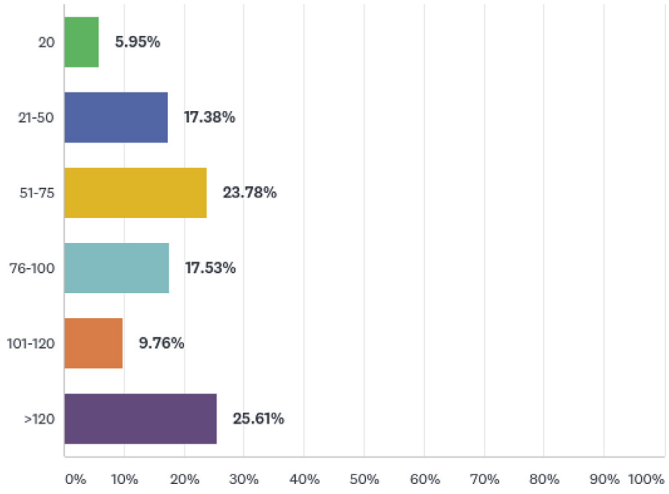


Fig. 3. Number of breast cancer cases treated per year.

same country, clearly indicating that there is no standardization in breast surgical training in all countries that have responded. Surprisingly, 8% have not done any additional training. These findings clearly call for an accredited, harmonised training pathway for Breast Surgical Oncology. There is an urgent need to move away from the outmoded breast surgical training currently embedded in general surgery or gynecology. A specific and focused educational program on the comprehensive management of breast cancer patients, understanding the role of breast cancer surgery within the multidisciplinary team as well as the complex breast surgical and multimodality decision making process and specialist surgical techniques. The rich academic underpinnings of breast cancer care must be understood to ensure practice is up to date and evidence based. This can only be achieved through consistent and validated training in Breast Surgical Oncology.

This survey serves also as a baseline assessment of the current expertise in oncoplastic surgery, showing a vivid interest in oncoplastic procedures: 77% of responders have had additional training in oncoplastic/reconstructive surgery. Oncoplastic procedures have become a tool for breast cancer resection in the last decade. Meta-analysis has confirmed that while improving cosmetic outcomes, there is equivalent locoregional control and overall survival compared to conventional breast conservative surgery [17]. The majority of responders have embraced training in oncoplastic procedures and 59% perform breast reconstructions, but still, there is no evidence that training was given in a quality assured way, as the duration of oncoplastic training is variable between responders. Our survey shows that oncoplastic procedures are significantly more likely to be performed by breast surgeons devoting more than 50% of their time to breast surgery and working in a Breast Unit, clearly demonstrating that Breast Units delivers superior quality cancer care.

Globally, the male to female surgeon ratio reflects the increased access of women into the surgical specialties, with 58% of the 671 responders being male, while in the subgroup who have been practicing breast surgery for 5 years of less, there is a significantly increase in the percentage of females (54%). Regrettably, this younger group still presents a similar diversity in breast surgical training, reflecting how the above mentioned differences in training have not improved over the years and no improvements has occurred in quality assurance.

Having a minimum breast cancer case load is not an evidence based quality indicator. One proposed minimum number of 50 new cases/year was suggested by the quality standards of the EUSOMA breast specialists [11], it now seems a low number if we include the overall number of procedures performed including risk reduction, surgery after neoadjuvant treatments, sentinel node biopsies, guided breast conservative surgery and oncoplastic techniques. The UEMS eligibility criteria for European Board Examinations for the

qualification as Fellow of European Board of Surgery in Breast Surgery demands that the applicant demonstrates they have worked for a minimum of one year in a Breast Surgery Unit dealing with at least 150 new primary breast cancer cases/year (https://www.uemssurg.org/divisions/breast-surgery).

It has been documented that high volume Units offer more breast conservative surgery as well as more SLN than low volume Units [18,19]. Alarmingly, the present investigation demonstrates that a substantial number of women (1/3rd) are receiving care by breast surgeons who do not meet the minimum EUSOMA standard of 50 new cases a year. Only 70% of Breast Units are treating more than 150 cases/year and 77% operate on more than 50 cases a year.

One of the limitations of the survey is the lack of questions related to research and mentoring. Surgical oncology research represents only 9% of all cancer research, and clinical trials and studies represent only 6% of all published surgical oncology papers [20]. Validated training will ensure that a research program is also part of training.

This survey does not intend to dismiss the great efforts of different Societies, Universities and Institutions in training breast surgeons, however, it present a clear picture of how breast surgeons are trained across Europe in 2018 and how difficult it is for patients to identify breast surgeons who have received quality controlled, certified training.

Future directions

A standardized level of training, expertise and practice across Europe is advocated to ensure improved outcomes: it is therefore mandatory to develop and set in place Certification in Breast Cancer Surgery across Europe. It is an absolute priority to establish joint cooperation between European Societies involved in breast cancer surgery to develop a program (quality standards, a training curriculum and standardized quality assessments) to be rolled out across Europe. This accredited training should provide breast surgeons with high quality evidence-based patient care, while incorporating research and educational programs that will assure that breast cancer patients get standardized and certified surgical management regardless of the country they are in. Breast cancer patients are urgently demanding this standardization and we should make this happen.

Conflict of interest

Conflict of Interest statement: the authors declare they have no conflict of interest.

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