Impact of webinar-based eLearning in the Japan-Asia Pacific region

Stephen J Nicholls MBBS PhD[a], Brian Tomlinson MBBS[b], Shizuya Yamashita MD, PhD[c], Lachlan Kenneally, BSc[d], Sarah Stickland, BSc[d]

[a]Monash Medicine Health, Monash University, Clayton, Australia.

[b]Macau University of Science and Technology, Macau, China.

[c]Department of Cardiovascular Medicine, Osaka University Graduate School of Medicine, Osaka, Japan.

[d]The Corpus, London, UK.

Corresponding author:

Sarah Stickland, The Corpus, 5-6 Underhill Street, London, NW1 7HS,

UK Phone:
+44 (0)20 7428 2971

Email:
sarah.stickland@the-corpus.com

Abstract

Objective: An educational initiative comprising an extensive series of live virtual events on treatment options for managing low-density lipoprotein cholesterol (LDL-C) levels in patients with atherosclerotic cardiovascular disease (ASCVD) was conducted among healthcare professionals (HCPs) in the Japan and Asia-Pacific (JAPAC) region. We present semi-quantitative data gained from metrics generated during this programme to assess its educational benefits and impact on clinical practice.

Methods: The JAPAC-ASCVD programme ran between May 2019 and March 2020, with 40 interactive webinar-style meetings conducted across eight countries in the JAPAC region. Each 1-hour event comprised 30-minute presentations followed by 30 minutes of interactive discussion. Audience input was enabled through a virtual platform. An impact measurement process was applied across all meetings to assess perceived educational value and relevant changes to clinical practice based on pre- and post-meeting questionnaires and 1-month follow-up.

Results: Over 600 HCPs attended programme sessions, and 193 attendees supplied pre- and post-meeting feedback. Semi-quantitative analyses of the resulting dataset revealed a clear, immediate educational value, with 89% of attendees reporting an increase in their levels of confidence in treating ASCVD, and 77% recording their intention to change their clinical behaviour. Based on 1-month post-meeting follow-up, 72% of respondents reported meaningful changes in their clinical approaches to treatment, with 63% believing that more of their patients were reaching target LDL-C levels compared with before the programme. There was also a notable growth in the number of HCPs reporting that they would prescribe new medications such as proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors in patients on maximal tolerated doses of statin therapy who had not achieved target LDL-C (42%).

Conclusions: Tangible changes in HCP clinical practice were noted among participants in the JAPAC-ASCVD programme, which have the potential to influence patient outcomes such as achievement of target LDL-C levels.

Keywords

Atherosclerotic cardiovascular disease; LDL-C; impact measurement; behavioural change; clinical practice; JAPAC

Introduction

The cancellation of most large international medical conferences in 2020 due to the global COVID-19 pandemic has prevented participation in traditional person-to-person educational lectures, seminars, lunch-and-learn-type meetings and advisory boards[1]. While demand for online meetings has been growing steadily over the last decade, lockdown measures due to the pandemic during the early part of 2020 have led to a huge increase in demand for activities that can be performed online[2].

Similar to the massive increase in Telehealth for the maintenance of patient care, and in addition to the new normal of online workforces in the pharma industry, many pharma-sponsored educational events have been converted to virtual or cloud-based formats including webcasts, webinars, social media postings and didactic online presentations[2,3]. As a result, alongside similar measures in other industries, a number of generic online meeting platforms including Zoom, Microsoft Teams, Skype, Cisco Webex and ON24 have seen a surge in popularity, with some providers having to navigate previously unrecognised challenges such as the provision of increased online security and privacy protection[1,2].

While the experiences of healthcare professionals at virtual meetings are vastly different from those at traditional face-to-face meetings, there are some similarities. One of the most significant challenges with the pivot toward virtual meetings due to the global pandemic is capturing and maintaining participant engagement during online events. This can be achieved in various ways such as polling, question-and-answer (Q&A) sessions, online whiteboarding, virtual breakout groups, and chat forums. Online platforms that enable such interactivity are a critical element in this, and are increasingly being used[1,2].

Well-developed healthcare and internet infrastructures and high rates of content digitisation have fuelled appreciable growth in the use of online educational initiatives in Europe and the USA over recent years[4,5]. In the Japan-Asia Pacific (JAPAC) region, increases in access to online resources and in the number of accredited medical schools have also led to a rise in demand for online medical education[4,5]. In the coming years, analysts have estimated a year-on-year growth rate of over 4% in the region[4,5]. In this paper, we describe the conduct of, and outcomes from, an online, webinar-based, CME accredited educational programme conducted in the JAPAC region that was designed to raise knowledge levels among physicians involved in the treatment of atherosclerotic cardiovascular disease (ASCVD), with a particular focus on patients with familial hypercholesterolaemia (FH). It is well known that lifestyle changes can lower the risk of developing ASCVD, but medication is usually required to target specific risk factors such as hypertension, diabetes, and high blood lipids, particularly low-density lipoprotein cholesterol (LDL-C)[6,7]. Currently, statins are recommended as a first-line therapy for dyslipidaemia and ASCVD, and have been in clinical use for over two decades[6,7,8]. However, statins are not always effective alone, and patients with persistent high LDL-C levels despite ongoing statin therapy can benefit from combined treatment

with other medications[6,7]. These include ezetimibe, bile salt resins, fibrates, niacin, fish oil, and newer agents such as anti-proprotein convertase subtilisin/kexin type 9 (PCSK9) monoclonal antibodies (PCSK9 inhibitors)[8-13].

There is a spreading belief in the cardiology community that the risks associated with raised blood lipid levels in ASCVD need to be more widely recognised and actively treated[6,10]. To achieve this, it is considered crucial to increase physician awareness of which, how, when and in whom treatments for ASCVD are best utilised[6,9,10].

Methods

The JAPAC-ASCVD programme

The JAPAC-ASCVD educational programme ran between May 2019 and March 2020, and comprised a series of 40 meetings that reached over 600 healthcare professionals (HCPs) across several different countries in the JAPAC region. Each meeting followed the same content and format and lasted 1 hour, including a 30-minute presentation and a 30-minute interactive discussion period. Audience interaction and discussion were encouraged throughout the meetings, with pre- and post-meeting questionnaires and presentation-specific polling enabled by a proprietary virtual platform (The Corpus; www.the-corpus.com).

The programme was CME accredited by the European Board of Accreditation in Cardiology (EBAC). The content of webinar presentations, which were sponsored by Amgen, was devised by an independent scientific committee of four members, led by Professor Keith AA Fox from the University of Edinburgh, UK.

The Corpus webinar service and virtual meeting platform

The JAPAC-ASCVD programme was conducted using a tailored meeting platform provided by The Corpus. They provide a bespoke webinar service geared toward giving treating clinicians the chance to learn directly from leading medical experts who drive healthcare innovation. Focused meetings for small learning groups of up to 30 physicians at a time are delivered within virtual medical education programmes at the national, regional, and global levels.
The virtual meeting room developed and used by The Corpus is a customisable, high-definition, WebRTC-enabled, internet browser-based platform that is accessible from anywhere in the world by individuals or groups with an internet connection. It enables simultaneous online presentations and parallel breakout sessions, with the ability to view presenters alongside content. Possible meeting styles include: group (institutional), single-attendee (e.g. regional/international) or combination-style online events. Virtual polling, roundtable functionality, breakout formats, screen sharing, and ad hoc verbal and written Q&A capabilities are all accommodated.

To use the Corpus platform for the JAPAC-ASCVD programme, attendees registered for single-HCP or group participation in programme events through a dedicated, easy-access registration page: https://participant.the-corpus.com. The platform did not require any software/app downloads, and crucially, meetings on this platform

all featured continuous live IT support to respond on the spot to any technical requirements or challenges (e.g. audio or video disruption). A dedicated Corpus moderator was also present.

JAPAC-ASCVD programme content development

The programme content was structured around three pre-defined, overarching learning objectives:
1) explore atherosclerosis and its risk determinants (focusing on high-risk patients);
2) understand contemporary best practice in treating ASCVD;
3) identify risk factors that may underpin residual risk based on current practice.

Scientific presentation topics addressing these learning objectives were determined through collaboration between the independent programme scientific committee and relevant, identified faculty (Table 1). Phone engagement and video demonstrations were conducted in collaboration with agreed presenters to create a tailored experience for the attendees. Once defined, engagement packs describing the programme process and registration instructions were sent out to JAPAC centres of excellence in ASCVD care and to individual invitees, to establish attendance.

Table 1

List of **a) scientific presentations** and **b) programme presenters included in the Corpus JAPAC-ASCVD programme**

a) Presentation titles

- Update on HDL as a target for new therapies
- Triglycerides and their role in cardiovascular disease
- Recent clinical trials and their impact for atherosclerosis
- Imaging of atherosclerosis: recent developments
- Atherosclerotic risk management in PCI patients
- Familial hypercholesterolaemia – updates on diagnosis and management
- Molecular mechanisms for involvement of TG-rich lipoproteins in atherosclerosis
- Management of patients with statin intolerance
- Guidelines for lipid-lowering: present status and future challenges
- Identification of high-risk subjects in secondary prevention
- Triglycerides: understanding their genetics and treatment
- New drugs targeting the lipid metabolism
- Integrating PCSK9 inhibition into clinical care
- Best practice in dyslipidaemia treatment: who, when and how?
- Genetics of triglycerides and implications for therapy

b) Programme presenters

Prof. Steve Nicholls*
Prof. Brian Tomlinson*
Prof. Shizuya Yamashita*
Prof. Christie Ballantyne
Prof. Alberico Catapano
Prof. Gaetano de Ferrari
Dr. Robert Hegele
Prof. Ulrich Laufs
Prof. Marc Sabatine
Prof. Lale Tokgözoğlu
Prof. Anne Tybjaerg-Hansen

*JAPAC-ASCVD Programme Scientific Committee member.

Impact assessments

Impact measurements were applied across all JAPAC-ASCVD meetings to assess perceived educational value and behavioural change among HCPs across four key assessment areas:
1) effectiveness of knowledge transfer;
2) intent to change behaviour;
3) perception of educational value;
4) self-reported actual change in behaviour.

Data were collected using 1–2-page pre- and post-meeting questionnaires that were developed by the programme scientific committee in collaboration with the programme organisers, and which were made available to meeting attendees via QR code access on their personal devices.

Pre-meeting questionnaires assessed initial HCP understanding of the intended scientific topics (Table 2). Questions regarding physicians' current medical practice in terms of treatment choices and treatment to target LDL-C levels in ASCVD patients were also included in most meetings.
To maximise engagement and enable measurement of knowledge transfer, attendees were also asked questions that were specific to the scientific content of each presentation. These presentation-specific questions were formulated to solicit responses that were either factually correct or incorrect, enabling semi-quantitative comparisons before and after the presentations.

To assess the success of knowledge transfer after each meeting, HCPs were asked the same programme-wide pre-meeting questions and presentation-specific questions (Table 2). Additional questions regarding intent to change the way the HCPs treat ASCVD in their clinical practice, as well as any increase in their confidence levels in the way they manage ASCVD, were also included. Actual HCP behavioural change in clinical practice was assessed based on data from 1-month follow-up questionnaires, which were delivered in both HTML and plain-text formats to explore best methods for maximal response rates, using an A/B testing protocol. Through iterative analysis, follow-up questionnaires were distilled down to two key questions deemed most indicative of the true educational impact of the programme:
1) Did you change your clinical practice behaviour as a result of the Corpus JAPAC-ASCVD meeting?
2) Are more of your patients now reaching target LDL-C levels?

Data analysis

Programme attendee responses were collated and underwent semi-quantitative analysis based on a categorical data set. Data are presented as numerical values (from binary count of responses to pre-defined questions) and calculated percentages (relative to total audience per meeting). Percentage changes in questionnaire responses before and after the meeting, and between assessments conducted at the meeting and at 1-month follow-up, are also presented. By nature, this was a retrospective analysis, so no pre-defined statistical analyses were conducted.

Table 2

Programme-wide pre- and post-meeting* questionnaire

Question	Possible responses
Contained in both pre- and post-meeting questionnaires*	
1. [Following this meeting]* My pharmacologic approach to treating ASCVD patients with high TG levels is to…	1. Intensify LDL-C lowering 2. Add a fibrate 3. Add fish oil 4. Add niacin
2. [Following this meeting]* In the patient on maximally tolerated statin therapy not at LDL-C goal, my next step is to…	1. Add ezetimibe 2. Add a PCSK9 inhibitor 3. Add a bile salt resin 4. Add niacin
3. Each doubling of statin dose results in what degree of LDL-C lowering?	1. 5-6% 2. 10% 3. 15% 4. 20%
Additional questions included in pre-meeting assessments only	
1. What treatments do you offer ASCVD patients? (tick all that apply):	High-intensity statins Statin with ezetimibe Statins with a PCSK9 inhibitor Statins with other lipid-modifying drugs e.g. fibrate, niacin, omega-3 fatty acids
2. How many of your current ASCVD patients do you believe attain target LDL-C levels?	<5% 5-25% 25-50% >75%
3. Please indicate where your LDL-C target for patients with ASCVD is…	<100 mg/dl (2.6mmol/l) <70mg/dl (1.8 mmol/l) <50 mg/dl (1.3 mmol/l) As low as possible
Additional questions included in post-meeting assessments only	
1. Do you feel more confident after today's meeting?	1. Yes 2. No 3. Not sure
2. Do you intend to change your clinical behaviour as a result of today's meeting?	1. Yes 2. No 3. Not sure

*Questions posed in immediate post-meeting questionnaire were phrased differently to those posed during the pre-meeting assessment.

Results

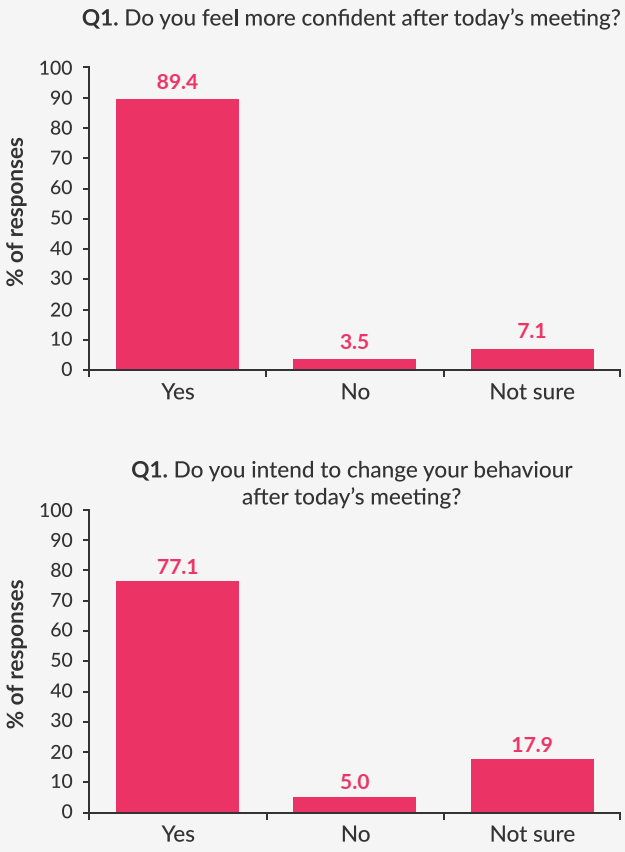
Programme reach

Through a series of 40 meetings, The Corpus JAPAC-ASCVD programme reached over 600 HCPs involved in the treatment of ASCVD across the region, including: Australia, China, Hong Kong, Japan, Korea, Malaysia, Singapore, Taiwan and Thailand.

Perceived knowledge transfer

Immediate post-meeting questionnaires indicated substantial perceived knowledge transfer (Figure 1). Overall, 89% of respondents reported feeling more confident in their clinical management of ASCVD as a result of having attended programme sessions. In addition, over three-quarters (77%) stated their intentions to change the way they manage ASCVD in clinical practice as a result of programme learnings.

Figure 1. Summary findings from immediate post-meeting assessment



Pre- and post-meeting programme-wide questionnaire responses

Immediate post-meeting responses to programme-wide questions indicated some distinct shifts in HCP attitudes and intentions for future clinical practice as a result of programme attendance, particularly regarding the pharmacological treatments they used. While not the focus of this study (i.e. impact measurement in virtual medical education activities), the disease-specific data output from this analysis is summarised.

Asked what their pharmacologic approach would be in treating ASCVD patients with high triglyceride (TG) levels (programme-wide question 1), there was a 6% increase in the proportion of HCPs noting that that they would intensify LDL-C lowering therapy. Most HCPs reported that they would usually add ezetimibe in patients on maximally tolerated statin therapy who had not achieved target LDL-C levels (programme-wide question 2), but after programme meetings there was an 11% decrease in

the percentage of participants advocating this course of treatment. There was also a 42% increase in the number of respondents indicating that they would add a PCSK9 inhibitor in such patients, a 33% increase in those who would add niacin, and a 63% decrease those who would add a bile salt resin. There was a moderate (6%) increase in the number of HCPs who correctly identified '5–6%' as being the degree of LDL-C lowering achievable with a doubling of statin dose (programme-wide question 3).

Presentation-specific questionnaire analysis

Table 3 summarises responses to questions on individual meeting topics listed in Table 2, where sufficient questionnaire responses were collated to allow semi-quantitative analysis based on the number of factually correct or incorrect answers before and after the meeting. Comparison of pre- and post-meeting responses showed a marked average increase (31%) in the overall number of correct responses. Growth values generally ranged from 17–80%, although a 0% growth value was recorded based on sessions related to new drugs targeting lipid metabolism.

Post-meeting follow-up assessment

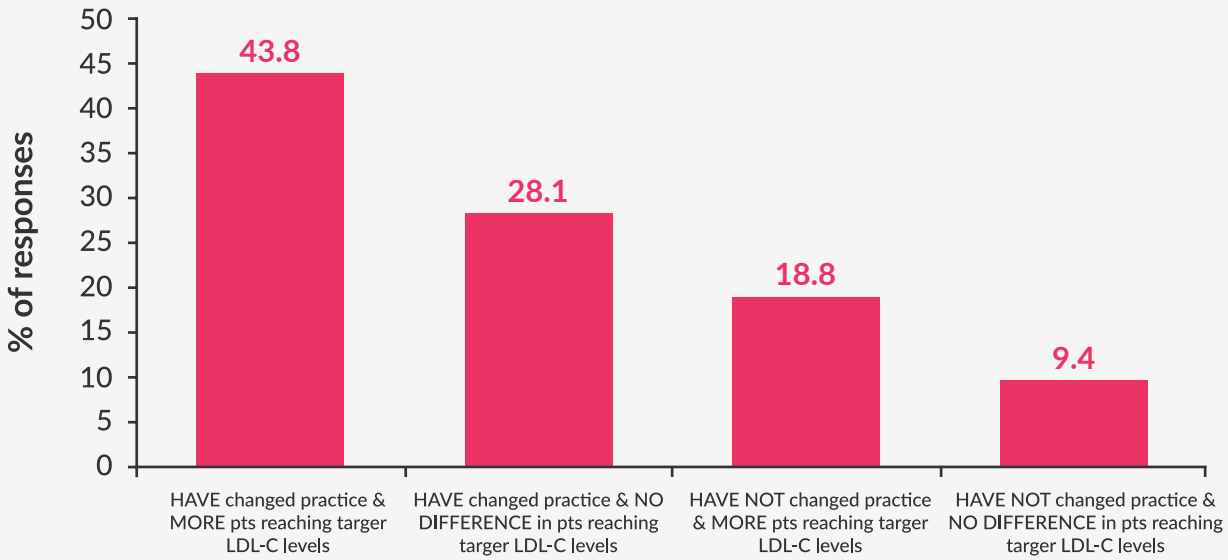
Based on responses to key 1-month follow-up questions (Figure 2), 72% of responders reported that they had changed their clinical practice after having attended a Corpus JAPAC ASCVD programme session. In addition, 63% of respondents reported a perceived increase in the number of their patients reaching target LDL-C levels since their attendance in a programme session.

Table 3. Pre- to post-meeting change* in responses to presentation-specific questions

Presenter	Question 1†	Question 2†	Question 3†	Question 4†	% Growth
1	100%	0%	25%	-	42%
2	25%	40%	58%	-	41%
3	0%	40%	22%	0%	16%
4	100%	7%	33%	-	80%
5	16%	-16%	0%	-	0%
6	19%	15%	2%	30%	17%
7	46%	25%	0%	-	24%
8	71%	0%	13%	-	28%

*Growth in percentages of respondents answering correctly; †Presentation-specific questions are available on request

Figure 2.
Summary of impact measurement: HCP responses from 1-month follow up



Footnote: For category 3 above (no change in practice but greater numbers of patients reaching targets) it is assumed that either respondents were simply considering changes as in changes in prescribing, but changes in understanding might have led to better outcomes.

Discussion

The recorded success of this series of educational meetings in ASCVD management indicates the ability of virtual webinar-based educational programmes to provoke tangible, beneficial changes in physician attitudes and knowledge levels. Impact measurements incorporated into this CME-accredited educational programme, which was attended by a large number of physicians in the ASCVD field in the JAPAC region, identified appreciable changes in clinician attitudes and behaviour.

HCP attendee responses indicated positive growth in disease management awareness across nearly every presentation-specific question posed during the programme. Based on immediate post-meeting feedback, high proportions of HCPs were:
1) more confident in their thinking about the effective treatment of ASCVD;
2) intending to change their behaviour in relation to how they treat ASCVD as a result of what they had learned.
In addition, the majority of respondents to the 1-month follow-up assessment reported that they had made changes to their behaviour after attending programme sessions, and that more of their patients were reaching target LDL-C levels.

The high current global utilisation and anticipated expansion of virtual medical educational programmes indicate good overall uptake and acceptance of available technologies in the JAPAC region[4,5]. However, effective eLearning does not come without challenges. Changes and

developments in digital delivery methods can put extra pressure on already very hard-working faculty and HCP attendees to familiarise themselves with new IT functionalities and while securing sufficient post-event feedback is crucial in determining the effectiveness of knowledge transfer and impact measurement, it is also a perennial challenge in both virtual events and face-to-face meetings. Persuading busy HCPs to take uncompensated time out of their schedules to provide CME-related feedback can be difficult. As an example, quantifiable HCP feedback was not achievable in a number of sessions in the Corpus JAPAC-ASCVD programme. However, iterative testing of follow-up methods in the programme did allow overall, quantifiable assessments of behavioural change.
Virtual learning platforms have significantly reshaped how we teach and engage with CME in cardiology and many other fields, fostering a sense of community within our specialties, which can be particularly beneficial in this pandemic era[1,2]. Remote eLearning can attenuate trainee burnout and promote wellness within busy clinical centres at a time when isolation has become 'the new normal'[2]. Virtual eLearning platforms can also negate the expense and time-inefficiency of travelling to onsite meetings. Not having to travel also means that HCPs can attend more meetings that meet their interests, removing the necessity of having to pick and choose. In addition, there are potential huge savings in terms of associated expenses and carbon footprint. We have calculated that this programme saved approximately 84.4 tonnes of CO2e emissions, based on the air travel that was avoided due to the virtual nature of the Corpus JAPAC-ASCVD programme alone.

Overall, while virtual eLearning can play an important role in educating both trainee and seasoned clinicians, the effectiveness, perceived educational value, and clinical impact of an online event/programme depends on a number of factors. Running a truly worthwhile project is not simply a case of presenting content online in the same manner as it would be presented face-to-face. Adequate planning and communication are key initial elements in generating tailored activities that meet all learning objectives. Content features that encourage engagement of all faculty/attendees is vital in ensuring effective knowledge transfer[2]
The use of a robust, easily accessible and reliable virtual platform, ideally featuring any necessary IT support and, if available, moderator service throughout sessions, can minimise any perceived learner burden. In addition, suitable, pragmatic methods of post-event follow-up such as those used in the Corpus JAPAC-ASCVD programme are important in quantifying knowledge transfer and behavioural change.

Conclusions

The impact assessment data presented here, coupled with information from previous systematic literature reviews of online medical education initiatives[2], demonstrate that well-planned, tailored approaches to eLearning encourage attendee engagement, help maximise post-event attendee feedback, and have the potential to practically impact on clinical practice2. Based on our findings, the Corpus JAPAC-ASCVD programme could potentially be extended at a global level and might effect further changes in the management of, and outcomes in, ASCVD.

Declarations

Ethics approval and consent to participate

No ethical approval was required for the conduct of this analysis as no personal information or medical data were collected or analysed.

Consent for publication

Not applicable.

Availability of data and materials

The dataset supporting the conclusions of this article is included within the article and its additional files. Raw data can be supplied upon reasonable request from the authors.

Competing interests

SJN, BT and SY received speaker honoraria from Amgen for presentations in the JAPAC-ASCVD programme. SS and LK are employees of The Corpus.

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This programme was sponsored by Amgen. The sponsor had no influence over the CME-accredited content of the programme meeting, nor any role in faculty recruitment. Sponsor involvement was restricted to funding and practical help in inviting HCPs to attend sessions..

Authors' contributions

SJN, BT and SY all participated as scientific committee members and presenters in the JAPAC-ASCVD programme, had access to the raw data for the impact assessment, participated in the production and review of the manuscript, and approved the final version of the manuscript for submission. SS and LK were involved in the construction and implementation of the programme, data analyses, production and review of the manuscript, and final approval of the manuscript for publication.

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Corresponding author:

Sarah Stickland, The Corpus, 5-6 Underhill Street, London, NW1 7HS, UK.
Phone: +44 (0)20 7428 2971. Email: sarah.stickland@the-corpus.com

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