The geko device for venous thromboembolism prophylaxis: consultation document

The National Institute for Health and Care Excellence (NICE) is producing guidance on using the geko device for reducing the risk of venous thromboembolism in the NHS in England. The Medical Technologies Advisory Committee has considered the evidence submitted and the views of expert advisers.

This document has been prepared for public consultation. It summarises the evidence and views that have been considered, and sets out the draft recommendations made by the Committee. NICE invites comments from the public. This document should be read along with the evidence base (see Sources of evidence considered by the Committee).

The Advisory Committee is interested in receiving comments on the following:

- Has all of the relevant evidence been taken into account?
- Are the summaries of clinical effectiveness and resource savings reasonable interpretations of the evidence?
- Are the provisional recommendations sound, and a suitable basis for guidance to the NHS?
- Are there any equality issues that need special consideration and are not covered in the medical technology consultation document?

Note that this document is not NICE's final guidance on the geko device for reducing the risk of venous thromboembolism. The recommendations in section 1 may change after consultation. After consultation the Committee will meet again to consider the evidence, this document and comments from public consultation. After considering these comments, the Committee will prepare its final recommendations which will be the basis for NICE’s guidance on the use of the technology in the NHS in England.

For further details, see the Medical Technologies Evaluation Programme process guide and Medical Technologies Evaluation Programme methods guide.

Key dates

- Closing time and date for comments: 09:00 11 December 2013
- Second Medical Technologies Advisory Committee meeting: 23 January 2014

NICE medical technologies guidance addresses specific technologies notified to NICE by sponsors. The ‘case for adoption’ is based on the claimed advantages of introducing the specific technology compared with current management of the condition. This case is reviewed against the evidence submitted and expert advice. The medical technology guidance on ‘the geko device for reducing the risk of venous thromboembolism’ recommends further research. This recommendation is not intended to preclude the use of the technology in the NHS but to identify further evidence which, after evaluation, could support a recommendation for wider adoption.

1 Provisional recommendations

1.1 The geko device shows potential to reduce the risk of venous thromboembolism. If shown to be effective, it could be used for people in whom other forms of mechanical prophylaxis are unsuitable, and it could also offer benefits compared with other mechanical prophylaxis methods for a broader population at risk of venous thromboembolism. However, there is currently insufficient evidence on its clinical effectiveness to support a case for routine adoption in the NHS.

1.2 Research is recommended in clinical settings to investigate the effect of the geko device on the incidence of deep vein thrombosis, compared with no prophylaxis or with established mechanical methods. Outcomes should include subclinical deep vein thrombosis detected by imaging, and clinical venous thromboembolic events. Research should address patient comfort and acceptability, ease of use, nursing implications and costs. The setting should include initiation in hospital, and, where appropriate, continuation after discharge.

1.3 NICE will review this guidance when new and substantive evidence becomes available.

2 The technology

Description of the technology

2.1 The geko device (FirstKind Ltd) is a battery powered, disposable neuromuscular electrostimulation device that aims to reduce the risk of venous thromboembolism.

2.2 The geko device is portable, compact and resembles a small wristwatch. It is applied to the skin over the fibular head (or other application site) and held in position wrapped around the leg, below the crease of the knee. The device uses a

patented electrical impulse delivery system. The impulses stimulate the common peroneal nerve, which causes muscular contractions in the lower leg and foot. The muscular action drives the venous muscle pump of the lower leg, facilitating the emptying of veins and increasing the return of blood to the heart. This imitates the process normally achieved by walking, without the person having to move.

2.3 The geko device is applied by a healthcare worker to 1 or both legs as needed. The device is non-invasive, small (149 mm × 42 mm × 11 mm) and lightweight (16 g), and does not restrict movement of the knee. The device is self-adhesive but an extra adhesive overlay is provided and used if necessary. The small contact area (35 cm^2) of the device is designed to minimise skin irritation and sweating. This device is available in a single size which is claimed to be suitable for most people. The device is disposable and must be replaced every 24 hours.

2.4 The geko device received a CE mark as a class IIa medical device in October 2010, to increase blood circulation and for the prevention of venous thrombosis.

2.5 The list price stated in the sponsor's submission is £22 (excluding VAT) per pair of geko devices.

2.6 The claimed benefits of the geko device in the case for adoption presented by the sponsor are:

- The geko device reduces the risk of venous thromboembolism via the prevention and reduction of venous stasis.
- Good patient adherence due to ease of application, which could help with a faster recovery.
- Discrete and comfortable to wear, allowing the person to retain their independence and mobility. This may help maintain patient wellbeing and ensure self-sufficiency.
- Minimal skin contact and therefore avoidance of skin irritation, skin breakdown and sweating.
- The geko device addresses an unmet need by delivering venous thromboembolism prophylaxis to patient groups who cannot use standard venous thromboembolism prophylaxis.
- The potential to improve speed of patient recovery and therefore reduce the length of hospital stay.

Current management

2.7 Venous thromboembolism – reducing the risk (NICE clinical guideline 92) recommends that all people admitted to hospital should have an assessment of their risk of venous thromboembolism. They should also have their risk of bleeding assessed before pharmacological prophylaxis is offered, and treatment should be determined by the balance of the risks of venous thromboembolism and bleeding occurring.

2.8 The choice of mechanical venous thromboembolism prophylaxis should be based on individual patient factors including clinical condition, surgical procedure and patient preference. Recommended methods of mechanical venous thromboembolism prophylaxis include anti-embolism stockings (thigh or knee length), foot impulse devices and intermittent pneumatic compression devices (thigh or knee length).

2.9 NICE clinical guideline 92 makes special reference to anti-embolism stockings and recommends that they should not be offered to people who have suspected or proven peripheral arterial disease, peripheral arterial bypass grafting, peripheral neuropathy or other causes of sensory impairment, cardiac failure, severe leg oedema or pulmonary oedema from congestive heart failure, major limb deformity preventing correct fit, local conditions in which stockings may cause damage (for example, 'tissue paper' skin, dermatitis, gangrene or recent skin graft) and unusual leg size or shape.

2.10 The guideline recommends offering combined venous thromboembolism prophylaxis with mechanical and pharmacological prophylaxis to people with major trauma or spinal injury, and to those having elective hip or knee replacement and hip fracture surgery. It also recommends consideration of combined venous thromboembolism prophylaxis for other orthopaedic surgery, based on assessment of risks and discussion with the patient, and for women who are pregnant or who have given birth during the previous 6 weeks who are having surgery, including caesarean section.

3 Clinical evidence

Summary of clinical evidence

3.1 Full details of all clinical outcomes considered by the Committee are available in the assessment report overview.

3.2 The key clinical outcomes for the geko device presented in the decision problem were:

- venous transit time, blood flow and blood velocity
- incidence of deep vein thrombosis
- incidence of pulmonary embolism/venous thromboembolism
- patient adherence.

3.3 The sponsor presented 7 studies, an interim report (Khanbhai et al. 2013) and some post-marketing surveillance data about the geko device. Two of the 7 studies were published reports (Tucker et al. [2010] and Warwick et al. [2013]) and 3 were unpublished studies (Jawad [cardiac], Jawad [coagulation] and Jawad [versus intermittent pneumatic compression]) based on a PhD thesis by Jawad (2012). The other 2 papers reported results from a study by Williams (a published poster [Williams published, 2013] and an unpublished manuscript [Williams unpublished, 2013]).

3.4 The External Assessment Centre considered that 3 of the 7 sponsor-submitted geko studies provided relevant evidence in line with the comparators and outcomes defined in the scope. The 4 studies not accepted by the External Assessment Centre were: Tucker et al. (2010), because the comparators were baseline measures and voluntary muscle action (dorsiflexions); Warwick et al. (2013), because of the lack of a proper control arm; Jawad (cardiac) (2012), because of the use of cardiac outcomes not defined in the scope; and Williams (published 2013), because it did not provide sufficient details of how baseline measurements were obtained.

3.5 Jawad (coagulation; 2012) described measurements taken in 10 healthy people using the THRIVE device (a predecessor of the geko device). Participants were placed in airline-style seating for 4 hours with the device activated for 5 minutes, every 15 minutes. All measurements were repeated in a second visit without the device to provide baseline values. Measurements of arterial and venous blood flow were made using colour flow duplex ultrasound and laser doppler flowmetry. A statistically significant increase was observed in mean venous blood flow ($p \leq 0.001$) and mean venous peak velocity ($p \leq 0.001$) with the device when compared against

baseline values in the same leg. The highest increase was found after 3 hours in both measures (+326% and +181% respectively) during the 4-hour session. No statistically significant difference from baseline was observed in mean arterial velocity, although mean arterial volume increased significantly ($p \leq 0.05$). The majority of people reported only mild discomfort with the device.

3.6 Jawad (versus intermittent pneumatic compression; 2012) compared the efficacy of the geko device in enhancing lower limb blood perfusion against 2 intermittent pneumatic compression devices (Huntleigh Flowtron Universal and Kendall SCD Express) in 10 healthy people. Measurements were made using colour flow duplex ultrasound and laser doppler fluxmetry. The median (and inter-quartile range) values for the venous blood volume flow were 123.5 ml/min (73.4) at baseline, 163 ml/min (105.3) for the geko device at a normal clinical use setting, 129 ml/min (42.7) for the geko device at a threshold setting (the minimum setting to elicit a minor muscular contraction in both the calf and the foot) and 118 ml/min (72.7) and 115 ml/min (60.2) for the 2 intermittent pneumatic compression devices. Therefore, the geko device increased venous blood volume flow by approximately 30% compared with the intermittent pneumatic compression devices ($p \leq 0.001$). The geko device also increased arterial blood volume flow by approximately 30% ($p \leq 0.001$), arterial blood velocity by 24% ($p \leq 0.001$) and total microcirculatory blood velocity by approximately 370% ($p \leq 0.001$). When using a visual analogue scale, no statistically significant differences in discomfort were found between the geko device and the intermittent pneumatic compression devices ($p \geq 0.05$).

3.7 A study by Williams et al. (unpublished; 2013) was presented by the sponsor: the methodology and results of this study are academic in confidence and cannot be reported here.

3.8 The sponsor presented post-market surveillance data based on self-completed questionnaires from 215 people who had used the geko device after either vascular or orthopaedic surgery or non-surgical treatment. The data showed that in general the device adhered well to the leg, was easy to apply and use, and was comfortable to wear.

3.9 The External Assessment Centre noted a number of limitations of the clinical evidence:

- All the geko studies included only healthy people: there were no studies on patients or in clinical settings.

- In some of the studies, people were positioned in economy-style airline seating, which is not representative of a typical hospital setting.
- In the submitted evidence, the longest period of time for which the device was continuously active was 30 minutes.

3.10 The sponsor also presented evidence on other mechanical venous thromboembolism prophylaxis methods including neuromuscular electrostimulation and intermittent pneumatic compression studies. Using the sponsor's search strategy, the External Assessment Centre identified a total of 22 studies (15 neuromuscular electrostimulation and 7 intermittent pneumatic compression): it excluded 10 of these (4 neuromuscular electrostimulation and 6 intermittent pneumatic compression) and identified, from its own literature search, 5 further studies. Of the resulting 17 studies, 6 presented evidence on the effect of neuromuscular electrostimulation on the incidence of deep vein thrombosis with all but 1 (Moloney et al. [1972]) showing a significant reduction.

3.11 The External Assessment Centre judged that the efficacy demonstrated by either existing neuromuscular electrostimulation, or intermittent pneumatic compression, devices could not be generalised to the geko device. It noted that other devices use different methodologies that introduce additional uncertainties related to the type of muscle contractions caused by the geko device.

3.12 From a literature search by the sponsor, 8 ongoing studies were identified, all with completion dates before July 2014. The incidence of deep vein thrombosis is an outcome in 1 of these studies which is a randomised controlled trial comparing the geko device against intermittent pneumatic compression, expected to finish in December 2013.

Committee considerations

3.13 The Committee noted that all the studies on the geko device involved healthy people: none were conducted on patients at risk of venous thromboembolism or in clinical settings. The Committee considered that the population in the studies therefore differed considerably from the population in the scope, and concluded that the evidence from those studies could not confidently be applied to patients at risk of VTE for whom other forms of mechanical prophylaxis are unsuitable.

3.14 The Committee considered that the data on measurements of blood flow provided some support for the claim that the device could reduce the risk venous thromboembolism. However, it judged that these surrogate outcomes were

insufficient, and that further evidence was necessary to show that the geko device reduces the incidence of venous thromboembolism in clinical practice. The Committee decided that further evidence from research in patients at risk of venous thromboembolism in clinical settings would be advantageous. It considered that outcome measures should include subclinical deep vein thrombosis detected by ultrasound imaging, and clinical venous thromboembolic events. The Committee wished to encourage such research to demonstrate whether the geko device is clinically effective.

3.15 The Committee discussed the relevance of studies (some conducted many years ago) that demonstrate the efficacy of neuromuscular electrostimulation in reducing deep vein thrombosis. It heard from the External Assessment Centre that the unique mode of action of the geko device introduces additional uncertainty about the association between the type of muscle contractions generated and a reduction in the incidence of deep vein thrombosis. The Committee was not convinced that the evidence on the efficacy of other neuromuscular electrostimulation devices is transferable to the geko device and concluded that further research with the geko device should be encouraged.

3.16 The Committee noted the current pilot study (NCT01935414) aiming to assess the incidence of asymptomatic and symptomatic deep vein thrombosis in people after elective total hip replacement using the geko device compared against anti-embolism stockings. The Committee discussed the potential difficulties and high costs of conducting trials aimed at demonstrating reduced incidence of deep vein thrombosis, but it agreed that the generation of such evidence was important for establishing the efficacy of the geko device for this indication.

3.17 The Committee recognised the practical difficulties of conducting a study in people who cannot receive current methods of venous thromboembolism prophylaxis because of the small numbers and particular circumstances of these patients. The Committee considered it would be useful to consider the geko device for a wider range of patients than those currently included in the scope. If research were to demonstrate that the geko device is as effective as other mechanical methods of prophylaxis methods, particularly intermittent pneumatic compression, then its use might be preferred in a broader population. The Committee wished to give strong encouragement to this type of research.

3.18 The Committee discussed other potential benefits for patients associated with the geko device. It noted the post-market surveillance data and heard expert advice that the geko device is simple to use and offers advantages in terms of mobility and

comfort, which may help improve compliance with its use. The Committee considered that evidence from comparative studies of the geko device against other mechanical methods of prophylaxis that showed benefits for patients, such as increased comfort and acceptability, would strengthen the case for adoption in the NHS of the geko device.

4 NHS considerations

System impact

4.1 The sponsor claimed that the geko device addresses unmet need by delivering venous thromboembolism prophylaxis to patient groups who cannot currently use the standard mechanical means of venous thromboembolism prophylaxis.

4.2 The sponsor proposed that use of the geko device would be initiated in a hospital setting and would not result in changes to the current pathway or involve additional system resources. The External Assessment Centre agreed with these assumptions.

Committee considerations

4.3 The Committee discussed the population described in the decision problem of the scope. It heard expert advice that the size of this patient group is difficult to estimate but that it represents a small proportion of patients at risk of venous thromboembolism. It concluded that further information on the characteristics and size of this patient group would be useful.

4.4 The Committee considered the utility of the geko device as a method of delivering extended mechanical prophylaxis after a person has been discharged from hospital. The Committee heard expert advice that there are patients who are at high risk and who require prophylaxis after leaving hospital who could benefit from a portable method of mechanical prophylaxis. The Committee acknowledged that use of the device outside a hospital setting was not addressed in the current evaluation, but suggested that further information on costs and benefits in this setting would be very useful.

5 Cost considerations

Cost evidence

5.1 No existing studies were identified on the cost impact of the geko device.

5.2 The sponsor submitted a de novo cost analysis using a decision tree model that estimated the cost associated with the geko device compared with no mechanical prophylaxis. The model population was patients for whom current mechanical methods of prophylaxis are impractical or contraindicated.

5.3 The decision tree structure was an amended version of the model from the NICE clinical guideline on venous thromboembolism. The model assumed that patients treated with the geko device experienced a reduction in their baseline risk of deep vein thrombosis. Of the patients who went on to experience deep vein thrombosis, most would have either symptomatic or asymptomatic deep vein thrombosis but some would progress to pulmonary embolism. A proportion of patients with deep vein thrombosis also experienced post-thrombotic syndrome, a permanent comorbidity that could generate costs over the patient's lifetime. Further, it was assumed that the patients who had a pulmonary embolism also had a risk of death. The time horizon for the decision tree was 1 year but the model also included the lifetime (15 years) cost of post-thrombotic syndrome. The External Assessment Centre stated that it believed the model structure captured the clinical pathway of care, assumptions and health states in an appropriate manner for the evaluation.

5.4 Most of the clinical parameters were based on the NICE clinical guideline on venous thromboembolism. The key assumptions for clinical parameters used in the model were:

- The underlying risk of deep vein thrombosis was 29.1% with no prophylaxis (this was based on the average risk of deep vein thrombosis for all surgical-related patients according to the NICE clinical guideline on venous thromboembolism).
- The proportion of deep vein thrombosis progressing to a pulmonary embolism was 10.5%.
- There was a 6% chance of pulmonary embolism causing death. No other mortality cause was considered.
- The relative risk of a deep vein thrombosis after treatment with the geko device was 0.39.

- Post-thrombotic syndrome occurred in 25% of patients with symptomatic deep vein thrombosis or a pulmonary embolism and 15% of patients with asymptomatic deep vein thrombosis.

5.5 No evidence was available for the reduction in relative risk of deep vein thrombosis associated with the use of the geko device. The sponsor's assumption of a relative risk of 0.39 was based on the incidence of subclinical deep vein thrombosis after the use of neuromuscular electrostimulation as reported in Browse & Negus (1970). The sponsor stated that this was a conservative assumption and further justified this because the value fell within the range (0.31–0.58) identified for intermittent pneumatic compression in the NICE clinical guideline on venous thromboembolism. The External Assessment Centre disagreed with this assumption.

5.6 The cost of the geko device was £22 per pair exclusive of VAT. The cost of purchasing the device per course of 6 days prophylaxis on a patient in whom the device is applied to both legs was therefore £132.

5.7 In the sponsor's model, the cost per patient estimated for the geko device was £359 and for the comparator (no prophylaxis) it was £565, resulting in a cost saving for the geko device of £206 per patient. After correcting for an error in the hourly nursing cost, the External Assessment Centre calculated the cost saving per patient to be £197.

5.8 The sponsor conducted univariate, 2-way and probabilistic sensitivity analyses. The 3 factors that affected the cost analysis the most were the cost associated with post-thrombotic syndrome, the relative risk of deep vein thrombosis associated with the geko device as a form of prophylaxis, and the proportion of deep vein thromboses that are symptomatic. The probabilistic sensitivity analysis showed that the geko device remained cost saving in 99% of simulations performed, with a mean cost saving of about £200 per patient. The sponsor concluded that the geko device was cost saving compared with no prophylaxis. The External Assessment Centre stated that the sensitivity analysis covered all the uncertain variables, was well performed and that the results supported the conclusions about cost savings from the submitted model.

5.9 The sponsor performed subgroup analysis in people for whom pharmacological prophylaxis is indicated and prescribed. An economic model was developed using values for the relative risk of deep vein thrombosis with pharmacological prophylaxis alone and with pharmacological prophylaxis plus the geko device of 0.14 and 0.02, respectively. Compared with pharmacological prophylaxis alone, the geko device in

combination with pharmacological prophylaxis was cost saving for the first 2 days and cost neutral if used for 3 days. It was not estimated to be cost saving after more than 3 days of treatment, with an incremental cost of £69 after 6 days of treatment.

Committee considerations

5.10 The Committee considered that the cost model structure was appropriate and that the sponsor had addressed the uncertainties in the cost model through sensitivity analyses.

5.11 The Committee agreed with the External Assessment Centre that results from the cost model were unreliable because of uncertainty associated with the assumption about the efficacy of the geko device compared with no mechanical prophylaxis. In particular, the Committee was concerned over the lack of direct evidence for a reduction in the incidence of deep vein thrombosis with the geko device. Furthermore, the Committee did not consider it appropriate to use a risk reduction for the geko device based on the incidence of deep vein thrombosis after use of a neuromuscular electrostimulation device that was derived from an extremely old study, and may not be consistent with the geko device's performance (see section 5.4). These 2 factors were important considerations influencing the Committee's recommendation for further research to investigate the incidence of deep vein thrombosis associated with the geko device. The Committee advised that further research should include collecting cost data from clinical practice.

6 Conclusions

6.1 The Committee considered that the geko device showed promise as a means of venous thromboembolism prophylaxis and noted that clinical experts were positive about its potential benefits. It considered the device to be novel, simple and easy to use, and noted its potential advantages over current mechanical prophylaxis methods with regard to mobility, comfort and compliance.

6.2 The Committee considered that the geko device might offer advantages as a means of mechanical prophylaxis to a broader population of patients than was specified in the scope. However, the Committee judged that the lack of direct evidence from clinical practice for a reduction in the incidence of deep vein thrombosis associated with use of the geko device meant that the case for routine adoption in the NHS could not be supported at this time. The Committee concluded that further research is needed to provide this evidence: it gave strong

encouragement to research on the effect of geko in clinical settings compared against established mechanical methods of VTE prophylaxis.

Bruce Campbell
Chairman, Medical Technologies Advisory Committee
October 2013

7 Committee members and NICE lead team

Medical Technologies Advisory Committee members

The Medical Technologies Advisory Committee is a standing advisory committee of NICE. A list of the Committee members who took part in the discussions for this guidance appears below.

Committee members are asked to declare any interests in the technology to be evaluated. If it is considered there is a conflict of interest, the member is excluded from participating further in that evaluation.

The minutes of each Medical Technologies Advisory Committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

Professor Bruce Campbell (Chair)
Consultant Vascular Surgeon, Exeter

Dr Peter Groves (Vice Chair)
Consultant Cardiologist, Cardiff and Vale NHS Trust

Ms Susan Bennett
Lay member

Prof Nigel Brunskill
Professor of Renal Medicine, University of Leicester

Mr Matthew Campbell-Hill
Lay member

Mr Andrew Chukwuemeka
Consultant Cardiothoracic Surgeon, Imperial College Healthcare NHS Trust

Professor Peter Gaines
Consultant Vascular Interventional Radiologist, Sheffield, Vascular Institute and Sheffield Hallam University

Professor Shaheen Hamdy
Professor of Neurogastroenterology, University of Manchester

Dr Cynthia Iglesias
Health Economist, University of York

Professor Mohammad Ilyas
Professor of Pathology, University of Nottingham

Dr Eva Kaltenthaler
Reader in Health Technology Assessment, ScHARR, University of Sheffield

Dr Paul Knox
Reader in Vision Science, University of Liverpool

Mrs Jacqui Nettleton
Programme Director, Commissioning, Western Sussex Hospitals NHS Trust

Mrs Karen Partington
Chief Executive, Lancashire Teaching Hospitals NHS Foundation Trust

Professor Brian J Pollard
Professor of Anaesthesia, University of Manchester. Consultant Anaesthetist, Central Manchester University Hospitals

Mr Brian Selman
Managing Director, Selman and Co

Professor Allan Wailoo
Professor of Health Economics, School of Health and Related Research (ScHARR), University of Sheffield

Mr John Wilkinson
Director of Devices, Medicines and Healthcare Products Regulatory Agency

Dr Janelle Yorke
Lecturer and Researcher in Nursing, University of Manchester

NICE lead team

Each medical technology assessment is assigned a lead team of a NICE technical analyst and technical adviser, an expert adviser, a technical expert, a patient expert, a non-expert member of the Medical Technologies Advisory Committee and a representative of the External Assessment Centre.

Chris Chesters
Technical Analyst

Bernice Dillon
Technical Adviser

Sameh Dimitri
Lead Expert Adviser

Gerard Stansby
Lead Expert Adviser

David Warwick
Lead Expert Adviser

Brian Selman
Non-Expert MTAC Member

James Clinch
External Assessment Centre Representative

Jennifer Summers
External Assessment Centre Representative

8 Sources of evidence considered by the Committee

The External Assessment Centre report for this assessment was prepared by King's Imaging Technology Evaluation Centre (KITEC):

- Clinch J, Healey A, Keevil S et al. (2013) The geko™electro-stimulation device for venous thromboembolism prophylaxis (September, 2013)

Submissions from the following sponsor:

- FirstKind Limited

The following individuals gave their expert personal view on the geko device by providing their expert comments on the draft scope and assessment report:

- Mr Sameh Dimitri, nominated/ratified by The Vascular Society – clinical expert
- Professor Gerard Stansby, nominated/ratified by The Vascular Society – clinical expert
- Mr David Warwick, ratified by The Vascular Society – clinical expert

The following individuals gave their expert personal view on the geko device in writing by completing a patient questionnaire or expert adviser questionnaire provided to the Committee.

- Mr Sameh Dimitri, nominated/ratified by The Vascular Society – clinical expert
- Professor Gerard Stansby, nominated/ratified by The Vascular Society – clinical expert
- Mr David Warwick, ratified by The Vascular Society – clinical expert
- Mr George Geroulakos, nominated by The Vascular Society – clinical expert
- Mr John Scurr, nominated by The Vascular Society – clinical expert
- Dr Mohideen Jameel, ratified by Association of surgeons of Great Britain and Ireland – clinical expert
- Mr Frank Smith, nominated by The Vascular Society – clinical expert
- Professor Gerard Stansby, ratified by The Vascular Society – clinical expert
- Dr Irfan Akhtar, nominated by The Vascular Society – clinical expert
- Ms Lynda Bonner, ratified by Royal College of Nursing – clinical expert
- Professor Gerard Stansby, ratified by The Vascular Society – clinical expert
- Professor Andrew Nicolaides, ratified by The Vascular Society – clinical expert
- Mr Bankole Akomolafe, nominated by The Vascular Society – clinical expert
- Anticoagulation Europe – patient organisation group

Copyright