RECOMMENDATIONS

These recommendations have been formed by a consensus exercise involving all those listed in the acknowledgements. The recommendations have been independently edited by medical editors experienced in developing recommendations for healthcare audiences to act on.

1	**Raise awareness of acute limb ischaemia, how to recognise it and what actions to take to reduce delays in the treatment pathway.** ▪ **Raise awareness with patients and the public about the symptoms and who to contact.** ▪ **Raise awareness with healthcare professionals in primary care, community care and all emergency departments (vascular hubs and spoke hospitals).** *Note: younger people and those without all of the defined six symptoms of ALI (Pain, Pallor, Paraesthesia, Paralysis, Perishingly cold, Pulselessness - the '6Ps') can still have ALI.*
RATIONALE FOR THE RECOMMENDATION	Delays occurred throughout the patient pathway due to a lack of recognition of symptoms of acute limb ischaemia by the patients and delays in recognition and diagnosis of acute limb ischaemia on behalf of the healthcare professionals. Delays can lead to amputations and should be avoided wherever possible.
FOR ACTION BY	**PATIENT AND PUBLIC AWARENESS** The Office for Health Improvement and Disparities (previously Public Health England), Public Health Wales, Public Health Agency Northern Ireland, Public Health Jersey. **CLINICAL AWARENESS** Commissioners (including NHSE Vascular Services clinical reference group) and integrated care boards in discussion with their trusts/health boards.
ADDITIONAL STAKEHOLDERS	Vascular Society, British Society of Interventional Radiology, NHS 111, Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, Royal College of General Practitioners, Royal College of Emergency Medicine, Royal College of Physicians, Royal College of Radiologists, British Society of Endovascular Therapy, Association of Ambulance Chief Executives, Joint Royal Colleges Ambulance Liaison Committee, Royal College of Nursing, Diabetes UK, Legs Matter, The Patients Association.
ASSOCIATED GUIDANCE	▪ NHSE: PERIPHERAL ARTERIAL DISEASE, AN OVERVIEW ▪ NHSE: COMPLICATIONS OF TYPE 2 DIABETES ▪ PATIENT INFO: LIMB EMBOLISM AND ISCHAEMIA ▪ ROYAL COLLEGE OF EMERGENCY MEDICINE: ACUTE LIMB ISCHAEMIA ▪ LEGS MATTER: ACT NOW TO SAVE LIMBS AND LIVES

IMPLEMENTATION SUGGESTIONS

FOR THE PUBLIC AND HEALTHCARE PROFESSIONALS

- A national campaign such as 'six hours to save a limb'

FOR PATIENTS AND THE PUBLIC

- Include symptoms of ALI in online patient information such as GP practice websites/NHS 111) and direct patients to their nearest vascular hub
- Information leaflet/infographic for patients who are at higher risk of ALI, including information on how to reduce risk and what to do if they experience symptoms of ALI

FOR HEALTHCARE PROFESSIONALS

- Red flags on primary care systems, recognising that ALI can 'mimic' deep vein thrombosis and stroke, that swelling may be a feature and that sensory-motor impairment is important
- Red flag for patients at higher risk, e.g. those with chronic limb-threatening ischaemia, atrial fibrillation, diabetes, or who smoke. They should be given advice on how to reduce their risk of ALI and told what they should do if they have symptoms
- A template could be produced to standardise the assessment of patients with possible peripheral arterial disease such as used in primary care Peripheral Artery Disease (PAD): Ardens EMIS Web
- See patients with symptoms of ALI for a face-to-face assessment
- All healthcare professionals, including ambulance staff, who triage/assess acute presentations need to be able to determine the severity of ALI, e.g. new numbness or paralysis of the limb, it is very severe, and the limb may be impossible to save if untreated within around six hours. The Rutherford classification could be used to aid this assessment and would support the communication of urgency.

2	**Risk stratify and refer/transfer patients with symptoms of acute limb ischaemia and new sensory or motor impairment* directly to a vascular hub.** **These would be patients with a Rutherford IIb category, affecting more than the toes* *See also recommendation 3*
RATIONALE FOR THE RECOMMENDATION	Patients likely to benefit most from an intervention (Rutherford category IIb) were not always directed to a vascular hub, causing a delay in their treatment beyond the accepted target of six hours. Furthermore, the Rutherford classification was rarely used outside of vascular hubs. *This also links with recognition in recommendation 1.*
FOR ACTION BY	Commissioners and integrated care boards in discussion with their trusts/health boards.
ADDITIONAL STAKEHOLDERS	Vascular Society, British Society of Interventional Radiology, Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, Royal College of General Practitioners, Royal College of Emergency Medicine, Royal College of Physicians, Royal College of Radiologists, Royal College of Nursing, Association of Ambulance Chief Executives, Joint Royal Colleges Ambulance Liaison Committee.
ASSOCIATED GUIDANCE	▪ NICE CLINICAL KNOWLEDGE SUMMARY: ACUTE LIMB ISCHAEMIA ▪ VASCULAR SOCIETY: PROVISION OF SERVICES FOR PEOPLE WITH VASCULAR DISEASE 2024 ▪ BRITISH SOCIETY OF INTERVENTIONAL RADIOLOGY: PROVISION OF INTERVENTIONAL RADIOLOGY SERVICES 2023 ▪ ROYAL COLLEGE OF EMERGENCY MEDICINE: ACUTE LIMB ISCHAEMIA

IMPLEMENTATION SUGGESTIONS

- Use ambulance bypass protocols to expedite time to treatment

- Use theatre booking systems and coordinators to access emergency theatres
- Record and audit time from symptoms to procedure (if needed)
- Learn from patient safety incidents related to ALI, fasciotomies, amputations and related deaths.

3	**Organise vascular networks to provide timely access to vascular specialists skilled in treating people with acute limb ischaemia.**
RATIONALE FOR THE RECOMMENDATION	Networks were under used and non-vascular specialists reported not being confident to treat patients in the spoke hospitals but had no formal transfer option to the vascular hub.
FOR ACTION BY	Commissioners and integrated care boards in discussion with their trusts/health boards.
ADDITIONAL STAKEHOLDERS	Royal College of Surgeons of England, Vascular Society, British Society of Interventional Radiology, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, Royal College of General Practitioners, Royal College of Emergency Medicine, Royal College of Physicians, Royal College of Radiologists, Association of Ambulance Chief Executives, Joint Royal Colleges Ambulance Liaison Committee.
ASSOCIATED GUIDANCE	▪ VASCULAR SOCIETY: PROVISION OF SERVICES FOR PEOPLE WITH VASCULAR DISEASE 2021 ▪ BRITISH SOCIETY OF INTERVENTIONAL RADIOLOGY: PROVISION OF INTERVENTIONAL RADIOLOGY SERVICES 2023

IMPLEMENTATION SUGGESTIONS

- Establishing a collaborative network similar to the UK national trauma networks would cover the pathway from primary care to spoke hospital to vascular hub and repatriation
  - Maintaining adequate service provision
  - Having a local repatriation guideline so that patients can be moved closer to their families and ensuring the best use of resources at the hub
- Using the Rutherford classification would support communication of urgency
- Telemedicine could be used for remote assessment by video consultation, or using video and photos of the limb to aid communication between vascular hubs and spoke hospitals, once the patient has had an in person review
- Share electronic patient records and images between hub and spoke care providers in the network
- Consider when to involve the palliative care team and at which location
- Enhance collaboration between vascular surgery and interventional radiology to optimise the use of expertise, workforce and facilities
- Senior members of the vascular surgery team and interventional radiology should review imaging and agree on the management plan
- Include vascular anaesthetic involvement when necessary and acute pain team referral when necessary
- Establish performance indicators once local pathways have been introduced and audit compliance against them
- Regular mortality and morbidity meetings should be encouraged to share learning
- Learn from patient safety incidents related to ALI, fasciotomies, amputations and related deaths.

4	**Develop a national guideline for the management of acute limb ischaemia.**
RATIONALE FOR THE RECOMMENDATION	There is no national guideline covering the care pathway for patients with, or at risk of ALI from primary care to spoke hospital to vascular hubs. In addition, there is no national data collection system and no quality improvement framework. In severe cases (Rutherford IIb), patients need to be treated by specialist staff within six hours of their symptoms appearing.
FOR ACTION BY	The Vascular Society with the British Society of Interventional Radiology.
ADDITIONAL STAKEHOLDERS	Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons of Great Britain and Ireland, Association of Anaesthetists, British Society for Haematology, Royal College of General Practitioners, Royal College of Emergency Medicine, Royal College of Physicians, Royal College of Radiologists, British Society of Endovascular Therapy, Association of Ambulance Chief Executives, Joint Royal Colleges Ambulance Liaison Committee.
ASSOCIATED GUIDANCE	▪ NICE CLINICAL KNOWLEDGE SUMMARY: ACUTE LIMB ISCHAEMIA ▪ VASCULAR SOCIETY: PROVISION OF SERVICES FOR PEOPLE WITH VASCULAR DISEASE 2024

IMPLEMENTATION SUGGESTIONS

THE GUIDELINE COULD INCLUDE

- Core components of pathways for different specialties
- The initial assessment/treatment/referral
  - Protocol/standard operating procedure for primary care, ambulance and the emergency department -bypass protocols and pre-alerts
  - Use of the Rutherford classification to standardise the description of severity in appropriate settings, noting that not every patient has all '6Ps'
  - Initial anticoagulation protocol

Transfer to the vascular hub:

- Shared electronic patient records/imaging access
- Palliative care
- Treatment pathway in the vascular hub
  - Assessment and pain control (acute pain team may be required)
  - Use of the Rutherford classification
  - Evidence of better clinical performance where ALI care pathways are used
  - Senior vascular surgical (decision-maker) review
  - Frequent limb condition re-assessment pre, during and post treatment
  - Treatment planning between senior vascular surgery, interventional radiology, vascular anaesthesia and decision-makers to agree a revascularisation plan, with minimal delay (prioritisation processes)
- Core components of the discharge planning process
- Monitoring of audit, quality improvement and performance should include National Vascular Registry reporting in quarterly and annual reports and inclusion in the NCIP dashboards and GIRFT metrics
- Patients should be facilitated and supported in participating in ALI research.

5	**Support the national vascular registry to capture focused data on acute limb ischaemia, and to report on procedures and outcomes for patients with ALI*** *ICD-11 will be mandated in the UK in the next five years and has codes for upper and lower ALI that will allow data comparisons with the national vascular registry data and national patient episode data, unlike ICD-10 where ALI is coded with chronic limb-threatening ischaemia.*
RATIONALE FOR THE RECOMMENDATION	There is no UK data collection (registry) on acute limb ischaemia. This needs to be in place to monitor and improve outcomes and allow benchmarking for quality improvement.
FOR ACTION BY	Funders and commissioners of the national vascular registry, working with the Royal College of Surgeons of England and partners as the current contract holder for the registry.
ADDITIONAL STAKEHOLDERS	Vascular Society, British Society of Interventional Radiology, NHSE Vascular Services Clinical Reference Group, Vascular Anaesthetic Society of Great Britain and Ireland
ASSOCIATED GUIDANCE	▪ **EUROPEAN SOCIETY FOR VASCULAR SURGERY (ESVS) 2020 CLINICAL PRACTICE GUIDELINES ON THE MANAGEMENT OF ACUTE LIMB ISCHAEMIA**

IMPLEMENTATION SUGGESTIONS

- Fund the addition of acute limb ischaemia to the National Vascular Registry
- Align the data collection with the International Consortium of Vascular Registries (ICVR) recommended data set, to ensure capture of:
  - Causes of ALI (atrial fibrillation, cancer, in situ thrombus, etc.)
  - Duration of ischaemia
  - Rutherford grade
  - Presentation to spoke hospital or vascular hub
  - Transfer times
  - Times from symptom to operation/intervention,
  - Type of intervention, use of modern techniques/new devices such as thrombectomy or clot retrieval
  - Use of anticoagulation,
  - Requirement for fasciotomy
  - Postoperative outcomes such as amputation and or death
  - Limb preservation
  - Postoperative anticoagulation regimens
  - Ethnicity
  - Alcohol consumption
  - Drug use
  - Use of vapes/electronic tobacco products
- Keep local records at vascular hubs and ideally at spoke hospitals within the network of all patients with acute limb ischaemia
- Use the ICD11 code for ALI as soon as it becomes available
- Monitoring of audit, quality improvement and performance should include National Vascular Registry reporting in quarterly and annual reports and inclusion in the NCIP dashboards and GIRFT metrics
- Collect patient reported outcomes to assess the impact of interventions and their delivery on patients.