ASPIRE Junior: Peripheral Artery Disease

PAD: occlusive disease of arteries – diminished blood supply w/ongoing tissue demand

Usually atherosclerotic or thromboembolic

Presentation: Fontaine / Rutherford

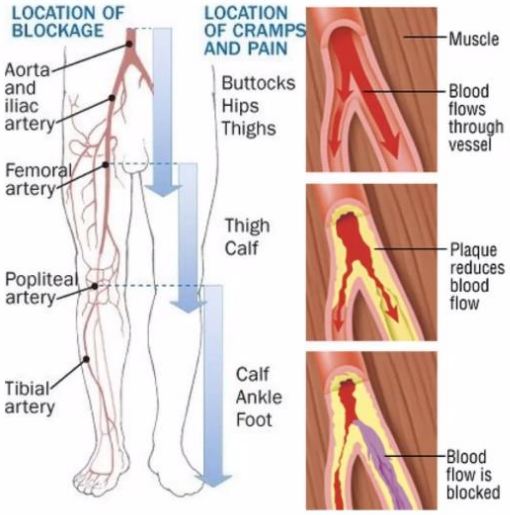
Severity

FONTAINE		RUTHERFORD		
Stage	**Clinical**	**Grade**	**Category**	**Clinical**
I	Asymptomatic	0	0	Asymptomatic
IIa	Mild claudication	I	1	Mild claudication
IIb	Moderate–severe claudication	I	2	Moderate claudication
		I	3	Severe claudication
III	Ischemic rest pain	II	4	Ischemic rest pain
IV	Ulceration or gangrene	III	5	Minor tissue loss
		IV	6	Ulceration or gangrene

ROULEAUX CLUB
UK Vascular Trainees' Association

PVD- Presentation

- Pain – Claudication reproducible pain on walking), rest pain – worse of elevating the leg, improved by hanging leg down.
- Paraesthesia- worse on elevating the legs
- Erectile dysfunction
- Weak/ absent pulses



Rest pain usually worse at night d/t lack of gravity

Location of pain depends on location of obstruction

ROULEAUX CLUB
UK Vascular Trainees' Association

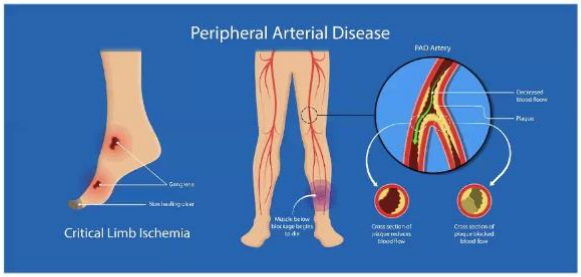
PVD- Presentation

- Skin – pale and cool / dependent rubor
- Trophic changes- Hairloss, shiny skin, muscle atrophy, diminished nail growth
- Ulceration

Ulcers usually small and punched out – bottom of foot or between toes

Chronic Limb Threatening Ischaemia (CLTI)
A threshold of values of impaired circulation. Syndrome – Presence of PAD, in combination with **rest pain**, **gangrene** or leg ulceration > 2 weeks duration

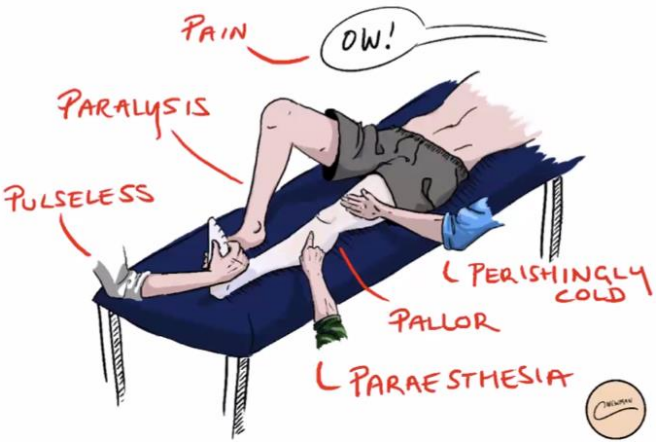
Associated with increased risk of **mortality**, **amputation** or **impaired quality of life**.



CLTI is new term instead of critical limb ischaemia

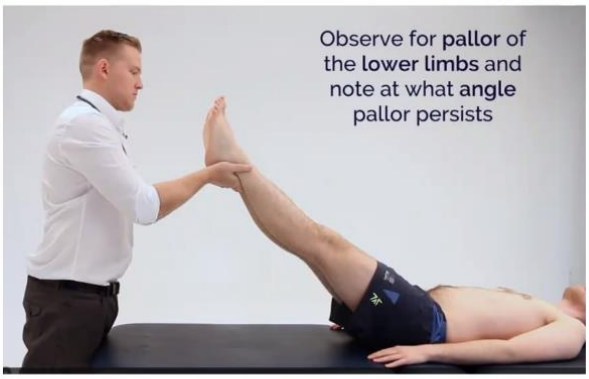
ROULEAUX CLUB
UK Vascular Trainees' Association

PVD- Acute Limb ischaemia



Needs to be acted on w/in 6 hrs to save limb!

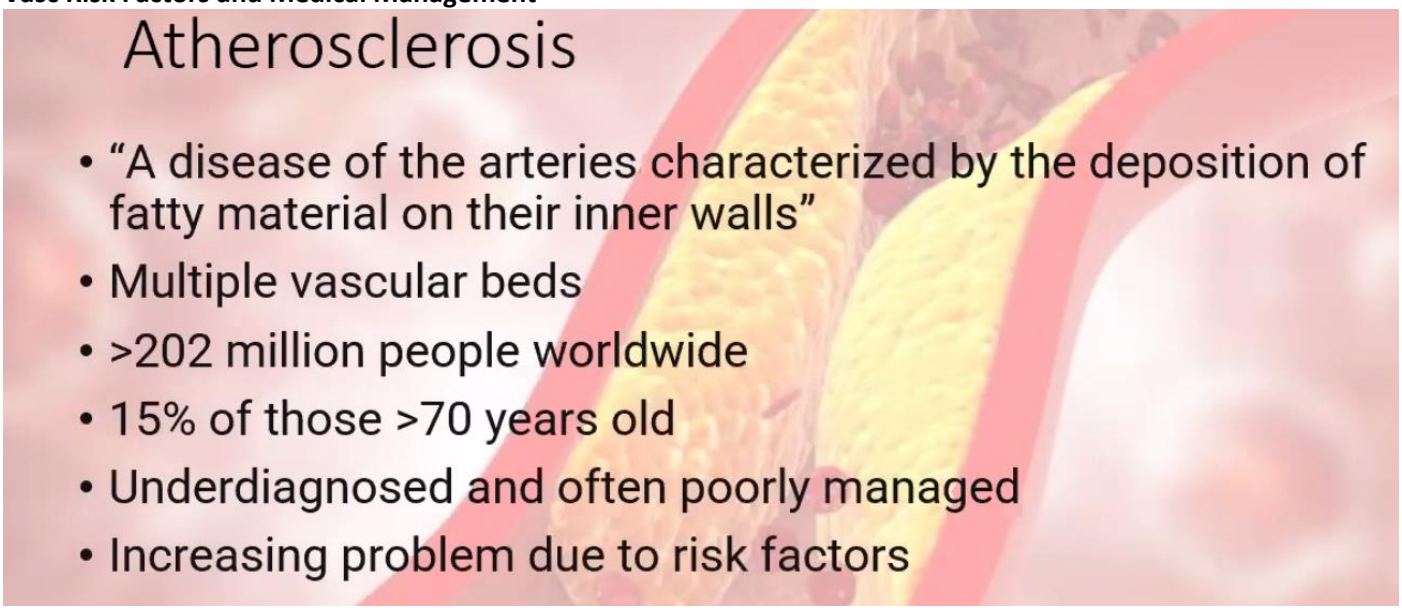
- Through inspection (Scars/ skin/ tissue appearance/ ulcers/ nails/ hair loss/ muscle wasting/ colour changes)
- Palpation (pulses/ temperature/ capillary refill/ sensation/ motor function/ aneurisms/)
- ABPI (SBP ankle/ SBP brachial)
- Buerger's test



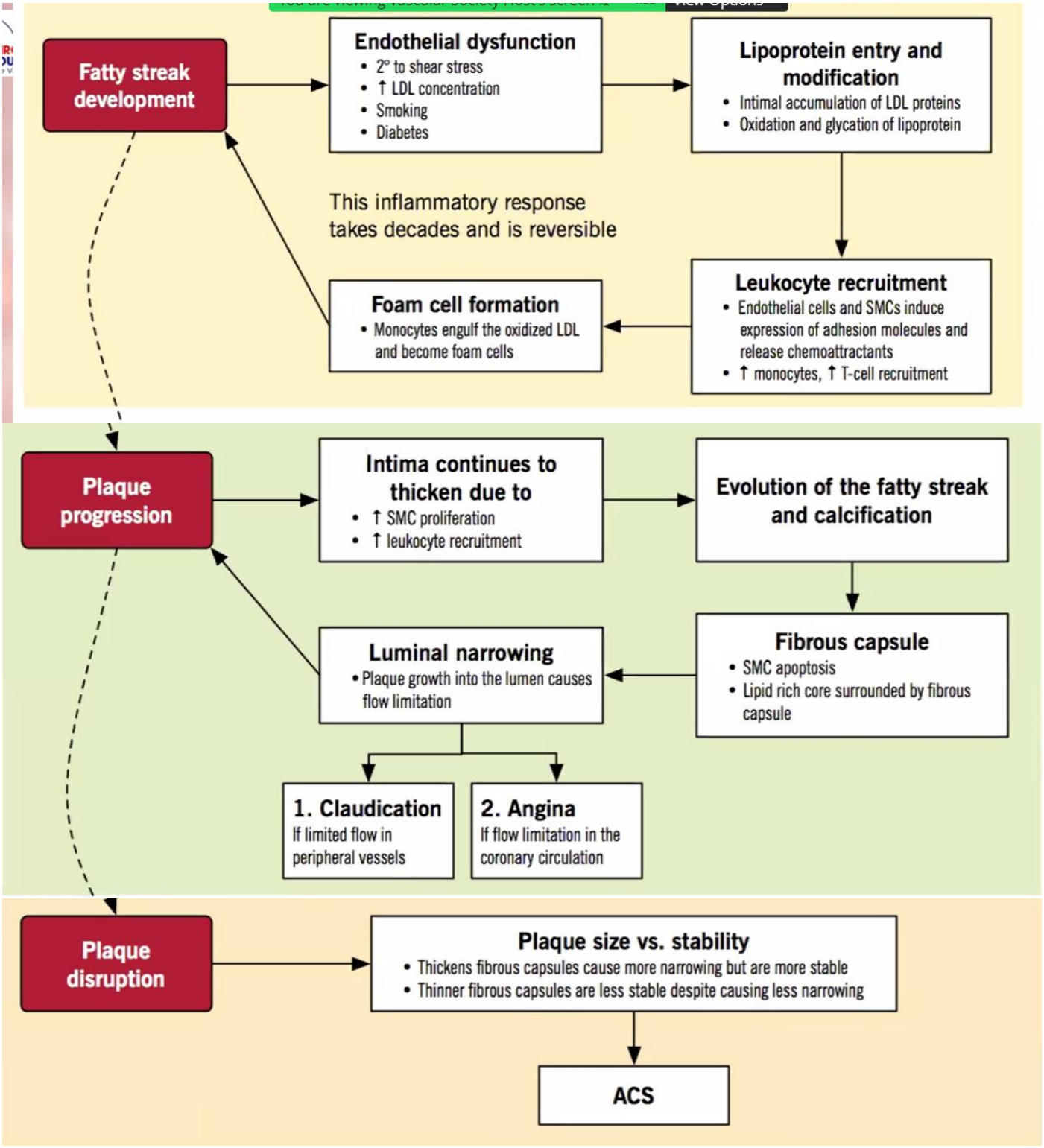
Buerger's – elevate feet for 2 minutes – if they go pale, then the patient has PAD – after elevation, allow patient to hang leg down to look for reactive hyperaemia
Do basic blood tests – remember to look for coagulopathy
Imaging –

Duplex ultrasound – operator dependent – limited by body habitus
MRA
CTA
DSA (Digital Subtraction Angiogram)

Vasc Risk Factors and Medical Management



Affects the whole body – not just one part of the body



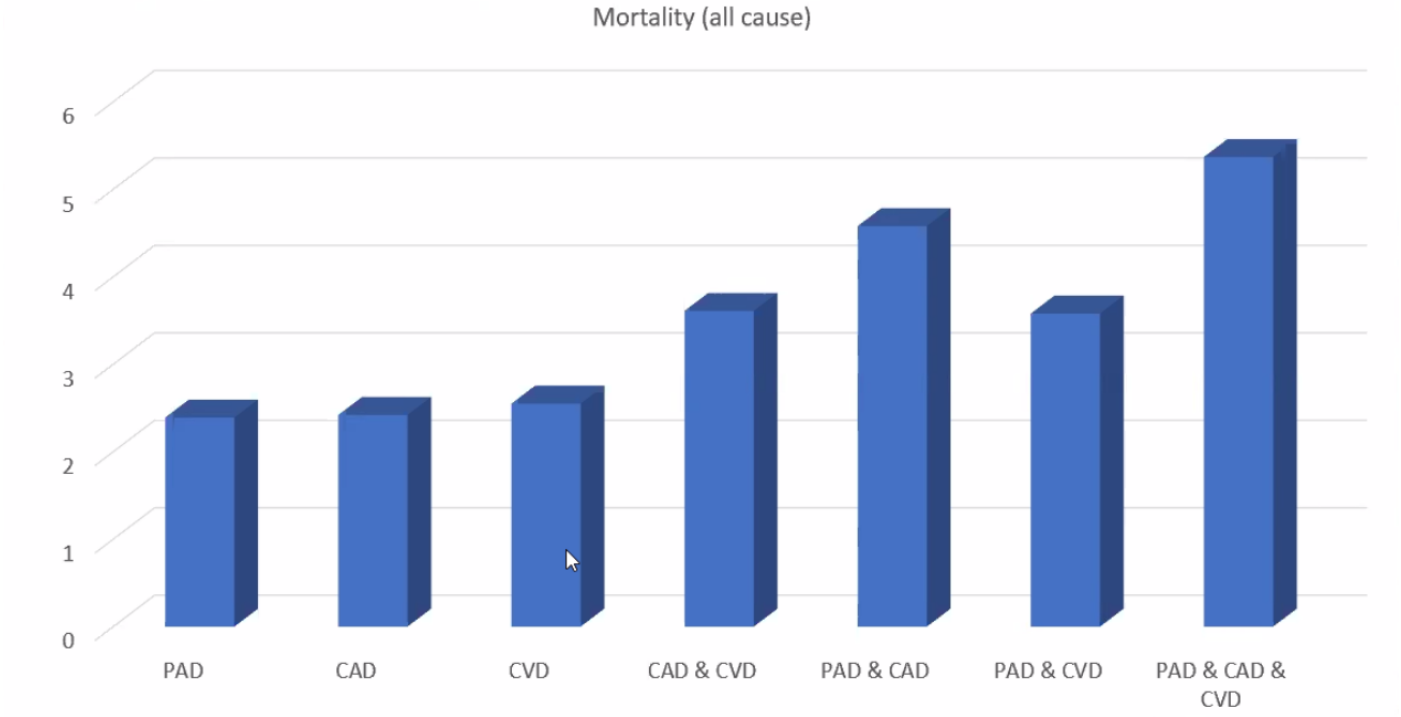
ACS – Acute on chronic ischaemia / stroke

Risk Factors

- Smoking
- Obesity
- Diabetes
- Hypertension
- Aging population

What are the risks?

- REACH registry (Reduction of Atherothrombosis for Continued Health)
- 68,000 at risk patients globally
- Risks of all cause mortality and cardiovascular event at 1 year



Patients w/all 3 have a higher mortality risk – Singular cardiovascular event higher w/PAD cohort

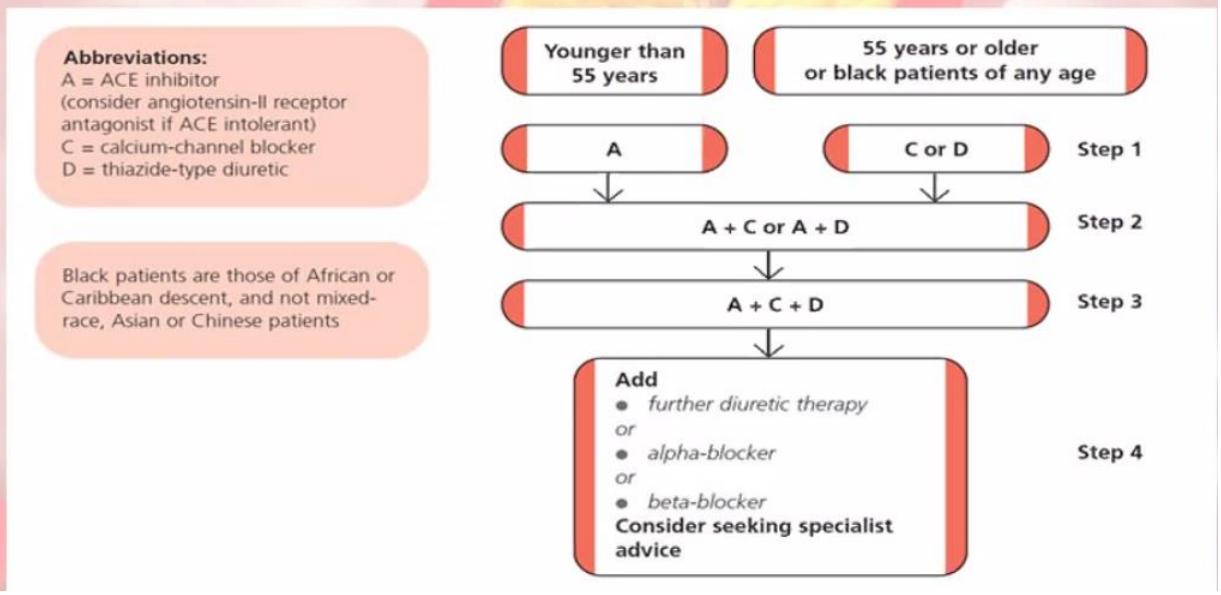
Best Medical Therapy

- Secondary Prevention of Cardiovascular Risk Factors
- NICE Guidelines
- Smoking Cessation
- Clopidogrel 75mg
- Atorvastatin 80mg
- Control of Hypertension
- Glycaemic Control
- Exercise

NICE Guidelines recommend BMT b4 surgery
Smoking cessation MOST important!! – can prevent progression to CLTI – referral to cessation program doubles cessation rate – key is getting long term smoking cessation results!
Antiplatelets – reduces CV mortality by 46%, fewer side effects than aspirin, but increased bleeding risk
Statins – STRONG positive correlation b/w cholesterol and incidence of cardiovascular disease – lower the LDL cholesterol – improves 1yr limb salvage rates, and walking distance @ 1 month

Management of hypertension

- Recommendation – BP <140/90mmHg
- CV risk doubles for every 20/10mmHg above 115/70mmHg



Get BP as low as possible w/in reason

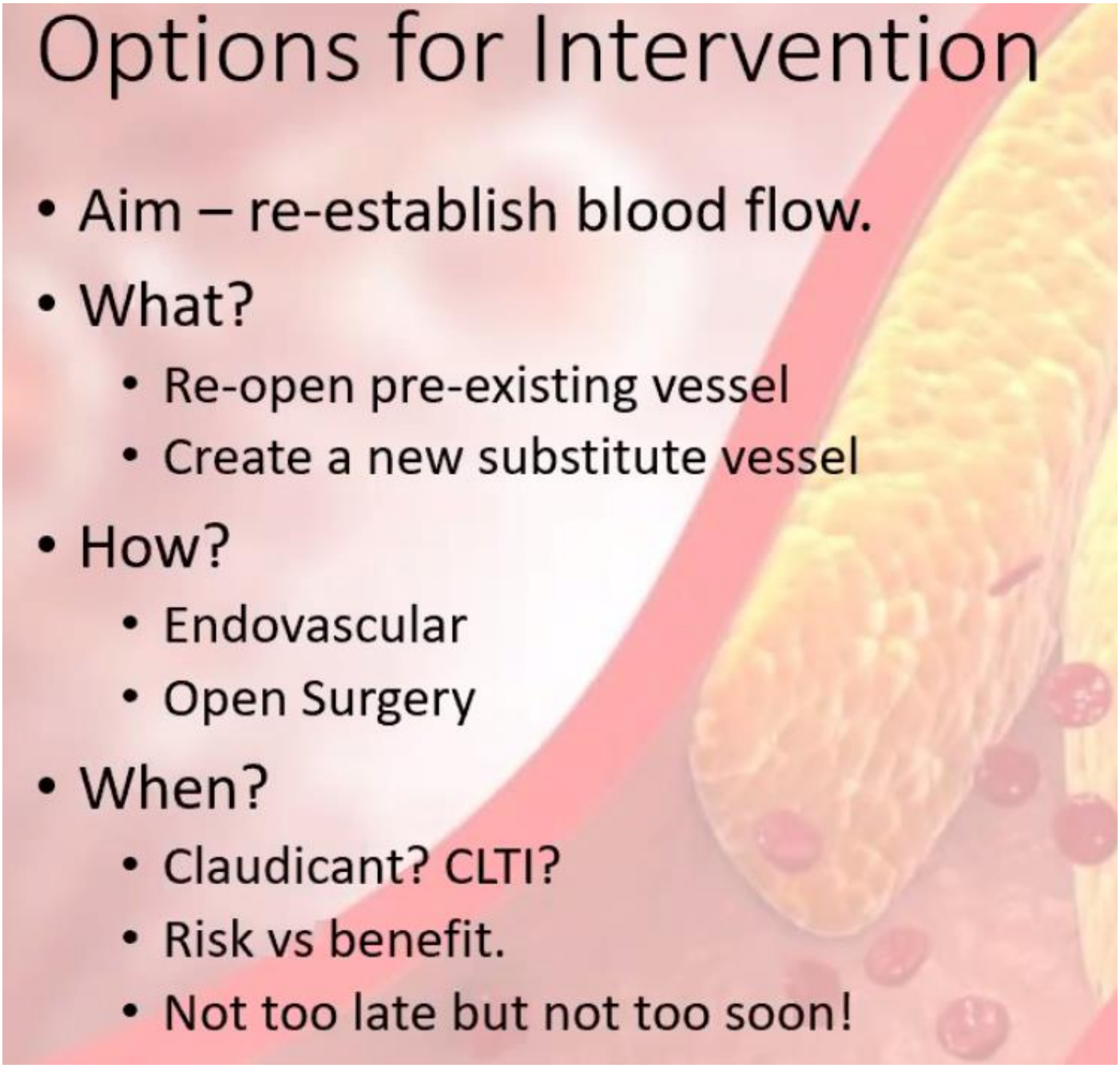
Management of Diabetes

- Diabetes increases risk of PAD 2-3-fold
- Undiagnosed diabetes – up to 12% of new PAD patients
- 1% rise in HbA1c – 28% increase in PAD & 28% increased mortality
- 1% reduction – 43& reduction in amputation or death from PAD
- Lifestyle management
  - Weight reduction – BMI >40/>35 & diabetes consideration of bariatric surgery
  - Diet
  - Exercise

Exercise

- NICE guidelines
  - 2 hours supervised exercise/week for 3 months
  - Exercise to maximal pain
- Benefits
  - Develop collateral supply
  - Improve overall CV health
  - Weight loss
  - Improve diabetes/hypertension
- Limitations as to where is able to offer the service

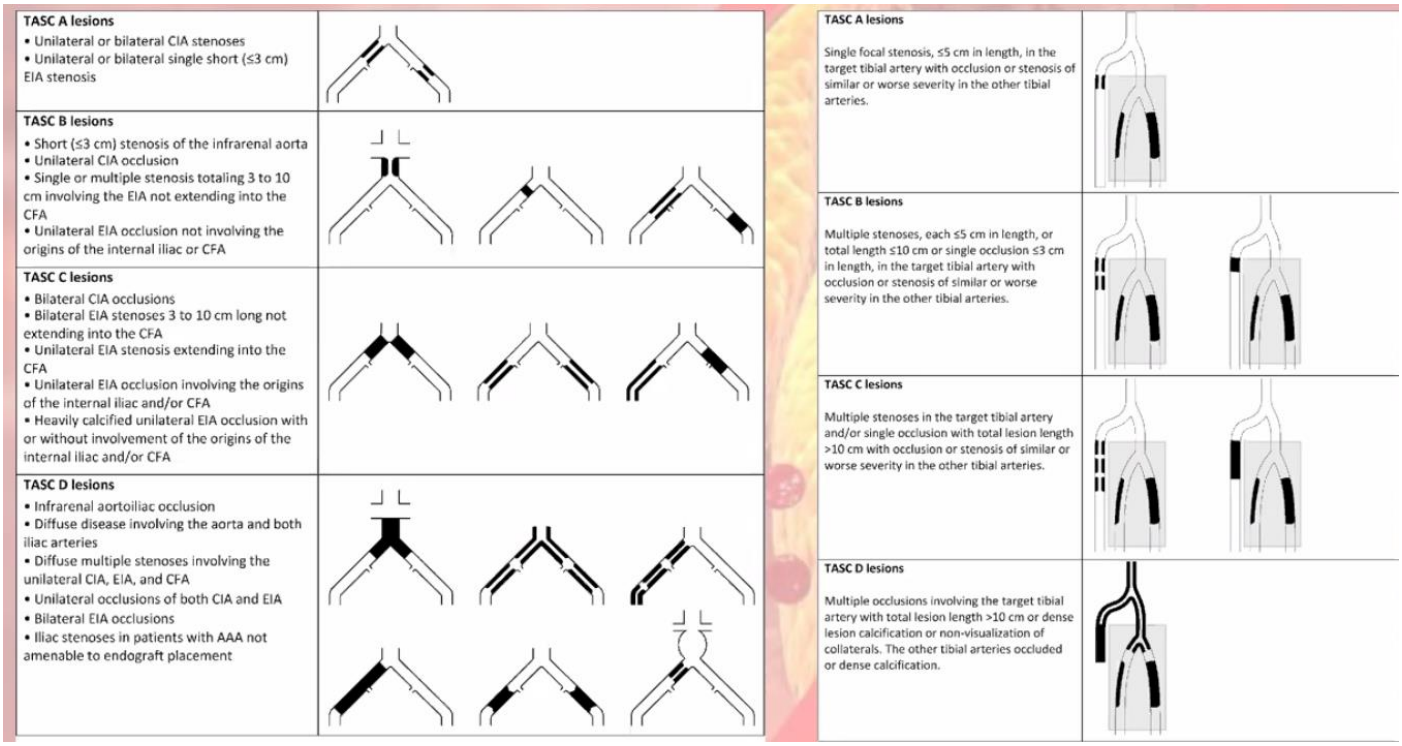
Intervention for PAD:



NICE Guidelines
TransAtlantic intersociety Consensus
European Guidelines – ESVS
AHA

When to intervene?

- Intermittent claudication – exercise more effective – risk vs benefit – risk of limb loss
- CLTI – rest pain / ulceration – risk vs benefit now changed – risk of limb loss w/ or w/o intervention – implement w/BMT and lifestyle changes – hold off as long as possible.



Treat the symptoms/patient, not the scans!!

- TASC A – D
- Increasing complexity of disease
- Does not necessarily relate to worsening symptoms
- A – best response to endovascular management
- D – Unable to undertake endovascular management/very poor response to endovascular management

Endovascular management - Angioplasty

- Balloon angioplasty
- Iliac and Infrainguinal
- Best for short stenoses
- Longer occlusive disease less effective
- Luminal or subintimal
- Drug eluting

IV contrast – can highlight collateral systems

DES controversy – paxitaxel – studies suggested increased mortality / cancer risk – no one cause that was highlighted as reason patients were dying – increased use for CLTI patients.

Steps

- Ultrasound guided percutaneous access
- Wire access
- Catheters
- Angiogram
- Sheath
- Crossing the lesion – luminal?
- Balloon choice

Puncture above the femoral head so you have something to press against

Stenting

- Iliac disease
- Unsatisfactory result
- Subintimal
- Less is more?
- Uncovered/Covered
- Flexibility?
- Self expanding/balloon expanding

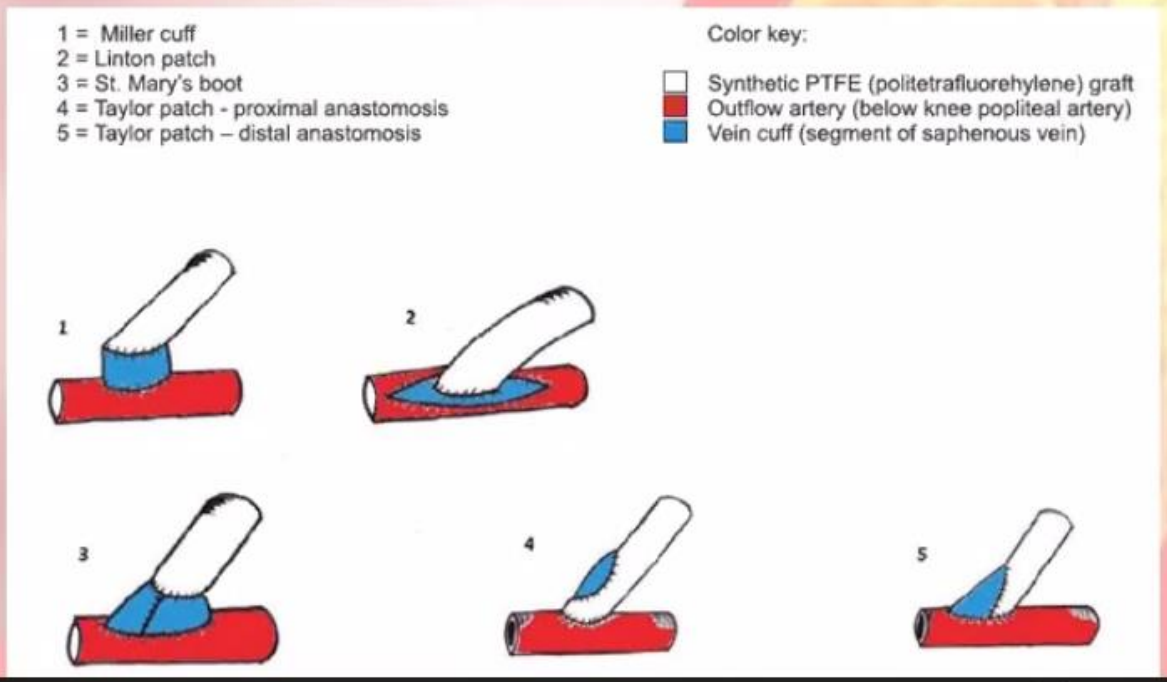
Can cause problems if there is further extension of disease – so don't use them if you don't need to
Covered only if concerned about rupture or bleeding

Open surgery

- Common femoral disease
- Femoral Endarterectomy

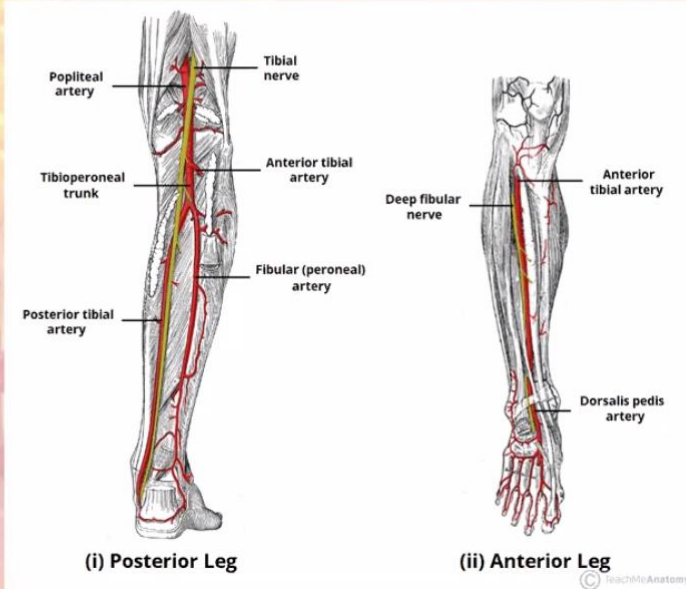
Femoropopliteal disease

- Femoro-popliteal bypass
- Above or below knee
- Vein (revered/in-situ), synthetic or biological



Tibial Disease

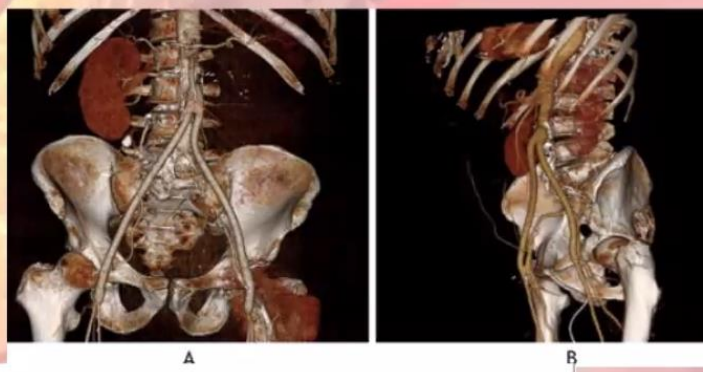
- Distal Bypass? – to crural vessels
- Ultradistal bypass? – to pedal vessels
- Poiselles Law – Flow proportional to r^4 and inversely proportional to Length
- Conduit?

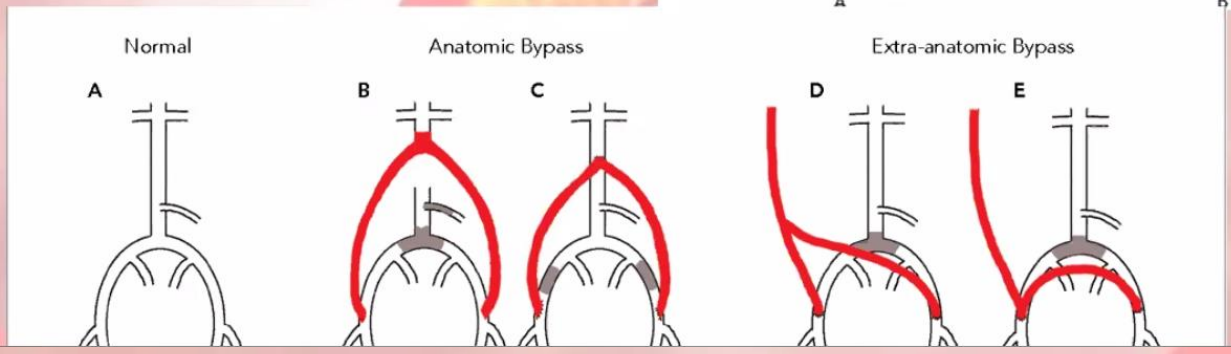


Think of longevity of graft – short wide grafts flow well, long thin ones don't

Aortoiliac disease

- CERAB – Covered reconstruction of aortic bifurcation?
- Aorto-bifemoral bypass?
- Extra-anatomical bypass?
  - Ax-fem/Ax-bifem
  - Fem-fem crossover





Other options?

- Distal Venous Revascularisation?

Plumbing vein onto artery distally

Amputation

- Usually seen as negative outcome
- Can be new lease of life for patient
- Consideration of healing potential
- Level to amputate?
- Improvement of blood flow to achieve healing at lower level?

The longer the limb the better from a rehab POV