



Ankle Brachial Index

How we do it?

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Acknowledgement

- ▶ Compiled by Ms Wendy McInnes, Clinical Nurse Consultant, Vascular Unit, The Queen Elizabeth Hospital, Adelaide, Australia
- ▶ Acknowledge the effort of the Department of Vascular Surgery, The Queen Elizabeth Hospital under the leadership of Prof Robert Fitridge, University of Adelaide



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Indication

- ▶ Exercise-related limb pain (claudication)
- ▶ Limb pain at rest
- ▶ Extremity ulcer/gangrene
- ▶ Follow-up of limb revascularization
- ▶ Absent peripheral pulses
- ▶ Digital cyanosis, cold sensitivity
- ▶ Arterial Trauma
- ▶ Exclude arterial involvement with venous ulceration

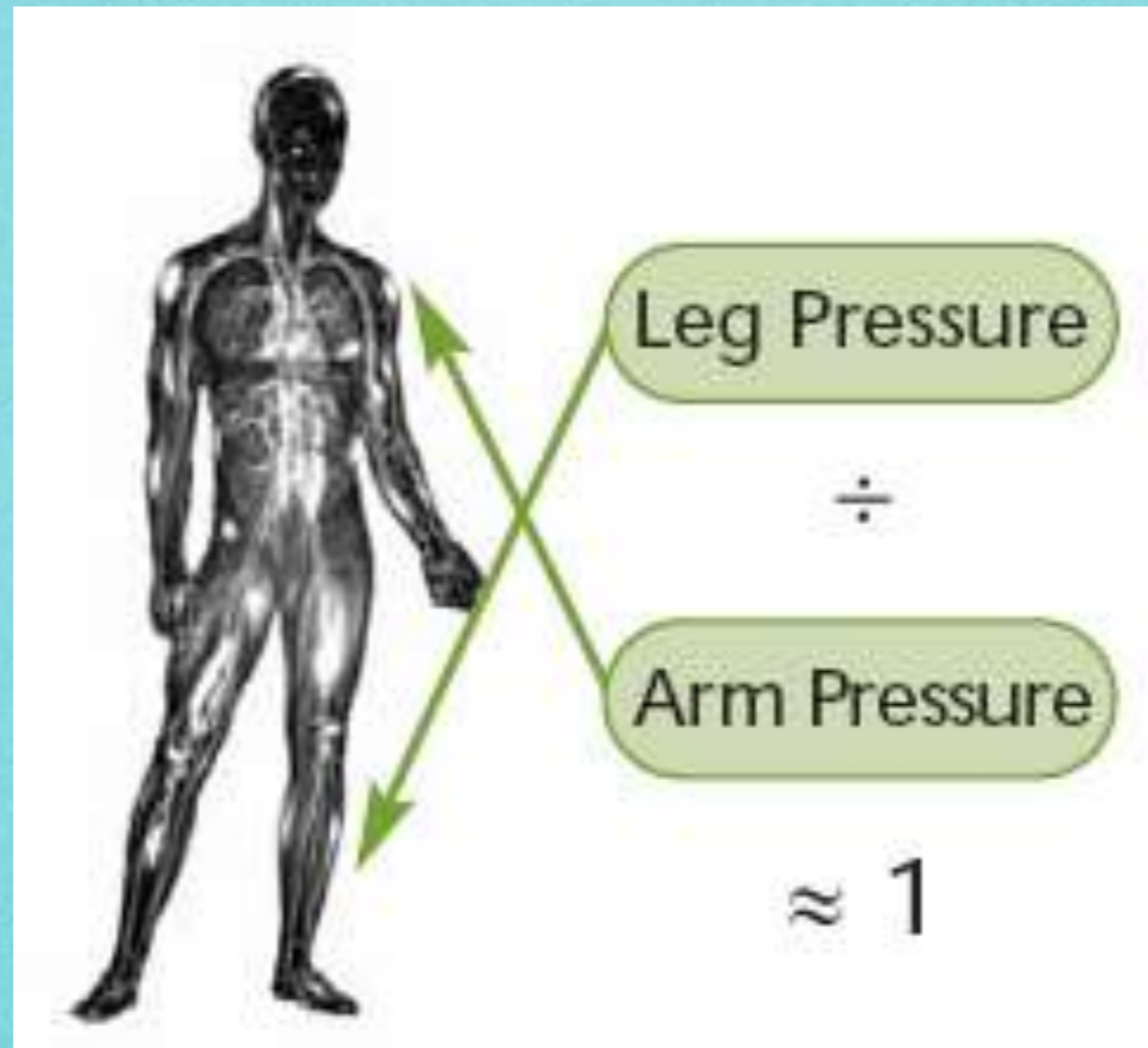


Accuracy

Diagnostic test	Sensitivity	Specificity
ABI	95	99
Pap smear	30-87	86-100
Faecal occult blood test	37-69	87-98
Mammography	75-90	90-95

Dormandy JA, et al. *Semin Vasc Surg.* 1999;12:96-106.
Nanda K, et al. *Ann Intern Med.* 2000;132:810-819.
Allison JE, et al. *N Engl J Med.* 1996;334:155-159.
Ferrini R, et al. *Am J Prev Med.* 1996;12:340-341.

ABI

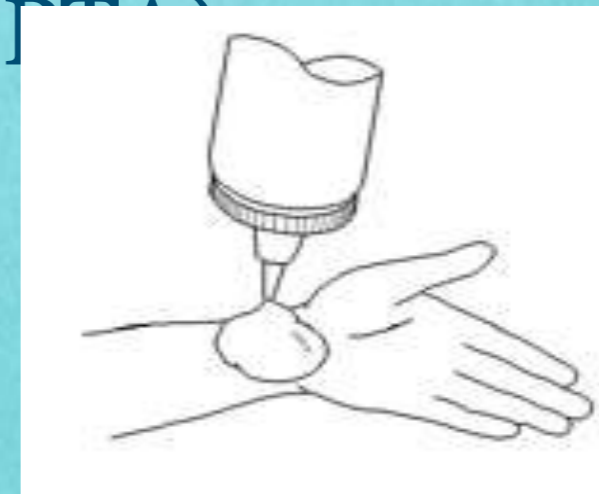


Procedure

- ▶ Explain the procedure to the patient and obtain consent
- ▶ Prepare bed, work area and wash hands
- ▶ Lie patient supine, not sitting or standing
- ▶ Use a 8 Mhz probe, may be required to use 5 Mhz in oedematous patient

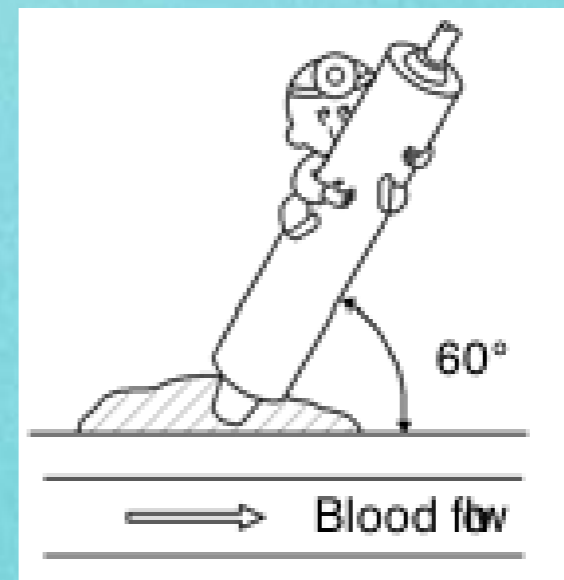
Procedure

- ▶ Apply blood pressure cuff
 - ▶ Upper arm for systolic brachial
 - ▶ gaiter area for Dorsalis pedis artery (DPA)/Posterior tibial artery (PTA)
- ▶ Apply ultrasound gel



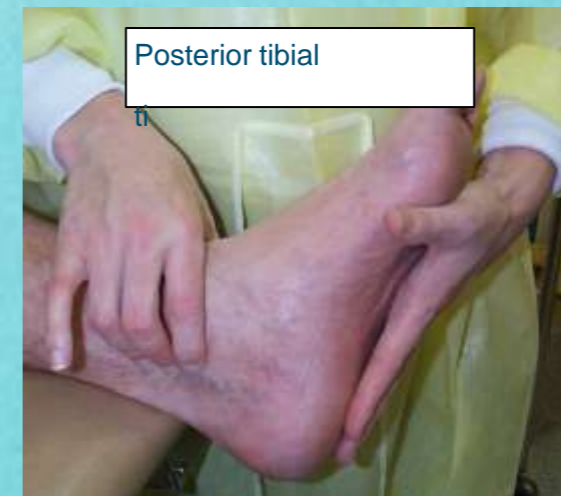
Procedure

- ▶ Place probe in correct position
- ▶ Inflate arm cuff and measure brachial systolic pressure
- ▶ Repeat for both arms



Procedure

- ▶ Inflate leg cuff and record pressure of DPA and PTA
- ▶ Record the higher pressure
- ▶ Repeat for both legs



Calculations

- ▶ Highest ankle pressure/Highest brachial pressure
- ▶ Document please.....

Calculations

Right ABI
 $80/160 = 0.50$

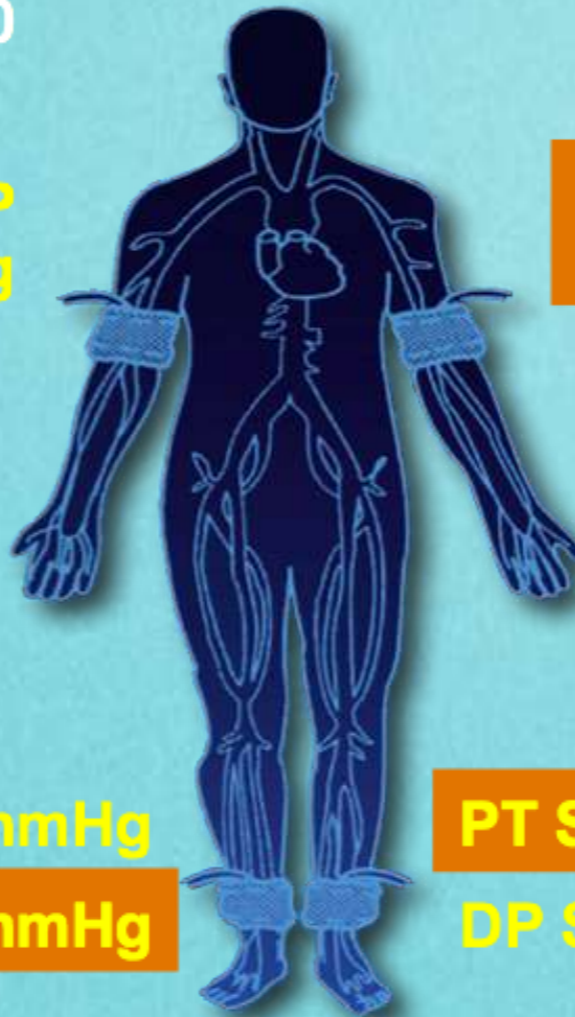
Left ABI
 $120/160 = 0.75$

ABI
(normal >0.90)

Brachial SBP
150 mmHg

Brachial SBP
160 mmHg

Highest
Brachial SBP



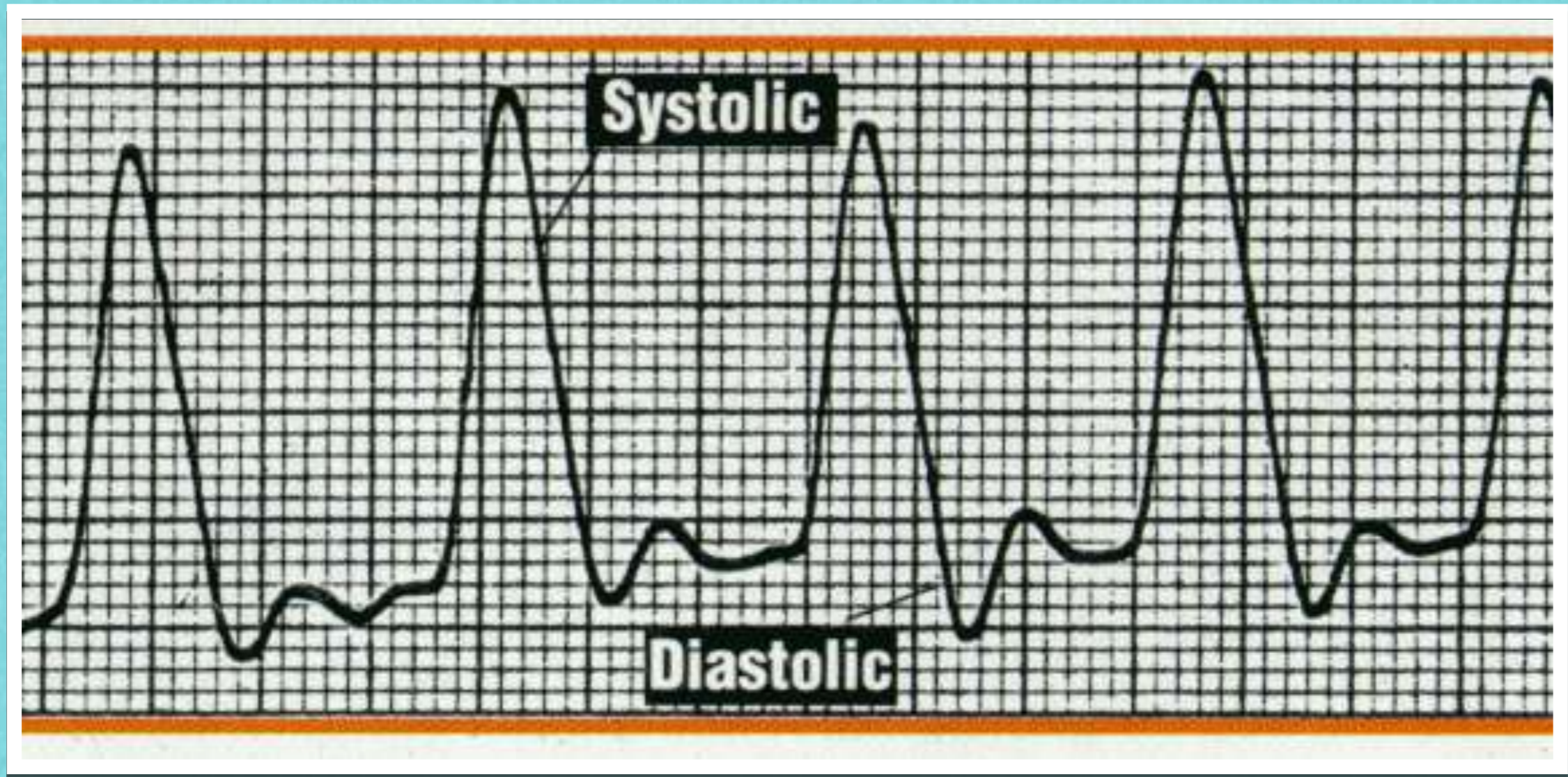
PT SBP 40 mmHg
DP SBP 80 mmHg

PT SBP 120 mmHg
DP SBP 80 mmHg

Highest of PT
or DP SBP

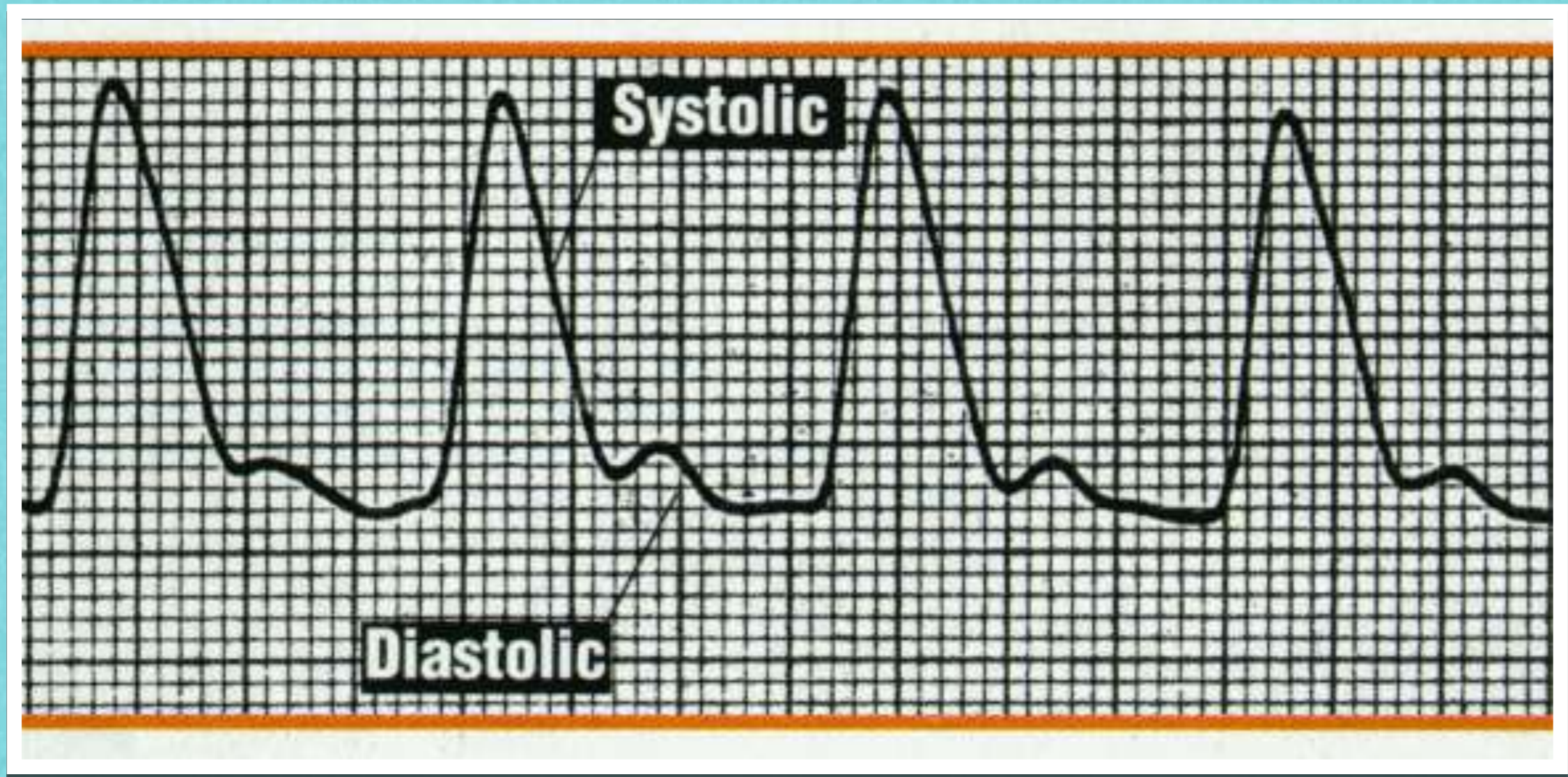
Results

Ratio	Results
>1.3	Raised measurement due to calcification of arteries- may be incompressible Toe pressure required
$>0.96- <1.3$	Normal arterial circulation
$<0.96-0.6$	Patient may present with intermittent claudication Vascular input and further investigations required
<0.5	Patient may present with rest pain and/or gangrene Vascular input and further investigations required



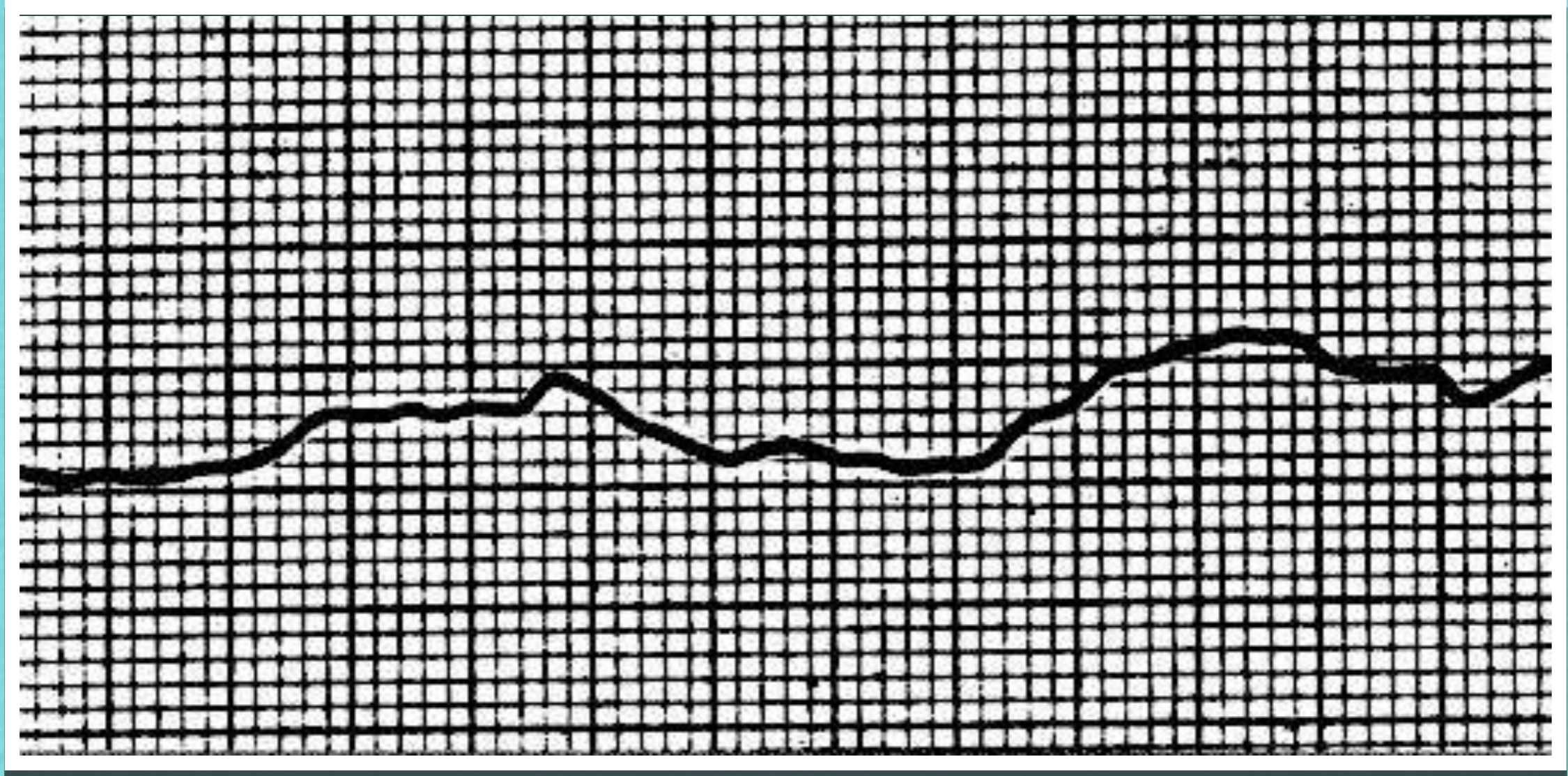
Triphasic signals





Biphasic signals





Monophasic signals

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False readings

- ▶ Excessive oedema
 - ▶ vessels are difficult to compress thus causing falsely elevated readings
- ▶ Co-morbid conditions
 - ▶ rheumatoid arthritis, renal failure
- ▶ Calcifications
 - ▶ renal failure, long term diabetics
- ▶ Incorrect pressure of probes
 - ▶ increase pressure at the probe site will distort, reduce or obliterate the flow



Practical Sessions



Thank you
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