

# DEPARTMENT OF OPTOMETRY & VISUAL SCIENCE

## CITY UNIVERSITY

Lecture notes to accompany 02 Lecture

### Optometric Screening for Vascular Hypertension

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#### *Introduction*

Why screen for vascular hypertension ?

- **It is an important disease.** Raised blood pressure is one of the major causes of illness and death in the western world
- **It is a common disease.** Hypertension occurs in between 10-15% of the population over 40 years of age
- **It is generally asymptomatic.** Like COAG it is nearly always asymptomatic unless physical damage is occurring to the target organ
- **It is eminently treatable**

#### *What is vascular hypertension ?*

There is in fact no clear dividing line between, hypertension and normotension. The higher the blood pressure, whether it be diastolic or systolic, constant or labile, the worse the prognosis.

However, there have to be artificial guidelines to enable the physician to determine when to intervene with treatment, and for optometrists to determine when to refer to the physician. Classically, a blood pressure of 120/80 has been said to be “normal” but when should a patient be referred? This question will be addressed later in this lecture.

#### *The optometrists' role*

Patients present for regular optometric checks. In the over 40 age group this is often driven by the evolution of presbyopia. Patients do not tend to visit their GP routinely but generally wait until they have an obvious problem.

Optometrists undertake about 95% of all primary eye care examinations in the UK with the remainder being carried out by ophthalmologists. Unlike other

primary health care practitioners, the optometrist and ophthalmologist are skilled in funduscopy. This provides the opportunity of combining sphygmomanometry findings with fundus appearance.

Sphygmomanometry may also be useful for those patients with suspected normal tension or low tension glaucoma.

### ***Why not solely rely on the appearance of the fundus?***

Barnard, Allen & Field (1991) showed that optometric evaluation of the retinal arteriolar tree does not provide adequate sensitivity and specificity. It was concluded that blood pressure measurement should be combined with fundus examination.

### ***Grading retinal vascular hypertension***

Remember that chronic vascular hypertension will lead to arteriosclerosis. However, fundus signs of vascular hypertension are often graded using Keith, Wagener & Barker's (1939) scheme.

Grade 1	Narrowing of the arterioles (general or focal)
Grade 2	More marked than grade 1
Grade 3	Grade 2 + cotton wool spots + haemorrhages (often superficial flame shaped)
Grade 4	Grade 3 + papilloedema

If there is a combined arteriosclerotic/hypertensive fundus appearance, a useful term used to describe this appearance "arteriopath" e.g., grade 1 arteriopath.

## **Sphygmomanometry**

Mercury column

Aneroid

Remove tight clothing

Patient reclining at 45 deg.

Middle of forearm level with heart

Place stethoscope over brachial artery in the antecubital fossa

Allow mercury to fall at 2 mm Hg/sec

### **Korotkoff sounds**

5 phases

Phase 1 = systolic

Phase 5 (silence) = diastolic

Guidelines for upper levels of BP for optometrists

<b>Age (years)</b>	<b>BP (mm Hg)</b>
18-44	140/90
45-64	150/90
>64	160/95

Sphygomanometry protocols

(1) Measure BP of everyone over a certain age ?

(2) Measure BP of at risk groups

Family history

Obesity

Symptoms ? !

Retinal signs ?

Combine BP with fundoscopy

Take minimum of 2 measurements before referring unless 1 x diastolic  $\geq$  110 mm Hg

take into account :-

fundus appearance

obesity

family history

past history

### **Referral**

Letter to GP should not presume to diagnose

Place fundus findings in apposition with BP results

### **Further reading**

Barnard N.A.S. (1989) Sphygmomanometry & Ophthalmodynamometry,  
Chapter 25 *In " Optometry"* Eds. Edwards K &  
Llewellyn R., Butterworths, London

Barnard NAS, Allen R, Field A (1991) Referrals for vascular hypertension  
in a group of 45-64 year-old patients  
*Ophthal Physiol Opt*, 11, 3, 201-205