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Blood pressure measurement in a district general paediatric A&E department

Blood pressure is a simple physiological measure routinely estimated in many paediatric clinical environments. The recommended frequency and requirement for this measure in children is debatable, particularly in casualty departments. However the rising burden to healthcare systems from hypertension should perhaps be used to review current practice.[1]

One thousand and six consecutive patient records from a district general hospital in west London from May to August 2004 were audited retrospectively. Blood pressure was measured in 9% of those 16 years or younger. By contrast aural temperature and manually estimated pulse rates were recorded in 91% of the group. Age was the largest single determinant for measurement ($p < 0.001$); triage priority, arrival time, and presenting complaint had lower impacts. Only 32% of children with a high priority triage had a measure of blood pressure. Appropriate follow up of abnormal results was patchy; 14% of raised blood pressures documented in casualty received no follow up or repeat measure. Interviews with staff indicated that there was no perceived need to check blood pressure unless specific medical directions were received. Equipment and appropriate age related normal charts were readily available and did not limit the service.

Although no evidence supports population based blood pressure screening in children, studies have suggested advantages to the measurement of blood pressure in the hospital setting.[2–4] This strategy identifies hypertension early, particularly in teenagers, who are infrequent attendees in general practice.[5] In urban British populations a hospital casualty is frequently their sole point of contact with health services (local audit results).

Following the audit period in this centre two cases of essential hypertension were subsequently identified in children aged 14 and 16 years. Neither had blood pressure measured on earlier visits to casualty. As documented recently the global burden of hypertension is likely to increase.[5] While A&E departments are not designed to carry out primary prevention, the valuable opportunity to prevent disease and improve outcomes with a simple measurement should not be overlooked.

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Intima-media thickness in obesity: relation to hypertension and dyslipidaemia

Obesity in childhood contributes to cardiovascular risk factors, such as hypertension and dyslipidaemia.[1] Exposure to these cardiovascular risk factors may induce atherogenic changes in the arteries.[1] Measurement of the intima-media thickness (IMT) of the common carotid artery (CCA) is an acknowledged non-invasive marker for early atherosclerotic changes and is a feasible, reliable, valid, and cost effective method.[2 3] It has not yet been studied whether hypertension and dyslipidaemia are related to IMT in obese children. Therefore, we measured clinical data (age, gender, degree of overweight as standard deviation score of BMI (SDS-BMI)[4]), IMT, serum lipids (triglycerides and HDL, LDL, and total cholesterol), systolic (SP) and diastolic blood pressure (DP) in 46 obese children (median age 9.6 years). The control group was comprised of 16 lean age and gender matched children. IMT was measured at CCA near the bifurcation at the far wall by B-mode ultrasound using a 14 Mhz linear transducer and compared between obese and lean children by Mann-Whitney U test, since IMT was not normally distributed. IMT as dependent variable and age, gender, SDS-BMI, blood pressure, and serum lipids as independent variables were determined in a multiple linear regression analysis. Blood pressure and lipids were compared between obese children with IMT above the upper quartile of IMT and children with IMT below or equal to the upper quartile of IMT by Student's t test for unpaired observations. Obese children showed a significant ($p < 0.001$) thicker intima media (median 0.06 cm) compared to the control group (median IMT 0.04 cm). In multiple linear regression analysis, IMT correlated significantly to triglycerides ($p = 0.023$) and systolic and diastolic blood pressure ($p < 0.001$). The children with IMT above the upper quartile (0.06 cm) showed significantly increased triglycerides ($p = 0.038$, median 142 mg/dl versus 103 mg/dl) and blood pressure ($p < 0.001$, median SP 137 mm Hg versus 119 mm Hg, median DP 71 mm Hg versus 60 mm Hg), while they did not differ significantly from the other children in respect of gender, age, SDS-BMI, and HDL, LDL, or total cholesterol.

Since IMT is increased in obese children, vascular changes in obesity seem to occur already in childhood. Childhood obesity may be a risk factor for developing atherosclerosis, since higher IMT of the CCA is reported to be predictive and is related to the severity and extent of coronary artery disease and strokes.[5 6] Our findings suggest that hypertension and hypertriglyceridaemia, which are part of the metabolic syndrome, have the highest atherogenic potential in childhood obesity.

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How to improve patients' understanding in biomedical research?

We read with interest the recent paper from Barnett and colleagues,[1] reporting the impact of different styles of informed consent forms proposed to children; it is one of the few papers on this important topic. Indeed, the content of informed consent documents (ICD) is a crucial element in the process of providing information to participants in biomedical research. Clear comprehension of this information—that is, the ability to understand its meaning and its consequences, is of great importance. However, investigators sometimes have the feeling that volunteers do not fully understand the major concepts of the study in which they are enrolled, and this issue is specifically relevant to children. This feeling has been confirmed by several studies in adults. A study conducted in two public hospitals[2] showed that 40.7% and 74.5% of patients respectively did not understand the content of the ICD for clinical studies in which they were enrolled. In a third study, 156 veterans were