organised jointly by the departments of surgery and of anatomy and developmental biology. The course is aimed at trainees from all surgical specialties. A third of the course will be taught and will provide an overview of the "new biology," with the aim of improving the level of scientific appreciation in surgery. The remainder of the course will be a research project done at the bench. Projects are offered in a wide range of science laboratories in the university and medical school.

The Association of Professors of Surgery has advised that every surgical trainee should undertake a period of full time research training, but it must be borne in mind that most surgeons will not subsequently perform laboratory research. This course offers an MSc in surgical science, and those with a primary motivation towards an academic career will be able to proceed to PhD registration. It is hoped that this type of programme will answer many of the criticisms of ill conceived and piecemeal research and provide a model for surgical training in the future.

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1 Smith R. Academic medicine: plenty of room at the top. *BMJ* 1993;**306**:6. (2 January.)

Colleges' concern

EDITOR,—C J McCullough rightly draws attention to the part that the royal colleges might play in a reassessment of the present system of delivering health care.[1] It will come as no surprise to learn that colleges have serious concerns about the current problems—"overspent," "underfunded" hospitals indicating a flaw in either the underlying principles of health care or their implementation. These concerns have been expressed to the secretary of state, the chief medical officer, and the chief executive of the NHS collectively and independently, and the colleges have indicated their willingness—indeed, their wish—to work with the administration to address both the immediate issues (as a matter of urgency) and long term issues.

As to the conflict between consultants' ethical and contractual obligations, it is surely the case that because of the vulnerability of patients, and to maintain patients' trust, doctors must always put ethical considerations first. How that responsibility is best discharged can be decided only by the person concerned.

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1 McCullough CJ. Fundholding practices get preference. *BMJ* 1993;**306**:141. (9 January.)

Self monitoring of blood glucose

EDITOR,—Robert Tattersall asks, "Should people with non-insulin dependent diabetes mellitus monitor their blood glucose concentrations?"[1] Although perhaps a case can be made for self monitoring by patients treated with insulin, there is no evidence to justify this expensive and uncomfortable practice for most people with non-insulin treated diabetes. It is true that home blood testing provides more accurate information than that available from urine tests, especially in patients with an abnormal renal threshold, and that it also provides information about everyday fluctuations. These advantages cannot, however, be considered to be worth while unless they can be shown to lead to better glycaemic control or a reduction of long term complications of diabetes, or both.

Several studies of self monitoring in non-insulin dependent diabetes have now been carried out,[2-5] but no difference has been found in glycaemic control between those who monitor their blood glucose concentrations and those who do not. I have just completed a randomised study of 24 patients receiving oral hypoglycaemic agents, in which I compared the glycaemic control (as indicated by monthly assay of fructosamine) of a group allocated to self monitoring of blood glucose and a similar group who tested their urine. There was no significant difference in glycaemic control between the two groups during the six month trial.

Despite the discomfort of frequent finger pricking there is a degree of fascination associated with blood letting,[6] and research suggests that most patients prefer blood testing to urine testing.[7-10] But every unnecessary home blood test wastes 26p of scarce NHS resources (compared with 4p for a urine testing strip), and if each of Britain's 500 000 non-insulin dependent diabetic patients carries out several tests a week the cost implications are enormous.

As a basis for adjustments to treatment results of self monitoring have now been superseded by the glycated haemoglobin concentration or results of fructosamine assays. Therefore, if self monitoring of blood glucose concentrations does not influence either treatment or glycaemic control its value is limited in non-insulin treated diabetes. A policy on home monitoring for this large group of patients should recognise that self monitoring is no longer the principal means of assessing glycaemic control but is, rather, a tool that can offer reassurance or warn of problems during the intervals between measurements of longer term control.

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EDITOR,—Lesley V Campbell and colleagues[1] and Robert Tattersall[2] raise doubts about the usefulness of blood glucose monitoring strips in diabetes mellitus. We are also concerned about the reliance placed on these tests but in a different context. We have seen three cases of hyperosmolar hyperglycaemic deterioration of diabetes (two purely non-ketotic and one with a degree of ketoacidosis) and observed a discrepancy between the readings obtained with blood glucose strips (Ames strip plus a digital meter in case 1, BM-Test-1-44 strips in cases 2 and 3) and the laboratory glucose measurements.

Case 1—A man aged 84, not known to be diabetic, presented with confusion, cough, and anorexia. On examination he was dehydrated with a rapid pulse and slight tachypnoea. Glucose estimation by digital meter was 15·5 mmol/l, but the laboratory measurement of 53 mmol/l suggested non-ketotic hyperosmolar hyperglycaemia. The patient died of thromboembolic complications.

Case 2—A woman of 85 with diabetes controlled by diet presented to the accident and emergency department and gave a history of loss of independence over two weeks and a fall. Her grazes were dressed, and a blood glucose concentration of 10 mmol/l was recorded with a BM strip. Examination otherwise was unremarkable. She was admitted for mobilisation, but tests requested the next morning on samples taken on the evening of admission showed a serum glucose concentration of 56·1 mmol/l. The patient died of thromboembolic complications.

Case 3—An insulin dependent diabetic woman aged 74 gave a history of nausea for one week and poor diabetic control. A district nurse checked her blood glucose concentration with BM strips at home; it varied between 17 and 44 mmol/l. The concentration obtained with a BM strip in the accident and emergency department was 17 mmol/l, but the laboratory measurement was 82 mmol/l. She had some ketoacidosis and responded to conventional treatment.

Non-ketotic hyperosmolar hyperglycaemia is uncommon and easily missed. It tends to present in elderly people, who may not be known to be diabetic. There is frequently a vague history, and they can appear surprisingly well, without the obvious dehydration and air hunger of younger ketoacidotic patients. Diagnosis can be delayed if too much reliance is placed on a blood glucose strip. These test strips should be used only for monitoring and not for making executive decisions.

The paradoxically low reading in hyperosmolar states despite good technique is highlighted in the datasheet supplied with the BM-Test-1-44 (though not mentioned in the Ames sheet) but is not generally recognised or taught. Its cause is not known (personal communication, Boehringer Mannheim UK (Diagnostics and Biomedicals), 1992), though the strips use a glucose oxidase reaction different from the hexokinase reaction of laboratory machines.

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Paget's disease of bone

EDITOR,—Roger Smith suggests that Paget's disease might be due to infection with a viral agent early in life.[1] Although this might well be the case, other explanations need to be considered. Familial clustering is well recognised in Paget's disease, with evidence of HLA linkage in some families and a greatly increased prevalence of the disease in first degree relatives of patients.[2] The unusual geographical distribution is equally compatible with a genetic component. Paget's disease, while most common in western Europeans, also occurs frequently in their descendants in Australia and South Africa, where it is rare in the indigenous population.[3] What could the mechanism of genetic Paget's disease be?