

radiotherapy to bedmaking. The ordinary patient would not recognise it as reasonable. We know perfectly well what a surgical operation involves.

Of course nurses have always and will continue to assist at these events. You are right to deplore the exaggeration that accompanied the Tomlinson/Bhatti case, in which Sister Tomlinson snipped off the appendix while Mr Bhatti held the forceps. Nurses are now sanctioned to remove the saphenous vein and prepare it for insertion into the heart, which is an equally simple task. The point here is that no preoperative clinical decision or diagnosis needs to be made, and the procedure is absolutely uniform, because the tissues are normal. In fact it could be argued that such work is in fact beneath the competence of a fully trained nurse, and a waste of her time.

You define a surgeon as a medical practitioner qualified to practice surgery, which is not exactly illuminating, and then proceed to draw a confused analogy involving lifts and ancient buildings, eventually giving the President of the Royal College of Surgeons a title that he held many years ago, before he was appointed to a chair and a knighthood. Such a discourtesy, trivial in itself, is revealing, since it indicates your anonymous contributor's inacquaintance with the surgical world.

A consultant surgeon has precise responsibilities, which were outlined in the Royal College of Surgeons' report *Consultant Responsibility in Invasive Surgical Procedures* published in 1992. To have a consultant perform every operation as sensibly defined would not only be unattainably expensive but also would in effect destroy training, because surgery is something that has to be learned on the job. It follows that one of the most important duties of the consultant is that of wise and responsible delegation.

The processes of preoperative assessment and counselling, the operation itself, and the postoperative care and support, are continuous and indivisible. An operation can only be described as routine or minor when it has been successfully completed. We do not, as you contend, need fewer trained surgeons, but more. This college has always supported a decrease in the hours of junior doctors' work, structured training programmes, involvement of surgeons in audit and administration, and the fully justified public expectation that consultants should spend more time with their patients explaining and advising both before and after an operation. This means that the call on consultants' time is steadily increasing.

There are two ways to deal with an expanding work load. The first is to keep the same number of workers and reduce their standard of work; the other is to increase their number and maintain or, preferably, raise the standard. We are in no doubt as to which is the preferable alternative.

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SIR—Successful surgical treatment does of course demand a training in surgical technique but it also requires a detailed knowledge of anatomy, physiology, microbiology, pharmacology, and general medicine. Moreover, this additional knowledge is often applied during the operation itself. It therefore makes no sense to have a doctor supervising the overall surgical care of a patient but leaving the operation itself for someone else to do. You need only look at the entry requirements for medical school and the syllabus taught there to understand why medical and surgical care is almost always better provided by doctors.

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Telemedicine in the Canary Islands

SIR—In the Canary Islands we have much experience of telemedicine. All the islands are connected through the REVISA network (Network of Health Care Videophones), which was started in 1990.¹ Although all hospitals are interconnected directly with each other, most prefer to pass the consultancies (urgent, deferred, or scientific) to the CATAI centre (Centre of Advanced Technologies in Image Analysis), which specialises in telemedicine and is in Tenerife. The centre evaluates referrals for urgency and availability of specialists within the network or the list of European consultants, and, furthermore, assures the compatibility of the different standards and proprietary systems used. We can therefore address many of the drawbacks pointed out in your Jan 14 editorial.

First, the REVISA network is adapted to the acquisition capabilities and communication facilities of a region that can be regarded as rural or isolated. We call our telemedicine consultations videoconsultations,² because images are always captured through videocameras, and their quality depends mainly on the device used. The images are sent with a lossless compression technique based on the modified Hoffman encoding; this does not exclude the Integrated Services Digital Network (ISDN) videophones that so far have not been used with patient data. Taking into account the 3 or 4 distant videoconsultations the CATAI centre receives each week, we prevented around 30% of interisland patient transfers and 3% of national transfers. Routine medical visits to the smaller islands by health care workers were reduced by 20%. The yearly savings are thus 35 million pesetas.

The management of services has been partly addressed through the CATAI centre, which tries to provide a quick response whenever needed. Legal implications have also been examined.³ A brief summary of our views is as follows. First, medical laws are based on who has the duty to whom, therefore the doctor in direct connection (contract) with the patient is liable. Second, medical practice without clinical examinations is contrary to medical ethics, but consultancies between specialists who do not require direct patient contact (eg, radiologists, pathologists, laboratory specialists) are partly exempt. Third, what is most dangerous for the patient? (For example, is treatment by telemedicine better than no treatment or delayed treatment while the patient is moved to hospital?) We add that medical practice is based on security and privacy. This and other obvious rules are not always fulfilled in remote and distant areas in which medical devices used for telemedicine do not require any guarantee.^{1,3,4}

Finally, our experience with 610 images sent for consultancy with the lossless compression technique (pathology, cytology, radiology) has shown that screen diagnosis requires training. This training includes procedures for sampling, technique for image acquisition, and screen diagnosis itself, with the aim of making appropriate diagnosis after one year's experience with specific medical diagnosis (unpublished work).

Telemedicine is regarded as an extra and unpaid duty in routine hospital work, and it is not subject to study or training in medical or paramedical curriculae, these being some of the important reasons for its small impact "on main stream medical services".

We thank all participants and workers of the REVISA network and the CATAI consortium who have allowed telemedicine to be used in the Canary Islands.

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- 1 Ferrer-Roca O. Videophone in pathology: interactive DNA and immunohistochemical measurements between European countries. *Patologia* 1991; **24**: 225-29.
- 2 Ferrer-Roca O. Narrow-band communications for telepathology. In: Wied GL, Bartels PH, Rosenthal DL, Schenck U, eds. *Compendium on the computerized cytology and histology laboratory*. Chicago: Tutorials of Cytology, 1994: 284-89.
- 3 Allaert F, Ferrer-Roca O. Be aware of legal aspects using telemedicine. *Patologia* (in press).
- 4 Ferrer-Roca O, Ramos A, Diaz-Cardama A. Immunohistochemical correlation of steroid receptors and disease free interval in 206 consecutive breast cancer; validation of telequantification based on global scene segmentation. *J Anal Cell Pathol* (in press).

Drug-licensing anomalies and Parkinson's disease

SIR—We welcome Bowman's (Feb 25, p 517) generally accurate and incisive description of the difficulties associated with the use of unlicensed medicines for the management of late Parkinson's disease, but we feel we should correct a minor error in his letter.

Bowman writes that apomorphine manufactured by National Health Service units was made to "an old BP [British Pharmacopoeia] formulation". Although this may be true for some units, our own production and quality control departments developed a formulation enabling the product to be terminally sterilised by autoclaving. The results of this formulation exercise have been published in an independently reviewed article¹ and subsequently reviewed by the Medicines Control Agency and the Medicines Testing Laboratory. Bowman implies that Britannia have developed a better formula, but as far as we are aware the formulation used by Britannia is essentially the BP formula referred to by Bowman, and as such is not terminally sterilised. The safety of aseptic filling processes, even in the most rigorous of commercial manufacturing operations, has long been recognised as less than that of terminal sterilisation. In the latest version of the orange guide² it is stated that wherever possible sterilisation by heat is the method of choice.

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- 1 Brookes RW, et al. An investigation on the stability of apomorphine injection upon sterilisation. *Pharm J* 1991; **247**: R11.
- 2 Rules and guidance for pharmaceutical manufacturers 1993. London: HM Stationery Office, 1993: annex 1, item 74.

Colchicine for secondary nephropathic amyloidosis in cystic fibrosis

SIR—Secondary nephropathic amyloidosis of the serum amyloid A (SAA) type is associated with several chronic inflammatory disorders. In cystic fibrosis (CF), about 33% of patients have amyloid deposits in histological preparations, but symptomatic amyloidosis has only been reported as a rare complication in adolescent CF patients.¹ The prognosis of CF patients after manifestation of nephrotic syndrome is very poor. Nearly all patients die within 1 year in the absence of a suitable therapy.² Treatment with colchicine has been an efficient therapy of SAA amyloidosis in familial Mediterranean fever but it has not been tried in CF. We report a beneficial effect of colchicine in 2 men with CF with secondary nephropathic amyloidosis.

In the first patient, CF was diagnosed late at the age of 19 years (genotype CFTR Δ F508/ Δ F508). He had a history of chronic mild maldigestion and infections of the lower respiratory tract. At the age of 35 years, a scarred shrinkage

of the right lung developed due to infection with *Pseudomonas aeruginosa* and chronic inflammation which could not be prevented in spite of a high-dose antibiotic regimen given every 3 months intravenously. At the age of 37 years, proteinuria was detected (1.1 g per 24 h). A kidney biopsy specimen revealed mild glomerular SAA amyloidosis without tubulointerstitial scarring. Oral colchicine (1.5 mg per day) has now been given for 30 months without side-effects. Proteinuria increased slowly (protein/creatinine 1.8 to 11.0) leading to a daily protein excretion of up to 5 g. Serum protein concentration remained stable between 5.6 and 6.0 g/dL. To date manifestations of nephrotic syndrome have been prevented and there are no signs of renal insufficiency (serum creatinine 53.4-68.6 μ mol/L).

In the second patient, CF was diagnosed in the first year of life due to pulmonary symptoms and failure to thrive (genotype CFTR Δ F508/L558S). Following chronic infection with *Pseudomonas aeruginosa* and inflammation despite an intensive antibiotic regimen, severe lung disease developed. Mild proteinuria was diagnosed at the age of 24 years, and 10 months later he presented with classic nephrotic syndrome (serum protein <4.5 g/dL, serum albumin <2.5 g/dL, proteinuria >1 g/m² per day) with ankle oedema and mild ascites. A kidney biopsy specimen confirmed the diagnosis of nephropathic amyloidosis of the SAA type without tubulointerstitial scarring. Over the next 2 years proteinuria varied from 6-20 g per day, and serum protein from 3.64-4.4 g/dL. After a severe nephrotic crisis, the patient accepted therapy with colchicine (1.5 mg per day). With continuous colchicine therapy manifestations of renal insufficiency were delayed for 18 months until levels of creatinine increased. The patient died 6 months later (4 years after manifestation of nephrotic syndrome) due to renal failure.

Our results with colchicine therapy are encouraging in view of the poor prognosis associated with secondary nephropathic amyloidosis in CF patients. We are aware of 14 well-documented cases with a mean age of 21 years at the time of diagnosis of proteinuria; these patients developed nephrotic syndrome and died within 1 year. It is well known that colchicine administration successfully prevents manifestation of SAA amyloidosis in familial Mediterranean fever patients when treatment is started before any renal damage has occurred or as long as there is only mild proteinuria.³ Colchicine treatment of amyloidosis in association with ulcerative colitis and ankylosing spondylitis has been reported with rapid and prolonged benefit.^{4,5}

The clinical courses of the patients reported here illustrate that nephrotic syndrome due to SAA amyloidosis in CF may have a better prognosis than previously expected. Genetic analysis of our patients shows that amyloidosis is not related to rare genotypes. Therefore, increasing life expectancy in CF might lead to more frequent presentation of patients with symptomatic amyloidosis. Mild proteinuria is the first sign and should be investigated by kidney biopsy. Colchicine therapy should be initiated as soon as possible, when SAA amyloidosis is proven. Further studies are necessary to evaluate the benefit of this therapy.

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- 1 McGlennen RC, Burke BA, Dehner LP. Systemic amyloidosis complicating cystic fibrosis: a retrospective pathological study. *Arch Pathol Lab Med* 1986; **110**: 879-84.
- 2 Melzi ML, Costantini D, Giani M, Appiani AC, Giunta AM. Severe nephropathy in three adolescents with cystic fibrosis. *Arch Dis Child* 1991; **66**: 1444-47