immune system of such patients with a spectrum of foreign proteins and inactive and possibly active virus debris, when the possibility of administering the single missing factor exists.

I agree that controversy continues to rage over the best means of virus inactivation. Most of the methods in current use show reasonable virus inactivation in vitro but lack clinical evidence that is not flawed. The best studies are on puriﬁed concentrates and those produced by monoclonal antibody puriﬁcation methods, although the former has been associated with hepatitis B. All sterilisation methods are dynamic processes which depend for their efﬁcacy on such factors as initial virus load, control of time, temperature, and humidity. It would seem that methods of manufacture that physically remove virus as a step in production are logically to be preferred to those which merely attempt to inactivate virus load present in the starting plasma. These methods are the current high-technology techniques.

These products are new and I agree that although signiﬁcant evidence already exists, additional independent clinical studies are needed to conﬁrm their beneﬁt to patients. Such studies are arranged and proceeding in many countries worldwide and will answer the questions posed.

In the meantime, one hopes that research into improved replacement therapy for haemophiliacs will not be stiﬂed by critical comment which misinterprets the motives for any attempt to recover the real costs of making these advances available to patients.

Armour Pharmaceutical Co Ltd, Earlsfort, Dublin 2, Ireland

R. B. CHRISTIE

Sir,—Professor Cash indicates that a variety of methods are used for the treatment of factor VIII concentrate in inactive potential virus contaminants, and he lists three types of heat treatment (dry, steam, and wet). All these processes are described as "terminal" but of virus inactivation procedures suitable for coagulation factor concentrates only dry-heat treatment is truly terminal. (A terminal treatment is one done when the product is in its ﬁnal sealed container; earlier treatments should be described as "in-process" steps.) Terminal inactivation procedures eliminate all possibility of accidental re-contamination by contact with contaminated equipment or other batches of product.

Cash draws attention to the fact that different dry-heat procedures have been heated at different temperatures, and he suggests that this may determine the product safety. Although the heating conditions are clearly important, other factors can inﬂuence the extent of viral inactivation, such as product formulation, product drying conditions, and virus stability.

It is now possible to manufacture factor VIII concentrates that are suitable for terminal heating at raised temperatures. Nevertheless, the full potential of the dry-heat procedure has not been realized, and this can only be achieved by fully exploiting all the factors that determine the degree of virus inactivation. However, even at this stage in its development, dry-heat treatment is our method of choice: it carries a low yield penalty, offers high viral inactivation potential, and, as a reproducible, controllable, and terminal step, is consistent with Good Pharmaceutical Manufacturing Practice.


CUTANEOUS REACTIONS TO ALUMINIUM IN VACCINES: AN AVOIDABLE PROBLEM

Sir,—Mild transient adverse reactions to toxoid vaccines are common and well recognised. We draw attention to a more persistent and troublesome local reaction due to the aluminium component of adsorbed vaccines, which presents as pruritus, eczema, hyperpigmentation, hypertrophic scars, or granuloma formation at the site of vaccination.

A 3-year-old boy was referred with three itchy lesions on the right buttock at the sites of previous injections of triple-vaccine. The lesions were palpable, eczematous, and slightly pigmented and hypertrophic. Limited patch testing with aluminium Finn chamber, of the type routinely used for application of patch test allergens. This produced a positive reaction at 48 h, which resolved over the next 7 days. Most cases of cutaneous aluminium reactions have been granulomatous reactions,1 2 presenting as persistent nodules, although local eczema was a feature in the three children we have reported.3 A persistent vaccination reaction suggests aluminium hypersensitivity, and can be conﬁrmed by patch testing. Although patch testing with metallic aluminium alone is not as sensitive as using a battery of aluminium salts, and does not exclude the possibility of reactions to preservatives such as thiomersal, it is a simple screen4 and conﬁrmed contact hypersensitivity to aluminium in the patient described. Two of the three lesions could have been avoided if aluminium hypersensitivity had been recognised, because plain vaccines could have been substituted for adsorbed vaccines. Most manufacturers of tetanus and diphtheria vaccines use alum-adsorbed toxoids (Evan Medical, Merieux UK, and Regent Laboratories) but DTP triple vaccine, tetanus vaccine, and 'Diphtheria and Tetanus' vaccine (not diphtheria alone) are available in either plain or adsorbed from (Wellcome Laboratories).

Department of Dermatology, Royal Victoria Infirmary, Newcastle upon Tyne NE6 3LP

Contact Dermatitis Investigation Unit, Belvedere Hospital, Glasgow

N. H. COX

CEILÍA MOSS

ANGELA FORSYTH


3. Gee NH, Moss C, Forsyth A. Allergy to non-absorbed vaccines and implications for patch testing. Contact Dermatitis (in press).


SIR,—Dr Antia (May 14, p 510) emphasizes the role of digital evacuation in producing the solitary rectal ulcer. If true, we would expect that avoidance of the practice would produce healing of the lesion. This has not been our experience in our patients. We would also expect that therapeutic horsemanship would have a high frequency of solitary rectal ulcer. But Sohn and Robilitov5 found that 250 homosexual males, 6 had rectal ulceration and in only 1 of these were the histological changes compatible with those of the syndrome. Furthermore the histological changes seen in the syndrome are not those expected of simple trauma. We feel that it is the prolapse of mucosa associated with prolonged straining at stool that is frequently the main cause of ulceration.

We agree with your March 5 editorial (p 513) that treatment of the condition is not straightforward. Whilst ulcers may heal and symptoms may ease after recovery in some patients with rectal intussusception, education about bowel habit and institution of a high-ﬁbre diet is as effective as any other treatment in the remainders.

Queen’s University of Belfast, Department of Surgery

E. J. MACOLIE

T. G. PARKS


