Correspondence

Cleaning and disinfection of equipment for gastrointestinal flexible endoscopy: interim recommendations of a Working Party of the British Society of Gastroenterology

SIR,—The report by the Working Party (*Gut* 1988; **29:** 1134–51) has been drawn to our attention and in particular, the section regarding management of HIV infected patients. The authors incorrectly state that 'there is no information on the activity of common disinfectants against the intermediate forms and cysts of cryptosporidium'. The relevance of 'intermediate forms' – that is, endogenous or tissue stages, in transmission is uncertain. The inherent resistance of the transmissible form of the parasite, the oocyst, to disinfection has been known for some considerable time.[1–4] Attempts have been made to extend the earlier studies using a combination of an *in vitro* test system, based on excystation inhibition, and *in vivo* verification of loss of infectivity (unpublished data). As a result, guidelines have been drawn up. (In preparation.)

Table *Efficacy of physical and chemical agents for the disinfection of oocysts of* Cryptosporidium

(1) *Chemical Methods* (30 mins at ambient temperature*)	
(i) Fully effective – 10 volume hydrogen peroxide	
(ii) Partially effective –	Exspor® (Alcide) NWD†
	1% sodium hypochlorite†
	1% ammonia
	1% sodium hydroxide
(iii) Ineffective –	2% activated gluteraldehyde
	1% formalin
	1% Phenol, 2% Hycolin®, 4% lysol
	90% ethanol, iso-propanol, N-propanol
	10% povidone iodine
	0·5% potassium permanganate
	Presept® NWD
	Sporicidin® NWD
	5% Dettol®
(2) *Physical methods*	
(i) Heat inactivation – oocysts have a low thermal death point and can be killed by five to 10 minutes at 50–55°C. Oocysts are also killed by freezing.	
(ii) Oocysts are inactivated by drying.	

*Some compounds may show increased effect with increased temperature.
†Inhibited by presence of protein.
NWD: Normal recommended working dilution.
®: Registered trade name.

Evidence has been adduced for symptomless oocyst excretion in normal subjects, asymptomatic carriage detected by intubation, and apparent reactivation of infection which may have resulted from such carriage. Given the resistance of the oocysts, the frequency with which the infection is known to occur in the immunologically normal human population and the potential seriousness of the infection in the immunocompromised, effective disinfection of endoscopes is essential.[5] Adequate cleaning may considerably reduce the level of risk. Given the above findings, however, the recommendation for disinfection by means of aldehyde preparations may not deal adequately with oocysts of *Cryptosporidium* and further studies are required. Such studies are in hand.

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References

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2 Campbell I, Tzipori S, Hutchison G, Angus KW. Effect of disinfectants on survival of cryptosporidium oocysts. *Vet Rec* 1982; **111:** 414–5.
3 Angus KW. Cryptosporidiosis in man, domestic animals and birds: a review. *J R Soc Med* 1983; **76:** 62–70.
4 Tzipori S. Cryptosporidiosis in animals and humans. *Microbiol Rev* 1983; **47:** 84–96.
5 Casemore DP. Human cryptosporidiosis. In: Reeves D, Geddes A, eds. *Recent advances in infection* No 3. Edinburgh: Churchill Livingstone, 1989: 209–236.

Reply

SIR,—Casemore *et al* provide important information on the activity of disinfectants and cryptosporidial oocysts. It is difficult to see how our interim recommendations on endoscope disinfection should be modified.

When considering disinfectants for use in endoscopy a variety of factors have to be considered. These include the antimicrobial activity against a spectrum of organisms likely to be present as contaminants, staff toxicity, and danger of hypersensitivity, and damage to endoscopic equipment.

Hydrogen peroxide has been used to flush through the internal channels of endoscopes to clear protein