affected limbs. Obvious temperature differences between the normal and affected limbs were observed but attempts to magnify the temperature differential by induction of reflex vasodilatation using a heated foot bath were not successful. The temperature differences appeared to be related to occlusion as they were not demonstrable when normal flow in the arteries returned.

REFERENCES

A PRELIMINARY STUDY OF MICROFILTERS
DO THEY HAVE A ROLE TO PLAY DURING BLOOD TRANSFUSION?
R. B. BULEY, AND JEAN LUMLEY
Department of Anaesthetics, Royal Postgraduate Medical School, Ducane Road, London

Many factors have been incriminated in the aetiology of the post-traumatic pulmonary insufficiency syndrome. One factor, which can possibly be avoided, is the deposition in pulmonary capillaries of cellular debris of microemboli following massive transfusion.

Swank (1961) and McNamara (1971) have demonstrated that cellular degradation products appear in increasing amounts as stored blood ages. Quantitatively this debris is measured by the screen filtration pressure or s.f.p.

Reul (1973) postulated that the use of microfilters during blood transfusion can diminish the amount of cellular debris presented to the lung. The efficiency of three microfilters employing surface or depth filtration principles was assessed under simulated clinical conditions in the laboratory: a microfilter being a filter with a significantly reduced pore size when compared with a standard filter.

One-, 2- and 3-week-old blood stores in citrate phosphate dextrose solution was transfused at a constant pressure of 250 mm Hg using a Fenwal BD4 pressure infuser. The microfilter under investigation was placed in line with a routine Baxter BR10 infusion set and the number of units which each filter could tolerate at these high flow rates was noted. Differences in the plasma haemoglobin content before and after filtration was measured to indicate erythrocyte damage.

The results showed that in the fresher week-old blood all microfilters were more efficient in handling large volumes of blood and the haemolysis was less.

Microfilters employing surface filtration methods were more efficient in the filtration of large blood volumes and caused less haemolysis than depth filtration microfilters.

REFERENCES

BACTERIAL FILTERS FOR MECHANICAL VENTILATORS
ANITA HOLDcroft, JEAN LUMLEY, H. GAYA, M. DARLOW, AND D. J. ADAMS
Departments of Anaesthetics and Bacteriology, Royal Postgraduate Medical School, Ducane Road, London, and the Microbiological Research Establishment, Porton Down, Wiltshire

Autoclavable ventilators are an expensive alternative to mechanical ventilators which can be disinfected. It has been suggested (Leading article, Br. Med. J., 1973) that bacterial filters can be used to prevent contamination of a ventilator and its environment. The potential hazards of permeability to bacteria and an increase in resistance developing in the circuit, due to condensation of water vapour, has now been largely overcome by heating or siliconizing the filter (Pyle, Darlow and Firman, 1969; Mitchell and Gamble, 1973).

The efficiency of bacterial filtration and change in resistance of the system was assessed first in the laboratory, and then in the clinical situation on the ward. Bacterial filters were connected to the inspiratory and expiratory ports of a Cape-Waine ventilator, that on the expiratory side being heated. The system was challenged by nebulizing Escherichia coli, Klebsiella aerogenes, Pseudomonas aeruginosa, Staphylococcus aureus, and a staphylococcal bacteriophage (to simulate a viral challenge), through the circuit for a total of 48 hours. Bacterial cultures were taken at various sites and filter resistance was measured before and after the study. No organisms were detected at any stage in the filtered air, and the filter resistance was unchanged.

Similar filters (inspiratory and expiratory) were used in an intensive care unit for more than a year. The inspiratory filter was attached to the air inlet port of a Cape-Waine ventilator and the expiratory filters were kept in the same position as in the laboratory tests. The system was used in rotation with other ventilators for a total running time of 1500 hours. Daily culture swabs were taken from the ventilator and the patient tubing and filter resistance was measured at intervals. Finally the laboratory nebulization and resistance tests were repeated.

It was found that contamination of the ventilator tubing occurred only in the patient tubing and in each case the organism was indistinguishable from that previously grown from the patient's respiratory tract. No growth occurred in the cultures taken from the ventilator, and no significant change in filter resistance was demonstrated over the period of the clinical study.

The results of these tests indicate the suitability of bacterial filters as an alternative to disinfecting or autoclaving of mechanical ventilators in ward use.

REFERENCES

METABOLISM OF 14C-LABELLED ALPHAXALONE IN MAN
L. STRUNIN, I. M. STRUNIN, K. KNIGHTS, AND M. E. WARD
Anaesthetic Department, King's College Hospital, London

Alphaxalone is the major active constituent of the new steroid induction agent Althesin (0.9% alphaxalone, 0.3% alphadalone acetate, 20% poloxymethylated castor oil, 0.25% NaCl in water). Studies in the rat (Card, McCulloch and Pratt, 1972; Child et al., 1972) showed that the plasma half-life of 14C alphaxalone was 6-8 min and the liver with the main site of metabolism. There was no redistribution in fat and approximately 70% of the radioactivity was excreted in the bile in the first 3 hours after administration. Further excretion studies over 5 days showed that 60-70% appeared in the faeces and only 20-30% in the urine.