Selective decontamination of the gut

EDITOR,—In their editorial on selective decontamination of the gut Simon W Atkinson and David J Bihari argue that a technique primarily designed to reduce acquisition of infection in intensive care units should be discarded in favour of more traditional techniques of infection control because it does not also reduce mortality in a heterogeneous intensive care unit population.[1] We do not agree. The high rates of colonisation and infection quoted by the authors in their first paragraph occurred despite conventional techniques of infection control. Selective decontamination of the gut evolved because of failure of these methods; it is not an alternative to conventional techniques but an addition.

Selective decontamination of the gut has generally been shown to be effective in reducing colonisation and nosocomial infection.[2] Those studies that do not show this reduction typically have not conducted selective decontamination in a rigorous manner[3] or have shown substantial exogenous infection.[4] In the French multicentre study, of the three essential components of selective decontamination of the gut only the topical application of non-absorbable antibiotics was used.[3] This resulted in a significant reduction in the number of cases of pneumonia due to aerobic Gram negative bacilli and the complete absence of superinfection in the treated group. But the omission of the parenteral element left a substantial rate of primary endogenous infection. The trial in Cape Town had a particularly high rate of exogenous infection, which may have masked the true treatment difference between the two groups.[5] This shows the need to maintain traditional infection control measures in addition to selective decontamination of the gut.

The inability of selective decontamination of the gut to reduce mortality in a general population in intensive care units despite the elimination of colonisation and nosocomial infection suggests that death occurs due to underlying disease rather than infection. In both the French multicentre study and the trial in Cape Town, however, most observed deaths occurred in patients with incurable underlying disease, AIDS, terminal cancer, and liver failure or the sepsis was present on admission. If mortality is thought to be the ultimate criterion the effect of selective decontamination of the gut should be investigated only in patients with primarily curable disease, in whom infection acquired in the intensive care unit is a major cause of death—for example, patients with trauma, with burns, or undergoing open heart surgery.[5]

The desire to dismiss an effective treatment because it cannot be shown to be universally applicable is a worrying trend that seems to be developing in intensive care medicine.

MARK A FOX
BRIAN FABRI
TREVOR WILLIETS

Cardiothoracic Centre,
Liverpool L14 3PE

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Advice to authors

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EDITOR,—Simon W Atkinson and David J Bihari's editorial on selective decontamination of the gut[1] follows one on this topic three years ago.[2] The message of both is a negative one, based on identical argument: increased survival is required before a technique may be implemented in intensive care units. Atkinson and Bihari reject selective decontamination mainly on the basis of lack of increased survival reported in two recently published large trials.[3,4]

Both trials studied a mixed medical-surgical population, including patients with AIDS, terminal cancer, trauma, and burns.[3,4] In both trials most deaths were attributable to the underlying disease. Selective decontamination of the gut is primarily designed to control infection. It can be expected to affect mortality only in patients in whom death is mainly attributable to infection. Infection may cause avoidable mortality in patients with curable disease such as trauma and burns and after cardiovascular surgery.[5]

At the European consensus conference mentioned in the editorial we presented preliminary data from a meta-analysis of 17 trials of selective decontamination of the gut which included over 2500 patients.[6] This showed that mortality varied dramatically among different studies, probably owing to differences in the mix of patients. Lower than expected mortality in control groups is commonly found because patients enrolled in trials tend to fare better than unselected groups of the same patients. When this happens even the most carefully performed a priori power calculations are compromised and may lead to erroneous overconfidence in the results. Best estimates from available trials of selective decontamination of the gut show that with a baseline mortality of 30% among controls at least 2000 patients need to be randomised to selective decontamination of the gut or to no treatment or placebo groups for the study reliably to detect a reduction in mortality as low as 10-20%. The two studies discussed above were of only 784 patients. They are too small to detect any moderate but possibly realistic therapeutic gain.

In Atkinson and Bihari's view, handwashing, avoidance of H_2 antagonists, and reserving antimicrobial drugs for cases of infection are still the traditional pillars of infection control in intensive care units. In our experience few critically ill patients in intensive care units do not receive antimicrobial drugs. Moreover, the effect of handwashing and avoidance of H_2 antagonists has yet to be tested in properly designed trials.

Finally, the editorial makes two interesting points. The authors acknowledge that after one decade of selective decontamination of the gut increased drug resistance has not occurred. Secondly, their statement that "attention to accepted standards . . . [is] likely to reap greater rewards" has been shown to be unrealistic by the substantial morbidity and mortality during outbreaks in the past[7] and recently, during an outbreak of infection with multiresistant *Klebsiella aerogenes* in Guy's Hospital.

H K F VAN SAENE
A PERCIVAL
C A HART

Department of Medical Microbiology,
University of Liverpool,
Liverpool L69 3BX

A LIBERATI

Lab Clin Epidemiology,
"Mario Negri" Institute,
20157 Milan,
Italy

C P STOUTENBEEK

Department of Intensive Care,
OLVG Hospital,
Amsterdam,
Netherlands

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EDITOR,—Simon W Atkinson and David J Bihari observe that the European consensus conference on selective decontamination of the gut suggested further prospective controlled multicentre studies are needed.[1] As an interim measure an epidemiologist could opt for a meta-analysis of the results of previous research.[2]

Vandenbroucke-Grauls and Vandenbroucke performed a meta-analysis of 11 published clinical studies to assess the effect of selective decontamination of the digestive tract on respiratory infections and compare survival of patients treated in an intensive care unit with that of untreated controls.[3] They found a protective effect of selective decontamination with respect to respiratory tract infections. Historical control studies yielded an odds ratio of 0·21 (95% confidence interval 0·15 to 0·29, $p < 0·05$) and randomised trials an odds ratio of 0·12 (0·08 to 0·19, $p < 0·05$). But mortality was not significantly different between treated patients and controls. The authors concluded that despite a clear protective effect against respiratory infections selective decontamination of the digestive tract had a limited effect on mortality. These results further emphasise the need to adhere strictly to accepted