differences are slightly larger, the disadvantages of those with low iron status are not major.

In Africa the state has limited financial and other resources for maintaining health and combating disease. In the absence of prospective studies, a widespread improvement of iron status would seem to have lower priority than many other health promotion endeavours, such as water supply, immunisation of children, and 24 hour availability of staff at clinics.

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Authors' reply

EDITOR,—Alexander R P Walker and Demetre Labadarios's first question is whether children of vegetarians are likely to be disadvantaged in terms of haem iron intake. In a large community prevalence study that we have recently completed we found no significant association between vegetarianism and iron depletion.[1] This is probably because, in Australia, vegetarianism is a matter of choice rather than a cultural dictate and vegetarians are usually well informed about dietary issues such as iron intake. The authors' comparison of vegetarian women and toddlers, in whom the central nervous system is still developing, may not be appropriate. A wealth of literature suggests that, among other effects, iron deficiency in young children impairs cognitive development[2] and immunity[3] and enhances absorption of lead from the environment.[4]

Australia has a high standard of living, a comprehensive social security system, and a well developed system of primary care. A safe water supply is guaranteed, levels of sanitation are high, and a wide range of foods is available at moderate cost. Conclusions drawn from data collected in a country such as Australia may not be applicable to the developing world; for this reason we described in our article the context in which our study took place.

In answer to the question whether the particular drawback of low ferritin concentrations would be clinically discernible, the answer is no. Firstly, it is iron deficiency anaemia rather than iron depletion that is associated with permanently impaired cognitive development. Secondly, the effects of iron deficiency anaemia on cognitive ability are too small to be detected in any individual child but in Australia are important on a population basis. The same is likely to be true for the other effects of iron deficiency. Whether these effects are demonstrable on a population basis in Africa requires research.

Ideally, decisions on the allocation of resources and priorities in any country should be based on an active and informed dialogue between public health officials and the community. In Africa the water supply, sanitation, availability of food, immunisation, breast feeding, education (especially of women), and political stability are likely to be of higher priority in promoting health and cognitive development than is the isolated problem of iron deficiency.

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Tea flavonoids have little short term impact on serum antioxidant activity

EDITOR,—There is currently much interest in the possible benefits of dietary flavonoids in preventing cardiovascular diseases.[1 2] The apparent protective effect has been attributed to the potent antioxidant activity of flavonoids. In vitro flavonoids are powerful inhibitors of the oxidation of low density lipoproteins, a process that has been strongly implicated in the development of atherosclerosis.[3] For some years we have been using enhanced chemiluminescence as a simple method of measuring antioxidant activity in biological and other fluids.[4] Since black tea may account for over half of the flavonoid intake in Western diets we recently investigated the antioxidant activity of a variety of black teas as well as their potential impact on antioxidant status in vivo.

We prepared eight samples of black tea by adding 0.5 g of tea leaf (from eight popular commercially available brands) to 25 ml of boiling water, which was regularly agitated for three minutes. The mean antioxidant activity in the resulting solutions was 8477 μmol/l (range 4275-12 110 μmol/l), which confirms that tea at typically consumed concentrations has powerful antioxidant properties in vitro. These values compare with typical serum antioxidant activities of 350-550 μmol/l.[4] It therefore seemed likely that ingestion of tea would have a considerable impact on serum antioxidant activity in vivo. We investigated the impact of drinking 500 ml of English breakfast tea (1 g/100 ml) on serum antioxidant status in 10 healthy volunteers (five male, five female; mean age 21.1 years; mean body mass index 24.0). After a four hour fast an intravenous cannula was inserted and the volunteers drank tea without milk over 20 minutes at lunchtime. Mean serum antioxidant activity before and at 60, 120, and 180 minutes after ingestion of the tea was 430, 434, 447, and 439 μmol/l, respectively (no significant change over time).

These results indicate that the rapid ingestion of large amounts of tea flavonoids has little short term impact on serum antioxidant activity and are in contrast to the results of similar studies by our group examining the impact of red wine flavonoids.[5] This does not exclude the possibility of a long term cumulative impact of drinking tea on antioxidant status. We suggest that further studies are required to determine the extent to which dietary flavonoids are absorbed and contribute to antioxidant activity in vivo.

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Immediate enteral feeding after gastrointestinal resection

Tests of intestinal permeability were inadequate

EDITOR,—Cornelia S Carr and colleagues report a trial with the important message that early enteral feeding after major surgery is both possible and safe.[1] Their conclusion about the changes seen in intestinal permeability is, however, unjustified.

Tests of intestinal permeability were performed preoperatively and on day 5 postoperatively. No significant change was found in the permeability index (lactulose:mannitol absorption ratio) on these two days in the group given early enteral feeding. This does not mean, however, that no rise occurred in this index: the permeability may have increased but returned to normal by day 5. Wicks *et al* showed that, after liver transplantation, permeability was increased only on day 1 and had returned to normal on day 3.[2] This is corroborated by our preliminary data showing that permeability in a range of patients in an intensive therapy unit may be greatly increased on admission but has returned to normal by day 6 (fig 1).

We also question the authors' experimental design and methodology with respect to the permeability tests. They state that after the test

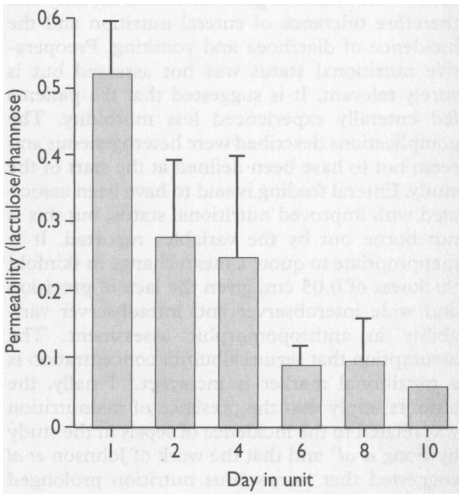

Fig 1—*Mean (SE) changes in permeability in six patients admitted to general intensive therapy unit*