quantity of paracetamol ingested was reduced; this measure is often unreliable, but in this study it was associated with a reduction in paracetamol concentration at 4-6 hours and decreased use of antidote. Early administration of the antidote was probably the reason why tests of liver function revealed no changes after the introduction of smaller packets. Unlike Prince et al,[4] we found no reduction in the number of severe paracetamol overdoses; the only benefit we noted was a reduction in costs because fewer antidotes were given and there were fewer hospital admissions.

As in other studies on the impact of reducing the availability of paracetamol,[4 5] a cause and effect relationship could not be identified. A number of factors—notably a change in medical practice and case mix—could have influenced the results. Although necessarily retrospective, this study has a number of strengths that make it more likely that the findings represent a change in overdose behaviour: there was a single observer, almost all cases of poisoning were identified, there was a time lag of three months between the date of law change and the second study period, and relatively objective measures were compared (number of admissions, paracetamol concentration, and use of antidote).

We conclude that measures to restrict the availability of paracetamol have reduced the amount taken in single overdoses but not the incidence of severe liver failure.

Cases of paracetamol overdose before and after the change to smaller packets (September 1998). Figures are medians (interquartile ranges) unless stated otherwise

	Jan-Jun 1998 (n=590)	Jan-Jun 1999 (n=594)	P value: Mann-Whitney U test	P value: χ^2 test
Estimated quantity of paracetamol ingested (g)	10 (5-18)	8 (5-14)	0.004	–
Serum paracetamol concentration (mg/l) at 4-6 hours	37 (14-80)	27 (6-64)	0.003	–
No (%) of patients admitted to hospital	398 (67.4)	374 (63.2)	–	0.17
No (%) of patients given antidote*	183 (31.1)	149 (25.1)	–	0.03
International normalised ratio at 24-48 hours	1.1 (1.0-1.2)	1.1 (1.0-1.2)	0.50	–
Concentration of liver enzyme† at 24-48 hours (U/l)	23.0 (18-37)	23.5 (19-52)	0.84	–

*N-acetylcysteine or methionine.
†Serum aspartate aminotransferase.

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Drug points

Anaphylactic-like reaction associated with oral budesonide

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Corticosteroids have antiallergic properties, which should reduce the likelihood of anaphylactic-like reactions. We describe a patient with an anaphylactic-like reaction associated with oral budesonide and apparent cross reactivity with mesalazine.

In 1995 a 29 year old woman with Crohn's disease started taking oral mesalazine (1 g three times daily) after ileocaecal resection. Within 48 hours her tongue and throat became swollen but returned to normal after the mesalazine was withdrawn. We evaluated her reaction to oral mesalazine (Pentasa, Yamanouchi Pharma; Asacol, Byk Nederland; and generic mesalazine prepared in the hospital's pharmacy) by giving her test doses (10 mg) in an outpatient setting. Within 30 minutes of exposure to each product, her tongue, buccal mucosa, and lips became swollen. Challenges with other drugs containing the same additives gave negative results. She had no history of asthma or nasal polyps.

In 1997 she started taking prednisone 20 mg daily and azathioprine 150 mg daily because of recurrent disease of the neoterminal ileum. In 1998 she started taking budesonide (Entocort, Astra Pharmaceutica) 9 mg daily because of weight increase. Dose tapering of the prednisone and azathioprine was planned after four weeks of budesonide treatment. Five minutes after she took the first capsule, her tongue and throat swelled, accompanied by transpiration, wheeziness, bowel complaints, and diarrhoea. She recovered within four days of treatment with clemastine. Intracutaneous tests with dilutions of budesonide suggested a non-IgE mediated reaction. Concentrations of urine methylhistamine outside the acute episode were normal, ruling out systemic mastocytosis. In 1999, after another ileocaecal resection, the patient's tongue and throat swelled after she received intravenous dexamethasone for prophylaxis against stress. She recovered after discontinuation of the drug and treatment with clemastine.

Published reports suggest that corticosteroid molecules are able to cause anaphylactic-like reactions.[1 2] Our report shows that anaphylactic-like reactions may also occur with oral budesonide and that cross reactivity may occur with mesalazine. Interestingly, sensitivity to aspirin, which is structurally related to mesalazine, has been postulated as a risk factor for anaphylaxis to steroids.[3]

The Dutch Medicines Evaluation Board and the manufacturer of budesonide, AstraZeneca, were informed. The manufacturer stated that allergic reactions to corticosteroids are more common than generally assumed and might be easily overlooked by clinicians.

Competing interests: None declared.

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