admitted to hospital wards and the vast majority must be treated as outpatients. Similar conditions prevail in other developing countries and it was with this fact in mind that the present study was undertaken on outpatients. There can be no certainty that every child in fact received his tablets according to the instructions given. However, the striking difference in subsequent egg counts between those treated with difetarsone and those who received placebo shows the effectiveness of the drug, and when consideration is given to the findings in other studies (Junod, 1965; Garin *et al.*, 1970; Nitzulescu *et al.*, 1970; Lynch *et al.*, 1972; Rubidge, O'Dowd, and Powell, 1973) we suggest that in those cases in group A with a small reduction in egg count dosage instructions were not followed. Further confirmation of the efficacy of difetarsone was provided by the considerable persuasion necessary to induce many of the mothers in group A to bring their children back to hospital for second and third stool collections. The invariable explanation offered for failure to keep an appointment was that the child had fully recovered and that further attendance at hospital was not thought necessary. This was in marked contrast to the prompt and sometimes premature return of children in group B who still had severe diarrhoea.

Conclusion

The present study has confirmed the value of difetarsone in the treatment of *Trichuris* infestation, and has shown that a single dose administered daily for 5 days is sufficient to eliminate even heavy worm loads. Side effects have not been encountered. When consideration is given to the morbidity caused by *Trichuris* infestation, its worldwide distribution, and the ineffectiveness of other preparations which have been tried, the advent of difetarsone represents a significant contribution to the treatment of the condition.

Summary

A controlled study was carried out to test the effectiveness of difetarsone in the outpatient treatment of children suffering from dysentery due to infestation with the whipworm *Trichuris trichiura*. This drug was effective in curing an infestation which has hitherto been very resistant to treatment.

We are grateful to Dr. D. McKenzie for the use of laboratory facilities and to Maybaker (S.A.) (Pty) Ltd. for supplies of difetarsone. The Fig. was from a barium enema examination carried out by Dr. R. Fisher. The Medical Superintendent of the Red Cross War Memorial Children's Hospital gave permission to publish.

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Pentazocine (Fortral) as post-operative analgesic in children

Pentazocine (Fortral) has been shown to be a powerful analgesic in adults (Ende, 1965). Its use in postoperative children was discussed by Gaines (1967), who found it effective in 42 out of 51 children studied while producing minimal side effects. McSwan *et al.* (1966) described a double-blind study involving pentazocine which included 12 children undergoing heart surgery, and found it effective in this condition. The aim of this paper is to extend these observations on pentazocine by describing an open assessment comparison with nepenthe and a double-blind comparison with pethidine.

Methods

Patients.

Trial A (age 1–4 years). 10 patients aged 1 to 4 years were studied after inguinal herniotomy, circumcision, orchidopexy, appendicectomy, or biopsy of sacral teratoma, 5 children being given each treatment. Nepenthe was injected using the dosage formula, 0·06 ml × age (yr), with an additional 0·6 or 1·2 ml given for

larger children. Pentazocine was injected using an insulin type syringe for greater accuracy, with the dosage being calculated from the adult levels using the factors of Catzel (1966).

Trial B (age 5–14 years). 56 patients aged 5 to 14 years were studied after either appendicectomy, orchidopexy, circumcision, herniotomy, removal of toe-nail or nail bed, or abscess drainage. Solutions of pentazocine and pethidine containing 30 and 50 mg/ml, respectively, were administered intramuscularly with a basic dose of 0·5 ml (15 and 25 mg) for children aged 5 to 8 and 1 ml (30 and 50 mg) for the others, though this dosage could be varied at the discretion of the doctor. In 28 children it was necessary to give further relief several hours later, and in these patients the same drug and dosage were given as used first time. A code break was provided in case of severe side effects, but it proved unnecessary.

Assessment. To avoid unreliable reports of pain from the children themselves, the senior nursing staff made an assessment of pain into moderate and severe grades before injection. At 30 and 120 minutes later, they observed whether the child was asleep, and if awake, whether there was relief of pain and whether there were any side effects. In those children given a further injection the same assessment procedure was followed.

Results

Trial A. Both pentazocine and nepenthe produced relief in all the patients at both observation times, though 3 children were suffering severe pain initially. All the children on pentazocine were asleep 30 minutes after injection, but 4 of those on nepenthe were awake. At 120 minutes, 2 children in each group were awake, and 1 from each group vomited. No other side effects were reported.

Trial B. The assessments made with the first injection are shown in the Table. Both pentazocine and pethidine produced relief in all children at both assessments, and about half of them were asleep at 30 and 120 minutes. There seemed to be a slight tendency for children with severe pain to be awake at 120 minutes if given pethidine, and asleep if given pentazocine.

16 children on pentazocine and 12 on pethidine required a further injection, and all of these obtained relief except for 1 child with moderate pain who was given pethidine.

The side effects were few. On the first injection there were 2 cases of flushing and sweating, 1 of vomiting, and 1 of dizziness with each drug, while 1 case of nausea was observed with pentazocine. After the second injection, 1 case of vomiting was seen with each drug, and 1 child was dizzy with pethidine. No effects on pulse, blood pressure, or respiration were noted among the patients.

Discussion

There were no obvious differences between pentazocine and either nepenthe or pethidine, but the nursing staff had the subjective impression that pentazocine produced less sedation. No full paediatric postoperative trial of pentazocine appears to have been carried out in this country, but the general findings here agree well with the observations of Gaines (1967) in Chicago as regards analgesic effect and comparative lack of side effects. This was illustrated clearly when 1 girl (1 year old) was inadvertently given more than twice the calculated dose of pentazocine which did not produce depressed respiration or blood pressure, and she was in a light sleep from which she was easily roused. This agrees with the conclusions of Marks (1967) who, with a 4 year old who ingested 400 mg pentazocine, found no notable side effects, though Keats and Telford (1964) suggested that blood pressure and respiration should decrease in this situation. These latter authors considered the possibility of psychic disturbance with pentazocine

TABLE

Postoperative pain and sleep assessment, comparing pentazocine and pethidine

	Initial pain		At 30 min			At 2 hr		
			Relief	Awake	Asleep	Relief	Awake	Asleep
Pentazocine (30 patients)	Moderate	19	19	11	8	19	11	8
	Severe	11	11	5	6	11	4	7
	Total	30	30	16	14	30	15	15
Pethidine (26 patients)	Moderate	16	16	9	7	16	6	10
	Severe	10	10	5	5	10	7	3
	Total	26	26	14	12	26	13	13

in children, but did not actually observe it, nor was it found in the present study.

Pentazocine therefore appears to be a safe analgesic for postoperative analgesia in children aged 1 year and upwards, being comparable in effect to the addictive narcotics.

Summary

To investigate the postoperative analgesia in children, induced by pentazocine, a small open comparison was made with nepenthe in 10 patients aged 1 to 4, and a double-blind comparison with pethidine in 56 patients aged 5 to 14. All treatments proved effective in reducing pain with only a few minor side effects and with no marked effects on blood pressure, pulse, and respiration. There were no marked differences between children aged 5 to 8 and 9 to 14, though the latter were given twice the dosage of the former. Pentazocine appears to be a clinically useful and safe analgesic in children between 1 and 14 years old.

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Urine and stool collection for metabolic studies in the newborn

Urine and stool collection for metabolic and diagnostic studies is becoming an increasingly important aspect of neonatal paediatrics. A number of different techniques have been described in recent years (Baldwin *et al.*, 1962; Liu and Anderson, 1967), but none has proved entirely satisfactory.

In our unit, 24-hour stool and urine samples have been routinely collected from the newborn for nearly 2 years, and over 80% of all collections have been complete and uncontaminated. The technique of collection is a modification of that of Liu and Anderson, but uses Hollister 24-hour U-Bags*. The collections have been equally successful in boys and girls.

Method

Attachment of urine bag. The infant's perineum is carefully cleaned with soap and water and thoroughly dried. The skin around the genitalia is then painted with compound tincture of benzoin using a cotton wool pledget and applicator. When this has dried, the urine bag is applied.

The attachment of the urine bag takes 2 individuals, and it is this step which is considered critical to the success of the collection. One person carefully stretches the skin, eliminating all skin folds and creases, while the second applies the bag (Fig. 1). This is stuck first across the perineum, then lateral to the vulva or scrotum, and finally onto the suprapubic region. If any folds or creases are left in the skin covered by the urine bag, the bag is removed and a fresh bag is applied.

Collection of stool. Once the urine bag is applied,

*Abbott Laboratories Ltd., Queenborough, Kent.

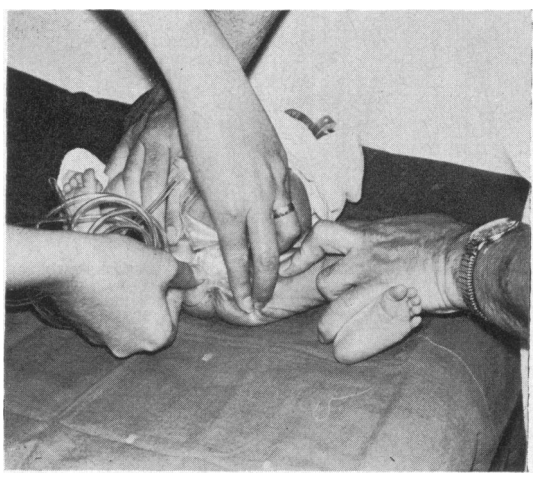

FIG. 1.—*The application of a urine bag to the perineum, showing the need for 2 individuals to eliminate skin creases.*