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Reporting of critical incidents shows how errors occur

EDITOR,—R E Ferner draws attention to the confusion that can be caused when different drugs are labelled in an identical manner.¹ I would like to draw attention to another problem.

Drugs may be presented in two or more strengths in identically sized and labelled ampoules. In my hospital, through the reporting of critical incidents, two examples of such confusion have recently come to light. In the first incident 30 mg of morphine was confused with 10 mg, and in the second incident 10 mg of diamorphine was given instead of 5 mg. In both cases the junior doctor, on rotation from one hospital to another, expected only one particular strength to be available.

While no excuses can be given for such errors, it is too easy to read what one expects to see. I agree that in the ideal situation checking would help prevent such errors, but this may not always be practical for doctors working on their own. As an anaesthetist in training, I often prescribe and dispense drugs simultaneously. I am aware that a patient's life could be put at risk if I were to inject either the wrong drug or the incorrect dose.

Such errors can be reduced only by better training and awareness. Confidential reporting of critical incidents by all members of staff is essential to build up a better picture of how errors occur.

NARESH NANDWANI
Registrar in anaesthetics

Leicester Royal Infirmary NHS Trust,
Leicester LE1 5WW

- 1 Ferner RE. Is there a cure for drug errors? *BMJ* 1995;311:463-4. (19 August.)

Inappropriate prescribing is "treatable"

EDITOR,—I read R E Ferner's editorial on drug errors with mixed feelings.¹ Over a decade ago Gosney and I drew attention to inappropriate prescribing (the prescribing of contraindicated drugs and drugs with adverse interactions) for elderly patients admitted to hospital.² We subsequently extended our surveys to patients seen in accident and emergency departments,³ patients in long term care wards, and patients in residential homes. We suggested that the conventional explanation for the high incidence of adverse drug reactions in elderly people (changes in pharmacokinetics and pharmacodynamics related to age, multiple disease, and poor compliance) might distract from prescribing errors as a cause. Our most recent study showed that just under half of adverse drug reactions and hospital admissions related to drug treatment in elderly people were due to inappropriate prescribing.⁴

I have always seen this as good, rather than bad, news. Inappropriate prescribing seems more likely to be "treatable" than age related changes in the way that drugs are handled and the other commonly invoked causes of therapeutic misadventures in old age.

We developed a computer system to help prevent inappropriate prescribing.⁵ We thought it unlikely that better education would prevent doctors from making errors. A busy doctor making rapid prescribing decisions will find it difficult to mobilise the two large bodies of information necessary to prescribe safely for older people: the often long list of diagnoses and the drugs that the patient may already be taking, and the massive, ever expanding body of pharmacological and pharmaceutical

information. There is an important difference between "passive" knowledge (information buried somewhere in one's cerebral cortex) and "active" knowledge (information that is used at the time of a therapeutic decision). Computer assisted prescribing would provide on line information without undermining the doctor's judgment.

Insufficient research into the effect of computer assisted prescribing in iatrogenic disease may reflect a failure to appreciate the tenuous relation between knowledge (especially passive knowledge) and appropriate therapeutic action. This may be because the educational agenda in therapeutics is set by people whose interests are highly specialised and who may not recognise the very "homely" reasons for poor prescribing, of which simple forgetfulness is the most important.

RAYMOND C TALLIS
Professor of geriatric medicine

Hope Hospital,
Salford M6 8HD

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Preventing local complications of depot neuroleptics

EDITOR,—Justin Hay's short report on complications at the site of injection of depot neuroleptics raises an important issue affecting those patients who require maintenance treatment with such formulations.¹ His conclusion that patients who have developed such complications should avoid certain formulations, including zuclopenthixol concentrate, is not borne out by our experience, both in clinical trials and from spontaneous reports of adverse reactions to the company. Certain aspects of Hay's study may go some way towards explaining this discrepancy.

Firstly, skill in giving depot injections may have varied widely among the health professionals involved in the study, and, additionally, no attempt seems to have been made to ensure standardisation of the injection technique (such as use of a Z track injection technique² and rotation of injection sites). The 19 acute problems described as clinically important leakage from the injection site may therefore reflect poor injection technique. Similarly, the 52 acute problems described as pain, bleeding, or haematoma are unlikely to represent a concentration effect; rather, they probably represent the trauma that can be associated with any deep intramuscular injection. Again, this varies with technique. Another aspect of technique requiring consideration is the higher viscosity of the more concentrated formulation and thus the greater potential for increased pressure and trauma at the time of injection.

Secondly, the patients receiving the concentrate formulations received more injections than the other patients, which may explain the increased frequency of local complications in this group.

Thirdly, it is recognised that the administration of large injection volumes may be associated with the development of local reactions,^{3,4} and accepted practice is to attempt to reduce the volume of depot in someone prone to such reactions. This can be done by reducing the dose, with increased risk of relapse, or by increasing the concentration. Thus patients in the groups receiving concentrate may have been selected over time to receive such

formulations because of their tendency to local reactions.

Compliance is best achieved by selecting a treatment that is well tolerated and convenient. In so doing, a clinical balance must be struck between the benefits of keeping the injection volume as low as possible (including psychological advantages to the patient and the avoidance of split site injections) and any potential risks of increased concentrations to local tolerability.

CHRIS MULDOON
Head of medical department

Lundbeck,
Caldecotte Lake Business Park,
Caldecotte,
Milton Keynes MK7 8LF

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Suicide after discharge from psychiatric hospitals in Scotland

EDITOR,—John R Geddes and Ed Juszcak provide information on trends in suicide after discharge from psychiatric hospitals in Scotland.¹ They comment that studies in other countries indicate that the peak incidence of suicide and undetermined deaths occurs in the 28 days after discharge. Our data on deaths recorded as E950-959 (suicide and self inflicted injury) confirm that this is also the case in Scotland (figure). Our findings also indicate that, while the peak number of deaths occurs in the first four weeks after discharge, the risk of death from suicide continues for some time. This supports the need for good planning for patients' discharge and for community support in the months after discharge.

Geddes and Juszcak argue that the changes may be related to decreases in the number of psychiatric beds, and they call for the retention of inpatient facilities. If death rates in females in the 28 days after discharge had returned to the same level that existed in 1968-72 then 12 deaths would have been prevented in 1988-92. This represents only 1.18% of all suicides and undetermined deaths in females in Scotland in the five years and 0.32% of these deaths in both sexes. We have reported previously that only 9.5% of males and 18.4% of females who died by suicide in 1991-2 in Scotland had been psychiatric inpatients in the 12 months before their death.² This, together with the finding that most people dying by suicide have not had recent contact with their general practitioners,³ brings

Deaths by suicide in 1991-2 after discharge from psychiatric hospitals in Scotland

into question the concentration of efforts to prevent suicide on health care services.

While supporting the need for good planning for patients' discharge, we believe that efforts should continue to identify other routes of intervention in the great majority of those dying by suicide, who have not been in contact with primary care or inpatient psychiatric services. Detailed examination of high risk groups, such as younger people and those in deprived communities,⁴ together with review of the scope for structural interventions, such as limiting the availability of popular methods of suicide,⁵ may offer the greatest population benefits.

CAMERON STARK
Consultant in public health medicine
Ayrshire and Arran Health Board,
Ayr KA7 4DW

DAVID HALL
Consultant psychiatrist
Crichton Royal Hospital,
Dumfries DG1 4TG

FIONA O'BRIEN
Health information scientist
Record Linkage Project,
Information Services Directorate,
Edinburgh

HELEN SMITH
Consultant in public health medicine
Argyll and Clyde Health Board,
Paisley PA1 1DU

MANICE STALLBAUMER
Community hygiene concern resource project leader
Hospital for Tropical Diseases,
London NW1 0PE

JOANNA IBARRA
Community hygiene concern programme coordinator
London N8 9JT

- 1 Geddes JR, Juszczak E. Period trends in rate of suicide in first 28 days after discharge from psychiatric hospital in Scotland, 1968-92. *BMJ* 1995;311:357-60. (5 August.)
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Clinical efficacy of treatment for head lice

Counting head lice by visual inspection flaws trials' results

EDITOR,—In their review of drug treatments for head lice Robert H Vander Stichele and colleagues identified only seven clinical trials in the past 29 years that met their evaluation criteria.¹ However, visual inspection (their main measure for clinical evaluation) is flawed.² Furthermore, to determine oviductivity a comparison of the hatching rate of treated and untreated eggs after incubation, to simulate the conditions on the head, is necessary.³

Use of a hand lens to detect hatchlings on the head is impractical because lice move rapidly away from disturbance in dry hair. Mathias *et al* found

the application of isopropanol alcohol to be helpful as it causes lice to fall from the head.⁴ Other workers use a fine toothed comb to detect lice. Nevertheless, none of these methods is sufficiently controlled to replace incubation in the assessment of oviductivity.

Vander Stichele *et al* barely touch on the question of resistance to insecticides. The evolution of genetically selected tolerance when an insect population is repeatedly exposed to a compound on a piecemeal basis is inevitable. Thus, although a product may work satisfactorily when it is submitted to a clinical trial, the situation changes after years of use. Cross resistance between compounds in the same chemical group is well documented, and multiple resistance may also occur.⁵ Moreover, the results of trials conducted on a louse population in one country are not valid in another country or region, where the history of exposure to pesticides of the lice is different. Consideration of these factors does much to throw light on the high prevalence of head lice noted by Vander Stichele and colleagues "although treatments abound."

MANICE STALLBAUMER
Community hygiene concern resource project leader
Hospital for Tropical Diseases,
London NW1 0PE

JOANNA IBARRA
Community hygiene concern programme coordinator
London N8 9JT

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Authors differ on assessment of flaws in trials

EDITOR,—The review of pediculicides by Robert H Vander Stichele and colleagues seems initially to be a major advance in the analysis of clinical studies in this field.¹ Having recently completed a major review of the literature on human lice, however, I wish to comment on this analysis. I agree that most trials are full of faults and should probably never have been published. When I read the authors' analysis, however, I wondered whether they and I had been looking at the same publications. Although I make allowance for some qualification criteria being vague and in some cases clinically irrelevant, the authors have been inconsistent in their application so that two nearly identical protocols are scored differently. I scored the same

"top" group of studies, with ' rather different results (table).

The authors laid much emphasis on the success of a product not being fully evident until 14 days after treatment, but three of their "best" studies (table) could have been influenced by previous treatment with pediculicides, having enrolled some patients who had been treated only one week previously. In any case, those with experience in the field know that "clinical trials are notoriously over-optimistic in this field" because parents cannot refrain from meddling in the outcome.³

Most insecticides have no residual effect, so using that as a primary criterion of efficacy discounts most from being regarded as successful pediculicides. Residual action, however, is a two edged sword. It may give a "quick fix," to enhance activity of otherwise poorly oviductal material and help prevent reinfection, but the residuum slowly wears away, leaving sublethal levels of insecticide, which can encourage resistance.³ In this the authors' theoretical analysis and recommendations have already been overtaken by reality. Resistance to permethrin, which may render the insecticide and its relatives useless, is already widespread in Britain,⁴ has been documented in Israel and the Czech Republic, and has been reported anecdotally from several other countries in Europe and elsewhere. Consequently the authors' comments suggesting that there is no justification for rotating insecticides to avoid resistance are anachronistic and perhaps naive, considering the history of resistance to "antibiotic" agents of all types.

IAN F BURGESS
Deputy director
Medical Entomology Centre,
Cambridge CB1 5EL

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Authors' reply

EDITOR,—Both Manice Stallbaumer and colleagues and Ian F Burgess point out the potential or inevitable development of resistance to broadly used pediculicides, which makes extrapolation of results of studies performed in one country to another country hazardous. Indeed, since we completed our manuscript reports of resistance to permethrin have been published.^{1,2}

We agree that a strategy for containing the pandemic of head lice should be based on the use of several active ingredients of proved efficacy. Hence we deplore statements in the media that,

Reassessment of seven studies found acceptable by Vander Stichele and colleagues: A is Vander Stichele and colleagues' assessment while B is my reassessment

Study		General item No*									Treatment specific item No*																		Total	Difference
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Maunder	{A	F	—	F	F	—	—	—	—	3	F	F	F	—	F	F	—	—	F	—	F	—	—	f	f	—	—	9	2	
	{B	f	—	F	F	F	—	F	—	5	F	F	—	F	—	F	F	—	F	F	—	F	—	—	—	f	—	—		9
Brandenburg <i>et al</i> †	{A	—	F	—	F	F	—	—	—	3	F	—	—	—	F	F	F	—	—	—	—	—	—	f	—	—	—	5	7	
	{B	—	F	f	f	F	—	—	—	4	F	f	—	F	—	F	F	F	F	F	—	—	—	f	F	f	—	—		11
Taplin <i>et al</i>	{A	—	—	—	F	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	f	—	f	—	f	—	3	1	
	{B	—	—	—	F	—	—	—	—	1	—	—	—	—	—	—	—	—	F	—	f	—	f	—	f	—	—	4		
Bowerman <i>et al</i> †	{A	—	F	—	—	F	—	—	—	2	F	f	—	—	F	F	—	—	—	—	—	—	—	f	f	f	—	7	4	
	{B	—	F	f	f	F	—	—	—	4	F	f	—	F	—	F	F	—	F	—	—	—	—	f	F	f	—	9		
Carson <i>et al</i>	{A	—	F	—	F	—	—	—	—	2	—	—	—	f	F	—	f	f	—	—	—	—	—	f	f	f	—	7	-1	
	{B	—	F	—	—	—	—	—	—	1	—	—	—	—	F	—	F	F	—	—	—	—	F	f	F	F	—	7		
DiNapoli <i>et al</i> †	{A	—	F	—	F	F	—	—	—	3	—	—	—	—	F	—	f	f	—	F	—	—	—	f	f	f	—	7	0	
	{B	—	F	—	—	—	—	—	—	1	F	f	—	F	—	F	—	F	F	—	—	—	—	f	F	f	—	9		
Clare <i>et al</i>	{A	—	—	F	F	—	—	—	—	2	—	F	—	f	F	F	—	f	—	—	—	f	—	F	f	f	—	9	5	
	{B	—	—	—	—	F	f	—	F	3	—	—	f	F	f	F	F	F	F	—	F	f	F	f	F	F	—	13		

Studies by Brandenburg *et al* and Bowerman *et al* used nearly identical protocols. F=Major flaw; f=minor flaw.

*See Vander Stichele and colleagues' paper for details. †=The three "best" studies, with some subjects treated one week before enrolment.