able reluctance to use two types of delivery instruments in case both fail, making subsequent caesarean section more difficult because of impaction of the fetal head in the pelvis.^{7 w4}

Breech and twin deliveries can also lead to second stage caesareans. Planned caesarean section is safer than vaginal birth for a term breech fetus with respect to immediate neonatal outcomes.⁸ The place of emergency caesarean is less clear when a mother presents in labour and reaches full cervical dilatation with an unexpected breech presentation. In the absence of an experienced and skilful obstetrician to perform assisted vaginal breech delivery, women are advised to undergo an emergency second stage caesarean.

Ironically, even though singleton births are far more common than twin delivery, more data exist on second stage delivery rates and risks for the second twin than for singletons. Several authors have reported rising rates of caesarean delivery for the second twin after the first twin has delivered vaginally.^{9 w5} The commonest reasons for this include non-vertex presentation of the second twin, fetal distress, cord prolapse, and placental abruption. If the second twin is 25% larger than the first, then the risk of caesarean delivery for this twin is significantly increased.¹⁰ Recent data suggest that the second twin's risk of hypoxia is five times greater than that of the first after vaginal delivery of the first twin.¹¹

Currently, about 10% of second twins are delivered by caesarean section after the first has been delivered vaginally: 10 years ago, the rate was 5%.¹² As many as two thirds of these caesareans are preventable and are due to operator inexperience—such as inability to perform internal version and breech extraction of a malpresenting second twin or poorly timed rupture of membranes leading to premature cervical contraction.^{w5} The ongoing Canadian multicentre study of mode of delivery of twins (the “twin birth study”) may further increase the caesarean section rate if results suggest safer delivery of twins by elective caesarean. However, many women expecting twins will present in labour before their planned caesarean section date of 38–39 weeks.

Despite problems relating to the inexperience of obstetric trainees, the United Kingdom is making great

strides in terms of structured training, assessment of competencies, and consultant delivered intrapartum care. Nevertheless, it is essential to recognise the need for obstetricians to maintain and develop their skills if women are to be offered safe alternatives to caesarean section when complications arise in labour.

Chris Spencer *consultant obstetrician*

St John's Hospital, Chelmsford, Essex CM2 9BG

Deirdre Murphy *professor*

Department of Obstetrics and Gynaecology, Trinity College, University of Dublin, Coombe Women's Hospital, Dublin, Republic of Ireland

Susan Bewley *consultant obstetrician*

(susan.bewley@gstt.nhs.uk)

Women's Services, Guy's and St Thomas' NHS Foundation Trust, St Thomas' Hospital, London SE1 7EH

- Black C, Kaye JA, Jick H. Caesarean delivery in the United Kingdom: time trends in the General Practice Research Database. *Obstet Gynecol* 2005;106:151-3.
- Allen VM, O'Connell CM, Baskett TF. Maternal and perinatal morbidity of caesarean delivery at full cervical dilatation compared with caesarean delivery in the first stage of labour. *Br J Obstet Gynaecol* 2005;112:986-90.
- Olsh KS. Reversal of the decision for Caesarean section in the second stage of labour on the basis of consultant vaginal assessment. *J Obstet Gynecol* 2005;25:115-6.
- Bahl R, Strachan B, Murphy DJ. Outcome of subsequent pregnancy three years after previous operative delivery in the second stage of labour: cohort study. *BMJ* 2004;328:311.
- Armstrong CA, Harding S, Matthews T, Dickinson JE. Is placenta accreta catching up with us? *Aust N Z J Obstet Gynaecol* 2004;44:210-3.
- Thomas J, Paranjothy S, Royal College of Obstetricians and Gynaecologists Clinical Effectiveness Support Unit. *The national sentinel caesarean section audit report*. London: RCOG Press, 2001.
- Gardella C, Taylor M, Benedetti T, Hitti J, Critchlow C. The effect of sequential use of vacuum and forceps for assisted vaginal delivery on neonatal and maternal outcomes. *Am J Obstet Gynecol* 2001;185:896-902.
- Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan A. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Term Breech Trial Collaborative Group. *Lancet* 2000;356:1375-83.
- Persad VL, Baskett TF, O'Connell CM, Scott HM. Combined vaginal-caesarean delivery of twin pregnancy. *Obstet Gynecol* 2001;98:1032-7.
- Yang Q, Wen SW, Chen Y, Krewski D, Fung KF, Walker M. Occurrence and clinical predictors of operative delivery for the second twin after normal vaginal delivery of the first twin. *Am J Obstet Gynecol* 2005;192:178-84.
- Smith GC, Shah I, White IR, Pell JP, Dobbie R. Mode of delivery and the risk of delivery-related perinatal death among twins at term: a retrospective cohort study of 8073 births. *Br J Obstet Gynaecol* 2005;112:1139-44.
- Bider D, Korach J, Hourvitz A, Dulitzky M, Goldenberg M, Mashich S. Combined vaginal-abdominal delivery of twins. *J Reprod Med* 1995;40:131-4.

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Emergency naloxone for heroin overdose

Should it be available over the counter?

Naloxone saves lives. Timely injection of the opiate antagonist naloxone rapidly reverses the respiratory suppression of heroin overdose,^{1 2} a major cause of death in young people.^{3 4} Recent regulatory amendments increase significantly the extent to which naloxone can now be used to prevent opiate overdose deaths. In June 2005, in the Medicines for Human Use (Prescribing) (Miscellaneous Amendments) Order,⁵ the United Kingdom added naloxone to the limited list of medicines that may be given by injection “by anyone for the purpose of saving life in an emergency” (alongside emergency adrenaline, glucagons, and snake antivenin). An emergency dose of naloxone may now be given to prevent death

from heroin overdose without specific medical instruction. In August 2005, New York state passed legislation (bills A.7162-A (Dinowitz) and S.4869-A (Hannon)) establishing that physicians may lawfully prescribe naloxone explicitly for potential future opiate overdose, including the situation where it may be administered to someone else.

Many people who take overdoses of heroin die even though friends or family are present.⁶ Peers often attempt to resuscitate,⁷ sometimes incorrectly,^{w1} and death may occur from respiratory arrest before

Summary of good practice with take-home naloxone and extra references w1-w7 are on bmj.com

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emergency services arrive. People who overdose, and their friends and family, could be given supplies of naloxone to keep at home and could be trained to give lifesaving interim care.^{w2 w3} Naloxone is already approved for reversing opiate overdoses. About 10% of user distributed naloxone is used for resuscitation—an informal project in Chicago reports 440 “reversals” from 6000 doses distributed (D Bigg, personal communication, 2006), and no fatalities or adverse reactions have yet been reported. The novelty is in the different settings and people giving naloxone.

Doctors are the primary group able to prescribe and administer naloxone. But many people who take overdoses die before the doctor arrives. Naloxone is already approved for use by ambulance services, similar to giving thrombolysis and defibrillation for suspected myocardial infarction. Some nurses and pharmacists can now give naloxone, under new “patient group directions” in the UK.^{w4} Doctors can instruct patients in self administration, as well as instructing family or other carers in emergency care or drug rehabilitation houses. Naloxone can be prescribed to named patients for self administration (this is an orthodox doctor-patient relationship, analogous to prescribing antivenin or emergency adrenaline). However, most opiate misusers are incapacitated by the time they realise they are overdosing. Named patients, with named carer, relative, or friend trained in its administration, can be prescribed naloxone (as with emergency adrenaline for anaphylaxis or glucagon for hypoglycaemia). Prescription to named patients, who themselves train another in assessing overdose and giving naloxone, is also possible, making naloxone more widely available but less controllable for clinicians. All these approaches are already being used within different clinical services in different localities.

Within our own clinical services, we currently target two groups, both with a high incidence of overdose: detoxified opiate misusers being discharged back into the community,^{w5} and patients in the first few weeks of methadone substitution therapy.^{w6} We also plan to provide naloxone to former opiate misusers being released from prisons, in view of their recognised excess mortality.^{w7}

Three proposals should be considered to increase the availability of naloxone. Firstly, further training should be provided in emergency administration of naloxone by non-healthcare staff. Non-healthcare staff in police stations, prisons, rehabilitation hostels, or remote communities could be trained in recognising

and managing overdoses (as aircrew are trained in managing in-flight emergencies) and could even receive instruction by mobile phone.

Secondly, patients or carers could administer naloxone to others who have a heroin overdose. If a patient or carer, trained in use of naloxone, is called to a life threatening heroin overdose, then they could potentially save a life by administering naloxone while waiting for emergency services to arrive. Although we do not currently recommend this, as it is unclear where the boundaries of duty of care lie, we are hearing from trained patients, carers, and staff who have given naloxone to others and judged it to have been life saving.

Thirdly, in the future, perhaps naloxone should be available over the counter in pharmacies, needle exchange programmes, and voluntary agencies to reach those at risk who are not in treatment. This would make it more available but would require further legislation, and the public would need training.

Naloxone is an extraordinarily effective drug and has been “transferred” to ambulance crews. The next logical transfer is for take-home naloxone to be given to patients at risk, their families, and carers (see bmj.com) to prevent deaths in the critical minutes before specialist care arrives.

John Strang *director*

(j.strang@iop.kcl.ac.uk)

Michael Kelleher *consultant psychiatrist in the addictions*

David Best *honorary senior lecturer in the addictions*

Soraya Mayet *specialist registrar in the addictions*

Victoria Manning *research worker in the addictions*

National Addiction Centre (Institute of Psychiatry/The Maudsley), London SE5 8AF

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- 1 Sporer KA. Strategies for preventing heroin overdose. *BMJ* 2003;326:442-4.
- 2 White JM Irvine RJ. Mechanisms of fatal opioid overdose. *Addiction* 1999;94:961-72.
- 3 Roberts I, Barker M, Li L. Analysis of trends in deaths from accidental drug poisoning in teenagers, 1985-95. *BMJ* 1997;315:289.
- 4 Kelleher M, Keown P, O’Gara C, Keaney F, Farrell M, Strang J. Dying for heroin: the increasing opioid-related mortality in the Republic of Ireland, 1980-1999. *Eur J Pub Health* 2005;15:589-92.
- 5 Medicines for Human Use (Prescribing) (Miscellaneous Amendments) Order 2005. www.opsi.gov.uk/si/si2005/20051507.htm (accessed 28 Jun 2006).
- 6 Strang J, Powis B, Best D, Vingoe L, Griffiths P, Taylor C, et al. Preventing opiate overdose fatalities with take-home naloxone: pre-launch study of possible impact and acceptability. *Addiction* 1999;94:199-204.
- 7 Strang J, Best D, Man L-H, Noble A, Gossop M. Peer-initiated overdose resuscitation: fellow drug users could be mobilised to implement overdose resuscitation. *Int J Drug Policy* 2000;11:437-45.

Teratogenicity of antiepileptic drugs

Women should consider stopping, minimising, or switching drugs before pregnancy

Prescribing for women with epilepsy is complicated by the potential teratogenicity of antiepileptic drugs. Current guidelines recommend that the most effective drug should be chosen before conception and prescribed at its lowest effective dose, ideally as monotherapy.^{1 2} But which antiepileptic drug is safest in pregnancy?

Early research on the safety of antiepileptic drugs in pregnancy was unreliable. Several countries set up pregnancy registries in the late 1990s, and data from these registries are now appearing.

References w1-w6 are on bmj.com