

ities or chronic illness, and most felt that they had experienced discrimination and lack of equal opportunities, as well as hostile or unhelpful attitudes and behaviours by colleagues.⁹ It is disconcerting that the introduction of anti-discrimination legislation has as yet failed to help health professionals with disabilities.

A second reason for health professionals' inability to relate to disability issues is the low numbers of students with a disability who are admitted to medical school. Particular concern was expressed regarding the under-representation of people with disabilities in medicine and the healthcare professions generally at the "Enabling disabled doctors" conference. Although not a main focus of the meeting, the problems faced by people with disabilities who wish to gain entry to study medicine and by students who become disabled during their studies was of great concern. As indicated by the Heidi Cox case such concern seems to be well founded and is supported by the findings of another recent workshop, "Teaching health professionals about disability," held by the Health Council, and supported by the MRC Health Services Research Collaboration. This workshop concluded that we need more doctors and other healthcare professionals with disabilities in order to help improve the poor engagement of health professionals with the experiences of disabled people in general.⁵

Several years have passed since a BMA report called for rigorous research into this area,⁹ which as yet has failed to materialise. One interesting pointer, however, is a recent audit of the information made available to the public on the websites of all UK medical, veterinary, and dental schools,¹⁰ which indicates that, although most medical schools provide some information for applicants with disabilities, reference to key policy documents is woefully inadequate.

Several creative ideas emerged from the two meetings cited above, which, if acted on, could help enable doctors with disabilities to take their rightful place in medicine. Delegates suggested positive responses to virtually all of the barriers identified and agreed that a vital first step is to confirm by rigorous research that the concerns and experiences reported by doctors with disabilities are widespread and representative. Secondly, more role models of doctors with disabilities who have succeeded in medicine are needed. This in

turn requires that representative numbers of disabled students are admitted to medicine, and that all disabled doctors and medical students are given the support they are entitled to. Thirdly, we need to learn from the sex and race equality gains that have occurred in society in general. The medical profession—and doctors with disabilities—would gain from engaging with other health professionals with disabilities and with the wider disability rights movement. Finally, and perhaps most importantly, a meaningful partnership must be struck with key organisations—including the GMC, the royal colleges, and the Department of Health (and devolved equivalents)—if we are to develop and integrate policies that will deliver real change.

Stewart Mercer *Senior clinical research fellow*

General Practice and Primary Care, Division of Community-based Sciences, University of Glasgow, Glasgow G12 0RR

Paul Dieppe *director MRC HSRC*

Department of Social Medicine, University of Bristol, Bristol BS8 2PR

Ruth Chambers *head*

Stoke-on-Trent Teaching Primary Care Trust Programme, Stoke-on-Trent ST4 4LX

Rhona MacDonald *editor Career Focus*

BMJ (rmacdonald@bmj.com)

Competing interests: None declared.

- 1 Dieppe P, ed. *The disability partnership. One in four of us: the experience of disability*. London: Health Council, 2000.
- 2 Begum N. The GP's role in shaping disabled women's lives. Barnes C, Mercer G, eds. In: *Exploring the divide: chronic illness and disability*. London: Disability Press, 1996.
- 3 Pinder R. Zones of danger, zones of safety: disabled people's negotiations around sickness and the sick record. In: Daykin N, Doyal L, eds. *Health and work: a critical perspective*. Basingstoke, UK: Palgrave Macmillan, 1999. ISBN 0333691911
- 4 Lavery M. *The seven year itch*. London: Royal Association for Disability and Rehabilitation, 2002.
- 5 Dieppe P, Holland P, eds. Teaching health professionals about disability. 2002. Workshop report. Available from MRC HSRC, Canynge Hall, Whiteladies Road, Bristol.
- 6 Moloney R, Hayward R, Chambers R. A pilot study of primary care workers with a disability. *Br J Gen Pract* 2000;50:984-5.
- 7 Cross P. Disabled and working. *BMJ* 2003;326(suppl):S185. <http://bmj.bmjournals.com/cgi/content/full/326/7400/s185>
- 8 Taysum P. The GMC has set a precedent for discriminating against disabled medical students. *BMJ* 2002;324:S199. <http://bmj.bmjournals.com/cgi/content/full/324/7352/S199>
- 9 BMA Working Party Report. *Meeting the needs of doctors with disabilities*. BMA Publications, London, 1997.
- 10 Tynan A. *Pushing the boat out: an introductory study of admissions to UK medical, dental, and veterinary schools for applicants with disabilities*. University of Newcastle: Learning and Teaching Support Network, 2003. (LTSN Special Report 1) ISBN 0 7017 0154 4.

When to retract?

Reserve retraction for fraud and major error

Today we are retracting a study that seemed to show that the outcome of pregnancy in diabetic women in northeast England was worse than that of diabetic women in Norway.¹⁻³ The authors have realised that they made a fundamental mistake.² Data collected in Norway were meant to exclude codes for gestational diabetes but didn't.² The conclusions cannot be allowed to stand, and a subsequent analysis shows no significant difference in outcome between women in the two countries known to have diabetes before pregnancy.² Studies are most commonly retracted because of fraud, but there is no question of misconduct in this case. It was a simple

mistake, and as soon as the authors realised it they asked us to retract the study.² But when should editors retract studies?

Retraction is topical following two recent high profile cases. *Nature Medicine* has just retracted a German study that described how three patients with metastatic kidney cancer responded to a vaccine produced by fusing their tumour cells with immune cells.^{4 5 w1} An ombudsman's committee from Göttingen University conducted an inquiry. It did not find scientific misconduct but did find negligence in the documentation of the trial and preparation of the manuscript. Some of the 17 authors needed convincing that the study should be retracted.

See pp 905, 929



Additional references w1-w12 appear on bmj.com

BMJ 2003;327:883-4

The second retraction concerns a study in *Science* that showed that injection of 3,4-methylenedioxymethamphetamine (ecstasy) into primates at doses close to those used recreationally caused severe damage to dopaminergic neurons.^{6 7 w2} The research was widely reported, including in the *BMJ*,^{w3} with the suggestion that the widespread use of ecstasy might cause an epidemic of Parkinson's disease. The authors asked for the study to be retracted once they realised that nine of the 10 animals had been given the wrong drug. The bottle was mislabelled.⁶

Some critics have accused the authors of "rushing their results into print" because of discussions in the US Congress on legislation to curb the use of ecstasy.^{w2} Colin Blakemore, a professor of physiology from Oxford and chief executive designate of the Medical Research Council, said that it was "hard to see how that process [peer review] operated properly in the case of this article" and that "respect for science" had been degraded.^{w2 w4} Some of the press have talked about *Science* being humiliated by having to retract the article.

All this is over the top. Peer review works on trust. If authors write that they injected a particular drug or had 200 patients in their trial, then they are believed. Nobody asks to see the drug and analyse it or to see the records of the 200 patients. Peer review will sometimes pick up fraud, but it isn't designed to do so—and mostly doesn't.⁸ Peer review is held to be almost sacred within science, and yet accumulating evidence shows it to be highly subjective, something of a lottery, and prone to bias and abuse.^{w5 w6} Several studies—including some undertaken by the *BMJ*—show that reviewers are poor at detecting major errors that are apparent in the text.^{w7 w8} They cannot be expected to detect errors that are not apparent from the text.

All journals publish studies that turn out eventually to be nonsense. All studies have some flaws, and critics often call for studies to be retracted. There were calls for us to retract our recent study on passive smoking.^{w9 w10} Subjects who felt abused by the Bristol Cancer Help Centre study, which wrongly said that women who went to the centre were likely to die sooner than "controls,"^{w9} went as far as the Charity Commission to try to get the study retracted. Many would like to see a retraction of the *Lancet* paper that linked the MMR (measles, mumps, and rubella) vaccine with autism.¹⁰ Indeed, almost every week people call for retraction of papers they don't like.

Many use the word retraction loosely. They probably mean that they want the editors to make clear that there are great anxieties over the studies. To editors retraction is a formal process that means that the study will be marked as retracted in Medline, their own index, and other indices—with the implication that it should be ignored. In fact retracted studies continue to be cited, usually without any indication that they have been retracted.^{w11} In a paper world the retracted studies could not be entirely destroyed (although in a recent case—here retraction was inappropriate—the publisher urged subscribers to tear out the pages^{w12}), but in an electronic world they could be deleted. Editors and publishers mostly don't do so—because it destroys the scholarly record. For the same reason we don't go back and correct the electronic pages: rather, we leave the error and make clear in the original that there is a correction.

Studies are most commonly retracted because they are fraudulent. Since 1994, when *bmj.com* began, the *BMJ* has retracted three studies and one letter, all because of fraud. As far as the editorial team can remember we have only once before retracted a study because of a major error.^{11 12} Studies should certainly be retracted when discovered to be fraudulent—because even if the distortion of the data seems small there are immediately questions about the integrity of all the data: the trust that underpins peer review is destroyed. Questions are also immediately raised about previous studies by the authors. But even retractions for misconduct are not straightforward. Some misconduct is minor. Should a study be retracted because authors fail to declare competing interests? Probably not, but it's a form of misconduct—and there are many other minor forms of misconduct. When does the conduct become sufficiently major to retract the article?

Still more difficult is the decision over when to retract a flawed study. Retraction is surely right for the *Nature Medicine*, *Science*, and *BMJ* papers, but it wouldn't seem to be right for the *Lancet's* MMR study. It's widely regarded as a very weak study, but "what you see is what you get." The weaknesses are there for all to see, while the defects in the three retracted studies are not apparent from what has been published. The severe defects in the Bristol Cancer Help Centre study are largely apparent—and so retraction is probably not appropriate, even though the conclusions go well beyond the strength of the methods and results.

Retraction should thus be reserved for studies that involve scientific misconduct and severe errors that are not discernible from the text. But when retraction is indicated editors should not hesitate. There is no need for shame. Retractions are like corrections. Excellent publications—like the *New York Times*—are full of corrections, whereas inferior publications—like British tabloid newspapers—have few. Everybody makes mistakes but not everybody admits them.

Richard Smith *editor BMJ*

Competing interests: RS is the editor of the *BMJ* and accountable for all it contains and its finances. A retraction is unlikely to have any financial consequences for the journal.

- 1 Retraction: Outcome of pregnancy in diabetic women in northeast England and in Norway, 1994-7. *BMJ* 2003;327:905.
- 2 Hawthorne G, Irgens LM, Moe N, Jervell J. Retraction of paper on maternal diabetes. *BMJ* 2003;327:929.
- 3 Hawthorne G, Irgens LM, Lie RT. Outcome of pregnancy in diabetic women in northeast England and in Norway, 1994-7. *BMJ* 2000;321:730-1.
- 4 Kugler A, Stuhler G, Walden P, Zoller G, Zobywalski A, Brossart P, et al. Retraction: Regression of human metastatic renal cell carcinoma after vaccination with tumor cell-dendritic cell hybrids. *Nat Med* 2003;9:1221.
- 5 Kugler A, Stuhler G, Walden P, Zoller G, Zobywalski A, Brossart P, et al. Regression of human metastatic renal cell carcinoma after vaccination with tumor cell-dendritic cell hybrids. *Nat Med* 2000;6:332-6.
- 6 Ricaurte GA, Yuan J, Hatzidimitriou G, Cord BJ, McCann UD. Retraction. *Science* 2003;301:1479.
- 7 Ricaurte GA, Yuan J, Hatzidimitriou G, Cord BJ, McCann UD. Severe dopaminergic neurotoxicity in primates after a common recreational dose regimen of MDMA ("ecstasy"). *Science* 2002;297:2260-3.
- 8 Rennie D. Misconduct and journal peer review. In: Godlee F, Jefferson T, eds. *Peer review in health sciences*. 2nd ed. London: BMJ Books, 2003.
- 9 Bagelan FS, Easton DF, Harris E, Chilvers CED, McElwain TJ. Survival of patients with breast cancer attending Bristol Cancer Help Centre. *Lancet* 1990;336:606-10.
- 10 Wakefield AJ, Murch SH, Linnell AAJ, Casson DM, Malik M, Berelowitz M, et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis and pervasive developmental disorder in children. *Lancet* 1998;351:637-41.
- 11 Alevizaki M, Legon S. Retraction in the light of new data. *BMJ* 1989;299:235.
- 12 Alevizaki M, Stevenson JC, Girgis SI, MacIntyre I, Legon S. Altered calcitonin gene in a young patient with osteoporosis. *BMJ* 1989;298:1215-6.