It is not easy to prevent bullying and harassment in the workplace. It requires people to moderate their behaviour so that they become positive role models and demands considerable changes in institutional culture. The negative impact that bullying and harassment have on the wellbeing of students and doctors, overall morale in the medical workforce, and recruitment and retention in the profession demand our continuing efforts to resolve these problems.

Diana F Wood *director of medical education and clinical dean*

(dfw23@medschl.cam.ac.uk)

University of Cambridge School of Clinical Medicine, Addenbrooke's Hospital, Cambridge CB2 2SP

Competing interests: None declared.

- 1 Frank E, Carrera JS, Stratton T, Bickel J, Nora LM. Experiences of belittlement and harassment and their correlates among medical students in the United States: longitudinal survey. *BMJ* 2006 doi: 10.1136/bmj.38924.722037.7C.

- 2 BMA Health Policy and Economic Research Unit. *Bullying and harassment of doctors in the workplace*. London: BMA, 2006. www.bma.org.uk/ap.nsf/Content/bullying2006 (accessed 25 Aug 2006).
- 3 Bully OnLine (UK National Workplace Bullying Advice Line). Bullying: surveys, facts, figures and costs. www.bullyonline.org/workbully/costs.htm (accessed 25 Jul 2006).
- 4 Rautio A, Sunnari V, Nuutinen M, Laitala M. Mistreatment of university students most common during medical studies. *BMC Med Educ* 2005;5:36.
- 5 Chartered Institute of Personnel and Development. *Managing conflict at work: a survey of the UK and Ireland*. London: CIPD, 2004.
- 6 Digital Opinion. National workplace bullying survey—the feedback. 2006. www.digitalopinion.co.uk/?SERVICES-BULLYING-NATSURVEY-RESULTS (accessed 25 Jul 2006).
- 7 British Medical Association. *Medical students welfare report*. London: BMA, 2006. www.bma.org.uk/ap.nsf/Content/WELFARE2006 (accessed 20 Jul 2006).
- 8 Nicholson S. "So you row, do you? You don't look like a rower." An account of medical students' experience of sexism. *Med Educ* 2002;36:1057-63.
- 9 Musselman LJ, MacRae HM, Reznick RK, Lingard LA. "You learn better under the gun": intimidation and harassment in surgical education. *Med Educ* 2005;39:926-34.

doi: 10.1136/bmj.38954.568148.BE

Congenital anomalies after treatment for infertility

Partly related to the cause of infertility

Research p 679

More than 10 000 children are born each year in the United Kingdom through in vitro fertilisation. Studies have shown an increased risk of adverse outcome in singleton infants conceived by the assisted reproductive technologies of in vitro fertilisation and intracytoplasmic sperm injection. These infants are at increased risk of intrauterine growth retardation, low birth weight, premature delivery, and perinatal mortality compared with infants born to fertile couples.¹ A twofold increase in the risk of major congenital malformations has also been reported,²⁻⁴ and there is some evidence of a specific increased risk of imprinting disorders such as Beckwith-Wiedemann and Angelman's syndromes.^{5 6} The source of the increased overall risk of anomalies could be the infertility treatment, either from the in vitro procedure or the drugs used to stimulate ovulation, or intrinsic factors associated with infertility itself. Various data have suggested that infertility, especially female infertility, is likely to be the most important factor.⁷⁻⁹

In this week's *BMJ* the relationship between infertility, infertility treatment, and the risk of congenital abnormality is addressed by a large scale, prospective cohort study by Zhu and colleagues.¹⁰ They found that women who took a prolonged time (> 12 months) to conceive but who did not receive infertility treatment had a small but significantly increased risk of having infants with congenital abnormalities. Furthermore, the authors show that when these women are compared with women who did receive infertility treatment, many of the apparent associations between assisted reproductive technologies and congenital abnormality are lost. However, they show that the association between infertility treatment and genital tract anomaly persists, even when rates are compared with women who took a long time to conceive.

The authors did not have information about infertility treatment among women who reported a time to

pregnancy of less than six months. Although most of the women in this group are unlikely to have had such treatment, it is plausible that some couples with known causes of infertility (such as azoospermia due to failed vasectomy reversal or known severe endometriosis) may have conceived with infertility treatment within six months of starting their attempts to have a baby. Any misclassification due to this issue would tend to underestimate the strength of association between infertility and anomalies, but the effect is likely to be small.

What are the implications of these results? To reproductive specialists, it is useful to know that infertility treatment may not be causally associated with the risk of adverse outcome in singleton infants conceived by assisted reproductive technologies. More likely, the causative factors for these outcomes are unrelated to the treatment, with the possible exception of malformations of the genital tract. Clearly, counselling about the spectrum of possible fetal adverse outcomes should form an integral part of the care of couples seeking fertility treatment. A balanced view should be offered, allowing couples to weigh up the small but significantly increased risk of complications against the benefit of parenthood that may not be otherwise achievable.

It may be helpful to emphasise the absolute risks. Zhu et al report an overall increased risk of congenital abnormalities in the region of 1-2% compared with women conceiving within 12 months. This is unlikely to be a major disincentive for most couples deciding on infertility treatment. The Human Fertilisation and Embryology Authority's website (www.hfea.gov.uk) and guide to infertility are important sources of accurate and up to date information about infertility treatment for UK patients. Future editions of these could reflect the new information provided by this study. A further valuable role for the authority may be to allow the use of its database of cycles of licensed fertility treatment for further research studies.

An increased risk of congenital malformations provides another reason for recommending that any pregnancy in subfertile couples, whether achieved naturally or through infertility treatment, is carefully monitored by a fetal medicine specialist, with detailed antenatal imaging. Given the possible link between infertility treatment and anomalies, counselling of affected couples in relation to future pregnancies may be more complex and require detailed input from clinical geneticists.

Finally, what are the possible genetic causes of subfertility in a parent that are associated with congenital anomalies in a baby? Constitutional chromosomal rearrangements, including reciprocal and robertsonian translocations, and inversions are all well known causes of reduced fertility, miscarriages, and a whole spectrum of birth defects in offspring who inherit a chromosomal imbalance.¹¹ In the presence of a normal

karyotype, the possibility of a subtelomeric rearrangement or interstitial chromosomal deletions and duplications must also be considered.¹² Another possibility is gonadal mosaicism in a parent for these chromosomal alterations,¹³ or other currently unknown monogenic defects. Future research should focus on establishing the mechanisms of these associations and, hence, provide improved risk assessment and counselling.

Soo-Mi Park *specialist registrar*

Department of Medical Genetics, Addenbrooke's Hospital, Cambridge CB2 2QQ

Raj Mathur *consultant*

Department of Reproductive Medicine, Addenbrooke's Hospital

Gordon C S Smith *professor*

(gcss2@cam.ac.uk)

Department of Obstetrics and Gynaecology, Cambridge University, Rosie Hospital, Cambridge CB2 2SW

- 1 Draper ES, Kurinczuk JJ, Abrams KR, Clarke M. Assessment of separate contributions to perinatal mortality of infertility history and treatment: a case-control analysis. *Lancet* 1999;353:1746-9.
- 2 Hansen M, Kurinczuk JJ, Bower C, Webb S. The risk of major birth defects after intracytoplasmic sperm injection and in vitro fertilization. *N Engl J Med* 2002;346:725-30.
- 3 Rimm AA, Katayama AC, Diaz M, Katayama KP. A meta-analysis of controlled studies comparing major malformation rates in IVF and ICSI infants with naturally conceived children. *J Assist Reprod Genet* 2004;21:437-43.
- 4 Hansen M, Bower C, Milne E, de Klerk N, Kurinczuk JJ. Assisted reproductive technologies and the risk of birth defects—a systematic review. *Hum Reprod* 2005;20:328-38.
- 5 Maher ER, Afnan M, Barratt CL. Epigenetic risks related to assisted reproductive technologies: epigenetics, imprinting, ART and icebergs? *Hum Reprod* 2003;18:2508-11.
- 6 Cox GF, Burger J, Lip V, Mau UA, Sperling K, Wu BL, et al. Intracytoplasmic sperm injection may increase the risk of imprinting defects. *Am J Hum Genet* 2002;71:162-4.
- 7 Williams MA, Goldman MB, Mittendorf R, Monson RR. Subfertility and the risk of low birth weight. *Fertil Steril* 1991;56:668-71.
- 8 Westergaard HB, Johansen AMT, Erb K, Andersen AN. Danish National In-Vitro Fertilization Registry 1994 and 1995: a controlled study of births, malformations and cytogenetic findings. *Hum Reprod* 1999;14:1896-902.
- 9 Lambert RD. Safety issues in assisted reproductive technology: aetiology of health problems in singleton ART babies. *Hum Reprod* 2003;18:1987-91.
- 10 Zhu JL, Basso O, Obel C, Bille C, Olsen J. Infertility, infertility treatment, and congenital malformations: Danish national birth cohort. *BMJ* 2006; doi: 10.1136/bmj.38919.495718.AE.
- 11 Shah K, Sivapalan G, Gibbons N, Tempest H, Griffin DK. The genetic basis of infertility. *Reprod* 2003;126:13-25.
- 12 Sismani C, Armour JA, Flint J, Girgalli C, Regan R, Patsalis PC. *Eur J Hum Genet* 2001;9:527-32.
- 13 Jones TM, Amarose AP, Lebowitz M. Testicular chromosomal mosaicism and infertility. *J Clin Endocrinol Metab* 1976;42:888-93.

doi: 10.1136/bmj.38982.702581.BE

Criminal prosecution for HIV transmission

A threat to public health

The Crown Prosecution Service for England and Wales has issued, for public consultation, new guidance on criminal prosecution for the “sexual transmission of infections which cause grievous bodily harm.”¹ It is likely to be used mostly in relation to HIV. Although this attempt to introduce standardised criteria for prosecutions is welcome, we have serious concerns about the public health impact of using the law to criminalise disease transmission.

People infected with HIV who are taking antiretroviral treatment are able to live relatively healthy lives, but those whose infection remains undiagnosed still face serious illness and death. There has never been a stronger imperative to encourage individuals at risk to come forward for testing so they can access treatment. In the face of a rapidly rising prevalence of HIV infection, there is an equally strong imperative for preventing transmission. This includes support for those infected, helping them work out how to avoid exposing their sexual partners to infection and dealing with the challenges this may involve.

The government has made it a policy priority to increase uptake of HIV testing^{2,3} and is funding prevention programmes in England for the population groups most at risk. Services around the country offer

voluntary testing, confidential partner notification, and education and support for affected individuals and their partners. Crucially, these measures rely on a relationship of trust and confidence between patients and healthcare professionals.

The sustainability and success of this approach are threatened by the policy of criminal prosecution. While those living with HIV infection or at risk of infection have had many reasons to be fearful about the impact of HIV, the possibility of appearing in a court of law followed by imprisonment had not until recently been one of them. However, 2001 saw the first successful prosecution in Scotland for “reckless injury,” followed by some in England and Wales for “reckless transmission” of HIV, under the 1861 Offences Against the Person Act. According to the Terrence Higgins Trust, more cases are in the pipeline.

Already there are indications that this use of the criminal law is having unintended negative consequences. Awareness is spreading among those infected with HIV that they face the threat of criminal prosecution. Media coverage has vilified those convicted as “AIDS assassins,” exacerbating the stigma already associated with infection. No wonder those unlucky enough to become infected often choose to keep their status a secret.

BMJ 2006;333:666-7