



## Carrier screening for cystic fibrosis

Brian O'Sullivan and Steven Freedman (May 30, p 1891)<sup>1</sup> have written a clear description of the latest information about cystic fibrosis. They do, however, neglect to mention the availability of carrier screening in the population. This is an unfortunate oversight from two perspectives.

First, as newborn screening for cystic fibrosis has become popularised in Europe and the USA, parents have had the opportunity to access genetic counselling and testing to avoid having a second child with cystic fibrosis if they choose. In Australia, the genetic element of the diagnosis by means of the immunoreactive trypsinogen/DNA screening model is seen as an opportunity to offer testing on subsequent pregnancies. Of those who choose to have more children, 67% choose to use prenatal testing.<sup>2</sup>

Second, prospective parents do not have to wait to have their first baby with cystic fibrosis to find out whether they are carriers. Population-based carrier screening has been recommended by the American College of Medical Geneticists and the College of Obstetricians and Gynecologists.<sup>3</sup> Population-based carrier screening has been called for in several countries, including Australia, and the European CF Society is formulating a policy.<sup>4</sup> Interestingly, in Massachusetts (the region from which O'Sullivan and Freedman hail), the incidence of cystic fibrosis has been halved since the introduction of carrier screening.<sup>5</sup>

I declare that I have no conflicts of interest.

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- 1 O'Sullivan BP, Freedman SD. Cystic fibrosis. *Lancet* 2009; **373**: 1891–904.
- 2 Sawyer SM, Cerritelli B, Carter LS, Cooke M, Glazner JA, Massie J. Changing their minds with time: a comparison of hypothetical and actual reproductive behaviors in parents of children with cystic fibrosis. *Pediatrics* 2006; **118**: e649–56.

- 3 American College of Obstetricians and Gynecologists, American College of Medical Genetics. Preconception and prenatal carrier screening for cystic fibrosis: clinical and laboratory guidelines. Washington, DC: ACOG/ACMG, 2001.
- 4 Massie RJ, Delatycki MB, Bankier A. Screening couples for cystic fibrosis carrier status: why are we waiting? *Med J Aust* 2005; **183**: 501–02.
- 5 Hale JE, Parad RB, Comeau AM. Newborn screening showing decreasing incidence of cystic fibrosis. *N Engl J Med* 2008; **358**: 973–74.

### Authors' reply

We appreciate John Massie's comments. Unfortunately, space considerations limited in-depth discussion of population-wide screening for cystic fibrosis gene carrier status in our Seminar. We agree with his premise that such screening can provide prospective parents with important information about reproductive issues. In fact, genetic testing for carriage of cystic fibrosis mutations has been temporally associated with declining birth rates of people affected by cystic fibrosis in Canada and the USA,<sup>1,2</sup> implying that parents who know of their status are choosing either not to reproduce or to terminate selectively pregnancies of affected fetuses.

Massie points out that US agencies support screening for cystic fibrosis as part of prenatal testing. Unfortunately, this screening often does not occur until after a woman already knows that she is pregnant. Generalised screening of young adults before conception could be difficult to implement and will require optimisation of technical and societal resources.<sup>3</sup> Some have argued that such testing should be delayed owing to the uncertainty of detecting all potential disease-causing cystic fibrosis mutations.

Although the heterogeneity of such mutations makes population screening daunting, improvements in methods have led to refinements in mutation detection and technical quality control, thus lessening this concern.<sup>4</sup> However, in addition to identifying those at risk, a screening programme requires integration of education and counselling with the testing. This

is true for any genetic disease.<sup>5</sup> To provide such services at a population level will be costly and require large-scale public health efforts. As always, patients' confidentiality and autonomy of decision-making must be preserved.

Finally, in this era of increased longevity for patients with cystic fibrosis, and with new, disease-modifying treatments on the horizon, the potential for improved outcomes of children born with cystic fibrosis in 2009 must be considered when counselling prospective parents about preconception and postconception choices. As Isaac Asimov stated, "No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be."

We declare that we have no conflicts of interest.

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- 1 Dupuis A, Hamilton D, Cole DE, Corey M. Cystic fibrosis birth rates in Canada: a decreasing trend since the onset of genetic testing. *J Pediatr* 2005; **147**: 312–15.
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- 3 Achterbergh R, Lakeman P, Stemerding D, Moors EHM, Cornel MC. Implementation of preconceptional carrier screening for cystic fibrosis and haemoglobinopathies: a sociotechnical analysis. *Health Policy* 2007; **83**: 277–86.
- 4 Grody WW. Cystic fibrosis testing comes of age. *J Mol Diagn* 2009; **11**: 173–75.
- 5 Andermann A, Blancquaert I, Bearchamp S, Dery V. Revisiting Wilson and Jungner in the genomic age: a review of screening criteria over the past 40 years. *Bull World Health Organ* 2008; **86**: 317–19.

### Department of Error

Seedat M, Van Niekerk A, Jewkes R, Suffla S, Ratele K. Violence and injuries in South Africa: prioritising an agenda for prevention. *Lancet* 2009; **374**: 1011–1022—In the fifth report of this Series (Sept 19), the sixth sentence in panel 2 (p 1014) should have read: "Burns are the main cause of injury death in children aged 1–4 years, with high rates of hospitalisation also reported; for example, the Cape Town hospitalisation rate (158 per 100 000)<sup>51</sup> echoes the high occurrence of infant morbidity and mortality reported elsewhere.<sup>52\*</sup>"

See Series page 1011