

feasible, affordable, sustainable, and safe. When these conditions are not met, strategies to reduce the risk of transmission during breastfeeding include promotion of shorter durations of breastfeeding, exclusive breastfeeding, and attention to good breast health and breastfeeding technique.⁴

There is an urgent need for research to improve the safety of breastfeeding for infants born to HIV-1-infected women. Potential strategies include modifications to the pattern and duration of breastfeeding, antiretroviral treatment for the breastfeeding mother or prophylaxis for the infant continued through the period of breastfeeding, or combinations of these. Some of these approaches are being assessed, but links need to be made between prevention of mother-to-child transmission and care of mothers with HIV-1 infection, especially in the context of initiatives to expand access to antiretroviral treatments in developing countries. Providing effective combination antiretroviral treatment to women with HIV-1 infection, especially to the most immunosuppressed, offers several potential advantages for the prevention of mother-to-child transmission, including addressing concerns about the risk of drug resistance associated with antiretroviral prophylactic regimens⁵ and about possible increased morbidity and mortality among HIV-1-infected women who breastfeed.

WHO and UNAIDS are committed to expanding access to interventions to prevent mother-to-child transmission and to care and support for HIV-1-infected mothers and their infants and families as key elements in a comprehensive response to the HIV/AIDS epidemic.

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- 1 The Petra study team. Efficacy of three short-course regimens of zidovudine and lamivudine in preventing early and late transmission of HIV-1 from mother to child in Tanzania, South Africa, and Uganda (Petra study): a randomised, double-blind, placebo-controlled trial. *Lancet* 2002; **359**: 1178–86.
- 2 DITRAME ANRS 049 Study Group. 15-month efficacy of maternal oral zidovudine to decrease vertical transmission of HIV-1 in breastfed African children. *Lancet* 1999; **354**: 2050–51.
- 3 Owor M, Deseyve M, Duefield C, et al. The one year safety and efficacy data of the HIVNET 012 trial. 13th International AIDS Conference, Durban, South Africa, 9–14 July, 2000 (abstr LbOr1).
- 4 WHO. New data on the prevention of

mother-to-child transmission of HIV and their policy implications: conclusions and recommendations. WHO Technical Consultation on Behalf of the UNFPA/UNICEF/WHO/UNAIDS Inter-Agency Task Team on Mother-to-Child Transmission of HIV. Geneva, 11–13 October, 2000. http://www.who.int/reproductive-health/rtis/MTCT_consultation.en.html (accessed May 27, 2002).

- 5 Eshleman SH, Mracna M, Guay LA, et al. Selection and fading of resistance mutations in women and infants receiving nevirapine to prevent HIV-1 vertical transmission (HIVNET 012). *AIDS* 2001; **15**: 1951–57.

Stress and burnout in doctors

Sir—I C McManus and colleagues (June 15, p 2089)¹ describe links between burnout and stress in UK doctors. They found that high levels of personal accomplishment increased stress levels, and depersonalisation lowered stress levels.

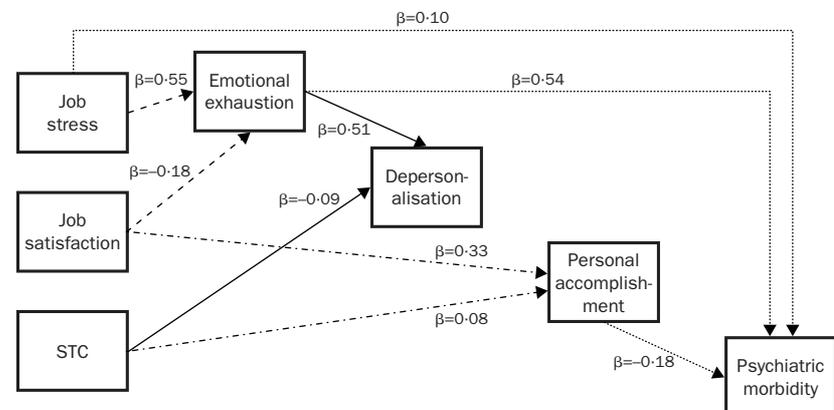
We identified entirely different associations among these factors in a study involving a national sample of 882 UK hospital consultants.² The study comprised a cross-sectional questionnaire survey in which, as with McManus and colleagues, burnout was assessed with the Maslach burnout inventory,³ and psychiatric morbidity (what McManus and colleagues describe as “stress”) with the 12-item version of the general health questionnaire.⁴ We assessed job stress as a composite score reflecting the amount of stress consultants experienced from a range of specific aspects of their role—eg, having conflicting demands on one’s time—identified through previous detailed interviews with consultants. Job satisfaction was assessed with the same approach.

We did separate linear regressions for each of the four mental health

outcomes: psychiatric morbidity and the three subscales of burnout (emotional exhaustion, depersonalisation, and personal accomplishment). For each outcome, variables to the left in the figure were included as potential predictors. Arrows indicate significant associations, with standardised β weights indicating their size and direction. We postulated that pervasive poor mental health—ie, psychiatric morbidity—occurs subsequent to job-specific poor mental health—ie, burnout. Emotional exhaustion was included as a potential predictor of personal accomplishment and depersonalisation, being conceptualised as the core element of burnout.

We found that job stress was associated with emotional exhaustion and psychiatric morbidity, providing support for an interactional model of stress,⁵ whereby perceived stress at work resulted in poor mental health. Job satisfaction protected consultants from burnout, in that it reduced the likelihood of emotional exhaustion developing, and was associated with higher personal accomplishment. Emotional exhaustion did lead to depersonalisation, but not low personal accomplishment. Burnout predicted psychiatric morbidity: emotional exhaustion increased the risk of psychiatric morbidity, whereas personal accomplishment reduced it.

McManus and colleagues suggest that their data indicate that cynicism and reducing one’s personal efficacy may protect doctors’ mental health. We found that depersonalisation (cynicism) was unrelated to psychiatric morbidity. Even if such a relation were confirmed, we challenge the interpretation that cynicism is “adaptive”, since it is likely to be harmful to relationships with patients and colleagues. Unlike McManus and colleagues, we found that increasing



Relations between job stress, job satisfaction, burnout, psychiatric morbidity, and communication skills training

STC=perceived sufficient training in communication skills.

one's personal efficacy protected consultants' mental health. Our finding that consultants who experience high levels of job satisfaction have better mental health indicates the importance of examining work-related factors. It would be prudent to test these models further with other datasets before promoting strategies for doctors that may harm patients' care.

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- 1 McManus IC, Winder BC, Gordon D. The causal links between stress and burnout in a longitudinal study of UK doctors. *Lancet* 2002; **359**: 2089–90.
- 2 Ramirez A, Graham J, Richards M, Cull A, Gregory W. Mental health of hospital consultants: the effects of stress and satisfaction at work. *Lancet* 1996; **347**: 724–28.
- 3 Maslach C, Jackson S, Leiter M. Maslach burnout inventory manual, 3rd edn. Palo Alto, CA: Consulting Psychologists' Press, 1996.
- 4 Goldberg D, Williams P. A user's guide to the General Health Questionnaire. Berkshire: NFER-Nelson Publishing, 1988.
- 5 Cooper C. Identifying stressors at work: recent research developments. *J Psychosomatic Res* 1983; **27**: 369–76.

Author's reply

Sir—Jill Graham and colleagues' data, far from being entirely different from our own, are actually gratifyingly similar. Multiple regression of our first-wave data shows that scores on the general health questionnaire are significantly associated with high emotional exhaustion ($\beta=0.51$, *vs* 0.54 in Graham and colleagues' data) and low personal accomplishment (-0.17 *vs* -0.18 , respectively), and there is no association with depersonalisation (0.047 *vs* not significant, respectively). We therefore predict that structural equation modelling of Graham and colleagues' longitudinal study will also replicate our causal model.

Although we agree that cross-sectional data show a correlation between high personal accomplishment and lower stress, we disagree with Graham and colleagues' interpretation. When using phrases such as “job satisfaction protected . . . from burnout”, “burnout predicted psychiatric morbidity”, “personal accomplishment reduced [psychiatric morbidity]”, or “increasing . . . personal efficacy protected . . . mental health”, they are talking of correlation and not causation. Such terminology is acceptable shorthand but must not be confused with proper prediction in the sense of earlier events telling about

later events. All cross-sectional studies have troubles disentangling correlation from causation unless strong assumptions can be justified.¹ Longitudinal studies such as ours have many fewer such problems.^{2,3}

It might seem a paradox that cross-sectional analysis finds high personal accomplishment is correlated with lower levels of stress, whereas longitudinal analysis finds high personal accomplishment predicts higher levels of stress. There is however no contradiction. Estimates of causal parameters across time need be similar neither in sign nor size to cross-sectional correlations. Consider the simple physical situation of lighting a number of similar fires with the wind blowing on some and not on others. At time 1, soon after the fires are lit, the oxygen makes some burn more brightly, producing a positive correlation between brightness and wind strength. Several hours later, at time 2, many fires have blown out or burned out because of the wind, producing a negative correlation between wind strength at time 1 and brightness at time 2. Metaphorically, the oxygen of high personal accomplishment may seem initially to protect against stress, but just as the fire runs out of fuel, so stress and burnout result when mental resources are consumed. To burn out one has firstly to have burned brightly, and high personal accomplishment makes the fire both burn and burn out.

Graham and colleagues question our use of the word “adaptive”. We agree that cynicism and reduced personal efficacy are damaging and maladaptive in the sense that they are “likely to be harmful to relationships with patients and colleagues”. Behaviours can, however, be adaptive in the short-term to the individual, despite being harmful or destructive in the long-term to the person or to society; one has only to think of the immediate gains driving many addictions, or to socially deleterious, non-zero sum games such as the tragedy of the commons, which are adaptive to individuals in the short-term. In that sense, cynicism is adaptive.

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- 1 Davis JA. The logic of causal order. London: Sage, 1985.
- 2 Kenny DA. Correlation and causality. New York: John Wiley, 1979.
- 3 Pearl J. Causality: models, reasoning, and inference. Cambridge: Cambridge University Press, 2000.

Performance-based partnership agreements in Afghanistan

Sir—Within the framework aiming to reconstruct the health system in Afghanistan, a joint mission of donors has proposed the implementation of performance-based partnership agreements (PPA) connecting private sector and the government. On the basis of the premise that publicly provided health services are generally ineffective, inefficient, and inequitable,¹ the donors propose that non-governmental and for-profit organisations deliver services. A competitive bidding process will be organised and PPAs will be signed, for which the financing will be per person and a supplementary amount for accessibility will be given for contracts in underserved areas. Several issues must be raised before engaging in an irreversible process.

A health system is an integral structure and it seems to us that even if the PPA process brings effectiveness in the delivery of services, the Afghan health system will still not perform while the other functions (financing, stewardship, and generation of resources²) are not effective.

The vision of the Afghan State in the report is that it is currently ineffective—ie, non-government actors have to deliver services.³ The Afghan government, which has never existed really, is thus killed before it is even born. There is still no consensus on whether services are better provided by private-sector or public-sector organisations. The case of China shows how much limitation of the role of the State can strikingly affect the efficiency and equity of the health system.⁴ Furthermore, the report seems to announce that the organisation of PPAs is a prelude to privatisation, of which we know consequences for equity.

All the health reforms of the past decade in developing countries focused on efficiency and not on equity. Will Afghanistan be the same? To want to assign resources per person will not resolve the issue of access, and this method goes totally against equity. Nevertheless, the Ministry of Public Health clarified that it wishes to reduce the inequalities of health-care access.⁵

In the description of the stages of the PPA process, we must wait for the last evaluation for communities to be able to express themselves. It translates the process vision which prevails in this report—expert's vision and cost-efficiency.