

health-care workers, existing patients, and visitors in Saudi Arabia^{7,8} and several other countries in the past few years.^{5,9,10} Common risk factors include exposure to contaminated and overcrowded health-care facilities, poor compliance with appropriate personal protection equipment when assessing patients with febrile respiratory illness, application of potential aerosol-generating procedures (eg, resuscitation, continuous positive airway pressure, nebulised drugs), and lack of proper isolation room facilities.^{5,7-10} The customs of patients seeking care at different health-care facilities (so-called doctor shopping), as in the cases of Patients 1 and 14, and having friends and family members to stay with patients as caregivers at already overcrowded health-care facilities are unique factors in South Korea.¹¹

Although no aerosol-generating procedures were performed (with the exception of Patient 14 receiving supplemental oxygen at 2–5 L per min during his stay at the emergency room),⁵ the role of such procedures, environmental contamination, and asymptomatic carriers in disease transmission would require further investigation in future major nosocomial outbreaks of MERS-CoV infection. Good compliance with appropriate personal protection equipment by health-care workers when managing patients with suspected and confirmed MERS-CoV infection, early diagnosis, prompt isolation of infected patients, and improvement of ventilation in health-care facilities are important measures to prevent nosocomial outbreaks.¹²

David S Hui

Department of Medicine and Therapeutics and Stanley Ho Center for Emerging Infectious Diseases, The Chinese University of Hong Kong, Hong Kong Special Administrative Region, China
dschui@cuhk.edu.hk

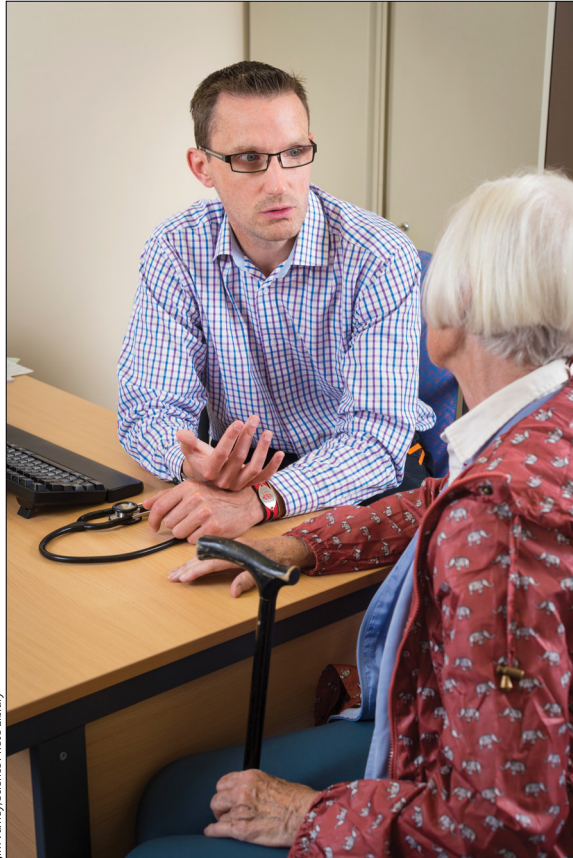
I was a member of the joint WHO–Republic of Korea Urgent Mission for the investigation of the outbreak of the Middle East respiratory syndrome in South Korea. I declare no other competing interests.

- 1 Zaki AM, van Boheemen S, Bestebroer TM, et al. Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *N Engl J Med* 2012; **367**: 1814–20.
- 2 WHO. Middle East respiratory syndrome coronavirus (MERS-CoV)—Republic of Korea. Disease outbreak news 24 May 2015. <http://www.who.int/csr/don/24-may-2015-mers-korea/en> (accessed June 13, 2016).
- 3 Korea Centers for Disease Control and Prevention. Middle East respiratory syndrome coronavirus outbreak in the Republic of Korea, 2015. *Osong Public Health Res Perspect* 2015; **6**: 269–78.
- 4 Kim KM, Ki M, Cho SJ, et al. Epidemiologic features of the first MERS outbreak in Korea: focus on Pyeongtaek St. Mary's Hospital. *Epidemiol Health* 2015; **37**: e2015041.
- 5 Cho SY, Kang J-M, Ha YE, et al. MERS-CoV outbreak following a single patient exposure in an emergency room in South Korea: an epidemiological outbreak study. *Lancet* 2016; published online July 8. [http://dx.doi.org/10.1016/S0140-6736\(16\)30623-7](http://dx.doi.org/10.1016/S0140-6736(16)30623-7).
- 6 WHO. WHO Guidelines. Natural ventilation for infection control in health-care settings. Geneva: World Health Organization, 2009. http://whqlibdoc.who.int/publications/2009/9789241547857_eng.pdf (accessed June 28, 2016).
- 7 Assiri A, McGeer A, Perl TM, et al. Hospital outbreak of Middle East respiratory syndrome coronavirus. *N Engl J Med* 2013; **369**: 407–16.
- 8 Oboho IK, Tomczyk SM, Al-Asmari AM, et al. 2014 MERS-CoV outbreak in Jeddah—a link to health care facilities. *N Engl J Med* 2015; **372**: 846–54.
- 9 Hijawi B, Abdallah M, Sayaydeh A, et al. Novel coronavirus infections in Jordan, April 2012: epidemiological findings from a retrospective investigation. *East Mediterr Health J* 2013; **19** (suppl 1): S12–18.
- 10 Hunter JC, Nguyen D, Aden B, et al. Transmission of Middle East respiratory syndrome coronavirus infections in healthcare settings, Abu Dhabi. *Emerg Infect Dis* 2016; **22**: 647–56.
- 11 WHO. WHO recommends continuation of strong disease control measures to bring MERS-CoV outbreak in Republic of Korea to an end. News release. June 13, 2013. <http://www.wpro.who.int/mediacentre/releases/2015/20150613/en> (accessed June 14, 2015).
- 12 Zumla A, Hui DS. Infection control and MERS-CoV in health-care workers. *Lancet* 2014; **383**: 1869–71.

Why do people not take life-saving medications? The case of statins

Several clinical trials have shown that statins reduce myocardial infarction, strokes, revascularisation procedures, and deaths from cardiovascular causes,¹ with only a small excess in muscle pain or weakness.² On the basis of a retrospective analysis of a database, Zhang and colleagues³ reported that about 20% of individuals taking a statin stopped because of suspected side-effects. Of these, 35% restarted statin treatment and more than 90% tolerated statins,³ indicating that the reasons for stopping medications were unrelated to statins in most cases. This key point

was omitted by two publications,^{4,5} which stated that 20% of patients on statins had side-effects, and this finding was widely reported in the UK media. Studies without a randomised blinded comparator group cannot distinguish between symptoms that individuals naturally have versus those caused by the medication. Matthews and colleagues⁶ investigated the impact of this media coverage on use of statins in UK primary care. They found that after the intense media coverage of the two papers,^{4,5} discontinuation of statins increased immediately for primary and



Jim Varney/Science Photo Library

secondary prevention of cardiovascular disease in UK primary care.⁶ This increase was temporary, and cessation of statins had returned to expected levels after 6 months. Among patients who were newly eligible to receive statins, there was no change in patients' likelihood of starting treatment. But there was a decrease in the proportion of patients who had any cardiovascular disease risk score recorded after the media coverage, and so a smaller pool of patients who met criteria for starting statin treatment for primary prevention. Similar findings have been reported from Denmark,⁷ France,⁸ Turkey,⁹ and Australia.¹⁰ Matthews and colleagues⁶ estimated that as a result of the media coverage about 219 000 individuals might have discontinued statins in the UK, which might have led to an excess of between 2200 (if two-thirds restarted statins) and 6400 (if nobody who stopped restarted statins) cases of avoidable cardiovascular disease.

The media usually prefer a good news story that sensationalises rather than one that does not. This is true for positive news ("breakthroughs") and negative news ("scares"). For example, in a publication¹¹ based

on observational data it was reported that the use of statins was associated with halving the risk of cancers—a finding that was widely reported in the media. But this finding has not been replicated in randomised trials.¹⁰ Journalists often base their stories on press releases issued by the authors' institutions or the journal in which the article is published, and they might not read the original article—placing responsibility on authors not to exaggerate their results, to appropriately reflect the weaknesses of their studies, and to avoid misrepresentations in their articles and press releases. Spin in press releases can exaggerate the importance of findings (eg, by extrapolating from surrogate outcomes to projected effect on clinical outcomes, or sometimes even from laboratory studies to effects in people) or minimise adverse effects. The public appears to depend as much on news reports as on discussions with their doctors for health information. Communication of health research findings in a balanced way places special responsibilities on authors, those who write press releases, scientific journals, and journalists. Editors of scientific journals are expected to be knowledgeable about the validity of the scientific methods used in papers and so are an appropriate filter. They should avoid publishing articles that make unjustifiable, misleading claims, or use questionable methods, even when the results are striking.

The recent Picker report on perceptions of statins,¹² commissioned by the British Heart Foundation, casts light on this issue. The report is based on 30 in-depth interviews with patients, three focus groups with general practitioners, and one focus group with cardiologists, followed by online surveys of 1000 patients, 625 general practitioners, and 145 cardiologists. This report noted that unfavourable news reports led about 5% of patients to discontinue statins, of whom nearly a third were at high risk of cardiovascular disease. Confidence in their general practitioners and fear of cardiovascular disease increased the willingness to adhere to statins, although concerns about side-effects and cynicism about the health-care profession, pharmaceutical industry, and medications were found to be associated with poor adherence. Almost all doctors surveyed (98%) believed that adverse media coverage of statins influenced patients who questioned their advice or declined a

prescription. Most doctors (75%) indicated increased reticence to discuss or prescribe statins, especially for primary prevention as a large proportion of patients (21–60%) questioned their advice.

Although lifestyle changes are preferred by many as initial steps for prevention of cardiovascular disease, the effect of simple advice during consultations to promote healthy lifestyles (other than a moderate effect on smoking cessation) is disappointing. Therefore, although efforts to improve lifestyles should be encouraged, they should not delay initiating statins in appropriate individuals because the two approaches are complementary and can have added benefits. Persuading physicians and their patients that even a proven and safe medication such as statins should be used lifelong for prevention of cardiovascular disease is difficult and time consuming, especially in primary prevention, in a busy general practice. It is essential that respected authorities provide evidence-based responses to erroneous claims about statins to balance any inaccurate media reports. Equally important are discussions between patients and their physicians about their risks of cardiovascular disease, the balance of potential benefits (especially over a lifetime), and adverse effects (uncommon and reversible) of taking statins or other effective preventive measures, so that joint decisions are made.

Given the benefits and infrequent adverse effects, steps to encourage wider statin use for higher-risk primary and secondary prevention as recommended by the National Institute for Health and Care Excellence guidelines¹³ (ie, in those with a 10% risk of cardiovascular disease over 10 years) are appropriate. The public health challenge is not overuse of statins, but their underuse even in high-risk populations.¹⁴ Concerns about over-medicalising the prevention of cardiovascular diseases are not supported by available data in view of the substantial shortfalls in the use of proven secondary prevention medications. Long-term adherence to statins can be improved by overcoming misperceptions, by balanced reports in the media, and

through close communication and shared decision making between patients and doctors.

Salim Yusuf

Population Health Research Institute, McMaster University and Hamilton Health Sciences, Hamilton, ON L8N 3Z5, Canada
yusufs@mcmaster.ca

SY is principal investigator of several trials of interventions in the prevention and treatment of cardiovascular disease, including the recent HOPE-3 study which evaluated statins and blood pressure lowering, and was funded by the Canadian Institutes of Health Research and AstraZeneca. The trial was designed, conducted, analysed, and reported by the independent Steering Committee and investigators at the Population Health Research Institute. SY holds the Marion W Burke Chair in Cardiovascular Disease of the Heart and Stroke Foundation of Canada.

- 1 Cholesterol Treatment Trialists' (CTT) Collaborators. The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: meta-analysis of individual data from 27 randomised trials. *Lancet* 2012; **380**: 581–90.
- 2 Armitage J. The safety of statins in clinical practice. *Lancet* 2007; **370**: 1781–90.
- 3 Zhang H, Plutzky J, Skentzos S, et al. Discontinuation of statins in routine care settings: a cohort study. *Ann Intern Med* 2013; **158**: 526–34.
- 4 Abramson JD, Rosenberg HG, Jewell N, et al. Should people at low risk of cardiovascular disease take a statin? *BMJ* 2013; **347**: f6123.
- 5 Malhotra A. Saturated fat is not the major issue. *BMJ* 2013; **347**: f6340.
- 6 Matthews A, Herrett E, Gasparrini A, et al. Impact of statin related media coverage on use of statins: interrupted time series analysis with UK primary care data. *BMJ* 2016; **353**: i3283.
- 7 Nielsen SF, Nordestgaard BG. Negative statin-related news stories decrease statin persistence and increase myocardial infarction and cardiovascular mortality: a nationwide prospective cohort study. *Eur Heart J* 2016; **37**: 908–16.
- 8 Saib A, Sabbah L, Perdrix L, Blanchard D, Danchin N, Puymirat E. Evaluation of the impact of the recent controversy over statins in France: the EVANS study. *Arch Cardiovasc Dis* 2013; **106**: 511–16.
- 9 Kocas C, Abaci O, Kocas BB, et al. The role of media on statin adherence. *Int J Cardiol* 2015; **201**: 139.
- 10 Schaffer AL, Buckley NA, Dobbins TA, Banks E, Pearson SA. The crux of the matter: did the ABC's Catalyst program change statin use in Australia. *Med J Aust* 2015; **202**: 591–95.
- 11 Nielsen SF, Nordestgaard BG, Bojesen SE. Statin use and reduced cancer-related mortality. *N Engl J Med* 2012; **367**: 1792–802.
- 12 Bohan H, van Doorn T, Witwicki C, Coulter A. Perceptions of statins: research with patients, GPs and cardiologists. Oxford: Picker Institute Europe, 2016.
- 13 National Institute for Health and Care Excellence. Cardiovascular disease: risk assessment and reduction, including lipid modification. 1 Recommendations. London: National Institute for Health and Care Excellence, 2014. <https://www.nice.org.uk/guidance/CG181/chapter/1-recommendations> (accessed Aug 1, 2016).
- 14 Yusuf S, Islam S, Chow CK, et al. Use of secondary prevention drugs for cardiovascular disease in the community in high-income, middle-income, and low-income countries (the PURE Study): a prospective epidemiological survey. *Lancet* 2011; **378**: 1231–43.