

## Letter from Glasgow

### METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* SCREENING IN SCOTLAND

Communicable diseases remain a serious threat to populations throughout the world and public health recognizes the threat they pose not just to industrial (and post-industrial) societies but also to countries that are still developing industrially. The challenges are different for different countries and this letter deals with healthcare-acquired infections (HAI) and, in particular, methicillin-resistant *Staphylococcus aureus* (MRSA).

MRSA infection is a problem for NHS Scotland. Scottish hospitals have periodic outbreaks of MRSA infection, the most recent one being in Glasgow.<sup>1</sup> The mass media often portrays MRSA as a 'killer bug' or 'super bug' which is 'rampant' in Scottish hospitals. A survey in Scotland, the NHS Scotland National HAI Prevalence Survey published in July 2007, highlighted the problem of HAI including MRSA.<sup>2</sup> It is worth noting that HAI is defined as an infection not present at the time the patient's healthcare begins but which arises afterwards.

The report was published by Health Protection Scotland (Scotland's agency which deals with communicable disease and environmental health) and involved 13 754 inpatients from October 2005 to October 2006. The overall prevalence of HAI was 9.5% (95% CI: 8.8–10.2) with the highest prevalence being found in the specialties of:

- Care of the elderly (11.9%)
- Surgery (11.2%)
- Medicine (9.6%), and
- Orthopaedics (9.2%).

The lowest prevalence was in obstetrics (0.9%). The most common types of HAI were urinary tract infection (17.9%), surgical site infection (15.9%) and gastrointestinal infections (15.4%). The most frequently occurring organisms were *Staphylococcus aureus* (141 cases, of which MRSA was present in 93 cases), and *Clostridium difficile* (95 cases). The management of *Clostridium difficile* is an issue in itself but perhaps that can await another letter.

Due to the problem that MRSA poses in Scotland, the organization for which I work (NHS Quality Improvement Scotland or NHS QIS) was asked by the Scottish Executive (now Scottish Government) HAI Task Force to undertake a health technology assessment (HTA) on the clinical- and cost-effectiveness of screening patients admitted to hospital for MRSA. The report was published in September 2007<sup>3</sup> and looks not just at the clinical- and cost-effectiveness of MRSA screening but also organizational issues, i.e. what does the health service need to do if screening is to be implemented, and patient issues, i.e. what are the perspectives of patients and their carers on MRSA screening. Essentially, the study has attempted to answer the question: 'Which strategy for screening for MRSA colonization of patients admitted to Scottish hospitals is most clinically and cost-effective?'

*Staphylococcus aureus* is a common bacterium and is carried by about 30% of the healthy population in the UK. If *Staphylococcus aureus* enters the body then it can cause a spectrum of infection from the trivial to potentially life-threatening. Due to the development of resistance of *Staphylococcus aureus* to the antibiotics used against infections caused by it, MRSA appeared

in 1961 and since the 1990s MRSA has become endemic in healthcare facilities. One method of controlling the spread of MRSA is to identify colonized (those carrying the organism) or infected patients and then to manage them to reduce the risk of MRSA transmission to others.

In Scotland, a variety of methods of identifying and managing patients with MRSA have been used to date. A survey of practice in Scotland (as part of the HTA) showed that 60% of hospital infection control units reported carrying out some assessment of MRSA colonization risk at the time of admission to hospitals. A few services reported screening all non-emergency patients or all patients admitted to orthopaedics or cardiac surgery.

The details of the study are in the report but suffice it to say that the systematic review and the economic modelling undertaken have taken forward the issue for Scotland. So what does the HTA conclude and recommend? The conclusions include:

- There was a lack of robust data to populate the economic model and the model used is, by definition, a simplified representation of what happens in real hospitals and wards. However, the modelling indicates that screening of patients would reduce the prevalence of MRSA.
- At present, chromogenic agar testing is the most clinically and cost-effective method of screening.
- Being identified as MRSA-positive has implications for patients such as being nursed in isolation and so the consequences of this need to be addressed by health professionals.

The recommendations are as follows:

- On the basis of the lack of robust evidence to inform the economic model, it has been recommended that a primary (pilot) study be set up on a regional basis to test whether the benefits predicted by the economic modelling can be realized in real life. A key aspect of testing the recommendation in real life is to understand how the flow of emergency and non-emergency patients admitted to hospital will work.
- There is insufficient evidence at present to change the UK policy regarding staff screening, i.e. to undertake staff screening only in unexplained MRSA outbreaks.
- There need to be systems to collect patient-based data on MRSA colonization and infection.
- Patients and their relatives need good quality information on MRSA, screening and reasons for infection control procedures so that they understand what is happening and why.

The eagle-eyed (and not so eagle-eyed) among the readers will note the caveats around the conclusions and recommendations. Clearly the information and data underlying the work on MRSA screening is not as robust and as reliable as we would like because the primary studies are methodologically weak or because the studies simply do not exist. But as a public health physician I would argue that we do not always have all the evidence (nor evidence in the form we would like) before we need to act. As an author of the HTA report I would argue that we have gone as far as the evidence allows us to.

What happens now here in Scotland? Nicola Sturgeon, the new Scottish Government Cabinet Secretary for Health and Wellbeing, has indicated her support for MRSA screening of patients admitted

to hospital. Consequently, there will be monies set aside for the primary study to be undertaken in Scotland and planning for the primary study has now started. That change is happening as a direct result of the HTA report is heartening. This will help us understand the issue of MRSA screening for patients in Scotland much better and holds out the hope of dealing with this form of HAI.

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## Letter from North America

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### eHEALTH AND pHEALTH: NEXT WAVE OF DISRUPTIVE TECHNOLOGY?

Electronic kiosks where patients register with a swipe of a 'smart card'. Hospital ID bracelets with scannable bar codes. Computerized bedside monitors which allow test results and treatment data to be recorded on the spot. Prescriptions electronically packaged and delivered by 'drug robots'. Individual patient drugs distributed by MedCOWS (Computer on Wheels). Informed patients who use laptops to enter personal health information and obtain their laboratory test results at the same time as their physicians.

These are but a few examples of the present and future world of healthcare information technology (IT). We and our colleagues barely recall a time when computers were mysterious devices, relegated to climate-controlled back rooms and understood only by a handful of 'techies'. Twenty years from now, none of us may remember a healthcare world devoid of PCs, handhelds and other electronic assistants. This new wave of disruptive technology is challenging traditional assumptions made by existing healthcare providers and manufacturers.

In the late 1990s, industries such as telecommunications and merchandising invested heavily in IT. At the time, critics argued that no new products would be generated from this investment, and that merely redistributing a delivery model could not improve quality or services and may add extra financial burdens. Within a decade, the critics mellowed out. Consumers clearly recognized the fruits of this investment and quickly became savvy about the internet highway, which led them to a multitude of new purchasing options including online shopping, traveller reservation systems and e-brokerages.

Google and Microsoft, IT companies that profited from the information revolution soon recognized that many internet searches are related to health. These corporations are now actively competing to build a presence in the healthcare sector. The Electronic Health Record (EHR) is a major example of the eHealth revolution. An EHR is an individualized personal health record that is accessible online from many separate but integrated, completely wireless IT systems. Critics argue that EHRs will allow sensitive personal health information to be made public, resulting in loss of

confidentiality. They fear that data monitoring systems will 'crash', resulting in vast losses of crucial information. On the other hand, EHR proponents point to existing secure databases and their many and varied advantages. Just one example: following a car accident, police can access victim's demographic and personal data within few minutes whereas health personnel have no such access. In future, paramedics and emergency room personnel could quickly access EHRs and use the eHealth data they contain to determine crash victims' pre-existing health conditions, medication allergies, and other potentially life-saving information.

Another new and fast growing trend known as personalized healthcare (pHealth) has also arisen during the past few years. pHealth has made it feasible for a person to locate information on the internet to develop personalized prevention, treatment and wellness programmes. Restructuring vast quantities of information for individualized use is a complex process, but IT companies have shown that they are up to the challenge. Google, for instance, has invested in the genetic profiling company 23andMe, whose slogan is 'genetics just got personal'. Starting this month, for US\$ 1000 and a bit of spit, 23andMe customers can learn what is known about how their complex biological code shapes, who they are, and how they can predict vulnerabilities to diseases. Microsoft has acquired Medstory, whose motto is 'information that matters', and whose goal is to provide consumers with easily accessible data about virtually any health-related topic. These are but two examples of emerging business trends in new eHealth and pHealth options.

The concept of patient empowerment emerged in the 1970s in the USA and Europe in the context of the civil rights movement. Patients and their organizations demanded a right to self-determination over decisions affecting their health. In addition to political pressure for giving consumers and patients more rights, there were also factors in the healthcare sector itself, driving the move to eHealth and pHealth. Of course, the financing of healthcare is a prime example. In 2005, US national spending on healthcare totalled nearly US\$ 1.9 trillion, 14.9% of the nation's GDP (4.9% in 1960). A recent congressional budget office estimate projected this spending to increase to 25% of GDP in 2025, and 49% in

2082. As US consumers are being forced to shoulder an ever-growing share of their healthcare costs, it has been suggested that by exposing the healthcare industry to increased consumer pressure, market forces will hopefully expand options for improved care at less cost. A federal government study estimates that the adoption of interoperable electronic medical records systems could produce efficiency and safety savings of US\$ 142–371 billion. Proponents of EHRs also contend that IT will lead to major benefits such as streamlining activities, redesigning work flow, standardizing policies across hospitals, reduce the time spent in documentation by healthcare personnel, and at the same time provide more data for monitoring and analysis of individual physician and hospital practices.

Despite these trends, the USA trails a number of other countries in the use of eHealth and pHealth. It is estimated that only 15%–20% of US physicians' offices and 20%–25% of hospitals have adopted EHRs. Persistent barriers include high costs, lack of certification and standardization, concerns about privacy, and a disconnect between who pays for IT systems and who profits from them. In contrast, total IT spending by the UK's National Health Service is set to hit £2.9 billion over the coming year. Other European and Scandinavian countries are also ahead of the USA in implementing IT strategies.

Has IT become relevant to healthcare in India? Highly relevant, it turns out. Top IT leaders at Bear Stearns' 20th Annual Healthcare Conference in New York unanimously projected India, with its

massive and largely computer-literate younger generation, as the next Asian healthcare hub. The anticipated growth rate of the Indian healthcare market has been pegged at 22% annually, reaching US\$3 billion (Rs 12 000 crore) by 2010. A higher demand for quality services, increased healthcare spending, closer linkage of health with quality of life, availability of advanced diagnostic and treatment options, and greater access to healthcare insurance are some of the factors expected to drive eHealth and pHealth growth. In turn, Indian IT and related industries are expected to benefit. In addition to the huge investments announced recently by the federal government and private hospitals, corporations such as Reliance Industries Limited (RIL) plan enormous healthcare investments to the tune of Rs 25 000 crore over 7–8 years.

Proponents also note that IT in India could coordinate activities at primary healthcare clinics and enhance prevention and treatment programmes which strive to reduce disproportionate rates of child mortality, tuberculosis, leprosy, and a host of other illnesses. Whatever the future may hold, healthcare will not be the same in the US and in India, with the emergence of enhanced consumer choices and empowerment facilitated by the internet revolution.

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## Letter from Chennai

### WHOSE HEAD IS IT ANYWAY?

We have had rules introduced by the Government of Tamil Nadu from time to time, insisting that riders of two wheelers in the larger cities of the state should wear crash helmets. Enforcement has always been lax. The last time around was in 2002, when the government, after considerable pressure from some quarters, said the law would be enforced strictly. Many riders of two-wheelers object that it is uncomfortable in our hot weather, that helmets have to be carried around or they will be stolen, and that each rider may have different pillion riders at different times, and it is unpleasant to have to share a crash helmet in sweaty weather. Women riders, and some men too, did not like the way in which the helmet messed up their hair style. The theft aspect has been taken care of by modifications of the helmet and the luggage rack on the motorcycle, so that the helmet can be locked on the bike and need not be carried around. Unfortunately, there is no way to keep one's head cool in a Chennai summer, though a comb is a sufficiently portable device to keep in your pocket or handbag and refresh your hair style.

Further, it was contended that helmets reduced the hearing and the field of vision of the rider, putting him or her at greater risk of accidents.

Other objections covered a wider field. Accidents are due to bad roads and bad driving by lorry and bus drivers, said a few, forgetting that no individual can change the corruption of the Corporation or the inability of our ineffective police force to

enforce the rules of the road. And whatever the culpability of others in the accident, the two-wheeler rider is the one whose head is cracked.

Another objection was still more basic. We are a democracy, said one, and if the majority of people do not wish to wear helmets, the government should not enforce the rule. That is an interesting thought. The majority of people in this country do not wish to pay taxes, though we want all the services that are paid for out of our taxes. Being a democracy, surely we should abolish all taxes.

Whatever the arguments, a deputation of two-wheeler riders went to the Chief Minister and requested him to withdraw the helmet rule, and he obliged them. Helmets disappeared from our roads.

On 24 May 2007, a single judge of the Madras High Court decreed that, on the basis of Section 129 of the Motor Vehicles Act of 1988, there was a statutory requirement for riders of two wheelers to wear helmets. Exemption was granted only to Sikhs. After this judgment, the government was forced to declare that, with effect from 1 June 2007, all two-wheeler riders would have to wear crash helmets. There was a mad rush to buy helmets, as it seemed the government was serious this time. On day 1, almost 90% of riders wore crash helmets, and the police had a field day booking many of those who did not wear them. In Coimbatore, 350 riders were booked in a single day and, for good measure, 250 motorists for not wearing seat belts. However, on day 2, our Chief Minister instructed the police, in a very public statement, that they should not 'harass'

people who did not obey this rule. He did not define the word harass and, since all the police were doing was to levy fines, they immediately construed it to mean that the Chief Minister thought that itself was harassment and stopped doing so. With that, helmets disappeared from Chennai's streets. As if to underline the stupidity of the authorities, a two-wheeler accident took place. The rider was wearing a helmet, and escaped with minor injuries. His pillion rider was not, and he had a fractured skull.

I am no authority on the merits or demerits of wearing helmets, but I would like to point out two facts. First, a Pubmed search using the terms 'helmet' and 'motorcycle' yielded 205 hits. I looked at random at 30 of them, and found all without exception indicated a reduction in mortality with the use of helmets, or an increase in mortality from head injuries where helmet laws had been relaxed. There is a demand among some people in the USA to annul helmet laws on the grounds that they infringe individual liberties. Some States have relaxed the law to allow people above the age of 21, who had health insurance coverage for US\$ 10 000, discretion on whether to wear a helmet or not. The relaxation provided material for many studies, which showed increased mortality among those riding without helmets. Second, Dr B. Ramamurthi, one of the pioneer neurosurgeons of India, and a man with phenomenal knowledge and experience, was a crusader for the use of crash helmets. I reproduce here one of many letters he wrote, this one to the editor of a local news magazine, *Frontline*, on 6 November 1999:

'For nearly 50 years, I have shed tears for the young, bright persons who became vegetables after suffering brain injury in accidents involving two-wheelers. Young widows with children evoke our sympathy, but it is more distressful to see young women struggling to support brain-damaged husbands and young children. Similar is the plight of elderly parents who are left with a son or a daughter who has suffered brain injury in a two-wheeler accident.

I invite the members of the public to visit with me the hospital wards in Tamil Nadu to see parents and young wives weeping for their sons and husbands. This will convince them not to worry about minor inconveniences caused by the wearing of helmets. People avoid wearing helmets on the ground that their hair style would be disturbed. But only if there is a head can there be hair or a hairstyle. If hair really falls off owing to the use of helmets, most of the bike-riders in the West, Japan and South-East Asia and even New Delhi would be bald by now.

Some people say that it is difficult to wear helmets in hot weather. This is true but people in Delhi, West Asia and many places in South-East Asia, which are hotter than Chennai, for instance, wear helmets for safety. The headache that a helmet causes is temporary and certainly less intense than the pain resulting from fractures of the skull or brain injury.

Nobody denies that carrying a helmet and keeping it safe are inconveniences. But if you had shed one thousandth of the tears I have shed for my patients and their wives and parents, you will immediately demand that wearing crash helmets be made compulsory for two-wheeler riders.

Dr B. RAMAMURTHI  
*Neurosurgeon  
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Drive down the roads of Chennai today, and the helmet is a rarity once more.

#### KIDNEY BUSINESS AS USUAL

Stating that genuine patients were put to hardship by the strict enforcement of the transplant rules, and the withdrawal of the

licence of many hospitals to do renal transplants, the government decided that the infractions committed by these hospitals were only minor and technical, and restored the status quo. Kidney transplanters are back in business. The proceedings of the Authorization Committee are now 'more transparent' and are put up on the website. Sixty-five unrelated donor transplants had been permitted till the end of July. I visited the website to see the reasons why the committee had permitted these transplants. You will remember that the only legal grounds for doing unrelated live donor renal transplantation is by virtue of affection of the donor for the recipient, and not love of his money. The website is open only to the extent of mentioning the name of the hospital, the name of the recipient and the donor, and, if permission was refused, the reason for refusal. These vary from 'conflicting statements' to 'the donor being unaware of the consequences'. Did 65 people donate their organs for love of the recipient? Any other reason would be illegal. How did the committee determine that these 65 people did not accept money for their donation? The website is silent on that point.

All this demonstrates is that the government is not serious about enforcing any of the laws it enacts. Not the wearing of crash helmets, not the prohibition of commercial dealings in transplantation, not the enforcement of the use of meters by auto-rickshaws. Can you imagine any other so-called metropolis where you have an authorized public transport sporting a meter, in which the passenger has to bargain with the driver about the fare he will pay to be transported to his destination? When our laws are not enforced, it is as good as not having a law at all. Are we a civilized people?

#### THE CRADLE BABY SCHEME

One other illegal, worse, criminal action that governments all over the country have been unable to prevent is the large scale murder of female infants. In 2002, the Government of Tamil Nadu introduced a scheme to prevent this murder by persuasion if not by enforcement. Cradles were placed outside government hospitals, and girl babies could be deposited there. No questions were asked, and the children were sent to orphanages and brought up there. In a few instances, parents openly brought the children over. They were counselled, and some of them changed their minds and took the children back. The Dharmapuri Government Hospital reported recently that it had received 955 babies since the scheme started. Thirty-nine were boys; 50 of the children were taken back by their parents. Despite this way out, many parents still resort to infanticide, and between 35 and 70 cases are reported every year. In neighbouring Salem district, the female-to-male birth ratio was 850 females to every 1000 males in the year 2000. Later studies are not available for the district as a whole, but studies from different primary health centres (PHCs) and villages show depressing ratios of between 706 and 901. Perhaps the cradle baby scheme needs more publicity in rural areas.

#### HOPE FOR TAMIL HEADS

There is hope for Tamil heads yet. On 7 August 2007, the Madras High Court sent a notice to the Government of Tamil Nadu asking why it had not implemented the GO of 22 February 2007, according to which it was mandatory for all riders and passengers of motorized two-wheelers in 6 cities of the state (including Chennai) to wear helmets after 1 June 2007. The government was given a week to submit its reply.

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