MRSA—a European currency of infection control

During the last three decades, many articles have been published describing and debating the epidemiology of methicillin-resistant *Staphylococcus aureus* (MRSA). This work was stimulated by the ongoing impact of infections caused by MRSA and the difficulties in preventing or treating them. Nevertheless, uncertainties regarding the transmission and control of MRSA remain. For instance, new epidemic strains of multiresistant *S. aureus* have continued to emerge and decline for unknown reasons in different places since 1961. It remains unclear why some European countries such as the UK are affected by the rising occurrence of epidemic invasive strains of MRSA, whereas countries like Denmark have nearly abolished their MRSA problem. Moreover, some local MRSA outbreaks have disappeared without any particular control efforts or antibiotic restriction, while others institutions report MRSA propagation or reappearance despite various attempts to contain it.

Almost 40 years after the first report of MRSA in the UK, the study by Farrington and colleagues published in this issue of QJM, describes another astonishing MRSA experience, and presents new insights into the never-ending struggle to prevent MRSA infections. Several aspects of the retrospective study by Farrington and co-authors attract our attention. First, this paper describes in a very detailed and careful manner a 12-year experience with MRSA at Addenbrooke’s Hospital in Cambridge. The authors demonstrate that sporadic or epidemic strains of MRSA could be controlled over 10 years through the use of a stringent, but labour-intensive control policy including screening of high-risk patients, transfer of patients to isolation rooms, and ward closure to new admissions in case of MRSA transmission. Since 1993, however, an increase of patients admitted with MRSA halted the initial ‘search and destroy’ strategy, resulting in a dramatic hospital-wide MRSA outbreak.

What is the first lesson to be learned from this outbreak and similar reports? MRSA is not constrained by local, regional or even national borders, and affects all hospitals and populations throughout Europe and around the world. Transfer of colonized or infected patients causes interhospital and intercountry spread of MRSA. In particular, nursing homes and other long-term care facilities constitute major MRSA reservoirs, and need to be surveyed closely for any strategy focusing on MRSA eradication to succeed. Because colonized elderly patients are frequently transferred between hospitals and long-term care facilities, a continuing circuit of MRSA transmission occurs. In the case of the described outbreak in Cambridge, where the geriatric wards were the most important epicentre, with one-third of all new cases in 1997, rigorous MRSA control in the transferring long-term care facilities may have helped to control the outbreak in the tertiary care centre. This suggests that the answer to the MRSA problem must come from a multidisciplinary approach involving different groups of health-care and public-health professionals, not only from those in the acute care setting. Moreover, the transfer of any MRSA patient from one health-care institution to another should be clearly stated at time of patient transfer. In the Netherlands, where MRSA is not endemic, a national control programme, including MRSA screening at time of hospital admission of all patients transferred from foreign hospitals or nursing homes, has been successful in preventing the spread of MRSA.

Unfortunately, the Dutch experience remains exceptional, and does not help to stop ongoing outbreaks in an epidemic setting such as that described by Farrington et al. The paper, however, dramatically demonstrates that an isolated MRSA eradication strategy cannot succeed if neighbouring institutions have already lost their battle against MRSA. In short: do not fight your battle alone during ‘war’ times, seek allies and collaborate in your common fight against MRSA!

Second, the described hospital was not only overwhelmed by the high number of MRSA cases admitted from outside, but also by internal problems exceeding the available capacities to continue any stringent eradication policy. The lack of isolation facilities and the increased nursing workload were probably the most important reasons why the outbreak spread throughout the whole institution. Unfortunately, the data from the present study about...
the relationship of increased nursing workload and MRSA transmission are insufficient to draw any definite conclusions; future analysis, however, may reveal interesting results confirming previous findings. In any case, the universal mechanism by which increased workload and understaffing is associated with increased risk of cross-transmission is poor compliance with handwashing practices, as shown in a survey of British nurses and another hospital-wide bedside observational study. Although it is virtually impossible to assess the true costs of MRSA infections, the current study showed that increased workload is certainly associated with additional MRSA infections and associated costs, especially in the current era of downsizing and cost-containment.

The third notable aspect of this study is the detailed evaluation of various efforts to control MRSA. Importantly, the present paper shows that a flexible MRSA control policy without strict isolation of all MRSA patients, fewer ward closures and staff screening for MRSA did not work. This stands in contrast to other reports, which have found that flexible MRSA control measures can succeed if focused on the main reservoir or modes of transmission, associated in some instances with topical decontamination of MRSA carriers by mupirocin. There is an ongoing debate concerning to what extent MRSA control measures may be ‘flexible’, but successful reports of modified MRSA control policies have been published, including only minimal special precautions and interventions without cohorting or use of individual patient rooms.

As pointed out by Humphreys and Duckworth in a recent article, it is time for a re-appraisal of MRSA control measures in light of changing epidemiological data and the unsuccessful ‘search and destroy’ strategy in most hospitals around Europe. Consequently, greater emphasis is required on improving standard precautions and hand hygiene, with quickly applicable alcoholic solutions as the cornerstone of infection control. Control measures such as placement of patients in exhaust-ventilated isolation rooms or regular staff screening are warranted only in special circumstances, and should not be a mandatory part of the regular MRSA control strategy. For more than 30 years, it has been shown that the main route of S. aureus transmission remains the transiently colonized hands of health care workers, and all available efforts should be directed to interrupt this mode of transmission. Nevertheless, in contrast to some expert opinions, we agree with Cookson that screening of patients with high-risk profiles rather than simply identifying infected patients, still plays a major role in the control of MRSA. Indeed, awareness of MRSA carrier status still directs our control efforts (e.g. patient isolation) and remains, unfortunately, the strongest incentive for many health-care workers to comply with basic hygiene guidelines, including handwashing or hand disinfection.

So what message should we take away from the experience at Addenbrooke’s Hospital in Cambridge and similar reports from the UK? Despite the favourable island situation and drastic control efforts, MRSA has gained access to most UK hospitals in the last decade, establishing endemicity and an increasing incidence of invasive infections. This trend was also observed throughout most European countries. To improve the control of MRSA, declaration of transferred patients with documented MRSA status should become mandatory. Basic infection control measures should be strengthened throughout all European hospitals, knowing that our most important ally in the fight against MRSA is hand hygiene. Additional measures such as surveillance of the MRSA reservoir, contact isolation and management of the MRSA carrier, should be targeted at units or patients at high risk of transmission or infection.

Unfortunately, MRSA has now become a universal ‘currency’ throughout Europe. With the help of the above-mentioned measures, there is still time to keep its exchange rate as low as possible!

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