Since April 2009, all patients electively admitted to English hospitals must be screened for meticillin resistant Staphylococcus aureus (MRSA).\(^1\) The requirement will be extended to emergency admissions from next year. Although the policy is presented as a population screening programme, most people who are screened will gain little benefit and may be harmed. The justification for universal screening is therefore unclear.

Control policy
The Department of Health has taken increasingly stringent measures since 2001 to reduce the burden of infection associated with MRSA. The measures seem to have been successful, with the numbers of MRSA bloodstream infections falling by more than half from 2003 to 2008. However, the overall numbers of healthcare associated infections reported to the English Health Protection Agency rose substantially, raising questions about the focus on MRSA.\(^2,3\)

Before April 2009 most NHS trusts screened patients for MRSA when they were considered to be at high risk of MRSA colonisation or infection. The mandatory MRSA screening policy extends the range of individuals screened to include people at low risk of MRSA colonisation or infection, such as patients without serious comorbidity admitted for hernia repair or arthroscopy. The policy runs contrary to current UK guidelines for the control of MRSA, which emphasise selective screening,\(^4\) and to US guidelines, which do not support legislation to mandate MRSA screening.\(^5\)

In the UK, hospital admission is the main risk factor for acquiring MRSA, and invasive medical procedures (particularly placement of a central venous catheter) are the biggest risk factor for MRSA bloodstream infections. About half of people admitted to hospital will be in the low risk category.\(^6,7\) The evidence supporting screening even in high risk groups is largely derived from uncontrolled studies.\(^6,8\) A large controlled study in a Swiss surgical unit reported no benefit from screening on admission.\(^7\)

The Department of Health’s impact assessment of universal MRSA screening assumes that everyone screened has an equal risk of infection.\(^9\) The costs associated with isolating patients to prevent secondary transmission and false positive results are not mentioned. The test performance of MRSA screening will depend on many variables, such as where samples are taken from, laboratory methods, and the reference standard used. If we assume a specificity of MRSA screening of 97.5%\(^9\) then 2.5 of every 100 tests will give a false positive result. The proportion of patients at low risk of MRSA colonisation who are in fact colonised with MRSA is not known. If 2.5% of a low risk population is colonised with MRSA (true positive) then the screening test will falsely identify at least as many people as it correctly identifies. The relative proportion of false positives to true positives increases as the proportion of true positives in the population falls. The department has not specified where swabs should be taken from for screening (beyond nasal swabs) or the requirements for performance of the test.

Rationale for mandatory screening
Various arguments are used to justify the policy of mandatory MRSA screening. These arguments tend to focus on benefits to screened individuals and benefits to others, many of whom are not identifiable until they are admitted to hospital. The Department of Health’s impact assessment states that screening combined with appropriate control measures “benefits the individual screened” by reducing the risk of MRSA infection.\(^8,9\)

By contrast the scientific justification for mandatory screening stems from the judgment that the screening policy will lead to an overall reduction in MRSA related disease, with little benefit and potentially some costs to most people screened. The argument that there will be an overall benefit is based on mathematical models showing that screening can reduce the incidence of MRSA infection (by allowing control measures to be taken before secondary spread has taken place), the observation that countries with a national screening policy such as the Netherlands have a low incidence of MRSA disease (although the Dutch policy is selective (risk based) screening),\(^10\) and the observation that screening is considered to have been effective in contributing to the control of outbreaks of MRSA infection.

Is there a benefit to people at low risk of MRSA?
The government’s impact assessment considers MRSA screening within the context of other health screening, where the objective is to improve the outcome of the screened individuals. Around 30% of healthy people carry S aureus. Studies suggest that most carriage

Around 30% of healthy people carry S aureus. Studies suggest that most carriage is transitory rather than persistent in people without risk factors for infection.

Should we screen low risk patients for meticillin resistant Staphylococcus aureus?

Department of Health policy requiring all hospital patients to be screened for MRSA breaches ethical guidelines, argues Michael Millar
Some patients may therefore benefit from eradication of MRSA before admission or surgery, although the extent of this benefit in patients without other risk factors for MRSA infection is uncertain

is transitory rather than persistent in people without risk factors for infection. MRSA colonisation has been associated with an increased risk of subsequent MRSA infection in patients who acquire MRSA in hospital, and preoperative carriage of *Staphylococcus aureus* is a risk factor for post-surgical wound infection. Some patients may therefore benefit from eradication of MRSA before admission or surgery, although the extent of this benefit in patients without other risk factors for MRSA infection is uncertain. If the screening strategy is effective then low risk patients may also benefit from better control of MRSA in hospitals in the long term.

These benefits have to be balanced against the potential adverse consequences, which include isolation, delays in treatment, social consequences, local distortion of resource allocation priorities, and the potential for disruption to patient care pathways. These burdens will apply to people with both false positive and true positive results and their importance will vary with individual circumstances.

It has been estimated that universal MRSA screening could increase fourfold the numbers of patients placed in isolation. Patients placed in isolation can suffer psychological and physical harms, partly as a result of the reduced contact with healthcare workers and others. Edmond and colleagues suggest that the routine application of active surveillance and contact precautions to large patient populations is not consistent with recent ethical frameworks designed for quality improvement activities.

The Department of Health’s impact assessment does not mention the consequences of the mandatory screening policy on patient isolation, even though its best practice advice is that patients with MRSA colonisation or infection should be isolated if possible. As well as adversely affecting the patient, isolation may affect control of other infections because it reduces the availability of isolation rooms. Thus MRSA screening of low risk patients is of uncertain benefit and may do harm.

Informed consent and patient information

Current requirements state that “valid consent must be obtained before starting treatment or physical examination.” This consent does not have to be written but the person giving consent must be “appropriately informed.” The department’s advice to healthcare workers is that “In the unlikely event that a patient refused to be screened, we should expect that the consequences of this be explained to them, in particular possible delays while appropriate measures are put in place to treat that patient.” The template patient information sheets do not mention the adverse consequences of screening, such as the implementation of contact precautions or delays in treatment resulting from the requirement for decontamination if MRSA is detected.

Many patients admitted to hospital will lack full capacity to give verbal or written consent. The decision to screen patients then resides with the healthcare staff, who must act in the best interests of the patient. This places staff in an invidious position because best interests include psychological health, wellbeing, quality of life, and relationships with family or other carers, all of which may be adversely affected by placing a patient in isolation.

MRSA screening to prevent harm to others

The Nuffield Council on Bioethics has recently published proposals for a framework for public health ethics. The framework aims to reduce the risks that people might impose on each other, minimise interventions that are introduced without the individual consent of those affected or without procedural justice arrangements (such as democratic decision making procedures) that provide adequate mandate, and minimise interventions that are perceived as unduly intrusive and in conflict with important personal values. These aims seem particularly relevant to mandatory universal screening for MRSA, where the benefit is an overall reduction in MRSA related disease.

The Nuffield framework is based on principles that are common to other public health ethics guidelines, including the harm principle and the precautionary approach. The harm principle states that “The only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others. His own good, either physical or moral, is not sufficient warrant.”

The harm principle implies that if we could show that MRSA positive people coming in to hospital are putting other patients at risk of MRSA infection we could justify isolation.
Is it appropriate to apply this principle to patients coming in to hospital with previously undetected MRSA colonisation? I would argue probably not. Most low risk patients are in hospital for short periods and have little contact with other patients. It is generally agreed that MRSA is spread in hospitals on the hands of healthcare staff and that the determinants of transmission include microbial load and degree of contact with healthcare workers. Patients with active MRSA infection provide the greatest load and reservoir of MRSA, have frequent contact with healthcare workers, and are given priority when isolation facilities are limited. Poor staff hand hygiene practices are rarely tackled by hospital management, and staff who often carry MRSA (particularly those caring for a patient with MRSA infection) go unscathed. Asymptomatic patient carriers provide less threat to other patients than staff with MRSA colonisation or poor hand hygiene, so the harm principle should not be applied to low risk patients.

The precautionary principle is derived from the Rio Declaration made at the United Nations Conference on Environment and Development in 1992. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation. It might be argued that we should pursue MRSA screening even in the face of uncertainty because the potential consequences of not screening are so serious and are potentially irreversible. The Nuffield Council framework draws on European Commission advice and proposes an approach that requires integration of at least five dimensions. These include risk assessment (including acknowledgement of uncertainties), attention to fairness and consistency, identification of the costs and benefits of different courses of action, transparency, and proportionality (actions taken should be in proportion to the risks).

The mandatory MRSA screening programme does not meet these five requirements. The only published formal risk assessment of the policy, the impact assessment, does not include the full range of risks; the policy is not fair to those at low risk of MRSA infection or consistent with policies on screening healthcare workers; other courses of action are more cost effective; there is a lack of transparency in information to patients; and the actions to extend screening to low risk patients are not in proportion to the risks to or from those patients. As currently formulated, the Department of Health’s mandatory MRSA screening policy breaches ethical guidelines and should be reconsidered.

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2 Millar MR, Coast J, Ashcroft R. Are MRSA blood stream infection targets fair to those with other types of healthcare associated infection or cost-effective? J Hosp Infect 2008;69:1-5.

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