healthier scotland
SCOTTISH GOVERNMENT

Health Protection Scotland

NHS National Services Scotland

NHS Scotland MRSA Screening Pathfinder Programme

SBAR Report to Scottish Government Health Directorates: policy implications of further research studies for national rollout of MRSA screening

Prepared for the Scottish Government HAI Task Force
by Health Protection Scotland

Delivered October 2010
Published February 2011

NHS Ayrshire & Arran

NHS Grampian

Acknowledgements

This report would not have been completed successfully and within schedule without the cooperation and support of the staff in all of the participating Pathfinder hospitals. Their collaboration is gratefully acknowledged.

Final Report delivered to SGHD in October 2010

First published in February 2011

For all enquiries please contact:

HAI & IC Group
1 Cadogan Square
Cadogan Street
Glasgow
G2 7HF

Tel: 0141 300 1100
Fax: 0141 300 1170

Email: nss.hps.enquires@nhs.net

Reference this report as:

Health Protection Scotland, NHS Scotland MRSA Screening; SBAR Report to Scottish Government Health Directorates: policy implications of further research studies for national rollout of MRSA screening 2011; Health Protection Scotland [Report]

Designed and typeset by:
Graphics Team, Health Protection Scotland

Policy implications of further research studies for national rollout of MRSA screening

Situation

A key recommendation of the HPS MRSA Screening Pathfinder Study report was that the potential for clinical risk assessment (CRA) as a potentially effective and cost-effective screening tool in its own right should be formally assessed before a decision was made on extending swab-based MRSA screening to all overnight admissions to hospital. It was also recommended that further studies should examine whether nasal screening alone was an effective screening tool in comparison with multiple body site screening. This Situation, Background, Assessment, Recommendation (SBAR) document summarises the final reports produced from the MRSA screening pathfinder programme including; the key findings from these further studies, longer term follow up within the pathfinder hospitals, economics, and offers recommendations on future policy development.

Background

The NHS QIS Health Technology Assessment (HTA) report recommended universal nasal screening using direct chromogenic agar culture as the preferred method to deliver clinical effectiveness at most reasonable cost. The HTA modelling of CRA (a series of questions which seek to identify those at higher risk of MRSA carriage) was clinically the most favourable approach in the model, but the adverse cost implications were based on what we now know was a very high estimate of time taken to apply the CRA.

The efficacy of nasal swabbing in detecting MRSA carriage was tested in the new Admission Study against a 'gold standard' (combined results from nasal, axillary, throat and perineal swabs plus swabs from wound or indwelling medical device sites, with broth culture on chromogenic agar and nutrient broth enrichment and sub culture on chromogenic agar).

A good first-line screening test should be simple and cheap, and should identify the great majority of true colonisations, whilst minimising the number of patients identified as being potentially at risk but not actually carrying MRSA. Ideally, the majority of true MRSA colonisations would be identified by asking CRA questions, contained within a small group of patients. The true colonisations in that smaller group could then be identified with more precision by taking swabs for laboratory testing. A universal CRA process could also enable prioritisation of at-risk patients for pre-emptive management (e.g. isolation or decolonisation) while awaiting laboratory confirmation.

Assessment

Nasal swabbing was shown to detect only 66% of the total MRSA positive colonisations identified, which is at the lower end of previous estimates from the literature. Coupled with 80% or 90% compliance with screening in routine practice, this implied that only 53-59% of true colonisations would be detected by expanding current nasal screening to all inpatients. This could be increased to 72-81% detection by taking three swabs for all patients (nasal, throat and perineal), but obviously at substantially increased cost.

A CRA comprising a positive response to any one of three simple questions (previous known MRSA; admitted not from home; wound/device present) detected 68% of true positives using laboratory data on MRSA history, and 64% using patient recall of past MRSA diagnosis. Although still well short of the ideal of identifying 100% of true cases, this simple CRA with nasal plus perineal swabs at a compliance of 90% would identify 50.3% of true positive cases using laboratory data. There would be a small detriment in using nasal plus throat swabs in patients where perineal swabbing was difficult or unacceptable.

Within the high risk specialties identified within the current UK guidance (Coia *et al*) there are five for which MRSA infection would have particularly serious consequences for patients: renal medicine, cardiothoracic/vascular surgery, intensive care and orthopaedics. The study indicates that CRA would identify most colonised patients who would be identified by nasal screening in these patients, but the overall cost picture would allow universal screening in these groups with two swabs to further improve ascertainment and minimise serious clinical consequences.

Rerunning the HTA model with new data indicated that the expected reduction in MRSA numbers would not be significantly different for universal nasal screening, CRA alone, or CRA plus nasal and perineal screening the four high impact specialties. Economic analysis shows that CRA alone and CRA with high impact specialty screening would be around one quarter and half the cost respectively of universal nasal screening.

The key issues were:

- The fundamental choice was between improving the performance of universal nasal screening, or achieving the same result as universal nasal screening at significantly reduced cost by applying CRA.
- Improving on the performance of universal nasal screening as a strategy would mean taking three swabs rather than one, at significant additional cost. This is not attractive in the current financial environment, and would impact adversely on the cost per Quality Adjusted Life Year (QALY).
- The three simple question CRA plus two swabs (nasal and perineal) performs almost as well as universal nasal screening at around one quarter of the cost.
- There are rational grounds for screening four 'high clinical impact' specialties with nasal and perineal swabs in addition – this would still be around half the cost of universal nasal screening.

- The CRA gives a rational basis for pre-emptive management of a manageable subset of patients at high risk of MRSA carriage. Consideration could be given to pre-emptive decolonisation of patients (elective and emergency admissions) if identified by CRA as high risk.
- Investment in IT systems to facilitate access to laboratory information by ward staff on previous MRSA colonisation or infection would improve performance by around 4%
- Current routine universal nasal screening of elective admissions and specialties not in the four high impact specialty group could cease to be a core requirement and CRA substituted as a first line screen.

Recommendation

The following options in descending order of preference are offered by the Programme Board for consideration as national **minimum** practice within a revised national policy on MRSA screening:

- **Option A:**
  - All patients should be screened on admission or pre-admission using the CRA tool;
  - those with one or more positive answers should proceed to nasal and perineal swab based screening, and CRA positive inpatients should be prioritised for pre-emptive isolation/cohorting pending laboratory results;
  - all patients in four high impact specialties (renal, cardiothoracic/vascular, intensive care and orthopaedics) should be screened using nasal and perineal swabs, and pre-emptively managed if CRA positive.
- **Option B:**
  - All patients should be screened on admission or pre-admission using the CRA tool;
  - those with one or more positive answers should proceed to nasal and perineal swab based screening, and CRA positive inpatients should be prioritised for pre-emptive isolation/cohorting pending laboratory results.
- **Option C:**
  - Proceed to universal nasal swab screening;
  - apply CRA to prioritise for pre-emptive isolation/cohorting pending laboratory results.