

A Strategy for the Control of
Antimicrobial Resistance in Ireland



**SARI Implementation:
Gap Analysis and Future Priorities
March 2008**

Introduction

The Strategy for the control of Antimicrobial Resistance in Ireland (SARI) was launched by the Minister for Health and Children in 2001. The strategy was developed in response to the rising prevalence of antimicrobial resistance (AMR) in Ireland, as evidenced from data arising out of Ireland's participation in the European Antimicrobial Resistance Surveillance System (EARSS), and in line with European Commission requirements for all EU member states to have a national strategy to address AMR. Following the launch of SARI, regional and national committees were established to coordinate the implementation of the strategy, along with a number of sub-committees, to provide expert guidance on specific aspects of SARI. SARI was originally coordinated, and funded, by the Department of Health and Children (DoHC), with responsibility passing to the Health Services Executive (HSE) in 2005. In 2007 the HSE launched a national strategy for healthcare-associated infection (HCAI), which incorporates SARI.

A gap analysis of SARI implementation was produced in 2005, which detailed progress with implementation of each of the recommendations in the strategy, identified gaps in implementation, and prioritised actions required to correct these gaps. This report is an update of the 2005 gap analysis, which takes into account changes in the governance and role of SARI arising from the establishment of the HSE and the launch of the HSE's HCAI strategy.

1: THE DEVELOPMENT OF A NATIONAL FRAMEWORK

1 a: *Development of a three-tier strategy, with local, regional and national tiers*

Progress to date:

- The HSE HCAI strategy (2007) indicates that local corporate responsibility for AMR and HCAI rests with hospital managers/chief executives and local health office managers.
- Regional SARI Committees were established in each former Health Board area. Most Committees disbanded in 2005, due to unclear reporting relationships under new HSE structures. These Committees are currently being re-established, to match HSE hospital network areas. Regional SARI Committees now report to Local Implementation Teams (LIT) and may be integrated with other relevant committees, e.g. regional/network infection and prevention committees. The chairperson of each SARI regional committee is also a member of the regional LIT.
- The national tier is dealt with under 1 b (below).

Gaps

- Lack of formal mechanism to ensure that local corporate responsibility for AMR and HCAI is enforced
- Not all SARI Regional Committees have been re-established
- There has been a lack of input into strategic decisions by SARI Regional Committees in some regions

Action required

- Ensure that all SARI Regional Committees are re-established, with clear terms of reference and reporting relationships
- Ensure corporate responsibility for AMR and HCAI is enforced at hospital, community and network management levels
- Ensure advisory role of regional committee is recognised and acted upon by each LIT

1 b: *Establishment of a multi-disciplinary national committee, with representation from all key stakeholders*

Progress to date:

- The SARI National Committee was established as a Department of Health and Children (DoHC) committee, with responsibility transferred to HSE in 2005. The SARI National Committee now acts as the scientific advisory committee to HSE HCAI Governance Committee (HCAIGC) .

Gaps

- Advice and recommendations from SARI National Committee often not prioritized or not implemented
- Lack of time to focus on strategic planning, due to need to focus on lack of

- resources, reporting relationships etc.
- Lack of communication or consultation regarding some national strategic decisions relating to AMR and HCAI, e.g. healthcare worker elearning project
- Current structures weighted towards acute hospital services
- Non-attendance by representatives from many nominating bodies

Action required

- Formalise and strengthen the role of the SARI National Committee as the national scientific advisory committee in relation to AMR and HCAI, including commitment by HSE and DoHC to implement key guidelines and recommendations
- Appointment of project coordinator to HSE HCAI Governance Committee, who would also be a member of the SARI National SARI Committee, with a remit that includes improved communication.
- Review structure, membership and terms of reference of SARI National Committee

1 c: *International co-operation, via National Committee*

Progress to date

- International links to European Centre for Disease Control (ECDC) and various European surveillance networks have been established, via the Health Protection Surveillance Centre (HPSC)
- The National Committee is recognised as the formal “Intersectoral Coordinating Mechanism” for AMR in Ireland by ECDC

Gaps

- No formal international links directly through the SARI National Committee
- Lack of full cooperation in international surveillance networks and other European initiatives
- The “intersectoral” role of the SARI National Committee has been hampered by the need to focus on resource and governance issues. As a result there has been minimal engagement, to date, with dental, veterinary, food safety and agriculture sectors
- The SARI National Committee was never resourced in terms of administrative and other support.

Action required

- Establish formal links between the National Committee and ECDC, in relation to AMR
- Commitment to, and provision of necessary resources for, full participation in the Improving Patient Safety in Europe (IPSE) initiatives and related surveillance networks
- Restructuring of the National Committee to increase representation from, and improve engagement with, all stakeholders
- Provide appropriate administrative and other support to the National Committee

2: THE SURVEILLANCE OF ANTIMICROBIAL RESISTANCE

2 a: *An infrastructure both at public health and laboratory level is established to ensure that reproducible, standardised, antimicrobial resistance data are collected and analysed locally, regionally and nationally in a timely manner*

Progress to date

- Surveillance scientists appointed to many laboratories and Departments of Public Health
- Computerised Infectious Disease Reporting (CIDR) system developed and in place in many laboratories and most Departments of Public Health
- Agreement to implement standardised susceptibility testing in all laboratories, using the Clinical and Laboratory Standards Institute (CLSI) methodology

Gaps

- Many laboratories still lack surveillance scientists
- CIDR not yet in place in all laboratories and Departments of Public Health
- CLSI methodology not yet implemented in all laboratories
- Poor IT infrastructure both within and between hospitals, laboratories and other agencies.

Action required

- Appointment of surveillance scientists to all laboratories (at least 1 whole time equivalent (WTE) for larger laboratories and 0.5 WTE for smaller laboratories)
- Roll-out of CIDR to all laboratories and Departments of Public Health (due for completion in 2008)
- Implementation of CLSI methodology in all laboratories, with provision of resources to achieve this where required
- Upgrade hospital and laboratory IT systems, aiming for one national, integrated, user-friendly and compatible system that provides data easily and in real time.

2 b: *DOHC establishes a network of national reference laboratories as a priority to service routine laboratories, help develop and evaluate new technologies and provide epidemiological data and facilitate research in this area. In addition, these laboratories should provide expert advice on areas of clinical practice and infection control*

Progress to date

- National MRSA and tuberculosis reference laboratories established
- Committee to develop recommendations for additional reference laboratories established by HSE

Gaps

- Existing reference laboratories under-resourced and unable to provide full reference services

- HSE reference laboratory committee disbanded
- National review of laboratories (Teamwork Report) undertaken with minimal consultation, and no consultation with any SARI committees or sub-committees
- National pneumococcal reference service withdrawn (limited pneumococcal serotyping recently reintroduced as part of limited project)

Action required

- Appropriate funding of existing reference laboratories
- Establishment of additional reference services, particularly services relating to AMR and HCAI

2 c: *Routine laboratories are resourced to enable them to provide reproducible and standardised antimicrobial resistance data in a timely manner. The provision of an electronic data handling system will be an essential element. These laboratories should be managed by consultant clinical microbiologists*

Progress to date

- Additional microbiologists appointed since the launch of SARI
- Funding for standardised susceptibility testing (CLSI) and laboratory information systems was included in SARI funding in some regions
- AMR module planned for inclusion in CIDR

Gaps

- Many laboratories have an insufficient number of laboratory scientists and may not be resourced to cope with the increasing demand
- CIDR not yet in place in all laboratories (planned for completion in 2008)
- No microbiologist in place in many large hospitals.
- Other hospitals still have no, or insufficient, on-site microbiology sessions

Actions required

- Appointment of additional laboratory scientists
- Appointment of additional consultant microbiologists
- Ring-fenced funding for laboratory services

2 d: *A general practice based sentinel surveillance system is established to ensure adequate geographic sampling for antimicrobial resistance in the community*

Progress to date

- Pilot sentinel surveillance project underway in Southern region
- Funding provided for national roll-out of sentinel surveillance

Gaps

- Time line for roll-out of sentinel surveillance not yet established

Action required

- National roll-out of sentinel surveillance needs to be progressed

2 e: *A hospital based surveillance system is established to detect hospital-acquired infections and ensure adequate sampling for antimicrobial resistance in this population*

Progress to date

- Enhanced surveillance of bloodstream infections in place in some hospitals
- Local HCAI surveillance systems in place in some regions
- A national standardised protocol for surveillance of surgical site infections developed and due to be published in early 2008
- Forty four Irish hospitals participated in the 2006 Hospital Infection Society (HIS) HCAI prevalence survey, but this was only possible with the assistance of external data collectors, who were employed on short-term contracts

Gaps

- Ireland still in breach of EC directive 2119/98/EC, requiring the establishment of national HCAI surveillance
- Most hospitals unable to participate in enhanced surveillance system, due to insufficient resources
- Most hospitals will be unlikely to be able to participate in a national HCAI surveillance system, due to insufficient resources, both staff and IT. This was highlighted in the HIS 2006 Prevalence Survey participant feedback questionnaire

Action required

- Provision of appropriate resources to allow laboratories to participate in enhanced surveillance systems
- Provision of appropriate resources at local, regional and national level to allow participation in, and coordination of, national surveillance of HCAI, including surveillance coordinators, infection control nurses and microbiologists and appropriate IT resources

3: THE MONITORING OF THE SUPPLY AND USE OF ANTIMICROBIALS

3 a: *The tight legislative controls that exist in the area of antimicrobial prescribing are maintained and enforced*

Progress to date

- No change

Gaps

- No data available on compliance with legislative controls

Action required

- Audit of compliance with legislative controls required

3 b: *A system for the collection and analysis of antimicrobial use and prescribing in hospitals and the community is established*

Progress to date

- National surveillance of community and hospital antibiotic consumption established through HPSC
- Surveillance of antibiotic consumption, using the General Medical Scheme (GMS) database, was established at the National Centre for Pharmacoeconomics (NCPE)
- National Participation in the European Surveillance of Antimicrobial Consumption (ESAC) network established
- Pilot project of sentinel surveillance through community pharmacies established
- Additional antibiotic liaison/infectious disease pharmacists appointed
- Hospital antibiotic consumption surveillance established as a mandatory requirement for HSE-funded hospitals

Gaps

- Many hospital unable to participate in antibiotic consumption surveillance, due to staff shortages or lack of appropriate pharmacy information technology
- Funding for surveillance at NCPE not continued
- Most hospitals still lack an antibiotic liaison pharmacist with responsibility for antimicrobial surveillance and stewardship

Action required

- Antibiotic liaison pharmacists required for all hospitals
- Ensure all hospital pharmacies have appropriate information technology systems
- Re-establish funding for surveillance at NCPE

3 c: *A basic set of data agreed by the committee be collected, i.e. the origin of the prescription, e.g. hospital or community, the agent and dose prescribed, the*

indication and the length of treatment

Progress to date

- Some elements of basic data set available for GMS antibiotic consumption, but not, for example, data in terms of antibiotic daily defined doses
- Prescribing audits carried out in some hospitals.

Gaps

- Surveillance using GMS data suspended, due to a lack of ongoing funding at NCPE
- Prescription level surveillance via community pharmacies required
- No standardised format for hospital prescribing audits
- Lack of resources for hospital prescribing audits

Action required

- Re-establish funding for surveillance at NCPE
- Antibiotic liaison pharmacists required for all hospitals
- Establishment of community pharmacy sentinel surveillance
- Agree a core dataset for hospital antibiotic prescribing audits

4: THE DEVELOPMENT OF GUIDANCE IN RELATION TO THE APPROPRIATE USE OF ANTIMICROBIALS

4 a: *Expert opinion on the diagnosis, investigation and management of patients with infection is available 365 days a year to all medical practitioners both in the community and hospitals*

Progress to date

- Additional consultant microbiologists and infectious disease physicians appointed since the launch of SARI

Gaps

- Many hospitals still have no on-site microbiology or infectious disease sessions
- Most community areas have no formal consultant microbiologist / infectious disease physician sessions

Action required

- Appointment of additional consultant microbiologists and infectious disease physicians to include community areas as appropriate

4 b: *National guidelines for appropriate antimicrobial usage are drawn up and introduced in all aspects of clinical practice both in hospital and the community. These must be evidenced based, exist for both the prescribing and non-prescribing of agents, have adequate information on dose etc. and highlight local variation*

Progress to date

- Draft GP guidelines on prescribing prepared
- Local prescribing guidelines in place in 67% of acute hospitals (Source: SARI Infection Control Sub-Committee Review of National MRSA Guidelines)

Gaps

- GP prescribing guidelines not yet finalised
- Hospital prescribing guidelines not in place in many hospitals

Action required

- Finalise GP prescribing guidelines and roll-out nationally
- Ensure all hospitals have up to date local prescribing guidelines, in line with section 4c below

4 c: *A process by which a reduction in inappropriate use of antibiotics can be achieved should be defined. This will differ in different settings, e.g. hospital versus community and will need to be developed accordingly*

Progress to date

- Pilot GP educational initiative established
- Recommendations on promotion of prudent antibiotic use in hospitals produced by the SARI Hospital Stewardship Sub-Committee in 2003
- Antibiotic liaison/infectious disease pharmacists appointed to some hospitals

Gaps

- GP educational programme not yet rolled-out nationally
- Hospital antibiotic stewardship recommendations not implemented
- Insufficient resources in most hospitals to establish and implement antibiotic stewardship programmes
- No training for antibiotic liaison/infectious disease pharmacists available in Ireland

Action required

- National roll-out of GP educational programme
- Hospital antibiotic stewardship recommendations need to be updated and implemented
- Appointment of additional consultant microbiologists, infectious disease physicians and antibiotic liaison pharmacists to establish and implement hospital antibiotic stewardship programmes
- Establish training for antibiotic liaison/infectious disease pharmacists in Ireland

4 d: *Interventions aimed at changing clinical practice are supported, encouraged and reinforced by a process of regular audit*

Progress to date

- Antibiotic audits included as part of GP educational initiative
- Antibiotic audits carried out in 26 (40%) of hospitals in 2003 (Source: Journal of Hospital Infection 2006;64:63-8)

Gaps

(As per 4b above)

Action required

(As per 4b above)

4 e: *Methods, which will aid the above processes, are developed, e.g. decision-support systems, computer assisted prescribing or other prescribing aids*

Progress to date

- Draft printed materials to aid prudent prescribing were developed by General Practice and Hospital Antibiotic Stewardship Subcommittees

Gaps

- No development of decision support systems or computer assisted prescribing

Action required

- As per 4b above
- Possible collaboration with academic institutions to develop computer-assisted prescribing

4 f: *Improvements in vaccine uptake, in particular influenza and pneumococcal vaccine, should be targeted and prioritised*

Progress to date

- Local promotion of vaccine uptake by individual GP practices and hospital clinicians
- Additional promotion of influenza vaccine uptake established by HSE National Immunisation Office

Gaps

- General lack of knowledge among health professionals of the importance of influenza and pneumococcal vaccination of at risk patients

Action required

- Education of health professionals and the general public regarding the importance of influenza and pneumococcal vaccination

4 g: *A monitoring system is established to measure the effectiveness of these interventions*

Progress to date

- Hospital antibiotic consumption surveillance established as a mandatory requirement for HSE-funded hospitals
- Quarterly reporting of *S. aureus* bloodstream infection, established as a mandatory requirement for HSE-funded hospitals

Gaps

- No standardised measurement of antimicrobial resistance, quality of antimicrobial prescribing or success of antimicrobial stewardship programmes established
- Poor quality data on influenza and pneumococcal vaccine uptake among targeted patient groups
- Lack of standardised data on influenza vaccine uptake among health care workers

Action required

- Development of national standards for antibiotic stewardship
- Audit of antibiotic stewardship programmes
- Standardised surveillance of influenza and pneumococcal vaccine uptake among patient required
- Standardised surveillance of influenza vaccine uptake among healthcare workers required

5: EDUCATION

5 a: *Educational programmes form the foundation for implementation of guidance strategies and a comprehensive programme should commence at undergraduate level. These programmes must be directed at all clinical professional groups providing patient care, the pharmaceutical industry and the general public*

Progress to date

- Public education campaign on the importance of hand hygiene in hospitals run in early 2007
- Infection control e-learning programme for healthcare workers being developed
- Educational leaflets for patients and the general public on HCAI and MRSA developed and circulated to all healthcare institutions

Gaps

- No public information campaign on prudent antibiotic use
- No requirement for undergraduate or postgraduate education on AMR or HCAI for most health professionals

Action required

- Public information campaign on prudent antibiotic use , to accompany GP educational programme, required
- Inclusion of education on AMR and HCAI to be made a mandatory requirement for undergraduate and postgraduate education of health professionals
- Ensure e-learning programme on infection prevention and control is mandatory and delivered to all healthcare workers
- Development and delivery of mandatory e-learning modules on prudent antibiotic prescribing for all medical students and clinicians

5 b: *Education on home hygiene, attention to public health issues, and those developing the strategy consider the maintenance and/or improvement of housing and social conditions*

Progress to date

- Food hygiene public information campaigns developed by *SafeFood*

Gaps and Action required

- Improvement in housing and social conditions will depend on government policy, and is probably outside the scope of SARI

6: THE DEVELOPMENT OF PRINCIPLES IN RELATION TO INFECTION CONTROL IN THE HOSPITAL AND COMMUNITY SETTING

6 a: *National infection control standards and principles are set both for hospitals and the community*

Progress to date

- National guidelines on hand hygiene and updated national MRSA guidelines produced
- National infection control standards currently being developed by the Health Information and Quality Authority (HIQA)
- National Cleaning Manual for hospitals developed by HSE

Gaps

- Lack of standards and guidance for community practice

Action required

- Extension of HIQA standards to community settings

6 b: *The necessary infection control services to meet the set standards are resourced and established in hospitals and the community*

Progress to date

- Additional infection control and prevention nurses appointed
- Additional consultant microbiologist appointed
- Infrastructural improvements in many hospitals
- National standards for hospital infection control infrastructure currently being developed for new buildings/units

Gaps

- Most hospitals do not have sufficient infection control and prevention nurse staffing, and some hospitals still have no infection control and prevention nurse
- Lack of access to infection control and prevention nurses and consultant microbiologists in most community units
- Many hospitals still have no, or insufficient, on-site microbiology sessions
- Insufficient single rooms, excessive multiple-bedded rooms, inadequate hand hygiene facilities and other infrastructural deficits in most hospitals. Only 10% of hospitals have a ratio of total beds to single beds of 3:1; 18% have ratios of greater than 15. (Source: SARI Infection Control Sub-Committee Review of National MRSA Guidelines)
- Many hospitals operate at bed occupancy levels that are too high to allow effective infection prevention and control measures. *Robert, please add in the annual figure for the HSE assessment of hospital activity?*

Action required

- Appointment of additional infection control and prevention nurses, including community-based appointments
- Appointment of additional consultant microbiologists
- Commitment to implement recommendations on hospital infection control infrastructure, including increasing the proportion of single rooms and phasing out of multiple-bedded rooms
- Reduction in bed occupancy rate to <85%

6 c: *The education of all health care workers on issues relating to infection control is prioritised*

Progress to date, gaps, and action required

(See section 5a)

6 d: *The importance of well-established preventative measures, e.g. hand hygiene, are reinforced and compliance improved*

Progress to date

- National hand hygiene guidelines and updated MRSA guidelines produced
- Public information campaign on hand hygiene in hospitals
- Educational initiatives for healthcare workers being developed (see section 5a)

Gaps

- Insufficient physical and personnel resources to implement hand hygiene and MRSA guidelines in most institutions
- Hospital staff often unable or unwilling to attend education sessions, often due to conflicting pressures, including meeting other healthcare targets

Action required

- Infection control resources (see section 6b)
- Establish mandatory education programmes for healthcare workers, and ensure resources needed to deliver the programmes are provided

6 e: *A monitoring system is established to measure the effectiveness of these interventions*

Progress to date

- Quarterly reporting of alcohol-based hand gel consumption, established as a mandatory requirement for HSE-funded hospitals

Gaps

- No standardised national surveillance of HCAI
- No standardised national audit of infection control and prevention process indicators

Action required

1. National standardised surveillance of HCAI (see section 2e)
2. Establishment of national audit of infection control and prevention process indicators, in line with HIQA infection prevention and control standards

7: FUTURE RESEARCH IN THIS AREA

7 a: The financial support provided by governmental bodies for research and development in the area of antimicrobial resistance is increased in line with needs and that such funding is prioritised

Progress to date

- Once-off funding for SARI-related pilot projects and research provided in 2003

Gaps

- No ongoing funding earmarked for SARI-related research

Action required

- Repeat funding for research with national steering committee established to oversee grant allocation

7 b: Antimicrobial resistance becomes a priority for funding bodies supporting health care and biomedical research

Progress to date

- Funding granted by Health Research Board to multi-year study on environmental transmission and other aspects of MRSA

Gaps

- None identified

Action required

- None identified

7 c: Pharmaceutical companies are encouraged to continue the development of new agents and their collaboration with academic units in Ireland

Progress to date

- Local collaboration between academic institutions and pharmaceutical industry

Gaps

- None identified

Action required

- None identified

7 d: A network of national reference laboratories is established to support the above research structure

Progress to date, gaps, and action required

(See section 2b)

Appendix: Current SARI-related staffing levels and future requirements

Post	Number of WTE* in 2001	Current WTE**	Minimum required WTE	Shortfall
Medical Microbiologists	15.5	29.5	41 ¹	12.5
Infection Control Nurses	31	76	100 ²	24
Surveillance Scientists	0	21	30 ³	9
Antibiotic Pharmacists	1	19	40 ⁴	21

*WTE: Whole Time Equivalents

**Staffing levels refer to posts in publicly-funded acute hospitals and do not include academic sessions, public health and other non-hospital appointments. Additional staffing requirements for private hospitals have not been included.

¹Based on Royal College of Pathologists recommendations for minimum staffing levels.

²Based on a minimum ratio of one infection control nurse for every 125 acute inpatient beds. This does not include requirements for long-stay institutions and community-based services.

³Based on the SARI recommendation of at least one WTE for large clinical laboratories, and at least 0.5 WTE for smaller clinical laboratories.

⁴Based on the SARI recommendation of at least one WTE for large acute hospitals, and at least 0.5 WTE for smaller acute hospitals.