



S A R I

The Strategy for the Control of
Antimicrobial Resistance in Ireland

Annual Report 2007

Contents

1. Executive Summary
2. Background
3. National Committee
4. Specialty Sub-Committees
5. Reports from Regional Committees
6. On-Going Challenges and Difficulties in the Full Implementation of SARI

Appendices

- I. Members of the National Committee (and the number of meetings attended)
- 2 Report of the 4th Joint Conference of the Antimicrobial Resistance Action Plan/Strategy for the control of Antimicrobial Resistance in Ireland, November 2007, Belfast.
3. Gap analysis on the implementation of SARI

1. Executive Summary

The strategy for the Control of Antimicrobial Resistance in Ireland (SARI) was launched by the Minister for Health and Children in April 2001. Although the intervening years has seen some progress in its implementation, much work remains to be done. Efforts at local level to improve antimicrobial prescribing and to reduce antimicrobial resistance (AMR) and also to reduce healthcare-associated infection (HCAI) continue. However, those involved in SARI remain unconvinced that this strategy is a genuine national priority, given the failures outlined in previous annual reports and the lack of designated funding for the area of AMR and HCAI, including infra-structural deficits in personnel with the relevant expertise. For example, there was no consultant microbiologist in Kerry General Hospital during 2007.

During 2007, initiatives were taken in devising an approach to the surveillance of surgical site (wound) infections and in starting to assess the prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) in intensive care units. In the light of changes in the health service, evolving priorities and the over-concentration on HCAI, the remit of and representation on the National SARI Committee was reviewed, and the Chairman and Honorary Secretary indicated that they would step down in the spring of 2008 when successors had been identified.

Locally, many hospitals or institutions have undertaken, or continue to undertake local initiatives such as HCAI surveillance and antibiotic stewardship. However, there was much variation in liaison and communication between the Regional SARI Committees and the Local Implementation Teams, established by the HSE to implement national strategic objectives. Furthermore, a survey of the implementation of national guidelines on the control and prevention of MRSA, first published in 2005, revealed that 88% of hospitals had major barriers when it came to implementation.

The consumption of antibiotics in Ireland is relatively high by European standards and unlike in many other countries, the use of antibiotics is continuing to increase annually. Other countries such as Belgium and France have seen a fall in consumption and not all acute hospitals in Ireland are able to provide valid and comparable data on antibiotic use.

Although a tranche of relevant and important posts, i.e. infection prevention and control nurses, surveillance scientists and antibiotic pharmacists, was approved in 2006, a number of these posts were unfilled by the end of 2007. Outside the acute hospital sector, there are major gaps in the provision of infection prevention and control services, microbiology advice and pharmacy support in the community.

A second gap analysis of the implementation of SARI was undertaken, the first having taken place in 2005. This revealed that some progress had been made in achieving the manpower targets set in the SARI report in 2001, e.g. the number of

SARI Annual Report 2007

antibiotic pharmacists had increased from 1 to 19 by 2007. However, the gap analysis indicated inadequate numbers and resourcing of reference laboratories, the absence of a national HCAI surveillance system, which is in breach of EC directive 2119/98/EC, the absence of on-site medical consultant microbiology services in some acute hospitals, and no formal educational system on AMR and HCAI for all healthcare workers.

SARI is a roadmap to achieve significant reductions in AMR and in the prevention and control of HCAI, and much good work has been done to date. However, its full implementation is not in sight due to a combination of poor communications, delayed decision making and the failure to recognise that there are major infra-structural deficits in the health service in Ireland that require prioritisation at the top and the allocation of ring-fenced funding.

2. Background

Ireland joined the European Antimicrobial Resistance Surveillance System (EARSS) in 1999. This demonstrated a high level of antimicrobial resistance in Ireland, compared to other European countries. Likewise the 1999 North-South methicillin-resistance *Staphylococcus aureus* (MRSA) survey found that the higher MRSA prevalence in the Republic of Ireland, compared to Northern Ireland, was associated with inadequate infection control resources. In response to these, and other findings, the Strategy for the Control of Antimicrobial Resistance in Ireland (SARI) was launched by the Minister for Health and Children, Mr. Micheál Martin in April 2001.

SARI recommended the establishment of a national framework including key appointments and developments in the areas of surveillance, monitoring the supply and use of antimicrobials, education, enhancing infection control in hospital and in community settings, and research. These recommendations were in line with the 1998 European Union “Copenhagen recommendations” and SARI is now recognised as Ireland’s formal “Inter-Sectoral Coordinating Mechanism” under the European Council recommendation on the prudent use of antimicrobial agents in human medicine (2002/77/EC). Part of the national framework including the National Committee was established together with Regional Committees and Specialty Sub-Committees. This annual report summarises the activities and developments in the implementation of SARI during 2007, including the activities of the various sub-committees and progress in the regions.

Professor Hilary Humphreys, Chairman, SARI National Committee and Dr Robert Cunney, Honorary Secretary, SARI National Committee, drafted this report, following the receipt of reports from the Regional and Specialty Sub-Committees. Both are grateful to the Chairs of the Specialty Sub-Committees and the Regional Committees, who are listed in Appendix I.

3. National Committee

The National Committee has 32 members with widespread representation from the regions and area authorities, and from various relevant professional groups. Following the re-organisation of the health services in 2004, the National Committee reports to the Health Service Executive (HSE) but has retained representation from the Department of Health and Children.

During 2007, the National Committee met on four occasions. In March 2007, the HSE established the Healthcare-associated Infection Governance Committee (HCAI GC) under the Chairmanship of Dr. Pat Doorley. Both the Chairman of the National SARI Committee and the Honorary Secretary are members of this Committee. Much of the initial activities of this group, which liaises with the SARI National Committee, centred on the appointment of the remaining posts from the tranche of 52 posts agreed and funded as far back as summer 2006 but some of which remained unfilled in the last quarter of the year. Arrangements were put in place to ensure good communications between both SARI and HCAI-GC. In particular, it was emphasised that SARI represents a significant body of scientific and professional expertise in both antimicrobial resistance (AMR) and healthcare-associated infection (HCAI) that should be used in guiding national strategic developments.

In the first quarter of 2007, the HSE launched the “**Say No to Infection**” document, which outlined the national strategy for the reduction of HCAI. However, there was criticism at the SARI National Committee about aspects of this document, including the comparison of data between different countries even though the methodologies were different. A redrafting of this document was undertaken and forwarded in late 2007, but by year end had not replaced the original document.

Regional SARI Committees were encouraged to liaise with Local Implementation Teams (LITs) which represent the executive structure for the implementation of national policy in the area of HCAI and AMR. The establishment and effectiveness of these LITs has been variable during 2007. In some regions they had commenced work very early on and were effective. The HCAI GC agreed to the collection and subsequent publication of data on antibiotic consumption, alcohol hand gel and *Staphylococcus aureus* bloodstream infection for acute hospitals, but corrected for clinical activity. This was possible due to close co-operation between members of the HCAI GC, SARI and the Health Protection Surveillance Centre (HPSC), and the LITs as well as with Regional SARI Committees. Delays occurred because of inaccuracies in the denominator data provided (e.g. bed numbers, bed occupancy levels, etc). Although this data was eventually available for release to the public before Christmas, the HSE decided to postpone publication until 2008.

SARI Annual Report 2007

The Teamwork Report on laboratory services in Ireland became available in late 2007, although this document was never officially published. However, it was an item for discussion at the December meeting. Concern was expressed at the failure to allow for the importance of close liaison between microbiologists and prescribers, both in hospitals and in the community to ensure appropriate use of antibiotics and to reduce AMR. While aspects of this report were to be welcomed, including the focus on patient care, the perception remained that those who drafted this report saw laboratory facilities akin to a factory where results are merely generated, without acknowledging the importance of both pre- and post- analytical input and the daily involvement of clinical microbiologists in patient care. The National Committee has discussed the necessity for national reference facilities on a number of occasions. The National Committee did not receive a copy of the submission made to the Teamwork Report Group from the HSE on this matter, despite requesting this on more than one occasion.

In the light of the establishment of the HCAI GC and other developments in the Health Service, it was decided to review the remit and representation on the SARI National Committee. In particular, it was noted that there was consistent non-attendance from some individuals and organisations or groups. The remit of the National SARI Committee was reviewed, representation from those bodies that have not been well represented previously was updated, and it was decided that inter-sectoral issues, and not just HCAI, would be more adequately covered in the discussions and in other activities. The Chairman indicated that he would step down when a new Chairman was identified in spring 2008 and the Honorary Secretary indicated that he would also be resigning later after an orderly transfer.

The fourth Annual Joint Antimicrobial Resistance action plan (AMRAP)/SARI meeting took place in Belfast in November 2007. These meetings, which are important forums for professionals to meet and discuss relevant issues, involve appropriate individuals and groups from Northern Ireland and the Republic exchanging information and ideas, and they enable them to update each other on progress in their respective jurisdictions. This meeting focussed primarily on antimicrobial stewardship and prescribing, and on the re-organisation of laboratory services in both Northern Ireland and in the Republic. A full report of this meeting is included as appendix II. Grateful appreciation was expressed to Mr. Jeff Dudgeon, the central administrator on behalf of the authorities in Northern Ireland for HCAI and AMR, as this was his last meeting due to impending retirement. He has assisted greatly in all of the AMRAP/SARI meetings to date. There is no such equivalent post in the Republic.

4. Specialty Sub-Committees

4.1 Infection Control

The Sub-Committee met on three occasions. During the year Dr. Fidelma Fitzpatrick took over from Dr. Robert Cunney as the Honorary Secretary. The Chairman of the Sub-Committee acknowledged the considerable efforts and contribution that Dr. Cunney had made since the Sub-Committee was established.

The Sub-Committee undertook an audit of progress on the implementation of national guidelines on the prevention and control of MRSA, which were launched by the Minister for Health and Children, Ms. Mary Harney in September 2005. These guidelines acknowledged that there might be difficulties in the implementation of some aspects, and therefore the Sub-Committee thought that it was appropriate to see what progress was being made and to identify the difficulties. Forty- three (88%) hospitals surveyed reported major barriers to the implementation of the national MRSA guidelines. These included inadequate hospital infrastructure, adequate in only one (2%) hospital to allow full implementation, availability of single rooms, adequate in 3 (6%) hospitals, laboratory resources to ensure the efficient identification of positive MRSA patients, adequate in 3 (6%) hospitals, and infection control nursing and consultant microbiologist staffing, adequate in 15 (31%) hospitals. In addition, high bed occupancy impacted on guideline implementation in 46 (94%) hospitals. This report was discussed at the National Committee and subsequently forwarded to the Chief Executive of the HSE and the Minister for Health and Children.

During 2007 there was some clarification on the process of drafting national standards on infection prevention and control. Previously, this had been undertaken by the Irish Hospital Accreditation Board but with the establishment of the Health Information and Quality Authority (HIQA), this responsibility has been transferred to that body. Towards the end of 2007, meetings took place to commence the development of national standards for both hospital and community settings, to be followed by consultation with a variety of bodies and with the public.

Surveillance of MRSA in hospitals has been shown to reduce infection rates through early identification of colonised patients and the initiation of contact isolation precautions to prevent cross-infection. However, there is currently no national system for surveillance of HCAs in Ireland, including those infections caused by MRSA. The National SARI Committee and the SARI Infection Control Sub-Committee agreed that the collection of weekly prevalence data on the extent of MRSA in general intensive care units (ICUs) within acute Irish hospitals represented an initial effort in this area.

After a consultation period in 2006, a pilot study of MRSA prevalence in general adult ICUs commenced in July 2007 subsequent to the appointment of the SARI surveillance scientist in the HPSC. The protocol was altered significantly during the pilot phase following feedback from participating hospitals. A proposed final version of the survey was due to be circulated to participants in early 2008 and the survey proper to commence in the second quarter of 2008.

With the National Committee, the Sub-Committee established three new groups, one to look at national surveillance strategies for HCAI (under the Chairmanship of Dr. Fidelma Fitzpatrick – Section 4.2) one on building standards for the refurbishment and renovation of existing facilities (chaired by Dr. Robert Cunney) and a Steering Group to oversee the MRSA weekly prevalence survey in general adult intensive care units.

There was some confusion about the public release of data on the Hospital Infection Society Prevalence Survey of Healthcare-associated Infection, which took place in the spring of 2006. Although the overall data, including a national prevalence figure of 4.9% for the Republic of Ireland, was released to the public in late 2006, it had always been intended to release the figures for individual hospitals in Ireland. Although the HPSC, under whose auspices the Prevalence Survey took place, provided the data and ensured that they were accurate, there was much uncertainty about the timing and the format of its release by the HSE.

By the end of 2007, there was no national educational programme for healthcare workers on the prevention and control of HCAI. In 2006, the Sub-Committee produced a draft tender document on learning and teaching materials in this area, which could be distributed to all healthcare workers. However, the HSE undertook to provide these materials via their e-learning centre but this has resulted in considerable delays with no programme in place by the end of 2007.

Finally, as there had been no clarification on the role and remit of this Committee, in the context of SARI and the establishment of other groups and committees within the HSE such as the HCAI GC, it was decided at the October meeting to disband this committee. Both the groups devising strategies on surveillance and building standards will report to the National Committee and the HCAI GC.

4.2 Surveillance of HCAI

Surgical site infections (SSI) are one of the most common HCAI. They represent a significant burden in terms of patient morbidity and mortality and can result in increases in length of hospital stay and costs of hospitalisation. The establishment of well-organised infection control surveillance programs have been shown in multiple studies to reduce rates of surgical site infection, thus representing one successful approach to tackle this problem.

SARI Annual Report 2007

In May 2007, the SARI National Committee agreed that a subcommittee be established to produce recommendations on surveillance of surgical site infection in Ireland. This was subsequent to agreement at the HCAI GC that HCAI surveillance was one of the key components in the prevention and control of HCAI. The committee is chaired by Dr. Fidelma Fitzpatrick, and its membership includes microbiologists, surveillance scientists, a surgeon, an infection prevention and control nurse and a representative from the Northern Ireland Healthcare-associated Infection Surveillance Centre.

The committee first met on 30th July 2007. In the short-term, the committee agreed to produce recommendations on the surveillance of surgical site infection nationally, including standardised definitions and a standardised national protocol containing a national core dataset. In the long-term, the committee will act as a HCAI steering committee and guide developments in HCAI surveillance. The committee will feed back to the HSE HCAI GC via the SARI National Committee.

In order to inform surveillance recommendations, a questionnaire was sent to the infection prevention and control teams (ICTs) of 59 acute national hospitals in August 2007 to capture the type of HCAI surveillance activities being carried out across the country. 45 hospitals responded. A variety of HCAI surveillance activities are currently being carried out;

- 13 (29%) hospitals are carrying out SSI surveillance.
- 17 (38%) hospitals are undertaking HCAI surveillance in the intensive care unit.
- 10 (22%) hospitals are surveying catheter-related bloodstream infection.
- 5 (11%) hospitals are carrying out surveillance of pneumonia.
- 5 (11%) hospitals are undertaking surveillance of urinary tract infections.
- 15 (33%) hospitals take part in other surveillance activities.
- 41 (91%) hospitals expressed an interest in participating in national HCAI surveillance initiatives. However as with the Hospital Infection Society (HIS) Prevalence Study feedback questionnaire in 2006, additional resources (IT and personnel) would be required in many centres to participate.
- SSI surveillance is being carried out in orthopaedic surgery (7 hospitals), colon surgery (6), cholecystectomy (6), cardiac surgery (4), caesarean section (2) and other surgical specialities (5). While all hospitals were using CDC definitions of SSI, only three hospitals had access to an automated data entry system (Teleform / Formic) and only 4 hospitals are using international protocols (HELICS / Panceltic).

A draft protocol for SSI surveillance in general surgery and recommendations for the establishment of a national SSI surveillance programme was prepared in the latter half of 2007. These were due to be circulated to the professional groups in early 2008 for consultation.

4.3 Surveillance of Antimicrobial Resistance

National data on antimicrobial resistance is provided through the European Antimicrobial Resistance Surveillance System (EARSS). Ireland has one of the highest levels of participation in EARSS among participating European countries, with Irish EARSS data in 2007 representing 100% of the population. However, Ireland still has a high level of antimicrobial resistance, compared to most other European countries. In 2007 1393 cases of *S. aureus* bloodstream infection were reported to EARSS in Ireland, with 536 (38.5%) caused by MRSA. This represents a small, although not statistically significant, decrease in the proportion of MRSA compared to 2006 (42%). While the prevalence of MRSA has remained relatively stable, levels of resistance amongst other EARSS pathogens have continued to rise in 2006. For example,

- Quinolone resistance in *Escherichia coli* increased from 5.4% in 2002 to 22.3% in 2007 (compared to 21.5% in 2006).
- Resistance to aminoglycosides in *E. coli* increased from 2.7% in 2002 to 9.9% in 2007 (compared to 7.7% in 2006).
- The proportion of vancomycin-resistant *Enterococcus faecium* (i.e. VRE) increased from 11.1% in 2002 to 33.5% in 2007. Although this represents a slight decrease compared to 2006 (37.3%), this remains one of the highest levels in Europe.

These increases in resistance to individual antibiotic classes have been accompanied by increased reporting of both *E. coli* and *E. faecium* strains that are resistant to multiple classes of antibiotics.

A subset of laboratories reporting to EARSS participate in a voluntary system for enhanced surveillance of bloodstream infections. Results from this enhanced system for 2007 continue to show central venous catheters as the most frequently identified source for *S. aureus* bloodstream infection, including MRSA bloodstream infection. Detailed results of EARSS and the enhanced bloodstream infection surveillance system are available from www.hpsc.ie.

4.4 Surveillance of Antimicrobial Consumption

Irish participation in the European Antimicrobial Consumption Surveillance (ESAC) network continues, with data on community antimicrobial consumption calculated from wholesale pharmacy sales data purchased from IMS Health. This data has shown a steady increase in the level of antimicrobial use in the community, coupled with increasing use of “broad spectrum” antibiotics in place of “narrow spectrum” agents. The overall outpatient antibiotic consumption for Ireland in 2007 was 22.6 defined daily doses (DDD) per 1000 inhabitants per day, although this data is still provisional. This represents a rise from the previous year’s rate of 21.1 DDD/1000/day. The rate of outpatient antibiotic consumption has been rising steadily at 2.4% per year since 1993 when the rate was 16.1 DDD/1000/day. A recent ESAC report showed that, in 2005, the median outpatient antibiotic consumption across Europe was 18.1 DDD/1000/day. This report also showed that Ireland was one of four European countries where the level of outpatient antibiotic use was increasing, compared to decreasing use in six countries and no change in the remaining 18 participating countries.

In a survey of all public acute hospitals in Ireland, 34 hospitals were able to provide valid antibiotic usage data for 2007. The median rate of antibiotic consumption was 80.6 DDD per 100 bed days used, compared to 78.7 DDD per 100 bed days used in 2006.

A pilot of sentinel surveillance of community pharmacies, developed by the HPSC and the School of Pharmacy at Trinity College Dublin, commenced in 2007. The project was included in HSE SARI funding for 2006 and was scheduled to commence in October 2006. However it was postponed until early 2007 due to difficulties in accessing the allocated funds.

Detailed results of antimicrobial consumption surveillance activities are available at www.hpsc.ie.

5 Reports from Regional Committees

5.1 Dublin North

The committee first meet in November 2007 under the co-chairmanship of Dr. Fidelma Fitzpatrick and Ms. Angela Fitzgerald, Network Manager, Dublin North. In addition, the chairman of the LIT, Mr. Brian Conlon, CEO Mater Hospital is a member of the committee. Administration support was provided by Ms. Jennifer Feighan, HSE.

Membership of the committee included representation from the professional groups, acute hospitals, and HSE Population Health and Primary Community and Continuing Care (PCCC) directorates. The terms of reference as circulated by the SARI National Committee were agreed at the first meeting and it was agreed that Dr. Fidelma Fitzpatrick would attend on a monthly basis or as requested by the LIT.

Initial discussion revolved around confirming the there were no outstanding problems with the relevant SARI posts (of the 52 posts) in the region and the gaps in infection prevention and control staffing outside of the acute hospitals. It was agreed that the committee was to meet on a quarterly basis thereafter.

5.2 Dublin North East

The HSE Dublin North East SARI Committee continued, as in 2006, to fund equipment and educational and research initiatives in both Acute and Primary and Continuing Care.

In Primary Care, general practices availed of funding specifically for laboratory specimen refrigerators.

In the hospital setting MRSA and Norovirus PCR methods were evaluated with staff and reagent funding. Equipment was purchased for the microbiology laboratory and expert services were engaged for legionella control and operating theatre commissioning.

Although one surveillance scientist is funded through SARI at present, it is of concern that the SARI recommended posts of surveillance scientist, antibiotic pharmacists and consultant microbiologists were not filled during 2007.

Formal working links with the LIT were established with a view to improved cross pillar infection prevention and control implementation in the future.

5.3 Dublin South

The Regional SARI Committee for Dublin South was established in late 2007 and had its first meeting in December. The Committee thanked Dr Eleanor McNamara for her outstanding contribution and commitment as chairperson of the former Eastern Regional Health Authority Committee. There were no major initiatives in 2007 as the inaugural meeting was held in December.

Four SARI posts were allocated to Dublin South as part of the 52 SARI posts approved by the HSE nationally in 2006. By the end of 2007, two posts were in place (antibiotic pharmacist in St Vincent's University Hospital and a surveillance scientist at the National Maternity Hospital and Royal Victoria Eye & Ear Hospitals). Permission had been obtained to advertise the other two posts (antibiotic pharmacist and infection prevention and control nurse for St. James Hospital).

Significant additional financial resources need to be allocated and prioritised for SARI if this strategy is to achieve its aims. In Dublin South, St Columcille's Hospital, Loughlinstown remained without a consultant Microbiologist. In 2007, the first hygiene audit and decontamination review were conducted by HIQA and a national report on the decontamination review is awaited. However, three acute facilities in Dublin South require major investment in sterile services departments which needs to be prioritised. Community healthcare facilities are poorly resourced in terms of infection prevention and control services.

5.4 Midlands

In 2007, the main focus of the Regional SARI Committee was the filling of posts as agreed in 2006. Issues pertaining to SARI were also raised at the Regional Infection Control Committee.

There is still no permanent consultant microbiologist in the HSE Midlands Area. A temporary half-time consultant microbiologist is in place to cover the three acute hospitals. This level of provision is totally inadequate, even to provide a service on a day to day basis to patients and there is no locum cover when the temporary consultant microbiologist is on holiday.

5.5 Midwest

SARI is incorporated into the Regional Communicable Disease Control Committee. Four meetings were held during 2007. The following major initiatives took place in 2007:

SARI Annual Report 2007

- 2 senior pharmacists (antibiotic) appointed in late 2007
- A second surveillance scientist took up post in September 2007.
- A point prevalence study of antibiotic usage was carried out in Mid-Western Regional Hospital, Ennis.
- Statistical Process Control charts for the surveillance of *C. difficile* infection and *S. aureus* bloodstream infection for acute hospitals was developed with the subsequent dissemination of surveillance data.
- The Mid-Western Regional Hospital, Ennis Infection Control Committee was re-activated and chaired by hospital manager in the absence of a consultant microbiologist.
- There was an increase in infection prevention and control nursing hours from 19.5 to 30 hours per week for acute services in Clare.
- Enhanced surveillance of *Clostridium difficile* and targeted training in the Mid-Western Regional Hospital, Ennis on this infection was undertaken.
- Increased hand hygiene awareness in Mid-Western Regional Hospital, Nenagh that included the introduction of a “Talking sign” advising patients, visitors and staff to perform hand hygiene on entering and leaving the hospital, was supported by ongoing education.
- Meetings on MRSA were convened and an MRSA Action Plan was developed for Nenagh.

The main impediments to the implementation of SARI recommendations are the insufficient funding and the employment recruitment ceiling. Key posts must be approved, funded and filled. Additional full-time microbiologists are required for the region; there is only one in place. The 2003 National Task Force on Medical Staffing (Hanly) Report recommended three full-time consultant microbiologists by 2009 and four by 2013.

A half-time infection prevention and control nurse (IPCN) was interviewed on 31/08/07 but not filled despite a staphylococcal scalded skin syndrome outbreak and significant infection control needs in the Mid-Western Maternity Hospital. Six IPCNs are required for the 3 hospitals within the complex (Regional, Maternity and Croom Orthopaedic Hospital) and a divisional nurse manager in infection prevention and control is required as a matter of urgency. In addition, a community IPCN is also required for each of three Local Health Offices.

MRSA screening has increased 67% since Sept 2005, but no additional resources have been allocated to the laboratory. The appointment of senior medical scientists and a secretary to the Mid-Western Regional Hospital Microbiology Laboratory are required.

An extra half-time specialist in Public Health Medicine and a further half-time surveillance scientist are required along with clerical support. Finally, the HSE embargo on travel and attendance to conferences discouraged attendance of healthcare staff at the 4th SARI/AMRAP conference in Belfast.

5.6 North-West

SARI Pharmacists were appointed and in post in both Letterkenny and Sligo General Hospitals. Hospital antimicrobial guidelines were developed for Letterkenny Hospital, and were due to be published in early 2008. The Regional Infection Control Committee was due to have a first meeting in early 2008.

5.7 South

The SHA-Regional SARI committee met four times in 2007 and there were additional sub-committee meetings. The structures agreed in mid 2007 were implemented at the end of 2007; the Chair of the Regional Infection Control Committee (RICC) joins the regular teleconferences held by the LIT. The Chair of the LIT attends the RICC and communication has greatly improved through this mechanism. The LIT is in the process of establishing the Community Infection Control Committee and each acute hospital is reviewing their Hospital Infection Prevention and Control Committee. The RICC held its first meeting in November 2007.

The following SARI related activities took place in for 2007.

- A laboratory antimicrobial resistance surveillance project was undertaken on urinary tract susceptibility data. The results were published in the Southern Health Authority (SHA) SARI Newsletter.
- Regional EARSS data is made available and distributed.
- A system for monitoring antimicrobial use was established in three hospitals that contribute to ESAC (see Section 4.4 above).
- The SHA Regional SARI committee funded a number of projects
 - Ongoing funding of the pneumococcal project in CUH / Department of Public Health and Department of General Practice project on Antibacterial Adherence / Mechanisms, Prevalence and Clinical impact of Multidrug Resistance in Gram-negative Bacteria being undertaken by the Mercy University Hospital and UCC.

SARI Annual Report 2007

The committee allocated funding to allow the development of a certificate/diploma in Health Protection in UCC. This will be equivalent to Diploma in Infection Prevention and Control. The course will provide an opportunity for training/education in the area of infection prevention and control for disciplines other than nursing.

Eight additional posts were sanctioned in July 2006, comprising four clinical nurse managers in infection prevention and control, three antibiotic pharmacists and one surveillance scientist. However, only 3.5 whole-time equivalent posts were filled in 2007.

A number of limitations to full implementation of SARI in the region were identified:

- There continues to be a lack of adequate infrastructure and appropriate infection prevention and control staffing levels.
- The introduction of an appropriate antibiotic stewardship programme in Kerry General was hampered due to the absence of a consultant microbiologist and antibiotic stewardship programmes were stalled in other hospitals due to inadequate numbers of appropriate personnel e.g. antibiotic pharmacists, surveillance scientists.
- The introduction of a teleform system for the surveillance of HCAI surveillance in Kerry General Hospital was hampered due to the absence of a consultant microbiologist and surveillance was also hampered at Cork University Hospital due to inadequate numbers of infection prevention and control nurses.

5.8 South East

The South East SARI committee met on two occasions in 2007, February and May. Dr Keady (consultant Microbiologist) resigned in May 2007 but the May meeting was chaired by Dr. Hickey. Dr Doyle will take over the chair in January 2008 and she will also be the representative on the LIT from January 2008

Antibiotic pharmacists took up their posts in St Luke's Hospital, Kilkenny in January 2007, Wexford General Hospital in October 2007, and Waterford Regional Hospital in August 2007

Additional infection prevention and control nurses took up their posts in South Tipperary General Hospital in October 2007, St Luke's Hospital, Kilkenny/Kilcreene in October 2007, and Wexford General Hospital in October 2007.

An additional surveillance scientist was appointed in Waterford Regional Hospital. She took up her post in 2008 following maternity leave.

SARI Annual Report 2007

An antibiotic point prevalence study was carried out in Wexford General Hospital on the 12th July 2007. 203 inpatient prescriptions were examined and 34% were receiving one or more systemic antimicrobial agents. A point prevalence study was done in St Luke's Hospital, Kilkenny in May 2007. 213 inpatient prescriptions were examined and 37% were receiving one or more systemic antimicrobial agent.

A pilot link nurse programme took place in Wexford General Hospital in 2005. A feedback report from the pilot was compiled in September 2007. This feedback was used to revise the link nurse programme which will be expanded to other hospitals in the region in 2008.

5.9 West

No report received.

6 On-going Challenges and Difficulties in the Full Implementation of SARI

- Although the funding of 52 posts in 2006 to enable the appointment of additional infection prevention and control nurses, surveillance scientists and antibiotic pharmacists was very welcome, there was much frustration in some regions over accessing this funding and in making appointments quickly.
- There was considerable variation in the level of liaison between the Regional SARI Committees and the LITs, and in some cases these links were only established towards the end of 2007. However, in some regions, this is working well with considerable benefits in terms of SARI implementation, e.g. the South.
- The SARI National Committee has never been allocated a budget for administration. During its first year funding was made available for key pilot projects, but no subsequent funding was provided.
- There remain significant manpower deficits throughout the country. For example, during 2007, there were no permanent consultant microbiologists in Kerry General hospital, the three acute hospitals (Tullamore, Portlaoise and Mullingar) in the Midlands Region and in Columcille's Hospital, Loughlinstown, Co. Dublin. There are inadequate numbers of infection prevention and control nurses in Cork University Hospital and in other acute hospitals, and provision in the community is very sparse.
- There has been an increase in the workload of many microbiology laboratories, e.g. MRSA screening tests have increased in most hospitals, but without any increase in funding for additional personnel or equipment.

Appendices

1 Members of the National Committee (and number of meetings attended)

Name	Nominating Body	Meetings attended
Prof. Hilary Humphreys	Royal College of Surgeons in Ireland	5/5
Dr. Robert Cunney	Health Protection Surveillance Centre	5/5
Dr. Fidelma Fitzpatrick	Health Protection Surveillance Centre	4/5
Ms Anne-Marie Bermingham / Ms Mary Kelleher*	Academy of Medical Laboratory Science	5/5
Dr. Kevin Kelleher	Health Services Executive	2/5
Dr. Mary Hynes	Health Services Executive	3/5
Ms Dorothy Gallagher	Consumers' Association of Ireland	4/5
Mr. Michael Gunn	Department of Agriculture & Food	1/5
Prof. Martin Cormican	Faculty of Pathology	2/5
Dr. Nola Leonard	Faculty of Veterinary Medicine	4/5
Dr John Egan	Food Safety Authority of Ireland	3/5
Ms Breda Corrigan / Ms Marina Burd	Infection Control Nurses Association	5/5
Prof Colin Bradley	Irish College of General Practitioners	2/5
Dr. Rebecca Cramp	Irish Pharmaceutical Healthcare Association	4/5

SARI Annual Report 2007

Ms Marita Kinsella	Pharmaceutical Society of Ireland	0/5
Dr. Lynda Fenelon	Royal College of Physicians of Ireland	3/5
Dr. Christine McCreary	University Dental School and Hospital	0/5
Dr. Colette Bonner	Department of Health and Children	3/5
Mr Peter Hanrahan	Department of Health and Children	3/5
Mr Stephen McMahon	Irish Patients Association	2/5
Dr. Edmond Smyth	Chair of SARI Hospital Antibiotic Committee	2/5
Dr. Eleanor McNamara	Chairs of Regional SARI Committee – East	4/5
Dr. Phil Jennings	Chairs of Regional SARI Committee – Midlands	2/5
Dr. Rose Fitzgerald	Chairs of Regional SARI Committee – Midwest	4/5
Dr. Rosemary Curran	Chairs of Regional SARI Committee – Northeast	5/5
Dr. Anthony Breslin	Chairs of Regional SARI Committee – Northwest	1/5
Dr. Mary Hickey / Dr. Deirbhile Keady	Chairs of Regional SARI Committee – Southeast	4/5
Dr. Olive Murphy	Chairs of Regional SARI Committee – South	5/5
Dr. Diarmuid O'Donovan / Dr. Heidi Pelly	Chairs of Regional SARI Committee – West	2/5

*Where two names are given, this indicates a change in representation, or a designated deputy to attend on behalf of the representative.

2 Fourth Conference of the Northern Ireland Antimicrobial Resistance Action Plan (AMRAP) and the Strategy for the Control of Antimicrobial Resistance in Ireland (SARI)

Background

The 4th joint AMRAP/SARI meeting took place in the Radisson Hotel, Belfast on the 15th November 2007. There were approximately 120 delegates in attendance, with a wide diversity of attendees, including microbiologists, infection prevention and control nurses, surveillance scientists, pharmacists, public health specialists, etc. The major themes of this meeting were *antibiotic stewardship* and *laboratory developments*. As with recent AMRAP/SARI meetings, a major feature of this conference was the exhibition of posters covering a variety of aspects of antimicrobial resistance, healthcare-associated infection and related matters. The conference, as with previous meetings, also offered interested professionals the opportunity to share expertise and knowledge.

Introduction and Welcome

Dr Michael McBride, the Chief Medical Officer for Northern Ireland welcomed the delegates to the meeting. He emphasised the importance of antibiotics as a resource and intimated that the new Minister in Northern Ireland has prioritised the prevention and control of healthcare-associated infection.

Session 1 Assessing the quality of Antimicrobial Prescribing.

Chairman, Professor Hilary Humphreys, Chairman, National SARI Committee

The Antimicrobial Stewardship Programme in Tayside

Professor Dilip Nathwani, Consultant Physician and Honorary Professor of Infection, Dundee University.

The keynote speaker for this session, Professor Dilip Nathwani, indicated that the drivers for antibiotic stewardship include patient care, containing costs, the emergence of antibiotic resistance, political considerations and legal aspects. Much of the developments that have originated in Scotland have been adopted by the rest of the UK and these include the overall responsibility for antibiotic prescribing to be held by the Chief Executive and the Medical Director of the Trust or hospital. In Tayside, they have taken the view that improved knowledge leads to better attitudes resulting in improved behaviour, when it comes to prescribing antibiotics. The literature is very scanty with regard to what is effective but patient-directed interactions are useful.

In Dundee, they have prioritised improving practice in the area of surgical prophylaxis and limiting the use of quinolones for the treatment of respiratory infections. This and

other developments have taken place by utilising amber, green and red feedback forms for wards and other areas. Finally, Professor Nathwani emphasised the importance of care bundles which not only apply to intravascular catheter line care and community-acquired pneumonia, but also to the use of antibiotics.

Auditing Prescribing Behaviour in Four Hospitals in Northern Ireland

Dr Hugh Webb, AMRAP Chair, Head of Microbiology at the South Eastern Health and Social Care Trust, Consultant Microbiologist, Ulster Hospital.

Dr. Hugh Webb's presentation outlined the methodology and overall results from a point prevalence survey of antibiotic use in four hospitals. This was part of a wider AMRAP initiative which included PCR to detect MRSA. The study involved the training of forty pharmacists and two infection control nurses and a total of 1,823 occupied beds were surveyed. The authors noted a bed occupancy level of 91% during the conduct of the study.

84% of wards had access to some guidelines but often this was to a formulary rather than to guidelines *per se*. In total, 32% of patients received antibiotics, in 80% of cases for empiric treatment. 67% of patients were initially prescribed antibiotics by the intravenous route, with co-amoxycylav followed by cefuroxime being the most common. The most common orally prescribed drugs were co-amoxycylav, ciprofloxacin and clarithromycin.

Amongst the main other findings or conclusions from the survey were –

- the high use of co-amoxycylav compared with amoxicillin
- issues pertaining to dosage and duration of antibiotics
- the considerable resources required in doing such point prevalent surveys. In future, periodic point prevalent surveys targeting specific areas might be more advisable.

Measuring Antibiotic Prescribing in Primary and Secondary Care

Miss Jacqueline Sheridan, Pharmaceutical Information Officer at the Central Services Agency, Northern Ireland.

Miss Sheridan outlined her remit at the Central Services Agency which is to make payments and keeps records of primary care prescriptions in Northern Ireland. In particular, 16 million prescription forms, approximately, are reviewed annually, of which 6% are antibiotics. Much of the data that is available is under used. Shortly, the annual report will be published on the website. Ms. Sheridan argued that a web-

based system was optimal for providing feedback as this can be updated and is readily accessible. The system has the capacity to provide further details on daily defined units of antibiotics prescribed, and by the end of 2008 a comprehensive data set of information will be available. However, this system is not without costs, both developmental and maintenance. In the future, it is hoped to integrate it with other systems to provide more comprehensive information for Northern Ireland.

Role of the Antibiotic Pharmacist in SARI implementation

Ms Audrey O'Reilly, Senior Pharmacist, St James's Hospital, Dublin.

Ms. O'Reilly reviewed the seven year history of antibiotic stewardship in St. James's Hospital, Dublin. This post plays a pivotal role in the surveillance of antibiotic use and has helped ensure that the hospital Antimicrobial Committee has been expanded. The antibiotic/infectious diseases pharmacist links very closely with specialist registrars in Microbiology and Infectious Diseases to carry out much needed audits. These audits have included assessment of increased linezolid use, therapeutic drug monitoring of vancomycin and gentamicin, and a feasibility study on the likelihood of out-patient intravenous antibiotic therapy. One of the conclusions of the audits is to make intravenous ciprofloxacin a restricted antibiotic because of cost and because often oral ciprofloxacin will suffice.

Plans for 2008 include improving educational sessions for non-consultant hospital doctors and others, and changing the culture of antibiotic use which will involve greater use of information technology.

Session 2 Laboratory Contribution to Controlling Antimicrobial Resistance. Chairman, Dr Tim Wyatt, Communicable Disease Surveillance Centre & The Mater Hospital, Belfast, and Consultant Microbiologist.

Molecular Advances in Microbiology and the Control of Antimicrobial Resistance: Is there Hope for the Future?

Professor Peter Hawkey, Professor of Clinical and Public Health Bacteriology, Consultant Medical Microbiologist, Division of Immunity and Infection, University of Birmingham and Health Protection Agency

Professor Hawkey, the keynote speaker for this session, emphasised that the presence of commensal flora in many microbiological samples makes it difficult to pick out quickly the presence of an antibiotic resistant "superbug." Molecular methods

have the capacity to give more rapid information about either the identification of an organism present, e.g. *Chlamydia trachomatis* in the diagnosis of sexually transmitted infections, or the presence of resistance, e.g. MRSA. Any test that is designed to detect resistance needs to be capable of automation and needs to provide a result quickly. The IDI-MRSA test is designed to detect all the common SCCmec strains. It takes approximately two hours to provide a result. Generally the negative predictive value is high at over 95% but the positive predictive value is between 70-85%. In the USA, healthcare costs have stimulated the evaluation of new systems in the hope that infection can be controlled quicker.

In addition to diagnostics, molecular methods are being used to provide rapid typing results as alternatives to pulsed field gel electrophoresis (PFGE). He outlined examples in Birmingham where such typing methods confirmed that cross-infection had not occurred when there was an outbreak of staphylococcal infection in a neonatal intensive care unit. Finally, Professor Hawkey predicted that in the future, with the human genome project, it would be possible to provide simple bed side tests, not only to diagnose infection, but also to confirm the presence of resistance.

The Future for Northern Ireland Laboratories

Dame Ingrid Allen, Professor of Neuropathology, Queen's University Belfast

The group, which Dame Ingrid chaired, reviewed laboratory services in Northern Ireland, had broad terms of reference, and had as one its priorities, the importance of opinion gathering in trying to get a consensus. Criteria used for deciding on what system should be put in place included the quality of service that was likely to be provided, its sustainability, the timeliness of any service, whether it provided value for money and finally, ease of implementation. Although the group was not asked to come up with a system which would make costs savings, any changes would have to be cost neutral.

The current laboratory services in Northern Ireland are characterised by a good standard of service but they are under a lot of pressure to provide that service, e.g. difficult to recruit certain personnel. Furthermore, the workload has been increasing by 5% a year. Specifically in Microbiology, there is a shortage of consultant microbiologists, many microbiologists work single-handed, and there is no sub-specialisation. In addition, there is an absence of 24 hour cover in certain areas and there is a loss of some epidemiological data.

The review came down in favour of a system which reduced the number of laboratories from 14 to 7. Specifically in Microbiology, there would be a 24 hour service in Belfast and in Derry and a 12 hour service would be provided in Antrim, Craigavon and Ulster Hospitals. Dame Ingrid acknowledged the need for newer buildings, better information technology, better transport systems and networks.

SARI Annual Report 2007

Following a period of consultation, the report has been adopted by the Department, and awaits final decision from the Minister for its implementation.

The Future for Republic of Ireland Laboratories

Mr Tom Finn, Health Service Executive, Chair, Diagnostic Services Review, Dublin

The discussion on the review of laboratory services in the Republic of Ireland was unsatisfactory as Mr. Finn arrived late. This review was different to that in Northern Ireland as there was little or no consultation and one of the conclusions from the review is to possibly locate 'cold' laboratories off hospital sites. According to Mr. Finn, the review has been accepted by the Health Service Executive, and discussions with the social partners are pending.

Meeting Overview

There was considerable discussion from the floor about such issues as the difficulty of changing culture with regard to antibiotics, the importance of ensuring that optimal antibiotic prescribing occurs not just in hospitals but also in the community and options for education to improve practice, e.g. the use of online facilities. With regards to reviews of laboratory services, some concern was expressed about moving diagnostic services away from the patient, and the clinical implications of having stand-alone laboratories. Pathology laboratories, including microbiology are not factories that churn out results from specimens, and a number of participants were concerned that such a model of laboratory service delivery would have a negative impact on requirements for clinical liaison, training and research in laboratory medicine.

Finally, grateful thanks are due to the speakers for their excellent presentations and to those attending the meeting for making it a success. We would also like to take the opportunity to thank Mr. Jeff Dudgeon and Ms. Karen Savage for all their organisation and attention to detail.

Hilary Humphreys

(on behalf of the AMRAP/SARI Organising Group)

November 2007

3 Gap Analysis on the implementation of 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. An updated report was produced by Dr Robert Cunney on behalf of the National SARI Committee. This analysis 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. The following summarises the gaps identified in the updated analysis. The full gap analysis report can be downloaded from www.hpsc.ie.

1: THE DEVELOPMENT OF A NATIONAL FRAMEWORK

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

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

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

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

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

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.

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*

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.

2 b: *Department of Health and Children 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*

Gaps

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

SARI Annual Report 2007

- 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 but serotyping recently reintroduced as part of limited project.

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*

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

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

Gaps

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

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

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

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*

Gaps

- No data available on compliance with legislative controls

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

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 the National Centre for PharmacoEconomics (NCPE) was not continued
- Most hospitals still lack an antibiotic liaison pharmacist with responsibility for antimicrobial surveillance and stewardship

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*

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

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*

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

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*

Gaps

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

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*

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

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

Gaps

(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*

Gaps

- No development of decision support systems or computer assisted prescribing

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

Gaps

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

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

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

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*

Gaps

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

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*

Gaps

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

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

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

Gaps

- Lack of standards and guidance for community practice

6 b: *The necessary infection prevention and control services to meet the set*

standards are resourced and established in hospitals and the community

Gaps

- Most hospitals do not have sufficient infection prevention and control nurse staffing, and some hospitals still have no infection prevention and control nurse
- Lack of access to infection prevention and control 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.

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*

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

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

Gaps

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

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*

Gaps

- No ongoing funding earmarked for SARI-related research

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

Gaps

- None identified

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

Gaps

- None identified

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

Gaps

(See section 2b)

4 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 Prevention and Control Nurses	31	76	100 ²	24
Surveillance Scientists	0	21	30 ³	9
Antibiotic Pharmacists	1	19	40 ⁴	21

*WTE: Whole Time Equivalentents

**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 prevention and 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.

