Healthcare Improvement Scotland | SAPG Safeguarding antibiotics

Review of Antimicrobial Management Team Workforce

March 2022

Scottish Antimicrobial Prescribing Group

Safeguarding antibiotics for Scotland,
now and for the future

Situation

Scottish Government is developing a workforce planning strategy for future provision of staff working within infection-related practice (infection prevention and control, antimicrobial stewardship and health protection). The Scottish Antimicrobial Prescribing Group (SAPG) has reviewed the current provision and future requirements for health board antimicrobial management teams (AMTs) required to inform this strategy and has made a series of recommendations to inform strategic antimicrobial stewardship (AMS) workforce planning.

Background

In 2008 the Scottish Management of Antimicrobial Resistance Action Plan (ScotMARAP)[1] was published by Scottish Government and laid out responsibilities around AMS for national stakeholders, NHS boards and clinical teams.

Actions for NHS boards included the following:

- *All NHS Boards should immediately set up, as a subgroup of their Area Drug and Therapeutics Committee (ADTC), AMTs, where not already in place.*
- *The role of the AMT in improving standards of antimicrobial use includes supporting staff education and clinical governance, promoting application of hospital antimicrobial policies, and enabling audit and feedback of these policies. In the context of single system working, hospital and 'out of hospital' care are both included in the remit of AMTs.*

In terms of staffing, ScotMARAP advised that the AMT should include a lead antimicrobial physician, lead microbiologist, lead antimicrobial pharmacist and other appropriate professionals. All AMTs should ensure that they have adequate public representation as fully engaged and involved members. The AMT in liaison with the ADTC should also link closely with clinical governance and risk management teams, the infection control committee and infection control manager.

Some boards already had antimicrobial pharmacist posts but to support NHS boards and their AMTs in delivery of local ScotMARAP recommendations Scottish Government provided central funding for 1.0 whole time equivalent (WTE) antimicrobial pharmacist per mainland board and 0.5 WTE per island board at Agenda for Change (AFC) band 8a level[2]. This funding has been maintained.

The updated ScotMARAP document published in 2014[3] detailed key deliverables for AMTs:

- Demonstration of ongoing collaboration with infection prevention and control teams.
- Demonstration of ongoing collaboration with ADTCs to report on AMT activities and provide expert advice on new antimicrobials.
- Optimising prescribing practice through implementation of AMS programmes.
- Improving professional education, training and public engagement to improve clinical practice and promote wider understanding of the need for more sustainable use of antibiotics.
- Better access to and use of surveillance data in humans.
- Better identification and prioritisation of antimicrobial resistance (AMR) research to focus activity and inform understanding of AMR.

From 2019, NHS Scotland moved to contributing to the UK-wide AMR strategy and 5-year national action plan[4] rather than having a separate Scottish policy document. The objectives for delivery of AMS remain the same with SAPG providing leadership and local delivery by NHS board AMTs.

Assessment

A review of evidence for composition of AMTs identified six studies[5-10] from France, the Netherlands, Canada, United States and Japan investigating the number and grade(s) of staff needed to implement AMS activities in hospitals. AMT core members were physicians (ideally infectious diseases specialists) ranging from 0.8-3.6 WTE, pharmacists 1.6-3.0 WTE and microbiologists 0.6 WTE per 1,000 acute care beds. While some of these studies also stated a need for administrative or data analyst support, none provided any information related to the role of nurses in stewardship. However, several authors[11-14] highlight the important stewardship functions of prescriber and non-prescriber nurses and their central role in facilitating collaborative practice and patient education to promote rational and appropriate use of antimicrobials. There appears to be a lack of recognition of the stewardship contribution of nurses through formal leadership channels such as AMT membership. Different models of nurse involvement in stewardship have been described which include specialist and generalist roles.[15] The nurse led management of cellulitis in outpatient parenteral antimicrobial therapy (OPAT) programme in Glasgow has been associated with a reduction in duration of IV therapy,[16] and nurse prescribing in primary care in Scotland has previously shown good adherence to local guidance.[17] One review article concluded that nurse involvement and leadership in AMS programmes improved clinical outcomes.[14]

Since the inception of SAPG there have been several surveys of staffing levels both across the AMTs and also, specifically, for antimicrobial pharmacists and associated staff:

- In 2014 a survey of AMTs found all boards had a core membership of consultant level doctor, consultant microbiologist, antimicrobial pharmacist and infection prevention and control (IPC) team representative. Some boards had additional clinical members, but few had a public partner. In terms of dedicated time for AMT work all boards had dedicated antimicrobial pharmacist time (range 0.4-4.5 WTE), the lead clinician was funded in six boards, ranging from 0.05-0.2 WTE and five AMTs had dedicated consultant microbiologist time (0.08-0.4 WTE).
- The National Point Prevalence Survey of Healthcare Associated Infection and Antimicrobial Prescribing 2016,[18] published by Health Protection Scotland, reported on AMS staffing using definitions and metrics from the Transatlantic Taskforce on AMR. The availability of staff with dedicated time for AMS activities is considered an indicator for effective stewardship programmes. There were approximately 0.30 WTE AMS roles per 250 beds in Scotland. The WTE included antimicrobial pharmacists and other experts with AMS activities in their job description.
- The Association of Scottish Antimicrobial Pharmacists has on several occasions collated data on antimicrobial pharmacy workforce within boards. The most recent survey in August 2020 detailed WTE, AFC grades and sector covered (primary and secondary care) as well as other staff involved in AMS, e.g. antimicrobial nurses, pharmacy technicians and data analysts. Antimicrobial pharmacist WTE per board was also related to hospital acute beds (range 0.55-2.97 WTE/1000 acute beds) and to board population (range 0.0016-0.0062 WTE/100,000 population). The survey did not include paediatrics, nor did it identify resource in terms of delivery of highly specialist regional or national services. Antimicrobial pharmacists are reported as per WTE activities, although this time can include clinical commitments to consultation ward rounds, patient management on infectious disease wards, provision of pharmaceutical care to OPAT and also primary care.
- In 2020 a SAPG conducted survey of paediatric AMS activities across Scotland identified that one territorial health board had a dedicated paediatric AMT and only seven of the remaining 10 (70%) had any paediatric representation on the board AMT. No distinction between paediatrics and neonatal services was made. In terms of dedicated time for AMT work, only one board in Scotland had dedicated paediatric antimicrobial pharmacist time (0.5 WTE), with no funding for the Lead AMT clinician. Audit and surveillance activities in paediatrics were only reported by 6 and 3 boards, respectively, and all boards reported a need for improved AMS activities within the field of paediatrics.

- A survey of AMTs carried out by SAPG in August 2021 (Appendix) confirms the level of variation across health boards in terms of medical staff provision for funded/planned sessions for AMT leads, and input of consultants in microbiology and infectious diseases to AMS activities. There is also variation in antimicrobial pharmacist time and links with primary care prescribing teams. In many boards there is a lack of antimicrobial nurses, pharmacy technicians, data analysts and administrators to support AMS activities, as well as a lack of resource for paediatric stewardship.

The data available on AMS workforce confirms significant variation across boards in terms of dedicated time of various staff roles: AMT lead, consultant microbiologist, antimicrobial pharmacist and pharmacy technician, antimicrobial nurse and data analyst.

Recognition is growing of the contribution an antimicrobial nurse can make in an AMS team. With nurses being the largest workforce within the NHS, expanding roles in health and social care and increased prescribing capability, nurse leadership in AMS is crucial. Only 3 of 15 (20%) health boards currently employ a nurse in the AMS role.

The antimicrobial technician is another developing and valuable role in AMS. AMS technicians ensure ward stock maintained is in line with infection management guidelines and reserved antimicrobials are recycled to appropriate clinical areas. AMS technicians have demonstrated significant increase in savings by reviewing stock lists and ensuring drugs are used before their expiry date. Technicians also support the antimicrobial team by highlighting to medical and nursing staff documentation of antimicrobial duration, IV review and missed doses of antimicrobials and documentation of allergy status. Only two boards currently have antimicrobial technicians, but these posts are vulnerable to other hospital pressures. Given their value it is recommended that roles should be developed for antimicrobial technicians at every acute hospital.

Children represent approximately 15% of the population; [19] however, they account for a significant volume of antimicrobial prescribing, and particularly in primary care settings.[20]

Despite significant growth in AMS activity, central national funding is only available for one antimicrobial pharmacist per mainland board. The broader AMS activity, therefore, is not ring-fenced resulting in resource (e.g. technicians and pharmacists) being pulled to support delivery of clinical services elsewhere, when required. AMS roles and functions are not easily replaced, and de-prioritising such specialist services negates AMS value and risks longer term impact within the organisation. Similarly, without specified funding for AMT leads and specific clinical microbiology sessions those clinicians providing AMS leadership are frequently diverted to other pressing clinical activities.

Working remotely and via electronic communication platforms has become a feature of the COVID-19 pandemic and has proved an effective means of team working throughout Scotland and more widely. To ensure equity of AMS provision throughout Scotland, further work is required to explore need and opportunities to formalise (and remunerate) remote AMS support from larger boards to smaller or island boards where full time AMS staffing is not feasible.

To support a sustainable comprehensive local AMS programme equity of staffing is essential and agreement on minimum WTE for each role is needed to inform future strategy and funding for workforce planning. This should be informed by discussion with AMTs and national steering groups and reflection on current local examples of good practice with respect to AMS staffing including specific professional groups and AFC grades matched to defined AMS activities. Within Healthcare Improvement Scotland there is a dedicated healthcare staffing programme team[21] who work with health boards to support workforce planning and may be able to assist with this process. It is also important to consider, define and assess the competencies required for various AMS activities to support appropriate training of staff. Maintenance of

collaborative working with other teams as specified within ScotMARAP for example IPC, risk and clinical governance and primary care is also crucial to avoid silo working and duplication of effort.

It is also important to consider changes in the way the broader NHS in Scotland uses antibiotics as part of systemic changes in models of service delivery. Key examples are the increasing role of non-medical prescribers, virtual patient consultations, evolving practice in care homes, and further development of OPAT and hospital at home services as part of the Scottish Government's Interface care initiative.

In addition, there is increased demand for AMS stewardship in health and social care and an expanding expectation of AMS activity for example in primary care and care homes.

Recommendations

- SAPG should work in partnership with board AMTs and the Healthcare Improvement Scotland's Healthcare Staffing Programme to develop a workforce specification for the delivery of effective and equitable AMS.

- This workforce specification should inform the AMS element of Scottish Government's strategic plan for the infection workforce, including any training needs to support development of staff.

Specific SAPG recommendations relating to AMS work force planning include:

1. The expanded (and future potential) roles of specialist antimicrobial pharmacists across both primary and secondary care should be taken into account in health board work force planning.

2. To ensure local medical AMS leadership each health board should ensure the role of local AMT infection specialists is specified and protected within job plans, and appropriately remunerated.

3. To effectively engage and promote AMS amongst nursing teams all territorial health boards should appoint a specialist antimicrobial nurse as part of their board AMT.

4. To support cost effective and appropriate use of antimicrobials across hospitals all territorial health boards should dedicate specific antimicrobial pharmacist technician roles for acute hospitals.

5. To support regular surveillance and feedback of antimicrobial use to inform local AMS interventions each territorial health board should have dedicated AMS analyst support.

6. To support and improve the expanding role of AMS within the paediatric population each territorial health board should incorporate dedicated and funded medical and pharmacy paediatric representation for AMS work within job plans.

7. The exploration by SAPG of the need for and potential of enhanced, formalised remote support to non-territorial boards to provide equitable AMS.

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Table of Abbreviations

ADTC	Area Drug and Therapeutics Committee
AFC	Agenda for Change
AMR	Antimicrobial resistance
AMS	Antimicrobial stewardship
AMT	Antimicrobial management team
HEPMA	Hospital electronic prescribing and medicines administration
ID	Infectious diseases
IPC	Infection prevention and control
MDT	Multidisciplinary team
OPAT	Outpatient parenteral antimicrobial therapy
PHS	Public Health Scotland
SAPG	Scottish Antimicrobial Prescribing Group
ScotMARAP	Scottish Management of Antimicrobial Resistance Action Plan
WTE	Whole time equivalent

Appendix

Antimicrobial Management Team Workforce Survey

Introduction

Scottish Government is developing a workforce planning strategy for future provision of staff working within infection-related practice (infection prevention and control [IPC]), antimicrobial stewardship (AMS) and health protection). SAPG is leading a review of current provision and future requirements for health board antimicrobial management teams (AMTs) to inform this strategy. Previous SAPG surveys of staffing levels across AMTs have shown significant variation across boards in terms of dedicated funded time for various staff roles. To continue to progress stewardship at national and local level it is important to address this.

Method

A survey was developed with questions to seek information about current staffing and AMS activities in each board together with clinicians' perception of ideal staffing provision to deliver local AMS ambitions. A Smart Survey© on-line tool was used to allow AMTs to input data and SAPG to create a summary report. The link for the survey was shared via an email to AMT leads and lead antimicrobial pharmacists and a pdf version was included to allow AMTs to discuss and agree answers together before submitting one survey response per board.

Results

The survey was completed by 14 of 15 health boards. No response was received from NHS Orkney.

Current staffing levels and grades

AMT leads

- The most commonly reported specialty of AMT lead was consultant microbiologist (5/14 boards) or consultant microbiologist/infectious diseases (ID) physician (2/14).
- In four boards the AMT lead was a consultant ID physician, in two boards the AMT lead was a consultant anaesthetist and in one board the AMT was co-chaired by a consultant microbiologist and a consultant ID physician.
- Five boards did not have formal funding or programmed activity for the AMT lead.
- For boards that did have formal PA this varied from 1 day per month to 2-4 sessions per week.
- None of the boards had additional consultant ID sessions for AMT work and five boards had additional consultant microbiologist time (up to 1PA per week).

Antimicrobial pharmacists

- Boards reported a range of grades with most pharmacists being AFC band 8a and four boards had an 8b pharmacist supported by pharmacists at band 7. These were a mix of full and part-time roles. In island boards pharmacists had a range of duties that included antimicrobials or the role was covered by several pharmacists.
- Support for primary care prescribing was provided by pharmacists via various means. One board reported 0.6 WTE of lead pharmacist time funded by primary care; one had a primary care pharmacist 0.2 WTE; one had a clinical pharmacist prescribing adviser 1 WTE and AMT work was part of their role; another reported the antimicrobial pharmacist links with prescribing advisers in primary care and another said that two prescribing adviser pharmacists helped with antimicrobial issues in primary care.

- Three boards reported that all personnel support primary care prescribing. One stated that the only support given was updating the primary care antimicrobial empirical guidelines, while others commented that it was difficult to quantify or specify areas of responsibility.
- Four respondents answered no to this question, however one of these stated the senior pharmacist role (8b) was area wide.

Antimicrobial nurses

- Four boards reported dedicated nurse roles in the AMT. The nurses with responsibility were in posts graded at band 5, 6 and 8a depending on the board.

Pharmacy technicians

- Two boards reported dedicated pharmacy technician roles. One board reported three staff at band 4, however it was noted that one of these technicians was frequently redirected to help in the dispensary, and the other board reported part-time role at band 5.

Data analysts

- Three boards reported having part-time support from a data analyst at band 5 or 6.

Administrators

- One board reported having part-time administrators at band 4, one board reported administrative support at band 4 for minute taking and AMT meeting administration and one board reported part-time support from the infection control administrator to organise AMT meetings and record minutes.

Current versus ideal staffing for AMT

- Data on board population was obtained from Public Health Scotland (PHS).
- These data were also used to calculate current and ideal staffing per 100,000 population (PHS data 2019) for mainland boards. This is a commonly reported measure in the literature used to relate to both hospital and community services (Table 1).
- Boards were asked to provide current PAs for medical staff and whole time equivalent (WTE) for other AMT staff and also to reflect on what they would see as ideal staffing to provide a robust stewardship programme.
- Figures provided for current and ideal staffing numbers were used to calculate the PA per 1,000 beds for medical staff and WTE per 1,000 beds for all other staff involved in AMT work as shown in Table 2.

Table 1: Current clinical staffing per 100,000 population in territorial NHS boards

Board	Forth Valley	Highland	Dumfries & Galloway	Ayrshire & Arran	Borders	Greater Glasgow & Clyde	Lothian	Lanark-shire	Tayside	Grampian	Fife
Population (100,000)	**306.64**	**321.7**	**148.86**	**369.36**	**115.51**	**1,183.12**	**907.58**	**661.9**	**417.47**	**585.7**	**373.55**
PA AMT Lead	2		1	2		2	2	1		1	2
PA AMT lead /100,000 population	0.0065		0.0067	0.0054		0.0017	0.0022	0.0015		0.0017	0.0054
PA ID consultant											
PA ID consultant /100,000 population											
PA consultant microbiologist						0.5	1	1			
PA consultant microbiologist /100,000 population						0.0004	0.0011	0.0015			
WTE antimicrobial pharmacist	0.5	1.5	0.4	1.7	0.6	5.43	2	2.2	1.6	1.44	0.4
WTE antimicrobial pharmacist /100,000 population	0.0016	0.0047	0.0027	0.0046	0.0052	0.0046	0.0022	0.0033	0.0038	0.0025	0.0011
WTE antimicrobial nurse			0.6				1		1	0.6	
WTE antimicrobial nurse /100,000 population			0.0040				0.0011		0.0024	0.0010	

Table 2: Current and ideal staffing per 1,000 acute beds (ideal shown in brackets where provided by AMT)

Board	Beds*	PA/1000 beds			WTE/1000 beds				
		AMT lead	ID consultant	Microbiology consultant	Antimicrobial pharmacist	Antimicrobial nurse	Pharmacy technician	Data analyst	Administrator
Ayrshire & Arran	919	2.17	0	0	1.84	0	0	0	0
Borders	198	0 (10)	0 (10)	0	3 (5)	0 (5)	0	0 (0.5)	0 (0.5)
Dumfries & Galloway	327	3.06 (3.1)	0 (3.1)	0.76	1.22 (3)	1.83 (3)	1.53 (3)	0	0
Fife	749	2.67 (4)	0 (2.67)	0 (2.67)	0.53 (1.33)	0 (1.33)	0	0	0
Forth Valley	721	2.77	0	0 (2.77)	0. 7 (1.38)	0	0 (0.55)	0	0
Grampian	927	1.07 (1.07)	0 (2.69)	0 (5.39)	1.54 (2.16)	0.65 (3.23)	0 (0.21)	0.027 (0.54)	0.027 (1.07)
Greater Glasgow & Clyde	3680	0.54	0	0.136	1.47 (1.69)	0 (1.62)	0.81 (0.81)	0.16 (0.27)	0 (0.27)
Highland	488	0 (2.05)	0 (2.05)	0 (2.05)	3 (6.15)	0 (2.05)	0 (1.02)	0 (0.51)	0 (0.41)
Lanarkshire	1331	0.75 (1.49)	0 (1.49)	0.75 (1.49)	1.65 (3)	0 (0.75)	0	0 (0.078)	0
Lothian	2137	0.93 (2.5)	0 (2.33)	0.46 (1)	0.66 (1.46)	0.46	0	0.37 (0.46)	0.23
National Golden Jubilee	200	1.25 (2.5)	0 (1.25)	0 (5)	2.5 (5)	0 (1.25)	0 (2.5)	0 (0.5)	0 (1)
Shetland	60	No dedicated AMT staff							
Tayside	1056	0 (2.84)	0 (0.95)	0 (0.95)	1.51 (3.78)	0.95 (3.78)	0 (0.95)	0 (0.47)	0
Western Isles	67	0.37	0 (14.92)	0 (14.92)	14.92	0/ (14.92)	0 (7.46)	0	0

AMT activities

Respondents indicated that antimicrobial pharmacists were most fully involved in all activities undertaken within their teams, followed by the AMT leads and other medically qualified staff. Antimicrobial nurses in boards who had them were also involved in a range of activities. Table 3 below shows the number of boards identifying staff groups involved in each AMS task.

Table 3: AMS tasks and staff roles involved

Stewardship activity	AMT Lead	ID Cons	Cons Micro	AM Pharm	AM Nurse	Pharm Tech	Other
GUIDANCE AND QUALITY IMPROVEMENT							
Development and review of guidelines	8	4	6	11	2	1	2
Data collection for QI	4	2	2	9	2	2	1
Development and review of PGDs	4	1	4	10	0	0	1
Point prevalence surveys	2	1	1	9	2	1	1
Hospital electronic prescribing and medicines administration (HEPMA) -related initiatives	5	1	3	9	1	1	1
Prepack and antibiotic stock initiatives	1	0	0	10	1	2	1
Penicillin allergy de-labelling initiatives	6	5	3	7	2	1	1
Discussion of antimicrobial issues with senior management	9	2	3	9	1	0	1
Audit and feedback	5	3	3	10	2	2	1
Practice and service development	7	3	4	11	1	0	1
EDUCATION							
Education of medical staff	8	4	6	11	0	0	1
Education of pharmacy staff	4	1	2	11	0	0	1
Education of nursing staff	5	3	4	8	2	0	1
Education of non-medical prescribers	5	3	4	10	2	1	1
Contributes to Higher Education	6	2	3	10	2	0	1
COLLABORATIVE WORKING							
Primary care prescribing teams	5	2	3	10	1	0	1
Care homes and Care at Home services	2	0	2	4	1	1	1
Interface with community hospitals	3	1	2	6	2	1	1
AMS contribution to other clinical multidisciplinary team (MDT) groups e.g. IPC, Risk	8	3	6	11	2	0	1
CLINICAL							
Clinical Stewardship ward rounds	4	1	2	6	2	1	1

Stewardship activity	AMT Lead	ID Cons	Cons Micro	AM Pharm	AM Nurse	Pharm Tech	Other
Advice on gentamicin and vancomycin	5	3	4	11	1	0	1
Advice on complex cases	6	4	6	10	0	0	0
Support of OPAT	3	3	3	8	1	0	1
Support of Hospital at Home	0	1	1	3	0	0	1
Respond to antimicrobial queries	6	4	6	10	1	0	0
Advice on clinical queries	7	4	6	10	1	0	0
INFORMATION							
Analysis of antibiotic use data	7	2	4	10	2	1	2
Production of antimicrobial use reports	3	1	1	10	1	1	3

Current level of AMS activity within board

Eight boards rated AMS activities as adequate and six boards rated as inadequate. No board rated as very good but several noted that prior to COVID-19 they would have given AMS activities this rating.

Benefit of a specific nursing AMS post(s)

Eleven respondents answered this question. Two boards currently had a nurse in post and they valued this position stating that the alternative approach taken by nurses was complementary to other roles.

Respondents who did not currently have a nurse thought nurses could contribute in the following areas:

- Development and delivery of education including peer education, involvement in undergraduate education and education of care home staff.
- Role model and leader for nursing staff providing support to optimise nurse management of urinary tract infections and wounds.
- Contribute to penicillin allergy de-labelling.
- Engage nursing staff in IV antibiotic review.
- Quality improvement work within wards, primary care and care homes.
- Link with senior nurses to raise profile and priority of AMS.
- Support data collection, analysis and feedback for audit and improvement.
- Involvement in MDT ward rounds.
- Improvement of primary and secondary care links.

Format and personnel involved in the AMS ward rounds

Six boards stated that they did not have AMS ward rounds for a variety of reasons, e.g. the consultant microbiologist works remotely, competing demands on AMT staff, shortfall or vacant posts or because rounds were felt to be counterproductive – encouraging prescribers to avoid making antibiotic decisions as this would be done for them. Various approaches to AMS rounds are summarised in Table 4.

Table 4: Details of current AMS ward rounds

Area/Type of AMS round	Personnel involved/specific review	Frequency
ICU	Microbiologist reviews antibiotic therapy	Daily
General surgery, cardiothoracic and orthopaedic wards, critical care, heart failure/transplant unit	Microbiologist, pharmacist review IV to oral switch, alert antibiotic advice, complex infection review, education and advice	Weekly
Orthopaedic ward	Microbiologist, OPAT, orthopaedic surgeon on call, pharmacist	Not stated
Surgical wards	Microbiologist, surgeons, pharmacist	Not stated
ID/microbiology meeting	Microbiologist, ID, OPAT, pharmacy team, lab team	Not stated
Colorectal surgical ward/HEPMA reports	Microbiologist reviews antibiotics and HEPMA reports	Not stated
Orthopaedic/TB	ID, pharmacist	
Review of alert antibiotics, prolonged aminoglycoside, complex cases	Microbiologist, pharmacist	Not stated
S. aureus bacteraemia ward round	AMS nurse led with support from microbiology registrar	Twice weekly
Ad hoc rounds	Consultant teams contact Highland for microbiology advice. Pharmacist reviews all IV antibiotics Monday-Friday. On call pharmacist for complex support outside regular hours	Not stated
No formal AMS round	ID and microbiologist on call teams review complex cases	Not stated
Other	Pharmacist, Nurse review compliance with policy, review/amendment to durations, IV review, IVOST, review response to therapy, referral of complex cases to ID team	Not stated

Conclusion

This survey confirms the level of variation across health boards in terms of medical staff provision for funded/planned sessions for AMT leads, and input of consultants in microbiology and infectious disease to AMS activities. There is also variation in antimicrobial pharmacist time and links with primary care prescribing teams. In many boards there is a lack of antimicrobial nurses, pharmacy technicians, data analysts and administrators to support AMS activities.