Chapter 5. Treatment recommendations

To optimise the prescription of antibiotics, it is important that healthcare personnel have access to information to support their decisions in the form of evidence-based treatment recommendations. For the treatment of infections in outpatient care, national recommendations are published by the Swedish Medical Products Agency (section 5.1). For the management of infections in hospital care, there are national, evidence-based care programmes developed by Infektionsläkarföreningen (the Swedish Society of Infectious Diseases) (section 5.2).

The production of treatment recommendations is a complicated process, on both a national and local level, and the involvement of the profession is important. The compilation of, evidence-based guidelines and treatment recommendations on a national level saves resources and is important to ensure similar administration throughout the country. However, merely establishing national recommendations is not enough – they must also be made known and implemented by the health services. Strama groups and pharmaceutical committees are key players through their systematic work to implement treatment recommendations into the healthcare system (section 5.3 and chapter 2). With national recommendations as the point of departure, local guidelines and memos are often produced and adapted to local requirements, including resistance situations, traditions and information channels.

The Swedish experience is that structured and coordinated work conducted by the profession on a national and local level is essential for healthcare personnel to have access to and knowledge of evidence-based treatment recommendations and follow these to a greater extent.
5.1 Recommendations for the treatment of infections in outpatient care

Since 2001, the Medical Products Agency has been publishing national recommendations for infections in out-patient care. Initially, the focus was on respiratory tract infections where there had been an over-prescription of antibiotics that was brought to attention partly by the work of Strama. Recommendations have subsequently been produced for several other common infection diagnoses in out-patient care, and for dental care.

The recommendations are primarily aimed at general practitioners and dentists, but are also important for physicians working in hospital care with the treatment of many minor infections, primarily in elderly people and in emergency wards. The aim is that the recommendations should provide support in the management of infections in out-patient care. One objective has been to more clearly define when the use of antibiotics is indicated – and when it is not – and to base this on the evidence found in the literature.

Implementation

National recommendations are produced in conjunction with expert meetings organised by the Medical Products Agency and the Public Health Agency of Sweden. The expert meetings were initially organised together with Strama, and then later with the Swedish Institute for Infectious Disease Control (SMI) as well as with ‘dental Strama’ (a Strama group composed of dentists).

In order to facilitate widespread support for the recommendations, it is essential that experts from various medical specialities participate, who can contribute with their experiences from both out-patient and hospital care. When recommendations for acute otitis media (AOM) were produced, general practitioners, ear, nose and throat physicians, infectious disease specialists, paediatricians, microbiologists and pharmacists took part, among others.

Prior to an expert meeting, the national specialist associations are usually asked for the names of experts with knowledge and experience within the area of infection in question. Inquiries are at the same time made into whether there are any binding obligations or conflicts of interest. The experts must not receive financial compensation from any companies that have an interest in the recommendations drawn up by the expert group.

Prior to an expert meeting, the invited experts are asked to write evidence-based background documents that address the different subjects that the recommendation concerns. The background documents are then sent out to all participants, prior to the expert meeting. Common subjects are:

- Aetiology
- Epidemiology
• Diagnostics (and differential diagnostics)
• Clinical evaluation (symptoms, signs of severe infection, anamneses, status, tests, monitoring)
• Treatment (e.g. painkillers, antibiotics, puncture)
• The effects and safety of antibiotics or other treatment

An expert meeting often goes on for two days. The experts first give a short lecture presenting the conclusions drawn from the various background documents. After this, work is conducted in groups to write various sections of the recommendation, based on the background documents. The statements made in the recommendations are evidence-graded. The discussions conducted during the expert meeting are important to reach consensus in respect of the recommendations, especially when there are no studies available on which to base opinions. It is also important that the formulation of the recommendation is adapted to clinical reality, and to the formulation of questions that physicians and nurses handle in their daily work. After the expert meeting, the recommendation and the background documents are summarised and sent to the participants for comment prior to publication.

The Medical Products Agency and the Public Health Agency of Sweden also have an agreement on the process with regard to the revision of treatment recommendations. The Public Health Agency of Sweden and the Strama Council are to regularly inventory the need for updates, based on the current knowledge situation and in consultation with the Medical Products Agency decide which revisions to prioritise.

The recommendations are communicated both nationally and locally

One challenge is to ensure that recommendations are not just published, but also reach their target groups and are used by the health services. The national recommendations are communicated via several channels, both nationally and locally. Recommendations are promoted via national websites, newsletters and press releases and are often picked up by the media that reach the wider general public. The Medical Products Agency publishes the recommendations in its journal Information från Läkemedelsverket [Information from the Medical Products Agency] which is sent to all prescribers. They also inform other relevant national and local actors, such as the pharmaceutical committees and 1177 – a telephone service providing medical information to the general public. Articles are often published in “Läkartidningen”, a journal for physicians in Sweden.
Treatment recommendations for out-patient care have been summarised on pocket-sized plastic cards and in a brochure. The brochure has been sent out to health centres across the country and has also been distributed by the Public Health Agency of Sweden, the Medical Products Agency, Strama groups and other local actors. The brochure presents the overall features of all recommendations and has been asked for by health centres. Concise information sheets that can be handed out to patients by the treating physician have also been designed for several areas of therapy. They provide information about the relevant infection, the treatment that is recommended, whether the patient should come back for a check-up and for which symptoms the patient should re-establish contact with their healthcare provider. The information sheets have been translated to several languages and can be downloaded free of charge from the Public Health Agency of Sweden’s website. Most are also available from the respective Strama group’s website. If necessary, they can be adjusted to local conditions.

The local work conducted by Strama groups and pharmaceutical committees is central for new recommendations to reach the prescribing physicians. Well-known local spokespersons who have a high degree of credibility are important for the recommendations to have the intended impact. They arrange training courses and also carry on discussions with the prescribers at health centres and clinics. Local (actors)/bodies also work with producing and revising local recommendations, based on national recommendations.

Results
Together with Strama and the Public Health Agency of Sweden, dental Strama and other representatives from the healthcare sector, the Medical Products Agency has produced treatment recommendations for the following infection diagnoses in out-patient care:

- Diagnostics, treatment and follow-up of acute otitis media (AOM) (2010 revision of recommendation from 2000).

In addition to these recommendations, the Public Health Agency of Sweden has during 2013 published data regarding the treatment of urinary tract infections in men. Recommendations that are to be published in the near future include: Antibiotic treatment of odontological infections, Drug treatment of acne, and Management and treatment of sexually transmitted infections.
The recommendations for infections treated in out-patient care refer in the first instance to the management of patients without severe underlying disease.

To facilitate the new recommendations actually reaching out to every prescriber in every primary health care centre, the numerically most important diagnoses, the one’s likely to have the greatest impact on the antibiotic prescription patterns, are summarized in the shorter but more easily distributed brochure “Treatment recommendations for common infections in outpatient care”, see more in chapter 2, figure 2.5.

In December 2011, SMI conducted telephone interviews with 100 randomly selected general practitioners in respect of the use and perceived benefit of the treatment recommendations. The interviews showed that several of the physicians interviewed were aware of the treatment recommendations. The majority stated that it was easier to choose the correct treatment and also to refrain from prescribing antibiotics with support from the recommendations.

Conclusions and lessons learned
The production of evidence-based treatment recommendations requires considerable resources; for this reason, it is most efficient to produce them at national level. National recommendations set a standard for when the use of antibiotics is indicated and are important for reaching similar administrations throughout the country. To gain widespread support for the recommendations and for them to have the desired impact, it is important the recommendations are produced with the consensus of experts who represent several medical specialities within both inpatient and outpatient care. Nor must there be any conflict of interest.

The national guidelines form the basis for the local guidelines and have an impact through the local engagement.

The national recommendations should be communicated through many different channels, both nationally and locally. A survey suggests that they are well-known among general practitioners. Training initiatives by well-known local stakeholders such as Strama groups and pharmaceutical committees are of utmost importance for the recommendations to reach the care sector and be implemented.

The treatment recommendations are not mandatory but merely provide support for prescribing physicians. The recommendations can never replace the clinical assessment made in the individual case. It is important, for medical efficiency and resource-optimised healthcare that the recommendations are followed to as large an extent as possible. In order to be able to evaluate compliance, access to diagnosis-linked data is required, for which various IT tools have been developed (chapter 4).
5.2 Examples of a national care programme for Community Acquired Pneumonia in hospital care

In Sweden, a clinical infection speciality with its own, independent clinical structure was developed at an early stage. Antibiotic therapy became a central area and led to a high level of competence that was also backed up by antibiotic research within the speciality. This high level of competence led to an all the more developed role as consultant to other areas concerned with therapy and medical care of infectious diseases. It also became natural to take responsibility for overall therapy recommendations for hospital care and, together with the primary care physicians, also for outpatient care.

The Swedish Society of Infectious Diseases is a nationwide association of, primarily, infectious disease specialists. The association is, with its members, one of the key stakeholders in the national work for rational antibiotic treatment conducted by the work of Strama. The association publishes national, evidence-based care programmes on the management of infections in hospitals. The association appoints programme groups responsible for designing the care programmes. The experts participate on a voluntary basis and are reimbursed by the association for the costs they incur through attending the meetings. The national care programmes include infectious endocarditis, bacterial CNS infections, viral CNS infections, community acquired pneumonia, joint and skeletal infections, urinary tract infections, and severe sepsis and septic shock. These programmes are primarily limited to adult patients. Below follows a description of how the association works with the care programme on how to handle community acquired pneumonia, primarily based on an interview with Jonas Hedlund, infectious disease specialist and chair of the programme group for community acquired pneumonia.

Implementation

The group for community acquired pneumonia consists of nine clinical specialists operating within the field of infectious diseases. The care programme for the management of community acquired pneumonia was first published in 2004 and has since been revised in 2007 and 2011 (47). The guidelines are based on published studies, quality-assessed by the group in terms of relevance and the strength of the evidence they provide.

International guidelines vary a great deal, due to a certain extent to differences in aetiology, epidemiology and resistance status. The Swedish recommendations are therefore adapted to the prevailing epidemiological situation.

The recommendations are a tool for rational treatment with antibiotics

The recommendations adopt an approach where classification is based on the severity of the disease and the expected care need, divided into polyclinical, hospital and intensive care respectively. To help in the assessment of the care level, the prognostic index CURB-65 is recommended. The assessment then also forms the basis for the choice of antibiotic treatment, the scope of the diagnostic measures and other care
measures. There is a clear aim for assessment of probable aetiological agents, to be able to provide optimised antibiotic therapy that is targeted as much as possible with the least potential to induce resistance.

As preventive measures, vaccination of risk groups against influenza and pneumococci is recommended, as is the cessation of smoking.

Phenoxymethyl penicillin, penicillin V, is recommended as the first choice in non-severe community acquired pneumonia in adults. This is in line with the Swedish tradition known as the “penicillin model”, which implies that the use of antibiotics with as narrow a spectrum as possible is preferred. Sweden has a favourable level of resistance in pneumococcus and there are good experiences from treating non-severe pneumonia with penicillin V.

**Communication and monitoring**

Updated care programmes are published on the Association of Infectious Disease Specialists’ website, in “Läkartidningen” and in international journals. They are also presented verbally at the association’s various meetings.

The association maintains several quality registers where, among other things, the monitoring of the compliance to the care programmes can be studied. Based on the care programme, parameters are registered for all admitted patients with community acquired pneumonia with a coverage of 70 percent.

Compilations show that the variation in compliance with the care programme is considerable between the different infectious disease clinics. These compilations are reported back to the infectious disease clinics and have also been presented at the Association’s meetings and on its website. As far as the choice of antibiotics is concerned, there has been an increased usage of narrow spectrum penicillins over the years and a parallel reduction in the use of cephalosporins in the national point prevalence measurements conducted by Strama during the 2000s (section 4.5).

**Conclusions and lessons learned**

Community acquired pneumonia is a common diagnosis. Around one out of five patients at the infectious disease clinics are treated for this diagnosis. Many with this diagnosis are also treated at other clinics. Evidence-based, rational therapy guidelines for diagnosis are therefore essential. Guidelines must be communicated to other physicians and be easily accessible at the time of prescribing.

Summarising evidence and revising guidelines requires considerable resources, which is why it is important to work systematically and limited to that which is most relevant. The care programme for community acquired pneumonia applies only to the management of adult patients who are not immunosuppressed and who are assessed/treated in hospital.
5.3 Examples of local Strama work with treatment recommendations

Since its formation in 1996, the Strama group in Region Halland has had the task of working towards rational use of antibiotics. Physicians, nurses and the wider public are important groups to reach with information regarding antibiotic resistance and how infectious diseases should be treated. Below follows a description of Strama Halland’s work, based on an interview with Mats Erntell, chair of the local Strama group and an infectious disease specialist in the county of Halland.

In 1997, legislation was implemented that required the establishment of pharmaceutical committees in each County Council tasked with working towards a rational use of medical products. In Region Halland, the Strama group has since 1998 been a therapy group within the pharmaceutical committee, with the task of formulating the regional therapy recommendations for infectious diseases in outpatient and hospital care. Through this, Strama Halland has received the mandate and resources to work towards, and to provide training on, rational antibiotic treatment.

Since 2011, the work has been reinforced by the various target formulations of the national patient safety initiative (chapter 1). The group’s task has been clarified in the management system and the work has increasingly been directed outwards through the introduction of regular visits to all healthcare providers for dialogue and feedback of antibiotic prescription and resistance data.

Implementation

Region Halland is located in south-west Sweden and has a population of more than 300,000. Strama Halland is made up of the County Medical Officer for communicable diseases as the chair, two general practitioners, a project coordinator, three infectious disease specialists, two microbiologists, a paediatrician, an ear, nose and throat physician, a public relations officer and three pharmacists. A dentist and the county veterinarian are co-opted into the group.

Strama Halland proceeds from national recommendations and care programmes when producing the local recommendations adapted to local routines for diagnostics and administration. Several local information channels are used in the implementation.

The basis for their work towards outpatient care is the pharmaceutical committee’s compendium of therapy recommendations published each year. The pharmaceutical committee organises a two-day residential course that provides Strama Halland, one of several expert groups, with time to revise its therapy area.

Fundamental to the work in hospital-based care has been the direct, collegial meetings, with information based on the point prevalence measurements of antibiotic use at various diagnoses that Strama Halland conducted, first on a regional basis and later through its participation in national measurements (section 4.5). Since 2004, Strama Halland has produced and updated an antibiotic guide that contains information on
all preparations on the market in respect of indications, dosages, dose reductions and any applicable remarks. There is also a simple pocket version with recommendations for the first day’s initial therapy. They thus focus on achieving rational antibiotic treatment through the correct choice of substance and dosage. The therapy recommendations in hospital care are based, in addition to the recommendations of the Medical Products Agency and Strama, on national documents from the Swedish Society of Infectious Diseases and the Swedish Reference Group for Antibiotics (SRGA), as well as on data from the Swedish Council on Health Technology Assessment, SBU, in respect of pre-operative antibiotic prophylaxis.

Communication
Strama Halland provides information via its own website and in conjunction with the training sessions for physicians and nurses provided under the auspices of the pharmaceutical committee. They also contribute information to the medical product committee’s information sheets and through the information sheets that they themselves provide to the healthcare sector.

The governing documents for primary care contain a clear Strama-mission for the clinics to adhere to the therapy recommendations and to analyse their own prescribing. The Strama group supports this through two annual visits at each health centre, where feedback is given on the centre’s individual prescription data. The health centre then makes a brief analysis of its own prescription. Each month, Strama Halland sends emails with open/official statistics detailing the antibiotic usage of all health centres to all units and decision-makers, to keep the issue of antibiotic usage alive.

The knowledge and expectations of the general public are also important for decisions regarding the prescription of antibiotics in outpatient care. Strama Halland has regular contact with local media so that information reaches the general public. To facilitate patient-physician encounters, patient information has also been produced based on national data. The information addresses the disease progress of common infections, when antibiotics are required, and what patients can do themselves.

Parents of young children are an important target group since children are often affected by infections and are one of the groups in society that uses antibiotics the most. In Sweden, all young children are monitored by children’s health centres (BVC) that also offer education for parents. Strama Halland has developed a training programme, Strama BVC, which is led by a paediatric nurse and which addresses common infections in children and why antibiotics are not always the obvious choice.

Results
Since there is a lack of continuous access to diagnosis-linked prescription data in Halland, it is difficult to study the adherence to treatment recommendations. However, in Region Halland, the total use of antibiotics has fallen substantially since the mid-1990s, just as it has elsewhere in the country.
Halland is one of the County Councils that, for many years, has had a relatively high level of antibiotic prescription. However, during the whole of 2012, prescription was reduced by 3 percent compared with the previous year. On average, 371 prescriptions per thousand residents were prescribed in 2012. Time-wise, the reduction coincides with the introduction of visits to the health centres and the instruction for centres to conduct their own analyses. A continuous reduction of 10 percent has been noted for the second half of 2012 and into 2013.

Conclusions and lessons learned
The extensive national work with evidence-based treatment recommendations is inspiring and important for the regional work. A regional multi-professional organisation with mandate and resources is a prerequisite for the effective implementation of new knowledge, along with adaptation to local conditions and information channels. Strama Halland’s experience has been that effective implementation requires professional support, and as a result, the group currently includes a public relations officer.
Interview with Dr Katarina Hedin

Katarina Hedin is a general practitioner with a PhD on communicable diseases among Swedish pre-school children. She has been involved in the Strama network at a local and national level since the late 1990s and is currently chair of Strama in the Southern county council of Kronoberg.

"During my training to become a specialist, I was surprised to meet so many children who were repeatedly treated with antibiotics for common colds and other simple infections. When I began to look into the matter I saw that there were significant national variations in the prescription of antibiotics. I was disturbed to find Kronoberg among the top counties in the country!" says Katarina Hedin.

Her involvement in Strama followed from this realisation. “The great thing about Strama is that it is a network with activities at many levels. Local, national and international meetings and discussions provide inspiration and ideas. A small county like Kronoberg can learn from work done elsewhere. It’s like a smorgasbord where we can pick and choose solutions to match our local needs”, Katarina Hedin says.

Hedin points to the importance of local initiatives, based on common needs and a shared interest to limit antibiotic resistance. As a network of engaged individuals representing different professions, local Strama can function in a semi-independent and pragmatic manner in relation to the general health care system.

In her work for Strama, Katarina Hedin often discusses guidelines for prescription of antibiotics with her fellow GPs at local health centres. “Working in the same field gives me credibility”, she says. “We speak the same language”. In her experience, most doctors see guidelines as helpful tools in their daily practice. However, some practitioners are generally critical of what they see as directives from above, while others just go about business as usual.

“Working for rational use of antibiotics also involves education and changing people’s expectations”, says Katarina Hedin. Over the past decade, she has noticed a clear shift in the expectations of her own patients at the health care centre in Tingsryd. “When I first started out as a GP, most parents demanded a prescription when they brought their sick child to the doctor. Today many parents are relieved and happy when I tell them that their child does not need antibiotics.”

Education and media attention has also improved preventive work in health care facilities and pre-schools. Hedin, who has headed a number of studies on transmission among children, emphasises that disease prevention is a process that must be kept alive, through the involvement and education of parents, teachers and health care staff. Today there are still great variations when it comes to basic hygiene routines and information to children and parents about how to prevent transmission.
As a result of Strama initiatives, political measures and growing awareness among the public, levels of antibiotic prescription have dropped nationally since the peak in the 1990s. However, as Katarina Hedin points out, Kronoberg still had comparatively high levels of antibiotic prescription to children under six until 2010, 15 years after she and other Strama activists raised the issue.

“We must be humble and realistic when it comes to implementing guidelines. Change takes time”, says Katarina Hedin.