

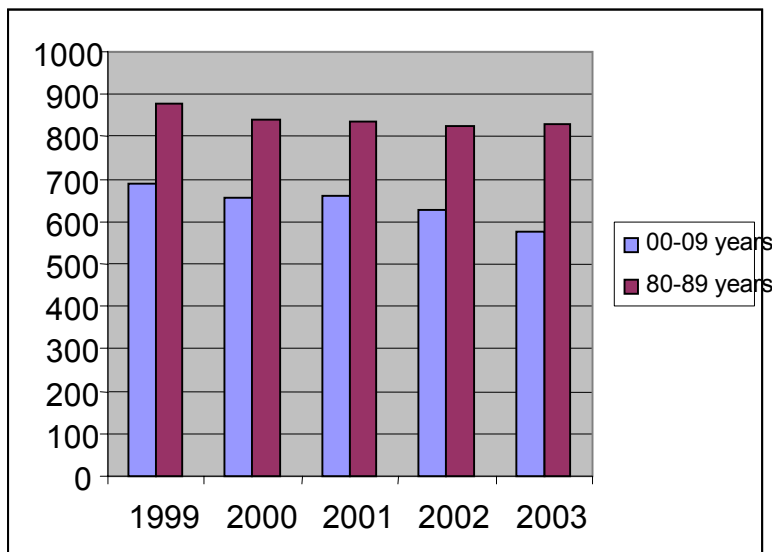
## The Swedish Strategic Programme for the Rational Use of Antimicrobial Agents and Surveillance of Resistance

The Swedish Strategic Programme for the Rational Use of Antimicrobial Agents and Surveillance of Resistance, STRAMA, received funding of 8 million SEK for 2003, via the Dagmar Agreement. These funds were divided between management functions and national and local projects. The focus of STRAMA's work during 2003 has been in accordance with the aims as stated in the proposal for a national plan of action against antibiotic resistance.

### Antibiotic consumption and resistance

The reduction in antibiotic consumption that has been seen in recent years in the youngest age groups continued during 2003, and is probably a sign of a reduction in unnecessary prescribing of antibiotics for virus infections, e.g. the common cold. On the other hand, antibiotic consumption in the elderly remains high, (see diagram).

Diagram: Number of antibiotic prescriptions/1000 population in different age groups



In order to obtain a more accurate picture of antibiotic consumption in different age groups and settings, STRAMA has initiated various studies that are described below under the heading "national projects". STRAMA also gives high priority to local projects in this area.

About 90 per cent of antibiotic use takes place in primary care. STRAMA supports a recently established network for primary care doctors with an interest in issues related to infection. The aim is to further improve and facilitate the management of patients with infections by improved collaboration.

The Institute for Infectious Disease Control (SMI) is responsible for the national antibiotic resistance surveillance programme. STRAMA follows developments and partakes in the exchange of information between authorities and other relevant organisations. Patterns of antibiotic resistance in Sweden remain favourable in comparison to many other countries. However, there is a trend towards increasing resistance against several bacteria. The number of cases of methicillin-resistant *Staphylococcus aureus* (MRSA) increased between 2002 and 2003 by 25% to 551 cases. Nearly half the cases have been reported from Stockholm. Several other counties also have problems, and Skåne has seen spread into the community e.g. in nursery schools. The number of reported cases of vancomycin resistant enterococci (VRE), another bacterium that is difficult to treat and spreads within the healthcare system, has more than doubled from 19 cases in 2002 to 45 in 2003. Penicillin-resistant pneumococci remain at a low level but have increased by 7% compared to 2002.

## National STRAMA activity

### National STRAMA group

STRAMA's national management board held two meetings during the year at which decisions were taken regarding the focus of its activities, project priorities and distribution of available finance. An executive committee mandated by the national group is responsible for day to day management.

### Education days

- This year's national education day, the STRAMA day, was largely focused on explicit treatment guidelines in primary and outpatient care. About 210 people attended the meeting, evenly divided between primary care and hospital staff.
- IVA-STRAMA held a meeting during the Annual Congress of the Swedish Medical Society to provide information about the joint project with the Swedish Intensive Care Register (SIR).
- STRAMA took part in the planning and running of an international seminar on "The Epidemiology of Antibiotic Resistance – an international perspective", which took place as part of SMI's masters course in epidemiology.

## National STRAMA project

### Infections in children

#### *Infections in nursery school*

Knowledge about the relation between the incidence of infection and hygiene practices, group size, indoor environment and time spent outdoors is patchy and the need for research into specific risk factors for infectious illness in preschool children is therefore great. A small number of intervention studies have suggested that rates of illness can be reduced by strict hygiene practices. In order to gain an insight into the situation in Swedish nursery schools, STRAMA, in collaboration with the Swedish Association of Local Authorities, has carried out a survey of hygiene practices and infection-related problems in a national selection of 350 nursery schools. The survey

was carried out with the help of infection control and child health nurses who interviewed nursery school staff and completed a questionnaire. The aim of the study was to establish:

- Significant risk factors that influence the spread of infection in nursery schools (e.g. hand washing, nappy changing, time spent outdoors, food handling)
- Current practices regarding the management of infectious illnesses
- How nursery school staff are informed about infections and their spread

The sickness absence rates of children were studied over two weeks at the selected nursery schools and related to current routines. The study has had a very positive reception from nursery school staff, and all those who were asked agreed to take part. All the material has now been collected and is currently being analysed. The results of the study are expected to be presented during the spring of 2004.

#### *Improved hand hygiene at nursery schools – less sickness absence?*

A Finnish study has shown that sickness rates at nursery schools fell by about 25% compared to a control group when hygiene practices were improved. However, this study introduced a long list of measures simultaneously, which can be hard to maintain in the long run. It is well recognised within the health service that hand disinfection with alcohol reduces the spread of infection. A pilot project in Örebro has shown that introducing hand disinfection with gel-based alcohol is straightforward for both children and staff at nursery schools. STRAMA plans to carry out a controlled study of the introduction of hand disinfection (gel) at certain nursery schools in six counties between the autumn of 2004 and the spring of 2005. Sickness rates at these nursery schools will be compared with control nursery schools that will not introduce hand disinfection. Sickness rates will be assessed using parental questionnaires. Provisionally, the study is expected to include 72 nursery schools.

#### *Infections in families with children*

Statistics from Apoteket AB show that there are great variations in the prescribing of antibiotics to children in different municipalities in Sweden. The object of this study was to establish if these differences in antibiotic prescribing could be explained by differences in the incidence of infection, infection-related consulting rates or rates of antibiotic prescribing during consultations. A secondary aim was to establish infection rates, symptom patterns, healthcare contacts and occupational sickness absence in Swedish families with children.

Between October 2002 and April 2003 a study was carried out in three municipalities with high antibiotic prescribing rates and in three municipalities with low prescribing rates. All families that brought children aged 18 months to the child health clinic were invited to take part in the study. Each family was asked to complete a questionnaire about their socio-economic status, any illnesses, and about their "fear of illness". For a month, each family member kept a diary record of all symptoms of infection, contact with the health service, and if antibiotics were prescribed.

84% of the families agreed to partake and 87% of these, a total of 831 families and 3 179 individuals, completed the study.

The results will be initially reported from four aspects:

- Symptoms of infection in families with children

- ❑ Geographical variations in antibiotic prescribing – can these be explained?
- ❑ Spread of infection in families with children
- ❑ The role of attitude and fear in illness and healthcare consultation.

The material is currently being processed and articles are in preparation.

*What does a ten-year-old know about antibiotic resistance?*

STRAMA has compiled educational material about the treatment of ordinary upper respiratory tract infections. The material is intended for pupils aged 10 yrs and the aim is to improve the pupils' knowledge of antibiotics and resistance development, with the long-term goal of avoiding unnecessary antibiotic treatment. A controlled study has been carried out in 12 schools in Uppsala and Gotland, and this showed a clear effect on the children's level of knowledge. The project has been chosen for a presentation at WHO-sponsored ICIUM conference "Improving use of medicines" in March 2004. The plan, formulated in collaboration with Apoteket AB, is to make the material available to school students throughout the country.

Antibiotic use

*The SANT study (Use of antibiotics in nursing/residential homes).*

The object of the study is to describe and evaluate the treatment of infections in nursing/residential homes for the elderly and to develop and test an educational package appropriate to the subject. A pilot study was initially carried out at seven different homes in Norrbotten county. Basic data collection was completed in January 2003. In parallel, 60 homes were recruited for the main study and basic data were collected from these during the autumn of 2003, at the same time that intervention/education was continuing for doctors and nurses at the pilot homes. The educational content was based on a presentation of the results to partaking doctors and nurses, a discussion about their implications, and an emphasis on the importance of good healthcare hygiene. In addition, current treatment guidelines for urinary tract infections, pneumonia, and certain skin and soft-tissue infections were presented. The actual course was given by a general practitioner from the local STRAMA group and the project manager, who is a pharmacist. Focus group discussions are used in this study to establish staff educational needs and to encourage greater understanding of the treatment of infection in nursing/residential homes. A total of eight focus groups consisting of doctors, nurses, assistant nurses and auxiliaries are planned. Three of these have been implemented. Main study interventions are in the planning stage and they are expected to have been completed before September 2004, after which the first assessment will be repeated. The second assessment and last phase of the pilot study is currently being carried out.

**Selected results from the main study:**

- 737 episodes of infection have been registered.
- Average age was 86 yrs, range 48-101 yrs, median 86 yrs.
- Respiratory tract infections accounted for 14%; urinary tract infections for 55%; skin and soft-tissue infections for 16% and other diagnoses for 15%.
- 78% of registered infections were treated with antibiotics.

### *Self-medication with antibiotics – an EU study*

Via STRAMA, Sweden has taken part in an EU study of self-medication with antibiotics. A questionnaire was sent to 1000 randomly selected people in Västmanland county, and 70% responded. Seventeen per cent said that they had used antibiotics during the previous twelve months. In all but three cases the drug had been obtained on prescription. Eleven per cent said they would consider self-medicating with antibiotics.

### *Antibiotics in hospital care*

A point prevalence study of antibiotic use in 56 Swedish hospitals was carried out in November. Data from 13 433 inpatients were collected and showed that 4 178 were being treated with antibiotics, corresponding to 31%. The local STRAMA groups planned the local implementation, and 19 of 21 counties took part in the survey. The study has aroused great interest – many in positions of responsibility have spontaneously expressed the view that partaking in the study was very instructive and that they had gained contact with, and an insight into activities with which they had previously been poorly involved. All data have now been collated and validation of the database is in progress. Partaking departments have informed us that they would consider taking part in a new study in the autumn of 2004. The study will be presented during the spring of 2004 at the annual European Congress of Clinical Microbiology and Infectious diseases.

### *The Influenza Study*

The weekly prescribing of antibiotics during the period 1997-2002 was compared with the number of laboratory confirmed cases of influenza. In four out of the five seasons that were studied, the influenza peak occurred in February-March. The level of antibiotic prescribing was relatively constant during these years but an increase was seen in December and in February-March. The total number of antibiotic prescriptions could not be related to influenza peaks, but a temporal association was seen, particularly in the elderly. The study has been published in the Scandinavian Journal of Infectious Diseases.

## **Lectures and symposia**

Members of STRAMA's national management board and executive committee have taken part during the year in several educational events e.g. the SMI's and RAF's educational days and courses. During the year, local STRAMA groups, local pharmaceutical committees, medical specialist associations and other networks have also invited STRAMA's chairman to lectures and discussion groups. Regular updates have been given to the media in regard to antibiotic resistance and consumption.

## **Other activities**

In 2003, the second annual report on the state of antibiotics and resistance in Sweden, SWEDRES 2002, was prepared, in collaboration with the Institute for Infectious Disease Control and the National Veterinary Institute. The report is in English and therefore represents an excellent instrument for increasing international awareness of

the Swedish methods of data monitoring, continuous intervention and contingency plans.

STRAMA's web site has during the year continually presented newsletters containing reports of current national and international activities.

An agreement has been signed with Apoteket AB for continued access to consumption data via the new statistics system - X-plain. The system is not ideal from STRAMA's point of view and work is in progress to formulate new requirement specifications that can form the basis for negotiating the provision of complementary functions.

## **Local STRAMA activity**

### **Local STRAMA groups**

STRAMA's executive committee has initiated an inventory of local STRAMA activities. The need for an inventory arose from the proposed Swedish plan of action against antibiotic resistance and was done by means of personal visits to all counties. Discussions took place with representatives of STRAMA groups, departments of infectious disease, microbiology laboratories, local pharmaceutical committees and county council executive officers. A comprehensive report will be presented in March 2004.

### Projects in primary care/outpatients:

1.5 million SEK of the year's funding has been distributed to support local projects throughout the country. The focus of these projects range over a wide area. Here are some examples:

- A survey of antibiotic resistance in the bacteria of the normal gut flora of Swedish children.
- Educating the nursery school staff of Malmö and Lund municipalities about infections and their spread in nursery schools.
- The prevalence of pneumococci with reduced susceptibility to penicillin (PNSP) 2003 in healthy 1½ yr olds and children with airway symptoms in Gothenburg.
- A survey of the antibiotic treatment of acute middle-ear infection in children.
- Healthcare-related infections in local authority care.
- The training of nurses in local authority and private domiciliary healthcare in hygiene practice and the management of infections within southwest Skåne.
- The presence of bacteria in the urine of our oldest citizens.
- Carriers of pneumococci with reduced susceptibility to penicillin among healthy 1½ yr olds in Gothenburg.
- Infections in primary care – diagnosis patterns and diagnosis-related antibiotic prescribing..

- Prevalence study of antibiotic treatment, infections, sores, venous lines and urinary catheters in local nursing/residential homes in West Götaland county.
- The incidence and turnover of asymptomatic bacteriuria in our oldest citizens.
- A comparative study of healthcare hygiene practices and their effect on the spread of MRSA infection in nursing/residential homes in Stockholm, Uppsala, Gothenburg and the Skåne counties.

#### Hospital projects:

- The right antibiotic for the right patient – hospital-STRAMA.
- Inpatient antibiotic treatment for community-acquired pneumonia – correlation to morbidity and mortality.
- Can the introduction of county-wide guidelines for antibiotic treatment promote optimal antibiotic use in hospitals?
- What proportion of antibiotic use in a university hospital is related to regional healthcare and highly specialised care?
- Antibiotic consumption in relation to antibiotic resistance in blood isolates of coagulase negative staphylococci.
- The distribution of tetracycline-resistant coliform bacteria in environmental matrices and animals in the proximity of a water treatment plant.

#### **International activities**

Swedish STRAMA activity has been presented at several international meetings and conferences. STRAMA is taking part in the EU-sponsored project ESAC (European Surveillance of Antimicrobial Consumption) whose aim is to chart antibiotic use in Europe. STRAMA's chairman has lectured at two international congresses with the Drug Information Association where antibiotic resistance and drug development were discussed.

The continuing development of resistance against antibiotics and the simultaneous reduction in research into new antibacterial drugs form the background to a meeting which is planned by the Dag Hammarskjöld Foundation in Uppsala in collaboration with STRAMA. Representatives from the WHO, EMEA, and the pharmaceutical industry will be invited, as well as health researchers from various countries, Doctors Without Borders and others. The aim is to create a dialogue and greater international awareness about the problem.

STRAMA has acted as advisor to the Swedish film group that has received EU funding to produce a film for the general public about antibiotic resistance.

Solna, March 2004

On behalf of the national STRAMA group

Otto Cars  
Chairman