MSIS celebrates 40 years

Recent developments remind us that communicable diseases with their unpredictable nature and potential for local and global epidemics have not yet been relegated to history. The Surveillance System for Communicable Diseases (MSIS) is an important tool for monitoring the epidemiological situation in Norway. In 2015, forty years have passed since this national health registry was established. A modernisation of the registry will provide a better knowledge base for the efforts to prevent and deal with communicable diseases.

The Surveillance System for Communicable Diseases (MSIS) began as a pilot project in Nord-Trøndelag and Vestfold counties in 1973, and became a national registry in 1975. Operation of the new registry was entrusted to the epidemiology department in the then National Institute of Public Health (SIFF). Arve Lystad, the department's first director, was a key figure in the establishment and operation of MSIS until he retired in 1999.

Before the introduction of the reporting system, the monitoring of communicable diseases was based on local collection of data from primary doctors and hospitals by the local chief medical officer. Municipal monitoring data were sent from the local chief medical officer to the county medical officer, who in turn forwarded the data to the Director of Health as well as Statistics Norway. Overviews of communicable diseases were published in the periodical *Sunnhetstilstanden og medisinalforholdene [The state of health and medical conditions]*, but not until 2–3 years later. After the introduction of MSIS, communicable diseases could be monitored nationally and with a far shorter time lag. From the time of its inception, the reporting system has been a collaborative effort shared by the municipal health services and the government institution responsible for prevention of communicable diseases.

The situation in the country with regard to tuberculosis had been monitored separately since the establishment of the Central Tuberculosis Registry under the National Mass Radiography Service in 1962 (since 1968: *Statens Helseundersøkelser* [*The National Health Screening Service*]). The registry was moved to the Norwegian Institute of Public Health in 2002 and integrated into the MSIS registry in 2015.

What MSIS is

The Surveillance System for Communicable Diseases is one of nine health registries established pursuant to the Personal Health Data Filing Systems Act (1). The MSIS regulations contain provisions on collection and processing of health information in the registry (2). According to the Act relating to the control of communicable diseases, the Norwegian Institute of Public Health shall 'monitor the national and participate in monitoring of the international epidemiological situation, undertake research in the area of control of communicable diseases and provide help and advice to authorities, health personnel and the population regarding communicable diseases and their prevention and control' (3). MSIS is an important tool in this work, including in the context of discovery and control of outbreaks of communicable diseases locally, nationally and internationally. The registry is updated on a daily basis, and data are published continuously via *www.msis.no*. The municipal health services can use MSIS data to monitor their local epidemiological situation. Data from the registry are also reported to international institutions such as the World Health Organization (WHO) and the European Centre for Disease Prevention and Control (ECDC).

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Norway is in an exceptional position in having national registries that can be linked with the aid of personal identification numbers, and there is an increasing demand for registry data for research purposes, especially when linked to information from other health registries, including MSIS. Surveillance systems in other countries tend to use the same definitions of cases, and registry data are therefore well suited to comparisons across countries. Research on data related to communicable diseases has the potential to produce new and important knowledge on their prevalence and causes, as well as the effects of various control measures.

The diseases in MSIS are divided into three groups – A, B and C. The Group A diseases (such as measles, salmonella, tuberculosis and hepatitis C) are reported with personal and detailed information on each case. Reports of infections in Group B (HIV, gonorrhoea and syphilis) are de-personalised with a view to protection of privacy and because of concerns for stigmatisation. The doctors report diseases in

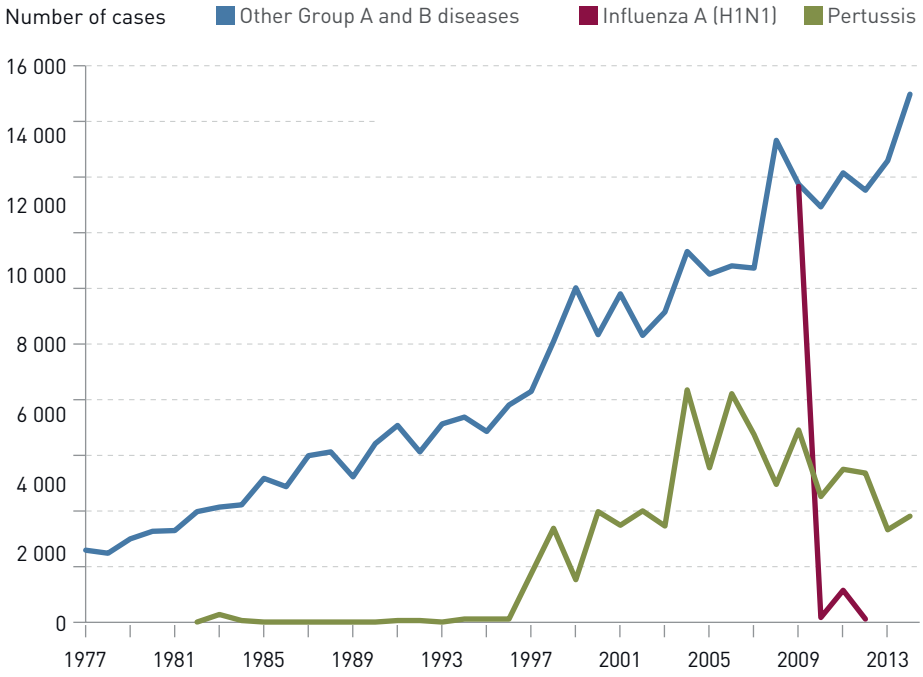

Figure 1 *Cases of communicable diseases in Groups A and B reported to MSIS 1977–2014*

groups A and B on an ongoing basis to the Norwegian Institute of Public Health and the chief medical officer in the patient's home municipality. Microbiology laboratories report cases directly to MSIS. Group C diseases (genital chlamydia, Clostridium difficile and until recently also influenza) are monitored without inclusion of personal data and with less information on each case. These reports are submitted by the laboratories in batches at varying time intervals.

Gradually, electronic reporting to MSIS by laboratories has been introduced, and as of 1 June 2015 approximately 25 per cent of the reports for Group A are submitted electronically, while the rest are sent by mail. All reports from clinicians are still sent by mail. There is a strong need for establishment of an electronic solution for reporting to MSIS by clinicians.

Over the years the scope of the reporting system has grown considerably, and now includes 67 notifiable diseases or conditions. This provides a broad picture of the epidemiological situation in Norway. Many of the diseases have been notifiable ever since the establishment of the registry, and some have been removed and new diseases have been added.

It is worrisome that a considerable proportion of the cases are reported only by the laboratories. After a comprehensive round of reminders for Groups A and B, approximately 80 per cent reporting by clinicians was registered in 2014. This results in poorer information on the prevailing situation and entails consequences for monitoring, recommendations and research. The low reporting rate can most likely be attributed to a cumbersome system with no opportunities for electronic submission and increased reporting requirements.

The development of MSIS reporting

The number of MSIS reports has increased steadily over the years. Figure 1 shows the growth in the annual number of reports. Swine flu and whooping cough are shown separately, since these diseases account for a considerable share of the total in certain periods. In addition to showing real trends and outbreaks, some of the increase is attributable to changes in the existing case definitions, new diseases having been made notifiable, and an increasing amount of testing. Unfortunately, we have no information on the number of tests. Moreover, the number of cases has increased as a result of population growth and immigration.

A considerable time may pass from the time of the test until the case is registered, and the system therefore has a limited ability to quickly detect outbreaks. However, early identification of serious individual cases or outbreaks is ensured through the duty held by health personnel to report various incidents related to control of communicable diseases, pursuant to the MSIS regulations (2) and the International Health regulations (IHR) (4).

The importance of MSIS

For 40 years, MSIS has served as a pillar of the efforts to control communicable diseases in Norway. Since its establishment, the registry has played a key role as a supplier of knowledge for recommendations regarding control of communicable diseases and preventive efforts locally and nationally.

Data from MSIS have helped keep local chief medical officers, hospital staff and laboratory personnel with responsibility for control of communicable diseases updated with regard to the prevalence and changes in the incidence of notifiable diseases. This information has been communicated actively, first through the MSIS report and later through the website of the Norwegian Institute of Public Health and the website *www.msis.no*.

Increased travel, migration and changes in the occurrence of diseases have resulted in new recommendations to the general public and the health services. As a result of changes in prevalence, preventive efforts targeting particular risk groups have been implemented, such as the introduction of new vaccines or extra booster vaccines. After the introduction of the pneumococcus vaccine in the Norwegian programme for vaccination of children, analysis of MSIS data showed a marked decrease in the incidence of systemic pneumococcal disease in Norway, including among those who were not vaccinated, such as people older than 65 years (5).

Various kinds of information are registered for the diseases reported to MSIS. This provides a basis for descriptions of the epidemiological development of the different diseases, and may also provide helpful information for assessment of control measures for communicable diseases and in case of outbreaks. For example, the locality of an infection may form the basis for recommendations regarding the regions of the country where vaccination against tick-borne encephalitis should be given, or to show whether a foodborne infection originated in Norway or abroad. Data on modes of transmission have provided a good overview of the HIV epidemic among men who have sex with men, and this has given the health authorities and non-governmental organisations (NGOs) important knowledge usable for prevention. Trends in modes of transmission for different diseases may reveal new risk groups, changed habits and the effect of control measures for communicable diseases. Such information forms the basis for control measures that are initiated locally and nationally.

MSIS has played a key role in the detection, clarification and handling of outbreaks and epidemics over the last 40 years. This includes, for example, the meningococcal Group B epidemic in the 1970s, the HIV/AIDS epidemic, which has been monitored since 1986, the nationwide outbreaks of salmonella in the 1980s, hepatitis A and B among intravenous drug users in the 1990s and the outbreaks of Legionnaire's disease and enterohaemorrhagic E. coli (EHEC) in the 2000s.

MSIS of the future

The reporting system for communicable diseases is well known and widely used in parts of the health services, although GPs relatively rarely diagnose notifiable diseases.

The main objective of MSIS is to monitor communicable diseases in Norway. Over the years, the reporting system has produced updated knowledge on the prevalence of notifiable diseases in Norway, and has been able to present development trends and prevalence over time and within various risk groups. Without the active commitment of the country's laboratories and all doctors who report disease cases, MSIS would not function. The current system functions adequately for many purposes, but there is a need for modernisation. In the future, we would like to see a more modern system in which the collection of data does not rely on manual submissions. In 2011, the government adopted a strategy for modernisation and coordination of national health registries, with better utilisation, better quality and safer handling of data as its objectives (6). Many development projects are underway in the field of health registries and e-health, and in 2015, the Norwegian Institute of Public Health started working on needs assessments and planning of the communicable disease registries of the future.

A robust infection surveillance system is crucial for monitoring communicable diseases and detecting and responding quickly to outbreaks or introduction/reintroduction of diseases. We need to remain vigilant with regard to new and old communicable diseases of an unpredictable nature and with a potential for local outbreaks as well as global epidemics.

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