

Development plan for Division of Infection Control, Environment and Health

Norwegian Institute of Public Health 2019-2024

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Background

This strategic development plan aims at how the Division of Infection Control, Environment and Health wishes to develop in the coming years. The plan describes the division's goals and initiatives from 2019 - 2024. In addition, the division-level initiatives are exemplified with more subject-specific initiatives that are more easily translated to departmental level. The development plan will be the starting point for more concrete plans and provide direction for activities within the division. The goal is for the development plan to contribute to the division fulfilling its social mission in the best possible way. Examples of activities under described focus areas are professionally justified proposals, and no priorities have been made for the examples or resource-wise/financial assessments of the example projects in this plan.

The core tasks of the division

The Division of infection control, environment and health must have high professional expertise in the occurrence and prevention of infectious diseases, as well as the health effects of exposure factors in the environment, acute poisonings and infectious agents. The area is responsible for all the core tasks (consulting, preparedness, research, services and communication) of the institute within this field. The area has broad preparedness responsibility within infection control and environmental health protection (Act on Protection against Infectious Diseases, Public Health Act and Health Preparedness Act). The Norwegian Institute of Public Health is the state's infectious disease prevention institute (infection control act §7-9) and many of the area's activities are related to this task. Infection control, environment and health are also responsible for a number of reference functions within medical microbiology and for professional guidelines for the implementation of the national vaccination programmes, vaccine procurement and preparedness as well as the distribution of vaccines. In the coming years, the Division of infection control, environment and health will clarify and develop our role as professional advisor to the ministry and directorate, as well as provide support to the municipalities and the health service in the area of environmental health care and infection control.

The division contributes to global processes and projects where we have national responsibility and expertise.

The challenges

Society is constantly changing and it is expected of us that we are flexible and can adjust the organization and work tasks according to changing requirements. Technological development and method development mean that the division needs to build better infrastructure for knowledge and services. The digitization that is taking place both in the health field and in society in general means that the amount of data is increasing, and that other actors can also be relevant for analysis and interpretation in fields where the division is currently the only actor.

The division must follow developments and be equipped to be able to assess new data sources and utilize the new data sources that we consider useful for our work. The division must ensure that it has good analytical competence so that we can utilize both internally

generated and externally generated data in a purposeful manner. We must be able to assess and use relevant data sources and analyze and understand data to be able to give good advice at the right time.

Demographic changes and an increasing globalization mean that the challenges with respect to diseases that the division provides advice and information about are changing. Changes are expected in the size of risk groups for various diseases (due to an aging population), and changes in the disease burden ratio. Groups that are sceptical of the authorities' advice in various fields are on the rise elsewhere in Europe, and one should be prepared for similar developments in Norway, even if the scale here is small for the time being. Increasing problems with antibiotic resistance are expected, and this is a stated area of focus for the division, where we are establishing a centre. Climate change can give us new challenges, for example in the field of vector-borne diseases. Increased trade and increased travel activity for both people and animals, food and other goods and services is pointed out by the ECDC as one of the main drivers for the spread of diseases across national borders. Globalization means that national and international challenges go hand in hand and national and that international health are two sides of the same issue. Solving the challenges requires cooperation across sectors and national borders.

An additional challenge is that in recent years NIPH have had reduced budgets and there are signals of continued scarce resources in the future.

The main challenges for the work in the Division of Infection Control, Environment and Health are therefore:

- Need to meet digitization in society
- Need for an increased degree of cross-sector cooperation nationally and internationally
- Need to perform more with scarcer resources

This development plan is prioritized measures to meet these challenges.

Organizational development of the division

In connection with OP in 2016, the division implemented an organization based on a line structure with formalized transverse structures. In the period 2019-2024, the division will focus on achieving greater flexibility in the organization both at management level and among employees in order to fully implement this structure. The division of responsibilities for various functions must be clarified and interdisciplinary cooperation in the division developed. It will also be possible to make ongoing organizational adjustments during the period to facilitate OP's intention.

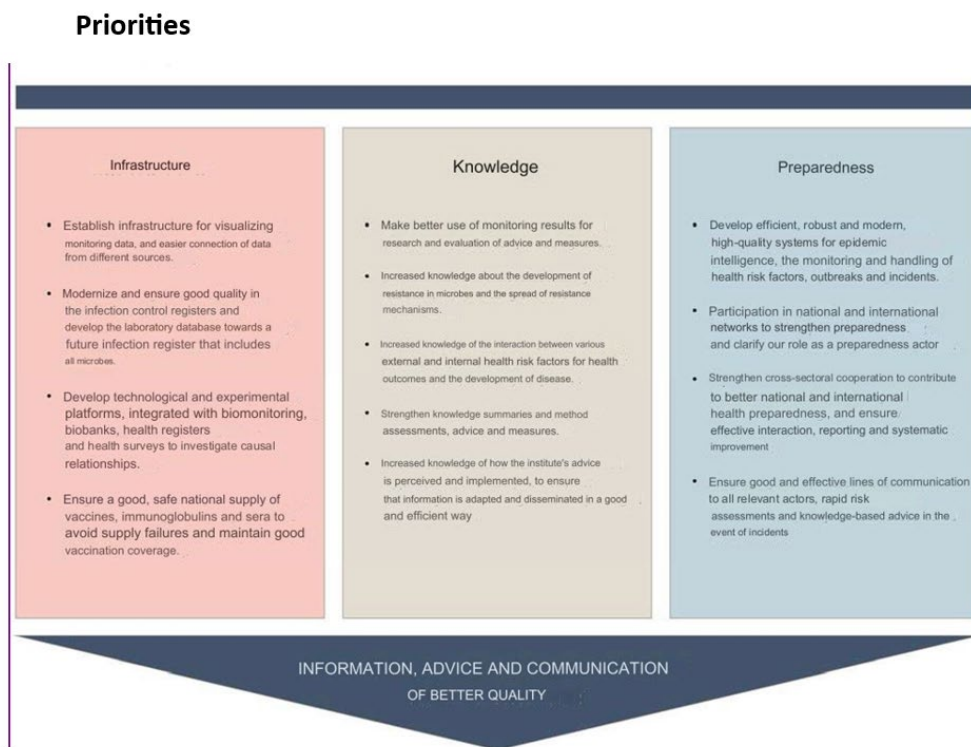
Development targets for the Division of infection control, environment and health during the period 2019-2024

As mentioned above, the Division for Infection Control, Environment and Health must have high professional expertise in the occurrence and prevention of infectious diseases, as well as the health effects of exposure factors in the environment, acute poisonings and infectious agents. In the years 2019-2024, the area will focus on:

- Develop infrastructure, data and analysis platforms to produce and disseminate data of a higher quality and to make better use of available data and thereby carry out better monitoring and improve the knowledge base for advice, preparedness work and research.
- Further develop a robust and holistic preparedness based on good professional competence, modern and effective analyses, clear and structured planning and systematic learning.
- Assist our users with effective and knowledge-based advice in infection control and environmental medicine and improve the communication of these.

The division has defined several infrastructure, knowledge and preparedness initiatives that build around the goals (see figure 1). Achieving the target will also depend on the division building more solid analytical competence, both in the form of skill development among employees in the area, and in recruitment processes.

Figure 1. Schematic overview of the division's investments (initiatives) in the period 2019-2024.



Infrastructure

The division supplies infrastructure and services to the health service, other external actors and the population. This includes, for example, 24-hour advisory services, the establishment of a human environmental biobank, advice and risk assessments for chronic exposures, reference functions in medical microbiology, vaccine procurement and vaccine distribution. The division manages and develops infection control registers for infection monitoring and preparedness with operational and data processing responsibilities.

Initiatives:

1. Establish infrastructure for visualization of monitoring data, and easier connection of data from different sources.
2. Modernize and ensure good quality in the infection control registers and develop the laboratory database towards a future infection register that includes all microbes
3. Develop technological and experimental platforms, integrated with biomonitoring, biobanks, health registries and health surveys to investigate causal relationships.
4. Ensure a good, secure national supply of vaccines, immunoglobulins and sera to avoid supply failures and maintain good vaccination coverage.

Examples:

Establish infrastructure for visualizing monitoring data and easier merging of data from different sources.

- Ensure good and timely dissemination of monitoring data to internal and external users.
- Develop disease burden models for an overview and real-time information on diseases and resistant microbes relevant to the area.
- Establish a platform with user-controlled access where municipal doctors can, for example, view surveillance results from their municipality with up-to-date data.
- Develop models and analysis tools for processing data from infection control registers and present data in a more user-friendly way.
- Develop a professional system to monitor side effect events after vaccination by making increasing the availability of data at individual level. Better availability of side effect data for research.
- Develop the possibility of seamless merging of data from SYSVAK and MSIS to allow quick estimation of the proportion of vaccinated persons in case data in MSIS, vaccine failure, quality assurance, and reporting to WHO and ECDC.
- Further develop internal infrastructure so that IT systems and analysis programs within laboratory operations and surveillance can deliver data more efficiently.
- Work to make health registers personally identifiable, to ensure that they can be linked to other health registers, both to ensure data quality, but also to be able to optimize the use of collected information and provide useful results for management.

Modernize and ensure good quality in the infection control registers and develop the laboratory database towards a future infection register that includes all microbes

- Work for electronic clinician reports to MSIS.
- Work to ensure that a future infection register also includes healthcare-associated infections
- Work towards the establishment of a National Infection Register.
- Work for the establishment of a national laboratory database.
- Work for electronic analysis responses from FHI.
- Work for easier access to linking various registers to find causal relationships.
- Strengthening the quality of the registers:
 - o Systematic evaluation of the surveillance of the individual notifiable diseases, type of infection and microbe.
 - o Improve the quality of data into existing monitoring systems by modernizing infection control registers.

Develop technological and experimental platforms, integrated with biomonitoring, biobanks, health registries and health surveys to investigate causal relationships.

- Further develop laboratory operations through the use of new technology, for example CyTOF, flow cytometry, Luminex, whole genome sequencing, in vitro systems, etc.
- Establish advanced in vitro models (cocultures, organoids, organ-on-a-chip) to better model/study effects in tissues/organs, which will contribute to the detection of causal relationships.

Secure national supply of vaccines, immunoglobulins and sera to avoid supply failures and maintain good vaccination coverage.

- Ensure preparedness for a new pandemic, both the right to buy vaccine and a trained distribution system to distribute it.

Knowledge

With increasing digitalisation, the amount of data available increases, and the division must develop greater analytical competence. By producing higher quality data and making even better use of available data, we shall carry out better monitoring and improve the knowledge base for advice, preparedness work and research.

The area has a large portfolio of research projects. The area's research will support our deliveries. There is a need for the externally funded part of the research to increase in the coming years. The research will support the strategy for the division and the department and our deliveries. This means that the research will be directed towards a more limited number of research topics. One of the research topics to be strengthened is antimicrobial resistance (AMR), and FHI has therefore established a Center for Antimicrobial Resistance.

Initiatives:

1. Make better use of monitoring results and register data for research and evaluation of advice and measures.
2. Increased knowledge about the development of resistance in microbes and the spread of resistance mechanisms.
3. Increased knowledge of the interaction between various external and internal health risk factors for health outcomes and the development of disease.
4. Strengthen knowledge summaries and method assessments for advice and measures.
5. Increased knowledge of how the institute's advice is perceived and implemented to ensure that information is adapted and disseminated in a good and efficient way.

Examples::

Make better use of monitoring results for research and evaluation of advice and measures.

- Understand the occurrence of infectious diseases and the effect of infection control measures.
- Identify risk groups that do not have the expected effect of vaccination measures, for example cases of vaccine failure.
- Work to combine different data sources to a greater extent to study associations. Improved interaction and research collaboration between the various divisions at NIPH.
- Building a system for disease burden modeling.

Increased knowledge about the development of resistance in microbes and the spread of resistance mechanisms.

- Understand the link between genetic and phenotypic resistance to predict the spread of resistance *in silico*.
- Integrate molecular and epidemiological data into models for increased understanding of transmission dynamics and better control of resistant microbes.
- Ongoing monitoring of resistance and occurrence of new resistance markers.

Increased knowledge of the interaction between various external and internal health risk factors for health outcomes and the development of disease.

- Build expertise in advanced *in silico* and *in vitro* models, epidemiological data and disease burden estimates.
- Integrate experimental research, biomonitoring, biobanks and epidemiology for more holistic studies of complex issues.
- Utilize existing biobank material to obtain a better overview of the population's exposure to environmental pollution and its impact on health.
- Build competence on interactions between various external health risk factors, such as indoor climate, mixed exposures, interaction between environmental toxin exposure and diseases, importance of environmental toxin exposure for the effect of vaccines, socio-economic status.
- Build knowledge about the consequences of climate change on current and future health in Norway, including the spread of infectious diseases from food and water, vector-borne diseases, interactions with air pollution and the impact of food production.
- Build expertise on interaction between external health risk factors (environmental toxins, infectious diseases, socioeconomic factors, lifestyle factors, drugs in overdose) and internal health risk factors (microbiota, genetics, inflammatory responses, existing, cyp genotype) to better understand susceptibility in the population.
- Contribute to generating new knowledge and a valuable overview of incidents in the water supply that may have health consequences in the population

Strengthen competence and increase resources for method assessments to assess the introduction of new vaccines or changes to vaccines given under public authority (programme or blue prescription).

- Develop a method book for knowledge-based advice.
- Strengthen competence and increase resources for method assessments to assess the effect and cost-effectiveness of other measures within infection control and the environment in order to increase decision-making support for these fields.
- Develop methodology for better and faster summaries of knowledge in the context of preparedness through increased cooperation with the Health Services Division.
- Increase research-based knowledge and innovation in vaccine development as well as evaluation and optimization of vaccination programmes.
- Increase research-based knowledge and innovation around access to antibiotics
- Ensure that new knowledge is implemented in counseling by systematically reviewing the most relevant literature in the field of poisoning, summarizing knowledge at the right level and making treatment recommendations that are kept up to date.
- Ensure that information and advice to the general public and the health service is knowledge-based and communicated effectively.

Increased knowledge of how the institute's advice is perceived and implemented to ensure that information is adapted and disseminated in a good and efficient way.

- Carry out Knowledge, Attitude and Practice (KAP) studies on our consultancy in various fields (e.g. our advice for protection against tick bites or our advice for hand hygiene in the health service).
- Call back exposed persons who contact the Poison Information Centre to get information about to what extent advice was understood and followed as well as whether the course of poisoning was as expected.

Preparedness

The division must monitor the national epidemiological and participate in monitoring the international epidemiological situation for infectious diseases, and in doing so keep track of international health threats. The division must also have an overview of environmental incidents impacting the population and changes in the poisoning picture. In the years 2018-2024, the division wants to further strengthen preparedness work. We will build a robust and comprehensive preparedness based on good professional expertise, modern and effective analyses, clear and structured planning and systematic learning.

Initiatives:

1. Develop efficient robust and modern high-quality systems for epidemic intelligence, surveillance and management of health risk factors, outbreaks and incidents.
2. Participation in national and international networks in the field of emergency preparedness to strengthen preparedness and clarify our role as an emergency response actor.
3. Strengthen cross-sectoral collaboration to contribute to better national and international health preparedness, and ensure effective interaction, reporting and systematic improvement.
4. Ensure good and effective lines of communication to all relevant actors, quick summaries of knowledge and risk assessments and timely knowledge-based advice at incidents.

Examples

Develop efficient robust and modern high-quality systems for epidemic intelligence surveillance and management of health risk factors, outbreaks and incidents.

- Have robust systems to be able to detect incidents early and ensure a quick coordinated response to outbreaks and public health threats.
- Assess the use of new data sources for monitoring purposes, e.g. social media and big data streams.
- Develop spatial analysis tools with short-term prediction for increased room for action.
- Develop root-cause analysis tools.
- Assess the need to prepare a method for and possibly regularly carry out mapping surveys in the health service to identify any challenges in the division of infection control.
- Assess the need to develop a system in collaboration with the health service for notification between different health institutions about ongoing outbreaks.
- Ensure the defined level of preparedness for emergency telephones within infection control, microbiological preparedness, drinking water and poisoning.
- Strengthen national handling of acute and serious incidents in the water supply through advice and knowledge building
- Further develop and modernize infection control registers to provide fast, high-quality information to the health service, authorities and the population.
- Ensure and contribute to local and national emergency plans for outbreaks of infectious diseases and environmental incidents.
- Carry out exercises to test the robustness and operability of the systems.

- Secure contingency stocks of vaccines, immunoglobulins and sera for Norway (incl. the Armed Forces).

Participation in national and international networks in the field of emergency preparedness to strengthen preparedness and clarify our role as an emergency response actor.

- Participate in and influence global processes for the development of tools for measuring preparedness in Norway, Europe and the world.
- Actively participate in networks in the monitoring and preparedness field under the auspices of the European Commission, ECDC and WHO.
- Become a stronger voice internationally when communicating surveillance data and infection control.

Strengthen cross-sectoral collaboration to contribute to better national and international health preparedness, and ensure effective interaction, reporting and systematic improvement.

- Participate in network meetings and influence the development of tools for improving health preparedness internationally as well as nationally.
- Support One Health cooperation in defined cooperation countries.
- Participate and contribute to the further development of good cooperation models for Crisis Committee B, and cooperation area CE.
- strengthen coordination and utilize expertise across sectors for better preparedness.
- Strengthen civil-military cooperation and a common methodological basis through joint educational courses in field epidemiology and in the laboratory.

Ensure good and effective lines of communication to all relevant actors, quick summaries of knowledge and risk assessments and timely knowledge-based advice in the event of incidents.

- Ensure rapid access to contact information for all the country's municipal doctors for use in crises.
- Maintain good cooperation with the Norwegian Medicines Agency to ensure efficient and good handling of unexpected events after vaccination.
- Develop methodology for quick knowledge summaries
- Strengthen the use of HelseCIM for efficient and rapid notification and reporting to relevant actors in the event of incidents and crisis.

Operationalization

Current planning:

1. The institute's strategy (5-year)
2. Business plan (annual - senior management's document)
3. Allocation letter (annual - it states which tasks from the business plan have been assigned to the Division, also reflects tasks from the allocation letter)
4. The division's development plan (In other words, the one you are now reading ©. The development plan is for 5 years)
5. Division plan (annual. Reflects the disposition letter and development plan)
6. The departments' activity plans (annual)

Plans mentioned in points 1 to 3 as well as point 5 are located here. Re points 4-6:

The development plan is initially valid for a five-year period. The development plan, together with the Disposition letter, will form the basis for annual Division Plans. The area plans in turn form the basis for the annual departmental plans.

In the Division Plan, initiatives to be started and implemented during the year will be described in more detail. The area plan is an important tool for resource allocation. The departments' activity plans describe the departments' mandated and self-initiated activities.

Division management's responsibilities:

The area management is responsible for preparing the annual Division Plans. The division management must also prepare timelines for the implementation of the development plan, with concrete milestones.

Responsibility for the implementation of the various initiatives is assigned to the scientific directors who ensure good coordination and resource distribution between departments within each goal and each initiative.

The initiatives are entered into the Action Portal with the relevant scientific director responsible for follow-up.

The department directors' responsibilities:

The department directors are responsible for incorporating activities that reflect the initiatives in their departmental plans and to follow up on these activities.

The division management and department directors must together ensure sufficient resources for implementation. Prioritization of activities should take place in dialogue between department directors and division management. This is to ensure an overall priority of initiatives of the division.