



Public Health Institutes
of the World

August 1, 2016

The National Institute for Public Health and the Environment (RIVM)

EVALUATION AND RECOMMENDATIONS

Part 1 Introduction

Part 2 IANPHI

Part 3 National Public Health Institutes

Part 4 RIVM

Part 5 Evaluation Process

Part 6 Findings of the Evaluation Team

FOCAL AREAS:

Focus 1 POSITION AND REPUTATION

Focus 2 LINKING WITH SOCIETY

Focus 3 WORKING IN NETWORKS AND CHAINS

Focus 4 IMPROVEMENT AND INNOVATION

Focus 5 INTERNATIONAL STRATEGY WITH FOCUS ON EU

Focus 6 HIGH-QUALITY ORGANIZATION IN 2020

Appendix I IANPHI Evaluation Team Members

Appendix II Core Attributes and Essential Public Health Functions for NPHIs

Appendix III Terms of Reference

Appendix IV Evaluation Agenda and Presenters

Appendix V Summary of Evaluation Team Recommendations

Part 1 Introduction

This evaluation was conducted April 10-13, 2016, at the request of the Management Board of the National Institute for Public Health and the Environment ([Rijksinstituut voor Volksgezondheid en Milieu](#); RIVM) and its Director General, Dr. Andre van der Zande, to assess progress toward the agency's *Roadmap 2020*. The Evaluation Team, chaired by Dr. Reinhard Burger (President, Robert Koch Institute, Germany, 2010-2015), included Dr. Camilla Stoltenberg (Director, Norwegian Institute for Public Health), Dr. Jitka Sosnovcová (Director, National Institute of Public Health, Czech Republic), Dr. Anne-Catherine Viso (Director, IANPHI Secretariat, French Public Health Agency), Dr. Jean-Claude Desenclos (Deputy to the Director General, Director for Science, French Public Health Agency and Secretary- General, IANPHI), Prof. Anthony Kessel, (Director of Global Public Health, Public Health England) and Ms. Courtenay Dusenbury (Director, IANPHI-US Office). Participants' biographies are provided in Appendix I.

The IANPHI [Framework for the Creation and Development of National Public Health Institutes](#) and the [NPHI Evaluation Tool](#) were used to support the evaluation. Strong preparation by an RIVM project team, led by Marien Weststrate (Project Manager, RIVM), contributed greatly to the team's work.

The *Roadmap 2020* was developed by RIVM's leadership team in 2012 and assessed and revised in 2015; it focuses on the Institute's activities around six major themes:

1. Position and reputation
2. Linking with society
3. Working in networks and chains
4. Improvement and innovation
5. International strategy with focus on EU
6. High-quality organization in 2020

The IANPHI Evaluation Team was asked to assess this strategic agenda and progress made during 2010-2015, including initiatives to develop cross-disciplinary fields of expertise in 43 areas and a laboratory strategy linked to a new building.

Part 2 IANPHI

The [International Association of National Public Health Institutes](#) (IANPHI) was launched in 2002 and chartered in 2006, with RIVM as a founding member. As an association of the directors of 100 National Public Health Institutes (NPHIs), IANPHI members include the directors of China CDC, the U.S. CDC, and the public health institutes of Japan, Thailand, Brazil, Mexico, South Africa, Ethiopia, Nigeria, India, France, Germany, and the United Kingdom, among others. With oversight from an Executive Board, IANPHI is

managed by a Secretariat based at the French Public Health Agency and an office at Emory University in the United States. IANPHI's mission is to improve health outcomes by building capacity within and among its member NPHIs. IANPHI provides technical assistance and grants, develops policy, and fosters its community through annual meetings, website and other communications, in addition to benchmarking and advocacy in support of strong NPHIs.

Part 3 National Public Health Institutes

Numerous countries have established NPHIs to coordinate and lead their public health systems. Some, such as the U.S. CDC, South African NICD, Brazilian FIOCRUZ, and China CDC, have developed over time, whereas others -- including Public Health England and the Public Health Agency of Canada -- were created more recently. Although NPHIs vary in scope and size -- from fledgling institutes focusing only on infectious diseases to those with comprehensive responsibility for all public health matters (including research, public health programs, and policy support and development) -- they share a national scope of influence and recognition and a focus on the major public health problems affecting the country. NPHIs use scientific evidence as the basis for policy development, program implementation and resource allocation and are accountable to national governments and the public. Their key functions -- including disease surveillance, detection, and monitoring; outbreak investigation and control; health information analysis for policy development; research; training; health promotion and health education; and laboratory science -- are particularly critical in low-resource nations.

To provide its members with policy guidance and a roadmap for strengthening NPHI capacity, in 2007 IANPHI drafted and approved a *Framework for the Creation and Development of National Public Health Institutes*. The IANPHI Framework includes Core Attributes and Essential Functions for NPHIs (Appendix II) and has been used by NPHIs from around the world to plan for and undertake capacity-strengthening activities. The NPHI Evaluation Tool was developed in 2012-2014 by a group of IANPHI members and key experts including RIVM. It was informed by IANPHI assessments of China CDC and other NPHIs, including THL Finland and WIV-ISP Belgium.

Part 4 RIVM

RIVM has had a long and successful history in the Netherlands. Its predecessor -- the Central Laboratory for State Supervision on Public Health -- was established in 1909 to fight cholera and other infectious diseases. In 1934, it merged with the National Serological Institute to form the National Institute for Public Health, which in 1984 merged with the National Institute for Drinking Water Supply and the Institute for Waste Materials Research/Society for Waste Removal to form RIVM. In 2008, parts of RIVM were split off to become the Environmental Assessment Agency.

RIVM is an agency of the Ministry of Health, Welfare and Sport (MoH), with a mandate defined by legislation in 1996. Its activities, defined annually in a work plan approved by the MoH and other relevant ministries, include policy support for the MoH and others, national coordination and oversight for public health programs organized at the regional

and local levels, prevention and intervention programs including breast, cervical and colon cancer screening, the national immunization program and the provision of information for professionals as well as the general public. The agency is also responsible for crisis management and response. RIVM's strong research program is internationally recognized. It includes six strategic themes coordinated by Chief Science Officers (CSOs): risk communication, integrated risk assessment, system assessment for policy support, health economics, host response, and mathematical disease modelling.

The Evaluation Team notes that the work of RIVM adds measurable value to the government and people of the Netherlands. Its evidence-based work is integral to ensuring healthier, longer lives for the Dutch citizens. Examples of the agency's programs and products include the following:

- [National Immunization Program \(RVP\)](#)
- [Public Health Status and Forecast](#)
- [National Air Quality Monitoring Network](#)
- [Cooperating for healthy schools: Toolbox](#)
- [Nanotechnology opportunities and risks](#)
- [Alert for new infectious diseases](#)
- [Monitoring the safety of consumer products](#)
- [Birds or traffic noise: A sound is not what you hear](#)
- [Population screening for cervical, breast and bowel cancer: Early detection to prevent deaths](#)
- [Cigarette additives: Tempting but not healthy](#)
- [Environment incident service: "Milieu Ongevallen Dienst"](#)
- [Lifestyle interventions: Changes that work](#)
- [Health information toolkits for the public](#)
- [Our food, our health: Food consumption survey](#)
- [The power of knowledge sharing](#)

Part 5 The Evaluation Process

Terms of Reference for the RIVM evaluation were defined prior to the site visit (Appendix III). The evaluation team received a thorough situation analysis with historic and future perspectives outlined in responses to the Evaluation Tool. Additional materials provided included budgets, the RIVM Laboratory Strategy, a laboratory assessment, a stakeholder engagement report, organizational details (including fields of expertise) and the results of an internal SWOT discussion. The Evaluation Team spent three days on site. Using an agenda and list of stakeholders developed in partnership with the RIVM leadership team (Appendix IV), interviews with key stakeholders were conducted and presentations by RIVM's leadership team were given. In addition to scheduled meetings, a meeting with junior and mid-level staff was arranged, and meetings with three CSOs were arranged at the request of the Evaluation Team.

Part 6 Findings of the Evaluation Team: Observations and Recommendations

The Evaluation Team was asked to assess progress on the six focal areas of the RIVM *Roadmap 2020* strategy:

1. Position and reputation
2. Linking with society
3. Working in networks and chains
4. Improvement and innovation
5. International strategy with focus on EU
6. High-quality organization in 2020

A summary of the Evaluation Team's recommendations is provided in Appendix V.

F1 RIVM ROADMAP 2020 STRATEGY POSITION AND REPUTATION

Focal area 1: Position and reputation

Observations:

An NPHI's position and reputation in the country rest upon its freedom and ability to provide independent scientific advice to government and the public. According to the IANPHI Framework:

Because NPHIs are part of, or closely aligned with, government they are not insulated from political influence. Nevertheless, an NPHI's priorities should be driven largely by science and data, including information about the public health needs of the country. Its scientific work—data collection, analysis, and reporting—should be conducted free from political influence. When political concerns significantly influence the formulation of policies and programs, this influence should be explicit. NPHI leaders should be selected on the basis of professional, scientific, and managerial expertise and experience. Scientific basis for programs and policies NPHIs should use the best possible data and knowledge to characterize the health of the population, set priorities, and develop and evaluate policies and programs. This includes using data to guide strategic planning, as well as developing or disseminating evidence-based guidelines for public health practice. The NPHI should be a main source of technical and scientific information for the Ministry of Health, legislators, and other parts of government. The NPHI should advocate for scientific and other evidence to inform decision-making at all levels of government.

The relationship between NPHIs and ministries of health is complex. Each country has its own legislated roles and responsibilities based on the national context. In the Evaluation Team's opinion, the Netherlands has the appropriate checks and balances in place to ensure that RIVM's work is based upon scientific evidence and not unduly influenced by politics. Under law, the MoH may not influence RIVM's research methods and results; a Scientific Advisory Board monitors the quality of its scientific activities. Its work plan and an annual report on its activities are sent to the MoH, Parliament and other partners. However, it is important to note that the Dutch budgeting system whereby ministries contract with RIVM for "work packages;" rather than RIVM setting its own budget priorities based on the country's public health needs, could result in public health priorities tied to political, rather than scientific goals. These annual negotiations may also limit RIVM's ability to plan for the long term.

Based on the stakeholder and internal conversations that took place during the evaluation, RIVM's reputation among the public, staff and stakeholders is very good. Some RIVM experts are recognized as being among the best in the world or seen as national heroes; staff and stakeholders are proud of the institute and its internationally recognized experts. RIVM is considered to be a top authority that delivers sound scientific advice. During stakeholder interviews, many of RIVM's accomplishments over the years were cited in addition to its excellent outcomes in vaccination rates. Likewise, RIVM's strong, visionary leadership was noted as a factor in trust and credibility.

A challenge faced by RIVM, and by NPHIs around the world, is increasing public skepticism and distrust of public health authorities, perhaps due in part to the increasing influence of social media and the internet as a way to rapidly share information, particularly in times of crisis. Misinformation can fuel public mistrust about public health and scientific authorities, as has been the case for RIVM and other institutes around vaccination programs. RIVM's *Roadmap 2020* anticipated this challenge. The strategy recognizes that RIVM's position as a "trusted advisor" to government and the public is the foundation of its credibility and ability to influence, both nationally and internationally. A strong reputation based upon scientific excellence and integrity (and free from government influence when issuing publications and policies) is key to its role as the country's NPHI. Clear, transparent communications with the media and the public, and successful risk monitoring and abatement, are important factors in maintaining RIVM's reputation. The public counts on RIVM to provide science-based policy advice including that on e-cigarettes, medical devices, standards for health and safety, hazardous substances in textiles, air quality, colon cancer screening and numerous other issues.

The *Roadmap 2020* has taken firm steps forward to understand and address this area. To inform its strategy, RIVM has routinely surveyed the public (1,626 persons responded in 2015) and in 2015 also surveyed a group of influential stakeholders. Survey results show the public thinks playing an expert role while being reliable and independent are RIVM's core values. A new issue-management program to monitor social media and to respond quickly adds value to RIVM and allows it to provide science-based information to the general public. A "LinkedIn" site with 9,000 followers allows for rapid dissemination of information including a national TB plan; this social media strategy has been very helpful in quickly providing accurate information to the public. RIVM has also renewed its internal integrity policy, in line with that of the Royal Netherlands Academy of Arts and Science.

RECOMMENDATIONS

Recommendations:

1. RIVM's scientific excellence is its greatest asset and should continue to be invested in and fostered by government.
2. RIVM should be more specific regarding its link to and support of national strategies based on the scientific outputs and evidence it produces.
3. RIVM should expand upon successful efforts to be more outward-facing, including through social media and efforts to link to society (outlined below). Its position and reputation would be further enhanced by these efforts.
4. RIVM should continue to seek opportunities for reports that can be published in the international literature; its contributions will be further appreciated by doing so.

F2
RIVM ROADMAP 2020 STRATEGY
LINKING WITH SOCIETY

Focal area 2: Linking with society

Observations:

The need to connect RIVM to the general public is an important part of the *Roadmap 2020*. Such linkages are meant to ensure that RIVM is in touch with the needs of citizens and that they value, use and benefit from its work. This is an area where RIVM has excelled, with initiatives that can serve as best practices for other NPHIs. The “outside in” and “trusted advisor” approaches have measurably fostered direct linkages with the public. These innovative approaches should be used as a gold standard by other NPHIs. RIVM’s strategy on issue management and social media, outlined in the previous section, is a helpful way to provide information to the public and to offset misinformation about public health topics, particularly during emergencies and crises. The expansion of citizen-based science, including innovative new apps for air quality and ticks, successfully engage the public in a new and innovative way, making RIVM and citizen partners in a shared goal of improving public health. RIVM’s efforts to engage the public have included citizen dialogues on e-cigarettes and nanotechnology as well as workshops with young people to ask their view on RIVM’s scientific agenda and communication strategies on vaccinations targeted to this age group. These interactions gave RIVM more insight into how people viewed these two social issues. A 2014 “Grenelle Symposium” to share experiences showed experts the benefits of community engagement. A graduate student thesis assessing RIVM’s stakeholder engagement noted that it was very effective and could be further strengthened through the development of a toolkit and skilled internal facilitators. A transparent process in which stakeholders understand why their views are being solicited and the impact they will have is also important.

These activities will continue to improve RIVM’s links with society and can be a good foundation for future efforts. Expanding upon them will be important as some stakeholders perceived that RIVM may have a reputation for being somewhat disconnected from society. This topic is further outlined in Section 3.

RECOMMENDATIONS

Recommendations:

1. RIVM should continue to build upon successful activities that engage the public; continue movement toward being an institute that plays a more visible public role.
2. RIVM’s new facility is an opportunity to engage with society; RIVM should host public conferences, not just scientific conferences, as well as events and educational gatherings.
3. RIVM should adopt horizon scanning (short- and medium-term) to anticipate potential future needs or threats in the public and media arenas.
4. RIVM should build upon existing training to increase the number of scientists engaged with social media, and other means of communication, to bring the public closer to RIVM experts.

F3
RIVM ROADMAP 2020 STRATEGY
WORKING IN NETWORKS AND
CHAINS

Focal area 3: Working in networks and chains

Key questions for consideration:

- Assessment of collaboration with other institutes, organizations and actors in the

field: Does RIVM make good use of partnerships?

- Assessment of collaboration with stakeholders: Are the activities of RIVM in line with the demand of the stakeholders?

Observations:

The Dutch “commissioning” system between national ministries and RIVM is a unique context; the Evaluation Team is not aware of any other of IANPHI’s 100 members that operates under a similar process. In most other countries, funds are available from the ministry of health. The institute, based on its priorities and those of the ministry, creates its own budget. This budget may include, in some cases, funds from services, research and other functions.

Under the Dutch system (with the exception of the RIVM Strategic Program (SOR/SPR), funding priorities are determined by a “top down” (e.g., ministerial/political) process. Rather than setting its own priorities, RIVM serves as a contractor to three main “commissioners:” the Director General of General Public Health at the MoH, the Director General of Agriculture at the Ministry of Economic Affairs, and the Director General at the Ministry of Infrastructure and the Environment. These Commissioners lay out their research and other needs and the available budgets in annual tender requests. For example, projects currently being commissioned from the MoH include those on legal issues related to public health/care, policy advice on public health/care, risk assessment and evaluation for policy, and consumer product safety. From the Ministry of Economic Affairs, tenders include those for safe, healthy and sustainable food, monitoring on the effects of manure, and a programmatic approach to nitrogen. From the Ministry of Infrastructure and the Environment, the tender includes projects on climate, air and noise, aviation, safety and risks, nuclear radiation and security. This system does not give RIVM the flexibility or authority to earmark its annual budget for the development of longer-term policy innovations.

In addition to its role in government, RIVM may be commissioned by others (e.g., regional and local authorities and municipalities, EU, WHO) to carry out research. On one hand, this system ensures that RIVM’s work is in line with national political priorities and the priority needs of regions and municipalities. On the other hand, annual commissioning can be time-consuming and does not always promote the long-term view needed to ensure results in public health programs. Although contractual agreements with commissioners limit annual budget cuts to 5 percent, the annual commissioning system may lead to situations where programmatic allocations could be increased or decreased based on political interest versus need. This unique context has been taken into consideration in preparing the team’s recommendations; for example, the Evaluation Team recognizes the national limitations on RIVM’s ability to set its own budget priorities.

The Dutch context around the number of government-funded institutes and groups working in public health is somewhat complex compared to that of many other countries with IANPHI member NPHIs. The number of government agencies, parastatal organizations and NGOs focusing on disease-specific or topic-specific issues and essential public health functions appears to be higher than in other countries, where such functions are frequently consolidated into one NPHI. At the same time, this unique Dutch context allows for a larger number of perspectives and positions to be heard and integrated into the national debate. The Evaluation Team took this Dutch context into consideration when

assessing partnerships, networks and chains.

RIVM's mandate includes contributions and linkages at the national, regional, and local levels with a variety of international, national and local partners including other government agencies, NGOs, universities, regional and local authorities, community groups and individuals. RIVM's main "clients" include the following inspectorates and ministries:

- Health, Welfare and Sport (MoH)
- Infrastructure and the Environment ("I&M")
- Economic Affairs ("EZ")
- Social Affairs and Employment ("SZW")
- Defense
- Security and Justice

Like other IANPHI members, RIVM operates in an increasingly complex partnership environment with rapidly changing priorities and the need for strong relationships across sectors. Some of the challenges RIVM faces are due to the Dutch system, with numerous annual contractual linkages to ministries. Others are due to decreasing national and regional budgets for public health and research, and competition among governmental organizations for the same tender requests (as well as fewer requests). Devolution is a new challenge that will require the establishment of clearer roles and responsibilities for RIVM (and new opportunities to add value and expertise). It should also be noted that, within the European context, partnerships are extremely complex and can vary from issue to issue; as some tasks are being transferred to international organizations, there is a need to be proactive in and contribute to European policy development and research activities.

The Evaluation Team found that RIVM was universally commended and recognized for its expertise and viewed as a strong collaborator. RIVM has good working relationships with the MoH and other ministries and with municipal authorities. Its ongoing efforts to connect to partners are recognized and appreciated. Its efforts to integrate with universities (e.g, dual appointments of experts, collaborative research projects and laboratory capacity development efforts) are viewed as good strategic engagements that benefit all. It was noted that RIVM's technical advice is reliable and good. In recent years its efforts to connect are genuine, forward thinking and flexible, which has been appreciated. For example, RIVM is working with 25 regional/municipal public health services to collect data and develop a monitoring system. RIVM's proactive role in European policy is very valuable for the institute and the Netherlands as a whole. Efforts to stimulate public-private partnerships (including reformulating RIVM's policy on these to make them more feasible to create and manage) have been helpful. A 2013 letter of intent between RIVM and partners to develop a national knowledge network for public health led to RIVM's development of several knowledge platforms, including those on intensive farming and electromagnetic fields.

RIVM has mapped all internal and external knowledge networks and has started a Client Relations Management project to professionalize the way it works with partners, with a focus on the local and regional levels. RIVM is actively reaching out to these partners to discuss how it can support them as the decentralization of tasks is phased in. Municipalities and other decentralized bodies will need support from RIVM, but the

specifics, and the necessary budget, have not yet been defined (or allocated). There is precedence for these interactions in research (e.g., provincial governments often commission research from the RIVM center VLH) but less in the development of tools or provision of technical support to implement and evaluate programmatic activities. This represents a huge opportunity for RIVM. Several stakeholders and RIVM staff mentioned the need and opportunity to develop tools for local authorities, including those for public health, nutrition and the environment.

In addition, RIVM is striving to become a data authority within the “open data” movement under its newly established CIO office. This movement toward collecting national data will also be a new opportunity for RIVM in terms of assessing information, connecting it within a national context, providing recommendations to the MoH and others, and informing the public.

Another opportunity may be in serving as a convener of knowledge – or an incorporator of knowledge on a particular topic from different areas within the country (e.g., universities, NGOs, statistics). This would add value to the disparate work of others and place all of it within an important national context. RIVM’s strategy to approach different needs by connecting and linking subjects, stakeholders and notion was seen as a way to bring new people and disciplines together to encourage innovation (e.g., convening of a working group on nano-materials; development of new in vitro models and describing their applicability to risk assessment). In doing so, RIVM can combine experimental and risk assessment features and improve its ability to formulate scientific advices, recommendations and to communicate it to stakeholders.

Partnerships are flourishing – and there is an opportunity for continued growth. Some partners expressed a desire for a closer relationship with RIVM on issues of common interest. Some hoped for a closer relationship between scientists at RIVM and NGO staff conducting interventions “in the field,” whereas others encouraged linkages with the social sciences to ensure a more comprehensive approach (i.e., rather than solving problems with math – a “beta-oriented” culture). Some stakeholders noted the impression that RIVM does not always take a stand on the issues and that there is a lack of anticipation of new public health topics. It is the Evaluation Team’s opinion that much of this dynamic may result from the “commissioning” system. RIVM scientists may sometimes only consult the literature rather than explore “real-life” interventions already underway. Some interviewees felt that a reliance on research/ scientific evidence, when not coupled with social sciences, reduced RIVM’s effectiveness.

Partners noted that the move to a new building presents a good opportunity to connect. They recommended several strategies for consideration, such as 1) building on the current strategy of public and media engagement to include behavioral change, social marketing, and communications; 2) continuing RIVM’s external orientation to focus on the health needs of the population rather than traditional research needs based on funding or scientific interest; 3) expanding RIVM’s influence through expanded joint work with the Netherlands Organization for Health Research and Development; 4) expanding linkages with universities and medical centers and conducting horizon scanings with partners to inform national strategies and RIVM’s work; and 5) seeking opportunities for reports that can be published in the international literature.

RIVM could appraise and rethink its relationship to and role vis-à-vis regional public health services and society in general, including how knowledge is created, integrated and applied. Realigning to deliver integrated services to municipalities and evidence-based guidance for local policy-makers could be an important new role.

Although stakeholders feel RIVM is headed in the right direction, some pointed to a feeling of elitism and disconnection from politicians and society. They noted that, to the public, RIVM might seem old fashioned – with a “trust us, we’re the experts” mentality that could give the sense that scientists don’t listen to people. Others noted that RIVM’s physical location (away from government and political centers) might add to the perception of isolation. One stakeholder noted that there are perceptions that RIVM could have a lack of connection to society in general, perhaps in part due to its separation from public health services in the community and at the municipal level.

RECOMMENDATIONS

Recommendations:

1. A more ambitious, broader, comprehensive and modern strategy to engage with the public and media (behavioral change, social marketing, communications) should be considered.
2. RIVM should conduct horizon scanning with partners to inform national strategies and RIVM’s work, and align with partners on issues or planning when feasible. Partners have expressed a willingness to align.
3. RIVM should explore the following opportunities:
 - The role of RIVM with municipalities/local government in providing tools and guidance
 - The movement toward collecting national data in terms of assessing information, connecting it within a national context, providing recommendations to the MoH and others for the purpose of informing the public. Realigning to deliver integrated services to municipalities and evidence-based guidance for local policy-makers could be an important new role
 - The potential role as a convener of information and strategies (e.g., linking science with others)
4. Linkages with universities and medical centers should be improved and expanded.
5. RIVM’s Scientific Advisory Board has great potential to advocate for RIVM within the Netherlands and should be called upon for this purpose; nearly all are members of the national scientific academy.
6. RIVM should be considered in a new role: as the national institution for systematic reviews on public health interventions.
7. RIVM should perform, for the Ministry of Health, an analysis of how the fragmented institutional system of providers of scientific knowledge serves municipalities/local governments and the health system in general compared to a single or smaller number of comprehensive institutions.

F4
RIVM ROADMAP 2020 STRATEGY
IMPROVEMENT AND INNOVATION

Focal area 4: Improvement and innovation

Observations:

The RIVM management board introduced the Innovation Prize in 2014 as a competition for staff to develop solutions for urgent public health problems. In 2014, the prize was awarded for an app for people experiencing lung problems and in 2015, the prize went to a tick removal trainer. The ultimate goal of this focus on innovation is to ensure that it becomes an integral part of daily work and that collaborators will think and work innovatively. An innovation ambassador has been appointed and the RIVM innovations were presented during Innovation Day in November 2015, which was attended by the Minister of Health.

There is a need for government as a whole – with the private sector -- to find ways to translate research findings into products that can solve problems. For example, it was noted that RIVM collects data on the presence of fine dust in textiles but there is no national funding to develop products that are less toxic. An example of how this area could be explored is RIVM's participation in the "Schieblock beraad" -- a problem-solving setting of policy makers that includes the port authority, inspectorates (regional and national) and experts (RIVM). This group develops solutions to challenging questions for problems that span disciplines. For example, when there were concerns about battery waste or heat waste, RIVM's knowledge helped to develop out-of-the-box solutions.

RECOMMENDATIONS

Recommendations:

1. Building on the Innovation Prize, an organizational culture that promotes idea creation should be further encouraged, including giving young researchers a small portion of their time (10%-20%) to create ideas or explore innovations, as is the case at multinational corporations like Google. Reducing organizational bureaucracy (outlined in Section 6) could also help to free up staff time.
2. RIVM has established new working methods and teams that work across disciplines. These could be prioritized for teams that handle complex issues, particularly those that include translational science initiatives and movement toward developing/incorporating new technologies.

F5
RIVM ROADMAP 2020 STRATEGY
INTERNATIONAL STRATEGY WITH
FOCUS ON EU

Focal area 5: International strategy with focus on EU

Observations:

The Dutch government, through RIVM, is a major contributor to WHO research in the region. RIVM's work in recent years has focused primarily on the European Union. Under the *2020 Roadmap*, the aim is to be a "competitive, enterprising, sensitive and valued European top institute." RIVM works to build collaborations and knowledge transfer with institutes in Europe, the U.S. and Canada; it shares experts and expertise and establishes alliances and MoUs. For example, RIVM collaborates with the Initiative International Collaboration for Health (IC4Health). In mutual agreement with several institutes, this initiative facilitates the exchange of experts and organization of meetings and generally enhances collaboration and knowledge exchange. An improved English-language website became available in 2014. RIVM's contributions to the European region are well understood; its experts are valued and called upon by major public health leaders in the region including ECDC and WHO. RIVM's eighth WHO Collaborating Center (WHO CC for Antimicrobial Resistance Epidemiology and Surveillance) was established in 2014.

Successful research collaborations have established the RIVM team as scientific leaders in the region.

At the same time, RIVM's work in less-developed countries is limited to competitive research grants with little or no humanitarian assistance. Its work in this area is very limited compared to comparable IANPHI members in the region, many of whom have become very involved in "twinning" projects with NPHIs in lower resourced countries. These long-term relationships benefit both institutes and strengthen diplomatic and humanitarian ties between nations. It is expected that EU funding, and funds from other donors, will be available in 2016 to support such efforts. We strongly encourage the Dutch government to mandate RIVM to explore involvement in these activities, which will boost its capacity, increase its standing in the EU and other forums and help serve the diplomatic and humanitarian assistance goals of the Netherlands.

RECOMMENDATIONS

Recommendations:

1. RIVM could play a larger role in international public health. A targeted "twinning" project with a low-resource country should be explored as a way to build RIVM's capacity and the influence of the Netherlands (diplomatic and humanitarian) around the world; good national models for this exist (e.g, in Sweden, Norway, France and the UK) and could be explored.

F6

RIVM ROADMAP 2020 STRATEGY
HIGH-QUALITY ORGANIZATION IN
2020

Focal area 6: High-quality organization in 2020

Key questions for consideration:

1. Have the strategic goals and allocation of resources of RIVM been in accordance with its legislative mandate and the relevant strategic national objectives set by the MoH?
2. Is the new organization of RIVM in line with its mission?
3. Is the recently formulated laboratory strategy adequate to address future challenges?
4. Are the recently formulated 43 expertise fields adequate to address future challenges?
5. Are RIVM's processes, practices and products innovative, of good quality and efficient?
6. Does RIVM implement its relevant Essential Public Health Functions properly?
7. Are the knowledge and competence of RIVM and its personnel adequate and sufficient for current and future challenges?

Observations:

The Evaluation Team's view is that most of the above seven questions may all be answered "yes." RIVM's organizational structure, laboratory strategy, implementation of the Essential Public Health Functions, expertise, and knowledge/competence are appropriate to supporting the *2020 Roadmap*. The 43 areas of interest, developed through a thorough and detailed stakeholder process within and external to RIVM, are an innovative way to identify and address cross-disciplinary issues. The laboratory strategy, given the national funding available, is sufficient to meet current demand; although spreading laboratory capacity across RIVM and smaller partners (universities) may be challenging in times of crisis or emergency. The laboratory strategy should be reassessed regularly to make sure it is in line with potential future needs, including those related to emerging infectious

diseases. Question 5, regarding processes, practices and efficiency, is addressed in more detail below.

In carrying out the *Roadmap 2020*, RIVM has undertaken a thoughtful and coordinated long-term strategy to plan for and invest in the future. Its innovative plan to make its operations more strategic, cost-effective and focused -- including initiatives for leadership development, process management, cross-disciplinary research and policy and strategic recruitment and staff retention -- is gold standard and can be a model for other countries to replicate. Stakeholders reported that these initiatives have “completely transformed” the institute, noting a new, cooperative way of working. RIVM’s plan for modernizing its operations, including the new building, is state-of-the art. Its work on strategic recruitment, retention (including flexible work hours and salaries), a strategic agenda and corporate story are excellent. Efforts to manage processes including consolidated links with commissioners – and efforts toward multi-year commissioning to ensure stability -- to make interface easier have paid off. It was noted that RIVM has established a strong relationship, including two-way dialogue, with the MoH.

The RIVM Strategic Program (SOR/SPR) contributes to tackling societal challenges through interdisciplinary research and support for innovation and capacity-building at RIVM. Together these activities will generate knowledge that is scientifically relevant and of practical use in policy development and other tasks. This program is based on what RIVM thinks is necessary for the development of future knowledge and experience. Ministries do not have any direct influence on the SPR. The program was set up to implement a translational, integrated approach to research and innovation, and its themes are in line with the strategic knowledge agenda of the MoH, the Ministry of Infrastructure and the Environment, other ministries, and the European research agenda Horizon 2020. The SOR/ SPR program is drawn up for a period of 4 years, and RIVM’s management board decides on available budgets.

A strategy to create 43 areas/cross disciplinary teams/operations around six strategic areas of research and grouped under six CSOs is still in an early stage but seems to be encouraging new ways of approaching complex issues and reducing “siloes” working approaches. CSOs face a challenge in bringing together teams outside the normal hierarchical structure of RIVM; within a year it should become clearer as to whether they are adding value. RIVM’s strategic research program could add significant value to the institute if properly implemented; its work to predict the major research questions of the future and to prepare to address these will be very useful; with this, RIVM could potentially lead consortia seeking grants.

RIVM faces many of the same threats as other NPHIs, such as decreased funding and increased competition, the potential to lose young talent to universities or the private sector, and rapidly changing ministerial priorities (with some key priorities no longer valued and politicians not always understanding the value of long-term investments in public health, labs, and global health). Other challenges include the impact of new privacy laws on data and a lack of access to registries and other (hospital) data, including adverse event registries for medical products. RIVM has been visionary in recruiting and keeping talent (including joint appointments with universities) and in making its research budget competitive. In the past, programs had been funded based on historical expertise or interest; now, there is a competitive process in place and RIVM has become well

represented in the Netherlands' network of universities.

Whereas RIVM excels in most areas, a common theme mentioned by the majority of those interviewed is that the agency, despite many steps in the right direction, remains too bureaucratic. Project management is seen as inefficient and time-consuming and could be made more businesslike. Slow decision-making processes, at times at RIVM and at times at the MoH, was mentioned by several stakeholders, who cited examples related to colon cancer screening guidelines (four years from evidence to screening) and insulin pump research (seen as a public risk but no results yet). In some cases, RIVM staff have seemed inflexible (wanting to do projects their own way, on their own timeframe, when cooperation would be quicker and more cost effective), with a lack of urgency and some inefficiency (multiple staff attending meetings when only one or two persons attend from other agencies). Lastly, as a grantee, RIVM's overhead and costs can apparently be expensive.

RECOMMENDATIONS

Recommendations:

1. Although not all bureaucratic processes may fall within the power of RIVM to change (many are at the MoH), assess current processes and guidelines to see how these could be streamlined or eliminated. The cost in staff time and productivity could be estimated by talking with department heads and staff as well as with commissioners; this will demonstrate the likely impact in time and cost-savings to government in reducing known inefficiencies.

APPENDIX 1: IANPHI Evaluation Team Members

Reinhard Burger

Prof. Reinhard Burger is the former President of Germany's Robert Koch Institute. He received his PhD in 1976 at the Institute of Medical Microbiology, University of Mainz. From 1983-1987 he served as a Professor for Immunology at the Faculty for Theoretical Medicine, at the University of Heidelberg. Since 1989 he has been a professor of immunology at the Free University of Berlin. Prof. Burger has been a visiting scientist at various institutions abroad, including the National Institutes of Health, Bethesda, MD, USA; Harvard Medical School, Boston, MA, USA; and the Medical University, Wuhan, PR China. He is a member of the German Society for Immunology, the German Society for Hygiene and Microbiology, the American Association of Immunologists, the German Society for Transfusion Medicine and Immune Hematology, and the American Association of Blood Banks. In 1993 he was appointed chairman of the National Advisory Blood Committee (Arbeitskreis Blut) of the German Federal Ministry for Health. He has authored many immunological publications and has served as a member on several national and international expert committees.

Jean-Claude Desenclos

Dr. Jean-Claude Desenclos is a public health epidemiologist and deputy Director for Scientific Affairs at the French Public Health Agency (Santé publique France, SpF). After his medical studies, he took part in humanitarian missions for Médecins Sans Frontières (MSF) from 1980 to 1983. He worked at MSF headquarters in Paris as a medical and public health advisor between 1984 and 1987. He then integrated Epicentre, an NGO dedicated to epidemiological studies in low-income countries created by MSF in 1987. In 1988 he joined the Epidemic Intelligence Service (EIS) program of the U.S. Centers for Disease Control and Prevention (CDC), followed by a preventive medicine residency. In 1992, he joined the Réseau National de Santé Publique (French National Public Health Network); in 1998, this organization became the InVS. Dr. Desenclos was the Head of the InVS Infectious Diseases Department from 1995 to 2008 before becoming InVS Scientific Director. He is particularly interested in epidemiologic studies of infectious disease transmission, methodology questions for decision-making in public health, emerging risks, and prevention programs and interventional research. He is a PhD thesis research director affiliated with the Doctoral School of Public Health (ED420) of Paris South University and is an associate editor for the European Journal of Epidemiology, BMC Infectious Diseases (editor of the viral hepatitis section), and PLOS Currents Outbreaks. He has contributed to 193 scientific publications referenced in PubMed.

Courtenay Dusenbury

Courtenay Dusenbury has served as the Director of the International Association of National Public Health Institutes (IANPHI) U.S. Office at Emory University's Global Health Institute in Atlanta since its founding in 2006. In this position she guides the operations of IANPHI including public health system strengthening projects in over 45 countries around the world.

Prior to her current position, she served as the Director of Federal Affairs for Emory University. She worked in the U.S. Congress as a legislative director, senior

health policy advisor and budget negotiator for members on the House Ways and Means and Energy and Commerce committees from 1994-2000, including work on annual budget bills, Medicare and Medicaid reform bills and public health legislation. From 1988 to 1991 she was Special Advisor for Federal Policy to the Director of the Puerto Rico Economic Development Agency in San Juan and from 1991 to 1994 was the federal health policy advisor to the Governor of Puerto Rico and assistant director of his office in Washington, D.C. She began her career as a health policy analyst and press secretary in the Pennsylvania State Senate. She is a graduate of the Pennsylvania State University; attended Georgetown University's Public Policy Institute and earned her MPH in health policy/health economics from Emory University. She has served on the governmental affairs boards of several major U.S. advocacy groups including the American Association of Medical Colleges, the American Association of Universities and the Association of Academic Health Centers.

Camilla Stoltenberg

Dr. Camilla Stoltenberg is a medical doctor with a Ph.D. in epidemiology. She was appointed Director-General of the Norwegian Institute of Public Health (NIPH) in 2012. NIPH provides expertise and knowledge in infectious disease prevention, environmental medicine, mental health, epidemiology, non-communicable diseases, global health and forensic medicine. From 2002 to 2007, she served as director of the Division of Epidemiology, and from 2007 to 2012 as Deputy Director General of the NIPH with particular responsibility for strategic development of national health registries, cohorts and biobanks. Dr. Stoltenberg is a member of the WHO Technical Steering Committee for MNCA (Maternal, Newborn, Child and Adolescent Health), the EAT Advisory Board, the Reference Group for the Palestinian National Institute of Public Health, and the Scientific Oversight Group at the Institute for Health Metrics and Evaluation, University of Washington. Previous appointments include research evaluation committees at the Wellcome Trust, and several evaluations, funding and advisory committees in England/UK, France, Germany, Sweden, the Netherlands and Denmark. Her current scientific work focuses on neurodevelopmental disorders. In addition, she is involved in research on perinatal and genetic epidemiology, health in immigrant populations, and social inequality in health. She is an adjunct professor at the Department of Global Health and Primary Care, University of Bergen, and holds an honorary doctorate from the University of Copenhagen.

Anthony Kessel

Prof. Anthony Kessel is a public health physician and medical ethicist. His current position is Director of Global Public Health and the Responsible Officer for Public Health England (PHE), and Honorary Professor and Coordinator of the International Program for Ethics, Public Health and Human Rights (IPEPH) at the London School of Hygiene & Tropical Medicine (LSHTM). At PHE, Prof. Kessel's responsibilities include leadership and oversight of global public health, medical revalidation and performance, and the field epidemiology training program. Previously Prof. Kessel was Director of Public Health Strategy, Medical Director and Director of R&D at the Health Protection Agency, and Director of Public Health and Medical Director at Camden Primary Care Trust in London. Prof. Kessel is also a general practitioner. He is associated with over £7m of grant funding and has around 100 publications (peer-review papers, reports, commentaries, book chapters) in areas such as public health ethics and philosophy, clinical epidemiology, obesity, HIV and environmental health.

He is sole author of a book published by Cambridge University Press entitled Air, the Environment and Public Health.

Jitka Sosnovcová

Dr. Jitka Sosnovcova has a Masters of Science in Chemistry and has studied PhD at the Institute of Chemical Technology Prague, Faculty of Food and Biochemical Technology. In 2006 she received a degree of competence in the field of public health in the Public Health Postgraduate Institute in Prague. From 1989-1992 she served as a senior scientist at the Department of Safety of Vaccines and Serums Quality Control of the Institute of Vaccines and Serums, with responsibility for development of methods for microbiological examination of vaccines and biological methods in vitro and in vivo. Since 1992 she has worked for the National Institute of Public Health of the Czech Republic, first as a senior scientist and Head of the National Reference Center for Food Contact Materials and Articles and for articles for children under age 3, and later as a Director of Center of Public Health Laboratories and as Deputy Director General. Currently, she is Director General of the National Institute of Public Health of the Czech Republic. Since 2006 she has served as chair of the Advisory Committee of the Chief Public Health Officer for Objects of Common Use, and since 2009 as chair of the Scientific Council of the National Institute of Public Health in Prague, a member of the Czech Technical Committee for Standardization and Expert of the Czech Accreditation Body on Quality Systems Auditing. Since 2004, she has been responsible for chemical risk assessment in the field of food safety and consumer protection at the national and European levels. She is a member of many committees and working groups for European Institutions (EC, EFSA, ECDC, Council of Europe).

Anne-Catherine Viso

Dr. Anne-Catherine Viso has a Ph.D. in Toxicology and a Master in Technology and Innovation Management. At the time of the peer review, she was deputy to the director of the Office for Science and Quality Management at the French Public Health Surveillance Institute (InVS). Since October 2006, she has been in charge of European and international affairs at InVS.

From August 2003 to 2006, Dr. Viso was responsible for European and international affairs at the French Agency for Environmental and Occupational Health Safety. Prior to that, from 1993-2003, she worked for a worldwide company delivering environmental services where she was in charge of European affairs related to water quality and water management. From 1990-1993, she was a post-doctoral fellow based at the Plymouth Marine Laboratory (UK) developing bio-molecular tools to study phytoplankton populations.

Appendix II: Core Attributes and Essential Public Health Functions for NPHIs

Core Attributes

- National scope of influence
- National recognition
- Limitations on political influence
- Scientific basis for programs and policies
- Focus on the major public health problems affecting the country
- Adequate human and financial resources
- Adequate infrastructure support
- Linkages and networks
- Accountability

Essential Public Health Functions

1. Evaluation and analysis of health status: Collect data to understand the health status of the population, set priorities, and suggest interventions. Gather or have access to data on vital statistics, potential threats to health, risk factors for disease and injury, and access to and use of personal health services. Use the data to guide policies and programs.
2. Public health surveillance, problem investigation, and control of risks and threats to public health: Collect data on an ongoing basis to monitor for public health problems, and, when problems are identified, take action to control them. Conduct ongoing monitoring for outbreaks and other Public health problems. Make sure that samples can be tested for organisms or chemicals that cause public health problems. Investigate outbreaks or other public health problems, and make sure that interventions are put in place to address them.
3. Prevention programs and health promotion: Take action to create the conditions that promote health in the population. Inform and educate people about how to improve their health. Support legislation and regulations to promote health. Support environmental changes to promote health
4. Social participation in health: Strengthen the power of the community to play an active role in public health. Involve the community in developing and designing programs to promote health Provide assistance and information to organizations that work to promote health.
5. Planning and management: Develop and implement a strategic plan, policies, and programs for the NPHI, as well as systems to ensure efficient operations. Have a clear vision and mission statement. Conduct periodic strategic planning, using data to identify priorities and set measurable goals. Employ staff who are trained in the systems needed for efficient functioning of an NPHI.
6. Regulation and enforcement: Ensure that regulations and rules that support public health are passed and enforced. Provide data to help regulators make evidence-based decisions. Evaluate the impact of regulations and rules on public health.

7. Evaluation and promotion of equitable access to necessary health services: In close collaboration with government and nongovernment agencies, monitor access to health care, including access for vulnerable populations; identify barriers to care and strategies to overcome barriers.
8. Human resource development and training: Help develop and retain a public health workforce that is adequate for national needs. Monitor the capacity and needs of staff. Provide training and continuing education. Provide fulfilling opportunities and other incentives to encourage staff to remain in the public health workforce.
9. Quality assurance in personal and population-based health services: Work with the healthcare system to improve health services. Conduct surveillance for healthcare-related infections. Collect data on or make recommendations about patient safety. Conduct evaluations or review data to assess the quality of services.
10. Public health research: Conduct research on high-priority issues. Characterize the country's most important health problems. Provide other data important to decision-making. Evaluate the effectiveness of interventions. Make sure that research findings are translated into decisions, policies, and programs.
11. Reduction of the impact of emergencies and disasters on health: Conduct planning for emergencies, and also be part of government-wide planning efforts. Determine in advance what services the NPHI will provide in an emergency. Provide materials and training to ensure smooth functioning during an emergency. Develop agreements with organizations that will be involved in a response.

Appendix III: Terms of Reference

The RIVM *Roadmap 2020* was developed by RIVM's leadership team in 2012 and assessed and revised in 2015; it focuses on the institute's activities around six major themes:

1. Position and reputation
2. Linking with society
3. Working in networks and chains
4. Improvement and innovation
5. International strategy with focus on EU
6. High-quality organization in 2020

The IANPHI Evaluation Team was asked to assess this strategic agenda and the progress made from 2010-2015 including initiatives to develop cross-disciplinary fields of expertise in 43 areas and a laboratory strategy linked to a new building.

Main questions:

1. Have the strategic goals and allocation of resources of RIVM been in accordance with its legislative mandate and the relevant strategic national objectives set by the MoH?
2. Is the new organization of RIVM in line with its mission?
3. Is the recently formulated laboratory strategy adequate to address future challenges?
4. Are the recently formulated 43 expertise fields adequate to address future challenges?
5. Are RIVM's processes, practices and products innovative, of good quality and efficient?
6. Does RIVM implement its relevant Essential Public Health Functions properly?
7. Assessment of collaboration with other institutes, organizations and actors in the field; does RIVM make good use of partnerships?
8. Assessment of collaboration with stakeholders: are the activities of RIVM in line with the demand of the stakeholders?
9. Are the knowledge and competence of RIVM and its personnel adequate and sufficient for current and future challenges?

Appendix IV: Evaluation Agenda and Presenters

Monday morning, 11 April: meeting with Board of Directors

- Introduction by Director-General André van der Zande
- Intro Domain M&V by Director Els van Schie
- Intro Domain M&V by Director Annemiek van Bolhuis
- Intro Domain Clb by Director Jaap van Dissel
- Intro DVP and Support Staff by Deputy Director-General Walter van Wijngaarden
- Intro Executive Office by Manager Eline Scheper

Monday afternoon:

- Organization and organogram: Loek Stokx (chief strategist) and Eline Scheper
- Relationship with RIVM commissioners: Loek Stokx, Jolle Landman (manager Finance, Compliance and Control) and Arjen Groothedde (departmental manager Finance, Planning and Control)
 - Issue management: Mariette Pasman (manager Communication and Documentation), Loek Stokx and Linda Dap (collaborator Communication and Documentation)
 - SWOT: André van der Zande and Loek Stokx
 - Stakeholder interview with Claudia Stein, director of Division of Information, Evidence, Research and Innovation, WHO

Tuesday morning, 12 April: interview with stakeholders

- Rob Beuse: Chairman, Program Committee "Population Screening Colon Cancer"
- Annemieke Nijhof: Member, Societal Advisory Group: "Environment and Safety"
- Dick Jung: Director, Safety and Risks Ministry of I&M
- Marjan Minnesma: Director, Urgenda
- Joost Ruitenberg: Chairman, Scientific Advisory Board, RIVM
- Ivonne Rietjens: Member, Scientific Advisory Board, RIVM
- Jos van der Meer: Member, Scientific Advisory Board, RIVM

Tuesday lunch time:

- Laboratory Strategy: Jaap van Dissel and Annemieke de Vries (head of Centre for Health Protection: "GZB")

Tuesday afternoon:

- Hendrik Jan Roest and Riks Maas: Central Veterinary Institute
- Martijntje Bakker: Manager, Prevention ZonMW
- André Kleinmeulman: Former Deputy, SG MoH
- Paul van Zeijst: Director, Medical Technology Inspectorate
- Angelique Berg: Director-General, General Public Health, MoH

Wednesday morning, 13 April:

- Stakeholder interview with Hugo Backx, Director, GGD-GHOR NL"
- Data strategy management: Willem Steenis, Manager, CIO office
- WHO and international projects: Eric Smit, Collaborator, International Department, Executive Office and Dick Verkaar, Manager International Department, Executive Office

Wednesday afternoon: meeting with CSOs, junior and senior scientists

- CSOs: Erik Lebrecht, Johan Polder and Lieke Sanders
- Scientists (junior/senior): Pieter Keizers, Aldert Piersma, Carolien van den Brink, Hedwig Braakhuis, Marjolein Geurts, Mart Stein and Richard Heijink

Appendix V: Summary of Evaluation Team Recommendations:

1. Position and reputation

1.1 RIVM's scientific excellence is its greatest asset and should continue to be invested in and fostered by government.

1.2 RIVM should make more explicit its link to and support of national strategies based on the scientific outputs and evidence it produces.

1.3 RIVM should expand upon successful efforts to be more outward-facing, including through social media and efforts to link to society (outlined below). Its position and reputation would be further enhanced by these efforts.

1.4 RIVM should continue to seek opportunities for reports that can be published in the international literature; its contributions will be further appreciated by doing so.

2. Linking with society

2.1 RIVM should continue to build upon successful activities that engage the public; continue movement toward being an institute that plays a more visible public role.

2.2 RIVM's new facility is an opportunity to engage with society; RIVM should host public conferences, not just scientific conferences, as well as events and educational gatherings.

2.3 RIVM should adopt horizon scanning (short- and medium-term) to anticipate potential future needs or threats in the public and media arenas.

2.4 RIVM should build upon existing training to increase the number of scientists engaged with social media and other means of communication to bring the public closer to RIVM experts.

3. Working in networks and chains

3.1 RIVM should consider a broader and more ambitious, comprehensive and modern strategy to engage with the public and media (behavioral change, social marketing, and communications).

3.2 RIVM should conduct horizon scanning with partners to inform national strategies and RIVM's work, and align with partners on issues or planning when feasible. Partners have expressed a willingness to align.

3.3 RIVM should explore the following opportunities: -

- o The role of RIVM with municipalities/local government in providing tools and guidance
- o The movement toward collecting national data in terms of assessing information, connecting it within a national context, providing recommendations to the MoH and others and informing the public. Realigning to deliver integrated services to municipalities and evidence-based guidance for local policy-makers could be an important new role.
- o The potential role as a convener of information and strategies (e.g., linking science with others).

3.4 Linkages with universities and medical centers should be improved and expanded.

3.5 RIVM's Scientific Advisory Board has great potential to advocate for RIVM within the Netherlands and should be called upon for this purpose; nearly all are members of the national scientific academy.

3.6 RIVM should be considered in a new role: as the national institution for systematic reviews on public health interventions.

3.7 RIVM should perform, for the Ministry of Health, an analysis of how the fragmented institutional system of providers of scientific knowledge serves municipalities/local governments and the health system in general as compared to a single or smaller number of comprehensive institutions.

4. Improvement and innovation

4.1 Building on the Innovation Prize, an organizational culture that promotes idea creation could be further encouraged, including giving young researchers a small portion of their time (10%-20%) to create ideas or explore innovations, as is the case at multinational corporations like Google. Reducing organizational bureaucracy (outlined in Section 6) could also help to free up staff time.

4.2 RIVM has established new working methods and teams that work across disciplines. These could be prioritized for teams that handle complex issues, particularly those that include translational science initiatives and movement toward developing/incorporating new technologies.

5. International Strategy with focus on EU

5.1 RIVM could play a larger role in international public health. A targeted “twinning” project with a low-resource country should be explored as a way to build RIVM’s capacity and the influence of the Netherlands (diplomatic and humanitarian) around the world; good national models for this exist (e.g., in Sweden, Norway, France and the UK) and could be explored.

6. High-quality organization in 2020

6.1 Although not all bureaucratic processes may fall within the power of RIVM to change (many are at the MoH level), RIVM could assess current processes and guidelines to see how these could be streamlined or eliminated. The cost in staff time and productivity could be estimated by talking with department heads and staff as well as with commissioners; this will demonstrate the likely impact in time and cost-savings to government in reducing known inefficiencies.