

THE ROLE OF REFERENCE LABORATORIES AND COLLABORATING CENTRES IN PROVIDING PERMANENT SUPPORT FOR THE OBJECTIVES AND MANDATES OF THE OIE

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***Summary:** Within the context and consideration of the commitments made through the adoption of the OIE's Fourth Strategic Plan (2006–2010) for capacity building of veterinary services, disease reporting and science-based standard setting, the network of OIE Reference Laboratories and Collaborating Centres play a primary role.*

Analyses of the results of a questionnaire survey to Member Countries suggest that there are many opportunities for OIE Reference Laboratories and Collaborating Centres to provide further support and expertise to help address shortcomings and vulnerabilities in global veterinary capacity. The areas assessed include market access, animal health, zoonoses-related public health, food safety and emerging diseases. Generally, the areas requiring support and the level of requirements vary according to geographical location and the developmental status of the Member Countries.

Although the much welcome OIE plans for the twinning of laboratories should help to develop expertise and the provision of services in developing countries, twinings need to be strategically managed and funded to be regionally effective and sustainable.

The uneven geographical distribution of the current OIE Reference Laboratories and Collaborating Centres does not facilitate full global access and use of the services they provide. There is also a need to address common issues regarding awareness, communication and resources among these Reference Laboratories and Collaborating Centres. Furthermore, the network must be enhanced and expanded to address a broader range of diseases and emerging issues to reinforce scientific integrity for the continued evolution of relevant international standards. Challenges related to communication, transportation, competing priorities and funding are the most common obstacles for Member Countries in using OIE Reference Laboratories and Collaborating Centres. The need for quality assurance in all areas of services to ensure reliable results and products is strongly supported by Member Countries.

A strategy and process are required to enhance and expand the network of OIE Reference Laboratories and Collaborating Centres to meet the present and long-term global needs of the OIE and its Member Countries. A draft resolution document containing a summary of these needs and a list of recommendations are being presented to the International Committee of the OIE at its 75th General Session in May 2007, for consideration².

Key words: World Organisation for Animal Health (OIE) – Reference Laboratory – Collaborating Centre – expertise – laboratory service – network – laboratory twinning – veterinary capacity building

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² Resolution No. XXXIV was adopted by the OIE International Committee on 24 May 2007 (see OIE *Bulletin* no. 2007-3, pp 37-38)

1. Introduction

The world's networks of Reference Laboratories (RL) and Collaborating Centres (CC) contribute scientific expertise and laboratory services in support of global health and prosperity. These networks form an integral part of many national, regional and international organisations. Although international RL and CC are located within specific national or regional jurisdictions, they are externally recognised and mandated to provide services internationally, as well as locally.

The specialised expertise of each RL and CC is related to a specific disease or topic, and is the basis of its scientific activities. The services typically provided are confirmatory testing, pathogen typing and technical training. Other activities may include disease monitoring, research and dissemination of information. Recently, the sphere of activity of RL and CC has been evolving considerably to serve the changing and increasingly demanding needs of society and the environment. In recognition of the many challenges resulting from globalisation, climate change, emerging and re-emerging diseases and modern agricultural and trade practices, the OIE (World Organisation for Animal Health) intends to strengthen its own network of RL and CC to meet the needs of the OIE and its Member Countries.

The network of OIE RL and CC is intended to be a source of expert support and information for the OIE and its Member Countries. Support and advice are required by the OIE for the development of science-based international standards, recommendations and guidelines for the prevention, detection and control of animal diseases including zoonoses, and for safe trade in animals and animal products. The OIE RL and CC are also mandated to provide Member Countries with world class expertise and laboratory services in support of capacity building of national veterinary services, diagnostic support for the detection and control of animal diseases and zoonoses of public health importance, for facilitating safe trade and science-based mediation of disputes, and ultimately, the global public good associated with the activities of Veterinary Services.

The OIE has proposed to strengthen its network of RL and CC to play a key and permanent role in delivering the objectives and mandates of the organisation. These objectives are outlined in the OIE's Fourth Strategic Plan (2006–2010). Key objectives are the following: a) supporting governance and capacity building of Veterinary Services for Member Countries; b) strengthening the science base in mandated areas to facilitate the OIE's influence on policy design, research and governance in animal health and welfare; and c) improving transparency in the animal disease situation worldwide [4].

2. Background

2.1. Global networks of Reference Laboratories and Collaborating Centres

In addition to the OIE, many national and international organisations have established RL and CC in various jurisdictions to provide support in the detection and control of diseases. Key to the success of RL and CC is their ability to acquire, enhance and maintain scientific skills and expertise through multilevel interaction and collaboration. Organisations with advanced networks of RL and CC with mandates related to the detection and control of diseases include OIE, FAO (Food and Agriculture Organization of the United Nations) and WHO (World Health Organization).

The WHO relies on CC to provide support for its programmes within specific countries, regions or globally. Recently, the WHO Global Influenza Surveillance Network has established a specific RL network for H5 influenza.

The FAO has both CC and RL. A total of 44 FAO CC "provide technical advice, expertise and consultation on specific subjects to FAO Headquarters, field projects and Member Countries and assist in the organisation and implementation of training". The 19 FAO RL are disease-based and they "provide consultations, assist in making diagnoses and developing diagnostic capability, maintain a reference collection of disease agents, produce and standardise reagents, assist in characterisation of causative agents and training activities" [2].

There are increasing demands to establish formal symbiotic relationships among networks of RL and CC, as there is much opportunity for interaction and cooperation within and between networks. A recent example of such inter-organisational cooperation is the OIE/FAO Network on Avian Influenza (OFFLU), which was established jointly by FAO and OIE and operates in collaboration with the WHO Animal Influenza Network [5].

Some of the most productive relationships have been established through informal networks among scientists [2]. These informal networks were facilitated by providing initial opportunities for scientists

across jurisdictions and regions to meet and share scientific issues, challenges and goals. These interactions often set the stage for mutual support for learning, exchanges, collaborative studies and sometimes for proposals to initiate more structured or formal networks with minimal bureaucracy and costs.

2.2. The network of OIE Reference Laboratories and Collaborating Centres

The OIE is currently supported by a network of 160 RL and 20 CC, many of which are predominantly clustered among developed countries.

The key disease-based activities performed by OIE RL include diagnostic testing, production and distribution of reagents, research and methods development, international harmonisation of methods, preparation of international reference materials, consultation, training, presentations and publications.

The CC of the OIE provide topic-related support in the form of research, expertise, harmonisation, consultation, training, dissemination of information, coordination of studies and organisation of meetings.

The OIE RL and CC are also an important source of expertise in the establishment of *ad hoc* and working groups critical to the OIE's elaboration and updating of international standards for terrestrial and aquatic animals, production of biologicals and diagnostic methods, as well as in the evaluation of the status of Member Countries for specified disease.

The mandates of the OIE RL and CC have been specified and are available on the OIE website¹. Each RL and CC prepares an annual summary of their mandated activities and services provided in support of the OIE and its Member Countries. These reports are reviewed and published by the OIE.

Review of applications and recommendations for new RL and CC, as well as the evaluation of performance, are the responsibility of the OIE Biological Standards Commission (for terrestrial animals) and the Aquatic Animal Health Standards Commission (for aquatic animals).

The 180 OIE RL and CC cover 83 groups of diseases or topics. For diseases for which there is only one RL, this RL is required to function in an authoritative role in its areas of specialty when interacting with national RL in other countries. However, awareness of the presence of national RL is usually poor. For diseases for which there are many RL, those RL function as a network of peers, but have the major disadvantage of lack of organisational leadership among the group.

In 2006, a questionnaire survey was conducted to assess the level of interaction and other performance indicators among the current OIE RL and CC. Results of the survey were presented at the First OIE Conference for RL and CC², and a report has been prepared [1]. Responses were received from 79% of RL and 95% of CC.

The survey results indicate that, although there was good awareness within the host country's Veterinary Administration of the role of OIE CC, there appeared to be little knowledge of the CC among other OIE Member Countries. This lack of awareness as well as lack of funding were cited as the main reasons for the still too low level of services from OIE RL and CC to Member Countries. Overall, the amount of collaboration and exchange among most RL and CC was low. In addition, the number of RL using validated tests varied considerably; even though 77% of RL used validated tests, only 40% of RL in developing countries and 23% of RL for aquatic diseases used validated tests. All responding RL and CC expressed a strong need and desire for closer collaboration, particularly on a disease-specific basis. In summary, there was overwhelming agreement on the need for improvement in communication, collaboration, exchanges and funding.

3. Consultation with Member Countries (via questionnaire survey)

The main source of data for this report was a questionnaire survey conducted between December 2006 and February 2007, to obtain information from all OIE Member Countries regarding their current situation and needs for improving veterinary capacity. Attempts were made to identify existing barriers and potential opportunities for the enhancement of and access to the network of OIE RL and CC.

1 Mandate of OIE Reference Laboratories: www.oie.int/eng/OIE/organisation/en_mandatLR.htm

Mandate of OIE Collaborating Centres: www.oie.int/eng/OIE/organisation/en_mandatCC.htm

2 First International Conference of OIE Reference Laboratories and Collaborating Centres, Florianopolis, Brazil, 3-5 December 2006

Responses were received from 65.5% (110 of 168) of the current OIE Member Countries. Participation from within the regions varied: Europe (86.1%), Americas (71.4%), Middle East (65.0%), Asia (61.5%) and Africa (47.1%) (See [Appendix I](#)).

The survey data were categorised in various ways and on a question-by-question basis analysed statistically and correlated as appropriate. For questions answered by every participating Member Country, the results have a margin of error of $\pm 5.5\%$ with a 95% confidence level. The categories used for analyses include regions as defined by the OIE (Africa, Americas, Asia and the Pacific, Europe, and Middle East), and economic status of the Member Country as defined by WHO (developed, in-transition or developing country).

3.1. Capacity of Member Countries

Member Countries were asked to provide information regarding the availability of laboratory services and the effectiveness of the country's veterinary infrastructure in addressing needs such as: market access, animal health, public health (zoonoses), food safety, and emerging diseases.

The survey results indicate that the level of Member Country satisfaction was similar in each of the five areas rated. 'Animal health' was rated the most satisfactory area by respondents (79.8%), whereas the fewest respondents (68.5%) were satisfied with capacity for dealing with 'emerging diseases'. A total of 25 of the 110 responding countries currently have OIE RL or CC, and their presence did not consistently correlate with either 'satisfactory' or 'unsatisfactory' responses from host countries in rating areas of capacity.

a. Market access

Even though there was a need for improvement in market access, 67.6% of all respondents rated their country's market access as 'satisfactory' or 'highly satisfactory'; 8 respondents (7.4%) indicated that their country's market access was 'unsatisfactory'.

Although none of the respondents from Africa rated market access as 'unsatisfactory', most were not completely satisfied, giving a rating of 'fair'. Respondents from Europe were generally the most satisfied with their market access.

Interestingly, 36% of respondents with RL and CC felt that their country's market access was 'highly satisfactory' compared with only 12% of countries without RL or CC.

Among developing countries, 45.2% of respondents indicated that their market access was 'unsatisfactory' or 'fair'.

b. Animal health

An overwhelming majority of respondents (80%) indicated that the animal health situation in their country or their capacity to address it was 'satisfactory' or 'highly satisfactory'. Only 1 respondent rated their capacity or situation in this area as 'unsatisfactory'.

Generally, respondents from Africa were the least satisfied with their country's overall animal health situation, while respondents from Europe were the most satisfied.

Of the respondents who had RL or CC in their country, 40% were highly satisfied with the animal health situation or capacity in their country, compared with 14.3% of countries without RL or CC.

Among developing countries, 30.6% of respondents indicated that their animal health situation or capacity was 'unsatisfactory' or 'fair'.

c. Public health (zoonoses)

According to most respondents (76.4%) most Member Countries were 'satisfied' or 'highly satisfied' with the public health (zoonoses) situation in their countries. Six respondents (5.7%) rated their country's public health as unsatisfactory.

Respondents from Europe were generally the most satisfied with their country's public health.

Of the respondents who had RL or CC in their country, 37.5% were 'highly satisfied' with the public health in their country, compared with 14.6% of countries without RL or CC.

Among developing countries, 35.6% of respondents indicated that their public health was 'unsatisfactory' or 'fair'.

d. Food safety

Most respondents (74.3%) suggested that their country's capacity for handling food safety issues was 'satisfactory' or 'highly satisfactory'. Seven respondents (6.4%) believed that this capacity in their country was 'unsatisfactory'.

Generally, respondents from Africa were the least satisfied with their country's food safety, while respondents from Europe were the most satisfied.

Among developing countries, slightly over one third (37.1%) of respondents indicated that their food safety was 'unsatisfactory' or 'fair'.

e. Emerging diseases

About two thirds (67.9%) of respondents rated their country's situation with regard to emerging diseases as 'satisfactory' or 'highly satisfactory'. Seven respondents (6.4%) gave a rating of 'unsatisfactory'.

Respondents from the Middle East were the least satisfied with their country's situation with regard to emerging diseases, while respondents from Europe were the most satisfied.

Among developing countries, 38.7% of respondents indicated that their emerging disease preparedness was 'unsatisfactory' or 'fair'.

3.2. Satisfaction of accessibility and use of OIE Reference Laboratories and Collaborating Centres

3.2.1. Location and challenges of RL and CC

Of 110 responding countries, 25 had OIE RL or CC and they varied in distribution among the regions: 13 in Europe, 4 in Africa, 4 in the Americas, 3 in Asia and 1 in the Middle East.

Of the 25 developed countries surveyed, 17 (68%) had OIE RL or CC, compared with 7 of 63 (11.1%) developing countries and 1 of 22 (4.5%) of those in transition.

Countries with OIE RL or CC indicated that issues regarding finances were the most important impediments in the provision of mandated services. Other common impediments included 'domestic/national workload', 'biosecurity restrictions for pathogen imports', 'costs of reagents/antigen', and 'level of expertise'.

3.2.2. Use of OIE RL and CC by Member Countries

The services provided by OIE RL and CC were widely used by Member Countries, but the use of services provided within a region varied from one region to another.

About two-thirds (65.3%) of respondents had used an OIE RL or CC within their region. European Member Countries (78.8%) were the most likely to have used an intraregional RL or CC, while Member Countries in the Middle East (27.3%) were the least likely to have done so.

Overall, 71.2% of respondents had used an RL or CC in another region. Those from Asia (92.9%) were the most likely to have used an OIE RL or CC in another region, while those from Europe (57.1%) were the least likely to have done so.

The presence of RL and CC in a country or region did not influence the use of services provided outside the region. About two-thirds (67.2%) of those who had used an RL or CC in their region also used one in another region, while 82.8% of those who had not used one in their region used one in another region.

Five respondents had not used the services of any OIE RL or CC.

Overall, 24 of the 25 respondents who had an OIE RL or CC in their country had also used one in another Member Country or region.

A total of 44.7% of participating countries without an OIE RL or CC had used one in another country in their region. Two-thirds of these had also used RL or CC in other regions.

Of all respondents, 26.2% had not used an OIE RL or CC in their own region, but had used one in another region.

3.2.3. Use of services provided

All services provided by OIE RL and CC were used by Member Countries, but use varied by frequency, region and service.

'Diagnostic testing' was the most used service, with 62.7% of respondents indicating that their country has used it at least once in the past five years. The second most used service was 'confirmation and agent identification', with 61.8% of respondents using it at least once in the past five years. More than a third of responding Member Countries did not use these two primary services from any OIE RL or CC.

'Training', 'reagents', 'scientific advice' and 'proficiency samples' were widely used by Member Countries.

Regionally, the highest percentage of responding countries using diagnostic services of OIE RL and CC was in Africa (83.3%) followed by the Middle East (76.9%). The regions with fewest respondents using this OIE service were the Americas (45.0%) and Europe (52.9%).

Respondents who had OIE RL or CC in their country were more likely than those who did not to have used each of the services at least once, with the exception of diagnostic testing.

3.2.4. Satisfaction of Member Countries

Of 97 Member Countries that used an OIE RL or CC, 86.6% were satisfied with the quality of services provided, and this was essentially regardless of the location of the service provider.

For one or more reasons, 13 respondents were dissatisfied with the quality of service provided: 7 indicated that it was due to 'the time required for the service; 6 to 'the poor communication'; and 6 to 'the transportation requirements for samples'.

3.2.5. Barriers to the use of OIE RL and CC

The largest barrier that reduced or prevented the use of OIE services was 'the transportation of samples', as indicated by 68.8% of respondents. About half of all respondents also indicated that 'cost' and 'external regulatory barriers' prevent them from using OIE services.

Countries that did not have OIE RL or CC were more likely to include 'transportation of samples', 'lack of awareness of services', 'cost' and 'external regulations' as barriers that prevented them from using OIE services. Conversely, those who did have OIE RL or CC in their country were more likely to cite 'internal bureaucracy' and 'confidentiality (control of information)'.

Regionally, countries of Europe felt that they were faced with the fewest barriers, whereas responses from the Americas indicated that they were faced with the most barriers.

3.2.6. Alternate source of services received by Member Countries

Although 90.9% of all respondents obtained some of the services provided by OIE RL and CC within or outside their regions, many Member Countries depended on a variety of non-OIE institutions for such services. Government departments, universities, FAO and WHO RL, and private laboratories are the main non-OIE providers of these services. A total of 61 (55.5%) participating countries indicated that they obtained these services from government departments, 47 (42.7%) from universities, 41 (37.3%) from FAO, 39 (35.5%) from WHO, and 24 (21.8%) from private laboratories.

The location of the providers of the services from OIE, FAO and WHO for most respondents (74%) was outside the region, whereas the non-OIE services from government and university laboratories were most often provided from within the Member Countries.

3.3. Priorities identified by Member Countries

3.3.1. Increased disease-specific support

The top ten diseases that were considered the most important diseases for which there should be additional RL and CC are listed below, and the number of countries requesting additional RL/CC is given in parentheses:

- Foot and mouth disease (45)
- Avian influenza (42)
- Newcastle disease (26)
- Rabies (24)
- Brucellosis (16)
- Tuberculosis (14)
- African swine fever (13)
- Bovine spongiform encephalopathy (13)
- Classical swine fever (13)
- Contagious bovine pleuropneumonia (13)

Of all the diseases suggested for additional OIE RL or CC, respondents preferred that the additional RL or CC be located: in their own country: 42.7%; within their region: 48.6%; outside their region: 8.7%.

Those who did not have an OIE RL or CC in their country were less likely than those who did to prefer that new RL or CC should be in their country.

Respondents from Europe and the Middle East were most likely to want new laboratories or centres in their own country, while those from other regions were more likely to want them in their own region, but not necessarily in their country.

3.3.2. Prioritisation of support services

'Confirmation and agent identification' and 'diagnostic testing' received the highest priority ratings by Member Countries (58.5% and 49.2%, respectively) and were consistently regarded as the two most important services, regardless of region. The next highest rated service was 'training and capacity building', followed by 'reagents' and 'validation'.

There was a high level of correlation between the indicated importance and use of services provided by OIE RL and CC. The five most widely used services were 'diagnostic testing', 'confirmation/agent identification', 'training', 'reagents' and 'scientific advice'.

a. Services for quality assurance (QA)

The vast majority of respondents, regardless of region, rated all nine listed QA-related services as 'important' or 'highly important', and indicated a preference for OIE RL and CC to be the provider.

'Standardised methods', 'training and capacity building' and 'validated methods' were the most important services to 99.1%, 97.2%, and 96.2% of countries, respectively. 'Proficiency testing' (95.0%) and 'laboratory accreditation' (92.2%) were also rated as being very important. 'Analyst certification' (74.0%), 'audit' (73.7%), 'facility certification' (67.6%) and 'programme certification' (57.7%) were of slightly lower importance to Member Countries.

Generally, QA-related services were regarded as very important and most respondents preferred to receive many of these services from OIE RL and CC. However, 44.6% of respondents preferred a non-OIE provider for laboratory accreditation services.

b. Services in support of dispute resolution

At least two-thirds of respondents indicated that it was 'important' or 'highly important' for OIE RL and CC to provide assistance in support of dispute resolution between Member Countries.

'Scientific advice', 'scientific information', and 'testing' were the three most important dispute resolution services for 99.1%, 98.1% and 96.2% of Member Countries, respectively. 'Quality assurance' (84.6%) and 'assessment of disease status' (82.5%) were also quite important services, while 'auditing' (68.6%) and 'purpose-driven research' (64.6%) were of less importance.

c. Support to process, publish and disseminate disease-related information

Almost all respondents (96.2%) from all regions agreed that it was 'important' or 'highly important' for OIE RL and CC to partner with other laboratories in Member Countries to process, publish and disseminate scientific information relevant to disease surveillance, prevention and control. There were no responses indicating that it was 'not important'.

d. Increased services for harmonisation of test methods

Member Countries from all regions overwhelmingly (97.2%) indicated the importance of increasing the role of OIE RL and CC in providing services for the harmonisation of test methods.

e. Expanded role for support in food-safety-related issues

Generally, a majority of respondents expressed a desire for OIE RL and CC to expand their role to provide services in support of food safety-related issues in Member Countries.

The need for 'expertise' and 'residue testing' received the highest ratings as 'important' or 'highly important' by 88.3% and 84.9% of respondents, respectively. Member Countries from the Americas and Africa were more likely than respondents from elsewhere to indicate the importance of these two food-safety-related needs.

Other expanded roles rated by most Member Countries as 'important' or 'highly important' were in the areas of 'trade regulations' (74.5%), 'food processing' (69.2%), 'farm production' (68.9%), 'food certification' (68.9%) and 'food transport' (60.8%).

f. Support in animal welfare

The need for support to address issues of animal welfare in Member Countries was rated as 'important' or 'highly important' by 75.5% of all respondents. This rating was more likely to be expressed by Member Countries from the Americas than elsewhere. However, a total of 22.6% of respondents rated this need as 'not important' or only 'somewhat important'.

g. Expanded role in support of ecosystem health and biodiversity

A majority of respondents (64.5%), especially those from the Americas (85%), agreed that there was an 'important' or 'highly important' need for OIE RL and CC to provide support to address issues of ecosystem health and biodiversity. However, this need was only 'somewhat important' or 'not important' to 32.7% of Member Countries.

3.4. Preferences for multi-organisational laboratory cooperation

a. Cooperation to address non-foodborne zoonoses

Most respondents felt that OIE RL and CC should have an equal partnership and play a collaborative role with organisations such as WHO in addressing non-foodborne zoonoses. More than half (55%) of all respondents indicated that this was 'highly important', while 35.4% felt that it was 'important' or 'somewhat important'. More than 60% of respondents did not think it was important for OIE RL and CC to serve in an independent role or partial partnership in providing non-foodborne zoonoses services.

b. Cooperation to address zoonoses and food safety

A majority of respondents (89.1%) indicated a preference for equal partnership and collaboration between OIE RL and CC and organisations such as FAO in addressing zoonoses and food safety. Nearly two thirds of all respondents rejected independent role or partial partnership for OIE RL and CC in providing zoonoses and food safety support.

c. **Formal inter-organisational laboratory cooperation**

Most respondents (88.1%) indicated that it was 'important' or 'highly important' for OIE RL and CC to establish formal agreements with other organisations in order to strengthen the services provided to Member Countries.

3.5. Preferences for additional OIE Reference Laboratories and Collaborating Centres and twinning agreements

3.5.1. Suggestions for specific RL and CC

Seventy one (64.5%) respondents indicated their country's willingness to consider the establishment of OIE RL or CC for at least one disease or topic. The proportion of willing Member Countries was similar among the regions. However, countries were more willing if they already had an OIE RL or CC.

The most frequently suggested diseases for new OIE RL and CC, and the number of countries requesting them, were as follows:

- Avian influenza (31)
- Foot and mouth disease (28)
- Newcastle disease (15)
- Classical swine fever (14)
- Brucellosis (13)

These suggestions correlated well with the diseases Member Countries rated as priorities.

3.5.2. Perceived implications of having OIE RL and CC

Potential advantages and disadvantages of having OIE RL or CC to a host country were identified by 83 (75.5%) and 54 (49.1%) respondents, respectively.

A wide range of advantages were listed by participants, but the most common advantage was the local and immediate access to services. Other frequently listed advantages related to the development and availability of local expertise, services and infrastructure, and international recognition.

The most common disadvantage that was listed related to the financial costs and was reported by 38 respondents; 14 respondents cited a lack of equipment or technical support; risk of disease was expressed as a disadvantage by 12 respondents; and shortage of personnel was listed 11 times.

3.5.3. Preferences for twinning agreements

Of the 25 responding countries that currently have OIE RL or CC, 1 country did not answer to this item. Of the remaining 24 countries, 23 indicated willingness to participate in twinning agreements for the development of RL and CC in other Member Countries and 1 respondent would decline participation in a twinning agreement.

The 23 Member Countries responding positively indicated a willingness to participate in specialty areas involving 15 diseases or subjects.

The most common diseases proposed for twinning agreements, and the number of countries proposing them, were as follows:

- Avian influenza (6)
- Rabies (4)
- Brucellosis (3)
- Newcastle disease (3)

When asked if they could mobilise national resources to participate in the twinning process, 22 of the 23 willing participants provided responses: 11 were unable, 8 did not know, and only 3 were willing to use their own resources. However, when asked their willingness to accept a

twinning agreement if funding was provided, 20 of the 24 respondents with OIE RL or CC indicated acceptance, 3 did not know, and 1 would decline.

Although most Member Countries had at least one national or other local veterinary laboratory or centre operating within their country, 30.9% did not have any such facility. Respondents indicated that a total of 185 laboratories or centres found in 76 Member Countries could be potential twinning candidates. The majority of potential candidates were located in government organisations (137) or universities (41).

3.6. Reporting of positive test results from OIE Reference Laboratories

A majority of all respondents (56.1%) indicated acceptance of the reporting of positive results for OIE-listed disease by OIE RL in all cases, but only after agreement of the OIE Delegate of the Member Country submitting the sample. The next most common preference (34%) was for the option of reporting all cases without any conditions.

3.7. Other suggestions and comments from Member Countries

In addition to the survey questions, 28 (25.5%) of the Member Countries participating in the survey also provided single or multiple suggestions or comments for consideration.

Most of the remarks related to the cost of laboratories, a variety of areas for improvements in the current network of OIE RL and CC, and the specific needs of Member Countries or regions. The need for funding via the OIE for laboratory infrastructure and support in Member Countries was a frequently expressed sentiment. Several respondents suggested improvements in linkages and communication between all stakeholders, including OIE RL and CC and Delegates as well as the national laboratories of Member Countries.

These suggestions and a number of specific comments are incorporated in the discussion section below.

4. Discussion

The full potential for OIE RL and CC to provide scientific support to the OIE and to assist Member Countries in strengthening their veterinary services capacity has not yet been achieved. Realising this potential is essential in order for the OIE to fully meet its objectives and mandates.

The information presented in this report may be used as a base from which to develop specific strategies and programmes and assist with the implementation and management of initiatives such as the twinning of laboratories. However, some caution should be exercised when interpreting the results of the questionnaire survey. Because some questions were not answered by all participating Member Countries, and the proportion of respondents varied regionally, the results might not accurately represent the situation in every region, particularly with the relatively low participation rate of countries from Africa. This might be confounded by the relatively high number of developing countries that did not participate in the survey, but have relatively high disease-related needs, and the absence of a few Member Countries that represent a relatively large part of at least one region. There is also the possibility that questions were misinterpreted. Furthermore, because of the need for descriptive responses to some questions, statistical analyses were not always possible. Nevertheless, the results of the questionnaire were only one of several valuable resources used in this exercise. Other sources of information included the literature, reports, and the recent Conference of OIE RL and CC.

The requirements and priorities of OIE Member Countries regarding services and expertise from OIE RL and CC are similar on some issues but vary considerably on others, usually according to region or economic status of the individual Member Country.

Although it appears that most Member Countries are at least somewhat satisfied with their veterinary capacity, the highest needs in this area relate to emerging diseases and market access.

The satisfaction of Member Countries and their use of OIE RL and CC are highly variable according to the location of the Member Country relative to the service providers. The clustering of most of the RL and CC in a few parts of the world has resulted in a disproportionate access and use of these services from one region to another because of issues related primarily to communication and costs.

The services seen by Member Countries as being most important are testing, identification of pathogens, training, validation of methods and provision of reagents. The most valued quality assurance services are

standardisation and validation of methods, training, proficiency testing and laboratory accreditation. The most preferred services for dispute resolution between countries are the provision of scientific information and advice, and testing.

A new support service that would be highly valued by Member Countries is assistance to process, publish and disseminate information related to local disease surveillance, prevention and control. Preferences of Member Countries for support in non-traditional areas are highly regional, with food safety expertise and residue testing regarded globally as being most important. The importance for OIE support in animal welfare as well as in ecosystem health and welfare is highest in the Americas.

Generally, most Member Countries favour equal partner collaboration between RL and CC of the OIE with those of other organisations, as appropriate for the provision of scientific support and capacity building.

A key area requiring consideration for strengthening the role of the OIE RL and CC is the laboratory network itself. Many of the main challenges relate to issues of communication and funding, and are also common to Member Countries and regions. Improvements in communication are required to address a variety of concerns expressed by OIE RL and CC, and Member Countries. Mechanisms are needed to facilitate awareness and establish communication, collaboration and mutual support among OIE RL and CC. These same opportunities are also needed for the OIE RL and CC and the providers of veterinary services in Member Countries. Specific examples suggested by survey participants include regularly held conferences for OIE RL and CC, regionally based meetings of national and OIE RL and CC, access to stakeholders, and the sharing and exchange of information, expertise and materials.

The lack of resources is a major impediment to OIE RL and CC as well as to Member Countries for the OIE to achieve its goal of providing and enhancing OIE laboratory services and expertise to all Member Countries. Evidence for this is the broad support from Member Countries for the twinning programme, but only if it includes financial support. The OIE's plans for twinning laboratories should help to fund the development of expertise and laboratory capacity in some countries. However, the achievements of sustainable funding requirements to improve and increase the services of the current OIE RL and CC beyond the resourcing and in-kind contributions provided by host countries should be considered. OIE RL and CC currently do not receive any direct OIE funding for the services they provide, and some may not require such funding. Non-OIE opportunities for funding should also be explored through donors or agencies such as the World Bank. Several Delegates have suggested a variety of non-economic rewards for OIE RL and CC such as formal recognition of facilities and experts, leadership roles, and exchange of personnel. Uncontrolled expansion of the OIE network of RL and CC without first addressing these needs would exacerbate funding deficiencies in the future.

The results of the recent surveys of Member Countries and OIE RL confirm the need for improved quality assurance (QA) among both national and OIE laboratories. The use of internationally recognised QA systems in all OIE RL and their use of validated methods are essential for ensuring the reliability of services, especially test results. This may help to alleviate the reservations expressed by Member Countries for the directive of reporting positive results for an OIE-listed disease directly from OIE RL to the OIE. Interestingly, the need for all areas of QA-related services is a very important priority according to an overwhelming majority of Member Countries, regardless of region. The demand for attainment and maintenance of an internationally acceptable level of QA in all areas of science and technology is increasing globally. Because of the high costs and increasing importance associated with QA, the OIE needs to strive to provide clear guidelines, training, support and recognition for its RL and CC to achieve the necessary standards of performance.

The needs and priorities identified by Member Countries as well as the OIE Strategic Plan relate to a number of issues specific to the current network of OIE RL and CC. The locations and areas of specialty of these RL and CC need to be strategically focused to address both the present and long-term priorities of the OIE and its regions. Currently, most of these OIE RL and CC are clustered within a small group of developed countries that have the necessary resources and level of expertise to support an international RL or CC. The disease or area of focus of many of the current OIE RL and CC are priorities for the host country, but often not for Member Countries elsewhere. This is reflected in the results of the questionnaire survey that show that many of the new RL suggested by developing Member Countries would focus on diseases that are of lesser or no priority for developed countries. As well, the distribution of current OIE RL by diseases or geography is not correlated with the priorities and planning investments of most Member Countries.

The diseases for which most Member Countries have the highest priorities are foot and mouth disease (23 countries) and avian influenza (20 countries). While presently four and seven OIE RL have been established for these diseases, respectively, only two of these eleven OIE RL are located in developing

countries, and neither of these two laboratories are for avian influenza. On the basis of regional distribution and developmental status of Member Countries, the priorities and locations are not well correlated. There may be many reasons for this poor correlation, and they should be considered in the implementation of the twinning programme and other forms of support for the development of veterinary services capacity. However, it is also necessary to maintain basic support and expertise in all areas of veterinary capacity in order to prepare for emergencies and changes in priorities.

Issues relating to communication and geography are the main deterrents for Member Countries to the access and use of OIE expertise and services. The location of RL and CC greatly influences the accessibility of services and expertise to Member Countries. Due to distance, costs and increasingly restrictive regulations for the movement of biological or biohazard materials, transportation is the largest single barrier faced by Member Countries in the use of available services from OIE RL and CC. Strategic positioning of new RL and CC is vital for it to have the maximum benefit to Member Countries and the OIE. Addressing the main needs within the current network of RL and CC prior to the expansion of the network should help to avoid future frustrations and could serve as a model upon which to expand the network and build capacity in Member Countries.

The information provided in this report may be used to develop strategies for strengthening the network of OIE RL and CC. There is a need to pay particular attention to central issues related to communication, funding, geography and QA, and to address challenges in these areas in the present network. Expansion of the network to help build appropriate and sustainable veterinary capacity in Member Countries will require consultation, strategic planning, sustainable external funding and controlled implementation.

A review of the structures and dynamics of networks of RL and CC in other organisations might provide valuable ideas to help model an expanded network of OIE RL and CC. For example, laboratory clusters or specific RL networks to address strategic disease control or surveillance needs are employed by the WHO, and PulseNet International is an interconnected system of laboratory networks around the world to address issues relating to the emergence and outbreaks of foodborne diseases. Review of these models may also reveal opportunities for partnerships with the OIE.

It is important to address the main challenges faced by many of the existing OIE RL and CC in order for them to satisfactorily address their mandates and to provide services and expertise globally and to successfully expand the network of laboratories. The process of strengthening the network of OIE RL and CC should be done in a manner that would help to build and support veterinary capacity in Member Countries and address the priorities of the OIE. The next steps should include the development of a strategic plan for enhancing and expanding the network and a process for implementation, in consultation with the appropriate groups.

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Appendix I

OIE Members having responded to the questionnaire on “The role of OIE Reference Laboratories and Collaborating Centres in providing permanent support for the objectives and mandates of the OIE”

1. Albania	39. Germany	76. Oman
2. Algeria	40. Ghana	77. Pakistan
3. Andorra	41. Greece	78. Paraguay
4. Argentina	42. Guinea Bissau	79. Peru
5. Armenia	43. Haiti	80. Philippines
6. Australia	44. Honduras	81. Portugal
7. Austria	45. Hungary	82. Romania
8. Azerbaijan	46. Iceland	83. Saudi Arabia
9. Bahrain	47. Indonesia	84. Senegal
10. Bangladesh	48. Ireland	85. Serbia
11. Belarus	49. Israel	86. Singapore
12. Belgium	50. Italy	87. Slovakia
13. Belize	51. Jamaica	88. Slovenia
14. Benin	52. Japan	89. South Africa
15. Bosnia and Herzegovina	53. Jordan	90. Sri Lanka
16. Botswana	54. Kazakhstan	91. Sudan
17. Brazil	55. Kenya	92. Suriname
18. Bulgaria	56. Kuwait	93. Swaziland
19. Burkina Faso	57. Kyrgyzstan	94. Sweden
20. Burundi	58. Latvia	95. Switzerland
21. Cameroon	59. Lesotho	96. Syria
22. Canada	60. Lithuania	97. Taipei China
23. Chile	61. Luxembourg	98. Tajikistan
24. Colombia	62. Macedonia (Former Yug. Rep. of ~)	99. Thailand
25. Congo (Rep. of the ~)	63. Mexico	100. Tunisia
26. Costa Rica	64. Mongolia	101. Turkey
27. Cote d'Ivoire	65. Morocco	102. Ukraine
28. Cuba	66. Mozambique	103. United Arab Emirates
29. Cyprus	67. Myanmar	104. United Kingdom
30. Czech Republic	68. Namibia	105. United States of America
31. Denmark	69. Nepal	106. Uruguay
32. Dominican Republic	70. Netherlands	107. Uzbekistan
33. El Salvador	71. New Caledonia	108. Vietnam
34. Eritrea	72. New Zealand	109. Zambia
35. Estonia	73. Nicaragua	110. Zimbabwe
36. Finland	74. Nigeria	
37. France	75. Norway	
38. Georgia		
