

Public Health Institutes of the World



**2008 Survey of Members**  
of the  
International Association  
of National Public Health  
Institutes (IANPHI)

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## ABSTRACT

### Objective

The goal of the International Association of National Public Health Institutes (IANPHI) is to increase global public health capacity by developing and strengthening national public health institutes (NPHIs) and creating linkages among them. By the end of 2008, IANPHI included 61 NPHIs from around the world, representing 32% of the world's countries. To inform IANPHI's work and provide a baseline for measuring increases in NPHI capacity over time, in 2008 we analyzed publicly available information about IANPHI member countries and conducted the second annual survey of IANPHI members.

### Methods

A written survey, based on concepts described in the NPHI Framework released by IANPHI in 2007, was distributed to directors of NPHIs that were members of IANPHI as of August, 2008. Questions related to infrastructure and activities; questions about activities were structured to correspond to the NPHI Core Functions (CFs) described in IANPHI's 2007 NPHI *Framework for the Creation and Development of National Public Health Institutes*. Information from the 2008 survey was supplemented by information from the World Bank and World Health Organization (WHO) about IANPHI member countries.

### Results

Thirty-seven of 61 members (61%) completed the questionnaire. Respondents varied greatly in resources, with full-time equivalent positions ranging from 20 to 16,000 and budgets ranging from \$1,569,569 to \$8.8 billion. Nearly 90% of NPHIs conduct at least six or more of the Core Functions, and 76% perform eight or more. Respondents most commonly reported substantial activities in *CF 2* (surveillance, problem investigation, and control of risks and threats to health), *CF 8* (human resources development and training), and *CF 10* (research). However, finer evaluation of the data illustrates that, within each Core Function, the scope and kinds of activities undertaken by NPHIs vary greatly. For example, all 37 respondents (100%) reported conducting substantial amounts of surveillance, which is one of the four components of *CF 2*. Six of these conduct surveillance for infectious diseases only, and four—all in the European region—conduct surveillance for noncommunicable conditions only. The data also indicate critical areas that are not being addressed by NPHIs, such as surveillance for occupational and mental health.

### Conclusions

IANPHI membership is increasingly representative of the NPHIs of the world. This survey shows that NPHIs vary greatly in resources and functions, although the majority carry out most of the Core Functions. Important issues are not being addressed by NPHIs; however our survey does not allow us to determine whether they are being performed by other agencies in our member countries. Given the heterogeneity of NPHIs and the countries where they reside, developing programs, materials, and support specific enough to be useful and flexible enough to be relevant will be an ongoing challenge for IANPHI.

## BACKGROUND

National public health institutes are critical parts of the world's public health infrastructure. Besides providing important services related to governmental activities, such as monitoring the health of the population and conducting surveillance for health conditions of concern, they play important roles in preparing for and responding to public health emergencies, such as the spread of swine flu.

The goal of the International Association of National Public Health Institutes is to increase global public health capacity by developing and strengthening NPHIs and creating linkages among them. Since beginning in 2006, IANPHI has steadily increased its membership to currently include 61 members. Today, IANPHI members represent 32% of the 192 countries of the world.<sup>1</sup> The list of current IANPHI members is available on the IANPHI website ([www.ianphi.org](http://www.ianphi.org)).

To characterize existing NPHIs and measure changes in capacity over time, IANPHI conducts annual surveys of members. For purposes of this and previous reports, an NPHI is defined as an IANPHI member.

An initial survey conducted in 2006 demonstrated that NPHIs vary markedly and that countries have used many approaches to develop functioning public health networks or agencies. In 2007, IANPHI published a Framework that described Core Functions (CFs) of an NPHI. These were used as the basis for the 2007 survey,<sup>2</sup> which described the broad range of efforts being carried out by NPHIs, as well as their diversity.

The 2008 survey was similar to that used in 2007, but was modified to ask explicitly about activities that NPHIs had included as write-in answers in their 2007 responses. For example, the 2008 survey asked about surveillance and epidemiology related to neglected tropical diseases, alcohol use, illicit drug use, and insecticide resistance testing. This report summarizes the results of the 2008 survey.

## METHODS

The 2008 survey was distributed in August 2008 to all IANPHI members and was also made available during IANPHI's Third Annual Meeting in October 2008.

Survey data were exported from Adobe into Excel. Data entries were checked for errors by a second individual and then imported into SAS for analysis. Country economic rankings were determined by the World Bank list of economies.<sup>3</sup> WHO regions were determined by the WHO global burden of disease regional classification system.<sup>1</sup> Country population data were based on 2009 estimates from the CIA World Factbook.<sup>4</sup>

Work on immunizations, such as surveillance for immunization rates, was considered infectious disease work for purposes of reporting on CFs 2, 3, and 10, which encompass surveillance, epidemiology, prevention programs, and research.

Due to small numbers in some categories and to reduce misclassification, for purposes of analysis of the Core Functions, responses were grouped into two

1 Global burden of disease regional classification system.

World Health Organization.  
[www.who.int/choice/demography/regions/en/index.html](http://www.who.int/choice/demography/regions/en/index.html)

2 [www.ianphi.org/resources/ianphi\\_folio/](http://www.ianphi.org/resources/ianphi_folio/)

3 World Bank list of economies.  
World Bank, July 2008.

[siteresources.worldbank.org/DATASTATISTICS/Resources/CLASS.XLS](http://siteresources.worldbank.org/DATASTATISTICS/Resources/CLASS.XLS).

4 CIA World Factbook: Population 2009 estimates.

[www.cia.gov/library/publications/the-world-factbook/index.html](http://www.cia.gov/library/publications/the-world-factbook/index.html)

categories: “Limited” (comprised of the categories “None/Minimal” and “Some” on the questionnaire) and “Substantial” (comprised of the categories “A lot” and “Comprehensive”). Although most respondents answered every question, a few left some responses blank. Since results are largely described in terms of the numbers of NPHIs reporting substantial activity, blanks are counted as the equivalent of a response of “None/Some” or “Limited” for purposes of analysis. Unless specified, the denominator used in calculating percentages of NPHIs that have substantial activities in a Core Function or a portion of a Core Function is the 37 NPHIs that returned questionnaires.

## RESULTS

### Respondent characteristics

Thirty-seven of 61 members provided survey data for a response rate of 61%. The World Bank economic rankings of responders and non-responders are shown in [Table 1](#). Less than half of IANPHI members are ranked as high income by the World Bank, and nearly 20% are low income. Responses were received from countries in all economic groups. However, consistent with the distribution of IANPHI membership, respondents tended to be from high-income countries.

<i>Economic ranking</i>	<i>Respondents (%)</i>	<i>Non-respondents (%)</i>	<i>Total (% of total members)</i>
Low income	8 (22%)	4 (17%)	12 (20%)
Lower middle income	5 (14%)	6 (25%)	11(18%)
Upper middle income	6 (16%)	8 (33%)	14 (23%)
High income	18 (49%)	6 (25%)	24 (39%)
<b>Total</b>	<b>37</b>	<b>24</b>	<b>61</b>

Although IANPHI members come from all WHO regions, 48% are from the European region. Responses were received from NPHIs in all regions (Table 2). NPHIs that responded exceeded those who did not respond in all regions, except in the Americas.

**Table 2: Characteristics of responding and non-responding IANPHI members, by WHO region**

<i>WHO Region</i>	<i>Respondent (%)</i>	<i>Non-respondent (%)</i>	<i>Total (%)</i>
Africa	6 (16%)	3 (13%)	9 (15%)
Americas	5 (14%)	6 (25%)	11 (18%)
Southeast Asia	2 (5%)	1 (4%)	3 (5%)
Europe	18 (49%)	11 (46%)	29 (48%)
Eastern Mediterranean	2 (5%)	1 (4%)	3 (5%)
Western Pacific	4 (11%)	2 (8%)	6 (10%)
<b>Total</b>	<b>37</b>	<b>24</b>	<b>61</b>

In terms of organizational location, respondents most commonly reported being part of the Ministry of Health (54%) or being an autonomous government agency (41%). Only one NPHI reported affiliation with another ministry, and one reported being autonomous from the government.

Three respondents did not report budget or full-time-equivalent staff (FTE) data. When possible, these respondents were included in budget and FTE calculations. The number of FTEs among those reporting ranged from 20–16,000 (Table 3). Reported IANPHI member budgets ranged from \$1,569,569 to \$8.8 billion—budgets that differ by a factor of 5606. The median budget for responding NPHIs from lower-income countries was \$5.9 million, and the median budget for NPHIs from high-income countries was \$48 million.

Among the 37 responding NPHIs, a median of 70% of funds came from the government budget. The remainder derived from donations, fees-for-service, private sources, endowments, grants, and other sources. Six NPHIs were 100% federally funded. The NPHI receiving the least amount of federal funds received only 5% of its budget from the federal government, with more than 90% coming from other funding sources.

The ratio of budget to FTEs, which may illustrate a relationship to the amount of money available for projects (as opposed to staff and indirect costs), varied from \$1,715 per FTE to \$550,000 per FTE.

NPHIs from high-income countries and countries with larger populations tended to have bigger budgets. Overall, reporting NPHIs had a median budget of \$.95 per person living in the country.

**Table 3. NPHI budgets, FTEs, budget-to-FTE ratios, population, and budget-to-population ratios, by World Bank economic ranking**

<i>Characteristic</i>	<i>Low Income</i>	<i>Lower-middle income</i>	<i>Upper-middle income</i>	<i>High income</i>	<i>Overall</i>
Provided data	8	5	6	18	37
Range of FTEs	125–498	131–400	213–10,254	20–16,000	20–16,000
Median number of FTEs	287	195	432	608	315
Range of NPHI budgets	\$1,650,000– \$25,000,000	\$1,569,569– \$16,000,000	\$4,386,210– \$774,155,898	\$2,668,704– \$8,800,000,000	\$1,569,569– \$8,800,000,000
Median NPHI budget	\$5,930,000	\$2,669,799	\$25,345,992	\$48,000,000	\$16,163,375
Range of budget-to-FTE ratios	\$5,964– \$115,824	\$5,000– \$64,777	\$17,830– \$142,857	\$1,715– \$550,000	\$1,715– \$550,000
Median budget-to-FTE ratio	\$17,268	\$15,717	\$30,781	\$114,441	\$69,005
Range of populations (thousands)	20,180– 153,547	2,061– 65,493	2,245– 196,343	1,308– 303,825	1,308– 303,825
Range of budget-to-thousand population ratio	\$40–\$303	\$31–\$1,295	\$313–\$7,272	\$160–\$29,537	\$31–\$29,537
Median budget –to-thousand population ratios	\$86	\$524	\$1,485	\$5,306	\$946

## Core Functions

### OVERVIEW

**Table 4** provides data on the number of NPHIs reporting substantial activities in at least one aspect of each of the Core Functions. More than half the NPHIs have substantial activity in some aspect of each of the Core Functions except for *CF 6*, regulation and enforcement, and *CF 7*, equitable access to necessary health services. NPHIs are most likely to have substantial capacity in the Core Functions related to evaluation and analysis of health status (*CF 1*); surveillance, problem investigation, and control of risks and threats to health (*CF 2*); human resources development and training (*CF 8*); and research (*CF 10*). NPHIs were least likely to have substantial capacity in those areas related to regulation (*CF 6*) and access to health care (*CF 7*).

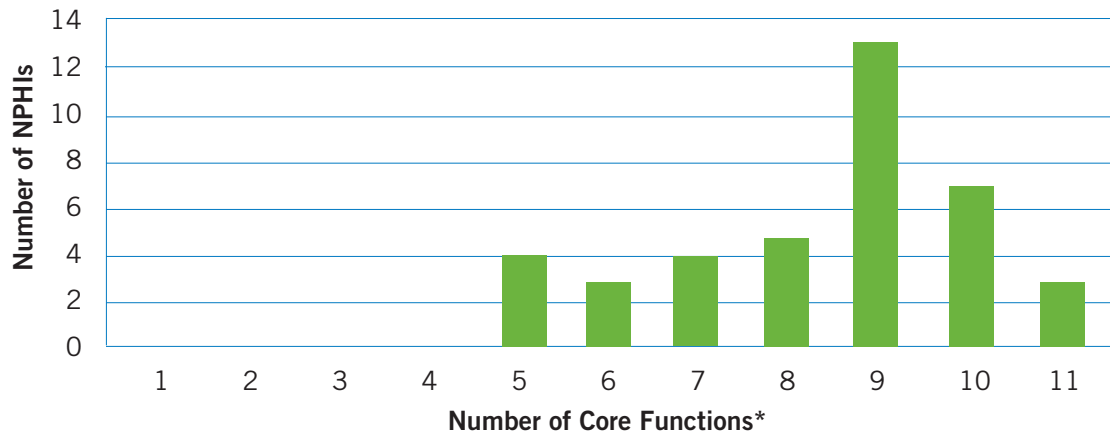
**Table 4: Number and percentage of NPHIs reporting substantial activities, by Core Function (CF)**

<i>CF</i>	<i>Issues covered by CF</i>	<i>Number (% of respondents to that question) reporting substantial activities</i>
CF 1	Evaluation and analysis of health status	32 (87%)
CF 2	Surveillance, problem investigation, and control of risks and threats to health	37 (100%)
CF 3	Health promotion and prevention programs	29 (78%)
CF 4	Social participation and citizen empowerment	29 (78%)
CF 5	Planning and management	31 (84%)
CF 6	Regulation and enforcement	18 (49%)
CF 7	Equitable access to necessary health services	15 (41%)
CF 8	Human resources development and training	33 (89%)
CF 9	Quality assurance in health services	26 (70%)
CF 10	Research	33 (89%)
CF 11	Reducing the impact of disasters	29 (78%)

Three NPHI respondents reported substantial capacity in at least one aspect of all 11 Core Functions, and 28 respondents (76%) reported substantial capacity in eight or more (Chart 1). NPHIs with limited capacity in the Core Functions were not necessarily in lower income countries. Of the nine NPHIs that did not report substantial capacity in eight Core Functions or more, five are in high-income countries, two are in lower- or upper-middle income countries, and two are in low-income countries.

**Chart 1. Number of Core Functions for which NPHIs reported substantial activity**

\* An NPHI was defined as having “substantial activity” in a Core Function if it reported substantial activity in at least one aspect of that Core Function.



#### INDIVIDUAL CORE FUNCTIONS

Consolidating responses to questions about the many aspects of some of the Core Functions, as was done to create Table 4, obscures important differences among NPHIs. Within each Core Function, the scope and kinds of activities undertaken by NPHIs vary greatly.

##### *CF 1: Evaluation and analysis of health status*

CF 1 includes three specific questions about evaluation and analysis of population health status, risk factors for disease and injury, and health status of groups of special interest. In addition, it provided an option for respondents. Thirty-two respondents (87%) reported substantial efforts in at least one of the three aspects of CF 1 that we specifically queried. Fifty-three percent of those with substantial efforts in at least one aspect had substantial activities in all three of the areas specified in CF 1.

##### *CF 2: Surveillance, problem investigation, and control of risks and threats to health*

This section of the survey included questions on surveillance, epidemiology, laboratory capacity, and assistance during outbreaks. Every NPHI (100%) reported substantial amounts of activity in at least one of the four aspects of CF 2. Seventy-eight percent reported substantial amounts of activity in all four aspects.

All NPHIs conduct substantial amounts of surveillance for at least one condition. More NPHIs conduct substantial surveillance for infectious disease-related issues (89%) than for noncommunicable conditions (84%). Four NPHIs in the high-income group conduct substantial noncommunicable disease surveillance but not infectious disease surveillance, and six NPHIs spanning all economic groups, conduct infectious disease surveillance but not noncommunicable surveillance. All respondents from the European region have noncommunicable disease surveillance activities, with

83% conducting infectious disease surveillance. In contrast, 100% of NPHIs in Africa conduct infectious disease surveillance, and only 50% conduct surveillance for non-infectious conditions. The one NPHI that has limited capacity to conduct epidemiologic investigations was from a lower-middle income country.

Information about numbers of NPHIs conducting surveillance for specific conditions is included in [Table 5](#). Although 31 (84%) report conducting surveillance for at least one noncommunicable condition, only one NPHI conducts surveillance for all of the conditions queried. Although noncommunicable conditions surveillance is most often conducted for nutritional status, chronic disease, and maternal and child health, the percentage of NPHIs that conduct surveillance for each of these was 54% or less. Surveillance for mental and occupational health is even less common among NPHIs.

Ninety-seven percent of NPHIs conduct substantial amounts of epidemiologic investigations for at least one condition. More respondent NPHIs conduct substantial epidemiologic work for infectious disease-related issues (86%) than for noncommunicable conditions (78%). Four NPHIs, one from the low income group and three from the high income group, conduct substantial noncommunicable disease epidemiologic investigations but not infectious disease investigations, and seven NPHIs conduct infectious disease epidemiologic investigations but not noncommunicable disease investigations. Ninety-four percent of NPHIs in the European region conduct epidemiologic investigations in noncommunicable conditions, while 83% do so with infectious diseases.

Information about numbers of NPHIs conducting epidemiologic investigations for specific conditions is included in [Table 5](#).

**Table 5. Number and percentage of NPHIs reporting substantial surveillance or epidemiologic investigations for various conditions**

<i>Condition</i>	<i>Number (%) with substantial activities in surveillance</i>	<i>Number (%) with substantial activities in epidemiologic investigations</i>
Any infectious disease	33 (89%)	32 (86%)
HIV/AIDS	30 (81%)	Not asked
Malaria	23 (62%)	Not asked
Tuberculosis	27 (73%)	Not asked
Immunizations	20 (54%)	20 (54%)
Neglected tropical diseases	16 (43%)	Not asked
Any noncommunicable condition	31 (84%)	29 (78%)
Nutritional status	20 (54%)	14 (38%)
Chronic disease	20 (54%)	17 (46%)
Maternal and child health	17 (46%)	16 (43%)
Injuries	16 (43%)	8 (22%)
Mental health	12 (32%)	10 (27%)
Occupational health	9 (24%)	4 (11%)
Tobacco use	15 (41%)	11 (30%)
Alcohol use	15 (41%)	12 (32%)
Illicit drug use	13 (35%)	10 (27%)

Of all NPHIs with substantial laboratory capacity, 78% have substantial capacity in microbiology. Eighty-one percent of NPHIs report substantial capacity in testing for exposure to environmental chemicals, nutritional status, pharmaceuticals, entomology, or other areas (see [Table 6](#)).

<b>Table 6. Number and percentage of NPHIs reporting substantial laboratory capacity, by type of testing</b>	
<i>Type of laboratory capacity</i>	<i>Number (%) of NPHIs</i>
Microbiologic*	29 (78%)
Exposure to environmental chemicals	16 (43%)
Nutritional status	14 (38%)
Insects	17 (46%)
Pharmaceuticals	5 (14%)
National reference laboratory services	24 (65%)
* Microbiologic laboratory capacity includes activities in bacteriology, parasitology, and virology.	

Both microbiologic and other laboratory capacities are distributed among NPHIs from countries in all economic rankings ([Table 7](#)). More than half the NPHIs without substantial laboratory capacity are in high-income countries.

<b>Table 7. Laboratory capacity, by World Bank economic ranking</b>			
<i>Economic ranking</i>	<i>Microbiologic* capacity</i>	<i>Other laboratory capacity</i>	<i>No reported capacity</i>
Low income (n=8)	7	7	1
Lower-middle income (n=5)	4	5	0
Upper-middle income (n=6)	5	5	1
High income (n=18)	13	13	4
<b>Total</b>	<b>29</b>	<b>30</b>	<b>6</b>
* Microbiologic laboratory capacity includes activities in bacteriology, parasitology, and virology.			

Eighty-seven percent of NPHIs provide substantial assistance during outbreaks. Seven NPHIs provide substantial epidemiologic but not laboratory assistance. Three countries provide substantial laboratory assistance without also providing substantial epidemiological help.

Several NPHIs have capacity in one aspect or *CF 2* but not another. **Table 8** illustrates patterns of overlap among the different aspects of *CF 2*. NPHIs with substantial capacity in infectious disease-related surveillance tend to have capacity in infectious disease epidemiology and microbiologic as well as other laboratory competence. They also tend to conduct noncommunicable surveillance and provide substantial amounts of epidemiologic assistance during outbreaks.

**Table 8. Number of NPHIs reporting substantial capacity in areas covered by questions about *CF 2***

<i>CF 2</i> area (number of NPHIs reporting substantial capacity)	Infectious disease surveillance (n= 33)	Noncom- municable condition surveillance (n=31)	Infectious disease epidemiologic investigations (n=32)	Noncom- municable condition epidemiologic investigations (n=29)	Microbiology laboratories (n=29)	Other laboratories (n=30)	Epidemic assistance in outbreaks (n=29)	Laboratory assistance in outbreaks (n=25)
Infectious disease surveillance (n= 33)		27	31	25	29	29	28	25
Noncommunicable conditions surveillance (n=31)	27		26	27	24	25	24	19
Infectious disease epidemiology (n=32)	31	26		25	28	28	28	24
Noncommunicable condition epidemiology (n=29)	25	27	25		24	24	23	19
Microbiology laboratories (n=29)	29	24	28	24		28	25	24
Other laboratories (n=30)	29	25	28	24	28		25	24
Epidemiologic assistance in outbreaks (n=29)	28	24	28	23	25	25		22
Laboratory assistance in outbreaks (n=25)	25	19	24	19	24	24	22	

Countries that conduct epidemiologic investigations for a condition are likely to conduct surveillance as well (**Table 8**). Thirty-one of the 32 NPHIs that conduct substantial infectious disease-related epidemiologic investigations also conduct substantial surveillance related to infectious diseases. Similarly, 27 of 29 NPHIs conducting substantial epidemiology for at least one noncommunicable condition also reported conducting substantial surveillance for noncommunicable conditions.

Twenty-nine of 33 (88%) NPHIs conducting substantial infectious disease surveillance and 28 of 32 NPHIs conducting infectious disease epidemiologic investigations (88%) have substantial microbiologic laboratory capacity (**Table 8**). Twenty-eight NPHIs with substantial capacity for epidemiologic investigations of infectious diseases (88%) provide epidemiologic assistance during an outbreak and 24 of 29 NPHIs with microbiologic laboratory capacity (83%) provide laboratory assistance in outbreaks.

*CF 3: Health promotion and prevention programs*

Twenty-nine NPHIs (78%) conduct substantial health promotion and prevention programs. More NPHIs conduct health promotion and prevention programs for noncommunicable conditions than for infectious diseases (Table 9). Three NPHIs conduct programs only for infectious disease-related issues, and six NPHIs conduct programs only for noncommunicable conditions. Half of the NPHIs with only noncommunicable condition programs are in upper-middle income countries. The majority of NPHIs in the European region conduct noncommunicable disease promotion and prevention programs (67%), compared to those working with infectious disease programs (61%). In contrast, health promotion and prevention programs in the Africa region tend to focus on infectious diseases (67%) compared to programs focused on noncommunicable conditions (33%). Two of the three NPHIs conducting only infectious disease programs are in Africa. Two NPHIs reported substantial programs in all of the categories queried.

**Table 9. Number and percentage of NPHIs reporting substantial health promotion and prevention programs, by condition addressed**

<i>Condition addressed</i>	<i>Number (%) of NPHIs</i>
Infectious diseases	23 (62%)
Immunizations	19 (51%)
Noncommunicable conditions	26 (70%)
Nutritional status	18 (49%)
Chronic diseases	16 (43%)
Injuries	8 (22%)
Maternal and child health	20 (54%)
Mental health	10 (27%)
Occupational health	6 (16%)
Tobacco use/tobacco-related conditions	15 (41%)
Alcohol use/ alcohol-related conditions	12 (32%)
Illicit drug use/ drug-related conditions	11 (30%)

*CF 4: Social participation and citizen empowerment*

Seventy-eight percent of NPHIs reported substantial efforts to provide information or other resources to individuals and communities or provide technical assistance to community-based organizations.

*CF 5: Planning and management*

Thirty of the respondents (81%) have substantial strategic planning efforts, including all but three of the twenty-one NPHIs that link their plans to that of the Ministry of Health or other government agencies (**Table 10**). Of the 30 NPHIs with planning efforts, all but two reported links between their plans and those of the Ministry of Health or other government agency. Both of these two NPHIs are a part of a ministry.

**Table 10. Strategic planning among NPHIs, by organizational placement of the NPHI**

<i>Organizational placement</i>	<i>Number of NPHIs</i>	<i>Number (%) that conduct substantial strategic planning</i>	<i>Number (% of those conducting planning) that link plans to those of the ministry</i>
Part of a Ministry of Health or other ministry	21	18 (86%)	16 (89%)
Autonomous government agency	15	11 (73%)	11 (100%)
Non-government or other	1	1 (100%)	1 (100%)
<b>Total</b>	<b>37</b>	<b>30 (81%)</b>	<b>28 (93%)</b>

*CF 6: Regulation and enforcement*

Although 49% of NPHIs report substantial activity in regulation or enforcement, many of these reported having activities in four areas or less. Twelve will be given substantial powers during public health emergencies (such as quarantine during a pandemic); and 10 have substantial activities in regulation or enforcement related to water quality; eight in food safety; and seven in environmental quality, tobacco products, and illicit substances. Fewer NPHIs have responsibility for regulations and enforcement related to testing of pharmaceuticals.

*CF 7: Evaluation and promotion of equitable access to necessary health services and CF 9: Quality assurance in personal and population-based health services*

Seventy-six percent of NPHIs have substantial activities in the health care-related Core Functions, with 41% reporting substantial activities related to *CF 7* and 70% reporting activities related to *CF 9*. Thirteen NPHIs (35%) do both, and nine (24%) do not have substantial activities in either.

*CF 8: Human resources development and training*

Eighty-nine percent of NPHIs have substantial activities in human resources development and training. Thirteen NPHIs (35%) have substantial activities related to evaluating the capacity of or filling the gaps in the country's public health workforce, and 24 (12 of those that have substantial activities related to the country's public health workforce) have substantial efforts to train workers in the NPHI.

Twelve NPHIs (32%) offer training leading to graduate degrees ([Table 11](#)). Eleven NPHIs offer masters, and ten offer doctoral degrees.

**Table 11. Number of NPHIs offering graduate degrees, by World Bank economic ranking and WHO region**

<i>NPHI country characteristics (n=1)</i>	<i>PhD only (n=2)</i>	<i>Masters only Masters (n=9)</i>	<i>Both PhD and (n=12)</i>	<i>Any graduate degree</i>
Economic ranking				
Low income	0	1	1	2
Lower-middle	0	0	1	1
Upper-middle	0	0	3	3
High income	1	1	4	6
Region				
Africa	0	1	1	2
Americas	0	0	2	2
Eastern Mediterranean	0	0	0	0
Europe	1	1	4	6
Southeast Asia	0	0	0	0
Western Pacific	0	0	2	2

*CF 10: Research*

Eighty-nine percent of NPHIs conduct substantial research related to at least one of the conditions identified in the survey. (See [Table 12](#) for a list of conditions addressed in the survey and the number and percentage reporting substantial activities in each.) More NPHIs conduct research in noncommunicable conditions (78%) than research in infectious disease-related conditions (70%). Seven NPHIs, seven of which are from high-income countries, conduct substantial amounts of noncommunicable condition research but not research on infectious disease-related issues.

**Table 12. Number and percentage of NPHIs reporting substantial health research activities, by condition addressed**

<i>Condition addressed</i>	<i>Number (%) of NPHIs</i>
Infectious diseases	26 (70%)
Immunizations	17 (46%)
Noncommunicable conditions	29 (78%)
Nutritional status	16 (43%)
Chronic diseases	15 (41%)
Injuries	9 (24%)
Maternal and child health	16 (43%)
Mental health	7 (19%)
Occupational health	6 (16%)
Tobacco use/tobacco-related conditions	10 (27%)
Alcohol use/ alcohol-related conditions	12 (32%)
Illicit drug use/ drug-related conditions	6 (16%)

Only one NPHI conducts substantial amounts of research related to all of the conditions listed in the survey. This NPHI is from a high-income country. The distribution of numbers of conditions for which NPHIs conduct research is described in [Table 13](#). The high-income countries had the highest number of NPHIs conducting substantial amounts of research in one to 11 conditions. While the low-income countries reported no NPHIs conducting substantial amounts of research for more than seven conditions, only one NPHI reported no substantial research activities.

**Table 13. Number of conditions for which NPHIs are conducting substantial amounts of research, by World Bank economic ranking**

<i>Number of conditions</i>	<i>Low income</i>	<i>Lower-middle income</i>	<i>Upper-middle income</i>	<i>High income</i>	<b>Total</b>
0	1	0	2	1	<b>4</b>
1-3	3	3	2	6	<b>14</b>
4-6	4	2	1	5	<b>12</b>
7-11	0	0	1	6	<b>7</b>

*CF 11: Reducing the impact of disasters*

Seventy-eight percent of NPHIs have been involved substantially with emergency planning or response. Forty-six percent of NPHIs report that they already have been involved in responding to a major disaster.

*CFs highlighted in the Framework: CFs 1, 2, and 10*

The 2007 NPHI Framework highlighted three Core Functions (*CFs 1, 2, and 10*). NPHIs often play leadership roles in fulfilling those functions by serving as major national repositories of infrastructure and expertise. Twenty-eight NPHIs report substantial capacity in at least one aspect of each of these three Core Functions, and nine report substantial capacities in two Core Functions. The nine NPHIs with substantial activities in two of the three highlighted Core Functions all have substantial activities in *CF 2*. Four have limited research activities (*CF 10*), and five have limited activities in evaluation of health status (*CF 1*).

## DISCUSSION

As IANPHI grows, IANPHI members increasingly represent the NPHIs of the countries of the world. Sixty-one (32%) of the 192 countries of the world now are IANPHI members. This survey provides a snapshot of the characteristics and capacities of the majority of IANPHI members.

NPHIs appear to be government focal points for public health in most countries, based on the large number of Core Functions for which they are conducting substantial amounts of activities. Almost all NPHIs report substantial activity in surveillance, problem investigation, and control of risks and threats to health (*CF 2*); human resources development and training (*CF 8*); and research (*CF 10*), suggesting that most countries view these functions as priorities for NPHIs. All NPHIs surveyed conduct at least one aspect of the four areas that make up *CF 2* (surveillance, epidemiologic investigations, laboratory capacity, and outbreak assistance), and 72% participate in all four of these categories, indicating how critical a function this is for NPHIs.

The scope and kinds of activities undertaken by NPHIs vary greatly within each Core Function. Some NPHIs carry out activities for infectious diseases, whereas others focus only on noncommunicable conditions. As a whole, NPHIs tend to conduct more surveillance and epidemiologic investigations for infectious diseases rather than noncommunicable conditions (*CF 2*) as shown in [Table 5](#), but they tend to target their health promotion and prevention programs (*CF 3*) more at noncommunicable conditions ([Table 9](#)).

There also appear to be regional differences among NPHIs. For example, the vast majority of European NPHIs have substantial activities related to noncommunicable conditions. All NPHI respondents from the European region have noncommunicable condition surveillance activities, with 83% conducting infectious disease surveillance. Ninety-four percent of NPHIs in the European region conduct epidemiologic investigations in noncommunicable conditions, while 83% do so with infectious diseases. The majority of NPHIs in the European region conduct noncommunicable condition promotion and prevention programs (67%), compared to those working with infectious disease programs (61%).

This is in contrast to the African region, where 100% of NPHIs conduct infectious disease surveillance and 50% conduct noncommunicable condition surveillance. While 83% of NPHIs conduct epidemiologic investigations for infectious diseases, only 67% do so for noncommunicable conditions. NPHIs conducting health promotion and prevention programs in the Africa region tend to focus on infectious diseases (67%) compared to programs focused on noncommunicable conditions (33%).

Noncommunicable conditions cause most global death and disability. Chronic noncommunicable diseases, such as heart disease, stroke, and type 2 diabetes, account for 60% of deaths worldwide and are projected to rise particularly quickly in the coming decades in developing countries.<sup>5</sup> Countries that have limited capacity to address noncommunicable conditions should consider increasing the comprehensiveness of their NPHIs by developing such capacity. This approach is being taken by a number of IANPHI members including Tanzania, Ethiopia, and Ghana.

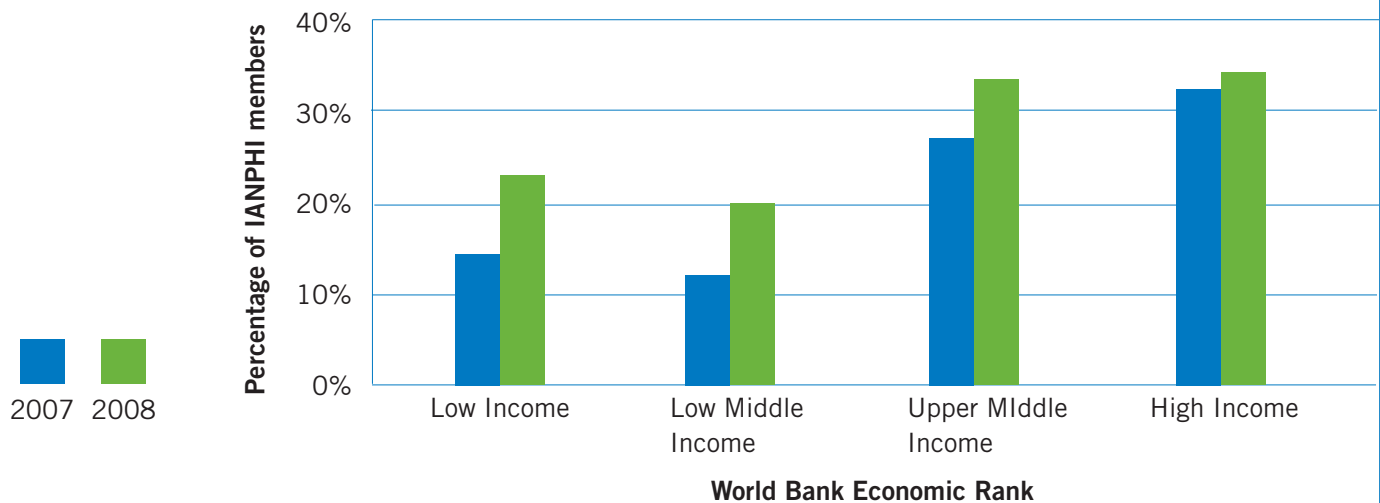
5 Daar AS, Singer PA, Persad SK, Stig KP, Matthews DR, Beaglehole R, et al. Grand challenges in chronic non-communicable diseases. *Nature* 2007; 450:494–6.

Few NPHIs appear to have surveillance, epidemiologic, or programmatic activities in such critical areas as occupational health; mental health; and alcohol, tobacco, and illicit substances. In some countries, governmental public health efforts in these areas may be limited, while in others they may be addressed by agencies other than NPHIs. We could not distinguish between these possibilities based on the survey data. Particularly in countries where capacity to address these issues is limited, NPHIs are encouraged to identify ways to begin to assess and develop approaches to important public health problems.

The range in NPHI budgets and amount of money available per FTE is also important. The difference between the lowest and highest resourced NPHIs varied by a factor of 5,606. Countries with a low resource-to-FTE ratio are unlikely to develop significant programs without additional support, even if they have a low wage pay structure.

Ideally, our analysis of survey data would have included a comparison between responses to the 2007 and 2008 surveys. In fact, the surveys were designed to allow for such analysis. However, the reporting members were different enough in the 2007 and 2008 surveys that such an analysis would be misleading. The change in membership is largely related to the increase in the number of IANPHI members. IANPHI has worked particularly hard to recruit members from Africa and among low-resource countries (Chart 2). While membership from most WHO regions increased between 2007 and 2008, the number of members from Africa almost doubled, and 25% of the low-income countries of the world are now IANPHI members. IANPHI's targeted recruitment is also evident in survey respondents; while nearly half of respondents were from high income countries, particularly from Europe, the number of respondents from the Africa region doubled from 2007 to 2008.

**Chart 2. Percentage of countries in each World Bank Economic Ranking category that were IANPHI members in 2007 and 2008**



Another issue is that in some countries the organization that initially joined IANPHI has been replaced by one whose activities more closely align with the Core Functions. If it is feasible, we will perform an analysis restricted to just those members who provided data in both 2007 and 2008. As IANPHI matures, and membership grows and stabilizes, year-to-year comparisons of survey data will become increasingly valuable.

The 2009 outbreak of swine flu and continued threats of pandemics and terrorism continue to be an impetus for coordinated governmental efforts in public health. The outbreak of SARS and threats of avian influenza resulted in consolidation of public health functions in NPHIs of several countries. Continued public health threats, as demonstrated by swine flu outbreaks in 2009, may continue this trend, either through organizational changes or by increasing the linkages among agencies carrying out core functions. The growing burden of noncommunicable conditions will also result in expanded missions and increased comprehensiveness of NPHIs in some countries.

We believe this 2008 survey will form a good baseline for further IANPHI surveys. Comparison of these data with results of future surveys will allow us to evaluate the changes in NPHIs over time and the continued importance of NPHIs as governmental focal points for public health.

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