



National Unified Health Research Agenda 2017-2022



PNHRS

Philippine National
Health Research System

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LIST OF ACRONYMS

AIDS	acquired immune deficiency syndrome
AIHO	Alliance for Improving Health Outcomes, Inc.
ARMM	Autonomous Region of Muslim Mindanao
CAR	Cordillera Administrative Region
CHED	Commission on Higher Education
CVD	cardiovascular disease
DOH	Department of Health
DOST	Department of Science and Technology
DSWD	Department of Social Welfare and Development
HEI	higher education institution
HIV	human immunodeficiency virus
LGU	local government unit
MersCoV	Middle East Respiratory Syndrome - Coronavirus
NGO	non-government organization
NUHRA	National Unified Health Research Agenda
PCHRD	Philippine Council for Health Research and Development
PDP	Philippine Development Plan
PHA	Philippine Health Agenda
PITAHC	Philippine Institute of Traditional and Alternative Healthcare
PNHRS	Philippine National Health Research System
RAC	Research Agenda Committee
RUHRA	Regional Unified Health Research Agenda
SARS	severe acute respiratory syndrome
STI	sexually transmitted infection
UPM	University of the Philippines Manila
WHO	World Health Organization

PREFACE

The Philippines is at a turning point where it is slated to reap the benefits of health research investments towards the country's economic, social and scientific growth. The Philippine National Health Research System (PNHRS) promotes investment in health research in the country. It ensures that health research is linked to the health system needs and opportunities; it directs investments in health research towards upholding the national interest; and it stimulates national, local and international partnerships and networks for health research and development.

The core of the PNHRS lies in the formulation of the National Unified Health Research Agenda (NUHRA), which summarizes the health research and development directions of the country for a six-year period. The agenda was disseminated to health research generators, funders, and end users to advance health through strengthening research activity, generating support and funding, prioritizing investments, and promoting the translation of research to health practice, products, and services.

Predating the formalization of the PNHRS in 2013 through RA 10532, the Philippine Council for Health Research and Development (PCHRD) has already facilitated two earlier versions of the NUHRA: (1) NUHRA 2006-2010, prepared by the Working Committee on Research Management for the NUHRA, and (2) NUHRA 2011-2016 prepared by the Research Agenda Committee (RAC). Regional stakeholder consultations were the foundation of the first NUHRA upon which a national consultation was fashioned. On the other hand, the second NUHRA had strong national directions from the agenda of the core agencies.

The current NUHRA 2017-2022, on the other hand, was developed through bottom-up approach via the 17 regional consultations, and top-down consultations, via the review of research agenda of individual government agencies and non-government organizations (NGOs). Technical papers and robust regional situationers providing contextual analysis, vision and strengths were key inputs to all consultations. The current NUHRA also strove to be more broad-based, seeking input from stakeholders whose work affect people's health.

The development of the NUHRA 2017-2022 was made possible through the combined efforts of various teams of researchers, academics, government officials, health professionals, and health policy experts all over the Philippines. The Alliance for Improving Health Outcomes, Inc. (AIHO), a group of young public health professionals and policy experts, designed the framework of the current NUHRA using the newly-developed PNHRS Guidelines for Health Research Prioritization (2016).

Regional consortia and stakeholders, likewise, deserve merit for dedicating time to fully participate in multiple consultations throughout the country, providing a prismatic lens into the current health status of the regions. National consultation participants must also be commended for offering their insights to provide a top-down perspective into the health research agenda.

Finally, the PCRHD has been an invaluable ally throughout the entire process. Their efforts to facilitate funding and coordination enabled the participation of this immense network of stakeholders to ensure a diverse and inclusive health research agenda.

NUHRA 2017-2022 summarizes the areas of research that all of us can promote, work together, fund, and support.

- PNHRS Research Agenda Committee

HEALTH RESEARCH AGENDA, THE PHILIPPINE EXPERIENCE

The Philippines has been a pioneer in the development of unified health research agenda allowing the government to facilitate the growth of national and local institutions (Angulo et al, 2006). The NUHRA guides health research and development efforts in the country, and given recent developments in local capacity, education, among others, catalyzes the development of the local health economy.

The NUHRA 2006-2010 & NUHRA 2011-2016

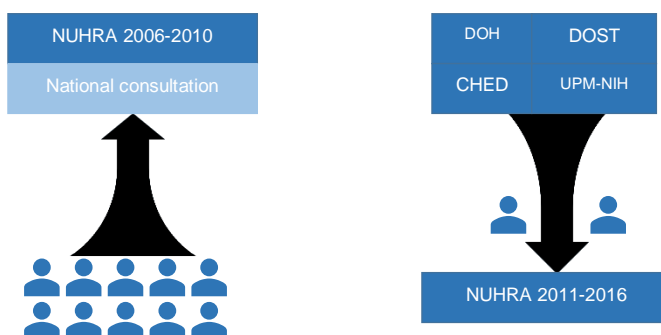


Figure 1 The NUHRA 2006-2010 was constructed using a bottom-up approach, wherein regional consultations yielded regional priorities that were elevated to the NUHRA. While the NUHRA 2011-2016 was designed through a top-down approach, wherein consolidated priorities of the PNHRs core agencies comprised the NUHRA, which was then disseminated for implementation at the regional and local levels.

The design and implementation of each version of the NUHRAs succeeded in their own rights. The 2006-2010 edition outlined 422 research priorities, produced through regional and national consultations. It was commended for its inclusive approach in engaging stakeholders from the regional level, including NGOs and public and private higher education institutions (HEIs). However, only 22% of the identified research priorities was addressed by the culmination of the NUHRA 2006-2010.

For the NUHRA 2011-2016 edition, PNHRs core agencies conducted their own consultations and research priority setting activities. The number of research priorities identified were 56 topics. However, uptake of these topics improved. Forty-five priority topics were addressed by research. However, despite remarkable efforts by the Department of Science and Technology (DOST)-PCHRD in the health sector to promote basic science research and pilot research studies as well as to advance funding sources and mechanisms, underdeveloped indicators for monitoring and evaluation were unable to match the pace of research generation and provide an accurate picture of the country's research output.

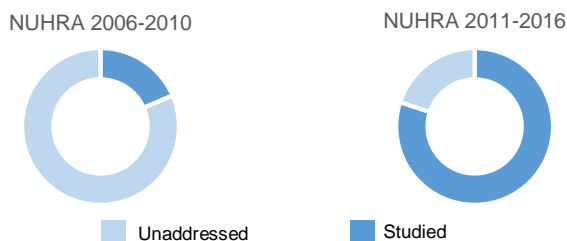


Figure 2 Approximately 80% of NUHRA 2011-2016 was addressed. On the other hand, only 22% of NUHRA 2006-2010 was studied.

In reviewing prior editions of the NUHRA, it is apparent that an effective health research agenda relies on an accurate identification of the health issues and needs of the country. However, the success of implementation also hinges heavily on funding support, which is likely assured when aligned with government priorities. The value of inter-organizational and global partnerships is important and is related to the country's standing in the global economy.

The NUHRA 2017-2022

Building on the achievements and the lessons learned from the previous editions, the current NUHRA 2017-2022 was designed to balance the inputs from the regional stakeholders and the national agencies. Moreover, an inclusive, realistic and collaborative approach was used.

NUHRA 2017-2022 is envisioned to be inclusive, realistic and collaborative.



Inclusive

Comprehensive discussions and materials on regional and national health issues, needs, and policies were considered

Widened scope of regional and national stakeholder mapping was ensured to include typically under-represented sectors, such as marginalized populations, NGOs, and private businesses



Realistic

Evidence-based resources were used to promote informed decision-making

Consultations were designed around an acute recognition of the diversity of interests among stakeholders

Political directions and implications were outlined to assure strong alignment with national policies



Collaborative

Partnerships among academics, government agencies, NGOs, the private sector, and other actors were formed to advance health research

Transparent and highly participatory processes were applied to engender ownership among stakeholders

HOW THE AGENDA WAS MADE

In 2016, the PNHRs developed its Guidelines for Health Research Prioritization which provided guidance to national and regional organizations on agenda-setting in health research. According to a comprehensive literature review, local experience, and interviews with key stakeholders in research, effective health research prioritization should follow a three-phase framework. (PNHRs, 2016). First is the preparatory phase which includes information gathering and integration for contextualization of health research issues, mapping of stakeholders, planning for implementation, monitoring and evaluation, and information dissemination. This is followed by the second phase, which is the implementation phase; this aims at producing the health research agenda through inclusive consultations. The guidelines prescribe the determination of criteria and application of the same to identify priority topics for inclusion into the research agenda. The third and final phase is the post-implementation phase, which emphasizes the importance of reporting the results, dissemination of the agenda, monitoring and evaluation of research generation and utilization, and updates to the agenda.

Following the PNHRs Guidelines for Health Research Prioritization, the NUHRA 2017-2022 applied the prescribed activities for the preparatory phase and the implementation phase. In the preparatory phase, inputs to the agenda setting process were varied and multifaceted, and each stakeholder involved during the consultations carries with them personal biases and knowledge which may or may not be entirely accurate and reflective of health issues. To lend structure to the information provided to the participants during the consultation process, the NUHRA 2017-2022 development adopted the Kingdon model for agenda setting (1984).

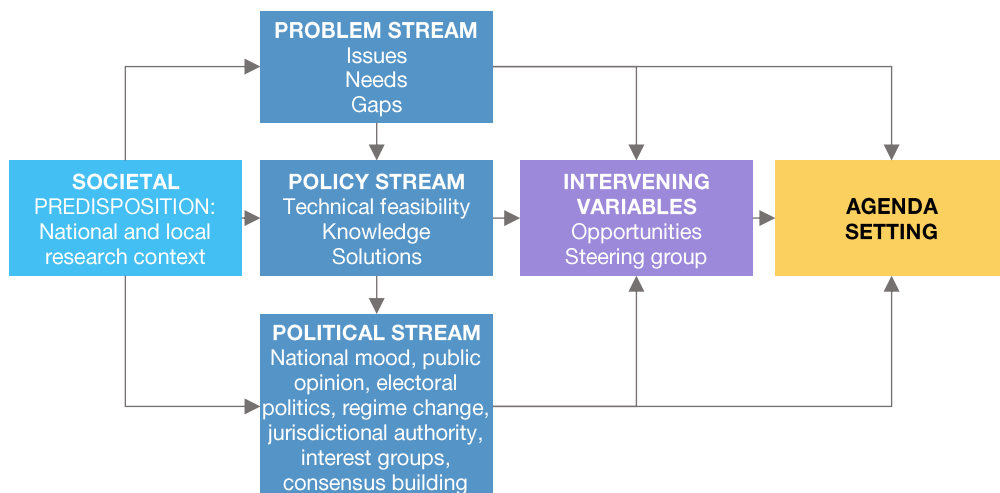
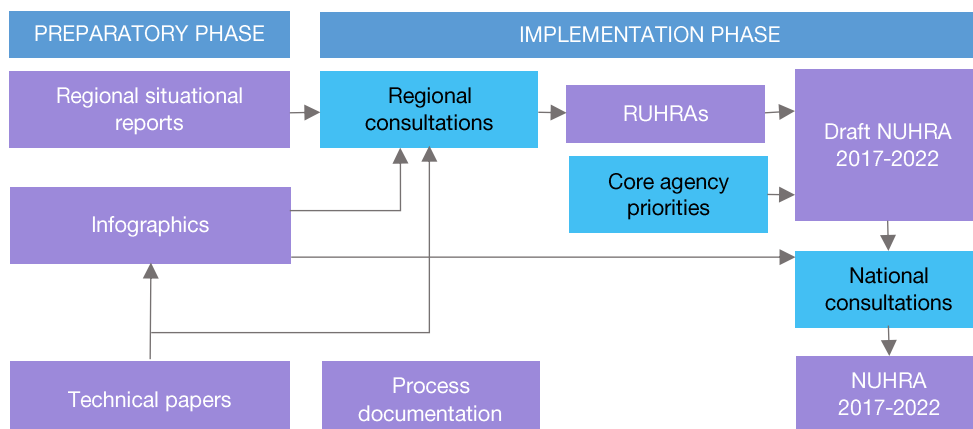


Figure 3 A flowchart illustrating the Kingdon Multiple Streams model on agenda-setting (1984)

The alignment of these three streams provided a window of opportunity for the elevation of an issue into public policy. Discussions during NUHRA development were centered around the awareness of these three streams.

Inputs for Agenda Setting Process

In framing the research context for every region and at the national level, several reports, and papers were developed to provide stakeholders with an objective basis and baseline information for determining health research priorities, alongside national and regional policies and political priorities.



Technical Papers:

1. Synthesis of national socio-economic development and health directions, and setting the working framework for NUHRA 2017-2022
2. A 20/20 vision of the Philippine health sector by 2040: review of current trends, developments, and challenges
3. Towards a relevant and actionable Philippine health research agenda: a review
4. Enabling greater private sector participation in health research in the Philippines

Figure 4 A flowchart illustrating the outputs during the development of the NUHRA 2017-2022. Purple boxes indicate the output documents.

Each region developed a regional situational report describing the stakeholders, health research context, and the health challenges, issues, gaps, and threats in the region. The report was drafted by focal persons and key informants with knowledge of local health needs. Four technical papers were also developed to frame key issues surrounding health, health sector, and health research needs at the national level (Box 1). These papers include a) Synthesis of national socio-economic development and health directions, and setting the working framework for NUHRA 2017-2022 (Salisi and Oraño, 2017); b) A 20/20 vision of the Philippine health sector by 2040: review of current trends, developments, and challenges (Klingel and Zuñiga, 2017); c) Towards a relevant and actionable Philippine health research agenda: a review (Lopez and Dizon, 2017); and, 4) Enabling greater private sector participation in health research in the Philippines (Magtubo and Mauricio, 2017). Together, these papers provided the current research context and policies of government and multinational agencies based on published data, reports, and other documents. These also offered an assessment of the status of the Philippine health research and reviewed private sector participation in health research.

Participants of the regional and national consultations expressed their agreement to health sector and health research challenges from their experiences. Introduction of new opportunities and directions was essential to raise the potential of health research's contribution to scientific and social growth. NUHRA 2017-2022 aims to usher promising ideas and possibilities to health decision makers, researchers, innovators, scientists, funders, investors and advocates.

Infographics on main findings of the technical papers and the methodology used were also developed for the general audience and non-academics to assist interpretation of key results during the conduct of regional and national consultations.

Process documentation was employed during consultations to ensure the transparency and integrity of the outputs leading to the development of the research agenda. Seventeen regional consultations produced 17 Regional Unified Health Research Agendas (RUHRAs). The Department of Health (DOH) and DOST-PCHRD's national health research priorities and the 17 regional outputs from the regions were combined and analyzed by thematic analysis (Braun & Clarke, 2006) to yield the first draft of NUHRA 2017-2022. The documents highlighted above are available for download and review from the PCHRD website (visit <http://www.pchrd.dost.gov.ph/>).

Box 1 Summary of the technical papers that helped frame key issues surrounding health, health sector, and health research needs at the national level.

Various influences arising from international, national, and local actors characterized the country's health sector and agenda setting (Salisi and Oraño, 2017). Landmark national developments and initiatives – recent economic growth, sin taxes, and social protection mechanisms (e.g., conditional cash transfers and PhilHealth packages, health facility enhancement, deployment of health workforce to geographically isolated and disadvantaged areas, and increased PhilHealth coverage) – are expected to influence how the health system advances. The Philippine Development Plan 2017-2022 and *AmBisyon Natin 2040* are setting directions that will also guide health care, health technology development, and research. Despite the potential borne from these health system achievements and the greater attention afforded towards health, persisting health problems of global and national scale continue to challenge the gains of the health system. Apart from reinforcing a robust service delivery network and supporting universal health insurance, central to the Philippine Health Agenda 2016-2022 is the recognition of the problems of maternal and infant mortality, communicable diseases, non-communicable diseases, diseases of industrialization and globalization, and increasing costs of healthcare.

While current efforts are directed towards subduing present health problems, the study of future and evolving health issues merit equal attention. A responsive health system is crucial to accommodate the changing needs and manage potential issues in an evolving societal, economic and political landscape (Klingel and Zuñiga, 2017). This can be achieved through better delivery and fiscal management of government health services in the face of increasing fiscal and political decentralization. Integrated service delivery models and networks with strong thrusts in primary care and health promotion must be designed to meet the needs of increasing workforce and ageing population. Increasing investments in human and intellectual capital through research and development, and an enabling policy environment for public-private-people collaboration are essential to facilitate reforms.

Health research has produced innovation and marketable products that benefited patients and healthcare (Magtubo and Mauricio, 2017). The government remains a strong generator, driver and funder of health research, but there is increasing evidence in support of engaging the private sector in health care in view of their positive impact on advancing scientific knowledge, productivity and economic growth. Two case studies highlighted successful collaboration on health research. The products included the Axis Knee System, a collaboration of the DOST and Orthopedic International, Inc., and the development of the *Blumea balsamifera* (Sambong) as a medicinal drug through the partnerships of the University of the Philippines Manila (UPM), DOST-PCHRD and Pascual Laboratories, Inc. Essential actions and lessons learnt are outlined in the paper. Through the NUHRA, DOST aims to further enhance collaborative work towards the development of new products that can contribute to healthcare in the Philippines and in other countries.

Healthcare and academic practitioners however are highly aware of the gaps and challenges that limit a healthy environment for health research (Lopez and Dizon, 2017). These policy, funding, management and capacity gaps require a more proactive role by core government agencies. There is a call for national institutions to initiate steps, namely: 1) increase budgetary allocation to strengthen the capacity of regional consortia; 2) improve policies for procurement/ funding of research; 3) streamline technical, ethical and funding approval processes; 4) build capacity of researchers in research proposal, management and implementation; 5) capacitate end-user agencies and stakeholders in utilizing research for policy/ program implementation, decision making and creation of technologies; and 6) establish a monitoring and evaluation system for health research utilization.

Documents Reviewed

Among the documents reviewed to complement the consultations conducted were as follows:

- **Philippine Health Agenda 2016-2022.** This is an issuance that guides design and implementation of relevant policies, plans, and programs of DOH central and regional offices, attached agencies, public and private healthcare facilities, local government units, and all other institutions relevant to the implementation of the agenda. The Agenda consists of three guarantees, namely, population and individual interventions for all life stages on the triple burden of disease, access to health interventions through functional Service Delivery Networks, and financial freedom when accessing interventions through Universal Health Insurance.
- **DOH Philippine Medium Term Research Agenda.** This highlights the health policy and systems research areas where evidence is most needed to realize the Philippine Health Agenda's (PHA) three guarantees. The agenda adopts the three guarantees of the PHA and further divides these into four thematic areas, namely, establishing need, identifying solutions, setting standards, and ensuring accountability.
- **DOST Harmonized Research Agenda.** This provides central direction, leadership and coordination of the scientific and technological efforts in the country. It is aligned with *AmBisyon Natin 2040*, and is divided into five sectors, namely, Basic Research; Agriculture, Aquatic, and Natural Resources; Health; Industry, Energy, and Emerging Technologies; and Disaster Risk Reduction and Climate Change Adaptation.
- **Philippine Development Plan 2017-2022.** This is the first medium-term development plan geared towards attaining the *AmBisyon Natin 2040* vision of a *matatag, maginhawa and panatag na buhay* [insert translation] for all Filipinos. To attain this, the Philippine Development Plan (PDP) laid down a solid foundation for a more inclusive growth, a high-trust society, and a globally competitive economy. The PDP contains strategies that fall under three pillars of "*Malasakit*" (enhancing the social fabric), "*Pagbabago*" (inequality-reducing transformation), and "*Patuloy na Pag-unlad*" (increasing growth potential of the economy). Under the pillar of "*Pagbabago*" is Chapter 10 of the Plan, "Accelerating Human Capital Development", wherein health strategies are outlined.
- **Sustainable Development Goals.** These are a set of international development goals adopted by countries to build on the successes of the Millennium Development Goals. There are 17 goals with 169 targets, which cover the three broad dimensions of sustainable development, namely, economic growth, social inclusion, and environmental protection.

Regional Consultations

The first stage of the implementation phase began with the regional consultations. For each region, a consultation with stakeholders in the academe, government, hospital, NGO, and private sectors was conducted with the objective of defining the health needs and concurrent research priorities of each institution as represented by the participant. Government agencies included the core agencies - DOH, DOST, and Commission on Higher Education (CHED) - and other relevant agencies (e.g., PhilHealth, local government units [LGUs], Philippine Institute of Traditional and Alternative Healthcare [PITAHC], etc.). Participants were presented with technical papers to provide the national context for health and health research, and with their own regional situational report to inform them of the current health sector status of their region.

The research priorities and perceived needs of each representative were raised through small focus group discussions. These topics were grouped into themes. The stakeholders also established their criteria and scoring weights to clarify the specific values and principles that would guide the prioritization of research topics. A summary of the criteria generated in the consultations is provided in Annex B.

Regional consultations were conducted from 25 April 2017 to 6 June 2017 with the first consultation conducted in the Autonomous Region of Muslim Mindanao (ARMM) and the last consultation performed in Caraga (see Annex A). The average number of participants per region was 26. The number of research priorities generated by the regions averaged at 16, with the least at 8 from Region 1 and the most at 26 from Region 6. From 17 completed regional consultations, 243 research priority themes were identified, with 1,364 sub-topics. After removing exact duplicates from the consolidated list of sub-topics, a total of 1,210 were considered.

National Consultation

The research priorities of all 17 regions were processed concurrently with the research priorities of DOH and DOST via thematic analysis following Braun and Clarke's (2006) process and iterative categorization to yield an initial list of six research themes for the NUHRA 2017-2022. A qualitative research software, NVivo 11, was utilized to extract comprehensive descriptions and to further refine each research theme.

National stakeholders were identified through the aid of the PNHRs RAC, PCHRD, and AIHO. One week prior to the national consultation, each potential participant was provided the following: 1) a project brief; 2) the draft NUHRA containing the list of all research priorities from the regions, the DOH and the DOST; and 3) technical papers describing the health sector and the health research system in the Philippines. Each participant was enjoined to review the documents and to prepare items for inclusion into the NUHRA.

During the national consultation on 23 June 2017, the participants gathered as a plenary of national stakeholders and raised their institutional research priorities for inclusion into the NUHRA. Representatives who were unable to complete their discussions were advised to relay their suggestions via e-mail.

The final version of the NUHRA 2017-2022 incorporated and synthesized the regional research topics, PNHRs core agencies' research priorities, and national stakeholders' health research priorities grouped into six thematic areas namely: Health Systems, Prevention and Treatment,

Holistic Approach, Resiliency, Innovation, and Equity. A total of 43 specific research areas were identified. The group also came up with the NUHRA Icon, a graphical representation of the current health research priorities (see Annex D).

Thematic Analysis

In generating the agenda from the outputs of the regional consultations and from the contents of documents, qualitative analysis was conducted. The topics raised by consultation participants and the topics in the reviewed documents served as the initial coding units. An Excel sheet was used to tabulate the initial coding units for ease of reference. These topics were reviewed singly, in relation to each other, and in toto, vis-a-vis the aforementioned documents from the national agencies and international publications. Several attempts at categorization of the codes were done using varied adaptations of frameworks (e.g., World Health Organization [WHO] Health System Building Blocks, and the PDP 2017-2022) for grouping health concerns and health research topics. The first cycle of coding was conducted using the inductively generated codes, that is, similar topics were grouped into codes. The codes generated in this first cycle were then further grouped. Through inductive and iterative grouping, the six research themes that currently comprise the agenda were determined to be the best fit.

This process was followed for all additions of topics to the agenda development process.

NUHRA 2017-2022 DEVELOPMENT

PRE-CONSULTATION

17 Regional
Situational
Reports



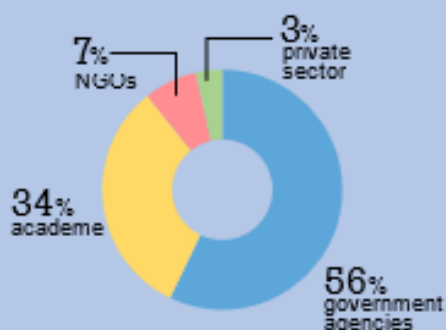
4 Technical
Papers

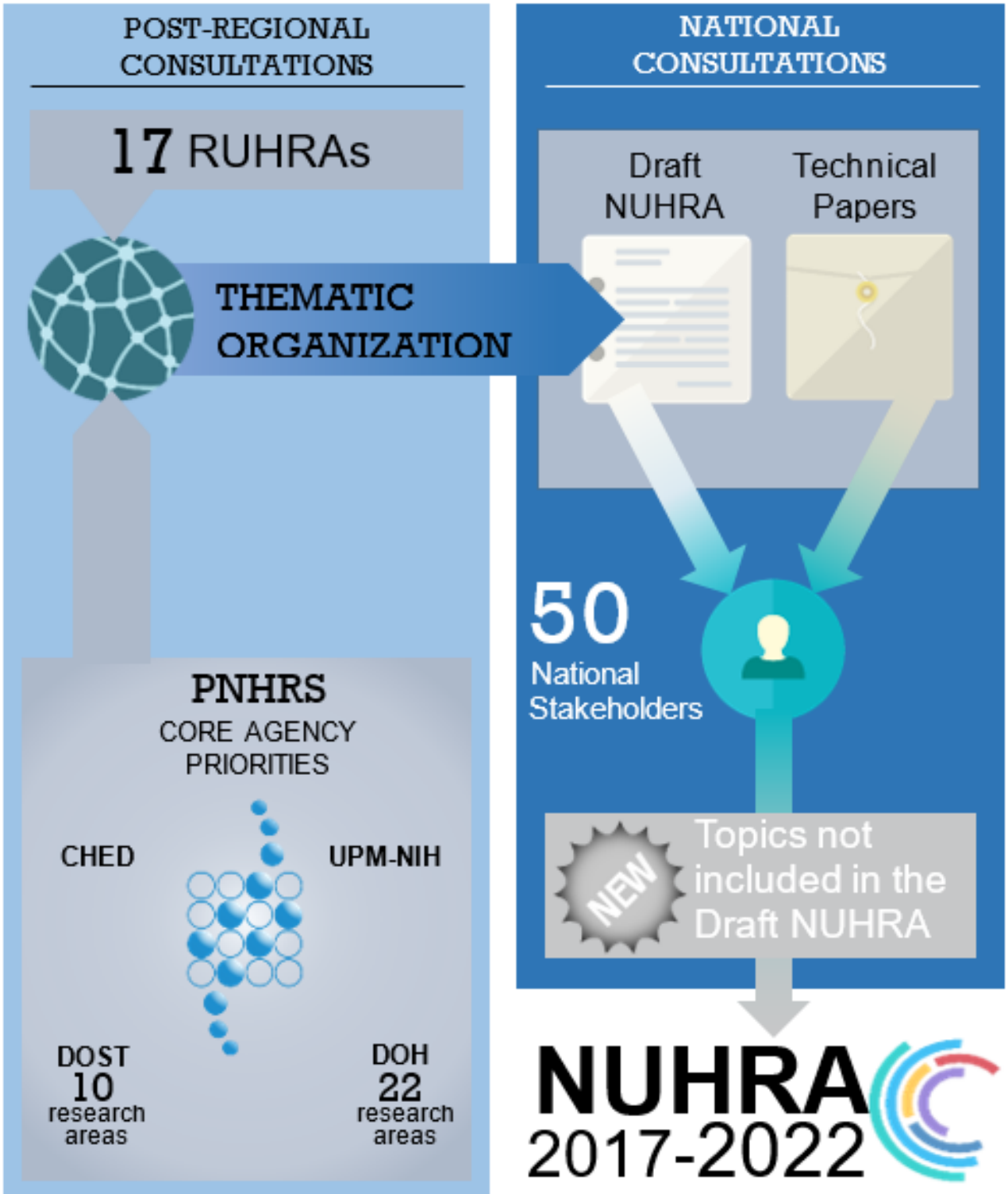
REGIONAL CONSULTATIONS

17 CONSULTATIONS

243 HEALTH RESEARCH
PRIORITIES in TOTAL

378 STAKEHOLDERS





RESEARCH PRIORITIES

There are six themes comprising the research priorities, namely: (1) responsive health systems, (2) research to enhance and extend healthy lives, (3) holistic approaches to health and wellness, (4) health resiliency, (5) global competitiveness and innovation in health, and (6) research in equity and health. Each of the six themes has corresponding research areas and description, which aim to guide the readers in determining the kinds of research that may fall under a specific theme.



Responsive health systems



Research to enhance and extend healthy lives



Holistic approaches to health and wellness



Health resiliency



Global competitiveness and innovation in health



Research in equity and health



Responsive health systems

To produce evidence towards efficient, quality, safe, and affordable healthcare

Health governance | Studies to strengthen evidence-based health policy formulation, enforcement and evaluation in the context of changing sociopolitical paradigms (decentralization, federalism, globalization, and market economy) which include health governance in terms of leadership, health enterprise models, management, partnership, and regulations in all levels (national to local) and within institutions, hospitals, organizations, and facilities, for both public and private sector

Health financing | Research on national and local health financing mechanisms including PhilHealth (case rates definition, utilization, primary care benefit package evaluation, etc.), alternative provider payment schemes (design of payment schemes, global budget, private health insurance and health maintenance organizations), new sources of healthcare revenue, and the creation of standards for cost estimation of cases and health facilities, resource allocation, and risk adjustment guided by health technology assessment

Access to essential medical products, vaccines and technologies | Studies on access to essential drugs, vaccines and other medical products; creation of efficient systems for logistics, allocation and distribution, and for price regulation; increasing awareness, implementation of, and compliance with the Generics Law; strengthening local manufacturing of medications, vaccines, and other medical products; lowering antimicrobial resistance; and addressing issues on safety and quality (potency of generic medicines, proliferation of counterfeit medications, adverse drug reaction reporting, and drug information for patients)

Health information systems | Research on translating health data to information and knowledge - standardization, harmonization, utilization, management, and communication for effective health service delivery; also includes innovative health information systems to support service delivery

Health service delivery | Research on how to make quality health services more accessible, effective, efficient, and available and more sustainable through strengthening and identifying factors affecting health service delivery networks and referral systems, and evaluating the impact of Health Facility Enhancement Program. This includes service delivery network and service delivery packages at all levels, as well as public-private partnership mechanisms for health services and management

Health human resources | Research on human resources for health development (quality of life, supply quantification, competency, effectiveness, future prospects, gaps), knowledge and practices affecting health outcomes, utilization of benefits and incentives (impact of professional fee and professional education), and strengthening the role of allied health professionals (e.g., nutritionists and physical therapists) to deliver primary care

Health economics | Studies aimed at supporting evidence and efficiency of health interventions; includes conduct of cost-benefit analysis studies directed towards disease and health programs, setting of standards, processes (health economic index), and application of health assessment models (local and health technology assessment) in achieving financial risk protection

Health research management | Research to improve the health research policy environment, human resource and institutional capacity, procurement mechanisms including payment of intellectual capital, translation of research into products of public value and utilization, and effective application of ethics in health research



Research to enhance and extend healthy lives

To produce evidence towards the prevention of disease, restoration of well-being, and reduction of disease burden

Adolescent health | Research on key health issues concerning adolescents - teenage pregnancy, mortality from teenage pregnancy, high risk behaviors, mental health, HIV/AIDS, and their corresponding policy and services

Communicable diseases | Research on diagnosis, treatment and prevention of dengue, diarrhea, HIV/AIDS and other STIs, tuberculosis, rabies, neglected tropical diseases and soil-transmitted helminthiasis, and other communicable diseases

Environmental health | Research on exposure, toxicity and other effects of poor environment conditions on health, including water quality and management; clean ambient and indoor air; solid and healthcare waste management; sanitation and hygiene; and integration of health in environmental and urban planning

Maternal, newborn and child health | Studies on factors influencing compliance, service utilization, management, and effectiveness of interventions directed towards the improvement of maternal, newborn, and child health

Mental health | Research on access, delivery and effectiveness of mental health programs across various age groups and conditions, such as depression, suicide, post-traumatic stress disorder, and addiction

Non-communicable diseases | Research on early detection, prevention, and control of non-communicable diseases, (i.e. cardiovascular diseases [CVDs], cancer, diabetes, chronic renal disease, etc.), risk factors, and evaluation of interventions and programs

Nutrition | Research on nutrition across all life stages: nutritional assessment and monitoring; the development of interventions; evaluation of nutrition programs and interventions; and promotion of food security, quality and safety

Oral health | Research on prevention, treatment of oral diseases, and evaluation of related programs

Reproductive health | Studies on the acceptability and effectiveness of family planning commodities and other interventions for family planning and STI prevention



Holistic approaches to health and wellness

To produce evidence geared towards the application and recognition of traditional, sociocultural, and alternative approaches to health in addressing health systems gaps

Filipino traditional and complementary medicine | Exploratory studies on the effectiveness, acceptability and safety of utilizing and interfacing alternative and Filipino healing modalities, remedies, and traditional healers (e.g., traditional birth attendants and *hilot*) with modern health practices, including their translation into products and services of public value

Determinants of health | Basic studies describing sociocultural determinants of health and well-being

Halal in health | Studies on developing halal-guided pharmaceuticals, food and non-food products; and describing the effects of the halal way of life on health including hygiene, sanitation, and wellness

Health behaviors | Studies on factors (e.g., risky behavior, preferences, perception, and health literacy) affecting health service provision, health status, health service utilization, and support for health reform initiatives (e.g., No Balance Billing)



Health resiliency

To improve the ability of the country's health system to be resilient with respect to emerging global and domestic threats

Accidents and injuries | Research to provide public health solutions for road safety and injury prevention

Climate change | Research to understand, assess and intervene on the health impacts of climate change, and to design sustainable health infrastructure

Disaster risk reduction and health emergencies | Researches on assessment, management and evaluation of emergency health interventions across the disaster cycle (preparedness, response, recovery, mitigation) with emphasis on mental health and psychosocial services, food security and nutrition, risk communications, infrastructure and capacity; this area includes studies to improve health of internally displaced persons because of emergencies

Emerging and re-emerging diseases | Research on diseases which have the capacity to spread through outbreaks and pandemics, including but not limited to Zika, SARS, Malaria, MERSCoV, etc.; to include the evaluation of the effectiveness of interventions

Environmental threats to health | Research on the health impact of coal, mining, chemical pesticides and other pollutants and toxins, with the inclusion of research on interventions to address these health risks

Occupational health and migration | Research on compliance to occupational safety and standards, and interventions; health consequences surrounding documented and undocumented migrant workers and their families; and research on the health impacts of urbanization, industrialization and globalization



Global competitiveness and innovation in health

To promote research as a tool for creating novel solutions to existing and emerging health problems through technology development and innovation in fields of rapid advancement

Diagnostics | Development of diagnostic tests and devices for early detection and monitoring of premorbid conditions and diseases

Drug discovery and development | Research on the identification and standardization of natural products, and the development of drugs and vaccines for specific conditions (e.g., cancer, skin diseases, dengue and Zika) and multidrug-resistant infections, for production, local use, and international marketability

Functional foods | Research on food supplements and functional food development; and on commercialization, safety, regulation, and impact assessment of functional foods and food supplements

Information and communication technologies for health | Research on data science and E-health solutions for the integration of health information in recording and utilizing patient information, mapping of health risks and health resources, telemedicine, and health promotion

Biomedical products and engineering | Research on improvisation and local development of reliable, safe, and affordable biomedical devices for supportive and therapeutic care, for local health service provision and international markets

"OMIC" technologies | Generation of new knowledge about health and disease using genomics, proteomics, transcriptomics, and metabolomics



Research in equity and health

To produce evidence to enable the health system to respond to health needs of and develop new solutions for vulnerable populations and marginalized sectors of society

Disability | Research on specific public health, clinical care, rehabilitation, and community interventions and preventive measures for people and children with different disabilities including developmental, physical, mental, and other forms

Gender | Research to understand health risks among men and women for the provision of gender-responsive health services across life stages

Geographically isolated and disadvantaged areas | Researches on factors affecting disease prevalence, nutrition, and access to health and water, sanitation, and hygiene services in geographically isolated and disadvantaged areas

Geriatric care | Research to map the health needs and appropriate health programs, policy, and services for the geriatric population

HIV/AIDS and other STIs | Socio-behavioral studies to address stigma, discrimination, and other barriers to HIV and STI screening and control

Indigenous peoples | Researches to document the knowledge, skills and practices of indigenous populations to empower and create accessible and culturally-sensitive health policies and services

Substance abuse | Research on the effectiveness of existing and alternative community-based and institutional models, as well as profiling of facilities and services for addressing substance abuse, including drug and alcohol abuse, and their associated health risks (e.g., CVD and stroke)

Violence | Research on the health, especially psychosocial consequences, of populations subjected to violence

Other vulnerable populations | Studies that will assess and develop new solutions for group-specific health needs of other vulnerable populations



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ANNEXES

Annex A. List of regional consultations held

Date	Venue	Region
18-19 April 2017	Davao City	ARMM
25 April 2017, 8 May 2017	Manila	NCR
25-26 April 2017, 1 June 2017	Iloilo City	Region 6
27-28 April 2017	General Santos City	Region 12
27-28 April 2017	Angeles City	Region 3
4-5 May 2017	Quezon City	MIMAROPA
4-5 May 2017	Cebu City	Region 8
10-11 May 2017	Davao City	Region 11
10-11 May 2017	Legazpi City	Region 5
11-12 May 2017	Baguio City	CAR
11-12 May 2017	Cebu City	Region 7
15-16 May 2017	Zamboanga City	Region 9
18-19 May 2017	Cagayan de Oro City	Region 10
18-19 May 2017	Tagaytay City	Region 4
23-24 May 2017	Laoag City	Region 1
25-26 May 2017	Cauayan City	Region 2
5-6 June 2017	Butuan City	Caraga
23 June 2017	Makati City	National Consultation

Annex B. List of criteria used in prioritization during the regional consultations

The following indicate the entire range of criteria used by the participants during the regional consultations:

- Acceptability
- Alignment with national and local directives
- Applicability of research
- Availability of resources
- Capacity and feasibility
- Equity
- Ethical acceptability
- Feasibility
- Impact or benefit
- Innovation
- Magnitude of problem
- Novelty
- Political will
- Public health impact
- Relevance and responsiveness
- Responsiveness to national and regional policies and goals
- Significance, impact, magnitude of the problem and concern
- Urgency and timeliness
- Utilization

Annex C. List of participating agencies

Angeles University Foundation. Asian Eye Institute. Association of Municipal Health Officers of the Philippines (AMHOP). AMHOP - Bauko, Mountain Province. AMHOP - Benguet. Baguio General Hospital and Medical Center (BGHMC). Batangas Medical Center (BatMC). Benguet State University (BSU). Bicol University - Bicol Consortium for Health Research and Development (BCHRD). Bicol Medical Center (BMC). Brokenshire College. Bulacan State University. Butuan Doctors College. Camarines Norte Provincial Office. Camarines Sur Polytechnic Colleges. Caraga State University. Cardinal Santos Medical Center. Catanduanes Provincial health Office. Catanduanes State College. Cavite State University (CvSU). Cebu Doctors' University (CDU). Cebu Provincial Government. Center for Research and Development. Mary Mediatrix Medical Center (MMMC). Commission on Higher Education (CHED). CHED-CAR. CHED Regional Office (RO) V. CHED RO VII. CHED RO XI. CHED-MIMAROPA. CHED-NCR. City Health Office (CHO). CHO Tagum. City Health Services Office - Baguio City. Cebu Normal University (CNU). Commission on Population (POPCOM) - III. Community Health Education, Services, and Training in the Cordillera Region (CHESTCORE). Cordillera Career Development College (CCDC). Cordillera Regional Health Research and Development Consortium (CRHRDC). Central Visayas Consortium for Health Research and Development (CVCHRD). Davao Oriental State College of Science and Technology (DOSCAST). Davao Regional Medical Center (DRMC). De La Salle Health Sciences Institute (DLSHSI). De La Salle Lipa (DLSL). De La Salle University. De La Salle University-Dasmarinas. Department of Environment and Natural Resources (DENR) - Environmental Management Bureau (EMB). DENR-MIMAROPA. DENREMB V. Department of Health (DOH) - CAR. DOH Department of Health Region III RO3. DOH Region V. Department of Health Region IV-A. Department of Science and Technology (DOST) - CAR. DOST Region III. Department of Social Welfare and Development (DSWD). Doctors for Indigenous Health and Culturally Competent Training, Education, Networking and Governance (DITENG) Inc. DOH Region VII. DOH Region VIII. DOH Caraga. DOH - Center for Health Development (CHD) Region V. DOH - CHD National Capital Region (NCR). DOH MIMAROPA. DOH Philippine Institute of Traditional and Alternative Health Care (PITAHC). DOH Treatment and Rehabilitation Center (TRC) Anomari Surigao City. DOST CALABARZON. DOST Caraga. DOST Cebu. DOST-NCR. DOST Negros Oriental. DOST Region V. DOST Region VII. DOST Region VIII. DOST Region XI. DOST - Food Nutrition Research Institute (FNRI). DOST - Industrial Technology Development Institute (ITDI). DOST - Philippine Council for Health Research and Development (PCHRD). DOST - Regional Health Research and Development Consortium (RHRDC) XI. Department of Tourism (DOT) MIMAROPA. Dr. Emilio B. Espinosa Memorial State College of Agriculture and Technology (DEBESMSCAT). Dr. Paulino J. Garcia Memorial Medical and Research Center. DSWD Region II. Eastern Samar State University (ESSU). Eastern Visayas Regional Medical Center (EVRMC). Emilio Aguinaldo College - Manila. Emilio Aguinaldo College - Cavite (EAC-C). Father Urios State University (FSUU). Holy Trinity University. Ifugao State University (IFSU). Ilocos Training and Regional Medical Center. Integrated Midwives' Association of the Philippines. Kalinga State University (KSU). Lingap para sa Kalusugan ng Sambayanan (LIKAS). Leyte Normal University (LNU). Luke Foundation (LF), Inc. Liceo del Verbo Divino (LVD). Lyceum of the Philippines University - Batangas (LPU-B). Manila Central University. Manila Doctors Hospital. Manila Health Department. Manuel S. Enverga University Foundation. Mariano Marcos Memorial Hospital. Marinduque Provincial Hospital. Marinduque State College. Mariveles Mental Hospital. Metropolitan Medical Center College of Arts Science & Technology. Mindoro State College of Agriculture and Technology. Metropolitan Medical Center College of Arts, Science & Technology (MMC -CAST). Naga Imaging Center Cooperative (NICC) District Hospital. National Commission on Indigenous People. National Commission on Indigenous Peoples (NCIP) - CAR. NCIP Region V. National Disaster Risk Reduction and Management Council (NDRRMC) Region V. National Economic and Development Authority (NEDA). National Nutrition Council (NNC). NCIP Region XIII. NCIP Region XI. NEDA - CAR. NEDA - MIMAROPA. NEDA Region IV-A. NEDA Region VIII. NNC - Caraga. Nutrition Center of the Philippines. Northwestern University. Occidental Mindoro State College. Office of Civil Defense (OCD) Region XI. Olivarez College. Oriental Mindoro Provincial Hospital. Ospital ng Palawan. Our Lady of Fatima University - Valenzuela. Palawan Health Office. Palawan State University. Pamantasan ng Lungsod ng Maynila College of Medicine. Philippine Association of Medical Technologists (PAMET) - Eastern Visayas Chapter. Pampanga Medical Society. Pampanga State Agricultural University. Partido State University. People's Disaster Risk Reduction Network. Perpetual Succor. PhilHealth. PhilHealth - CAR. PhilHealth - Caraga. PhilHealth - Region III. Philippine Nurses Association (PNA) - CAR. Provincial Health Office (PHO). PHO Abra. PHO Apayao. PHO Benguet. PHO Cavite. PHO Kalinga. PHO Marinduque. PHO Mountain Province. PHO Northern Samar. PHO Nueva Ecija. PHO Romblon. PHO Sorsogon. Pines City Colleges (PCC). Philippine League of Government and Private Midwives, Inc. (PLGPMI). Polytechnic University of the Philippines. POPCOM Region XI. POPCOM MIMAROPA. Provincial Planning and Development Office (PPDO) - Bohol. Ramon Magsaysay Technological University. Region 1 Health Research and Development Consortium. Republic Central Colleges. Research Institute of Tropical Medicine (RITM). Respond Inc. RHRDC XI. Romblon Provincial Hospital. Romblon State University. Saint Louis University - Medical Outreach Missions Foundation Inc. (SLU-MOMFI). Saint Louis University (SLU). SLU School of Natural Sciences (SNS). Saint Paul University (SPU) Surigao. San Pedro College. Save the Children. Sibog Katawhan Alang sa Paglambo, Inc. (SIKAP). Southern Leyte State University (SLSU). Sorsogon State College. St. Joseph Parish. Bunawan Agusan del Sur. St. Luke's College of Medicine. St. Luke's Medical Center. St. Paul University. St. Paul University Manila. Surigao del Sur State University. University of the East Ramon Magsaysay (UERM) Memorial Medical Center, Inc. UERMMMC - Research Institute of Health Sciences (RIHS). University of the Immaculate Conception (UIC). Universidad de Sta. Isabel. University of Baguio (UB). UB Institutional Ethics Review Committee (IERC). University of Nueva Caceres. University of Perpetual Help - Dr. Jose G. Tamayo Medical University. University of Saint Anthony. University of San Carlos (USC). USC - Center for Social Research and Education (CSRE). University of Southeastern Philippines (USEP). University of Sto. Tomas. University of the Assumption. University of the Cordilleras (UC) Research Management Committee (RMC). University of the Philippines (UP) Baguio Capability Building Committee (CBC). UP Los Banos (UPLB). UP Manila. UP Manila - National Institutes of Health. UP Visayas Tacloban College (UPVTC). Wesleyan University Philippines. Western Philippines University. Zuellig Family Foundation.

Annex D. The NUHRA Icon

The diagram with overlapping arcs is a representation of the various research themes comprising the NUHRA 2017-2022, and adapts the parallel and foundational approach of the PDP framework. In reducing over 1,300 research topics into a graphical format, it is apparent that the icon cannot comprehensively articulate the vast and complex interconnections between each research theme.

The different health research themes and their relation to each other are illustrated as concentric arcs. The length of each arc provides a visual estimate of the number of research topics in each research theme as volunteered by the participants of the regional and national consultations. Each theme is not mutually exclusive and the concentric arrangement of each arc in the icon signifies a theme's close relation to the other components of the diagram. The concentric circles may also be viewed as a telescopic lens, focusing on one theme at a time.

Supporting the NUHRA is the greater realm of health systems, as defined by the World Health Organization. Found in the outermost ring, this emphasizes the role of well-functioning health systems in supporting the other health research priorities in the diagram. The circular icon complementing this theme shows six overlapping circles representing the six building blocks of the health system.

The second outermost arc represents research to enhance and extend healthy lives or summarized as prevention and treatment. This second theme are arranged into specific health programs addressing specific diseases. Notably, this arc is the longest among the six themes and signifies the bulk of research topics volunteered during the consultations. The icon representing this second theme is the rod of Asclepius as a reference to prevention and treatment.

The third layer in the series of arcs are composed of three segments colored red, yellow and blue. The colors were inspired by the Philippine flag and imparts the Filipino identity to the diagram. The top arc, holistic approaches to health and wellness, represents the current clamor for studies involving alternative and complementary medical approaches as well as research on traditional and indigenous health knowledge. The icon for this theme shows a set of leaves implying studies involving natural remedies which is a part of this theme. In a similar note, the icon for the resiliency theme shows bamboo stems swaying to the wind. This theme involves research responding to natural and man-made threats of local and global magnitude which has a large implication on health. The bottom arc represents the theme on global competitiveness and innovation in health which envisions health research that will advance the Philippines to be at par with its regional and global counterparts in terms of discovery and technology development. The icon shows a circuit board signifying technology, networking and novel ideas.

Finally, at the core of the NUHRA 2017-2022 lies perhaps the most crucial component of health research. The theme of equity in health research recognizes the disparities in health for certain marginalized populations who suffer from increased vulnerability to abuse, limited representation in the Philippine health sector, and inadequate recognition of their specific health needs. The equity theme is represented by a purple icon showing marked differences in height as a symbol of the differences among peoples and the necessary steps needed to promote equity in health. It is the grand aspiration of this NUHRA 2017-2022 that further progress in the health sector will be felt not only by most, but by all Filipinos.

Annex E. PNHRs Research Agenda Committee

Chair:

Dr. Maria Lourdes K. Otayza *Chair, Region 1 Health Research & Development Consortium
Medical Center Chief II, Mariano Marcos Memorial Hospital and
Medical Center*

Members:

Prof. Cynthia P. Cordero *Professor
University of the Philippines Manila*

Ms. Arlene S. Ruiz *Chief Economic Development Specialist
National Economic and Development Authority*

Dr. Ma. Teresita S. Cucueco *Director IV
Occupational Safety and Health Center
Department of Labor and Employment*

Dr. Ma. Beatriz G. Villanueva

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Dr. Custer Deocaris *Chief
Research Management Division
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