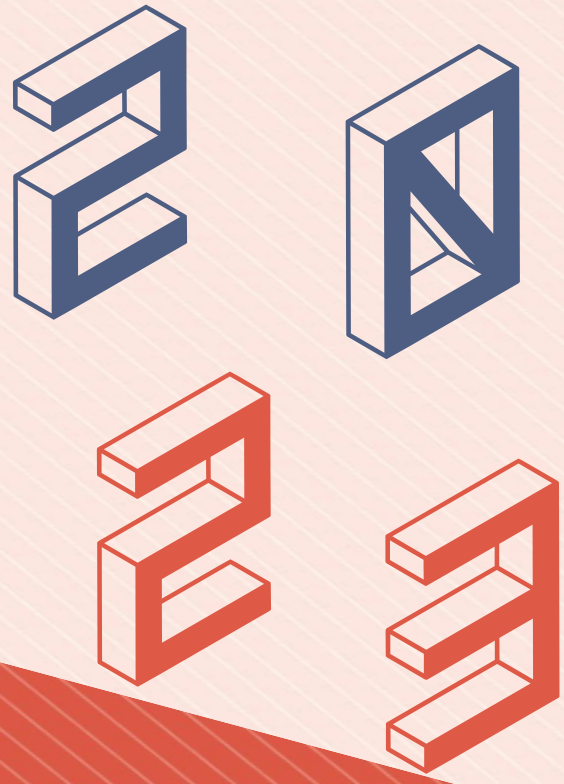
CALL FOR PROPOSALS

DOST/ PCHRD FUNDING



PHILIPPINE COUNCIL FOR HEALTH RESEARCH AND DEVELOPMENT

Department of Science and Technology

The Philippine Council for Health Research and Development (PCHRD) is one of the three sectoral councils of the Department of Science and Technology (DOST). It is a forward-looking, partnership-based national body responsible for coordinating and monitoring health research activities in the country.

PCHRD is accepting research and development (R&D) proposals for funding in 2023. The call for proposals is for specific R&D priority areas under the Harmonized National R&D Agenda (HNRDA) which hinges on DOST's S&T thrusts, emerging and re-emerging health concerns, and health researches that will better equip the country in the next pandemic, and beyond.

This call encourages public and private higher education institutes, research and development institutes and non-profit organizations to conduct applied R&D and forge collaboration by and among organizations involved in health R&D.

PCHRD PRIORITY AREAS

2023
DOST/ PCHRD FUNDING

Biomedical Devices Engineering for Health

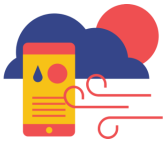
OMIC Technologies for Health

Diagnostics

Nutrition and Food Safety

ICT for Health

Functional Foods



Disaster Risk Reduction and Climate Change Adaptation in Health

Mental Health

Re-emerging and Emerging Diseases

General considerations in formulating Program/ Project proposals

- Proposals are encouraged to harness or build on existing studies/ data, resources and technologies for further development. Some diseases/ conditions may already have information e.g. clinically-relevant biomarkers/ molecular signatures, therefore not needing new studies on biomarker discovery/ validation.

  - If the proposal will be positioning itself as “pioneering” (e.g involving discovery of new biomarkers, or focusing on a topic wherein no previous research has been done), compelling justification/ arguments must be clearly stated to justify the need for the research.

  - For any proposal, the state of research, especially in the country, should be discussed thoroughly, including how the proposed outputs will contribute to better health outcomes, addressing the gaps and/or improvement of existing health programs.

  - For this year’s call, approved proposals will be funded and commence in 2023, therefore, relevance at that timepoint should also be considered.

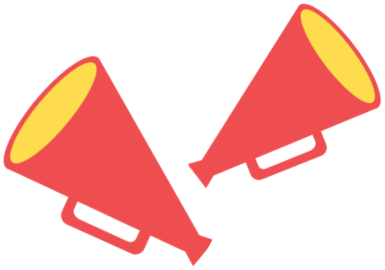
- Rationale behind the choice of disease/ condition, proposed study framework/ biological model/ methodology etc. should be strongly justified and supported by relevant data.

- Proposals should be clear on how the expected outputs/ outcomes will lead to better health outcomes. For Program Proposals (or proposals requesting for significant resources), consider including a “Program Research Roadmap" in the “Expected Outputs/ Outcomes”, illustrating expected milestones/ outputs per implementation year, and succeeding researches, especially translational studies that will have to be undertaken beyond the proposed project implementation period- to achieve the Program Outcomes. This is separate from the Project Workplan/ Gantt Chart.

- Plans for data sharing/ access should be included in the proposal e.g. sharing research outputs to other researchers/ groups who might be interested in further collaboration.

- Proposed resources must be justified, especially if these will involve significant capital outlay. As stated in the DOST Grants-in-Aid Guidelines, counterpart from the Implementing Agency must be provided.

- It is encouraged that Program Proposals be multi-institutional / collaborative. In addition, relevant stakeholders (e.g. clinicians, government programs) should be engaged/consulted, even at the device development stage. For proposals that will involve clinical trials/ human trials, the proposal should already include study design details for the clinical trials phase.



CALL FOR PROPOSALS

2023

DOST/ PCHRD FUNDING

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

The Program addresses the need for 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. The DOST identified Biomedical Devices for Health Services as one of key priorities for 2021 onwards, recognizing the potentials and benefits of local-development of biomedical devices.

To ensure that we ensure continuous support, and elevate Biomedical Devices Innovations in the country, we are identifying the following research topics for this year's Call for Proposals:

1. Minimally-invasive surgical devices;
2. Devices for Postoperative/ Rehabilitative Care;
3. Devices for Health Emergency Response
4. Distributed Healthcare and Devices, and
5. Simulation platforms for health and disease studies

Program Manager: **Mr. Jose Joy J. Gepanaga**

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BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

PRIORITY TOPICS

Minimally-invasive surgical devices

This area looks into local innovations on minimally-invasive surgical equipment which will result in more accessible/ affordable devices, will utilize/ harness local resources- all taking into consideration local clinical practice guidelines, local health service provision and international markets.

Specific Priorities	Description	Expected Output/s

1. **Minimally Surgical equipment that can be used in either endoscopic or robotic-assisted surgeries.**	• Minimally-invasive surgical equipment limits the size of incisions needed during surgeries to lessen wound healing time, associated pain, and risk of infection.
	• The benefits of minimally-invasive surgical equipment include:
	  • Smaller incisions
	  • Less pain
	  • Low risk of infection
	  • Short hospital stay
	  • Quick recovery time
	  • Less scarring
	  • Reduced blood loss
		• Locally-developed, minimally-invasive surgical equipment ready for clinical testing/ commercialization.

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

PRIORITY TOPICS

Devices for Postoperative/ rehabilitative care

This area looks into local innovations that can lessen healing time and/or assist the specific body part to perform movement which improvement can be monitored through built-in sensors as the treatment progresses. May also involve use of innovative/ more sustainable materials.

Specific Priorities	Description	Expected Output/s
2. **Development of local biomedical devices that can be used for movement rehabilitation**	• Biomedical devices that can lessen healing time and/or assist the specific body part to perform movement which improvement can be monitored through built-in sensors as the treatment progresses. May also involve use of innovative/ more sustainable materials	• Locally-developed, devices and protocols ready for clinical testing/ commercialization

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

PRIORITY TOPICS

Devices for Health Emergency Response

The area involves the development of local/ innovative biomedical devices that will equip healthcare providers/ responders and the public for the health emergencies such as pandemics, and environmental disasters..

Specific Priorities	Description	Expected Output/s

1. **Development of biomedical devices used for health emergency situations**
 	
2. **Development of biomedical devices for pandemic and disaster response**
	• Biomedical devices that are critical for timely and continued access of the public during health emergency situations such as pandemics and environmental disasters, such as but not limited to:
	  • Ventilators and other ventilation-related Devices
	  • Innovative Personal Protective Equipment (PPEs) for ***Health emergency workers/ responders,***
	  • Other related devices for health emergency response
		• Locally-developed, devices and protocols ready for clinical testing/ commercialization

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

PRIORITY TOPICS

Distributed Healthcare and Devices

Distributed Healthcare aims to de-centralize health care provision by shifting from facility-based to patient-focused health care. This area envisions innovations in biomedical devices that will support facility-based health management, and increase access to healthcare such as in geographically-isolated and disadvantaged areas (GIDAs).

Specific Priorities	Description	Expected Output/s
1. **Development of assistive devices (e.g. prosthetics/ orthotics)**	1. Biomedical devices that can maintain or improve an individual's functioning and independence to facilitate participation and to enhance overall well-being, specifically: • Artificial body part replacement (prosthesis) and orthosis • Mobility aids for PWDs	• Locally-developed devices and protocols ready for clinical testing/ commercialization • Evidence/data for policy formulation clinical practice guidance, more appropriate tools/ systems for health interventions, leading to better health outcomes
2. **Devices for better Primary Health Care provision** • Elderly/ geriatric care • Maternal and Child care	2. Ensuring innovative, yet accessible technologies for elderly/ geriatric care, and maternal/ child care which can be deployed in the Primary Health Care Setting	

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

PRIORITY TOPICS

Simulation platforms/ tools for health and disease studies

This area aims to develop innovative bioengineered devices that will support/ augment 1. Disease studies, and 2. Training of Medical students/ professionals.

Specific Priorities	Description	Expected Output/s
1. **Bioengineered tissues; "organ-on-a chip", simulated body parts**;	• Development of biomedical devices e.g. microfluidic systems and/ or tissue engineering to simulate tissue- and organ-level physiology for studies on disease etiology, or as possible alternatives for skin grafts or transplantation of organ parts	• Locally-developed, devices and protocols ready for clinical validation
2. **Locally-developed Tools/ devices for medical training**	• Devices and Tools for Training of Medical students/ professionals, such as medical dummies, surgery simulators and tools (non-software- based)	• Locally-developed, devices and protocols ready for validation/ commercialization

BIOMEDICAL DEVICES ENGINEERING FOR HEALTH

Additional Considerations in formulating proposals under BIOMED

1. The proposal should **provide *a clear value proposition*** i.e. why the proposed output/ device will have more value compared to what is already available. Also, competition analysis should be included.

2. For proposals/ Programs a **five-year development-to-commercialization (or technology transfer) plan** should also be included, clearly stating the device development phase, testing phases, clinical trials, re-engineering, and commercialization phases. Target milestones should also be clearly identified.

3. Proponents are encouraged to explore partnerships/ services of DOST-funded facilities such as Advanced Manufacturing Center (DOST- AMCEN), Electronic Products Development Centre (DOST-EPDC), DOST- PTRI Medical Textile Testing Facility etc.

    - DOST-AMCEN: Engr. Fred Liza (fredliza@yahoo.com / fpliza@mirdc.dost.gov.ph)
    - DOST-EPDC: Engr. Victor Gruet (vicgruet@gmail.com)
    - PTRI-MTTF: Dr. Celia B. Elumba, Director (cbelumba@ptri.dost.gov.ph)

DIAGNOSTICS

The Diagnostics program focuses on the development of diagnostic tests and devices for early detection and monitoring of premorbid conditions and diseases, utilizing existing and/or novel technologies. Development of diagnostic tests for priority diseases can help follow the spread of diseases, monitor the effectiveness of interventions and indicate the presence of drug resistance.

For this year's Call for Proposals, the following topics are being identified:

1. Diagnostics for Non-Communicable Diseases

2. Diagnostics for Infectious Diseases

3. Diagnostics for Neglected Tropical Diseases

Program Manager: **Ms. Mary Ann I. Pacho**

mipacho@pchrd.dost.gov.ph

DIAGNOSTICS

PRIORITY TOPICS

Diagnostics for Non Communicable Diseases		
Specific Priorities	**Description**	**Expected Output/s**
1. **Diagnostic kits/tests for cancer, cardiovascular diseases and diabetes**	• Tools/kits for clinical measurement of certain novel biomarkers for assessing risk to cancer, diabetes and cardiovascular diseases	• Locally-developed diagnostics ready for clinical testing/ commercialization •

Diagnostics for Neglected Tropical Diseases		
Specific Priorities	**Description**	**Expected Output/s**
1. **Development of diagnostic kits for COVID-19, Tuberculosis, Hepatitis, diseases associated with antimicrobial resistance**	• Studies on the development of reliable and cost-effective diagnostic tools (point of care tests) for the detection of the disease • Studies on cell-mediated and humoral immunities to SARS-CoV-2 infection after vaccination • Studies on the detection of drug resistance to HIV • Researches on HIV subtype • Researches related to the screening tests for the diagnosis of liver diseases	• Locally-developed diagnostics ready for clinical testing/ commercialization • Information on the level of protection of COVID-19 vaccines • HIV treatment and containment strategies • Data for policy formulation

DIAGNOSTICS

PRIORITY TOPICS

Diagnostics for Neglected Tropical Diseases		
Specific Priorities	**Description**	**Expected Output/s**
1. **Tools/test for detection of Leptospirosis, rabies and soil-transmitted helminthiasis**	• Biorecognition tools/tests to detect intermittent presence of organisms in body fluids. • Point of care test for clinical detection of rabies infection in humans • Highly sensitive and specific point of care test to determine the status and intensity of soil-transmitted helminthiasis	Tools/test for detection of leptospirosis, rabies and soil-transmitted helminthiasis

DIAGNOSTICS

Additional Considerations in formulating proposals under DIAGNOSTICS:

- Diagnostics-related programs/project proposals should have a clear concept-to-utilization roadmap. Significant expected outputs should also be identified.
- The proposals should provide a justification for the uniqueness of the studies e.g. comparison of proposed kits over commercially-available ones.
- The proposals should also include risk-assessment and cost analyses

INFORMATION AND COMMUNICATION TECHNOLOGY FOR HEALTH (ICT FOR HEALTH)

In view of the ongoing pandemic and the advancement of technology which serves to monitor and address the gaps in the Philippine healthcare system, and streamline screening procedures in response to the urgency of data needed for evidence-based public health interventions, the ICT for Health Program opens the call for proposals for the following topics below.

These research areas not only encourage proposals in new identified fields of information and communication technology, and artificial intelligence in healthcare, but also builds upon current interventions being implemented in order to evaluate and assess its efficiency and effects in the health information system as highlighted in this time of pandemic.

For this year's Call for Proposals, the following topics are being identified:

1. **Artificial Intelligence in Healthcare Empowered by Data Analytics**
   - Improvements on Health Service Delivery Utilizing Health Data Analytics
   - Disease Modelling

2. **Cybersecurity and Protection for Health Information System**
   - Blockchain Technology Application in the Healthcare Provider Network
   - Other Software Ensuring the Implementation of the Data Privacy Act of 2012

3. **Artificial Intelligence in Healthcare Applications**
   - Machine Learning in Development of Computer Software as Diagnostic Tools
   - Development and Validation of Internet of Things (IoT) Applications for Health
   - Space Technology in Health
   - Clinical Decision Support Systems

4. **Assessment and Development of ICT-enabled Health Delivery Services**
   - Telemedicine and Teleconsultation Technologies

Program Manager: **Ms. Pearl C. Tumlos**

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ICT FOR HEALTH

PRIORITY TOPICS

Artificial Intelligence in Healthcare Empowered by Data Analytics		
Specific Priorities	**Description**	**Expected Output/s**
1. **Improvements on Health Service Delivery Utilizing Health Data Analytics**	• Interventions to improve delivery of healthcare services and implementation of knowledge discovery studies utilizing health data analytics	• ICT platforms for HTA studies; • Tools for data analytics and visualization of healthcare data; • Demand forecasting models of healthcare services and infrastructure; • Secondary use of electronic health record data (taking into consideration design, development, and implementation of publicly available clinical data sets similar to MIMIC); • Cloud-based health applications
2. **Disease modelling**	• Mathematical modelling of infectious diseases	• Real-time or near-real time disease modeling • GPS/ satellite-enabled application for monitoring and surveillance during outbreaks

ICT FOR HEALTH

PRIORITY TOPICS

Cybersecurity and Protection for Health Information System		
Specific Priorities	**Description**	**Expected Output/s**
1. **Blockchain technology application in the Healthcare Provider Network**	• Involves the implementation of blockchain technology software on existing interoperability layers currently being implemented in health information systems of hospitals and LGUs with Province-/ City- wide Health systems	• Blockchain technology application
2. **Other software ensuring the Implementation of the Data Privacy Act of 2012**	• Implementation of cybersecurity software throughout a health information system	• Cybersecurity software

ICT FOR HEALTH

PRIORITY TOPICS

Artificial Intelligence in Healthcare Applications		
Specific Priorities	**Description**	**Expected Output/s**
1. Machine Learning in Development of Computer Software as Diagnostic Tools	• Developing machine-enabled diagnostic tools through complicated statistical techniques	• AI-enabled tools for medical diagnostic purposes
2. Development and Validation of Internet of Things (IoT) Applications for Health	• Designation of *in silico* laboratories to test health applications	• Validated wearable health monitors
3. Space Technology in Health	• Studies on effects of microgravity to the health of humans and other organisms; • Utilizing space technology such as Global Positioning System (GPS) and remote sensing for public health surveillance and implementation of public health programs	• Applications involving robotics and AR/VR technologies; • GPS or remote sensing- enabled alert software or sensors for environmental monitoring in public health surveillance

ICT FOR HEALTH

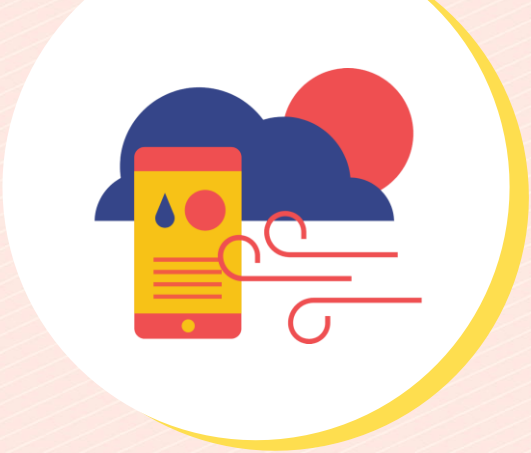
PRIORITY TOPICS

Artificial Intelligence in Healthcare Applications		
Specific Priorities	**Description**	**Expected Output/s**
4. Clinical Decision Support Systems (CDSS)	• Utilization of health data analytics to develop a decision support tool for clinicians, administrative staff, patients, caregivers, or other members of the care team to improve care quality, avoid errors or adverse events, and allow care team members to be more efficient	• CDSS integration with EMRs; • Electronic medical records (EMR)-enabled CDSS; • Specifically: - computerized alerts and reminders to care providers and patients; - clinical guidelines; - condition-specific order sets; - focused patient data reports and summaries; - documentation templates; - diagnostic support, and contextually relevant reference information; - other related tools;

ICT FOR HEALTH

PRIORITY TOPICS

Assessment and Development of ICT-enabled Health Delivery Services		
Specific Priorities	**Description**	**Expected Output/s**
1. **Telemedicine and Teleconsultation Technologies**	• Interventions in the delivery of telemedicine and teleconsultation services	• - Applications for delivery of telemedicine services in low-resource/rural areas • Development of data compression and/or automated data transmission algorithms to improve data exchange in telemedicine • Review of teleconsultation, telemedicine and telerehabilitation protocols in the Philippines and Asia



DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION IN HEALTH

Disaster Risk Reduction is the concept and practice of reducing disaster risks through systemic efforts to analyze and manage the causal factors of disasters by reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness for adverse events (UNISDR). Concrete actions to ensure that development gains are protected from disaster risk are enumerated in the Sendai Framework to which the Philippines is a signatory. Climate Change Adaptation, on the other hand, is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities in relation to climate change.

Disaster Risk Reduction and Climate Change Adaptation particularly in health is a significant contributor in inclusive and sustainable development of a nation such as the Philippines which is one of the many countries that experience natural disasters. Hence, scientific and technological activities and innovations in DRR-CCA in Health are part of the priorities of the government with the aim to address the following gaps:

1. Identification and characterization of climate-sensitive and/or climate-related diseases;

2. Food security and nutrition during disasters especially for the vulnerable populations;

3. S&T based innovations in building resilient health systems during disasters.

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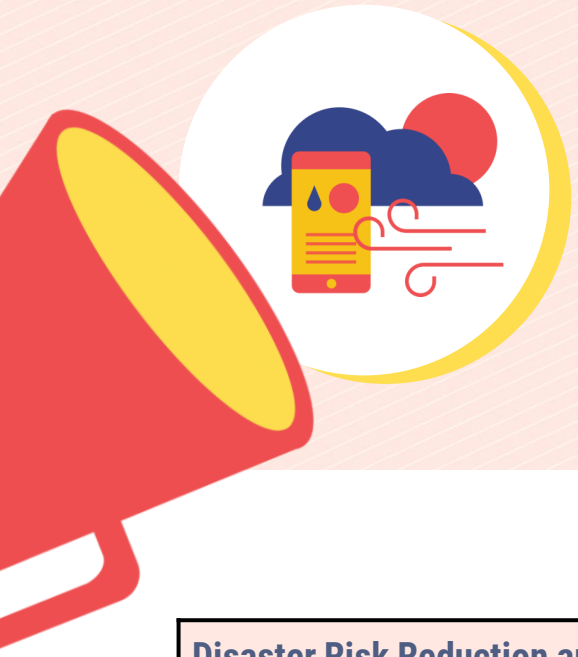

DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION IN HEALTH

PRIORITY TOPICS

Disaster Risk Reduction and Climate Change Adaptation for Health		
Specific Priorities	**Description**	**Expected Output/s**
1. S&T based innovations in building resilient health systems during disasters	• Innovations for emergency medical care services, water, sanitation, hygiene and nutrition during disasters; • Technology development for search and rescue, triage and health emergencies;	• S&T based tools which improve health services during disasters
2. Food Innovations to address the nutritional and health effects of disasters	• Researches on ready to use therapeutic food (RUTF) and food for disaster emergencies	• Developed ready to use therapeutic food (RUTF) and food for disaster emergencies especially for vulnerable population
3. Researches to ensure health consequences during disasters are reduced	• Environmental risk assessment studies and innovations to prevent adverse health effects during disasters	• Tools or inventions to ensure reduced health consequences brought about by environmental contamination or pollution
4. Climate Change Adaptation in Health	• Characterization of diseases whose incidence is directly affected by climate change.	• Generated data on the characterization climate change sensitive diseases for possible intervention development

RE-EMERGING AND EMERGING DISEASES

Emerging and re-emerging infectious diseases continue to pose serious and alarming threats to public health globally. Emerging infectious diseases, which can be zoonotic, vector-borne, foodborne or airborne, are infections that have recently emerged in a population or those that are rapidly increasing in incidence or geographic range. Meanwhile, re-emerging diseases are infections that reappear in a population after they have been on a dramatic decline.

The recent COVID-19 pandemic highlights the need for integrated R&D thrusts in infectious diseases to bridge research gaps in virology, medical microbiology and immunology that will strengthen public health emergency response.

This year's Call for proposals under the Re-emerging and Emerging Diseases will focus on:

1. Emerging diseases such as: Dengue, Zika and HIV Infections;

2. Innovative approaches in diagnosis and management of re-emerging infectious diseases;

3. Development and evaluation of novel therapeutic interventions specifically focusing on the following re-emerging diseases: Tuberculosis, Influenza, Malaria, Cholera and Pertussis

Program Manager: **Ms. Guiddita L. Gelera**

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RE-EMERGING AND EMERGING DISEASES

PRIORITY TOPICS

Research on Emerging Diseases: Arboviral Diseases; HIV

This area focuses on research in 1. Arboviral diseases (viral diseases transmitted by arthropod vectors e.g mosquitoes and ticks), specifically Dengue, Zika and JE; and 2. HIV/ AIDS Infections. This research area ultimately aims to produce innovative tools/ systems that are designed to provide additional evidence/data for policy formulation, improved health interventions, leading to better health outcomes.

Specific Priorities	Description	Expected Output/s
1. **Dengue, Zika, Japanese Encephalitis**	Proposals may cover any or all of the following: • Use of science/ Technology and innovation to Map disease incidence/ outbreaks and development of simulation models for prediction and risk management. • Development early warning systems for dengue, zika and Japanese encephalitis for immediate response. • Research on pseudovirion production for diagnostics and vaccine development • Evaluation of possible treatment/ therapeutic modalities against Dengue, Zika, JE	Outputs may cover any or all of the following: • Density maps and other information; simulation models for diseases risk prediction and management • Early warning systems by developing alert levels integrating disease, entomological, environmental and socio-demographic data for the prediction of arbovirus outbreak • Process/ proof of concept on production of pseudovirions to be used for diagnostics and vaccine research • Information on new/ validated modalities for diseases treatment • Additional evidence/data for policy formulation clinical practice guidance, more appropriate tools/ systems for health interventions, leading to better health outcomes

RE-EMERGING AND EMERGING DISEASES

PRIORITY TOPICS

Research on Emerging Diseases: Arboviral Diseases; HIV

This area focuses on research in 1. Arboviral diseases (viral diseases transmitted by arthropod vectors e.g mosquitoes and ticks), specifically Dengue, Zika and JE; and 2. HIV/ AIDS Infections. This research area ultimately aims to produce innovative tools/ systems that are designed to provide additional evidence/data for policy formulation, improved health interventions, leading to better health outcomes.

Specific Priorities	Description	Expected Output/s
2. HIV/ AIDS	Proposals may cover any or all of the following: • Use of science/ Technology and innovation for improved surveillance of HIV/ AIDS in the country • Studies leading to prevention of Mother-to-Child Transmission (MTCT) of HIV/AIDS. • Evaluation of possible treatments/ therapeutic modalities against HIV/AIDS, • Studies on HIV vaccine development	Outputs may cover any or all of the following: • Tools/ systems using data analytics for improved surveillance and monitoring of HIV/AIDS prevalence in the country that are scalable/ transferable • Developed innovative tools/ systems programmed to improve surveillance, monitoring, and prevention of mother-to-child HIV/AIDS transmissions. • Therapeutics for enhancement and elongation of the lives of HIV/AIDS patients • Vaccines For HIV/AIDS • Additional evidence/data for policy formulation clinical practice guidance, more appropriate tools/ systems for health interventions, leading to better health outcomes for HIV/ AIDS population

RE-EMERGING AND EMERGING DISEASES

PRIORITY TOPICS

Research on Re-Emerging Diseases

This research area centers on re-emerging diseases including neglected tropical diseases such as helminthiasis, filariasis, schistosomiasis, trematodes and chikungunya. Studies will focus on development of improved systems to provide crucial data to augment approaches in implementing interventions for better healthcare programs.

Specific Priorities	Description	Expected Output/s

Re- Emerging Diseases
• Tuberculosis
• Influenza & Mers Cov
• Malaria
• Cholera
• Pertussis
• Rabies
• Leptospirosis
• Ebola
• *Neglected Tropical Diseases*
  • helminthiasis
  • filariasis
  • schistosomiasis
  • trematodes
  • chikungunya
	Proposals may cover any or all of the following:
	• Epidemiological Studies for diseases with significant deficiencies in epidemiological information
	• Use of science/ Technology and innovation to map disease incidence/ outbreaks and development of simulation models for prediction and risk management.
	• Development of early warning systems integrating disease, entomological, environmental and socio-demographic data for the prediction of outbreaks
	• Use of science/ Technology and innovation approaches in developing, evaluating and/or assessing health programs or clinical interventions
	• Development and/ or Evaluation of novel treatment/ therapeutic modalities
		Outputs may cover any or all of the following:
		• Epidemiological information that fills in crucial information gaps, and will lead to better health intervention programs
		• Density maps and other information; simulation models for diseases risk prediction and management
		• Innovative Early warning systems that are scalable and can be adopted by/ integrated to disease surveillance programs
		• Information/data/ evidence that will lead to better health interventions/ programs/ Policies
		• Information on new/ validated modalities for diseases treatment or therapeutics

‘OMIC’ TECHNOLOGIES FOR HEALTH (OMICS)

The OMIC Technologies for Health Program utilizes information from different ‘OMIC’ technologies (such as genomics, proteomics, bioinformatics etc) in generating information, as input to development of precision medicine, diagnostics, therapeutics, and as a support to health & clinical practice guidelines and policies of the Philippines.

The current pandemic highlights the benefits of DOST and PCHRD investment in OMICS, with the ongoing genomic surveillance of SARS-CoV-2 strains in the country. Expertise of Project leaders in molecular biology, as well as equipment have been crucial in equipping different institutions in the country, in responding to the pandemic. Furthermore, pioneering, large-scale programs in genomics of Cardiovascular diseases, diabetes, and infectious diseases in the Filipino population have been generating information, ready for translational studies.

For this year’s Call for Proposals, the following topics are being identified:

1. **Multi -omics approach on Health and Diseases**
    - Non-communicable diseases (CVD, Diabetes, Cancers)
    - Infectious diseases of relevance in the country
    - Addressing malnutrition on children and adults
    - Neurological, neurodegenerative, or psychiatric diseases of relevance in the Philippines
2. **Genomic Biosurveillance**
    - Infectious diseases of relevance in the country
    - Rare diseases of relevance in the country (following Republic Act 10747 “Rare Disease Act”)

3. **Translational Omics Research for Precision Medicine**
    - Cardiovascular Diseases;
    - Diabetes Mellitus;
    - Cancers
    - Other diseases/conditions wherein the host immunological response plays a crucial role

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'OMIC' TECHNOLOGIES FOR HEALTH (OMICS)

PRIORITY TOPICS

Multi -omics approach on Health and Diseases

The area involves integration of multiple platforms e.g. genomics, transcriptomics, proteomics, metabolomics, and bioinformatics/AI/computational pipelines to provide a more comprehensive view of a specific human condition e.g. disease or state of health

Through this multi-perspective approach, it is envisioned that more comprehensive information regarding diseases/ conditions of utmost importance in the country will be generated, and in greater resolution. These information are expected to be translated into **tools for pre-emptive lifestyle intervention, better disease diagnosis and prognosis, prediction of treatment responses, as well as targets for development of diagnostics and therapeutics, focused on the Filipino population**.

Specific Priorities	Description	Expected Output/s
1. **NCDs:** • Cardiovascular Diseases; • Diabetes Mellitus; • Cancers 2. **Infectious diseases of relevance in the country** 3. **Addressing malnutrition on children and adults**: • Stunting, micro/micronutrient deficiency in children, • Obesity and diabetes in adults 4. **Neurological, neurodegenerative, or psychiatric diseases of relevance in the Philippines**	Proposals may cover any or all of the following: • Fundamental research: discovery and validation of biomarkers as biological signatures in signatures of the pathophysiology associated with the specific disease/ condition • Integrating bioinformatics/ computational/ machine-learning pipelines and/or technologies with discovery/ validation of clinically biomolecular markers/ signatures for diagnosis, patient stratification, prognosis or monitoring or prediction of treatment/ therapy/ intervention response and side effects for the specific disease/ condition	Outputs may cover any or all of the following: • List/ database of biomarkers, biological signatures • Computational/ machine-learning pipelines and/or technologies (.e.g software tools, programs, etc) integrating clinically relevant biomolecular markers/ signatures, which can be used/ further developed for diagnosis, patient stratification, prognosis or monitoring or prediction of treatment response and side effects etc. • Better/ more informative biological/ disease models incorporating informative of diagnosis, prognosis, treatment evaluation/ response • • Evidence/data for policy formulation clinical practice guidance, more appropriate tools for health interventions, leading to better health outcomes

'OMIC' TECHNOLOGIES FOR HEALTH (OMICS)

PRIORITY TOPICS

Genomic Biosurveillance (infectious diseases, rare diseases)

Genomic Biosurveillance involves the use of genomic technology platforms and associated technologies to actively gather, analyze and interpret data related to disease activity and threat in order to provide early warning of health threats, early detection of health events, and overall situational awareness of disease activity.

Specific Priorities	Description	Expected Output/s
1. **Infectious diseases of priority in the Philippines** 2. **Rare diseases of relevance in the country**	• Involves use of genomic technologies and systems that will enhance the efficiency and sensitivity of biosurveillance including how to scale, and sustain these systems.	• Genomic biomarkers and scalable/ sustainable systems for enhanced biosurveillance • Evidence/data for policy formation, clinical practice guidance, improved systems/ tools leading to better health surveillance and interventions.

'OMIC' TECHNOLOGIES FOR HEALTH (OMICS)

PRIORITY TOPICS

Translational Omics Research for NCDs for Precision Medicine (Cardiovascular Disease, Diabetes, Cancer, Immunology)

Translational -omics refers to the deployment/ application of information/ knowledge to individual patients. It promises a new way of investigating and treating disease by targeting the molecular fingerprint of a given condition/state in specific populations/ groups (Wafi & Mirnezami, 2018).

Specific Priorities	Description	Expected Output/s
1. **Cardiovascular Diseases;** 2. **Diabetes Mellitus;** 3. **Cancers of *relevance / priority in the country*** 4. **Other diseases/conditions wherein the *host immunological response plays a crucial role***	• Validation of clinically biomolecular markers/ signatures for diagnosis, patient stratification, prognosis or monitoring or prediction of treatment response, and targeted therapies	• Clinically relevant biomolecular markers/ signatures, for better disease stratification, prognosis or monitoring or prediction of treatment response, and targeted therapies • Evidence/data for policy formulation clinical practice guidance, more appropriate tools/ systems for health interventions, leading to better health outcomes

*Wafi, A., & Mirnezami, R. (2018). Translational –omics: Future potential and current challenges in precision medicine. Methods, 151, 3–11. https://doi.org/10.1016/j.ymeth.2018.05.009

NUTRITION AND FOOD SAFETY

The Nutrition and Food Safety Program seeks to address the human nutrition problems in the country such as micronutrient and macronutrient deficiencies, overnutrition, nutrition related diseases, as well as the current and emerging issues in food safety. The program aims to explore avenues and opportunities using science, technology, and innovation in providing solutions for the improvement of Filipinos' health through proper nutrition and safe food.

For this year's Call for Proposals, the following topics are being identified:

1. **Nutrition**
   - Maternal Nutrition
   - Geriatric Nutrition
   - Nutrition Assessment
   - Nutrigenomics
   - Nutrition Assessment
   - Product Development for Supplementation
   - Determinants of Malnutrition

2. **Food Safety**
   - Studies on the following food safety issues: heavy metals, aflatoxin, allergens, microbiological contamination and food-borne and water-borne diseases
   - Exposure assessment of selected nutrients, food contaminants, and food additives in commonly consumed foods

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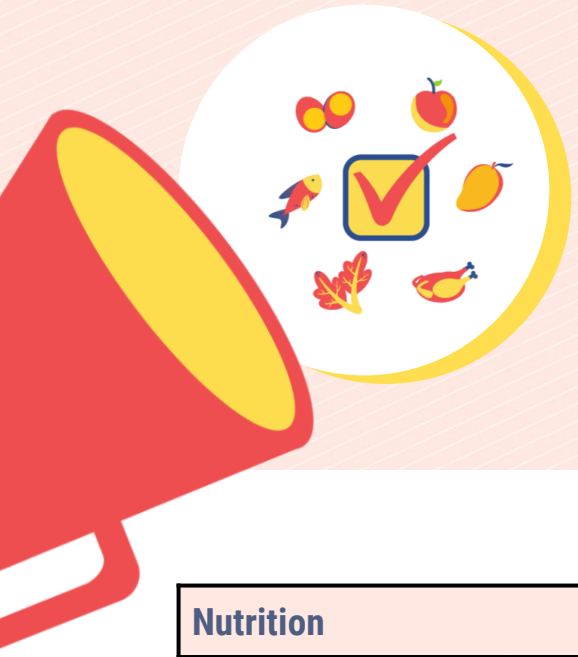
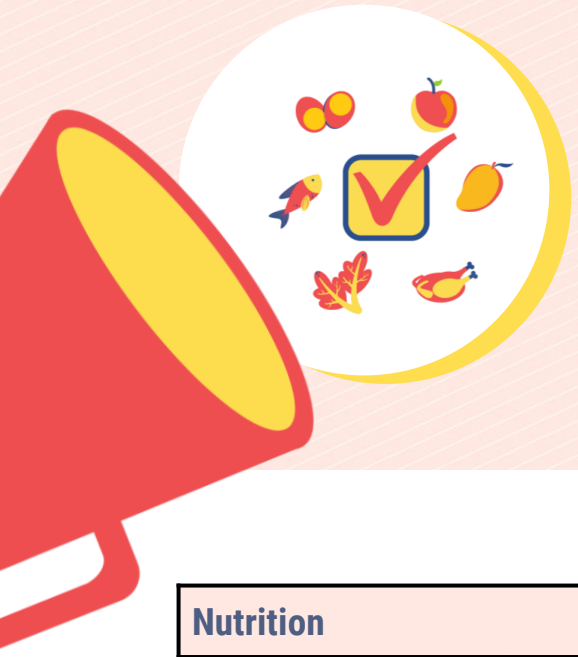


NUTRITION AND FOOD SAFETY

PRIORITY TOPICS

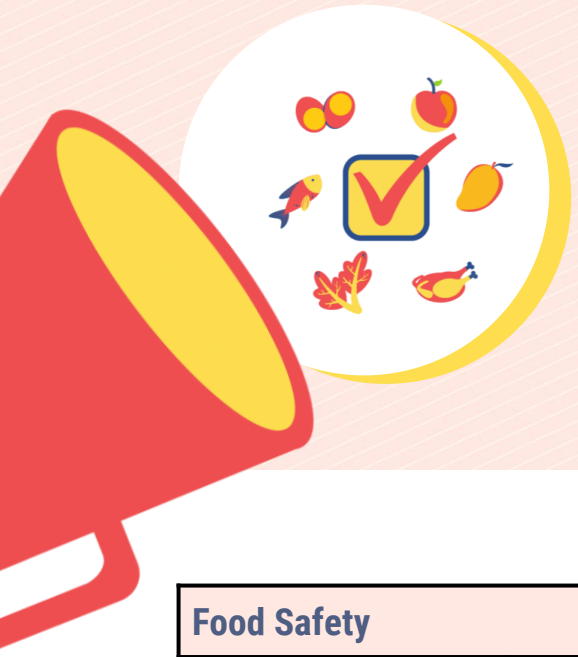
Nutrition		
Specific Priorities	**Description**	**Expected Output/s**
1. Maternal Nutrition	• Undernutrition in adolescent pregnant women • Perinatal nutrition of older mothers (pregnancy after age 35)	• Information from prevalence and intervention studies on the undernutrition in adolescent pregnant women • Information from studies on appropriate perinatal nutrition for older women • Policies on improvement of maternal health in the Philippines
2. Geriatric Nutrition	• Nutritional intervention for prevention or delay of cognitive decline and dementia • Nutrition and psychological distress in the elderly	• Information from *in vivo* studies and clinical trials on the nutrition interventions • Information on the relationship of nutrition and psychological distress in the elderly • Policies on the improvement of geriatric care in the Philippines
3. Nutrigenomics	• Personalized diets using OMIC technologies	• Developed tools or mobile applications for personalized diets



NUTRITION AND FOOD SAFETY

PRIORITY TOPICS

Nutrition		
Specific Priorities	**Description**	**Expected Output/s**
4. Nutrition Assessment	• Nutrition Assessment of individuals with physical and mental/intellectual disabilities • Assessment of prevalence and efficacy of fad diets	• Developed tools for nutrition assessment • Information on prevalence and efficacy of fad diets • Improved information materials for public dissemination
5. Product Development for Supplementation	• Development of products as diet supplement using locally available commodities to address child malnutrition	• Developed safe and effective supplementary products ready for technology adoption
6. Determinants of Malnutrition	• Determinants of malnutrition among people in Geographically Isolated and Disadvantaged Areas (GIDAs)	• Information on malnutrition in GIDA communities • Development of intervention models



NUTRITION AND FOOD SAFETY

PRIORITY TOPICS

Food Safety		
Specific Priorities	**Description**	**Expected Output/s**
1. Studies on the following food safety issues: heavy metals, aflatoxin, allergens, microbiological contamination and food-borne and water-borne diseases	• Research on the safety and quality of locally available food in terms of medically-relevant food-borne and water-borne illnesses • Development of Point-of-Care (POC) kits for Food Safety Analysis	• Data on the food-borne and water-borne illnesses related to the consumption of locally available foods • Developed POC kits for Food Analysis ready for technology adoption • Improved policies on food production and safety monitoring
2. Exposure assessment of selected nutrients, food contaminants, and food additives in commonly consumed foods	• Qualitative and/or quantitative evaluation of the population intake of biological, chemical, and physical agents via food	• Information on the occurrence and concentrations of selected nutrients, food contaminants, food chemicals, and food additives in the Filipino diet • Information on the consumption patterns and levels of selected nutrients, food contaminants, food chemicals, and food additives

FUNCTIONAL FOODS

The Functional Food Program of PCHRD focuses on researches tackling crops and food products that have possible health advantages beyond their distinctive nutritional benefits for the prevention of non-communicable diseases. In 2017, eight (8) commodities were identified for research prioritization namely: rootcrops, seaweeds, edible mushrooms, local berries, turmeric, Pili, Malunggay, VCO and other coconut products. During the Functional Food Technical Working Group Meeting in February 2019, it was agreed that Rice, specifically Brown Rice and Pigmented Rice, should be included in the list of the priority research commodities. The updated list has nine (9) priority research commodities.

For this year's Call for Proposals, the following topics are being identified:

1. **Unpolished and Pigmented Rice**

2. **Edible mushrooms, Pili, Seaweeds, Turmeric, Root crops, Local berries, VCO and other coconut products**

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FUNCTIONAL FOODS

PRIORITY TOPICS

FUNCTIONAL FOODS		
Specific Priorities	**Description**	**Expected Output/s**
1. Unpolished and Pigmented Rice	• Characterization, efficacy studies, and product development of unpolished and pigmented rice	• Information on the health relevant components of unpolished and pigmented rice • Rice product with established health benefits
2. Edible mushrooms, Pili, Seaweeds, Turmeric, Root crops, Local berries, VCO and other coconut products	• Characterization, efficacy studies, and product development of edible mushrooms, Pili, Seaweeds, Turmeric, Root crops, Local berries, VCO and other coconut products *(Continuing studies for research institutions with ongoing and/or completed studies funded or monitored by DOST-PCHRD)*	• Information on the health relevant components of the mentioned commodities • Functional food product or ingredient with established health benefits

MENTAL HEALTH

According to the World Health Organization (WHO), mental health is “a state of well- being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.” The global call for mental health started in the Lancet Commission Report in 2018, in which all countries were reminded of their approaches and actions towards mental health and mental illness. The inclusion of mental health in the targets of the 17 Sustainable Development Goals (SDGs) is one response to this call as well as the adoption of WHO’s Comprehensive Mental Health Action Plan 2013-2020 in the 66th World Health Assembly. The Philippines, which is a participating country during the 2016 Asia Pacific Economic Cooperation’s Strategic Needs Assessment (APEC-SNA), has reported three (3) priorities in the mental health systems namely (1) enhancement of disaster-related response to mental health, (2) institutionalization of community mental health services, including the deployment of a human resource development plan, and (3) establishment of an efficient and sustainable drug supply chain (Lazo and Ignacio, 2019).

In 2018, the Philippine Mental Health Act or RA 11036 was enacted after 15 years of lobbying and advocacy. Based on the law, research and development shall be conducted in collaboration with academic institutions, NGOs, and psychiatric, neurologic, and related associations to gather needed data for the development of a culturally-relevant national mental health program (Lazo and Ignacio, 2019).

In response to the needed research and innovation for mental health, the Philippines’ Mental Health Research Agenda was launched on October 11, 2019. The agenda focuses on the following three themes which are outcome based:

1. **Improved Mental Health Information System,**
2. **Strengthened Leadership and Governance, and**
3. **Accessible, Affordable, Responsive and Holistic Mental Health Services.**

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MENTAL HEALTH

PRIORITY TOPICS

Mental Health		
Specific Priorities	**Description**	**Expected Output/s**
1. **Social Determinants for Mental Health**	• Research on the development of science and technology innovations in relation to the various social determinants which affect the mental health in the nation.	• Guidelines on how to improve social determinants related to mental health • Policy recommendations for MH practitioners
2. **Inventory and Evaluation of Mental Health Interventions**	• Research on the effectiveness, assessment, management, and evaluation of various existing mental health interventions in the country, including the development of guidelines for community-based MH services. • Research on effective interventions or services for special populations (i.e. elderly, children, women, etc	• Inventory of existing MH interventions or services • Monitoring and evaluation tools specific for local MH intervention programs • Policy recommendations on best-practice interventions for LGUs
3. **Standardization of Mental Health Services**	• Research on the standardization of mental health services for implementation across various settings.	• Manuals on how to implement specific MH interventions

MENTAL HEALTH

PRIORITY TOPICS

Mental Health		
Specific Priorities	**Description**	**Expected Output/s**
4. ICT for Mental Health	• Research on the development and use of web and mobile- based applications and the improvement of existing information systems, which includes inter-clinic referral systems, electronic medical records, remote patient monitoring systems, and patient portals for effective delivery of mental health services at all levels of health care.	• Web- and mobile-based applications geared towards improvement of mental health service delivery • Improved information systems for both MH service practitioners and users
5. Diagnostics and Omics Technology for Mental Health	• Research on the generation of new knowledge about mental health using genomics, proteomics, transcriptomics, and metabolomics and the utilization of off-patent or lapsed and/or novel technologies including the localization of existing tools for appropriate management of mental health.	• Localized tools for the diagnosis and/or management of mental health conditions • Generated data using omics technologies to contribute to the development of personalized treatment and management of Filipinos' mental health

CALL SCHEDULE

2023

DOST/ PCHRD FUNDING

OPENING OF CALL

July 6, 2021
12:00 AM

SUBMISSION PERIOD

CLOSING OF CALL

August 6, 2021
5:00 PM

WHERE TO SUBMIT?

Submit via:
https://dpmis.dost.gov.ph/

All submissions must go through the DOST Project Management Information System (DPMIS). No email / mailed-in submissions will be processed

CALL FOR PROPOSALS

2023

DOST/ PCHRD FUNDING

Mental Health **Functional Foods** **Nutrition and Food Safety**	Ms. Marianne Joy Gochangco-Laya *mmgochangco@pchrd.dost.gov.ph*
Disaster Risk Reduction and Climate Change Adaptation in Health	Mr. Rogelio Guaring II *rvguaring@pchrd.dost.gov.ph*
OMIC Technologies for Health **Biomedical Devices Engineering for Health**	Mr. Jose Joy Gepanaga *jjgepanaga@pchrd.dost.gov.ph*
Re-emerging and Emerging Diseases	Ms. Guiditta Gelera *glgelera@pchrd.dost.gov.ph*
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General concerns	*feedback.pchrd.dost.gov.ph*