

Research Strategies, Trends, Opportunities in Pediatric Infectious Disease

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PHILIPPINE COUNCIL FOR HEALTH
RESEARCH AND DEVELOPMENT

- Current state of S and T in the country
- Current state of research in general and for pediatric infectious diseases in the country

Today's presentation



- Research Priorities based on the NUHRA
- Research opportunities in pediatric infectious diseases, its importance and relevance

Today's presentation





United Nations
Educational, Scientific and
Cultural Organization

380 researchers, scientists and engineers (RSE) per million

1% GDP Expenditure on R&D (GERD)



180 RSEs
(2009)

270 RSEs (2013)



Science for Change Program (S4CP)
DEPARTMENT OF SCIENCE AND TECHNOLOGY

Photo credit: <https://www.vecteezy.com/vector-art/88744-outline-science-icons-vector>

AmBisyon Natin 2040

Malasakit

Pagbabago

Kaunlaran

Harmonized National R&D Agenda

National Integrated
Basic Research
Agenda (NIBRA)

Health

Agriculture, Aquatic
and Natural Resources
(AANR)

Industry Energy
and Emerging
Technology

Disaster Risk
Reduction and
Climate Change
Adaptation (DRR
CCA)

Science For The People

- 1 R&D to Address Pressing Problems
- 2 R&D for Productivity
- 3 R&D to Tap, Manage and Store Renewable Energy Resources
- 4 R&D to Apply New Technologies Across Sectors
- 5 Disaster Risk Reduction and Climate Change
- 6 Maximize Utilization of R&D Results Through Technology Transfer and/or Commercialization
- 7 Accelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competitiveness
- 8 Assistance to the Production Sector
- 9 Upgrading of Facilities and Improvement of S&T Services
- 10 Human Resource Development for Science & Technology
- 11 Capacitate and Utilize Institutions in the Regions – SUCs who do R&D and Develop Human Resources in S&T
- 12 Collaboration with industry, academe and international institutions

Republic Act 10532: PNHRS Act of 2013

On May 7, 2013, His Excellency President Benigno “Noy” S. Aquino signed Republic Act 10532 or “An Act Institutionalizing the Philippine National Health Research System” of 2013.



The Philippine National Health Research System (PNHRS) is the national integrated framework for health research in the country

The PCHRD is recognized and mandated as the national coordinating body for health research in the country

Philippine National Health Research System



RESEARCH PRIORITIES for HEALTH S&T

- Diagnostics
- Drug discovery and development
- Functional foods
- Hospital equipment and biomedical devices
- Information and communication technology for health
- Dengue
- Nutrition and food quality and safety
- Disaster risk reduction
- Climate Change Adaptation
- Genomics/Molecular technology (Platform technology across research priorities)



“Infectious diseases account for **15 million deaths per year worldwide**, and disproportionately affect **young people, elderly people, and the poorest** sections of society. ”

-The Lancet





Goal 3: Ensure healthy lives and promote well-being for all at all ages

Sustainable Development Goals



1. Pneumonia	6. Accidental drowning and submersion
2. Diarrhea and gastroenteritis of presumed infectious origin	7. Dengue Fever and Dengue- hemorrhagic fever
3. Congenital anomalies	8. Chronic lower respiratory diseases
4. Septicemia	9. Meningitis
5. Other diseases of the nervous system	10. Leukemia

Top 10 Mortality Causes in Children 1-4 years old



1. Pneumonia	6. Congenital anomalies
2. Dengue Fever and Dengue-hemorrhagic fever	7. Leukemia
3. Accidental drowning and submersion	8. Meningitis
4. Other diseases of the nervous system	9. Septicemia
5. Transport accidents	10. Diarrhea and gastroenteritis of presumed origin

Top 10 Mortality Causes in Children 5-9 years old



1. Pneumonia	6. Dengue Fever and Dengue-hemorrhagic fever
2. Accidental drowning and submersion	7. Chronic rheumatic heart disease
3. Other diseases of nervous system	8. Leukemia
4. Transport accidents	9. Septicemia
5. Congenital anomalies	10. Nephritis nephrotic syndrome and neph

Top 10 Mortality Causes in Children 10-14 years old



- ✓ **Pneumonia, diarrhea** and **congenital anomalies** are the leading causes of death among **children below 5 years of age**
- ✓ **Bacterial sepsis, pneumonia,** and **respiratory distress** are the **top leading causes of infant mortality.**



Philippine Health Statistics 2012



PCHRD |

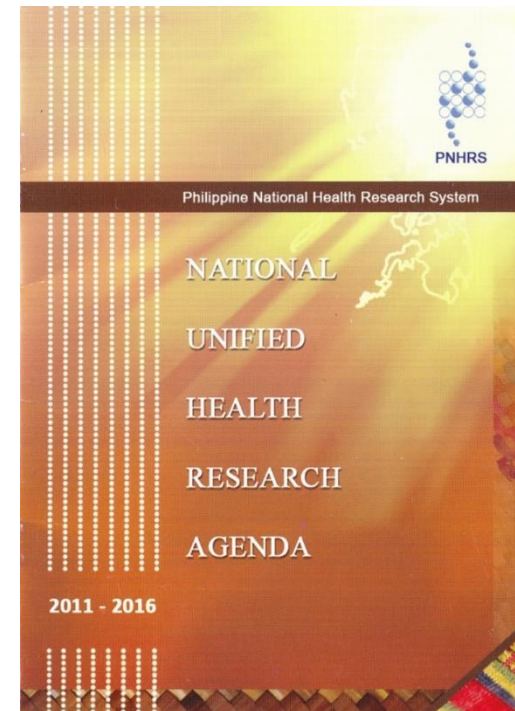
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National Unified Health Research Agenda

NUHRA, 2011-2016

NUHRA, 2006-2010

National Health R&D
Agenda, 2000-2005



Harmonized National R&D Agenda 2017-2022

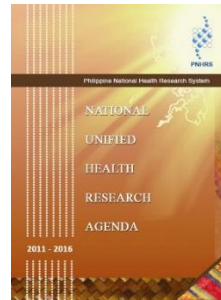
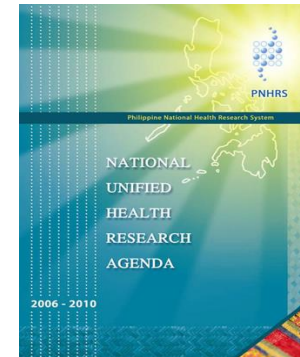
-----Health-----



- **NUHRA**

- National roadmap for health research in the country
- Provides focus and direction for health research and development efforts
- Serve as guide for policy makers, funding and donor agencies and researchers
- Provides evidence-based solutions to pressing health problems
- Serve as basis to maximize resource utilization and minimize duplication of research efforts

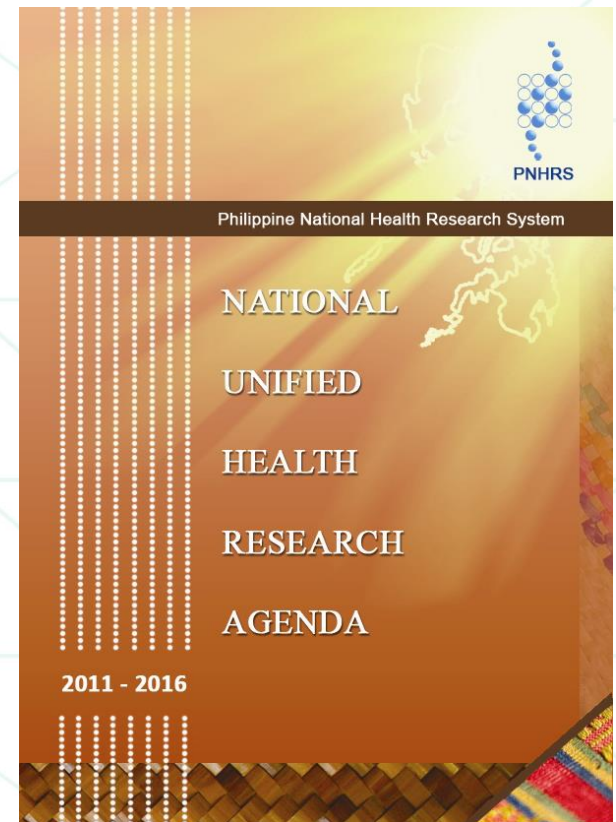
- Health S & T research agenda will be integrated in the NUHRA



Research Priorities

Four major areas:

1. Health Technology Development
2. Health Financing
3. Health Service Delivery
4. Socio-environmental health concerns



NUHRA



Harmonized National R&D Agenda 2017-2022

-----Health-----

Research Priorities for Health Tech Devt

- a consolidation of health research priorities of the DOST agencies
- each agency conducted research priority setting activities
 - guided the DOST's S and T thrusts, emerging and re-emerging health concerns and other national and global development concerns
 - consultations done with experts and stakeholders from the public and private sectors through meetings, workshops, FGDs



Diagnostics

Health Technology Development

Development of diagnostic kits for priority infectious diseases and non-communicable diseases for the early detection and/or prediction of disease and mortality, utilizing existing technologies that are off-patent or lapsed technology and/or novel technology. Such technology will also look at genetic or biological markers associated with DM, CVD, and cancer

National Unified Health Research Agenda



Diagnostics

Health Technology Development

Priority diseases: Infectious diseases

1. Dengue and dengue-like illness
2. Multidrug Resistant/Extensively Drug Resistant Tuberculosis (MDR/ XDR TB)
3. Drug-Resistant Malaria
4. Influenza-like illness
5. Leptospirosis
6. Sepsis
7. Human immunodeficiency virus (HIV)
8. Hepatitis

National Unified Health Research Agenda



Drug Discovery and Development

Health Technology Development

Researches will aim to discover new drugs which can be developed up to the pre-clinical stage. It will involve the discovery of compounds or molecular drug targets (genomics) that can serve as candidates for drug development. Drugs will be developed for common infectious diseases and lifestyle related disorders.

National Unified Health Research Agenda



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Drug Discovery and Development

Development of standardized herbal drugs and discovery of new drugs from local sources for development up to the pre-clinical stage. Drugs will be developed for:

- Infectious diseases
 - Bacterial infections (*M. tuberculosis*, *Enterococcus faecium*, *S. aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*)



DRUG DISCOVERY
AND DEVELOPMENT PROGRAM

Drug Discovery and Development

- Viral diseases (e.g. dengue influenza)
- Fungal infections
- Non-communicable diseases
 - Lifestyle-related diseases (e.g. diabetes, CVDs, etc.)
 - Cancer (colon, breast, lung)
 - Respiratory diseases
 - Neurodegenerative diseases



DRUG DISCOVERY
AND DEVELOPMENT PROGRAM

Nutrition and food quality and safety

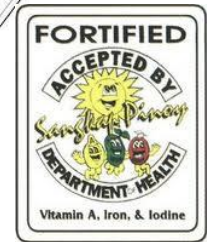
- Food quality and safety refers to the assurance that food will not cause harm to the consumer when prepared or eaten according to its intended use.
- Major nutrition problems in the country
 - Micronutrient deficiencies
 - Macronutrient deficiencies
 - Overnutrition
 - Nutrition related diseases



Nutrition and food safety

Specific topics
2018

- Food fortification
 - Fortified multi-nutrient growth mix products
 - Rice extrudate
- Development/revision of nutrition tools and standards
 - Nutritional guidelines
 - Food exchange list
 - Body composition assessment



-----Health-----

Nutrition and food safety

Specific topics

2018

- Nutritional assessment and monitoring
 - In-depth and correlation studies (dietary risk factors to non-communicable diseases)
 - Nutrition surveys
- Designing nutrition intervention programs
 - Nutrition delivery system for complementary feeding promotion



Nutrition and food safety

Specific topics

2018

- Food quality and safety
 - enhancement of food composition database for dietary exposure assessment
 - exposure assessment of selected nutrients, food contaminants, and food additives in commonly consumed foods



Dengue

- Reduction of transmission through vector control
- Involves targeting the mosquito vector/s in the habitats of its larval and adult stages and where human vector contact may occur
- Develop an early warning system by developing alert levels integrating entomological, environmental and socio-demographic data for the prediction of dengue outbreak.



Dengue

- Vector biology
- Vector surveillance and integrated vector management (IVM)
- Dengue case management
- Dengue outbreak management



Genomics / Molecular Technology

Health Technology Development

Molecular and genomics technologies use the information in the human genome in the design of vaccines, therapeutics, and diagnostic devices or products.

National Unified Health Research Agenda



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Genomics / Molecular Technology

Priority diseases

1. Cardiovascular Diseases (CVD)
- 2. Infectious Diseases (TB, Dengue, and Influenza)**
3. Cancer
4. Diabetes
5. Neurodegenerative Diseases

National Unified Health Research Agenda



Science for Change Program (S4CP)



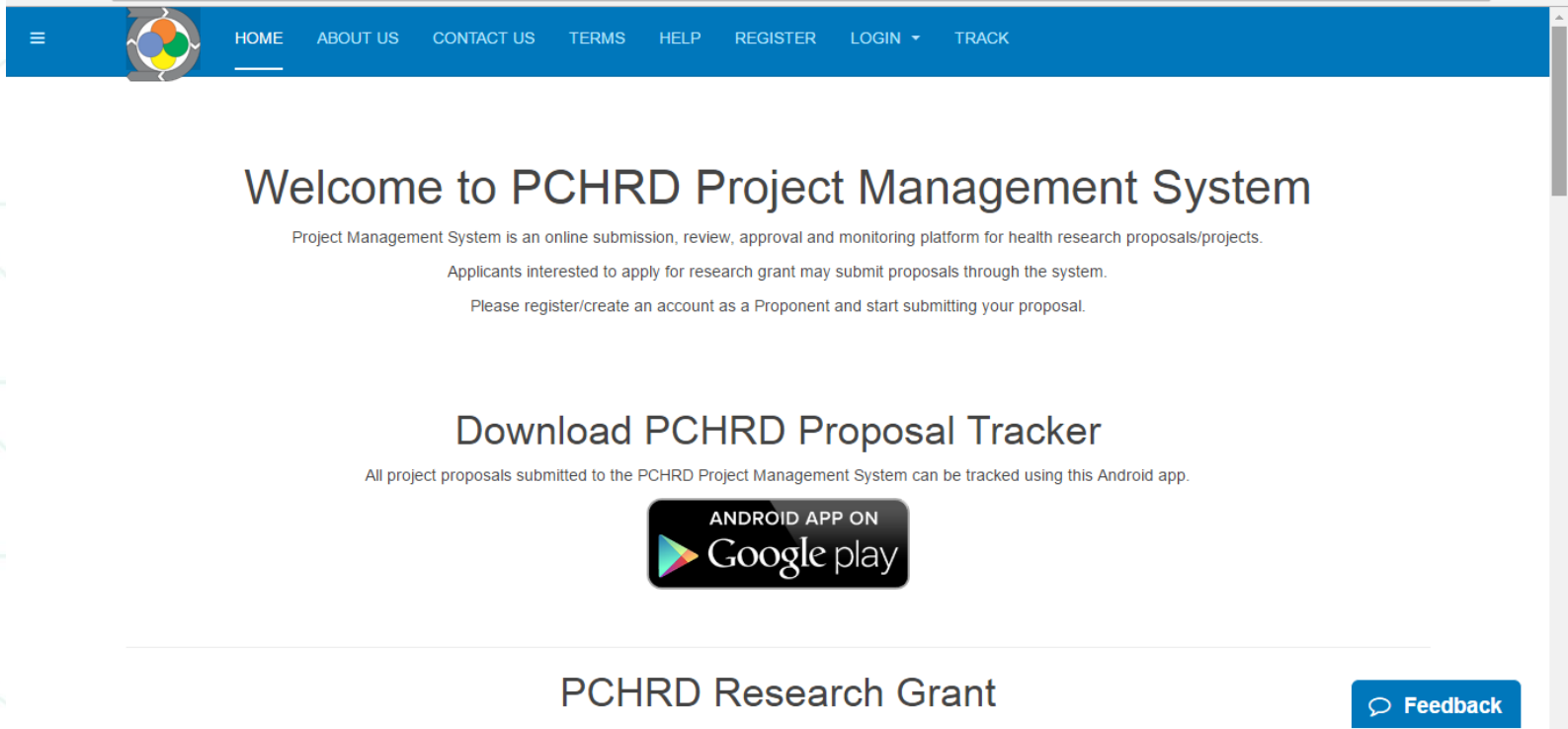
DEPARTMENT OF SCIENCE AND TECHNOLOGY

S4CP

endeavors to significantly accelerate Science, Technology and Innovation (STI) in the country through massive **increase in investment** on S&T Human Resource Development and R&D through the program

- A. Program Expansion in 10 areas
- B. New Programs in 5 areas
- C. S&T Human Resource Development
- D. Accelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competitiveness.

www.projects.pchrd.dost.gov.ph



The screenshot shows the homepage of the PCHRD Project Management System. At the top is a blue navigation bar with a menu icon, the PCHRD logo, and links for HOME, ABOUT US, CONTACT US, TERMS, HELP, REGISTER, LOGIN, and TRACK. The main content area features a large heading "Welcome to PCHRD Project Management System" followed by a brief description of the system as an online submission, review, approval, and monitoring platform. Below this, there are instructions for applicants to register and submit proposals. A section titled "Download PCHRD Proposal Tracker" includes a link to an Android app on Google Play. At the bottom of the screenshot, there is a section for "PCHRD Research Grant" and a "Feedback" button.

Submit your proposal



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