



सत्यमेव जयते

# INDIA AFRICA HEALTH SCIENCES MEET REPORT

**INDIAN COUNCIL OF MEDICAL RESEARCH**

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# INDIA AFRICA HEALTH SCIENCES MEET REPORT

SEPTEMBER 1-3, 2016  
VIGYAN BHAWAN, NEW DELHI



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**Dr SOUMYA  
SWAMINATHAN**

*Secretary, Department  
of Health Research  
Ministry of Health and  
Family Welfare,  
Govt. of India and  
Director General,  
Indian Council of  
Medical Research*

## FOREWORD

India and Africa both face similar challenges in health, including commonalities in disease burden, similar demographics and environment, limited resources to run large-scale public health programmes, and a strong desire to attain self-sufficiency in disease management. At a time when emerging economies are increasingly moving away from Western funding models and looking to develop independent capacities, it is critical that India and Africa reach out to each other and understand each other's strengths, priorities and challenges, and devise strategies to jointly develop innovative solutions for our common health problems.

As a direct follow-up to the historic India Africa Forum Summit III held last year under the leadership of the Hon'ble Prime Minister of India, the Indian Council of Medical Research and the Ministry of External Affairs came together to organize the first Indian Africa Health Sciences Meet. Four other Ministries partnered in this effort, making it a unique inter-ministerial initiative. The high-level deliberations at the Meet were attended by cabinet ministers, policy makers, technocrats, industry representatives, and leading scientists and experts from both regions.

*The discussions were focused along three critical areas of partnership:*

1. Training and capacity strengthening of health professionals, researchers, regulators and industry staff
2. Prioritizing diseases and areas for health research collaboration
3. Enhancing pharmaceutical trade and manufacturing capabilities for drugs and diagnostics

The proceedings and outcomes of the meeting have been summarized and synthesized in this report. To further shape and carry forward the vision and key outcomes of the Meet, it is imperative to structure an inter-ministerial platform in India in accordance with the meeting recommendations, and link with the appropriate nodal bodies within the African Union to take the partnership forward. The platform would function as an independent management unit for the projects that will be executed under the partnership.

I thank the President of Mauritius for her enlightening message, and the Hon'ble Cabinet Ministers from India and Africa who graced the meeting with their distinguished presence and enthusiastic participation. I express my gratitude to our partners: the Ministries of Health and Family Welfare, Science and Technology, Commerce and Industry, and Chemicals and Fertilizers, and the International AIDS Vaccine Initiative (IAVI), Wellcome Trust and Pharmexcil for their support. I also thank my colleagues across the various Departments of the Government of India and pan-African agencies for taking the lead in this timely and unique initiative.

I am confident that this landmark Meet has set the tone for a longstanding and mutually beneficial relationship in the area of health sciences, and I look forward to working closely with the key stakeholders and partners across India and Africa towards achieving our goals.

Dr. Soumya Swaminathan



## INTRODUCTION

India and Africa together constitute one-third of humanity. Besides being natural allies with strong historical, cultural and business relations that have stood the test of time, the two regions share similar challenges in health. This includes commonalities in disease burden, limited resources to run large-scale public health programmes, and a shortage of medical and research professionals to deliver innovative healthcare solutions to communities in need.

However, with the rapid advancement and growth in the economies of both regions, there is a strong motivation to enhance existing capacities, accelerate progress towards the Sustainable Development Goals, and attain self-sufficiency in disease management. To realize these objectives in an efficient manner, it is critical for India and African nations to work closely and in tandem with each other, by leveraging complementary strengths, pooling resources together, and collaborating across the spectrum of health.

The landmark India Africa Forum Summit (IAFS) III in October 2015 under the aegis of the Hon'ble Prime Minister of India and with the motto of "reinvigorating partnerships through shared vision" set the tone for collaborative and mutually beneficial partnerships between the two regions. Health was among the key areas identified for furthering collaboration, with India committing significant resources towards enhancement of health capacities in Africa by announcing the Africa Health Fund.

In order to carry forward the strategic vision of IAFS III through concrete partnerships and a well-defined action plan, the Indian Council of Medical Research partnered with the Ministry of External Affairs, Ministry of Health and Family Welfare, Ministry of Science and Technology, Ministry of Commerce and Industry, and Ministry of Chemicals and Fertilizers to organize the first India Africa Health Sciences Meet on September 1-3, 2016 at Vigyan Bhawan in New Delhi.

## OBJECTIVES

The objectives of the India Africa Health Sciences Meet were to:

- UNDERSTAND CURRENT NEEDS, OPPORTUNITIES AND CAPACITIES IN AFRICA WITH RESPECT TO THE HEALTH SCIENCES
- IDENTIFY AND PRIORITIZE DISEASES OF COMMON CONCERN AND KEY AREAS OF FOCUS FOR PARTNERSHIPS
- OUTLINE THE GUIDING PRINCIPLES, OPERATIONAL FRAMEWORKS, EXECUTABLE STRATEGIES AND FINANCIAL MECHANISMS FOR EFFICIENT AND EFFECTIVE IMPLEMENTATION OF THE PARTNERSHIP

*The concept note as conceived is available as **Annexure-A** in this document.*







## PARTICIPATION

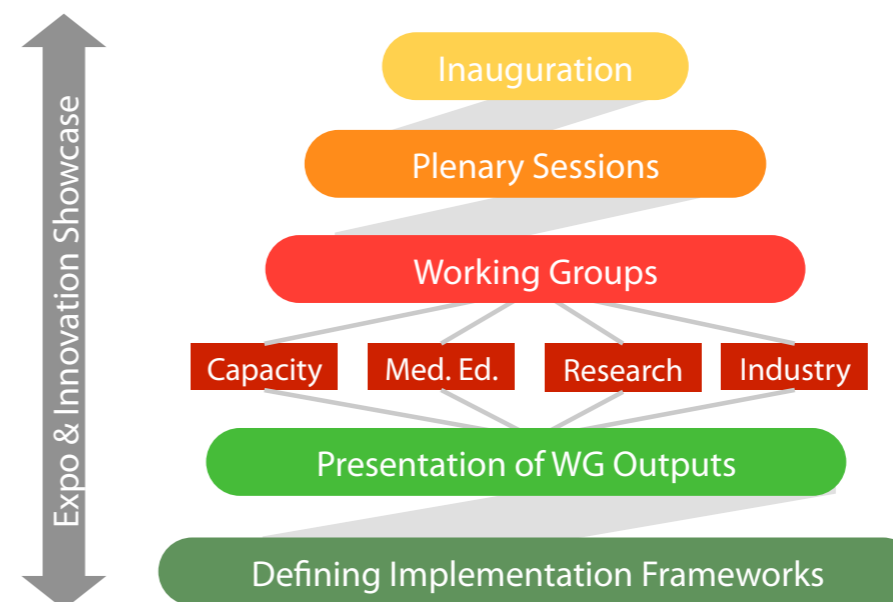
The meeting was attended by Dr. Jitender Singh – Minister of State for Development of the North East Region, Prime Minister's Office, Shri. Jagat Prakash Nadda – Minister of Health and Family Welfare, Dr. Harsh Vardhan – Minister of Science and Technology, Gen. V. K. Singh – Minister of State for External Affairs, Smt. Nirmala Sitharaman – Minister of State (Independent Charge) for Commerce & Industry, Shri. Faggan Singh Kulaste and Smt. Anupriya Patel – Ministers of State for Health and Family Welfare, and the Health Ministers of Congo, The Gambia, Mozambique, Namibia, Nigeria and Zimbabwe. Additionally, Secretaries from the Ministry of External Affairs, Department of Scientific and Industrial Research, Department of AIDS Control, and Department of Health Research, along with Additional/Joint Secretaries of the Department of Health and Family Welfare, Department of Biotechnology, and the Department of Pharmaceuticals participated in the meeting. Correspondingly, senior government functionaries from the Ministry of Health of several countries in Africa and senior representatives from pan-African organizations such as the African Union (AU), the African Academy of Sciences (AAS), and the Alliance for Accelerating Excellence in Science in Africa (AESAs) were in attendance. Additionally, representatives from the diplomatic missions of various African nations in New Delhi actively participated in the deliberations.

In addition, scientific and technical experts from leading research institutions and industrial corporations in the two regions and senior representatives of global development agencies with a significant footprint in India and Africa such as the Bill and Melinda Gates Foundation, the United States Agency for International Development, the Wellcome Trust, the William J. Clinton Foundation, the World Health Organisation, and the International AIDS Vaccine Initiative participated in the meeting.

Over 400 delegates were present during the various sessions of the meeting. A detailed list of some of the key participants is presented in *Annexure-B*.



## MEETING STRUCTURE



The detailed agenda and programme of the meeting is listed in *Annexure-F*.

## THEMES OF DISCUSSION

The discussions were broadly focused around three primary areas of mutual concern:

### CAPACITY BUILDING AND CAPABILITY STRENGTHENING

of health professionals, including doctors, paramedics, nurses, technicians, clinical and biomedical researchers, laboratory managers and a host of other allied professions

### IDENTIFYING DISEASES AND PRIORITIES FOR HEALTH RESEARCH COLLABORATION

between the two regions, as well as outlining the modalities and frameworks for implementation, including leveraging global funding for innovative projects

### EXPLORING LOCAL MANUFACTURING CAPABILITIES FOR DRUGS AND DIAGNOSTICS

in Africa through industrial cooperation with India as well as harmonization of regulatory policies for increased pharmaceutical trade and joint manufacturing initiatives





## EXHIBITION & INNOVATION SHOWCASE

An exhibition of innovative diagnostics, therapeutics, prevention tools, other medical technologies and devices, pharmaceuticals, nutraceuticals, cosmeceuticals, as well as innovative research projects and studies was organized to highlight innovations in health and biotechnology in India. The participation in the exhibition ranged from government departments, research institutions, medical colleges and hospitals, universities and academia, industry stalwarts, and emerging start-ups. It showcased devices, products, posters and charts covering various aspects of the biomedical ecosystem in the country, and was greatly appreciated by the visiting health ministers, diplomats, bureaucrats, delegates, other visitors and media.

*A list of products and technologies displayed in the exhibition is provided in Annexure C.*



## DELIBERATIONS

The following were the key points identified under each theme during the deliberations:

### a) Capacity Building

- Capacity strengthening efforts in the human resources should be largely implemented through provision of scholarships in India for African medical and health professionals, fellowships for emerging scientists, and enhanced training and exchange programmes between leading medical and academic institutions, and regional Centres of Excellence.
- Indian clinical research centres can benefit from the vast experience of African institutions in conducting community outreach and research preparedness activities, formation of cohorts for studying various stages of diseases of concern, coinfections, and outbreak response as well as imbibing global standards and best practices from the African experience of working in resource constrained conditions.
- A key priority for Africa is the development of health infrastructure and clinical facilities, as it would lead to advanced treatment options being made available locally. Infrastructure needs are also required for developing state-of-the-art laboratories and research institutions. Towards this, the African Union Commission is taking a lead to ensure that Centres of Excellence in research are developed in each region in Africa.
- The Science and Technology Research Centre at the African Union Commission identified the need for Indian support in strengthening implementation research and delivery science in Africa, emphasizing that significant challenges are faced by African nations in translational research and in navigating technologies from basic research to product development.
- For capacity strengthening efforts, the relative priority between training medical doctors and clinical staff versus health research scientists and professionals must be clearly and adequately addressed. Regional and national priorities in this regard must also be clarified, so that they can be addressed accordingly.
- Human resources training should be designed keeping in mind the local context, demand, infrastructure and existing capabilities, so that there is no mismatch between training received and facilities available in the country to implement the learning.
- From the several presentations and ensuing discussion on innovative initiatives carried out in the two regions such as BIRAC, InCreD, AESA DELTAS and Grand Challenges Africa, it is clearly evident that mentorship of the next generation of health scientists and researchers is a key aspect for making programmes sustainable and less dependent on individual drive and brilliance.







## b) Research Priorities

- The partnership between the two regions should be symbiotic and reciprocal. India can gain from initiatives taken in Africa on adolescent health, reducing school drop-outs amongst girls, HIV self-testing and voluntary couple counselling and testing, similar to the lessons learnt from Malawi on Option B for preventing mother-to-child transmission of HIV. Africa can gain from India's strong biotechnological research prowess, pharmaceutical manufacturing capabilities, technology transfer strategies, and regulatory and IPR policies. The partnership should be considerate of regional priorities outlined in strategic plans such as the AU Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024).
- Strengthening the Primary Health Care delivery systems has led to a marked improvement in the health indicators in both India and Africa. India's performance in bringing down maternal and child mortality rates is better than the world average. Africa has developed highly successful community outreach, participation, and research preparedness models that India can learn from. Examining the primary health care delivery system of both nations and culling out best practices for replication would be an extremely useful exercise.
- Among key examples of innovative, cross-disciplinary initiatives and experiences presented by both regions were the following:
  1. The Biotechnology Industry Research Assistance Council (BIRAC) set up by the Department of Biotechnology to promote innovation and entrepreneurship in the biotechnology sector, and address critical gaps and strengthen the ecosystem to accelerate lab-to-market time for game changing biomedical products.
  2. The Indian Clinical Researcher Development (InCreD) Programme created for promoting clinical research in India. Medical educational institutions almost exclusively cater to the education and training of young students to become doctors, paramedical staff and other medical professionals, while giving relatively low attention to research. The InCreD programme has established attractive opportunities and fellowship and mentoring programmes for young clinical researchers.
  3. The Alliance for Excellence in Science in Africa (AESAs) that runs various initiatives to develop a large cohort of internationally competitive researchers in Africa, and mentors for the next generation of scientific researchers, in partnership with institutions such as the New Partnership for African Development (NEPAD), African Academy of Sciences (AAS), Wellcome Trust, Bill and Melinda Gates Foundation (BMGF), and the Department for International Development (DfID), UK.
  4. The Grand Challenges Africa initiative of AESAs to promote translation research in the continent.



## c) Industrial Development, Trade and Cooperation

- Dedicated consultation on regulatory alignment and harmonization is required to fast-track the joint efforts in industrial collaboration and trade.
- Formulation drug manufacturing capabilities can be developed in Africa in a phased manner, by first embedding African professionals in Indian industry through internships, especially towards training in Good Manufacturing Practices (GMP), and then establishing joint manufacturing facilities in Africa through supply of Active Pharmaceutical Ingredients (APIs) from India.
- Although India is one of the primary locations for medical tourism from African nations, medications prescribed by Indian doctors are often not available in Africa. There needs to be better harmonization to effectively tackle this problem of access.
- Industry-academia and policy gaps need to be bridged, and decision makers need to inform investors and pharmaceutical companies about the areas that need key R&D focus to have synergized efforts and funding towards new product development.







## RECOMMENDATIONS

### a) Capacity Building

- A substantial number of scholarships and fellowships offered by the Government of India to African students should be allocated for training in the fields of medicine, paramedical, health research, pharmaceutical development and allied fields.
- Options need to be explored for establishing incubators and embedding African researchers in Indian industry in order to facilitate greater technology transfer and building of sustainable capacities and capabilities.
- Training opportunities should also be offered to Indian post-doctoral researchers at African laboratories, to both diffuse and imbibe new learning, especially in areas such as Open Science, ICT-enabled medicine, GIS and geo-medicine, etc.
- The development of women leaders in the health science arena should be an important priority.
- Capacity building partnerships should not only include the expertise available in Indian and African institutions but should be enriched through partnerships with other world-class agencies and institutions with relevant expertise to enhance skills in both regions.

### b) Research Priorities

- Among diseases of mutual concern, the following deserve the highest priority for collaborative efforts:
  - 1. Infectious Diseases:** Malaria, HIV/AIDS, Tuberculosis, Diarrheal Diseases, Hepatitis B and C
  - 2. Neglected Tropical Diseases (NTDs):** Leishmaniasis, Lymphatic Filariasis, Onchocerciasis, Dengue
  - 3. Non-Communicable Diseases (NCDs):** Cancer, Cardiovascular Disease, Diabetes, Haemoglobinopathies
- The focus of collaborative research on infectious diseases should be on developing vaccines (prioritization of antigens, validation of candidates and field trials) and improved diagnostics (point-of-care antigen-based diagnostics), whereas in NTDs and NCDs the research should advance manufacturing of novel drugs and diagnostics.
- The steering committee and working groups should decide the exact nature and scope of collaborative projects for the identified diseases.

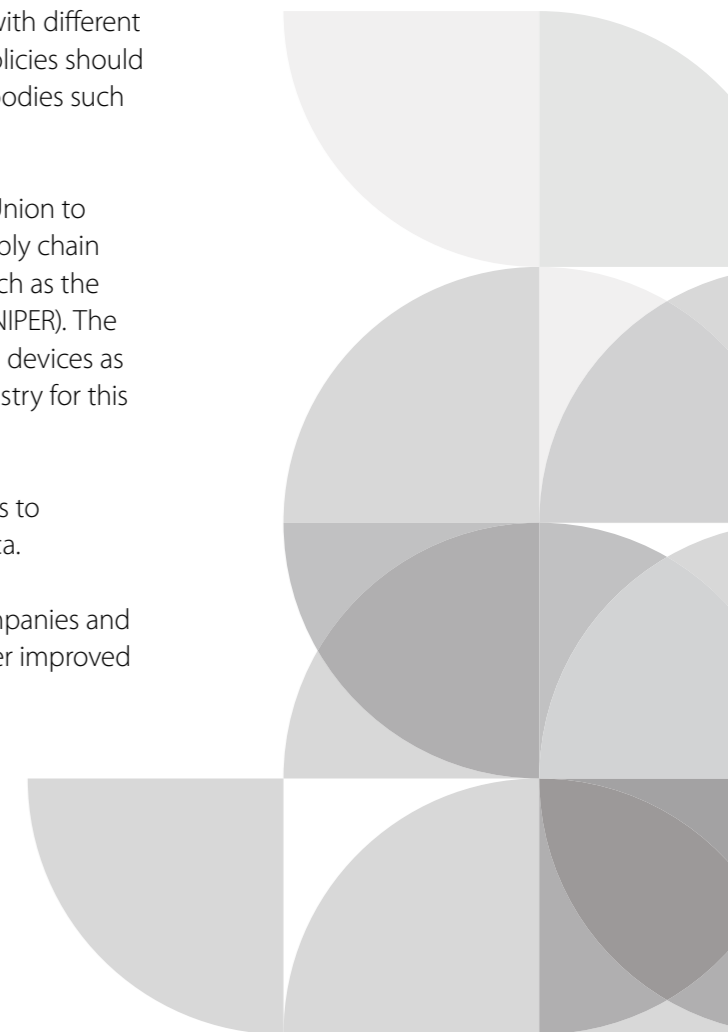


### c) Industrial Development, Trade and Cooperation

- As a first step, a workshop between Indian and African regulators should be organized towards understanding each other's regulatory practices, and discuss adoption of IPR policies.
- To circumvent the need to enter into separate arrangements with different African nations, harmonization and alignment of regulatory policies should be attempted through the African Union, and other regional bodies such as SADAC, EAHRC.
- India should enter into a phased agreement with the African Union to promote local manufacturing facilities in Africa by sharing supply chain and product development knowledge through institutions such as the National Institute of Pharmaceutical Education and Research (NIPER). The next phase of training should include diagnostics and medical devices as well. African professionals should be embedded in Indian industry for this purpose through internship programmes.
- An incentive plan needs to be developed for Indian companies to systematically invest in and set up manufacturing units in Africa.
- An annual industrial convention between pharmaceutical companies and business leaders from both regions must be organized to foster improved trade opportunities and collaboration.

*The key points presented in the Key Presentations are available in **Annexure D**.*

*The Working Group Outputs are available in **Annexure E**.*





# CONCLUSIONS

The following strategic framework was utilized to arrive at the key conclusions of the meeting:

	Research	Human Resources		
		Medical	Health	Pharma/Industry
Steering				
Working Groups				
Human Resource				
Financing				
Framework				
Programs/Processes				
Reporting process				
Training • (Long/Short) • Medical vs. Research • Regulatory and IPR • Industry Internships				

The key conclusions included:

## Broad Principles

- The key principles for the partnership should be as follows:
  - o Reciprocate and collaborate both ways
  - o Leverage resources through innovative multi-sectoral partnerships
  - o Capitalize on regional diversity and complementary strengths
  - o Employ existing systems and platforms, technology and infrastructure wherever possible
  - o Focus on developing research systems and projects that are globally competitive, highly ambitious and have an elevated sense of urgency
- It is imperative to recognize the heterogeneity and regional diversity within Africa in terms of health status, priorities and current capacities, and therefore to steer new initiatives, engage through existing systems and networks that are cognizant of the differences such as the African Union. This will also assist in effective streamlining of regulations and policies.

## Steering and Implementation

- A joint India-Africa steering mechanism should be devised under the aegis of ICMR and AU to manage the partnership.
- From the Indian side, an independent Secretariat should be set up with representation from key ministries and premier institutions to make it a consolidated and singular management unit for the partnership.
- A Governing Council (with representatives from key Ministries and ancillary funding agencies) will be responsible for providing an overview and overall program management and execution.
- Individual Expert Working Groups will manage the following areas:

### 1. Training and Capacity Building

- o Allocate scholarships/fellowships at premier Indian institutions/ companies for promising African candidates in medical and paramedical training, clinical and biomedical research, and pharmaceutical manufacturing and allied disciplines
- o Establish institutional linkages between Indian and African Centres of Excellence for provision of fellowships, and training and exchange programmes, especially in emerging areas of research including genomics, bioinformatics, etc.

### 2. Health Sciences Research and Development

- o Devise mechanisms for collaborative research in identified priorities
- o Establish linkages between scientists and institutions of both regions
- o Issue Call for Proposals on identified priority areas and approve relevant and promising projects that are genuinely collaborative

### 3. Pharmaceutical Manufacturing and Trade

- o Harmonization of regulatory practices in:
  - Drug standards and licensing
  - Intellectual Property Rights
  - Standards and data from clinical trials
- o Internships for African professionals in Indian industry
- o Further bilateral consultations on ease of trade for Indian pharmaceuticals to enhance business in Africa

- There should be a clear distinction between governance and management. While the vision and broad strategies for the partnership will be provided by the identified government departments, nodal agencies and pan-African bodies, the implementation, execution and operational management of the partnership should be structured through professional bodies that will bring executional brilliance to collaborative projects.





## Financing

- With the Africa Health Fund announced by the Hon'ble Prime Minister at IAFS III functioning as the initial seed fund, the Government of India should consider additional mechanisms such as concessional finances, Lines of Credit (LoCs) and grants to strengthen specific areas of the partnership in the future.
- African governments and pan-African agencies are also expected to contribute, and funding from international development agencies is to be leveraged. Towards this end, the Wellcome Trust, the United States Agency for International Development (USAID), and the International AIDS Vaccine Initiative expressed interest in providing funding for areas of common interest.
- Creative funding models such as Public-Private Partnerships (PPP), Corporate Social Responsibility (CSR) funds and other innovative routes should be explored to ensure sustainability.

## Partnership Framework

- Efforts also need to be made to consolidate existing bilateral and multilateral efforts between various Indian ministries and Africa, and bring them together under a single umbrella to synergize partnerships, improve efficiency, and achieve optimal utilization of resources through effective management.
- ICMR and AU being the nodal agencies for managing the partnership must enter into a Memorandum of Understanding (MoU) to outline the objectives, priorities and executional strategies for the partnership.
- The two agencies must also work jointly to develop a mutually agreeable project charter and vision document.
- Advocacy should be taken up as a key component of the partnership, and proportionate resources allocated to it, in order for the broader vision and initiatives to receive adequate attention in society and in public discourse.

## NEXT STEPS

The following are the next steps identified for setting up the framework and executional systems for effective implementation of the partnership in accordance with the key points identified in the conclusions of the meeting:

### a) Partnership set-up

- ICMR to sign a Memorandum of Understanding (MoU) with the African Union Commission to detail the broad objectives, strategies and executional frameworks for the partnership.
- ICMR to establish and lead a joint inter-ministerial platform in collaboration with the Ministry of External Affairs, Ministry of Health and Family Welfare, Ministry of Science and Technology, Ministry of Commerce and Industry, and Ministry of Chemicals and Fertilizers, to consolidate collaborative initiatives across the spectrum of health sciences and steer engagement with the nodal agency (or agencies) identified from the African side.

### b) Governance

- A Governing Council (GC) to be constituted with representatives from key Ministries and ancillary funding agencies to take up the key recommendations and outcomes of the meeting and outline the implementation and execution strategy.
- Joint Working Group (JWG): Under the ICMR-African Union MoU, the Parties shall establish a JWG comprising of the representatives of Ministries Stakeholders, program managers and implementers from both India and Africa. The JWG will be responsible for steering and review of the progress and recommending measures for the smooth operation of the program; and also address issues for joint resolution that the Parties cannot address effectively outside of the JWG.
- For effective management and implementation of the partnership, the Expert Working Groups will be formed in each of the areas identified: Training and Capacity Building; Health Sciences Research and Development; and Pharmaceutical Manufacturing and Trade.

### c) Linkages

- The inter-ministerial platform will establish linkages with key pan-African institutions such as the New Partnership for African Development (NEPAD), the African Scientific Research and Innovation Council (ASRIC) and African Observatory for Science, Technology and Innovation (AOSTI) at the African Union, African Academy of Sciences (AAS), Network of African Science Academies (NASAC), and Alliance for Excellence in Science in Africa (AESAs).







**INDIA AFRICA HEALTH SCIENCES PLATFORM**

**INDIA**

**MIN. OF H&FW**

DHR  
DHFV  
NACO

**MIN. OF S&T**

DBT  
DST  
DSIR

**MIN. OF CHEM. & FRT.**

DOPH.

**INDUSTRY**

CII; FICCI; CIPI

**ACADEMIA**

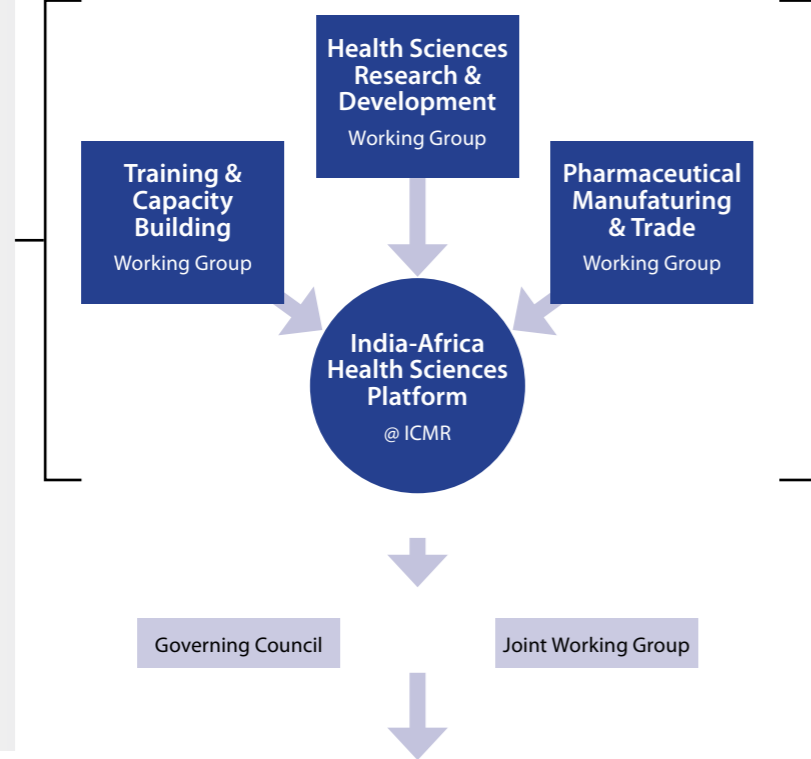
**AFRICA**

**COUNTRIES**

KENYA; MADAGASCAR;  
RWANDA; TANZANIA;  
ETHIOPIA; BURUNDI;  
MALAWI; ZAMBIA;  
MOZAMBIQUE; EQ.  
GUINEA; UGANDA;  
ZIMBABWE; EGYPT;  
SOUTH SUDAN; CONGO;  
GABON;  
THE GAMBIA; GHANA;  
NIGERIA; MALI; TOGO;  
COTE D'IVORIE; SOUTH  
AFRICA; NAMIBIA

**SCIENTIFIC NETWORKS**

AOSTI, NEPAD, AAS,  
AES, NASAC, ASRIC  
EAHRC, SADAC



1. Define agenda & strategic roadmap

2. Convene meetings

3. Raise resources

4. Fund projects

5. Monitor progress & report to stakeholders

Expert Working Groups

**d) Funding**

- ICMR to partner with the Ministry of External Affairs to avail the seed fund of USD 10 million from the Africa Health Fund announced at IAFS III, and collaborate with the Ministry of Health and Family Welfare, Ministry of Science and Technology, Ministry of Commerce and Industry, and Ministry of Chemicals and Fertilizers to consolidate resources for furthering the partnership.
- ICMR to get in touch with the international development agencies such as the Wellcome Trust, USAID and IAVI that expressed interest at the meeting towards supporting the initiatives coming out of it, to explore supportive and complementary funding options.
- For long-term sustainability, in addition to concessional finances, Lines of Credit (LoCs) and grants by the Government of India, other creative financial models including Public-Private Partnerships (PPP), Corporate Social Responsibility, and funding by additional international development agencies and African countries need to be explored.



**e) Framework**

- ICMR to work with the African Union Commission to develop an India Africa Biomedical Research Framework and Charter, and constitute joint working group to effectively navigate and execute joint initiatives in each of the identified sub-areas.
- ICMR to delineate a work plan for the next six months for the inter ministerial platform in order to successfully execute the next steps and set up the partnership.
- Future India Africa Health Sciences Meets to be planned at regular intervals to monitor progress, take corrective measures, and further enhance and strengthen the partnership.



## ANNEXURE-A : Concept Note

The India Africa Forum Summit III (IAFS-III) held in October 2015 ushered in a new era in the historical and longstanding India-Africa relationship. It emphasized renewed and reinvigorated partnerships between the two regions through a shared vision for collectively addressing major global and regional challenges such as sustainable health, clean and renewable energy, human security, and scientific and technological advancement.

The achievement of the vision and goals agreed on at IAFS-III will only be possible by working together closely and developing cutting-edge, innovative, sustainable, and most importantly, regionally relevant solutions. This calls for strategic and multi-faceted collaborations between the leading stakeholders of both regions.

India has committed substantial support (India-Africa Development and Health Funds by the Hon'ble Prime Minister in IAFS-III) towards the development of Africa, with dedicated focus on capacity building, sharing of technical know-how, and global collaborative academic linkages. Although existing efforts such as the CV Raman Fellowship, S&T Ministers Conference, Pan African e-Network, etc. are commendable and invaluable to advancing India and Africa's shared goals, there is a need to further strengthen and leverage our regional synergies to contest shared challenges, especially in the health sciences.

The commonalities between Africa and India in disease epidemiology, including communicable & non-communicable diseases and other health-specific issues, can be well-addressed through collaborative research programs focusing on population-based studies and disease specific product development. Additionally, towards achieving the Sustainable Development Goals (SDG) targets, African nations are particularly motivated to develop local scientific capacities for Africa-led, Africa-centered, and Africa-specific disease prevention and management. This can be achieved by:

- a) Raising the efficacy of health research institutions, laboratories, universities, human resources, and regulatory bodies in addressing the growing burden of disease;
- b) Gaining proficiency in emerging areas of disease research such as bioinformatics, big data analysis, deep sequencing, genomics, proteomics, bioethics, etc.
- c) Establishing manufacturing facilities and capabilities for drugs, diagnostics and medical devices through industry partnerships.

For these reasons, health is particularly suited to be one of the foremost areas for engagement between India and Africa to further our collective vision elucidated at IAFS-III. Therefore, the Indian Council of Medical Research (ICMR) in partnership with the Ministry of External Affairs (MEA), Government

of India, has taken up the task of connecting with various governmental, academic, industry and civil-society institutions across both regions and laying the groundwork for deliberations on successful and sustainable health science collaborations between India and Africa. The effort has culminated in the India Africa Health Sciences Meet – a three-day meeting from September 1-3, 2016 in New Delhi between senior policy makers, technocrats, scientists, medical specialists, researchers and industry leaders from the two regions to deliberate on the future of India-Africa health collaborations.

### Objective

The purpose of the meeting is to help build, strengthen and enhance India-Africa health science collaborations for addressing diseases of common concern and achieving shared health goals across the spectrum of public health, capacity building, disease research and industrial collaborations. We hope to do this by first understanding current capacities, needs and opportunities; then working together to identify key areas of focus and prioritize diseases of common concern; and finally sketching the frameworks for collaborative projects.

The meeting will play a pivotal role in defining the broad contours and overall strategy for innovative India Africa health science collaborations that will help raise the efficacy and proficiency of Africa and India's health research institutions, laboratories, universities, human resources, and policies to jointly addressing the growing burden of disease in the two regions.

The focus of the meeting will be on generating the following outputs:

- I. Identifying and prioritizing key areas and diseases for partnership, with clear executable strategies and institutional mechanisms to ensure successful collaboration across the spectrum of:
  - o Capacity building and human resource development through fellowships, training workshops, exchange programmes, etc. in areas such as:
    - industrial processes including QA/QC
    - disease and biomedical research
    - medical and health professionals' education
    - IPR and regulations
    - allied research areas such as bioengineering
  - o Research collaborations for disease-specific population-based studies and immunobiology studies
  - o Mutual trade opportunities, IPR and regulatory alignment, and joint manufacturing requirements
- II. Defining the framework and guidelines for coordination, management, governance and implementation of collaborative programmes.



## Organizer

ICMR anchors medical and health research in the country by connecting with departments in the Ministries of Health and Family Welfare, and Science and Technology, as well as regulators, industry, research institutions and global development agencies. As understanding the disease and translating disease research into policy and product development is the key to achieving social, business and development goals in healthcare, ICMR is optimally placed to connect with all relevant stakeholders to achieve clarity on key programmes and propel partnership in health sciences as outlined at IAFS-III.

ICMR has partnered with the Ministry of External Affairs, Ministry of Health and Family Welfare, Ministry of Science and Technology, Ministry of Commerce and Industry, Ministry of Chemicals and Fertilizers, Pharmexcil, International AIDS Vaccine Initiative and Wellcome Trust to organize this unique cross-regional and cross-sectoral meeting.

## ANNEXURE-B: Key Participants

### India

#### Government

1. Dr. Jitender Singh – Hon'ble Minister of State for Development of the North East Region
2. Shri. J. P. Nadda – Hon'ble Minister of Health and Family Welfare
3. Dr. Harsh Vardhan – Hon'ble Minister of Science and Technology
4. Gen. V. K. Singh – Hon'ble Minister of State for External Affairs
5. Smt. Nirmala Sitharaman – Hon'ble Minister of State (Independent Charge) for Commerce & Industry
6. Shri. Faggan Singh Kulaste – Hon'ble Minister of State for Health and Family Welfare
7. Smt. Anupriya Patel – Hon'ble Minister of State for Health and Family Welfare
8. Shri. Amar Sinha – Secretary, Ministry of External Affairs
9. Shri. Girish Sahni – Secretary, Department of Scientific and Industrial Research
10. Dr. Soumya Swaminathan – Secretary, Department of Health Research
11. Shri. N.S. Kang – Additional Secretary, Department of AIDS Control
12. Dr. Arun Panda – Additional Secretary, Department of Health and Family Welfare
13. Shri. Sudhanshu Pandey – Joint Secretary, Department of Commerce
14. Shri. Manoj Dwivedi – Joint Secretary, Department of Commerce
15. Dr. Neena Malhotra – Joint Secretary, Ministry of External Affairs
16. Shri. Sundhansh Pant – Joint Secretary, Department of Pharmaceuticals
17. Dr. G.N. Singh – Drugs Controller General of India
18. Shri. K. Nagaraj Naidu – Director and Head of Division, ITPES
19. Dr. Renu Swarup – Managing Director, BIRAC

#### Experts

20. Dr. M.K. Bhan – Former Secretary, Department of Biotechnology
21. Dr. V.M. Katoch – Former Secretary, Department of Health Research
22. Dr. N.K. Ganguly – Former Director General, Indian Council of Medical

#### Research

23. Dr. K.K. Talwar – Former Director, PGIMER, Chandigarh
24. Dr. M.C. Mishra – Director, All India Institute of Medical Sciences
25. Dr. Sachin Chaturvedi – Director General, Research and Information Systems for Developing Countries (RIS)
26. Dr. Gagandeep Kang – Executive Director, Translational Health Sciences and Technology Institute
27. Dr. Arabinda Mitra – Advisor & Head, International Cooperation, Department of Science and Technology

28. Dr. Sanjay Mehendale – Additional Director General, Indian Council of Medical Research
29. Dr. Devi Shetty – Chairman and Director, Narayana Health
30. Dr. Anupam Sibal – Group Medical Director, Apollo Hospitals
31. Prof. K.V. Ramani – Professor, IIM Ahmedabad
32. Prof. Raghavan Varadarajan – Professor, IISc Bangalore
33. Dr. V.K. Vijayan – Former Advisor to DG, ICMR
34. Prof. K. Srinath Reddy – President, PHFI
35. Dr. Shiv Sarin, Director – ILBS, New Delhi
36. Dr. Sudhanshu Vrati – Head, Vaccine and Infectious Disease Research Center, THSTI
37. Dr. Shinjini Bhatnagar - Professor & Head, Paediatric Biology Centre, THSTI
38. Dr Akhil Banerjee – Professor, NII
39. Dr Shiv Kumar Sarin – Director, Institute of Liver and Biliary Sciences
40. Prof. Seyed E Hasnain – Professor, Biological Sciences, IIT Delhi
41. Dr. D.N. Rao – Head, Department of Biochemistry, AIIMS, New Delhi
42. Dr. Nikhil Tandon – Professor, Department of Endocrinology and Metabolism, AIIMS, New Delhi
43. Dr. P.L. Joshi – Former Director, National Vector Borne Disease Control Programme, Thiruvananthapuram
44. Prof. Rajesh Kumar – Head, School of Public Health, PGIMER, Chandigarh
45. Dr. Virender Chauhan – Former Director, ICGEB
46. Prof. Raghavendra Gadagkar – President, INSA
47. Dr. S. Mahalingam – Associate Professor, Department of Biotechnology, IIT Madras

### Industry

48. Mr. Madan Mohan Reddy – Chairman, Pharmexcil
49. Mr. Dinesh Dua – Vice Chairman, Pharmexcil
50. Dr. P.V. Appaji – Director General, Pharmexcil
51. Dr. Gurpreet Sandhu – Managing Director, Reva Pharmachem
52. Mr. Mahidhwaj Sisodia – Vice President: International Business, Cadila Pharmaceuticals
53. Mr. Vishal Gandhi – CEO, Biorx Venture Advisors Pvt. Ltd
54. Mr. Sanjay Shah - Sr. General Manager, Marketing & Business Dev., AKORN India
55. Mr. Alok Upadhyaya - Vice-President Exports, Associated Biotech
56. Dr. Jai Prakash - Senior Principal Scientific Officer, Indian Pharmacopoeia Commission
57. Mr. Sumit Agarwal – Director, Axa Parenterals
58. Mr. Uday Bhaskar - Asst. Executive Director, Pharmexcil
59. Dr. Dinesh Pendharkar – Oncologist
60. Mr. Rishi Herenz - Head Business Development, GMR Group
61. Mr. Shiv Narayan Mishra – Manager, Claris Injectables Ltd.

## Africa

### Government and Pan-African Agencies

1. H.E. Dr. Ameenah Gurib-Fakim – Hon'ble President of the Republic of Mauritius
2. H.E. Mr. Omar Sey – Hon'ble Minister of Health, Islamic Republic of the Gambia
3. H.E. Mrs. Jacqueline Lydia Mikolo – Hon'ble Minister of Health and Population, Republic of Congo
4. H.E. Dr. Nazira Vali Abdula – Hon'ble Minister of Health, Republic of Mozambique
5. H.E. Dr. Bernard S. Haufiku – Hon'ble Minister of Health and Social Services, Republic of Namibia
6. H.E. Mr. Osagie Emmanuel Ehanire – Hon'ble Minister of State for Health, Federal Republic of Nigeria
7. H.E. Mr. Aldrin Musiiwa – Hon'ble Deputy Minister of Health and Child Care, Republic of Zimbabwe
8. H.E. Mr. Abel Zafimahatratra – Member of National Assembly, Madagascar
9. Dr. Mohammed Kyari – Senior Scientific Officer, African Union Scientific, Technical and Research Commission (AU/STRC)
10. Dr. Philippe Kuhutama Mawoko – Executive Secretary, African Observatory for Science, Technology and Innovation (AOSTI), African Union Commission
11. Dr. Thomas Kariuki – Director, Alliance for Accelerating Excellence in Science in Africa (AESIA)
12. Dr. Amadou Moctar Dieye – Director of Pharmacy and Medicine, Republic of Senegal
13. Dr. Diawara Bassalia – Director of Training and Research, Ministry of Health and AIDS Control, Cote d'Ivoire
14. Mr. Ebrima Bah – Director of Health Research, Ministry of Health and Social Welfare, Islamic Republic of the Gambia
15. Dr. Francisco Aleluia Lopes Junior – Inspector General of Health Activities, Ministry of Health, Republic of Guinea-Bissau
16. Dr. Ibrahima Seck – Technical Advisor, Ministry of Health, Republic of Senegal
17. Dr. Mamadou Kone – Deputy Director of Cabinet, Ministry of Health and AIDS Control, Cote d'Ivoire
18. Dr. Quinhas Fernandes – Deputy National Director of Public Health, Mozambique
19. Dr. Hudu Mogtari – Chief Executive Officer, Food and Drugs Authority, Ghana

### Experts

20. Dr. Gibson Kibiki – Executive Secretary, East African Health Research Commission (EAHRC)
21. Dr. Gordon Awandare – Director, West African Centre for Cell Biology of Infectious Pathogens (WACCBIP)
22. Dr. John Amuasi – Executive Director, African Research Network for Neglected Tropical Diseases (ARNTD)



23. Dr. Abdoulaye Djimde – Head, Molecular Epidemiology at MRTC, University of Bamako
24. Prof. Abimiku Al'ashle – Executive Director, IRCE, Institute of Human Virology, Nigeria
25. Dr. Clarisse Musanabaganwa – Director of MRC, Rwanda Biomedical Center
26. Dr. Etienne Karita – Country Director, Project San Francisco, Rwanda
27. Dr. Evans Inyangala Amukoye – Chief Research Officer, KEMRI
28. Dr. Evelyn Gitau, Programme Manager, African Academy of Sciences
29. Dr. Harriet Nabudere – Principal Research Scientist, Uganda National Health Research Organization
30. Dr. Marianne Mureithi – Chief Research Scientist, Kenya AIDS Vaccine Research Initiative – Institute of Clinical Research (KAVI-ICR)
31. Dr. Pauline Byakika – Epidemiologist, Makerere University College of Health Sciences
32. Dr. Stephen Mshana – Deputy Vice Chancellor, Catholic University of Health and Allied Sciences, Tanzania
33. Dr. Taye Tolera Balcha – Director General, Armauer Hansen Research Institute
34. Dr. Vernon Mochache – Head of Research, National AIDS Control Council, Kenya
35. Dr. Vololontiana Hanta Marie Danielle – Professor of Internal Medicine, University of Antananrivo, Madagascar
36. Dr. William Kilembe – Project Director, Zambia-Emory HIV Research Project (ZEHRP)

#### Industry

37. Dr. Hany Mashaal – General Manager, Sun Pharma Egypt
38. Dr. Mohamed Mabrouk – Chief Executive Officer, Pharmed Healthcare Egypt
39. Dr. Simon Agwale – Chief Executive Officer, Innovative Biotech Ltd.

#### International Development Agencies

1. Dr. Abha Saxena – Coordinator, Global Health Ethics, WHO, Geneva
2. Dr. Benny Kottiri – Research Division Chief, Office of HIV/AIDS, United States Agency for International Development (USAID)
3. Dr. Mark Feinberg – President and Chief Executive Officer, International AIDS Vaccine Initiative (IAVI)
4. Dr. Anatoli Kamali – Africa Regional Director, IAVI
5. Dr. Rajat Goyal – India Country Director, IAVI
6. Dr. Simon Kay – Head, International Operations, Wellcome Trust
7. Dr. Shahid Jameel – Chief Executive Officer, Wellcome Trust-DBT India Alliance

## ANNEXURE-C: Exhibitors

NO.	NAME OF TECHNOLOGY	INSTITUTE
1	TransNANO Transport Incubator	AVI Healthcare Pvt Ltd
2	The Bempu Hypothermia Alert Bracelet for Newborns	Bempu Health Private Limited, Bangalore
3	Portable Baby warmer	Phoenix Medical Systems, Chennai
4	TBCCTV - Real time drug adherence monitoring for tuberculosis patients	Embryyo Technologies Private Limited
5	Brilliance + Smartcane	Phoenix Medical Systems, Chennai
6	Home Based Speech Therapy Devices for Speech Impaired adults and children	Innoflaps Remedy Pvt. Ltd., New Delhi
7	1. Low Cost Safety Syringe 2. Low Cost Disposable Laparoscopy Trocars 3. Disposable Skin Staplers	ALFA CORPUSCLES
8	Antibiogram device	National Hub for Healthcare Innovation Development, Anna University
9	A affordable, connected, Reliable smart Hemo dialysis system for Home and rural healthcare centers.	RenalyX Health systems Pvt Ltd, Bangalore
10	Wheelchair recliner	King George Medical University, Lucknow
11	Closed loop automatic blood pressure control system	Postgraduate Institute of Medical Education and Research, Chandigarh
12	Infusion pre-alert alarm + Cricoid pressure sensor	Postgraduate Institute of Medical Education and Research, Chandigarh
13	Design and Development of Chest Splint for RDS Neonate	JSS Medical College and Hospital, Mysore
14	Zerodor: Low cost, low maintenance, no consumable, chemical free waterless urinal technology	Indian Institute of Technology, Delhi
15	Non invasive blood glucose monitoring system based on photoacoustic spectroscopy	Indian Institute of Technology, Kharagpur
16	Low cost laterite based filter for arsenic removal	Indian Institute of Technology, Kharagpur
17	A smartphone microscope for point-of-care diagnostics	Indian Institute of Technology, Mumbai
18	Suchek – Affordable Glucometer and Strips for the same.	Indian Institute of Technology, Mumbai + Biosense
19	Touchb: Non invasive hemoglobin estimation device	Indian Institute of Technology, Mumbai + Biosense
20	Affordable standing wheelchair	Indian Institute of Technology, Madras
21	Add on for outdoor mobility	Indian Institute of Technology, Madras
22	LIMO + Intraosseous Device	School of International Biodesign, New Delhi
23	Patient Transfer Sheet + Brun	School of International Biodesign, New Delhi
24	Windmill + Sohum	School of International Biodesign, New Delhi

25	An affordable miniature flow analyser, for various healthcare and non-healthcare applications, including immune state monitoring in infectious diseases e.g. CD4 cell counting in HIV/AIDS, at point-of-care locations.	Centre for Cellular and Molecular Platforms, Bangalore
26	Novel Integrated Newborn Resuscitation Solution to Empower Front-line Health Workers to Resuscitate Newborns Effectively	Windmill Health Tech. Pvt Ltd
27	A point of Care (POC) device for detection of antibiotic sensitivity of uro-pathogens in human urine.	Xcellence in Biological Innovations and Technologies, Hyderabad
28	Sohum: A novel device to screen newborns for hearing loss in resource poor settings to prevent speech loss.	Sohum Innovation lab, Bangalore
29	Microfluidics based On-chip Real-Time PCR Device for Neonatal and Maternal / High-throughput Optofluidic Microscope	Shanmukha Innovations Private Limited, Bangalore
30	AINA device to measure blood glucose, HbA1C, lipids (HDL, LDL, TrG), Creatinine and Haemoglobin	Janacare Solutions Pvt. Ltd.
31	World's Most Affordable, long life Defibrillator that is Battery less, Hand Cranked, Rugged with reusable paddles. 1x1 feet prototype	Jeevtronics Pvt Ltd
32	Electrochemical Technology for Point-of-care Biosensors	Indian Institute of Science, Bangalore
33	MIRCaM-mobile intelligent remote cardiac monitoring	Cardiac Design Labs
34	Non Invasive Glucometer Using NIR Spectrometry	NDRF (IEI) Institute of Engineers Bangalore.& Indus Biomedical devices Mysore
35	A STEMI System of Care for Low and Middle Income Countries: The Tamilnadu STEMI Model using STEMI Technology	STEMI INDIA, Coimbatore
36	Smart Phone Compatible Video Laryngoscope	Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow
37	M Health Technology based Spirometry + eConsultation platform + tele-evidence programme	Postgraduate Institute of Medical Education and Research, Chandigarh
38	Probabl Hepatitis B Vaccine	Bharat Biotech, Hyderabad
39	Typhi Vaccine	Bharat Biotech, Hyderabad
40	Rota Virus	Bharat Biotech, Hyderabad
41	Development of Killed Vaccine for JE	Bharat Biotech, Hyderabad
42	Development and commercial manufacturing of ELISA based diagnostic test for Japanese Encephalitis Virus (JEV) infection in Mosquito samples.	Zydus Cadila, Ahmedabad
43	Zydus Cadila – A commitment to Accessible Innovation.	Zydus Cadila, Ahmedabad
44	Development and commercial manufacturing of ELISA based diagnostic test for Chandipura virus (CHPV) infection in human serum samples.	Zydus Cadila, Ahmedabad
45	Development and commercial manufacturing of ELISA based diagnostic test for Kyansur Forest Disease virus (KFDV) infection in human serum samples.	Zydus Cadila, Ahmedabad

46	Development and commercial manufacturing of ELISA based diagnostic test for Hepatitis E virus (HEV) infection in human serum samples.	Zydus Cadila, Ahmedabad
47	Development and commercial manufacturing of ELISA based diagnostic test for Crimean Congo hemorrhagic fever virus (CCHFV) infection in Bovine and Sheep/Goat.	Zydus Cadila, Ahmedabad
48	Andhra Pradesh MedTech Zone	Andhra Pradesh MedTech Zone
49	ICMR Network	Indian Council of Medical Research (ICMR)
50	MTAB	Indian Council of Medical Research (ICMR)
51	Personal Cooling Garment	National Institute of Occupational Health, Ahmedabad
52	Double (Iron and Iodine) fortified Edible salt (DFS)	National Institute of Nutrition, Jamai Osmania Post, Hyderabad
53	Development of PCR Based method to Detect food Borne Pathogens	National Institute of Nutrition, Jamai Osmania Post, Hyderabad
54	RDB kit for screening for common Indian b-thalassemia mutations and abnormal hemoglobins (PPT)	National Institute of Immunohaematology, Mumbai
55	PrasavGraph: an android based e-partograph	Indian Council of Medical Research
56	AV Magnivisualizer	Institute of Cytology and Preventive Oncology
57	Bacillus thuringiensis var. israelensis (VCRC B17) (MTCC 5596), a mosquitocidal biopesticide	Vector Control Research Centre, Puducherry
58	Non-invasive Procedure for Kala-Zar Detection	National Jalma Institute of Leprosy & Other Mycobacterial Diseases, Agra
59	Solar Portable Culture Incubator	ICMR, New Delhi
60	Assy For detection of Tubercle Bacilli	ICMR, New Delhi
61	labike and suitcase model	Accuster Technologies Pvt. Ltd., New Delhi
62	Robotics	Apollo Hospitals Group,Indraprastha Apollo Hospitals, New Delhi
63	Precision Oncology	Apollo Hospitals Group,Indraprastha Apollo Hospitals, New Delhi
64	Surgical Robot Trainer	Indian Institute of Technology, Madras
65	Medical Treatment: Nox Wound Dressing	Bhabha Atomic Research Centre
66	Nisargruna Biogas Technology	Bhabha Atomic Research Centre
67	4. ECoG transfer 5. Above Knee Prosthesis	Defence Bioengineering and Electromedical Laboratory
68	1. PPVPM 2. Telemedicine System 3. Remote Physiological System Cochlear Implant	Defence Bioengineering and Electromedical Laboratory
69	Indo Africa Program	Department pf Science and Technology
70	Truenat® H1N1	bigtec Private Limited, Bangalore
71	Truelab microPCR platform	bigtec Private Limited, Bangalore
72	Streptokinase: CSIR's four generations of clot busters	Council of Scientific & Industrial Research (CSIR)
73	Indigenous dental implant system	Council of Scientific & Industrial Research (CSIR)
74	Risorine: A new drug formulation for treatment of tuberculosis	Council of Scientific & Industrial Research (CSIR)



## ANNEXURE-D: Key Presentations

Dr. Mohammed Kyari >

### Africa Health Strategy 2016-2030



- 1st strategy 2007-2015
- Integrating health policy instrument, research and innovation
- Existing continental and global health policy and commitment and instruments
- Advocates for and promotes Member States to prioritize and invest in specific social determinants of health
- Strengthening health systems
- Quality, affordable, accessible, health system
- Accountability, monitoring and evaluations

### Pharmaceutical Manufacturing Plan for Africa



- Triggered by commitment of African Government on attaining goal number 8<sup>th</sup> of the MDG to increase proportion of the population with access to affordable essential drugs on sustainable basis
- Studies to establish Africa's local pharmaceutical production capacity
- Business plan developed by AUC-UNIDO in 2012. This is premised on STISA 2024 that industrial development of pharmaceutical sector will contribute to improved health sector

between 1975-97 out of 1223 new medicines only 11 target tropical disease

Dr. Devi Shetty >

### Why is Surgery Important

1. Deaths from HIV/AIDS 1.46 million, Tuberculosis 1.2 million, Malaria 1.17 million, lack of surgery 16.9 million (32.6% of all deaths)
2. 5 billion people do not have access to safe, affordable anaesthesia and surgery.
3. 143 million additional surgeries needed in low and middle income countries. (LMIC)
4. Out of 313 million surgeries performed currently, only 6% happens in poorest 37.3% of world population resides.
5. India needs 65 million surgeries per year while only 26 million are performed.
6. Central Sub-Saharan Africa needs 6 million surgeries and the unmet demand is 4.2 million surgeries.

Source : Lancet Commission on Global Surgery 2030

### IMR / MMR can't come down due to vacancy

81.2% - Specialists in CHCs

74.9% - Surgeons

65% - Obstetrician and Gynecologists

79.6% - Physicians

79.8% - Pediatricians

Source: Rural Health Statistics 2018. MoHPW

Dr. N.K. Ganguly >

## Global Trends In Supply And Demand



U.S. DEPARTMENT OF LABOR

BUREAU OF LABOR STATISTICS  
TABLE 2. FASTEST GROWING OCCUPATIONS, 2004-14

1	31-1011 Home health aides
2	15-1081 Network systems and data communications analysts
3	31-9092 Medical assistants
4	29-1071 Physician assistants
6	15-1031 Computer software engineers, applications
8	31-2021 Physical therapist assistants
7	29-2021 Dental hygienists
8	15-1032 Computer software engineers, systems software
9	31-9091 Dental assistants
10	39-9021 Personal and home care aides
11	15-1071 Network and computer systems administrators
12	15-1061 Database administrators
13	29-1123 Physical therapists
14	19-4092 Forensic science technicians
15	29-2056 Veterinary technologists and technicians
16	29-2032 Diagnostic medical sonographers
17	31-2022 Physical therapist aides
18	31-2011 Occupational therapist assistants
19	19-1042 Medical scientists, except epidemiologists
20	29-1122 Occupational therapists

15 of the 20 fastest growing occupations in the USA are in Health Care

## Steps to Ensure adequate supply of new vaccines

- **At the level of Vaccine giants**
  - Engage in technology transfers to local players in lieu of committed volumes, especially for states with higher disease burden
  - Strategise to optimize cost of vaccines including combinations of manufacturing & packaging innovations
- **At the level of Government**
  - Provide incentives to manufacturers through larger committed volumes & tax/duty breaks (for MNC manufacturers etc.)
- **Other strategies**
  - New donor funding (similar to GAVI co-financing model) for new vaccines (both R&D and delivery)

Modified from Source: Transforming India's vaccine market, McKinsey, 2012

## Global University For Medical, Nursing And Paramedical Education

- Global shortage 12.9 million health workers – WHO
- India - 3 million doctors, 6 million nurses by 2034 – PwC
- \$ 50 million, \$1/2 million, license, land, location
- Virtual university for Asia, Africa and Latin America
- Curriculum 80%-20%, global experts
- Online theory with animation and hands on training
- Tran- border license to practice
- Maastricht university or University of Minnesota as mentor
- University or driving school?

## Way forward:

- Improve disease surveillance to inform manufacturers – strain circulation, change in serotypes etc.
- Regulations are archaic: need immediate attention
- Fast track clearance for vaccines for outbreaks with associated policy initiatives for their uptake
- With increasing burden of NCDs India should look into vaccines for cancers, therapeutic vaccines &



Dr. Mahidhwaj Sisodia &gt;



## Challenges / Changes Required for Advancement of Industrialisation in Africa

- Adequate confidence and comfort to be given to foreign investor whether its about its about joint venture or any other investment.
- Easy access to finance and incentive.
- Certainty and consistency in Government policies. More predicable regulatory framework
- Creating environment of building local capabilities in terms of qualified manpower.

7



## Cadila Pharma's presence in Africa

- Cadila has its presence in all regions of African continent either through its subsidiaries, manpower, trade associates and partners.
- Cadila has its subsidiaries in Nigeria and Kenya.
- Its manufacturing plants are approved by almost all African health Authorities and products are approved as well.
- Catering to healthcare needs in public as well as private sector.
- Clinical research projects.
- Local manufacturing facilities.

8

Dr. Thomas Kariuki &gt;

## Strengthening India-Africa Biomedical collaborations

### Priority issues to take forward:

---

- Targeting gaps in the research ecosystem
  - Strengthen institutions that have weak institutional capacity to manage research (e.g. through policy, standards such as GFGP)
- Evaluating research capacity strengthening
  - Including high level institutional buy-in from African and non-African partners



## Potential concrete steps to create powerful partnerships

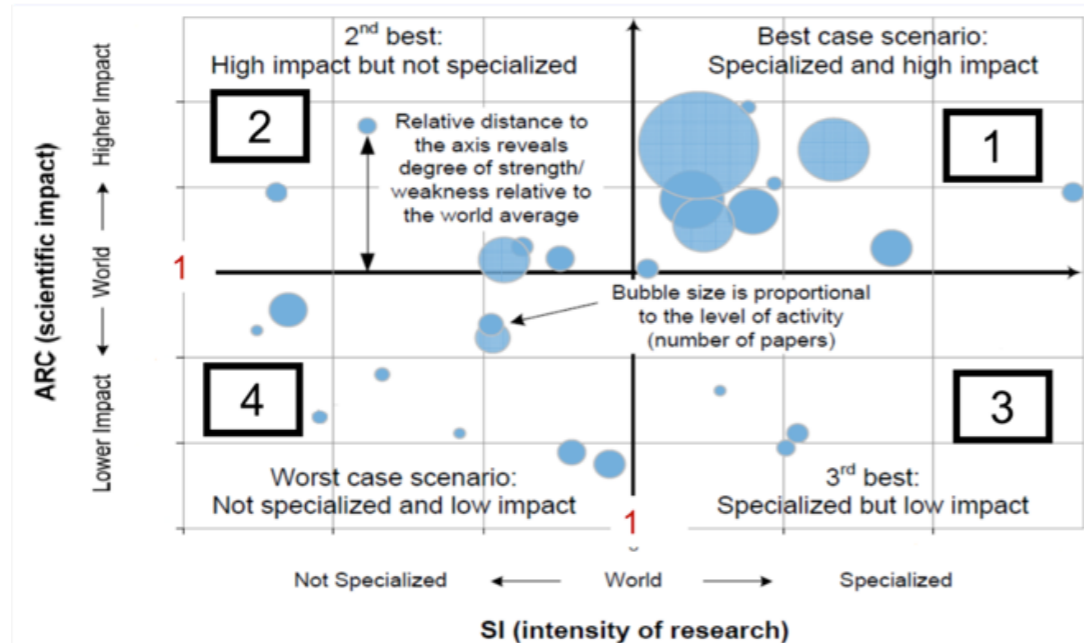
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- Start new collaborations to strengthen researcher links e.g. AESA and India Alliance
- Set high expectations to our researchers – Nobel Prize standards?
- Share best practices in STEM, R&D, innovation, ethics, regulation etc.
- Engage with and advocate for investment by other partners and governments



Dr. Philippe Mawoko >

### Let data speak for the scientific production of the AU in Health sciences: Positional Analysis

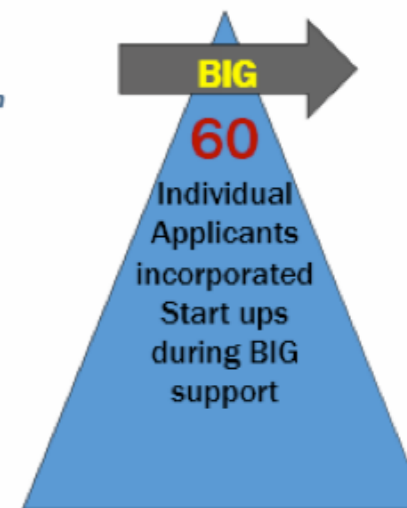


Dr. Renu Swarup >

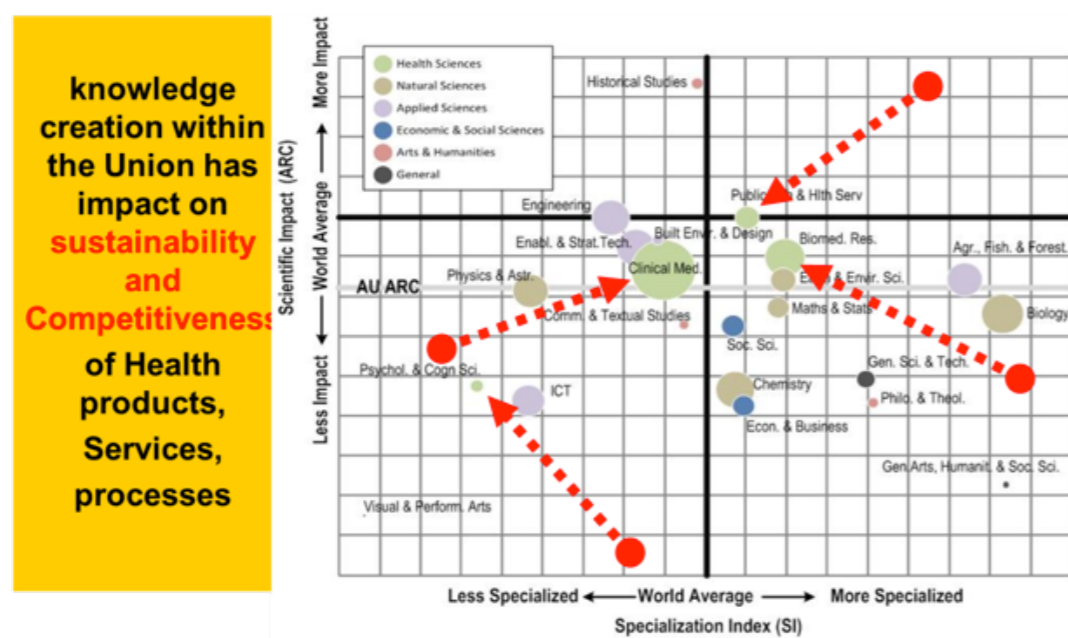
### Energising Startups



- ❖ Nos. of Total Calls Launched – 9
- ❖ Total Applicants – 1430 till 8<sup>th</sup> call
- ❖ Selected Proposals – 192 up to 8<sup>th</sup> call i.e. 13.4% Selection rate
- ❖ No. of Completed Projects till June, 2016 – 51
- ❖ No. of Ongoing Projects – 137 including 8<sup>th</sup> call
- ❖ 44 Women Entrepreneurs supported
- ❖ 111 start-ups supported
- ❖ Total Funding – INR 58.82 crores
- ❖ Employment support to 572 skilled resources
- ❖ 62 IPs filed
- ❖ 44 Grantees availed follow-on funds. INR 84.61 crores generated



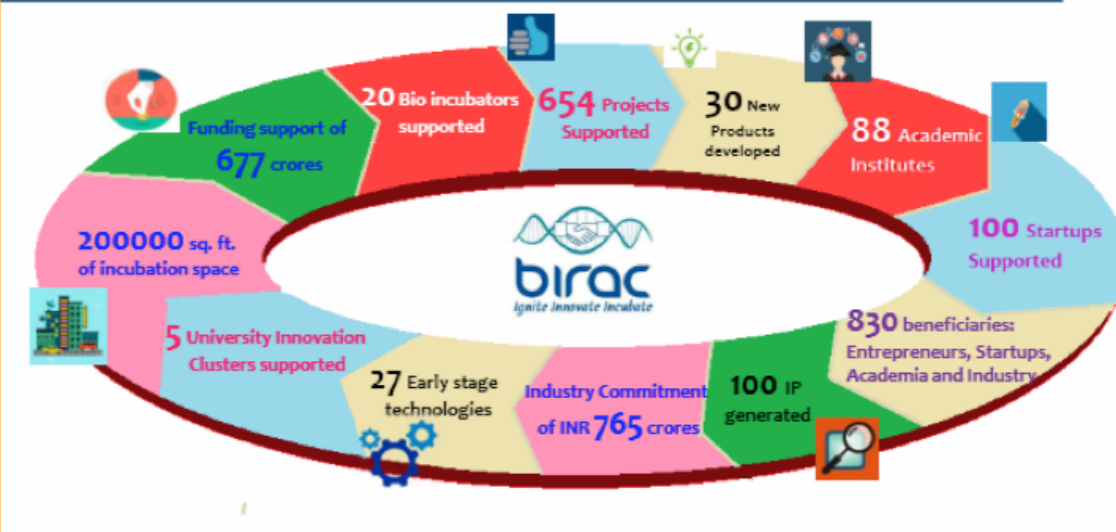
### Strength and weakness of the African Union by scientific field, 2005/10 Case of scientific production in Health Sciences



knowledge creation within the Union has impact on sustainability and Competitiveness of Health products, Services, processes

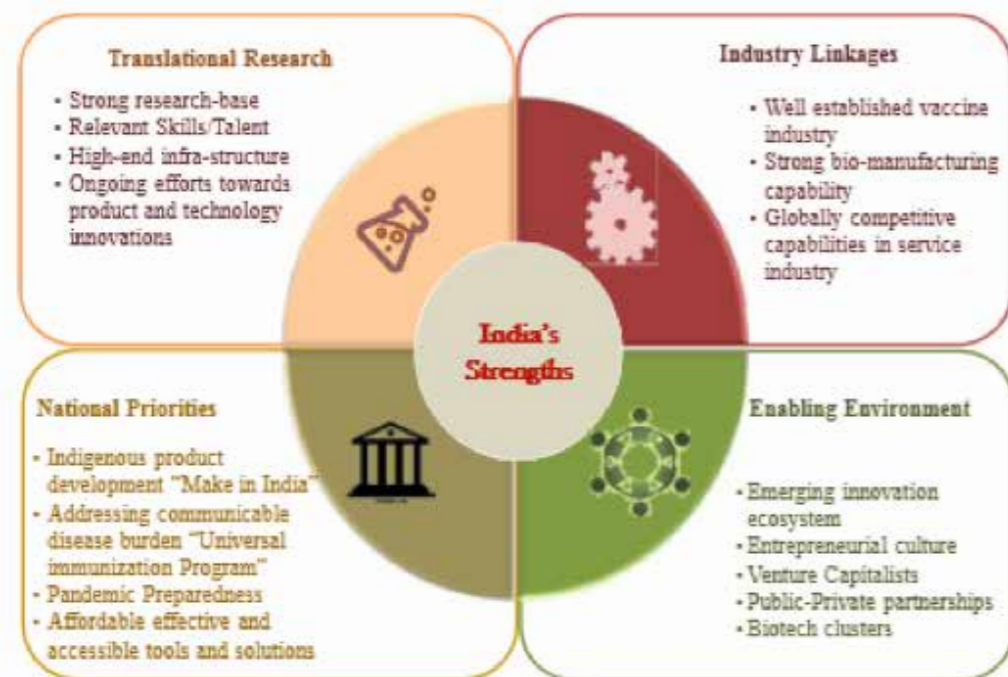
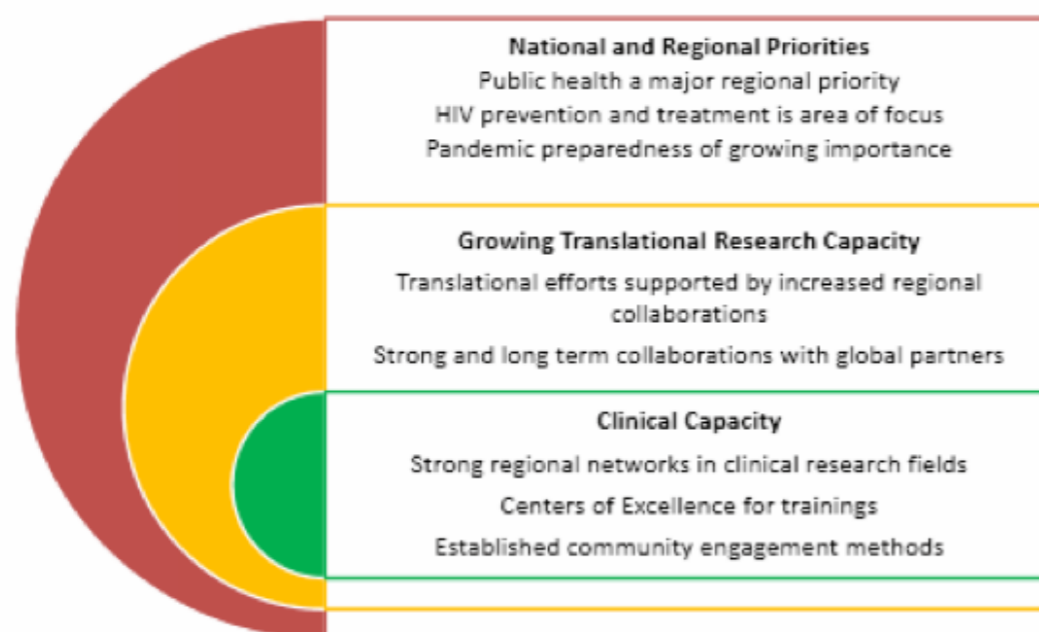
Source: www.aosti.org

### BIRAC's Impact





Dr. Mark Feinberg &gt;

**What can India offer?****What can Africa offer?**

Dr. Simon Kay &gt;

**Why is any of this relevant for this meeting?****What next?**

- Agree goal and outcomes over 10 years.
- Clarity on goals and recommend these are clarified in working groups.
- Identify a strong African partner – I will recommend AESA as that partner.
- Funds to be committed on both African and Indian sides and not just reliant on external funders.
- Establish small steering team.
- Can provide some mobility funds.

**Recognise the wider intangible benefits**

- Deepens cultural understanding;
  - offers greater diversity in tackling intractable challenges
  - and shares and leverages resources
- Collaboration depends on serendipity, personal chemistry and mutually beneficial collaborations. Meetings like this one; and further catalytic meetings and encounters will enable a flourishing India Africa research ecosystem.



Dr. Gagandeep Kang &gt;

## Early Career Medical Researcher Awards at THSTI

- Established in 2015
- Identify outstanding young medical researchers
- Goal is to bridge epidemiology and biomedical research to develop interventions and solutions for maternal and child health



## The Indian Clinical Researcher Development Program

- Aimed at Assistant Professors in medical colleges
- Support to change the ecosystem
- Mix of contact courses to develop skills and online teaching for content delivery
- Rigorous assessment
- Strong mentoring (including international physician-scientists)
- Continued support for research project in home institution
- Networking of InCreD fellows and high level engagement of institutional leadership for support

Dr. M.C. Mishra &gt;

## Trinity of Mission

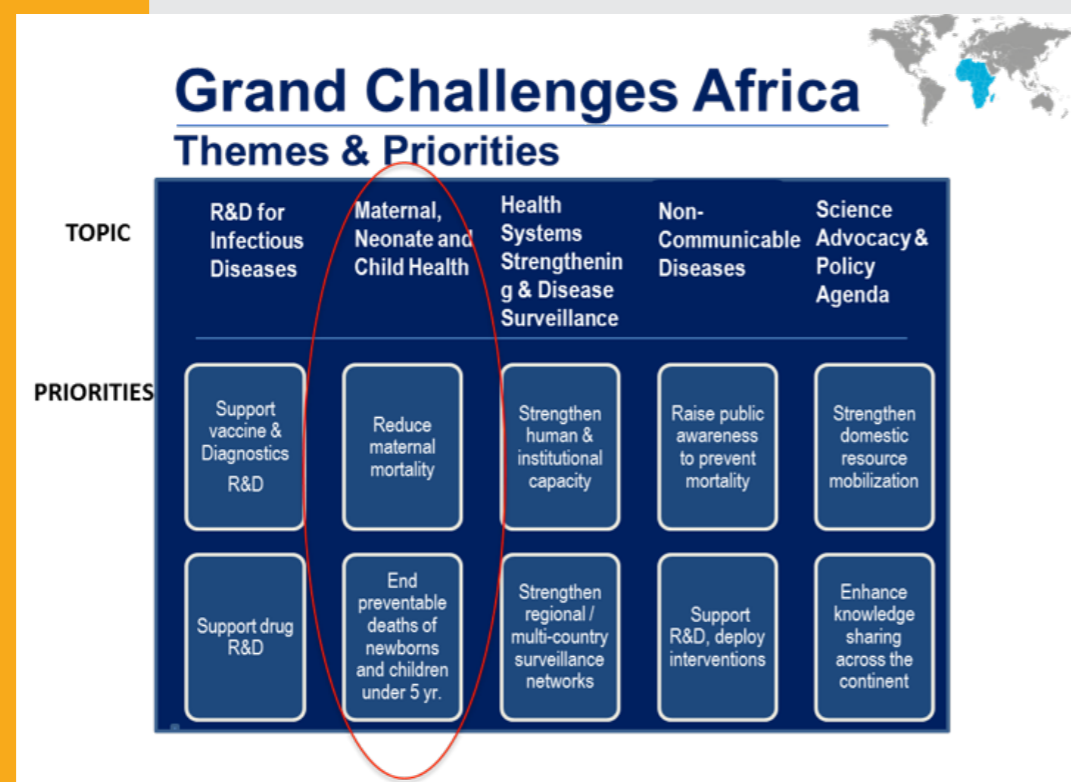


## New Academic Courses Starting 2015-16 = 11

	Course	Specialty	Department/Centre
1.	D.M.	Paediatric Pulmonology & Int. Care	Paediatrics
2.	D.M.	Paediatric Nephrology	Paediatrics
3.	D.M.	Interventional Cardiac Radiology	Cardiac Radiology
4.	D.M.	Therapeutic Nuclear Medicine	Nuclear Medicine
5.	D.M.	Infectious Disease	Medicine & Microbiology
6.	D.M.	Addiction Psychiatry	Psychiatry & NDDTC
7.	D.M.	Critical Care Medicine	Anaesthesia
8.	D.M.	Oncoanaesthesia	BRAIRCH
9.	M.Ch.	Trauma Surgery & Critical Care	JPN Apex Trauma Centre
10.	M.Ch.	Plastic & Reconstructive Surgery	JPN Apex Trauma Centre
11.	M.D.	Palliative Medicine	Dr.BRAIRCH



Dr. Evelyn Gitau &gt;



## Grand Challenges Africa

### Examples of what we will fund

#### Novel diagnostics to enable rapid LMIC predictors in the first month of life and in pregnant women for:

- Neonatal sepsis (ideally bacteria/virus specific and even with AMR patterns);
- Common metabolic disruptors/predictors such as glucose, acidosis, electrolytes;
- Predictors of occurrence and severity of encephalopathies in Africa;
- Contributors to common problems that afford a treatment/prevention option like ABO/Rh blood typing, apnea/oxygen etc.
- Measures of fetal and sickle hemoglobin
- Wearable sensors for Heart Rate /Respiratory Rate/BP/EEG/Temperature etc.

#### Precision medicine for public health

- Applying new technologies to identify microbes and other exposures in Africa that may increase susceptibility to non communicable diseases (cancer, cardiovascular diseases etc.)

#### Policy and Advocacy

- Innovative ways of encouraging the policy implementation of recommendations made by technical working groups, steering committees etc

## ANNEXURE-E: Working Group Outputs

### WORKING GROUP 1: SESSION 1

### Disease Priority and Research Areas of Focus

#### Outcomes of Discussions

##### 1. Prioritization of diseases and themes

- Infectious Diseases (the major ones)
  - Priority diseases – Malaria, HIV/AIDS, Tuberculosis, Diarrheal diseases, Hepatitis B/C
  - Research themes – Vaccines and Diagnostics
- Neglected Tropical Diseases (NTDs)
  - Priority diseases – Leishmaniasis, Lymphatic filariasis, Onchocerciasis, Dengue
  - Research themes – Diagnostics and Drug development
- Non-communicable Diseases (NCDs)
  - Priority diseases – Cancer, Cardiovascular, Diabetes, Hemoglobinopathies
  - Research themes – Diagnostics and Drug development
- Cross-cutting foci (to be considered in design of studies)
  - Malnutrition
  - One health concept (infections in humans and animals)
  - Epidemiology – cohort studies

## Outcomes of Discussions

### 2. Research and interventions – Four working groups proposed

#### Group 1a. Infectious Diseases – Vaccines (ID-Vaccines)

- Prioritization of target antigens
- Validation of candidates – in vitro and animal models
- Immunobiology
- Cohorts/Clinical Research Centres
- Field trials/Clinical Trial Network

#### Group 1b. Infectious Diseases – Diagnostics (ID-Diagnostics)

- Point of care tests – e.g HRP2 deletion for *P. falciparum*
- Antigen-based diagnostic tests Typhoid
- Diagnostic tests for detecting latent TB
- Rapid diagnostic tests for multidrug resistant clinical isolates
- Rapid diagnostic tests for sepsis

## Outcomes of Discussions

### 2. Research and interventions – Four working groups proposed

#### Group 2. Neglected Tropical Diseases (NTDs) – diagnostics & drug development

- Recombinant antigens for the rapid, sensitive and highly specific diagnosis of visceral leishmaniasis – ready for trials
- Biplex PCR method to diagnose Lymphatic filariasis (LF) and Onchocerciasis - kits already evaluated in India, ready for clinical evaluation in Africa
- PCR methods for detecting soil transmitted helminthic (STH) infestations directly from stool samples – ready for trials
- Synthetic compounds for treatment of visceral and cutaneous Leishmaniasis - ready for trials
- Small drug molecules for visceral leishmaniasis (VL) – ready for animal experimentation

#### Group 3. Non-communicable Diseases (NCDs) – determinants & diagnostics

- Mapping the disease burden
- Identifying diseases determinants
- Environmental factors
- Genetic markers of risk
- Epigenetic mechanisms
- Affordable diagnostics

## WORKING GROUP 1: SESSION 2

### Advancing Health Research Collaboration and Medical Education

#### Methodology of Support



#### Additionally:

- Networking; regular India-Africa joint scientific meetings
- Quality and accreditation of courses (mutual)- part of larger vision to enhance institutions
- Competency
- Pan-African e-network establishment
- Student exchange
- Focus on Degree, post graduate and doctoral programs
- Collaboration, networking, partnerships, twinning programs
- In-service training of doctors/lab assistants



## Road map I

- Identify priorities
- Need to identify specific allocation for health? Within 10M\$
- Work on reserving seats for African students (MBBS, MD/MS, super-specialty) in Indian health education institutions
- Timeline: short-term– form working groups with experts from both regions– follow up discussion for specifics.
- Africa: identify nodal agency at regional level– to do mapping; also individual countries to reinforce

## Road Map II

- ICMR International Health Division to serve as nodal agency for identifying institutions in India
- Role of Ministry of External Affairs (MEA) in helping in liaising with African counterparts
- Indian and African institutions: identify pro-active leadership, institutional mechanism, periodic interactions
- Info-African health professionals education conference to be organized
- Institutional champions
- Learning visits: once in India and once in Africa

### WORKING GROUP 1: SESSION 3

## Advancing Health Research Collaboration and Medical Education



### Key Recommendations



#### Underlying Principles

- 50% of 50,000 scholarships offered by India should go towards health capacity and research
- Capacity building in **health systems and infrastructure** should be based on needs identified through research/surveys
- Capacity building in **biomedical research** should be based on merit – investment in the right people and ecosystems
- Knowledge generation, common goals and innovation as pillars of the partnership
- Emphasis on twining and cross-fertilization of ideas/tools
- Good management practices should be emphasized



### Key Recommendations



#### Funding mechanisms

- Joint Working Group (JWG) to identify and prioritize areas of funding
- Invest the research partnership with single pan-Africa and pan-India bodies with experience in research management
- **Or** set up an autonomous body in India to work with African Regional Organizations?
- Bilateral funding – India to provide seed funding; seek African funding to be spent in Africa
- Trilateral funding – Africa + India + International funder
- Africa-India joint calls for collaborative research, training workshops, etc; showcase events and outreach
- Faculty-Student exchange programs; area specific workshops

## WORKING GROUP 2

## Advancing Industrial Cooperation in Pharma and Health Sectors

**How & What to do?**

- ✓ Institutional Cooperation for HRD for Industrial process, Product Development & distribution.
- ✓ African students to be trained in Institutes of Pharma Excellence like Niper to be enhanced. All to respond intensely.
- ✓ Training & Development for Pharma, Diagnostics & if possible for Medical Equipment as well.
- ✓ Human Capital from both India & AU to bilaterally benefit .
- ✓ High exchange for Indians working in in Africa & African Students in India across all institutes in India on Scholarships.
- ✓ Induct more AU students for masters through phased partnerships to train the trainer – Local Talent & setting up JV's in AU with NIPER.
- ✓ India can impart knowledge to all for product development both room temp & cold chain.
- ✓ India can impart extensive global Supply Chain knowledge of domestic & exports to 100 countries.

**Facilitation - How**

- Collaboration in formulation while supplying API's from India to support manufacturing in Africa
- This can be facilitated on a **Win- Win** Platform under the aegis of G2G umbrella withy AU by ensuring the following :
- ✓ Ease of doing business in AU
- ✓ Indian IPR to be adopted & Protected
- ✓ Proper Licensing environment
- ✓ Easy, Convenient & Efficient payment facilitation

**ANNEXURE-F: Agenda & Programme**

## INDIA AFRICA HEALTH SCIENCES MEET (IAHSM)

Venue: Vigyan Bhawan, New Delhi | Dates: 1<sup>st</sup> to 3<sup>rd</sup> September, 2016**DAY 1: 01 SEPTEMBER 2016**

3.30-5.30 pm	Registration
	<i>Inauguration (Hall No: 6)</i>
5:30pm	Lighting of the Lamp
5:40pm	Felicitation of Dignitaries
5:50pm	Welcome Address by Secretary DHR and DG ICMR Dr.Soumya Swaminathan
6:00pm	Message from President of Mauritius Her Excellency Ameenah Gurib-Fakim read by Dr. Thomas Kariuki
6:10pm	Address by Hon'ble Minister of Health and Social Services from Namibia H.E. Dr. Bernard Haufiku
6:20pm	Address by Hon'ble Minister of State of External Affairs General Vijay Kumar Singh
6:30pm	Address by Hon'ble Minister of State (Independent Charge) for the Ministry of Commerce & Industry Smt. Nirmla Sitharaman
6:40pm	Address by Hon'ble Minister of Science and Technology Dr. HarshVardhan
6:55pm	Inaugural Address by Hon'ble Minister of Health and Family Welfare Shri. J.P.Nadda
7:10pm	Vote of Thanks Dr. Nomita Chandhiok
7:30pm	<b>Banquet Dinner (Atrium)</b>

**DAY 2: 02 SEPTEMBER 2016**

8.00am-1.00 pm	Registration
	<i>Opening Session (Hall No: 5) Perspectives of African Health Ministers Coordinated by Dr. Harpreet Sandhu</i>
	Welcome <b>Dr. Soumya Swaminathan</b>
	Address by Hon'ble Minister of Health and Population from Congo <b>H.E. Mrs. Jacqueline Lydia Mikolo</b>
	Address by Hon'ble Minister of Health from Mozambique <b>H.E. Dr. Nazira Vali Abdula</b>
9.00-10.30am	Address by Hon'ble Minister of Health from Islamic Republic of The Gambia <b>H.E. Mr. Omar Sey</b>
	Address by Hon'ble Minister of State of Health from Nigeria <b>H.E. Mr. Emmanuel Osagie Ehanire</b>
	Address by Hon'ble Deputy Minister of Health and Child Care from Zimbabwe <b>H.E. Dr. Aldrin Musiiwa</b>
	Remarks by Chief Guest Hon'ble Minister of State of Health and Family Welfare <b>Smt. Anupriya Patel</b>



<b>Session 2 (Hall No: 5) Plenary Session</b>	
10.30–11.45am	<b>TECHNICAL SESSION 1</b> India Co-Chair: <b>Shri. C.K. Mishra</b> Africa Co-Chair: <b>Mr. Abel Zafimahatraitra</b> <ul style="list-style-type: none"> <li>Policy Environment and Mechanisms to Support Health &amp; Pharmaceutical Sector by Utilizing Science Technology and Innovation through Research Translation - <b>Dr. Mohamed Kyari</b></li> <li>Grand Challenges Africa: A Platform for Funding Innovation in Africa - <b>Dr. Evelyn Gitau</b></li> <li>Global Medical University - <b>Dr. Devi Shetty</b></li> <li>India's Strengths in Research and Translation for India Africa Collaboration - <b>Dr. N.K. Ganguly</b></li> </ul>
11.45–12.15pm	Tea Break
12.15–1.30pm	<b>TECHNICAL SESSION 2</b> India Co-Chair: <b>Dr. V.M Katoch</b> India Co-Chair: <b>Dr. Anupam Sibal</b> Africa Co-Chair: <b>Dr. Francisco Aleluia Lopes Júnior</b> <ul style="list-style-type: none"> <li>Status and Capacity of Africa in Health Science: A Measurements Perspective - <b>Prof. Philippe Mawoko</b></li> <li>Opportunities and Challenges for Advancing Industrial Cooperation with Africa - <b>Dr. Mahidhwaj Sisodia</b></li> <li>Strengthening Collaborations Between India and Africa to Accelerate STI Programs in Both Regions: the AESA Approach - <b>Dr. Thomas Kariuki</b></li> <li>BIRAC – Spurring Innovation in India - <b>Dr. Renu Swarup</b></li> </ul>
1.30–1.35pm	Introduction to Session 2 - <b>Dr. Rajat Goyal</b>
1.35 – 2.30 pm	Lunch (Atrium)
<b>Session 3 Working Groups</b>	
<i>Working Group1: (Hall No: 5) Advancing Health Research Collaboration and Medical Education Coordinated by Dr. Nikhil Singla</i>	
2.30–4.00pm	India Co-Chair: <b>Dr. K.K. Talwar</b> India Co-Chair: <b>Dr. Arabinda Mitra</b> Africa Co-Chair: <b>Prof. Abimiku Alash'le</b> <ul style="list-style-type: none"> <li>Capacity Building for Health and Biomedical Research</li> <li>Medical and Health Professionals' Education</li> <li>Disease Priority, Research Areas of Focus-e.g. Population based intervention studies, Immunobiology</li> </ul>

	<b>Key speakers</b> <ul style="list-style-type: none"> <li>Creative Partnerships to Accelerate Innovation in Public Health - <b>Dr. Mark Feinberg</b></li> <li>Funder perspective: building research excellence in Africa and India - <b>Dr. Simon Kay</b></li> <li>Building Independent Investigators and a Clinical Research Ecosystem - <b>Dr. Gagandeep Kang</b></li> <li>Medical and Health Professionals' Education - <b>Dr. M. C. Mishra</b></li> </ul>
4.00–4.30pm	Tea Break
4.30–6.30pm	<b>Moderated Break Out Sessions:</b> Key Opportunities of Mutual Interest and Strategies for Moving Forward <ol style="list-style-type: none"> <li>Capacity Building for Health and Biomedical research</li> <li>Medical and Health Professionals' Education</li> <li>Disease Priority &amp; Research Areas of Focus-e.g. Population based intervention studies, Immunobiology</li> </ol> <b>Moderators</b> <ol style="list-style-type: none"> <li>India: <b>Dr. Shahid Jameel</b>, Africa: <b>Dr. Etienne Karita</b> and <b>Dr. Abdoulaye Djimé</b></li> <li>India: <b>Dr. Sanjay Mehendale</b>, Africa: <b>Dr. Pauline Byakika</b> and <b>Dr. Diawara Bassalia</b></li> <li>India: <b>Dr. Rajesh Kumar</b>, Africa: <b>Dr. Gordon Awandare</b> and <b>Dr. Quinhas Francisco Fernandez</b></li> </ol>
<b>Working Group 2: (Hall No: 6) Advancing Industrial Cooperation in Pharma and Healthcare Sectors Coordinated by Dr. Meenakshi Sharma</b>	
2:30–4.00pm	India Co-Chair & Moderator: <b>Shri. Sudhanshu Pandey</b> Africa Co-Chair: <b>Dr. John Amuasi</b> <ul style="list-style-type: none"> <li>Institutional Cooperation for Human Resource Development for Industrial Processes, Product Development and Distribution</li> <li>Recognition of Indian Pharmacopeia and Regulatory Environment in Africa – Challenges and way forward</li> <li>Africa Based Manufacturing – Case Studies for a Way Forward</li> </ul> <b>Panelists :</b> <ul style="list-style-type: none"> <li><b>Shri. Sudhans Pant</b></li> <li><b>Dr. Hudu Mogtari</b></li> <li><b>Dr. GN Singh</b></li> <li><b>Dr. PV Appaji</b></li> <li><b>Shri. K. Nagaraj Naidu</b></li> <li><b>Dr. Taye Tolera</b></li> </ul>
4.00–4.30pm	Tea Break

4.30–6.30pm	<p><u>Moderated Break Out Sessions:</u> Key Opportunities of Mutual Interest and Strategies for Moving Forward</p> <ol style="list-style-type: none"> <li>1. Institutional Co-operation for Human Resource Development for Industrial Processes, Product Development and Distribution</li> <li>2. Recognition of Indian Pharmacopeia and Regulatory Environment in Africa – Challenges and way forward</li> <li>3. Africa Based Manufacturing – Case Studies for a Way Forward</li> </ol> <p><u>Moderators:</u></p> <ol style="list-style-type: none"> <li>1. India: <b>Dr. Gurpreet Sandhu</b> Africa: <b>Dr. Mohamed Mabrouk</b> and <b>Dr. Kone Mamadou</b></li> <li>2. India: <b>Dr. SE Reddy</b> Africa: <b>Dr. Hudu Mogtari</b> and <b>Dr. Harriet Nabudere</b></li> <li>3. India: <b>Mr. Dinesh Dua</b> Africa: <b>Dr. Hany Mashaal</b> and <b>Dr. Clarisse Musanabaganwa</b></li> </ol>
6.30 pm	<b>Day Concludes</b>

### DAY 3: 03 SEPTEMBER 2016

#### *Session 4 (Hall No: 5)* *Key Opportunities and Way Forward* *Coordinated by Dr. Harpreet Sandhu*

9.00–10.30am	<p>Africa Regional Perspectives on Opportunities for Partnership Co-Chairs: <b>Prof. Sachin Chaturvedi</b>, <b>Dr. Anatoli Kamali</b>, <b>Dr. Benny Kottiri</b></p> <ul style="list-style-type: none"> <li>• Eastern Africa: <b>Prof. Gibson Kibiki</b></li> <li>• Southern Africa: <b>Dr. William Kilembe</b></li> <li>• Western Africa: <b>Dr. Abdoulaye Djimdé</b></li> <li>• Central Africa &amp; Madagascar: <b>Prof. Danielle Vololontiana Hanta Marie</b></li> <li>• North Africa: <b>Dr. Hany Mashaal</b></li> </ul>
10.30–11.15am	Presentation by Moderators of Working Groups
11.15–11.45am	Tea Break
	<p>Moderated Panel Discussion : Meeting Recommendations and Way Forward Indian Co-Chair: <b>Dr. MK Bhan</b> African Co-Chair: <b>Dr. Mohamed Kyari</b></p> <p><u>Panelists</u></p> <ul style="list-style-type: none"> <li>• Dr. K. Vijay Raghavan</li> <li>• Dr. Soumya Swaminathan</li> <li>• Shri. Amar Sinha</li> <li>• Dr. Arun Panda</li> <li>• Shri. NS Kang</li> <li>• Dr. Benny Kottiri</li> <li>• Dr. Simon Kay</li> </ul> <p>Address by Chief Guest Hon'ble Minister of State (MoS) (Independent Charge) for the Ministry of Development of North Eastern Region, Prime Minister Office, Personnel,</p>
1.15pm-1.25pm	Public Grievances and Pensions, Department of Atomic Energy and Department of Space- <b>Dr. Jitendra Singh</b>
1.25-1.30pm	Vote of Thanks <b>Dr. Harpreet Sandhu</b>
1:30– 2:30 pm	Lunch (Atrium)
<b>Meet Concludes</b>	

