Promotion of Research & Innovation
U.S. Government Global Health Principle Paper:
Guidance for the Field

USG Interagency Team

Elizabeth Higgs, MD, DTMH, MIA, NIH
Callie Raulfs-Wang, PhD, USAID
William Levine, PhD, CDC
Mark Peterson, PhD, USAID
Karen Hawkins-Reed, MPA, CDC
Neal Brandes, MA, USAID
Kristen Saarlas, PhD, USAID

Draft for Public Comment

Table of Contents

EXECUTIVE SUMMARY

Field-based investments in Research and Innovation for global health has the potential to achieve improve people's health in low and middle income countries. The Research & Innovation Principle paper outlines objectives broadly seek to leverage local and international research and implementation expertise to:

- Discover innovative ways of delivering services that reduce cost, increase access, and improve quality of care;
- Hasten implementation of successful interventions at scale, including adapting and replicating successful models from one setting to another; and
- Develop local capacity for identifying research needs, developing appropriate research activities, implementing, evaluating, and publishing research findings in the peer-reviewed literature.

This paper summarizes the US Government's position on promoting Research and Innovation in global health, provides guidance to missions on how to successfully support Research and Innovation in the field, and tap into technical support for such activities in USG Agency Headquarters. Illustrative (optional) and global (required) indicators for monitoring and evaluating Research and Innovation are provided, as are related resources to help position field staff for rapid uptake of this key principle.

PREFACE

The United States Presidential Global Health Initiative (GHI) outlined seven fundamental principles [i] to guide the U.S. Governments (USG) strategy, policy, and programs in current and future global health efforts. These principles normatively reflect how the USG works towards achieving global health priorities and health targets.

The inclusion of the Promote Research and Innovation Principle underscores two critical shifts in global health thinking. First, evidence must guide and underpin policy, practice, and strategy decisions in global health. The global community expects accountability demonstrated by evidence that links investments to health outcomes with greater emphasis on efficiency and sustainability. Evidence to inform and drive effective, efficient, sustainable global health interventions, services, programs, and systems linking investments to outcomes is a core purpose of promoting research and innovation. Secondly, globalization combined with scientific advances has accelerated the rate of scientific exchange and multiplied the potential for global collaboration and local innovation while simultaneously bringing the challenges in resource scarce areas into greater focus.

Over time the application of the Principle to Promote Research and Innovation, will improve the efficiency, effectiveness, and sustainability of global health services, interventions, and programs and lead to accelerated progress towards USG Global Health goals, including achieving an AIDS Free Generation by 2015, reaching the GHI Targets , and ending preventable child deaths as outlined in A Promise Renewed [ii]. The application of this Principle will also facilitate the development of high impact research agendas and the translation of research results into global public health benefit.

PURPOSE

The purpose of this Principle paper is to share information, guidance, ideas, resources, challenges, and experiences with U.S. Government (USG) country teams on how to apply the Promotion of Research and Innovation (R&I) principle in their programs to accelerate progress towards the USG and partner country health goals. The paper includes information on how USG field teams can obtain technical support from the science and development agencies within the USG.

Vision: A sustained commitment to applying learning from research and innovation will result in accelerated progress towards reaching global health goals and provide transparent evidence linking USG global health investments and health impact

OVERVIEW

This paper begins with the rationale for USG efforts to promote research and innovation in USG global health initiatives and programs. It continues with the definitions of research, innovation, evaluation, and monitoring all of which play a role in learning.

The next section describes the six objectives which comprise the evidence cycle and includes general recommendations, shared experiences, and suggestions on how to achieve the objectives, optimize resources, and enhance collaboration across the USG at the country level.   Specific recommendations linked to suggested resources are provided in the appendices. The paper continues with how to measure progress in advancing research and innovation. It also conveys technical support potentially available to the USG teams in the field to advance research, innovation, and translation of results into sustainable health impact and sustainable research capacity.

RATIONALE

Years of investment in scientific capacity have made the United States one of the most productive scientific societies in the world. This scientific progress, such as the development of effective antiretroviral therapy for HIV/AIDS, has contributed to improved global health outcomes through effective USG global health delivery programs such as PEPFAR[iii]. Yet the full potential of translating scientific investments and leveraging scientific discovery for health impact has yet to be fully realized. Translating results from research and innovation is particularly challenging for the world's most vulnerable populations in the lowest economic quintile, in distant rural areas, or crowded impoverished slums. In an era of fiscal constraint, the global community is pressed to deliver more health value, defined as improved health outcomes for dollars spent. The USG is committed to strategically leveraging global health investments across all agencies, and the comparative advantage of each, for greater global public health impact in USG global health endeavors.

Globalization and innovation create opportunity for accelerated translation of science, technology, research, and innovation into global health impact. Future global health advances should continue to be *evolutionary* – e.g. accelerating scaling of evidence-based health services to populations without access and also *revolutionary* – leap frogging previous sequential stepwise single discipline progress with multidisciplinary scientific and technological approaches to create novel, sustainable solutions for the world's most pressing health challenges.

Innovation is needed to generate new ideas and more effective means of doing things. Research is needed to test innovative approaches and provide evidence on effectiveness. Implementation research informs how to efficiently and effectively scale-up novel health services to populations in a sustainable manner and to show attribution of investments to outcomes. Globalization facilitates contribution from local problem solvers who can identify local challenges and solutions to facilitate the delivery, and

12

utilization of evidence based efficacious health care. The USG encourages research and program investments to concurrently improve the both the evidence-base and the application of key knowledge and practices through operational research and implementation science. Special focus is encouraged to strengthen the integral connections between research activities, their innovative application in programs, and the achievement of health goals.

The USG Promotion of Research and Innovation Principle supports leveraging the full U.S. Government science and development communities in collaboration with host country governments, public health institutions, universities, and a new community of solvers to achieve global health gains. The USG global health goals (e.g. an AIDS-Free Generation and GHI targets) are most likely to be achieved through collaboration between the scientific community, the development community, and host country institutions and governments. To achieve these goals requires innovative solutions and application of scientific and technical advances that translate advances such as mobile telephones and internet into health benefits through innovative programming this is evaluated through implementation science. The ability of Missions and USG country Teams to enable such innovations in their programs is crucial to success.

Finally, the USG is committed to partnering with countries to work towards sustainable country owned global health. Therefore, the promotion of research and innovation includes a focus on building sustainable research and innovation capacity to enable countries to establish and execute an ongoing evidence cycle for their health priorities.

Globalization and innovation create opportunity for accelerated translation of science, technology, research, and innovation into global health impact.

DEFINITIONS OF RESEARCH AND INNOVATION

Broadly, research can be defined as the systematic application of scientific methods to generate novel findings. The continuum of research ranges from basic early stage to applied late stage research designed to efficiently and effectively implement novel findings or interventions outside of a research setting. Over the past decade, in an attempt to improve the efficiencies in global development programs, the field of implementation science has evolved as a study of methods to improve the uptake, implementation, and translation of research findings into routine and common practices outside the research setting (e.g. the ''know-do'' or ''evidence to program'' gap) (Padian, 2011). The USG President's Emergency Plan for AIDS Relief (PEPFAR) introduced an implementation science framework in 2011 to facilitate causal attribution of programs to outcome in order to advance the "value and impact" of PEPFAR programs. Many USG teams are now accustomed to the PEPFAR implementation science framework and this Principle Paper builds on these definitions.

The PEPFAR implementation science framework includes three elements: monitoring and evaluation, operations research, and impact evaluations (Padian, 2011). Monitoring is the "routine daily assessment of ongoing activities, inputs, outputs, and progress while evaluation assesses what has been achieved" (The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2008) and is not research for the purposes of this paper and reporting. In contrast, operations research and impact evaluations are considered to be research. Operations research involves "increasing efficiency of implementation and operational aspects of a particular program through the use of scientifically valid research methods" (The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2008, Madon, 2007, Padian, 2011). Impact evaluations enable causal attribution of observed changes in outcomes to a particular program by comparing these changes with what would have happened had the program not been implemented (the counterfactual scenario) (Padian, 2011). Impact evaluations should include value assessments whenever possible, (e.g., health outcomes per dollars spent) to enable cost effective comparisons. Cost effectiveness is an important element of sustainability for resource constrained countries. For the purposes of this guidance, USG teams should consider promoting research and innovation activities which advance health impact and outcomes, value for health, and address the "know-do gap". In general this will not encompass early stage laboratory focused studies, nor therapeutic and device development.

- **Global Health Research**: For the purposes of this guidance, late stage[1] research is intended to develop evidence which maximizes the impact of USG global health activities on health outcomes. Such research generally includes operations research, impact evaluations, and other research that supports accomplishing the USG global health goals with the highest priority given to those with the most immediate health impact within a 3 to 5 year time period. This includes studies of innovation, effectiveness, impact, and sustainability.

- **Global Health Innovation**: Innovation is a novel way of making or doing things including novel business or organizational models, operational or production processes, technologies or products or services that lead to substantial improvements in the effectiveness, efficiency, or sustainability of a global health activity.   Global health activities include systems, services, interventions, and programs on both the supply and demand side. Thus innovation can take place outside of the formal health system, within the formal health system, within the community health system, or within the community itself. Innovation is not limited to development of novel technologies; it can also be a novel approach or application of a technology, service, or intervention.[2]

---

[1] The US Foreign Assistance Office defines three research areas which are defined and treated as "linked key issues" which are mutually exclusive for reporting purposes: Basic Research (BSR), Applied Research (APR), and Development Research (DVR). These tree areas are predominately defined by systematic study directed towards differing aims:1) to gain knowledge or understanding necessary to determine the means by which a specific need may be met-Applied Research (APR) 2) to obtain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts-Basic Research, and 3) application of knowledge for production of useful materials, devices, and systems or methods including design, development, and improvement of prototypes and new processes to meet specific requirements-development research.

[2] Note: Programs that simply make use of innovative solutions are not included within this Key Issue unless they are explicitly aimed at accelerating the rate at which novel solutions are developed, tested and scaled.

- **Monitoring and Evaluation:** Monitoring is the routine assessment of ongoing activities, inputs, outputs, and progress while evaluation assesses what has been achieved and does not generally employ scientific methods to determine outcomes or impact relative to a counterfactual as in an impact evaluation (The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2008). For the purpose of this paper, routine programmatic monitoring and evaluation are not considered 'research' or 'innovation'. Please see the USG M&E Principle paper for additional guidance in this important area.

Given the importance of context for determining health needs and solutions, it is anticipated that USG field supported research, as opposed to headquarters supported research, will focus on improving the value and impact of USG supported country owned programs. Likewise, local higher education learning institutions, research centers, and private technology companies provide opportunities for local innovation to address context specific local challenges and solutions needed to facilitate the delivery and utilization of evidence based efficacious health care.

STRATEGIC OBJECTIVES &THE EVIDENCE CYCLE

This principle paper suggests a simple strategic approach to promoting research and innovation by contributing to and using evidence to maximize the impact of USG global health activities on health outcomes. This strategic approach involves six objectives (Box 1.) that together comprise the Evidence Cycle characterized in the Results and Innovation Framework (Figure 1).
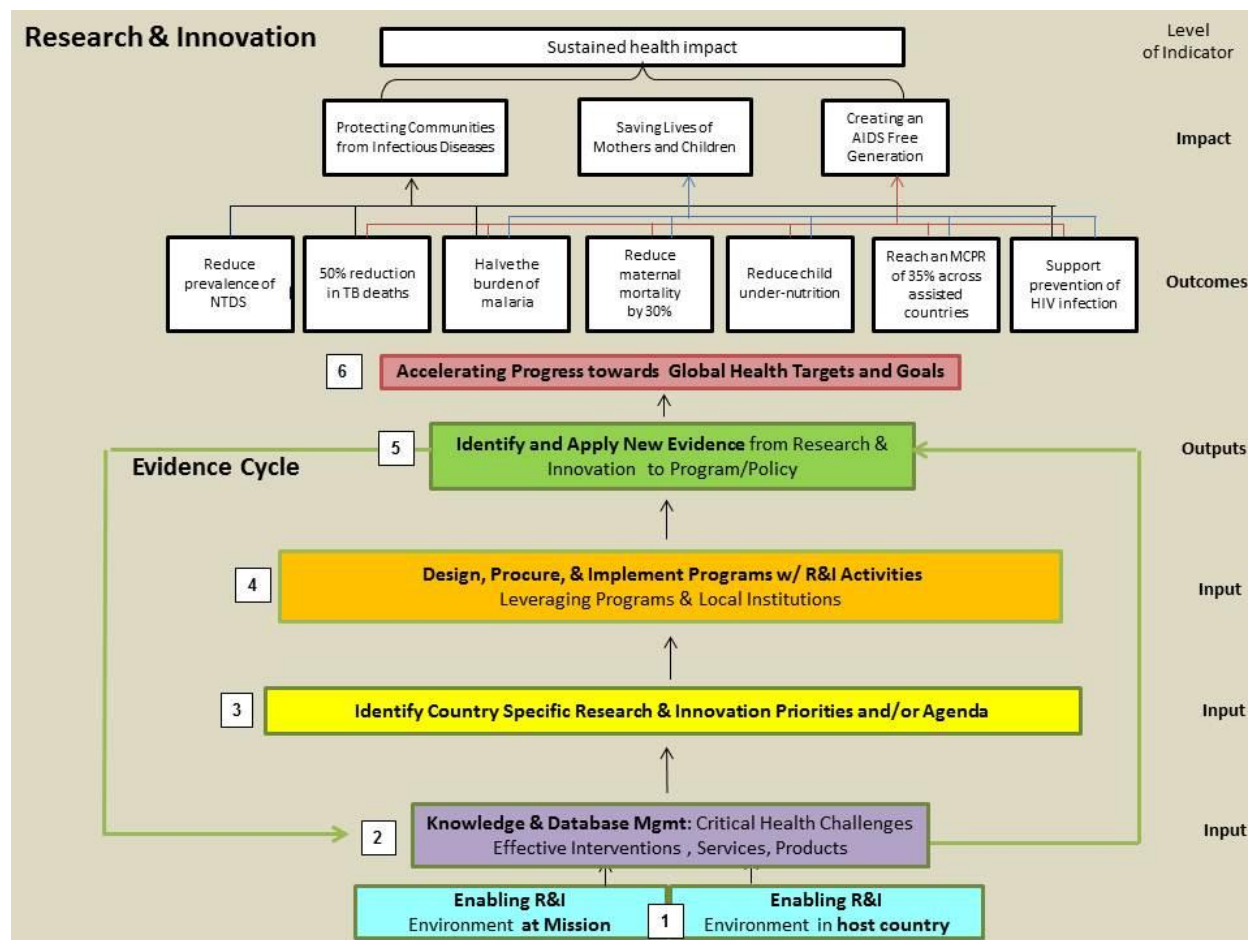

Box 1. SIX OBJECTIVES of the EVIDENCE CYCLE

I.   Develop an enabling environment for research and innovation
II.   Establish an effective knowledge management system
III.   Identify country-specific research & innovation priorities (and/or agenda)
IV.   Design & procure evidence based programs & embed prioritized research and innovation activities
V.   Identify and apply research and innovation learning to programs, policies, and evidence base
VI.   Quantify improved value and accelerated progress towards the USG global health targets

---

These objectives are intended to help country teams promote the collaborative incorporation of research, innovation, as well as evaluation and monitoring, into an evidence cycle for of continuous, evidence-based quality improvement, innovation, and translation of learning into sustained population level health impact.

Recommendations and suggested indicators for each Objective are included in Appendix II. Recommendations are intended to be useful and most are non-obligatory. Once the R&I indicators are finalized, teams will be required to report on the indicators identified as "Global Indicators" in the Monitoring and Evaluation portion of this paper. USG teams do not have to apply these objectives (nor the framework) in a sequential fashion, as the evidence cycle is cyclical, but it may be useful to do so.

Figure 1. The Research and Innovation Results Framework is based on developing and applying novel evidence generated during the "Evidence Cycle". The Framework aligns with six objectives.

OBJECTIVE I: Develop an Enabling Environment for Research and Innovation

Overview

An enabling environment in the USG missions and in the host country is the foundation of efforts to promote research and innovation. To facilitate ease of understanding this section is divided into two parts: 1) developing an enabling environment at the USG Missions, and 2) developing an enabling environment in the host country.

Box 2. Common Challenges Developing a Research and Innovation Environment

- Lack of knowledge of all the activities of USG agencies in a particular country or area such as nutrition, as there is no single, central knowledge source. This is particularly true between research and development agencies (e.g. NIH and USAID) but can also be true between development agencies, e.g. USAID and MCC, and within agencies, e.g. HHS CDC and NIH. Lack of communication and coordination lead to redundancies and/or missed opportunities for synergy, cost sharing, and efficiencies.
- No visible health Research & Innovation contact at USG Mission
- USG staff may not identify Research & Innovation as a priority for development.
- USG researchers, even those working internationally, often do not recognize the importance of development priorities in their work and have little contact with the USG Missions.
- Government responsibilities for health, science, technology, and education are often divided between ministries.

Developing an Enabling Environment for Research and Innovation at USG Missions

The Enabling R&I Environment at the Mission is a critical component of promoting R&I in country and should include the presence of at least one R&I 'coordinator' responsible for managing country specific R&I responsibilities. USG teams may also choose to align the coordination vertically with specific health areas, e.g. nutrition, or malaria. In such cases USG teams should be aware of opportunities for program integration which lead to greater efficiencies. The R&I Coordinator should serve as the point-of-contact for R&I related activities and this function should make up a significant portion of their work-plan. Though the entire USG team assumes responsibility for planning all aspects of the evidence cycle, the R&I coordinator will organize the team to support the global health R&I activities and report on progress. As part of their knowledge management function, the R&I coordinator should compile, with headquarters assistance, the USG supported health research projects, including sites which are part of USG supported research and innovation networks[3], taking place in the country including studies funded by the USG (e.g. USAID, Millennium Challenge Corporation, Centers for Disease Control, U.S. President's Emergency Plan for AIDS Relief, Department of Defense, and the National Institutes of Health etc.). This

---

[3] The USG increasingly supports a wide range of global health research and innovation networks which may be valuable sources of technical assistance to both the USG mission and the host country governments, Examples include, but are not limited to: USAID's Higher Education Solutions Network http://www.usaid.gov/hesn , NICHD's Global Network for Women's & Children's Health Research https://www.nichd.nih.gov/research/supported/Pages/globalnetwork.aspx

USG research list can be updated on an annual basis with the help of USG contacts in Washington, D.C. and the field. The R&I coordinator can also help facilitate host country research partners by reaching out and coordinating involvement with local universities, medical schools, research institutes, health professional associations, and USG supported implementing partners and research networks. Additional recommendations for the R&I Coordinator activities are included in Appendix II.

Creating an Enabling Environment for R&I in the Host Country

In keeping with the principles of integration and country ownership, USG teams should collaboratively engage key host country stakeholders, leverage existing country owned research capacity, and facilitate sustainable research capacity while promoting research and innovation. Research and Innovation stakeholders usually include policy makers, relevant government sectors (e.g. Ministry of Health, Ministry of Science and Technology, or Ministries of Finance) national academies of science, research institutions, multilaterals, universities, and, where relevant, the private sector. Some countries, for example India, Kenya, and South Africa, have significant research infrastructure and expertise and serve as regional health research leaders. Thus, teams are encouraged to engage local and regional expertise to the full extent possible (see Recommendation 1.5) Although some countries will have extensive sustainable R&I infrastructure, some countries may have limited technical expertise and research capacity. Thus, it is imperative for USG efforts to continue to support higher education and training in the public health fields particularly in disciplines such as: epidemiology, nursing, medical, research, midwifery etc. Working with local research and innovation institutions facilitates development of sustainable research capacity.

> **Box 3. Building local research capacity while leveraging USG science investments to accelerate solutions for child survival**
>
> The Partnerships for Enhanced Engagement in Research (PEER) was created by USAID to leverage research capacity and investments in science developed by USG science agencies for development challenges. In 2012, the first PEER Health solicitation created opportunities for developing country researchers to partner with National Institutes of Health (NIH) funded researchers on challenges related to child health implementation science. PEER Health provides opportunities for USAID Missions to engage with local universities, research institutes, and NIH supported investigators. Leadership and financial responsibility of PEER projects rest with the developing country scientists and their local institutions, enhancing local capacity to respond to research solicitations, manage grants, and undertake cutting edge implementation science activities.

In order to inform the development of a research and innovation plan and build upon existing activities, the R&I coordinator should lead an assessment of current scientific research and innovation activities, infrastructure, training plans, and needs. The results of this assessment will inform development and prioritization of the research and innovation agenda. Though the nature of the host country environment for R&I can vary greatly, early engagement of local stakeholders in knowledge management and priority setting for research and innovation will facilitate improved translation into health impact after new knowledge results from R&I activities.

OBJECTIVE II: Knowledge Management

A little knowledge that acts is worth more than much knowledge that is idle."

Kahlil Gibran, Author of The Prophet

"Knowledge for the most part exists only in application."

Peter Drucker, Author of The Effective Executive

Overview

In order for the research and innovative learning to be used, adapted, and scaled, it is essential for USG Country Teams to have access to and contribute to a knowledge management (KM) plan. Effective knowledge management involves development and sharing of global and local evidence and information. Thus, a country KM plan includes two parts: 1) global knowledge management 2) country specific knowledge management. Organizing and coordinating knowledge and information reduces duplication, avoids reliance on outdated information, and shortens the time it takes to find, adapt and use knowledge to improve or expand health programs. Effective KM is a critical component of reducing costs, increasing value, stimulating innovation, and promoting at-scale implementation of evidence-based programs and practices.

Global Knowledge Management

Global knowledge is gained from the collective experience of research and innovation across all countries and provides opportunities to learn from multiple contexts and various country perspectives. The headquarters knowledge management plan is a catalyst for sharing, synthesizing, and learning from the collective experience, thus enabling countries to leverage what they know works in other countries.

As acknowledged in the initial GHI Monitoring, Evaluation, Research, and Innovation USG paper in 2009, the burden of responsibility for creating a comprehensive USG knowledge management system to capture both data and best practices falls on participating Agencies at Headquarters. The KM staff contributes to the "research to practice"' process by:

- ➢ Collecting all potential "innovative" models resulting from research, program management and/or other sources, including those outside the health sector.
- ➢ Collecting and making public documented best practices, evaluations, funded research publications, results of funded research and innovation conferences or consultations.
- ➢ Conducting a periodic review and summary of evidence derived from global health programs that assess the feasibility and cost-effectiveness of new models and archiving these into a system that would allow for open access and widespread proactive dissemination.

➢ Supporting professional discussion (threaded bulletin boards or chat rooms) for staff to ask/answer questions and/or have longer term discussions on specific applications/adoptions of models to the field.

Country Knowledge Management Plan

To effectively use Global Knowledge Management, each USG country team should also develop and implement a country knowledge management plan that brings together key country data, ongoing research and innovation activities, cost effectiveness data, and other relevant knowledge for each global health target or goal. The ultimate goal should be to optimize the sharing, adaptation and use of knowledge resources that connect best practices and innovative health interventions, services, and products with immediate health challenges such as malaria incidence, drug resistance patterns, disease prevalence information, and local program experiences.

To support strengthened health research and innovation USG implementers and their partners must share actionable information and knowledge generated locally to address challenges and improve program results with the headquarters Global Knowledge Management system, and with the global community via publications and effective dissemination strategies for their successes such as electronic regional technical meetings, and the like, so countries may learn from one another.

OBJECTIVE III: Identify Country-Specific Research & Innovation Priorities

Overview

Ideally a document which outlines multi-year, country specific, public, research and innovation priorities (which may or may not be considered an RI agenda) achieves two important aims: 1) identification of critical country specific evidence gaps and implementation challenges, and 2) inclusion of a plan to address key R&I priorities. Publically available R&I priorities help to identify, clarify, and communicate the locally relevant research and innovation priorities that when addressed will result in accelerated progress toward global health goals and targets. Doing so will help create demand to address identified priorities in the public and private sector. Examples of priorities might include the need to deliver scalable innovations such as oral rehydration salts or Option B+ to a particular geographic region or population, or the scale of other interventions to reduce postpartum hemorrhage, or malnutrition.

Research and Innovation Priorities

R&I priorities must reflect country host country public health priorities and challenges.   In some countries the R&I priorities may already be publically apparent in an R&I Agenda, or within the USG strategy or country national research priorities. In others countries, the USG team may need to facilitate development of such priorities. Ultimately a publically available R&I agenda should facilitate collaboration across multiple donor countries, or in some cases different USG agencies. The process of identifying priorities or developing an agenda should be informed by knowledge management and developed with stakeholders including country governments, local research and public health institutions, national academies of science, and other relevant stakeholders. Ideally the R&I priorities are already identified by national public health leadership. Further, R&I priorities should clearly articulate specific problems to be addressed; evidence needed, and anticipated impact on public health targets, and goals.

Transparent research and innovation priorities have the additional benefit of communicating priorities to the research and innovation communities both locally and across the USG. Therefore, making R&I priorities publically available can facilitate cost effective coordination across the USG, country stakeholders, and other bilateral and multilateral donors working in R&I in the country. The R&I agenda may be developed as a separate document or included in the Country Development Cooperation Strategy or as an addendum to the GHI Country Strategy. Teams should also consider placing a time frame on priorities, e.g. R&I activities attainable in the next five years.

Developing the R&I agenda can be a mechanism for drawing relevant stakeholders to global health priority challenge areas. One mechanism that USG teams may use to inform R&I priorities is convening technical experts around specific challenges, e.g. neonatal sepsis, behavior change science, nutrition, or the need to scale specific innovations. Consultations should always include local scientists, institutions, as well topical experts, and may take the form of a 'Science for Development" meeting or expert consultation as desired (See Appendix IV and Box 4 for more info on the Science for Development Meetings). Such consultations may help USG teams identify relevant evidence, knowledge gaps, and the local technical assistance needed around country health research priorities, and ultimately close the gap between novel evidence and policy.

> **Box 4. USG Science for Development Meeting in Mali**
>
> In January 2012, the USG team in Mali organized a Science for Development meeting. Drawing more than 100 participants, it was the first meeting of its kind to be held in Africa and served as an important occasion to build upon decades of U.S. Government internal collaboration within Mali, strong partnership with the Government of Mali, and collaborative research between Malian and U.S. scientists. It gave participants an opportunity to explore ways in which the introduction of research, innovation, and new technologies can drive and influence development work in Mali. The meeting advanced the coordination, utilization, and application of existing knowledge, identified evidence gaps, and leveraged the scientific community to support the advancement of key Malian health development goals in five areas: HIV, tuberculosis, malaria, neglected tropical diseases, and health systems strengthening. The Malians established a Scientific Advisory board to the Ministry of Health and over thirty Malian scientists volunteered their technical services to the USG mission.

Priorities for the introduction and scale-up of evidence-based, effective 'innovations' in the host country should be data driven and targeted toward local priority health areas. Innovations do not have to be an entirely new approach but could be a modification of approaches already in existence. Once an innovation has been shown to have a positive performance outcome, decisions should be made to determine if the innovation meets criteria for further investment and scale. When identifying priority approaches, teams are encouraged to consider the cost-effectiveness of the intervention, means to integrate the intervention with existing health system, testing needed to determine success of adoption, and sustainability of proposed intervention or approach. The Center for Accelerating Innovation and Impact within the Global Health Bureau at USAID can be consulted for advice around adoption and scale up of innovations.

OBJECTIVE IV: Design and Procure Evidence-Based Programs with Embedded Research and Innovation Activities

Overview

Evidence underpins all effective USG programming and forms the basis of good program design. The 'Evidence Cycle' is heavily featured in the R&I strategic framework and illustrates an iterative cycle of designing programs in line with country specific R&I priorities which lead to new evidence, best practices, and ultimately a new generation of programs and potential R&I priorities based on the acquired evidence (R&I Framework, boxes 2-5). While health impact is the primary aim of health programming, the generation of new evidence is a critical component within the program cycle. Ensuring that learning "loops back" to inform the continuous dynamic improvement of programs, is essential for accelerating progress towards the global health targets and goals. Thus, research and innovation activities should be incorporated or 'embedded' into USG programs with the goal of producing high-quality context specific evidence to inform future and current USG supported health policy and programming efforts. In particular, USG teams should support research that bridges the gap between evidence-based services and their effective implementation with the goal of improving the health "value" of USG investments. As outlined in Objective I, when possible these research activities should be done in collaboration with local technical expertise and HC governments.

Designing evidence-based programs

 "Demand Evidence and Think Critically" is a common refrain in scientific fields. However, ensuring that programmatic learning adheres to the same level of rigor and defining the bar for 'evidence' is often difficult in the complex environments where USG global health teams operate. Additionally understanding the type of evidence needed to answer a specific question is also important in order to choose the appropriate type of research study.

Embedded research and innovation activities

The successful introduction and scale of innovative programs requires embedding active learning to ensure optimal program implementation and causal attribution of program implementation to outcomes and impact. "Learning" encompasses standard monitoring and evaluation, in addition to various types of research such as: operations research, impact evaluations, qualitative research, and other types of studies. For example, in order to determine if an innovation will have value, a pilot study must be conducted to assess performance or impact measures relative to standard-of-care or standard approach. All USG agencies and contract organizations carrying out these types of research activities should liaise closely with USG health teams responsible for program implementation. Open access peer-review publications are a desired outcome of all types of research and USG teams and implementing partners should plan for authorship at the research design phase. Failure to publish in peer review journals jeopardizes the information, the financial investment in the research, and can lead to the repetition of the research elsewhere.

The fundamental principles of rigorous research are important for all USG supported research including independent review of protocols to include: study design, appropriate comparators, human subject protections, and statistical analysis plans including adequate power when appropriate to ensure the study will adequately address the primary study questions. USG health teams overseeing research

activities classified as human subject research are encouraged to host protocol review in conjunction with a local Institutional Review Board.

USG teams are encouraged to develop (or request) a plan for publication and authorship ensuring that local scientists and innovators have a leadership role in the design, implementation, and publication of R&I activities. Leveraging local scientific and technical expertise in the design and implementation of R&I activities promotes sustainable research capacity, strengthens science and development linkages, and facilitates the critical research to applied learning "feedback loop."

OBJECTIVE V: Share and Apply R&I Learning to Programs and Policies

Overview

Upon completion of R&I activities, it is critical that the knowledge gained is communicated and applied. The "feedback loop" linking research and innovation results to service, training, policy, and programs is critical to promote improved quality and accountability in health programs. Assuming R&I activities were collaboratively planned with key stakeholders via the development of the R&I priorities, translating the results to policy and action will be a natural next step. All USG research should be undertaken with the goal of accelerating progress to the targets and goals, therefore, using the results to advance these targets through more effective programs become a natural part of the learning cycle.

A sustained commitment to applying learning from research and innovation will result in more effective, sustainable service delivery programs over time.

Communicating Research and Innovation Results

Teams must ensure that USG supported R&I activities and results are published in a peer review open access journal, thus contributing to an evidence base that others can both use and build on. USG teams are encouraged to follow the publication plan developed during the design process. It is important to publish results even if they are negative findings, e.g. an innovative approach to delivery of nutritious food was not effective due to unpalatable taste. If the results are not published the knowledge will not be optimally utilized and over time, forgotten, which wastes resources. Similarly, the results should be maintained in the country knowledge management system and shared with the HEADQUARTERS Global Knowledge Management System. Assuming the research and innovation activities undertaken were derived from the collaboratively developed R&I priorities/agenda, stakeholders in the agenda and/or in the design and conduct of the research itself can help communicate the results and incorporate the learning into improved health programs and or systems.

Applying the results

Though research published in peer reviewed journals contributes to the evidence base and facilitates knowledge sharing, publishing alone will not accrue health benefit in the field. When well designed, USG-supported research and innovation results should inform and advance progress towards the USG health targets including strengthening existing, and identifying new, sustainable, cost-effective service delivery programs; overcoming barriers to implementation and system scale-up; facilitating the development and expansion of improved and integrated health interventions and systems; improving health value; and informing improved health policies. A sustained commitment to applying learning from research and innovation will result in more effective, sustainable service delivery programs over time. Further, as USG teams collaboratively execute against the country R&I priorities/agenda, the priorities/agenda will need to be revisited and revised accordingly. Teams may wish to hold periodic R&I meetings where results and revisions are collaboratively discussed with stakeholders.

OBJECTIVE VI: Quantify Accelerated Progress towards the USG targets

Overview

Transparent accountability for clearly communicating the relationship between global health investments and health impact has become a standard expectation in global health. The USG is committed to reporting progress in both the USG targets and the impact of the principles on the targets. The overall vision is that sustained learning from research and innovation will improve global health decision making and programs leading to greater health value and accelerated progress in reaching country specific USG targets and goals. USG research and innovation is not "research for research sake". Rather USG R&I in the field should advance country specific USG targets as articulated in the definition of USG Research.

To capture and quantify the impact of R&I learning, USG country teams must be cognizant of the changes resulting from the new evidence being put into practice and assess the anticipated impact of the new evidence on health targets. Teams may find it useful, and perhaps necessary, to use modeling or percentages of enhanced efficacy, efficiency, coverage, access, health value etc. to determine the impact of the R&I over time. USG teams are encouraged to use the quantitative measures related to the specific health targets, e.g. GHI targets, AIDS free generations, etc.

MEASURING RESEARCH AND INNOVATION

Overview

The USG is committed to transparency of results. An overall monitoring and evaluation goal is to understand the contribution of the seven principles to success as measured by progress towards the USG targets and improving health value (health impact per dollars spent). Below are listed 'Global' (i.e. reportable) indicators as they relate to key R&I Objectives.   Additional illustrative indicators are listed in Appendix I. Teams will find specific recommendations for each objective in the tables in Appendix II.

Global Indicators

	Objectives	Global Indicator
I	Develop an enabling environment for research and innovation	**Publically Identified Research and Innovation coordinator(s) (Y/N)**
II	Establish an effective knowledge management system	
III	Identified country-specific research & innovation priorities (and/or agenda)	**Publically available country-specific Research and Innovation priorities (and/or agenda)**
IV	Design & procure evidence based programs & embedded prioritized research and innovation activities	**% of mission health budget spent on health research activities**
V	Identify and apply R&I learning to programs policies & evidence base	**# of peer review publications that include a local collaborator resulting from USG funding**
VI	Quantify accelerated progress towards the USG global health targets	

Table 2: Each objective forms part of the evidence cycle and is supported by suggested recommendations (Appendix II). There are five suggested indicators and three global (reportable) indicators (bolded) and two illustrative (optional) indicators within the R&I Framework.   Two are foundational to progress and three measure improvement over time.

Indicators

The first two indicators, "Identified R&I Coordinator" and "Publically Available Collaborative Research & Innovation Priorities/Agenda" are simple dichotomous indicators and considered foundational for promoting R&I activities. Teams are encouraged to communicate the contact information for the R&I Coordinator and the R&I priorities/agenda in a public fashion via websites.

The third indicator, "Percentage of mission health budget spent on health research activities" is intended to capture the output of, and commitment to, the R&I process. This will not capture the individual investments of some agencies, e.g. the NIH or the USDA. However, is should reflect the growing commitment to critical research and innovation in global health via the USG missions. The optimal percentage of mission budget allocated towards research will vary by program size and needs; in general countries are encouraged to target 3-8% towards research activities. It is important that teams include all the expenditures for various types of research in their calculation of total percentage expenditure. Research embedded in innovation to assess effectiveness, impact, and sustainability should be included in this total as well. The percentage should not include R&I research supported via Headquarters

The indicator, "number of protocols that include a local collaborator" captures the commitment to collaboration with local stakeholders and governments and to build sustainable research capacity. Reporting and/or tracking the number of peer review publications with a local collaborator reflects the commitment to: transparently building the evidence base by through scientifically standard process, communicating the results of R&I activities, collaborating with local scientific institutions, and building research capacity and country ownership for R&I.

Illustrative Indicators

Illustrative indicators that countries may find useful to track are listed in Appendices I.

SEEKING TECHNICAL ASSISTANCE

The US Government seeks to leverage all the US agencies' capabilities to advance and accelerate global health goals such as the GHI targets and Creating an AIDS-Free Generation. In keeping with the Quadrennial Diplomacy and Development Review (2010), the USG supports a "whole of government" approach to USG global health collaboration, coordination, thus leveraging of all USG agency resources. It is likely that USG mission teams will need technical assistance in advancing the Principle of Promoting Research and Innovation as suggested in this principle paper.   There are at least three ways that teams may identify technical assistance for R&I activities from across the USG: 1) use the resources identified through Appendix III in this paper, 2) specific request placed through the Country Support Unit via the Country Coordinators, or 3) make a specific request through the new Office of Global Health Diplomacy by completing a USG Global Health Research and Innovation Technical Assistance Request form.

ACKNOWLEDGEMENTS

REFERENCES

Madon, T., Hofman, K.J., Kupfer, L., Glass, R.I. (2007). Implementation science. *Science*, 318: 1728-1729.

Padian, N.S., C.B. Holmes, S.I. McCoy, R. Lyerla, et al. (2011). Implementation science for the US President's Emergency Plan for AIDS Relief (PEPFAR). *J Acquir Immune Defic Syndr*, 56(3).

The Global Fund to Fight AIDS, Tuberculosis and Malaria, United States Agency for International Development (USAID), World Health Organization (WHO), Special Program for Research and Training in Tropical Diseases, Joint United Nations Program on HIV/AIDS (UNAIDS), The World Bank. (2008) *Framework for Operations and Implementation Research in Health and Disease Control Programs*.

APPENDICES

Appendix I –Global and Illustrative Indicators

Global (required)/ Illustrative (optional)	Objective (s) measured	Indicator Name	Data Source	Data Collection Method	Target
Global	Objective I	**Publically Identified Research and Innovation coordinator(s) (Y/N)**	Research and innovation coordinator(s) scope of work ; Embassy staffing/org chart	Review of research and innovation coordinator(s) scope of work/role. Data will be collected on an annual basis.	Minimum 1 identified R&I Coordinator with 50% LOE
Illustrative	Objective I	**Number of USG supported health research activities**	Implementing partner records/documents	Data will be collected by reviewing implementing partner records. Research activities will be tracked at the Embassy level. Data will be collected on an annual basis.	
		Percent of Mission health research activities reflecting collaboration between two or more USG agencies in county			
		Percent of Mission health research activities reflecting collaboration with local research institutions and universities			
Illustrative	Objective II	**Existence of a national and sub-national databases that enable stakeholders to access relevant data for policy formulation and program management and improvement**	PEPFAR Report/WHO		

Illustrative	Objective II	Existence of designated and functional institutional mechanism charge with analysis of health statistics, synthesis of data from different sources and validation of data from population and facility sources	PEPFAR/WHO		
Global	Objective III	**Publically available country-specific Research and Innovation priorities (and/or agenda)**	Collaborative research and innovation priorities and/or agenda documentation	Country-specific R&I priorities and/or agenda can include a priority list or agenda that is country-led, USG-led or led collaboratively by country and USG. Included in reporting requirements by Embassy. Data collected on an annual basis.	Yes
Illustrative	Objective IV	**# of USG funded health research protocols that have a local collaborator**	Implementing partner and US agency records	Reviewed = Refers to health research protocols that have undergone a technical expert review and an IRB ethical clearance review. Included in reporting requirement by Embassy and implementing partners. Data collected on an annual basis.	Increase over time
Global	Objective IV	**Total dollar amount spent on health research by the Mission.**	Mission budget records, Implementing partner budget records	Data will be collected by reviewing mission health budget records and implementing partner budget records and dividing the amount of the health budget spent on research activities by the total amount of mission health budget for the past year. Data will be collected on an annual basis.	no target
		Percentage of Mission health budget spent on Research activities			Approximately 3 to 8 percent
Illustrative	Objective IV	**Number and list of USG supported health innovations introduced in country**	Implementing partner records/documents	*Innovation* = Is a novel way of making or doing things to improve the effectiveness, efficiency, or sustainability of a global health activity. Innovation is not limited to development of products, drugs, or diagnostics; it can also be a novel approach or application of a technology, service, or intervention. *Introduced* = Refers to any new innovation not previously supported in country that is incorporated into USG health programming or the host country health system. Data will be collected by reviewing implementing partner records/documents to sum the number of innovations introduced in the country during the past year. Data will be collected annually.	

Illustrative	Objective IV	**Number of health innovations developed locally with USG support**	Implementing partner records/documents	*Innovation* = Is a novel way of making or doing things to improve the effectiveness, efficiency, or sustainability of a global health activity. Innovation is not limited to development of products, drugs, or diagnostics; it can also be a novel approach or application of a technology, service, or intervention. *USG Support* = Support through the Higher Education Solutions Network (HESN) , Grand Challenge Program, or other program. Data will be collected by reviewing implementing partner records/documents. Data will be collected on an annual basis.	
Illustrative	Objective V	**Number and list of health innovations being scaled in host country with USG funding**	Implementing partner records/documents	*Innovation* = Is a novel way of making or doing things to improve the effectiveness, efficiency, or sustainability of a global health activity. Innovation is not limited to development of products, drugs, or diagnostics; it can also be a novel approach or application of a technology, service, or intervention. Data will be collected by reviewing implementing partner records/documents. Data will be collected on an annual basis.	
Global	Objective V and Objective I	# of peer review publications that include a local collaborator resulting from USG funding	Implementing partner records, research publications	Included in reporting requirements by Embassy and implementing partners. Data collected on an annual basis.	increase over time

Appendix II –Recommendations for Country Teams by Objective

Objective 1: Developing an Enabling Environment for R&I by USG team	
1.1	Identify at least one person within the team to serve as a R&I coordinator: • Coordinator is responsible for helping the USG team promote optimal use of best available evidence and acquisition knowledge. • R&I designee should manage lists of research activities occurring in country • Health teams are encouraged to request and utilize the AAAS Science & Technology Policy fellows who may be available to spend a year or more at the mission as part of the overseas fellows program
1.2	Coordination among USG Agencies for R&I: • Obtain list of USG/Washington contacts from the Country Support Office at federal global health agencies to help coordinate in country research including contacts at the following: HHS/NIH, HHS/CDC, HHS/OGHA, State/OGAC, USAID, MCC • Identify and compile ongoing USG supported global health research within the country to share with the USG team. It is not unusual for the USG agencies to be unfamiliar with research funded by other USG agencies. • Obtain list of former USG research trained individuals e.g. from Fogarty International Center (FIC) at NIH that reside and work in host country See Appendix 4 for additional R&I Resources
1.3	Coordinate Research Efforts with Host Country • Generate local contacts relevant to Mission specific health priorities at local science academies, higher education learning institutions, and professional associations and provide a list to the USG team. • Create a list of local scientists with specific technical expertise who are willing to share their expertise with the USG team and the Ministries of Health. It is common for the local scientists to feel they do not have a mechanism to contribute their expertise to public health efforts within their own countries. • Take a lead in working on developing and executing the collaborative research and innovation plan
Objective 1: Developing an Enabling Environment for R&I in Host Country	
1.4	Identify presence or plans for a National Health Research Plan
1.5	Collaborate with local educational institutions to ensure that USG funded health programs are leveraged for research, innovation, and degree programs for higher education
1.6	Support of research conducted toward USG target areas (e.g. HIV/AIDS, TB, Malaria, Nutrition, Maternal Health, etc.) in partnership with host country research institutes
1.7	Encourage policies requiring researchers to report results to USG teams and host country's relevant ministries.
1.8	Identify, support, and collaborate with relevant scientific advisory bodies utilized by the host country, such as the National Academies of Science. In the event that appropriate health research advisory groups do not exist, look for opportunities to assist in their

	formation, drawing upon existing scientific strengths in the country with a special emphasis on those researchers who have strong ties to international and USG research entities (e.g. the NIH, USDA, or the CDC).
1.9	Integration of policies and regulations to support research. Multiple organizations including government (national, state and district levels), health institutions, and community based organizations can play a significant role in facilitating or hindering research. Streaming and communicating guidance to the research community on country research policies and procedures can facilitate in country research.
Objective 2: Establishing an effective knowledge management system	
2.1	USG Teams are encouraged to centralize demographic and health data that it can be drawn upon to determine the context in which interventions will be carried out and that will provide data to inform strategy and program development as well as evaluations. In addition to establishing a centralized repository of such data (including either the data or easily accessible references to the data, such as hyperlinks that can be followed to find up-to-date data sets), the USG team should ensure that the existence and location of these data is made known to those who can use it in decision making. USG Teams are encouraged to seek information on evidence based services, interventions, and innovations to accelerate progress towards the USG targets. Each of the USG target areas has lists of up-to-date options for programs intended to reach USG targets. Key papers supporting many of the evidence based activities to
2.2	Data sets and information on best practices should be standardized to the extent possible, so that disparate data sets are more easily drawn upon for single analyses. This may entail requesting that program evaluations answer similar questions or produce data in similarly organized, machine readable formats, including the same meta-data with similar data sets (for example, how the data was collected, the time frame to which the data applies, or who produced it).
2.3	USG teams are encouraged to perform a mapping exercise that will result in knowledge of what USG-relevant data sets and knowledge are available (from USG, implementing partners, international organizations, NGOs, and others) and that will identify gaps that can be addressed through the research agenda.
Objective 3: Developing Country-Specific Prioritized R&I Agenda	
3.1	Assessment of Host Country Research & Capacity
3.2	Convene in-country health scientists and program implementers around a specific health priority or priorities, e.g. neonatal sepsis, or around a specific challenge to global health targets and programming (high rates of post-partum hemorrhage, malaria resistance, low vaccination rates, or low use of modern contraception. • Invite USG experts to participate as needed. Depending on the topic and goals, this could be a Science for Development meeting as described elsewhere in this guidance. This activity would support a dynamic information flow between researchers, policymakers, and implementers regarding research evidence and/or global health program planning, improvement and innovation. • For example, if a country is considering expanding misoprostol for prevention of maternal hemorrhage after childbirth, convene an in country meeting of policy makers, implementers, and researchers to review evidence and plan implementation science needs. Doing so will ensure integration of all available evidence, identification of knowledge gaps and technical

		assistance needs, and enhance the implementation of research findings into policy in the future.
3.3		Draft country specific Prioritized Research and Innovation agenda To be maximally effective, it is suggested that the R&I plan follow the time tested S.M.A.R.T. approach towards setting R&I objectives: Specific, Measurable results, Attainable, Realistic, Time bound. For example, though developing a malaria vaccine is a meritorious goal, it would not be attainable for example with single country resources, in a short time frame. Suggested content should include: • Assessment of host country Research & Capacity • The identification of resource, technical gaps, evidence gaps, and implementation challenges. • Key research priorities for a given time frame • Potential innovations to be scaled in a given time frame • Priority actions to advance the research and innovation agenda in coordination with the host government • Plan to assess, ensure, and share progress. Specific timelines for each research priority and a quantitative assessment of how research and innovation plans will advance programming and targets.
Objective 4: Designing and procuring evidence based programs & embedded R&I activities		
4.1		USG Teams should maintain a broad portfolio of research activities to inform programming including operational research, feasibility studies, epidemiological studies, and impact evaluations
4.2		Research and innovation activities should be embedded with the introduction and scale of innovations introduced in host country
4.3		USG Teams in host country should ensure that all Research Activities in Country compile with federal guidelines on human subjects protection, IRB, and ERC
Objective 5: Identifying and applying R&I learning to programs, policies, and evidence base		
5.1		USG teams should track the progress of R&I activities in a transparent fashion enabling teams to understand when new results will be available.
5.2		Incorporating new evidence into programming may be straight forward, e.g. novel mobile phone communication strategy for post natal follow-up in a rural community or complex e.g. integration of intermittent preventive therapy for children under five into ongoing vaccination programs. USG teams should not hesitate to seek technical assistance from headquarters for interpretation and application of learning outcomes into programs.
5.3		Implementing partners and USG staff should publish research findings in peer-review journals rather than contributing to the gray literature
Objective 6: Quantifying accelerated progress to global health targets		
6.1		USG teams should track the changes in programming and policies made on the basis of new evidence derived from R&I by health target area
6.2		USG teams should quantify the anticipated, and measure the actual, impact of the novel evidence on health outcome such as the seven USG target areas.

Appendix III. Resources for R&I Objectives

Resource	Website	Contact
Objective 1: Develop an Enabling Environment		
Global Health Technologies Coalition: Why Investing in Global Health Research Works	http://www.ghtcoalition.org/files/ER_GHTCPolicyReport2_final_c.pdf	
CDC Center for Global Health	http://www.cdc.gov/globalhealth/index.html	
CDC Office of the Associate Director for Science (Science Quality and Integrity) See guidance on Scientific Integrity	http://www.cdc.gov/od/science/index.htm	
FDA, Office of Global Engagement: Can help provide support to Mission health teams on overcoming regulatory hurdles.		US-FDA-OGE@fda.hhs.gov
Fogarty International Center at the National Institutes of Health: Supports research training opportunities for global health researchers in developing countries. The Division of International Relations, FIC, can also be contacted to determine the number and scope of current FIC awards and NIH supported trainee by country.	http://www.fic.nih.gov/	Dr. Jim Herrington, Director of the Division of International Relations, FIC/NIH herringtonj@mail.nih.gov
Department of State, Office of Global Health Diplomacy		
Global Health Initiative	http://www.USG.gov/	
HHS, Office of Global Affairs	http://www.globalhealth.gov/index.html	globalhealth@hhs.gov
HHS, Office of Global Health Research		
NCI, Center for Global Health: Cancer is a leading cause of death around the world. NCI/CGH helps support NIH research efforts on the surveillance, prevention, and treatment of various cancers worldwide.	http://www.cancer.gov/aboutnci/globalhealth	Dr. Ted Trimble, Director NCIGlobalHealth@mail.nih.gov

Resource	Website	Contact
NCI, Tobacco Control		Michele Bloch
NHLBI, Center for Global Health: NHLBI/CGH supports global health research on chronic disease at various research institutes around the world.	http://www.nhlbi.nih.gov/about/globalhealth/	Cristina Rabadán-Diehl, Ph.D., M.P.H. Deputy Director rabadanc@nhlbi.nih.gov
NIAID, Clinical Trials Network		
NICHD, Office of Global Health: The OGH facilitates international research and coordinates the HIV/AIDS portfolio at the NICHD.	http://www.nichd.nih.gov/about/org/od/ogh/Pages/index.aspx	Dr. Vesna Kutlesic kutlesicv@mail.nih.gov
NIEHS, Center for Global Environmental Health: The Global Environmental Health Program assists the NIEHS in achieving its goals in three areas: Global Environmental Health Research, Global Environmental Health Translation, and Global Environmental Health Scientific Capacity.	www.niehs.nih.gov/geh	Dr. John Balbus, Director NIEHSGEH@mail.nih.gov
Global Health Technologies Coalition: 25 NGOs work to building support for global health technologies, conduct policy analysis to inform, develop and pursue strategic agenda for GHT, conduct outreach and pursue alliances, education and inform policy makers (based in Washington DC)	www.ghtcoalition.org/about-ghtc.php	info@ghtcoalition.org
PEER Health program	http://sites.nationalacademies.org/PGA/dsc/peerhealth/index.htm	Kelly Robbins
USAID M Bureau, Library and Learning Resource Center	http://inside.usaid.gov/m/cio/support/service/library-learning-resources-center	
USAID TRACTION Project: Supports several USAID research projects around the world.	http://www.tractionproject.org/index.html	tracinfo@urc-chs.com
Objective 2: Establish an Effective Knowledge Management System		

Resource	Website	Contact
CDC Epi Info 7 and Epi Graph: downloads, tutorials and guides, translations (ex: French, Chinese, Spanish, Portuguese)	http://wwwn.cdc.gov/epiinfo/	
CDC Learning Connection: Public health Informatics, Epidemiology, Surveillance and Statistics	http://www.cdc.gov/learning/index.html	
CDC Science Clips an online bibliographic digest featuring scientific articles and publications that are shared to enhance awareness of emerging scientific knowledge.	http://www.cdc.gov/phlic/sciclips/	
AID Data: A public database which plots donor investments (including USAID, World Bank, DFID) in development through geographic tagging.	http://www.aiddata.org/content/index	
Clinical Trials.Gov: A website that maintains all approved USG supported clinical trials. Is searchable by country, region, or topic.	http://www.clinicaltrials.gov/	
Demographic Health Surveys (DHS): Contains health and demographic data from over 300 surveys in over 90 countries. Reproductive Health Surveys	http://www.measuredhs.com http://www.cdc.gov/reproductivehealth/Global/Surveys.htm	info@measuredhs.com
Knowledge for Health: A knowledge sharing website that contains health assessments, evidence, and the 'Implementing Best Practices' portal for researchers and practitioners to collaborate and share information. It also contains Popline, which is a searchable database of over 350,000 FP/RH publications and Photoshare, a searchable collection of free health and development photographs from around the world.	http://www.k4health.org/	
Implementation Science Journal: Is an open access, peer-reviewed online journal that focuses on research relevant to the scientific study of methods to promote the update of research findings into routine healthcare in clinical, organizational or policy contexts.	http://www.implementationscience.com/	
Multiple Indicator Cluster Surveys (MICS): Contains survey data on health, education, child protection and HIV/AIDS.	http://www.childinfo.org	mics@unicef.org
NIH Reporter: A public database of all NIH supported research, which can be searched by country or research topic.	http://report.nih.gov/	
UNICEF Country Statistics	http://www.unicef.org/statistics/index_countrystats.html	
USAID Development Experience Clearinghouse (DEC): A website that contains USAID project reports, evaluations and other relevant documentation on USAID	https://dec.usaid.gov/	ksc@usaid.gov

Resource	Website	Contact
projects dating back to 1946.		
USAID GeoCenter: The GeoCenter works with Missions and operating units on planning, policy and learning activities by employing geographic methods and technologies to help USAID think spatially about its programs.	http://www.arcgis.com/apps/PublicGallery/index.html?appid=143d06ca84d9447cb585e3a2ac1c8e82&group=79306efcd11a41b3a2c3b261b0c09f9c	GeoCenter@usaid.gov
WHO Data and Statistics	http://www.who.int/research/en/	
World Health Organization's Global Alert and Response System	http://www.who.int/csr/en/	
Objective 3: Develop Country-Specific USG Prioritized R&I Agenda		
Guidance for Creating a Science for Development Meeting		
Country Example of a USG Prioritized R&I Agenda		
R&I Agenda Table of Contents Template		
Objective 4: Design and Procure Evidence-Based Programs and Embedded Prioritized R&I Activities		
CDC Office of the Associate Director for Science (Science Quality and Integrity)	http://www.cdc.gov/od/science/aboutus/index.htm	
CDC Guidance on Scientific Integrity	http://www.cdc.gov/od/science/docs/CDCSIGuideE02_16_12.pdf	
CDC Quality Resources: CDC Peer Review, Human Subjects Protection, Final Report Guidance, IRBs, training	http://www.cdc.gov/od/science/quality/resources.htm	
CDC Integrity Resources: Public Health Ethics, Privacy and Confidentiality: legislation and regulations, Certificates and Assurance, Information Collection Review, Human Research Protections, Animal Care and Use	http://www.cdc.gov/od/science/integrity/	
Agency Level Research Policy		
Authorship Policy: CDC	http://www.cdc.gov/maso/Policy/Authorship.pdf	
Peer-Review Policy: CDC	http://www.cdc.gov/maso/pdf/PeerReview.pdf	
NIH/CDC/FDA Small Business Innovation Research and Small Business Technology Transfer programs (SBIR)	http://grants.nih.gov/grants/funding/sbir.htm	
CDC Innovation Resources	http://www.cdc.gov/od/scienc	

Resource	Website	Contact
	e/innovation/resources.htm	
Research Handbook		
Research Protocol Guidance: CDC	http://www.cdc.gov/od/science/docs/CDCSIGuideE02_16_12.pdf	
Advancing Excellence and Integrity of CDC Science: Innovation	http://www.cdc.gov/od/science/quality/innovation.htm	
USAID Human Subjects Research Guidelines	http://transition.usaid.gov/policy/ads/200/200mbe.pdf	
Report to Congress: Health Related Research and Development Strategy, 2011-2015	http://ghtcoalition.org/files/HRStrategy_web.pdf	
Objective 5: Identify and Apply R&I Learning to Programs, Policies, and Evidence-Base		
Evidence Summit Resources: Protecting Children Outside of Family Care	http://www.hvcassistance.org/summit.cfm	
Evidence Summit: CHW Evidence Summit Final Report	http://www.coregroup.org/storage/Program_Learning/Community_Health_Workers/chw%20evidence%20summit%20final%20report-19dec2012.pdf	
Objective 6: Quantify Accelerated Progress Towards the USG Targets		

Appendix IV. General Guidance of Science for Development Meetings

Recommendations: "**Science for Development Meetings**"
Hosted by USAID Mission Directors and/or US Government Ambassadors

Elizabeth Higgs, USAID & Jim Herrington, NIH December 2011

Purpose: Science for Development Meetings facilitates field linkages between the USG supported research community and the US development practitioners. These meetings can take several shapes from informal "meet and greets" to a more structured program which may yield greater strategic results. This document includes suggested steps for hosting a meeting.

Background: Under the Global Health Initiative (USG) umbrella, the USG is committed to a whole of government, evidence based approach to achieving the USG health targets. Effective use of science, technology, and innovation is critical to the success of the Presidential Global Health Initiative (USG). During his May 5, 2009 announcement, President Obama stated, "We will not be successful in our efforts to end deaths from AIDS, malaria, and tuberculosis unless we do more to improve health systems around the world, focus our efforts on child and maternal health and ensure that best practices drive the funding of these programs." USAID Administrator Rajiv Shah underscored the importance of advancing science and innovation: "Science and technology innovations are critical drivers of growth—some estimates attribute up to half of GDP gains to this kind of innovation. We will dramatically accelerate our efforts to solve major science, technology, and engineering challenges in development and engage the full federal science community in this effort."

USAID is committed to inclusive leadership and engaging the full federal science community to advance USG. USAID recognizes the critical importance of collaborating with in-country scientists and research institutions to support and advance the evidence base for efficient, effective, and sustainable health programs. Science for Development Meetings hosted by Mission Directors and/or US Ambassadors will initiate a dialogue with in-country NIH, DOD, CDC, and other USG supported researchers and other health innovators with the longer term goal of facilitating USG host country evidence-based programs to optimize health benefit to the populations needing them most.

Meeting Objectives: Objectives may vary depending on primary purpose of meeting

1) Communicate US Government development agenda and objectives to the host country health research and academic communities
2) Provide the mission directors and USG staff with a greater understanding of ongoing in-country research and innovation activities
3) Discuss how ongoing local research and public health institutions might be leveraged to support the USG principles and targets, e.g., "increase impact through strategic coordination and integration," and "encourage country ownership and invest in country-led plans."
4) Provide structured links with national researchers who can provide technical advice to the mission on research and innovation activities likely to advance USG goals, e.g. develop a prioritized research and innovation agenda

5) Identify new health scientists and scholars who might benefit from linkages with the NIH, CDC, USDA, USAID etc. and their support mechanisms

Possible Recommended Steps: Steps will vary depending on scope and primary purpose of meetings
   1) Identify the POC at Fogarty International Center at National Institutes of Health to provide list of in-country current and former NIH supported trainees, researchers, and research institutions. USAID Headquarters can assist with this
   2) Utilize in-country expertise and other resources to identify additional local resources without previous connections with the NIH
   3) Issue an invitation to the identified researchers. For those accepting, request a one-two page over view of research and innovation activities, and how this might relate to public interest/ national health strategy.
   4) Provide: a one to two page overview of USG, two page summary of USG country strategy, and overview of ongoing USAID supported research.
   5) Identify Scientific Session lead in country

Potential Outcomes:
   1) Database of local technical expertise and subject matter expertise
   2) New applicants for NIH supported research and training
   3) Development of standing links between the scientific community, the missions, and/or government ministries
   4) Identified specific health goals with integrated scientific and development work plans
   5) Collaborative research and innovation agenda for USG

<center>**Illustrative Short Meeting Agenda**</center>

I.   Welcome: USAID Mission Director or Ambassador
II.   Introductions
III.   Overview of USG Partnership effort, including principles and health targets
IV.   Overview of Country Specific USG Objectives
V.   Presentations by host-country scientists on their USG-funded research activities
VI.   Open discussion on how local researchers and health scientists are supporting USG objectives and identify missed opportunities
VII.   Open discussion on how USAID is supporting local research capacity, can foster country ownership, and identify innovative opportunities for host-country research to inform the USG development agenda

---

[i] All seven principles referenced: http://www.USG.gov/about/189862.htm

[ii] President Obama reiterated the goals of an AIDS-Free Generation and saving children from preventable deaths
http://www.theatlantic.com/politics/archive/2013/02/obamas-2013-state-of-the-union-speech-full-text/273089/
[iii] PEPFAR or the Presidential Emergency Plan for AIDS Relief was established in 2003 to help save the lives of those suffering from HIV/AIDS around the world. http://www.pepfar.gov..