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Healing Life. Delivering Care.
BUILDING AN ECOSYSTEM FOR CHANGE
2016 – 2018
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Harvard Medical School Advisory Committee,
Leadership Team, and Staff
Dear Friends,

The Harvard Medical School Center for Global Health Delivery—Dubai has been created with the express aim of building a robust ecosystem of researchers and practitioners committed to addressing the gap in delivery of high quality health care to individuals in the communities where they live and work.

As we mark the end of the fourth year of activities for the Harvard Medical School Center for Global Health Delivery—Dubai, we remain committed to our aim of strengthening the ecosystem of people thinking about how to better deliver health care to individuals, families and communities suffering from preventable and treatable diseases. Our conviction is that people, rich or poor, in both the east and the west, deserve high quality, affordable care, so that they can reach their full human potential. We have put this report together to share with you a number of important milestones as we pioneer our unique model to foster change.

The challenges we face in global health delivery can be solved, but will require progress in our thinking about health, care-giving, care-delivery, and the systems through which those who need health care are able to access it. Achieving this will require progress in both our understanding of how to better deliver health care to those in need, and moral clarity about viewing health as an inalienable human right. In the UAE, 2018 is the “year of Zayed,” or year of giving, in honor of Sheikh Zayed Bin Sultan Al Nahyan, the UAE’s founder. A visionary thinker who placed a great deal of emphasis on education and social development, Sheikh Zayed recognized that, “No matter how many buildings, foundations, schools and hospitals we build... all these are material entities.” Instead, he said, “The real spirit behind progress is the human spirit, the able man with his intellect and capabilities.” As we enter 2018, we honor this vision, and strive for a world where all people have the opportunity to achieve their full potential.

We hope you share in our collective achievements as we work together to improve health care delivery globally. We are eager for your input and your engagement.

SALMAAN KESHAVJEE, MD, PhD
Director, Harvard Medical School Center for Global Health Delivery—Dubai
Professor of Global Health and Social Medicine

This gap is a translation gap: academic medical centers have excelled in translating laboratory findings into clinically useful tools; but we have had limited success in the next step of translation, which is ensuring that individuals, families, and communities with health needs have access to the fruits of modern medicine. Unsurprisingly, this care-delivery gap exists across disease groupings — from diabetes, obesity, mental health, hepatitis C, and tuberculosis to access to timely surgical care — and across geographies ranging from Dubai to Boston, and from Cape Town to Beijing.

Dubai is an important global crossroads and hub for innovation. The aim of our Center was to develop a program in Dubai that would draw from the spirit on which Harvard University was founded—the pursuit of knowledge and the betterment of human kind—and Dubai was built—as a crossroads for innovation and human development. In order to achieve this goal, we specially designed a social strategy that would foster change in the way care is delivered. We created a mechanism to link Harvard researchers with local practitioners and scientists so that they could work together to ask important questions and generate new knowledge around the myriad delivery gaps being faced.

To date, we have funded more than five million dollars of cooperative research awards from our Center. We have also offered more than 100 scholarships to individuals in the UAE and the region to study in Harvard programs that are designed to increase capacity to conduct important research on health delivery. Through our workshop series, we also have brought together more than 1,500 scientists, practitioners and policy makers to translate state-of-the-art knowledge about care delivery into policies.

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SALMAAN KESHAVJEE, MD, PhD
Director, Harvard Medical School Center for Global Health Delivery—Dubai
Professor of Global Health and Social Medicine
Center for Global Health Delivery

The Harvard Medical School Center for Global Health Delivery—Dubai is addressing some of the most pressing health challenges in the region by focusing on research, medical education, and training. These activities together promise to improve health care delivery systems and patient outcomes for diseases prevalent in the United Arab Emirates, Middle East, North Africa, and neighboring regions in Africa, Asia, and Europe. The Center, established by Harvard Medical School in Boston and Dubai in 2014, is a hub for training, research, analysis, and policy formation that optimizes the last phase of health care delivery, ensuring that care providers have the systems and tools necessary to alleviate human suffering caused by disease.
Driving Change in Global Health Care Delivery

We build capacity with the aim of improving health care delivery in diverse communities where people live and work. Through research, education, and collaboration, we are addressing some of the most pressing health care delivery challenges facing our world today. We do this with a focus on disease areas that are emblematic of the challenges faced in delivering high quality health care.

**STEP 1**
Training is vital to our efforts to build capacity for better health care delivery research and implementation.

**STEP 2**
Our approach relies on a unique model of accompaniment—pairing regional investigators with Harvard faculty.

**STEP 3**
Expertise is exchanged, connections are made, and blueprints for progress are disseminated.

**STEP 4**
Policy drives local and national governments to take action on specific health care delivery topics.

Lifecycle of Improving Global Health Delivery
Harvard Medical School’s mission is “to create and nurture a diverse community of the best people committed to leadership in alleviating human suffering caused by disease.”

The Center fulfills this mission through a focus on optimizing the last phase of health care delivery.
Since our founding in 2014, the Harvard Medical School Center for Global Health Delivery—Dubai has been catalyzing a movement to translate knowledge into systems, tools, and policies that improve the last phase of health care delivery around the world.

In keeping with Harvard Medical School’s mission, ‘to create and nurture a diverse community of the best people committed to leadership in alleviating human suffering caused by disease’ the Center addresses some of the most pressing health challenges, assists with building local and regional research capacity through research and education, and advances the global health care delivery equity agenda by creating an environment where the best minds can come together to challenge the status quo.

IN THE PAST 48 MONTHS, THE CENTER HAS HOSTED

40 Workshops + Symposia
10 Major Courses

\[ \text{2,685 Attendees} \]

HIGHLIGHTS

Building a knowledge ecosystem is critical to Harvard Medical School’s mission and the cornerstone of our work.

THE CENTER CURRENTLY HAS

19 Cooperative Awards
6 Faculty Awards

$5.4 million Funds awarded

TO DATE, THE CENTER HAS AWARDED

81 Scholarships + Fellowships

To Harvard students, students from the UAE and the Center’s region

$1.6 million Funds awarded

These awards have included funding for the Harvard Medical School MMSc Program in Global Health Delivery, Harvard T.H. Chan School of Public Health Masters of Public Health, the Global Health Delivery Intensive summer program, the Program in Clinical Effectiveness, and scholarships for Harvard Medical School and Harvard University scholars to study in the region, as well as Global Education programs.

APPROACH AND STRATEGY

Dr. Ammar Albanna and his team conduct a workshop on ADHD for medical doctors at Al Jalila Children’s Specialty Hospital, Dubai.

During TB patient’s visit for contact investigation and post-exposure therapy initiation, a doctor checks patient’s digital x-rays and enters her observations on a tablet at the Indus Hospital in Karachi, Pakistan.
Tuberculosis kills more adults worldwide than any other infectious disease. And, although it has been treatable for years, rising levels of drug-resistant tuberculosis pose an ever-growing threat. By identifying, treating, and monitoring household contacts of patients diagnosed with drug-resistant tuberculosis at Pakistan’s Indus Hospital, this study will test the effectiveness of preventive therapy in children and adults who have been exposed to drug-resistant tuberculosis and who are at risk for developing tuberculosis disease. Moreover, it will illuminate the feasibility of preventive therapy implementation in a programmatic setting.

Yogyakarta, Indonesia, with a population of nearly 3.5 million people, is a middle-income province with a rich set of universities, public and private hospitals, and a public health system. However, its small pool of psychiatrists and lack of integrated mental health services severely hinder its ability to serve the mentally ill. This study—which is linked to a larger program attempting to build comprehensive service systems in five primary health care centers—endeavors to construct and evaluate culturally compatible models for improving services for people with a psychotic illness in settings with extremely limited resources. As a result, it will help to increase the percentage of people with psychotic illness that receive regular, appropriate care.

The development of strategies to make quality health services available to isolated, high-risk populations without access to health facilities remains a major challenge for health care delivery in low-resource settings. A prime example is the 1.25- to 1.5 million people living in fishing communities scattered across the islands and shores of Lake Victoria—in Tanzania, Uganda, and Kenya. The health of people living in East African fishing communities has attracted attention recently as the high prevalence and incidence of HIV infection in these communities has been revealed. This project aims to deliver basic health services to residents of fishing communities bordering Lake Victoria in Kisumu County, Kenya. The project draws on a “differentially care” model of HIV service delivery for low-resource settings that emphasizes adapting and simplifying the organization of services to meet the varying needs of recipients.

In 2014, the Center awarded grants to three faculty members from the Harvard Medical School Department of Global Health and Social Medicine to conduct health care delivery research in the region alongside local project investigators. In 2017, two additional grants were awarded. This work is establishing the Center’s reputation as a global innovation hub, strengthening the region’s research ecosystem, and addressing some of the world’s most pressing health problems.

**Faculty Research Contracts**

<table>
<thead>
<tr>
<th>STUDY</th>
<th>LOCAL PI</th>
<th>HARVARD PI</th>
<th>AFFILIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Monitored Assessment of SSI: A Pilot Study</td>
<td>Lubna Samad</td>
<td>John Meara</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
<tr>
<td>Tracking the Lancet Indicators in a LMIC Setting</td>
<td>Lubna Samad</td>
<td>John Meara</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
<tr>
<td>Time Driven Activity Based Costing (TDABC)</td>
<td>Hamidah Hussain</td>
<td>John Meara</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
<tr>
<td>Screening and Treatment of Children and Adults Exposed at Home to Drug-Resistant TB</td>
<td>Hamidah Hussain</td>
<td>Mercedes Becerra</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
<tr>
<td>Building a Model for Comprehensive Mental Health Care in Yogyakarta, Indonesia</td>
<td>Subandi and Carla Marchira</td>
<td>Byron Good, Mary-Jo Delvecchio Good</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
<tr>
<td>Delivering Health Services to Lake Victoria Fishing Communities in Kisumu County, Western Kenya: A Pilot Project</td>
<td>Elizabeth Bukusi, Zachary Kwenia</td>
<td>Norma Ware</td>
<td>HARVARD MEDICAL SCHOOL</td>
</tr>
</tbody>
</table>
The Center has funded research across four areas of focus:

- **Mental Health**: 7 projects
- **Surgical Care**: 2 projects
- **Infectious Disease**: 5 projects
- **Obesity + Diabetes**: 5 projects

**Total Projects**: 19

### Cooperative Research Award Program

The Center is focused on strengthening local health care delivery research through a cooperative award mechanism. The mechanism is designed to build collaborative research capacity in Dubai and the region. The Center uses a cooperative award agreement as a support mechanism that involves substantial grantor involvement (in this case, the Harvard Medical School Center for Global Health Delivery—Dubai). For each research award, the Center links a local/regional collaborator with an established researcher from Harvard University or from one of Harvard’s 16 affiliated hospitals. The Harvard faculty member works closely with the local/regional collaborator on all aspects of the research.
Cooperative Research Awards

**Bangladesh**

- **STUDY**: Facilitating Implementation of a Medical Referral Care Program and Mobile-based Training for Mothers of Children with Autism Spectrum Disorders in an Urban Population in Bangladesh
  - **LOCAL PI**: Aliya Naheed
  - **HARVARD PI**: Kerim Munir
  - **APPLICATION**: CHD

**India**

- **STUDY**: Developing a Comprehensive Care Model for Diabetes Mellitus in Rural India: An Innovative Approach to the Specialist Workforce Crisis in Rural Indian Hospitals
  - **LOCAL PI**: Swetha Iyer
  - **HARVARD PI**: Pankaj Malhotra
  - **APPLICATION**: CHD
- **STUDY**: Assessing the Effectiveness of Collaborative Tele-Mental Health Services for ADHD in Primary Care: A Randomized Trial in Dubai (ECTSAP-Dubai Trial)
  - **LOCAL PI**: Ammar Albanna
  - **HARVARD PI**: Hesham Hamoda
  - **APPLICATION**: CHD

**Kenya**

- **STUDY**: Developing a Community Health Worker-Based System for Suboptimal Care Finding and Referral at the Community Level in Kenya
  - **LOCAL PI**: Janet Agaya
  - **HARVARD PI**: Gita Rudan
  - **APPLICATION**: CHD

**Kuwait**

- **STUDY**: Developing a Community Health Worker-Based System for Suboptimal Care Finding and Referral at the Community Level in Kuwait
  - **LOCAL PI**: Nadia Zghoul
  - **HARVARD PI**: Edgar Ross
  - **APPLICATION**: CHD

**Lebanon**

- **STUDY**: Developing an Innovative Education Program for Adolescent Students: A School-Based Emotional Resiliency Program for Middle School Students in Lebanon
  - **LOCAL PI**: Anne Becker
  - **HARVARD PI**: Fadi Maalouf
  - **APPLICATION**: CHD

**India**

- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in India
  - **LOCAL PI**: Aliya Naheed
  - **HARVARD PI**: Kerim Munir
  - **APPLICATION**: CHD

**Pakistan**

- **STUDY**: Developing a Comprehensive Care Model for Diabetes Mellitus in Rural India: An Innovative Approach to the Specialist Workforce Crisis in Rural Indian Hospitals
  - **LOCAL PI**: Swetha Iyer
  - **HARVARD PI**: Pankaj Malhotra
  - **APPLICATION**: CHD
- **STUDY**: Assessing the Effectiveness of Collaborative Tele-Mental Health Services for ADHD in Primary Care: A Randomized Trial in Dubai (ECTSAP-Dubai Trial)
  - **LOCAL PI**: Ammar Albanna
  - **HARVARD PI**: Hesham Hamoda
  - **APPLICATION**: CHD

**South Africa**

- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in South Africa
  - **LOCAL PI**: Janet Agaya
  - **HARVARD PI**: Gita Rudan
  - **APPLICATION**: CHD

**United Arab Emirates**

- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in UAE
  - **LOCAL PI**: Aliya Naheed
  - **HARVARD PI**: Kerim Munir
  - **APPLICATION**: CHD
- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in South Africa
  - **LOCAL PI**: Janet Agaya
  - **HARVARD PI**: Gita Rudan
  - **APPLICATION**: CHD

- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in Lebanon
  - **LOCAL PI**: Anne Becker
  - **HARVARD PI**: Fadi Maalouf
  - **APPLICATION**: CHD

- **STUDY**: Developing an Emotionally Supportive Environment for Adolescents with Autism Spectrum Disorders in an Urban Population in Kuwait
  - **LOCAL PI**: Nadia Zghoul
  - **HARVARD PI**: Edgar Ross
  - **APPLICATION**: CHD
Feasibility of Implementing a Mental Health Care Program and Home-Based Training for mothers of children with Autism Spectrum Disorders in an urban population in Bangladesh

Mothers of children with Autism Spectrum Disorder (ASD) have reported higher levels of depression compared to mothers of children with other developmental disorders. The prevalence of ASD is high in Asia countries. A survey conducted in urban Bangladesh has discovered that 40% of the mothers with children attended as a special school have had major depressive disorder, and about 40% of them have suffered from a major depressive episode. High burden of depression can have adverse impacts on a mother’s ability to provide care for a child with ASD and as such results in lower quality of care for the child. Dr. Naheed hopes to address the gaps in mental health care supports and the home-based training program of institutionalizing the combined intervention of mental healthcare delivery and home-based training.

Dr. Naheed is conducting a pilot feasibility study of a package intervention including mental health care and a home-based training program for the mothers with children diagnosed with ASD to detect the positive activities of the specialists that offer ASD care in Dhaka city in Bangladesh. The study aims to address major depressive disorder among mothers of children with ASD in two schools over a 15-month period in Bangladesh. A psychosocial and a special educator have been deployed in each school to provide counseling and training sessions for mothers in the intervention. The impact of these interventions is evaluated with a post-hoc survey. The primary outcome of the study is to assess the feasibility of institutionalizing the combined intervention of mental health care supports and the home-based training program of the mothers who would be diagnosed as having major depressive episodes. Dr. Naheed hopes to address the gaps in mental health care delivery that is lead by mothers of children with ASD in Bangladesh.

Bundled Intervention Integrating Mental Health Services into Rural Primary Care in Nepal

Implementation research study

STUDY SITE: Nepal
LEAD PI: Bibek Adhikari, MD
Assistant Professor, University of California, San Francisco

Dr. Adhikari is conducting a large-scale randomized controlled trial implementing an outreach model to improve mental health services. The study evaluates the change in knowledge, skills, and attitudes in non-specialists who receive a mental health care curriculum and a large-scale outreach model to improve mental health services. The intervention is compared to usual care. The outcome of this study will focus on the impact of this model on the availability of mental health services, the knowledge and attitudes of the non-specialists, and the mental health outcomes for the children. The study will contribute to a better understanding of the mental healthcare services for children who require mental health services. A School-Based Emotional Resiliency Program for Middle School Students in Lebanon

Evaluation of implementation and effectiveness in reducing the burden of depression and anxiety

STUDY SITE: Beirut, Lebanon
LEAD PI: Fadi Maalouf, MD
Assistant Professor of Psychiatry, American University of Beirut
OUTCOME: Azize Becker, MD
Benjamin and Enid Hurwitz Professor of Global Health, Harvard Medical School

Recent data indicates the prevalence of mental disorders among adolescents in Lebanon is high. Nearly half of Lebanon’s adolescents have been estimated to have a mental health disorder. Of those, there are only three mental hospitals and five psychiatric units with 43 psychiatric beds per 10,000 individuals. Dr. Maalouf aims to assess the effectiveness of the ‘FRIENDS’ program, a cognitive behavioral school-based intervention that has been shown to be effective in reducing anxiety symptoms in youth. A randomized, wait-list control trial is used with an unblinded outcome assessment. This design will evaluate the effectiveness of the FRIENDS program, a cognitive behavioral school-based intervention that has been shown to be effective in reducing anxiety symptoms in youth.

Implementation research study

Instructor in Medicine, Brigham and Women’s Hospital
HARVARD PI:
Assistant Professor, University of California, San Francisco
LOCAL PI:
Assistant Professor, University of Medicine and Health Sciences
STUDY SITE:
Implementation research study in Primary Care in Nepal

Impacting integrated genotyping

STUDY SITE: Dubai, United Arab Emirates
LEAD PI: Mohammed Uddin
Associate Professor, Mohammed Bin Rashid University of Medicine and Health Sciences

The National Autism Spectrum Disorders (NASD) network, which focuses on improving care for children with autism spectrum disorders, currently has gaps in mental health care. For example, there are no standardized mental health care services for children with ASD. Dr. Acharya is conducting a longitudinal mixed-methods study to evaluate targeted genetic testing for 'At Risk' ASD/Neurodevelopmental Disorders in Children. The primary outcome of the study is to assess the feasibility of institutionalizing the combined intervention of mental health care supports and the home-based training program of the mothers who would be diagnosed as having major depressive episodes. Dr. Naheed hopes to address the gaps in mental health care delivery that is lead by mothers of children with ASD in Bangladesh.

The study evaluates the change in skills, knowledge, and attitudes in non-specialists who receive a mental health care curriculum and a large-scale outreach model to improve mental health services. The intervention is compared to usual care. The outcome of this study will focus on the impact of this model on the availability of mental health services, the knowledge and attitudes of the non-specialists, and the mental health outcomes for the children. The study will contribute to a better understanding of the mental healthcare services for children who require mental health services.

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Developing an Integrated Practice Unit for Mental Health Services

Within existing tuberculosis, diabetes and antenatal care programs

**STUDY SITE:** Karachi, Pakistan

**LOCAL PI:** Aneeta Pasha, MA
Manager, Mental Health Interactive Research and Development

**HARVARD PI:** Aamir Khan, MBBS, PhD
Lecturer on Global Health and Social Medicine, Harvard Medical School

Increasing numbers of patients are being left undiagnosed, misdiagnosed or untreated for mental illnesses due to the stigma associated with such diseases as well as a lack of integration of such services in public and private health care programs. Ms. Pasha is implementing a mixed-methods design to determine if the process of integrating mental health services with private and public provider settings improves mental health service efficiency and uptake for TB, diabetes and antenatal care patients. This team is evaluating the efficacy of a previously developed mHealth app for mental health screening, in six TB, diabetes, or antenatal programs across Pakistan. The goal of this study is to develop and evaluate a practical and replicable model for integrating mental health screening and treatment services by establishing and evaluating the performance of an integrated practice unit (IPU) for mental health services embedded within existing TB, diabetes and antenatal care programs in both public and private provider settings.

Teacher-Led Intervention to Build Resilience in Lebanese School-Age Children

**ACCEPTABILITY, EFFECTIVENESS AND PREDICTORS OF OUTCOME**

**STUDY SITE:** Beirut, Lebanon

**LOCAL PI:** Fadi Maalouf, MD
Associate Professor and Interim Chairperson, American University of Beirut

**HARVARD PI:** Anne Becker, MD, PhD
Maude and Lillian Presley Professor of Global Health and Social Medicine, Harvard Medical School

Anxiety disorders are very common in children and adolescents yet remain largely untreated. In Lebanon, anxiety disorders comprise 50% of mental disorders among youth. Yet, only 9% of those suffering from anxiety seek and receive help. Dr. Fadi Maalouf is studying the effectiveness of a school-based intervention, “FRIENDS for life.” This intervention has shown significant effect in reducing anxiety and depressive symptomology in middle school children in Beirut, as witnessed in a recent school-based randomized controlled trial.

Effectiveness of Collaborative Tele-Mental Health Services for ADHD in Primary Care

**A randomised trial in Dubai (ECTSAP-Dubai trial)**

**STUDY SITE:** Dubai, United Arab Emirates

**LOCAL PI:** Ammar Albanna, MD
Consultant Child and Adolescent Psychiatrist, Al Jalila Children’s Specialty Hospital

**HARVARD PI:** Hesham Hamoda, MD
Assistant Professor of Psychiatry, Boston Children’s Hospital

Dr. Albanna is conducting a randomized controlled trial to determine whether a tele-mental health program improves the clinical and functional outcomes for children with Attention Deficit Hyperactivity Disorder (ADHD) in Dubai. 67 patients are being recruited for treatment by pediatricians trained in ADHD screening and treatment methodology, with an additional 67 patients included as a comparator arm. As a result of this study, Dr. Albanna hopes to bridge the gap between the high prevalence and burden of ADHD in Dubai and the shortage of mental health professionals.
Access to surgical care is extremely limited in developing countries, driven in part by a parallel gap in access to anesthetics. The Lancet Commission on Global Surgery estimates that anesthesiologists make up less than 20% of surgical care providers globally. One qualitative study showed that in rural and under-resourced areas, there were rarely a surgeon and an anesthesiologist available in the same place. In rural India, it is uncommon for hospitals to be staffed with both a surgeon and an anesthesiologist, resulting in poor access to surgical care and patient morbidity and mortality. Spinal anaesthesia, which is far simpler to perform than general anaesthesia, offers an opportunity to significantly increase access to surgical care through task-shifting to non-anesthesiologist medical officers.

Dr. Menon is conducting a training program for medical officers in the application of spinal anaesthesia, subsequently conducting a noninferiority study of the medical officers vs. anesthesiologists in administering the procedure. Following the training program, Dr. Menon is attempting to procure credentialing for the trainees following completion of the training program and noninferiority study. Five medical officers have been recruited as trainees, and, following completion of their training, will perform spinal anaesthesia on 288 patients for the non-inferiority study. Outcome measures of interest will include the rates of inadequate analgesia, complications at 72 hours, and adherence to safety checklists by medical officers.
Extension of Hepatitis C Screening, Diagnosis and Treatment into the Community

A low cost, point-of-care, test-and-treat model for Pakistan

Hepatitis C is a viral disease of the liver that kills up to 700,000 people per year. The Hepatitis C virus (HCV) is particularly prevalent in low and middle-income countries, with Pakistan estimated to have up to 8 million people with HCV, making Pakistan home to the second largest HCV-infected population in the world. There are as many as 200,000 new infections taking place each year, with the main driver of this epidemic being reuse of needles. The introduction of generic drugs at affordable prices has provided an opportunity to scale up treatment of HCV in Pakistan. However, currently only 5% of HCV patients in Pakistan are thought to be diagnosed. This study aims to find undiagnosed HCV patients by developing and piloting a low-cost, test-and-treat strategy at community medical centers serving high-risk areas of Karachi.

Dr. Hamid seeks to: raise awareness of HCV diagnosis and treatment in communities; assess the sensitivity and specificity of locally available rapid HCV tests; assess the sensitivity of the GeneXpert system for HCV RNA detection, and pilot the Extended Community Health Outcomes (ECHO) model to evaluate the effectiveness of a low-cost community care model for HCV patients in Karachi. To test the sensitivity and specificity of locally available rapid and GeneXpert tests, 11,800 patients are being screened for HCV using rapid tests. Individuals testing positive for HCV then undergo GeneXpert testing and assessment for liver fibrosis.

Developing a Community Health Worker-Based System

For tuberculosis case-finding and infection control in health facilities in Kisumu, Kenya

Healthcare facilities in places like Kenya, which has high burdens of both tuberculosis (TB) and HIV, represent prime settings for TB transmission. Western Kenya demonstrated a 50% increased risk of TB infection in healthcare workers as compared to school teachers of the same community with the risk of infection increasing as a function of time spent in a health facility. Ms. Agaya is piloting a system for screening patients entering health care facilities to identify TB suspects, expedite diagnosis, and reduce exposure to TB for other patients to address the gap in TB diagnosis among people within health care facilities. The aim of this study is to develop a system that ensures systematic screening for tuberculosis among health care facility clients and basic infection control in waiting areas in an effort to reduce transmission within health care facilities.

A young Turkana sits with her sick child near a satellite clinic at Nakalala, a temporary nomadic settlement for the people of Turkana tribe (Kispa).
Assessing Pathways to Care Among Tuberculosis (TB) and Drug-Resistant Tuberculosis (DR-TB) Patients in Pune City, India

A biosocial inquiry

STUDY SITE: Pune, India
LOCAL PI: Sachin Atre, PhD
Research Consultant, Dr. D.Y. Patil Vidyapeeth, India
HARVARD PI: Maha Farhat, MD
Assistant Professor of Biomedical Informatics, Harvard Medical School

Inadequate or incomplete treatment, or low-quality medicines, can lead to the spread of drug-resistant (DR) TB. The TB and DR-TB burden is particularly severe in India, which accounts for a quarter of the world’s cases of TB disease, and has the highest burden of multidrug-resistant TB (MDR-TB) of any country. Dr. Atre seeks to assess pathways to TB treatment in India through a prospective observational cohort study. A total of 400 suspected TB patients and 800 sputum smear-positive patients are being screened using GeneXpert technology. The study team is following up with those whose TB shows signs of being drug-resistant. Patients’ experiences with TB and DR-TB care are assessed through semi-structured interviews of up to 300 patients diagnosed during the screening study. Outcome measures will include the proportion of TB cases identified through GeneXpert screening to be drug-resistant, time from sample collection to treatment initiation, and common themes in patient experiences and behavior during their treatment experience. This study aims to improve early diagnosis and treatment of Rifampicin-resistance (RR) and MDR-TB.

The Effect of Using Vaccine Reminder and Tracker Bracelets to Improve Routine Childhood Immunization Coverage and Timeliness in Pakistan

A randomized controlled trial

STUDY SITE: Karachi, Pakistan
LOCAL PI: Danya Arif, MSc
Senior Program Manager, Maternal and Child Health, Interactive Research and Development, Pakistan
HARVARD PI: Aamir Khan, MBBS, PhD
Lecturer on Global Health and Social Medicine, Harvard Medical School

Pakistan has one of the highest infant mortality rates in the world. This is in part due to the low coverage (54%) of all basic vaccinations. Some of the key factors hindering improvement in uptake of immunization services include low uptake, lack of awareness among parents of immunization schedules, and inability to remember vaccine appointments. Ms. Arif is testing simple silicon bracelets designed for illiterate or uneducated mothers, to increase immunization and simultaneously address issues in supplier verification. These bracelets can serve as effective reminders for mothers for timely immunization of their child and as a tool for vaccinators to verify vaccine administration and coverage. The bracelets, designed for illiterate or uneducated mothers, are low-cost and adaptable to most local settings. The expected outcome of this study will be an improvement in the proportion of fully immunized children (having received pentavalent-3, polio-3, pneumococcal conjugate vaccine-2, and measles-1 vaccines) and timely immunizations in children under 2 years of age.
A major feature of the cardiovascular disease crisis in the Middle East and North Africa (MENA) region is that its patients have the youngest age of first heart attack of any other region surveyed in the INTERHEART study, which examined 52 countries. Risk factors found to be prevalent in people who experience heart attacks early in their lives include diabetes, obesity, smoking, and dyslipidemia. In the UAE, Dr. Alsheikh-Ali estimates that 10% of the population has diabetes, due to high adiposity, unhealthy dietary habits, and physical inactivity. A previous study found that 76% of people screened in malls in the UAE were found to possess at least one uncontrolled risk factor. Dr. Alsheikh-Ali seeks to examine risk factors and delivery gaps associated with premature myocardial infarction (MI) in men younger than 55 and women younger than 65 in the UAE.

Dr. Alsheikh-Ali is conducting a case-control study at Sheikh Khalifa Medical City in Abu Dhabi among patients being treated for premature MI to screen for suspected biological and lifestyle risk factors. Upon discharge, patients enrolled in the case-control study are then tracked in a prospective observational cohort study in order to explore the personal, financial, social, and geographic factors associated with poor adherence to treatment post-MI. Patients are contacted for follow-up every three months. Dr. Alsheikh-Ali is recruiting 400 cases and 400 matched controls from Sheikh Khalifa Medical City (SKMC) for the case-control portion of the study; the 400 cases will then be enrolled in the cohort study. The case-control study will assess links between premature MI and certain risk factors, while the cohort study component examines adherence to medications and lifestyle counseling, as well as barriers to adherence, and their relationship with cardiovascular outcomes. Dr. Alsheikh-Ali aims to reduce the overwhelming burden of cardiovascular disease by addressing gaps in treatment in the UAE region.
High blood pressure is a known risk factor for several serious conditions such as ischemic heart disease and stroke. Studies have shown that although nearly 33% of adults suffer from hypertension globally, levels of treatment are low particularly within Arab countries where hypertension and high body-mass index are prevalent. Despite validated methods of diagnosis and treatment, only 13% of adults have adequate control over their hypertension indicating a considerable delivery gap. Dr. Ghattas is exploring the potential for blood pressure self-monitoring to engage patients and overcome obstacles to regular monitoring in Lebanon where the prevalence of hypertension has been found to be 37%. A pilot study is being conducted using mixed-methods to identify issues in self-monitoring, experienced by patients, and determine the current level of engagement amongst patients. This study aims to address a delivery gap that is contributing to the high rates of uncontrolled hypertension.

Pre-diabetes is a diagnosis given to people who have blood glucose levels above normal, but not high enough to be diagnosed with type 2 diabetes mellitus (T2DM). Because pre-diabetes is asymptomatic, people often remain unaware of their condition, allowing it to progress to full-blown T2DM. Intervening prior to this progression is critical, as modifying behavioral risk factors through lifestyle interventions aimed at encouraging weight loss can reduce the risk of developing T2DM, or delay the onset. Dr. Zghoul is piloting a feasibility assessment of a smartphone-based T2DM application by determining the proportion of Kuwaitis willing to download the app, estimating the proportion of app users at high risk for T2DM, assessing the compliance among high-risk participants in taking recommended diagnostic tests, and determining the correlation between application prompts, participant compliance, and lifestyle changes among participants in response to application recommendations. An invitation to download the app and participate in the program will be sent to 3,000 mobile phone numbers, of whom 100 are expected to download the app. Participants who download the app will be prompted to take a Centers for Disease Control-validated risk assessment. Based on their score, participants will be entered into appropriate weight loss programs directed by the app, and referred to Dasman Diabetes Institute for a blood test appointment, as appropriate. If effective, this app will be beneficial in changing behavior of those at risk of developing T2DM and preventing incidence of new cases of T2DM.
Implementing Diabetes and Cardiovascular Disease Risk Screening Program

In community pharmacies in the United Arab Emirates

STUDY SITE: United Arab Emirates

LOCAL PI: Hamza Al Zubaidi, MSc, PhD
Assistant Professor, University of Sharjah

HARVARD PI: Rifat Atun, MBBS
Professor of Global Health Systems, Harvard T.H. Chan School of Public Health

In Arabic-speaking countries, the prevalence of diabetes and cardiovascular disease (CVD) are increasing to alarming levels with high morbidity and mortality rates while the healthcare systems of these countries generally have little capacity to conduct screening. People at high risk for diabetes or CVD need early detection to initiate appropriate treatment and thereby delay progression and subsequent complications. Dr. Al Zubaidi aims to assess the feasibility and performance of an evidence-based screening intervention for type 2 diabetes mellitus and CVD in community pharmacy settings. This is the first time such a study is being conducted in an Arabic-speaking country. The study engages a representative sample of 12 community pharmacies in the UAE to recruit 672 screening participants from across the population. Outcomes include the percentage of participants who screen positively for elevated diabetes risk or undiagnosed diabetes, elevated CVD risk, the percentage of positively-screened individuals referred for medical assessment, and the rate of uptake of these referrals. Dr. Al Zubaidi hopes to introduce pharmacy-based screening for diabetes and other chronic diseases into the UAE which can lead to improved health outcomes.

Shared Decision-Making and Delivery of Care at Outpatient Clinics in Dubai

Does the gender of the patient and the provider make a difference?

STUDY SITE: Dubai, United Arab Emirates

LOCAL PI: Mohamad Alameddine, PhD
Associate Professor of Health Management and Policy, Mohammed Bin Rashid University

HARVARD PI: Amil Shah, MD
Assistant Professor of Medicine, Brigham and Women’s Hospital

Enhancing patient-centered care through the promotion of shared decision-making (SDM) in clinical settings is considered a top priority for health managers and policy makers in health systems. Gender has been known to play a key role in patient-provider interactions. Female physicians are reported to possess stronger patient-centered communication styles, with patients who are more engaged in discussions and more likely to express themselves freely. Dr. Alameddine seeks to assess patient and provider perceptions of shared decision making in outpatient clinics in Dubai, identify factors associated with favorable perceptions of SDM and explore the effect of provider’s and patient’s gender on SDM through a cross-sectional survey of patients and providers. Fifty clinicians, divided evenly by gender, are being selected. Following their appointments with participating physicians, 250 male and 250 female patients are being assessed on SDM from a patient perspective, as well as an assessment of general patient satisfaction. The study goal is to ensure that the treatment plan for common diseases such as hypertension, obesity, diabetes, and cardiovascular diseases is based on a shared decision between the physician and the patient, irrespective of gender, and to enhance patient satisfaction and compliance to treatment protocols.
WORKSHOPS + SYMPOSIA

WITHIN THE PAST 24 MONTHS, THE CENTER HAS HOSTED:

1,761 Attendees
89 Countries Represented

Workshops

Muslim Philanthropy and Sustainable Health Care Delivery in the Muslim World
DECEMBER 1–2, 2016

Emerging Lessons from Pakistan for the Zero TB Initiative
FEBRUARY 22–24, 2017

Determinants of Obesity and Diabetes in the Middle East: Systems Thinking and Systems Change
FEBRUARY 26–27, 2017

Obesity, Diabetes and Breast Cancer Nexus in the MENA Region
FEBRUARY 28–MARCH 1, 2017

The Lancet Commission on Reframing NCDs and Injuries for the Poorest Billion
MARCH 9–10, 2017

Systems of Care for Autism Spectrum Disorder: A Global Perspective
MARCH 30–APRIL 1, 2017

Outpatient Care Delivery in the Russian Federation: Creating a Platform for Improved Health Outcomes
JUNE 28, 2017

Field Guide for Management of Multidrug-Resistant Tuberculosis in Children
JULY 10–21, 2017

Rethinking the International System of Health Governance
SEPTEMBER 15–17, 2017

First Global Consultation on Progress Metrics for Zero TB Zones
SEPTEMBER 26, 2017

Global NCD Research: Perspectives from INDEPTH and UAE Countries
DECEMBER 10–11, 2017

Health System Strengthening and Breast Cancer Care in the Middle East: Results of the Harvard Research Study
JANUARY 22–23, 2018

Advancing Global Nutrition for Adolescent and Family Health: Innovations in Research and Training
FEBRUARY 16–17, 2018

National Surgical, Obstetric, and Anaesthesia Planning
MARCH 21–22, 2018

Symposia

Keynote: The Role of TB Infection in TB Elimination
SEPTEMBER 27, 2017

TB Infection: Building a Framework for Eradication
SEPTEMBER 27–28, 2017

New Strategies and Tools for Treating Obesity in Primary Care
OCTOBER 8, 2017

Diabetes Update 2017
OCTOBER 9, 2017

Primary Care 2030
JUNE 21–22, 2018

Scaling Up Community Health Worker Delivered Interventions for Common Mental Disorders
JUNE 23–25, 2018

Zero TB Initiative: Strategies to Eliminate TB One Community at a Time
JULY 15–16, 2018
Courses
Within the past 24 months, the Center has hosted 10 major courses with 197 attendees representing 26 countries.

Protocol Development
Led by Subhash Chandir, senior epidemiologist, this three session course introduces basic research concepts to healthcare professionals interested in conducting research and methods to translate ideas into successful scientific protocols. Participants included healthcare professionals, health scientists, and researchers.

Strategy and Value Measurement for Global Health Care Delivery
From the vast open spaces of rural Siberia to the dense urban neighborhoods of Lima, Peru, the challenge is similar: how to best deliver effective health care to those who need it. This past spring, Harvard’s medical and business schools convened 68 senior clinical, financial, and administrative leaders from universities and health systems in 17 countries in Asia, Europe, and the Americas at the Harvard Medical School Center for Global Health Delivery—Dubai for a three-day intensive course designed to teach the fundamentals of strategy and value measurement for global health care delivery.

This course is one of the latest steps in a process that began when the Center was launched two years ago. In that short time, faculty and staff have cultivated a program of diverse international research and education initiatives reaching 99 countries and bringing together researchers, clinicians, and students from around the globe for collaborative research projects, symposia, and educational programs.

The work involves a broad discussion of how to improve health outcomes for tuberculosis, diabetes, heart disease, mental health, global surgery, non-communicable disease and other challenges affecting countries around the globe, and then the design of strategic global health initiatives to tackle them. The participants came with diverse experiences and perspectives, but shared a common goal. They came to learn strategy and value measurement techniques for global health care delivery.

“One came away with new perspectives, an increased sense of responsibility and the hope to be able to properly utilize the tools and ideas generated to make sustainable impact and change.”

JUSTINA SEYI-OLAJOE
Lagos University Teaching Hospital, Nigeria

“Strategy and Value Measurement for Global Health Care Delivery is an exciting example of how health care delivery can be improved through optimization of different parts of the care delivery value chain.”

SALMAAN KESHAVJEE, MD, PhD
Director, Harvard Medical School Center for Global Health Delivery—Dubai
Professor of Global Health and Social Medicine, Harvard Medical School
During the last 24 months, the Center awarded scholarships to individuals to attend the Global Health Delivery Intensive Program and the Program in Clinical Effectiveness at Harvard Medical School.

**Scholars**

Participated in the Global Health Delivery Intensive Course

The course is a rigorous non-degree summer program that trains public health leaders and health practitioners.

**25 Scholars**

- **REHAM IBRAHIM ABOU EL FADL, MPH, PhD**
  Consultant, Social Research Center, American University in Cairo, Egypt

- **ARUN BAHULAYEN NAIR**
  Health Systems Researcher, ACCESS Health International, India

- **ARIFAH NUR SHADRINA**
  Chief Operating Officer/Physician, Kalasatama Child & Adolescent Clinic, Founder, GoldenCare Endeavors

- **ARIDAFI MUKHIT, MS**
  Health Nutrition Officer, United Nations Relief and Works Agency, Kenya

- **LOISE NDONGA**
  Medical Doctor, Cardiovascular Diseases, Kenya Ministry of Health, Kenya

- **RAHAB BATOLI**
  Research Coordinator, Department of Pediatrics and Child Health, Aga Khan University, Pakistan

- **CAROLINE MAE RAMIREZ**
  Consultant, Health Systems Management, Philippines

- **AMANI SALEH ALQANTANI, BSc, MPH**
  PhD Candidate in Public Health and Epidemiology, The University of Sydney, Australia

- **GYANU TAMANG**
  Monitoring, Evaluation, Accountability and Learning Manager, Catholic Relief Services, South Sudan

- **PRATISTHA THAPA RAMYAAL, MPH**
  Senior Operations Partnerships Manager, Possible Health, Nepal

- **ABHA SHRESTHA**
  Program Lead, Rural Health Services Division, Dhulikhel Hospital, Nepal

- **BIKESH SHRESTHA**
  Deputy Executive Director, Nick Simons Institute (NSI), Nepal

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  Community Impact Manager, Nyaya Health, Possible Health, Nepal

- **POSHAN THAPA, MPH**
  Director of Research and Evaluation, Nyaya Health, Nepal

- **RAWYA KHODOR, MPH**
  Research Consultant, Issam Fares Institute for Public Policy and International Affairs, Lebanon

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  Medical Officer, Possible Health, Nepal

- **BIKASH GAUCHAN**
  Director of Medical Education, Possible Health, Nepal

- **PRADIP LAMSAL, MS**
  Head of Hospital Pharmacy and Social Medicine, Helping Hands Community Hospital, Nepal

- **BHASKAR PANT, MD**
  Orthopedic Surgeon, Grano International Hospital, Nepal

- **ALLA ABDALLA**
  Project Manager, Executive Team for Healthy Lifestyle, United Arab Emirates

- **INAS EL SHAHAWI**
  Specialist Dentist, Dubai Health Authority, United Arab Emirates

- **ENAS MOHAMMED ELZUBEIR**
  Authorization and Case Management Medical Officer, Health Insurance Company, United Arab Emirates

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  Community Impact Manager, Nyaya Health, Possible Health, UAE

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The program is designed for physician-clinicians, fellows, and faculty who seek quantitative and analytic skills needed for clinical research or are interested in health care administration. Three individuals took part in the first year of the Program in Clinical Effectiveness and one individual took part in the second year.

4 Scholars

Participated in the Program in Clinical Effectiveness

1 Scholar

Participated in the Master of Public Health program at the Harvard T.H. Chan School of Public Health

1 Scholar

Participated in the Master of Medical Sciences in Global Health Delivery Program
The Center provided 21 awards totaling $252,000 to Harvard medical and graduate students to address crucial global health care problems. The proposed research will lead to innovative interventions that will optimize the “last mile” of health care delivery.

**Awards**

The internship provided students with a strong foundation in the basics of clinical and health delivery research and exposed them to the tools of research methodology. Students also worked alongside Center staff to support research projects conducted through the Center’s Cooperative Research Award Program and completed the online module, “SWEN — Global Health Care Studies from a Biosocial Perspective.”

The one-month internship concluded with a journal club in which each intern presented a critical appraisal of a scientific publication.
Our Center seeks to promote systems of care delivery through which we can share the fruits of modern medicine — across diseases and across geographies.

We have set in motion a process of accompaniment: working in close partnership with researchers and practitioners to create new knowledge, and translating this knowledge into policies that can directly improve health care delivery. Our mission is both intellectual and moral, and will require both the creation of better systems of care delivery, and a commitment from people, communities and governments.

We hope you will work with us to foster this change.
Our Global Footprint

This map represents the worldwide reach of our collaborators since the inception of the Center.

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<tbody>
<tr>
<td>50</td>
<td>Number of Workshops, Symposia, and Courses</td>
</tr>
<tr>
<td>2,685</td>
<td>Total Number of Attendees</td>
</tr>
<tr>
<td>81</td>
<td>Total Number of Scholars</td>
</tr>
<tr>
<td>102</td>
<td>Total Number of Countries Represented</td>
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Faculty

Our sincere thanks to the Harvard University faculty who play a key role in building capacity in Dubai, the UAE, and the region.

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SHEHZAD NOORANI
Assistant Professor of Medicine
Brigham and Women’s Hospital

It is an honor and a pleasure to work with Shehzad Noorani. You will find his photographs throughout our progress report and on display in our offices in Boston and Dubai. Shehzad has a deep interest in social issues that affect lives of millions of people in developing countries. He has covered major stories resulting from man-made and natural disasters in Afghanistan, Iraq, Sudan, Sri Lanka, Syria, Turkey and Bangladesh. Other assignments for organizations like UNICEF, WHO, BRAC, UNADS, Johns Hopkins and Harvard University have taken him to over 60 countries in Europe, Asia, Central Asia, Africa and the Middle East.

His personal and in-depth documentary work has been extensively exhibited and featured in major international magazines and publications around the world. He received numerous awards including Mother Jones International Fund for Documentary Photography for Daughters of Darkness, a story about the lives of commercial sex workers in South Asia and honorable mention by National Geographic’s All Roads Photography Program in 2005 for Children of Black Dust. River Bleeds Black, his work on environmental degradation of the Buranga river in Bangladesh, was selected by the Open Society Institute for Moing Walls 15.
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SPECIAL THANKS
We are grateful to those who have supported the ongoing work of the Center.

Al Jalila Foundation
Advance Access & Delivery
Beth Israel Deaconess Medical Center
Boston Children’s Hospital
Brigham and Women’s Hospital
Chandika Medical College
Division of Global Health Equity at Brigham and Women’s Hospital
Dubai Harvard Foundation for Medical Research
Dubai Health Authority
Dubai Healthcare City Authority
Gulf Medical University
Harvard Business School
Harvard Global Support Services
Harvard School of Dental Medicine
Harvard T.H. Chan School of Public Health
Interactive Research and Development
Massachusetts Eye and Ear Infirmary
Massachusetts General Hospital
Mohammed Bin Rashid University of Medicine and Health Sciences
Partners In Health
Thomson Group

We are grateful to the Dubai Harvard Foundation for Medical Research.
Its generous financial support has allowed the Center to establish a presence in Dubai and make tangible progress throughout the region. We are also grateful for the Foundation’s continued support of our mission to build capacity for change.

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