

Research Forum Review

August 2015 to January 2016



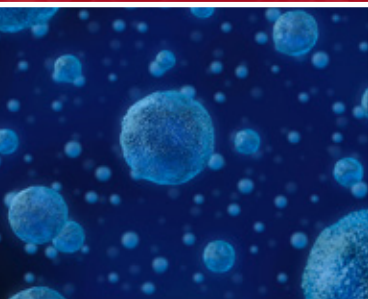
Neuroscience

Neuroscience



Heart

Heart



Infections

Infections



مؤسسة حمد الطبية
Hamad Medical Corporation

HEALTH • EDUCATION • RESEARCH صحة • تعليم • بحوث

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Research is important in creating the evidence base that can be used to drive forward changes in clinical practice to improve outcomes for our patients.

Welcome messages



Great strides in research

The rapid development of Qatar and its healthcare system has given us an opportunity to establish Hamad Medical Corporation as the leader of biomedicine and clinical research in the region.

It is an exciting time for research in HMC. We continue to build on our research strengths in cardiovascular, trauma, surgery, pediatrics, cancer, diabetes, urology, emergency medicine, neuroscience and genetics and molecular science.

We recently received the distinction of becoming the first healthcare system globally to have achieved accreditation of all our hospitals by the Joint Commission International (JCI) under the Academic Medical Center program. It is heartening to know that our research policies, processes and quality were evaluated and are in line with best practices around the world.

The advent of the Research Forum program since last year has been a major success. The Research Forum was envisioned to be a platform where all researchers within HMC can gather to discuss research and collaborate and share research ideas and support each other to create an enabling environment and research culture within HMC and Qatar.

Six months into the program, the Research Forum has already addressed current research in Qatar on Neuroscience, Heart and Infections. The Research Forum Support Committee has supported over 50 researchers with their research ideas and projects.

The Research Forum has strengthened our long-standing partnerships with Qatar University, Weill Cornell Medical College-Qatar, Sidra Medical and Research Center, Qatar Biomedical Research Institute and Hamad Bin Khalifa University. The resounding success of the Research Forum program is evident from the participation of all biomedicine and health institutes in Qatar.

I would like to thank the entire Faculty, physicians, nurses, staff, students and our collaborators from biomedicine institutes in Qatar who have come together to contribute to the Research Forum. We are committed to develop the Research Forum program and are hopeful that it continues to grow and deliver its promise.

**Professor Ibrahim A Janahi,
Executive Director Research,
Hamad Medical Corporation
Professor of Clinical Pediatrics, Weill Cornell Medical College**



Virtuous cycle of research, education and clinical practice

In recent years there has been a resurgence of interest in Academic Health Systems as a model for driving improvements in healthcare. They do this by adopting a laser-like focus on excellence and innovation across all their spheres of activity, questioning and challenging current dogma and introducing and testing new concepts, whether it is in clinical practice, research, administration or education. This is called

'the virtuous cycle', whereby each area is interdependent, such that advances in one will influence another. This interlocking of the clinical, research and educational components of the mission will facilitate the process of delivering new medical and scientific advances to the patient.

Research underpins and facilitates change, allowing us to progress and move seamlessly into a future that promises personalized medicine, cures for diseases such as cancer and more efficient delivery of services to underprivileged sections of our society such as those with mental health issues. To achieve this, however, research must be embedded in the clinical services and be delivered by inter-professional teams drawn from across the entire Qatar research ecosystem. It must also engage the community, funding bodies, patient support groups and the government as partners so that policy can be influenced, particularly in the area of public health.

The Qatar AHS is committed to this concept and will also become more self-sufficient by producing a national inter-professional workforce that will equal the best in the world, through a rigorous education and training program. The Research Forum is one such program and its strength and success comes from the fact that it is organized and led by the research community itself.

**Professor Edward Hillhouse
Chief Of Scientific, Academic and Faculty Affairs
Hamad Medical Corporation, Doha, Qatar.
Professor of Medicine
Department of Medicine, Weill Cornell Medical College**



Bridging the research spectrum

Health research strengthening is widely accepted as one of the strongest, most cost-effective and sustainable methods of improving the health of populations. Qatar is at its tipping point in research after years of investment and with a huge pool of young physicians, nurses, students and researchers. The Research Forum program was created to strengthen and harness the true potential of research in HMC and Qatar.

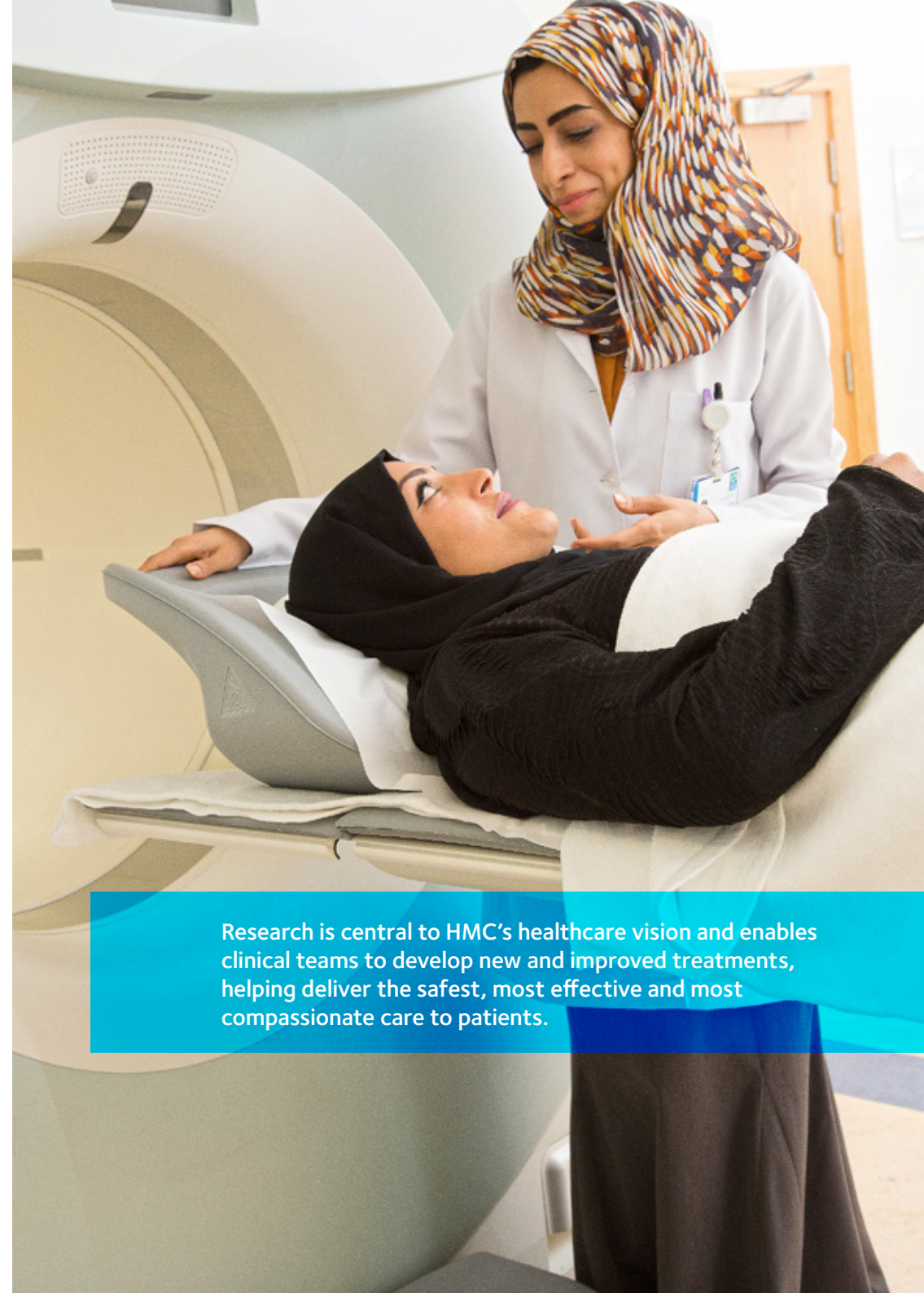
The conception of the Research Forum began in early 2015, following which a series of meetings was conducted with senior medical and academic HMC leadership to discuss the idea. A consensus was then developed and the Research Strategy and Assurance Committee approved the establishment of the Research Forum program in May 2015.

The Research Forum has evolved to provide an ecosystem for biomedicine and health research in Qatar. Three important research areas, Neuroscience, Heart and Infections have been covered extensively. Researchers, clinicians, scientists and health professionals from across HMC, Qatar University, Weill Cornell Medical College-Qatar, Sidra Medical and Research Center, Qatar Biomedical Research Institute and Hamad Bin Khalifa University came together to present their work, connect and discuss research. New research ideas and collaborations were spawned at the Research Forum.

The Research Forum Support Committee brings together a group of researchers, scientists and academic clinicians who are keen to provide research support and guidance to aspiring researchers in HMC and Qatar. The invaluable contribution by the Research Forum Support Committee members has resulted in many researchers, physicians, nurses, health professionals, fellows, residents and students being facilitated and supported with their research projects. I am thankful to the Research Forum Support Committee members who have provided their time and efforts in creating a research support system.

We are dedicated to building on the success that we have achieved with the Research Forum program. We look forward to the future where the Research Forum plays its role in strengthening and developing Qatar's health research system and contributes to global scientific knowledge and advancement of medicine and health.

Dr. Furqan Irfan,
Research Forum Lead,
Clinical Scientist, Emergency Medicine,
Hamad Medical Corporation



Research is central to HMC's healthcare vision and enables clinical teams to develop new and improved treatments, helping deliver the safest, most effective and most compassionate care to patients.

Chapter 1: Neuroscience

August 2015

The First Research Forum on Neuroscience was held on 17 August 2015 at Bayt Al Dhiyafah, Hamad Bin Khalifa Medical City. The program started with the welcome speech followed by research talks on Neuroscience – Stroke and Multiple Sclerosis led by Professor Ashfaq Shuaib and his team. Speakers included Professor Ashfaq Shuaib, Dr. Saadat Kamran and Dr. Naveed Akhtar from **Hamad Medical Corporation**, Professor Rayaz Malik from **Weill Cornell Medical College-Qatar** and Associate Professor Owais Qudwai from **Qatar University**. The research talks spanned the spectrum of stroke research in HMC and included an interesting talk on corneal confocal microscopy markers of axonal loss and repair in Multiple Sclerosis. The afternoon session was dedicated to research support provided by the Research Forum Support Committee, with one to one discussions with aspiring researchers.

Breakdown of attendees

| DESIGNATION | NUMBER OF PEOPLE |
|---|------------------|
| Directors and Chairs | 14 |
| Senior Consultants | 21 |
| Consultants | 14 |
| Specialists | 7 |
| Nurses | 9 |
| Fellows and Residents | 12 |
| Scientists | 9 |
| Researchers | 12 |
| Executives | 5 |
| Allied Health Professionals | 25 |
| Qatar Biomedicine Institutes (Weill Cornell Medical College-Qatar, Qatar University) | 2 |
| Total | 130 |

Program

| TIME | TOPIC | PRESENTER |
|--------------------|--|---|
| 9am to 10am | Registration | Ms. Josephine Williams Project, Manager, CPMO |
| 10am to 10.10am | Welcome speech | Mr. David Astley, Chief of Tertiary Hospitals Group |
| 10.10am to 10.20am | Research in HMC | Professor Ibrahim Janahi, Executive Director of Medical Research |
| 10.20am to 10.30am | Establishing the Research Forum | Dr. Furqan B. Irfan, Lead Research Forum, Clinical Scientist and Research Lead, Dept. of Emergency Medicine |
| 10.30am to 11.45am | Present Your Research: Neuroscience | |
| 10.30am to 10.45am | 1. Understanding Collaterals in Acute Stroke | Prof. Ashfaq Shuaib – Director Neurosciences, HMC |
| 10.45am to 11am | 2. Augmenting Brain collateral circULATION by perConditioning in Acute iSchemic Stroke (ABULCASIS study) | Dr. Saadat Kamran – Senior Consultant Neurologist, HMC Dr. Naveed Akhtar – Consultant Neurologist, HMC Prof. Ashfaq Shuaib – Director Neurosciences, HMC |
| 11am to 11.15am | 3. An Intelligent Instrumentation Integration Platform. Aiming for zero stroke related complications. (Algorizm Study) | Dr. Naveed Akhtar – Consultant Neurologist, HMC Owais Qudwai – Associate Professor, Computer Engineering, Qatar University Dr. Saadat Kamran – Senior Consultant Neurologist, HMC |
| 11.15am to 11.30am | 4. A randomized double-blinded placebo controlled trial of OSA treatment in stroke: Impact on vascular steal, hypertension, AF and development of a customized new monitoring device for cardiac rhythm (Avicenna study) | Dr. Saadat Kamran – Senior Consultant Neurologist, HMC Dr. Naveed Akhtar – Consultant Neurologist, HMC Prof. Ashfaq Shuaib – Director Neurosciences, HMC |

| TIME | TOPIC | PRESENTER |
|--------------------|--|--|
| 11.30am to 11.45am | 5. Imaging biomarkers to assess severity and progression of Multiple Sclerosis. IBN NAFIS study. | Dr. Saadat Kamran – Senior Consultant Neurologist, HMC Prof. Rayaz Malik –, Professor of Medicine, Weill Cornell Medical College- Qatar. Dr. Dirk Deleu – Head of Neurology, HMC |
| 11.45am to 12.15pm | Q and A | Stroke Research team |
| 12.15pm to 12.30pm | Ethics | Prof Richard Gray |
| 12.30pm to 1.30pm | Prayer/Lunch Break | |
| 1.30pm to 4.30pm | Bring Your Research | |
| | Research Idea | Dr. Furqan B. Irfan, Dr. Zain Bhutta |
| | Research Question/Hypothesis | Dr. Sameer Pathan, Prof Peter Cameron |
| | Literature Search | Dr. Dominique Soekarman, Dr Palli Abdulrouf |
| | Scientific Justification | Prof. Richard Gray |
| | Study Design and Methodology | Dr. Rafael Consunji |
| | Clinical and Public Health research | Prof Ashfaq Shuaib, Prof Stephen Thomas, Prof Edward Hillhouse, Prof Ibrahim Janahi |
| | Genetics & Molecular research | Professor Ramzi Mohammad, Dr Fayaz Ahmad Mir, Dr Ajaz Ahmad Bhat, Dr Muzammil Ahmad Khan |
| | Translational Research | Dr. Shahab Uddin Khan, Dr Jane Olsson |
| | Citations and references | Dr. Yahia Zakaria Imam |

| TIME | TOPIC | PRESENTER |
|------------------|---------------------------|--------------------------------------|
| | Sample size calculation | Dr. Prem Chandra |
| | Research grant/ proposal | Dr. Naveed Akhtar, Ms Rabia Ali Khan |
| | Ethics/ IRB | Ms Yael Hoogland |
| | Data collection | Dr. Ayman Ahmed ElMenyar |
| | Statistical Analysis | Dr. Rajvir Singh |
| | Write a paper | Dr. Cornelia Sonia Carr |
| | Write an abstract | Dr. Guillaume Henri Jean Alinier |
| | Submit a manuscript | Dr. Wanis Ibrahim |
| | Oral/ poster presentation | Ms Mary Anne Tourette |
| 4.30pm to 4.45pm | Closing | Dr. Furqan B Irfan |

Summary of research talks - 1st Research Forum

1. Prof. Ashfaq Shuaib, Director Neurosciences, Hamad Medical Corporation Understanding Collaterals in Acute Stroke

Lancet Neurol. 2011 Oct;10(10):909-21. doi: 10.1016/S1474-4422(11)70195-8.

Collateral blood vessels in acute ischaemic stroke: a potential therapeutic target

Shuaib A, Butcher K, Mohammad AA, Saqqur M, Liebeskind DS.

Ischaemic stroke results from acute arterial occlusion leading to focal hypoperfusion. Thrombolysis is the only proven treatment. Advanced neuroimaging techniques allow a detailed assessment of the cerebral circulation in patients with acute stroke, and provide information about the status of collateral vessels and collateral blood flow, which could attenuate the effects of arterial occlusion. Imaging of the brain and vessels has shown that collateral flow can sustain brain tissue for hours after the occlusion of major arteries to the brain, and the augmentation or maintenance of collateral flow is therefore a potential therapeutic target. Several interventions that might augment collateral blood flow are being investigated.

2. Dr. Saadat Kamran, Senior Consultant Neurologist, Hamad Medical Corporation Augmenting Brain collateral circULATION by perConditioning in Acute iSchemic Stroke (ABULCASIS study)

The treatment of acute ischemic stroke using thrombolytic therapy is time limited to 4.5 hours from onset. Due to various factors only 5% of acute stroke patients will be eligible for treatment. It has been shown in major stroke treatment trials that outcome of acute stroke is significantly influenced by time to treatment. Longer the delay larger is the infarct and worse the outcome. After large artery occlusion the tissue survival depends on the collateral circulation. The collateral circulation is a network of leptomeningeal collateral arteries (LMCA) (artery-to-artery anastomoses) that cross connects the outermost branches of adjacent arterial trees. The collaterals respond via dilation to preserve cerebral blood flow (CBF) in the affected region, by providing alternative routes for blood flow in stroke, when large vessels are occluded or severely stenosed. A robust collateral circulation is a predictor for vascular recanalization, prevents malignant edema, malignant transformation of ischemic infarct and reduces the risk of intracerebral hemorrhage. Collateral circulation is able to sustain the ischemic penumbra (viable ischemic brain tissue) long enough for definitive treatment i.e. thrombolysis or clot retrieval. However, it tends to fail and may not be robust

enough to sustain the penumbra long enough for more definitive treatment. Ischemic Perconditioning (IP) is a method by which collateral augmentation can be achieved in the brain by inducing ischemia reperfusion in a distant (remote) organ such as skeletal muscles almost immediately after stimulation. The resting tone of cerebral arteries (including pial arteries) and arterioles is maintained by a basal amount of Nitric Oxide (NO) released by the endothelium. IP causes up regulation of nitric oxide, improved cerebral blood flow in the ischemic penumbrae, and down regulation of inflammation and glutaminergic excitotoxicity. This provides a unique window of therapeutic intervention, to sustain ischemic penumbra, and treat the ischemia by augmenting the LMCA flow. The main goal of this research is to augment collateral circulation in acute stroke patients, to save the ischemic penumbra and improve outcome using safe, cost effective and noninvasive methods. The age of acute stroke patients in our population is younger than in the West. The new research will help investigate a simple treatment that holds promise by increasing the blood flow to brain after an acute stroke. This will hopefully reduce the severity of the stroke thus leading to a much smaller disability and preventing mortality/death due to acute stroke in our population.

3. Owais Qudwai, Associate Professor, Computer Engineering, Qatar University Intelligent Instrumentation Integration Platform, using image based system and pressure sensors to develop patient monitoring bed Stroke to prevent pressure sores in stroke patients.

The main outcome measures in acute stroke that lengthened the patient's hospital stay are aspiration pneumonia, urinary tract infection and pressure sore. An evident relationship between an increase in the length of stay in hospital and the development of complications following an acute stroke has been observed in our Stroke registry. Detection and quantification of patient position/turning limb movement allows for prevention of pressure sore in hemiplegic stroke patients. The objective of the study is to develop an integrated system that can intelligently monitor the patient position/turning directly from patient's bed and translates it into preemptive diagnostic displays/alerts for the medical staff, thereby preventing pressure sores. This will include a Basic Wireless Sensor network topology (to receive data from various data sources), an add-on modules (for acquiring and processing data from various sensors), development of new sensor modules (adapting them into the forms such that they can be implemented within the bed environment) and using overhead camera (for incorporating visual digital inspection). The combination of sensor data from the bed and imaging data will provide complete information regarding patient positioning, turning duration in each position. This will help in reducing the events of bed sores, and in turn reducing complications and will reduce hospital stay.

4. Dr. Naveed Akhtar, Consultant Neurologist, Hamad Medical Corporation**A randomized double-blinded placebo controlled trial of OSA treatment in stroke: Impact on Vascular steal, hypertension, AF and development of a Customized New monitoring device for cardiac rhythm (Avicenna study)**

Obstructive Sleep Apnea (OSA) and related complications of blood pressure fluctuation, AF, vascular steal are a major burden on health care both in direct and indirect cost. Hypertension alone is a major risk factor for cardiovascular, stroke, renal and ophthalmological problems. With diabetes the number of cardiovascular and stroke events, renal failure and transplant will all increase. The Hamad Medical Corporation stroke database with over 1000 patients has shown that 75% of hypertension patients with stroke are poorly treated. We believe, this may in part be due to the associated OSA, since the BMI in 2/3rd stroke patients is in the obesity range- preventable problem. The most serious complication associated with OSA is atrial fibrillation, which can cause embolic infarcts in the brain and elsewhere. There are a number of ongoing and completed trials in OSA but to our knowledge there is no study that has shown a causative relationship between OSA and AF in a prospective trial. The detection of atrial fibrillation requires prolonged cardiac monitoring. We propose the development of a new wireless device that can be worn by acute stroke patients for 30 days and wirelessly conveys the cardiac data via blue tooth to either a phone or computer. Thus it will not only increase the detection of a serious risk factor for stroke but help also help detect if AF resolves with the treatment of OSA. This will save the patients added risk of anticoagulation and provide the clinician with an etiology of stroke.

5. Prof. Rayaz Malik**Professor of Medicine, Weill Cornell Medical College-Qatar****Corneal nerve imaging as a biomarker to assess the severity and progression of Multiple Sclerosis (Ibn Nafis Study)**

In this era of new drugs in multiple sclerosis (MS), there is a need for biomarkers of disease activity and surrogate end points to assess therapeutic benefit. Whilst the prevention or modification of relapses or progressive disability is key, disability scales are relatively insensitive to change, demand large numbers of patients and long trial durations. Magnetic resonance imaging (MRI) can monitor CNS lesions, axonal damage and atrophy, but is not a currently accepted primary end point due to the 'clinico-radiological paradox'. Axonal loss is recognized as the main pathological substrate and determinant of progression in MS. Axons are abundant in ocular tissue, and imaging them may provide surrogate measures of axonal loss in MS. Ocular coherence tomography (OCT) quantifies the retinal nerve fibre layer (RNFL), which relates to brain volume in MS, but it remains to be validated prospectively. We have pioneered corneal confocal microscopy (CCM), a rapid, non-invasive ophthalmic imaging technique (NIH-R01, NINDS-R01, JDRF) that detects early axonal loss in diabetic and other peripheral neuropathies and Parkinson's disease. Its potential as a surrogate endpoint for clinical trials is further established by showing nerve regeneration in diabetic patients after pancreas and kidney transplantation and in phase 2 trials of sarcoid and diabetic neuropathy with the novel peptide ARA290. We propose to translate these findings to MS by assessing the relationship between CCM markers of axonal loss and repair [corneal nerve fiber (CNFD), branch density (CNBD) and length (CNFL)] and RNFL against MRI measures of brain atrophy and clinical disability (EDSS) in a cohort of patients with relapsing remitting MS (RRMS) over 12 months.

1st Research Forum photo gallery



The Research Forum assembles on a regular basis and provides a platform where anyone interested in research can gather to discuss and share their research, and collaborate with fellow researchers.

1st Research Forum – Bring Your Research Group

| Designation | Dept. | Research Aspect Sought Help for | Details of Project | Details of Support Received | Research Forum Support member sought advice from |
|-----------------------------|------------------------------|---|--|--|--|
| Nurse | OPD | Research idea and hypothesis | Research idea | Developed over all idea on how to go about starting a research project | Dr. Ayman El Menyar |
| Consultant | Dental | Literature search, Study Design | Epidemiology and factors associated with cleft lip and cleft palate in Qatar | How to do a literature search on pubmed and how to start a research | Dr. Abdul Rouf |
| Scientist AHS | Academic Health System | Ethics/IRB | Targetting Leukemia stem cells in AML | Ethics approval for the research project | Dr. Furqan Bin Irfan Uddin |
| Resident | Urology | Study design and methodology | Urogenital randomised controlled trial research project | Developed over all idea on how to go about starting a research project. | Dr. Prem Chandra, Dr. Furqan Bin Irfan Uddin |
| Graduate Registered Nurse | A&E (AKH) | Research idea and hypothesis | Obstetrical Analgesia | Discussed research idea | Dr. Prem Chandra |
| Bariatric Endocrinology | Surgery | Baisc science and molecular research | Genetics research project | Obtained guidance on how to conduct genetics study | Dr. Ajaz, Dr. Manjunath, Dr. Muazamil |
| Clinical Fellow | Bariatric medicine | Research idea , Study Design and Methodology | Comparing outcomes of Bariatric surgery patients | Received support on study design, research proposal and literature search | Dr. Sameer Pathan, Dr. Abdul Rouf, Dr. Zain Bhutta |
| English Language Instructor | Language dept. (Cuban Hosp.) | Study Design and Methodology | Research Methodology on an educational research project | Received support on study design | Prof Guillaume Alinier |
| Nurse | Pediatric Emergency | Research idea | Project based on pediatric nursing research in Emergency department | Discussed how to develop good research projects in Pediatric Emergency Medicine | Prof Guillaume Alinier |
| Specialist, Surgery | Al Khor Hospital | Study design and methodology | 1. Effect of Cerner implimentation 2. Ureteric stone management 3. Case reports | Received support on many research projects | Prof Guillaume Alinier, Dr. Furqan Bin Irfan Uddin |
| Clinical Fellow | Medical Education | Study design and methodology | Epidemiology of acute pancreatitis on Qatar | Received support on study design of descriptive study | Dr. Sameer Pathan |
| Clinical fellow | Bariatrics | Research proposal and data collection | Biomarker after bariatric surgery and risk of Diabetes | Received support on study design and data collection for a retrospective study | Dr. Abdul Rouf |
| Charge Nurse | Outpatient | Study design and methodology, oral presentation | Experience, views and attitudes of physicians towards Clinical information system in HGH | Received support on study design of a Cross-sectional study | Dr. Abdul Rouf, Dr. Ayman El Menyar |
| Specialist – Surgery | Oromaxillofacial surgery | Statistical Analysis | Bone morphogenetic protien-2 role in the formation and angiogenesis of oral squamous cell carcinoma | Developed better understanding of statistical analysis pertaining to the study, correct application and requirements. | Dr. Rajvir Singh |
| Charge Nurse | Inpatient | Funding, Study design and methodology | Impact of nursing performance on stroke patient outcomes at Hamad General Hospital | Received support on research question and hypothesis, study design for a retrospective study, study outcomes and grant funding | Dr. Abdul Rouf, Ms Mary Anne Tourette |
| Staff Pharmacist | A&E Pharmacy | Scientific Justification, Study design | Double Blinded Comparison of Metoclopramide plus Paracetamol to Diclofenac Sodium In Treating acute Musculoskeletal pain | Acquired information about study design and Methodology | Dr. Prem Chandra |

Chapter 2: Heart

October 2015

The Second Research Forum was held on 8 October 2015 at Bayt Al Dhiyafah, Hamad Bin Khalifa Medical City. The program included 10 research talks on the theme of ‘Heart.’ Professor Edward Hillhouse gave the welcome speech, followed by speakers from various biomedicine institutes and health centers in Qatar presenting their research work in the field of ‘Heart’ and Cardiovascular Medicine and Surgery.

Speakers from **Hamad Medical Corporation** included Associate Professor A.A. Gehani and Dr. Mohammed Gomaa from Cardiology, Dr. Hany Osman from Cardiac Anesthesia and Dr. Pradeep Bhaskar and Dr. Dina Al Waheidi from Cardiac Surgery. Dr. Christian Bollensdorff gave an overview of ongoing research projects at the **Qatar Cardiovascular Research Center (QCRC) and Sidra Medical and Research Centre**. Dr. Irem Mueed presented a research project from the **University of Calgary Qatar**. Ass. Professor Maguy El Hajj and Ass. Professor Fatima Mraiche represented **Qatar University** while Ass. Professor Charbel Abi Khalil presented his work from **Weill Cornell Medical College Qatar**.

Post-lunch, the ‘Bring your Research’ segment of the Research Forum took place which involved providing research support to the researchers by Faculty from the Research Forum Support Committee.

Breakdown of attendees

| DESIGNATION | NUMBER OF PEOPLE |
|---|------------------|
| Directors and Chairs | 12 |
| Senior Consultants | 16 |
| Consultants | 11 |
| Specialists | 13 |
| Nurses | 13 |
| Fellows & Residents | 7 |
| Scientists | 14 |
| Researchers | 12 |
| Executives | 6 |
| Allied Health Professionals | 12 |
| Qatar Biomedicine Institutes (Weil Cornell Medical College-Qatar, Sidra, University of Calgary, Qatar University) | 6 |
| Total | 122 |

Program

| TIME | TOPIC | PRESENTER |
|--|--|---|
| 8.30am to 9am | Registration | Ms. Josephine Williams Project Manager, CPMO, HMC |
| 9am to 9.15am | Welcome speech | Prof Edward Hillhouse Chief of Scientific, Academic and Faculty Affairs, HMC |
| 9.15am to 9.30am | Introduction to Second Research Forum | Dr Furqan B. Irfan Lead Research Forum, Clinical Scientist and Co-Director Research, Emergency Medicine, HMC |
| 9.30am to 12pm Present Your Research: Heart | | |
| 9.30am to 9.45am | 1. Nationwide Primary Coronary Angioplasty Program in Qatar: From concept to implementation | Dr. Abdurrazzak Gehani, Senior Consultant Cardiologist, HMC, Director Nationwide Primary PCI Program, Associate Professor WCMC |
| 9.45am to 10.00am | 2. A selection of research projects of QCRC in Qatar - from clinic to bench | Dr. Christian Bollensdorff, Deputy Executive Director Qatar Cardiovascular Research Center (QCRC) |
| 10am to 10.10am | 3. Depression Among Cardiovascular Patients Living in a Middle Eastern Country — Preliminary findings from a cross-sectional survey | Dr. Irem Mueed PhD, Research Project Manager, University of Calgary Qatar Dr. Tam Truong Donnelly PhD, Professor - University of Calgary |
| 10.10am to 10.20am | 4. Prevalence of Conventional Versus Non-Conventional Cardiovascular Risk Factors in Patients Following Percutaneous Coronary Intervention for Acute Coronary Syndrome | Dr. Mohamed Gomaa, Clinical Fellow, Dept. of Cardiology, HMC |

| TIME | TOPIC | PRESENTER |
|--------------------|--|---|
| 10.20am to 10.30am | 5. Utilization of evidence-based secondary prevention medications at the time of discharge in patients with acute coronary syndrome (ACS) in Qatar | Dr. Maguy El Hajj, Assistant Professor, Chair of Clinical Pharmacy and Practice Section, College of Pharmacy, Qatar University |
| 10.30am to 10.40am | 6. Kinetics of high sensitive troponin after cardiac surgery | Dr. Hany Osman, Specialist, Anaesthesia, HMC Dr. Samy Hanoura, Specialist, Anesthesia, HMC Dr. Amr Salah, Consultant, Anesthesia and Intensive Care, HMC |
| 10.40am to 10.50am | 7. Bilateral diaphragmatic paralysis following pediatric cardiac surgery-management options | Dr. Pradeep Bhaskar, Specialist, Pediatric Cardiac Anesthesia, Pediatric Cardiac Surgery, HMC Dr. Jiju John, Sr.Consultant Pediatric Cardiac Anesthesia, HMC |
| 10.50am to 11am | 8. Coronary Artery Anomalies and CT Angiography | Dr. Dina Alwaheidi, Resident, Cardiothoracic Surgery, HMC Dr. Abdulaziz Al Khulaifi, Chair of Cardiothoracic Surgery, HMC |
| 11am to 11.15am | 9. The Role of Cathepsin B in Cardiovascular Remodeling | Dr. Fatima Mraiche, PhD, Assistant Professor, Chair of Pharmaceutical Sciences, College of Pharmacy, Qatar University |
| 11.15am to 11.30am | 10. Epigenetics in cardiovascular disease | Dr. Charbel Abi Khalil, Assistant Professor of Genetic Medicine, Weill Cornell Medical College |

| TIME | TOPIC | PRESENTER |
|--------------------|---|--|
| 11.30am to 12pm | Q and A | 'Heart' Research Talk Presenters |
| 12pm to 12.15pm | Research and Ethics - JCI accreditation as an Academic Medical Center | Ms. Angela Heather Ball, Assistant Director Business Development & Research, MRC, HMC |
| 12.15pm to 12.30pm | Say Yes to Breastfeeding Initiative Defining Future Health Quality Improvement and Patient Safety | Dr. Mohammed Ilyas Khan, Specialist in MCH/Lactation Consultant, Obs & Gynae Department, HMC |
| 12.30pm to 1.30pm | Prayer/Lunch Break | |
| 1pm to 4.30pm | Bring Your Research | |
| | Research Idea | Dr. Furqan B. Irfan, Dr Zain Bhutta |
| | Research Question/Hypothesis | Dr. Sameer Pathan, Prof Peter Cameron |
| | Literature Search | Dr. Dominique Soekarman, Dr Palli Abdulrouf |
| | Scientific Justification | Prof Richard Gray |
| | Study Design and Methodology | Dr. Rafael Consunji, Dr. Mohamed Ali Siddig |
| | Clinical and Public Health research | Prof Ashfaq Shuaib, Prof Stephen Thomas, Prof Edward Hillhouse, Prof Ibrahim Janahi |
| | Genetics & Molecular research | Professor Ramzi Mohammad, Dr Fayaz Ahmad Mir, Dr Ajaz Ahmad Bhat, Dr Muzammil Ahmad Khan |
| | Translational Research | Dr. Shahab Uddin Khan |
| | Citations and references | Dr. Yahia Zakaria Imam |
| | Sample size calculation | Dr. Prem Chandra |
| | Research grant/ proposal | Dr. Naveed Akhtar, Ms Rabia Ali Khan, Dr. Ruben Peralta |

| TIME | TOPIC | PRESENTER |
|------------------|---------------------------|----------------------------------|
| | Ethics/ IRB | Ms Yael Hoogland |
| | Data collection | Dr. Ayman Ahmed ElMenyar |
| | Statistical Analysis | Dr. Rajvir Singh |
| | Write a paper | Dr. Cornelia Sonia Carr |
| | Write an abstract | Dr. Guillaume Henri Jean Alinier |
| | Submit a manuscript | Dr. Susanna Akiki |
| | Oral/ poster presentation | Dr. Jane Olsson |
| | Funding | Mary Anne Tourette |
| 4.30pm to 4.45pm | Closing | Dr. Furqan B Irfan |

Summary of research talks - 2nd Research Forum

1. Dr. Abdurrazzak Gehani, Senior Consultant Cardiologist, Hamad Medical Corporation, Associate Professor WCMC

Glob Cardiol Sci Pract. 2013 Nov 1;2012(2):43-55. doi: 10.5339/gcsp.2012.23. eCollection 2012.

Primary coronary angioplasty for ST-Elevation Myocardial Infarction in Qatar: First nationwide program.

Gehani A, Al Suwaidi J, Arafa S, Tamimi O, Alqahtani A, Al-Nabti A, Arabi A, Aboughazala T, Bonow RO, Yacoub M.

Abstract

In this article, we outline the plans, protocols and strategies to set up the first nationwide primary Percutaneous Coronary Intervention (PCI) program for ST-elevation myocardial infarction (STEMI) in Qatar, as well as the difficulties and the multi-disciplinary solutions that we adopted in preparation. We will also report some of the landmark literature that guided our plans. The guidelines underscore the need for adequate number of procedures to justify establishing a primary-PCI service and maintain competency. The number of both diagnostic and interventional procedures in our centre has increased substantially over the years. The number of diagnostic procedures has increased from 1470 in 2007, to 2200 in 2009 and is projected to exceed 3000 by the end of 2012. The total number of PCIs has also increased from 443 in 2007, to 646 in 2009 and 1176 in 2011 and is expected to exceed 1400 by the end of 2012. These figures qualify our centre to be classified as 'high volume', both for the institution and for the individual interventional operators. The initial number of expected primary PCI procedures will be in excess of 600 procedures per year. Guidelines also emphasize the door to balloon time (DBT), which should not exceed 90 minutes. This interval mainly represents in-hospital delay and reflects the efficiency of the hospital system in the rapid recognition and transfer of the STEMI patient to the catheterization laboratory for primary-PCI. Although DBT is clearly important and is in the forefront of planning for the wide primary PCI program, it is not the only important time interval. Myocardial necrosis begins before the patient arrives to the hospital and even before first medical contact, so time is of the essence. Therefore, our primary PCI program includes a nationwide awareness program for both the population and health care professionals to reduce the pre-hospital delay. We have also taken steps to improve the pre-hospital diagnosis of STEMI. In addition to equipping all ambulances to perform 12-lead electrocardiograms (ECGs) we will establish advanced wireless transmission of the ECG to our Heart Centre and to the smart phone of the consultant on-call for the primary-PCI service. This will ensure that the patient is

transferred directly to the cath lab without unnecessary delay in the emergency rooms. A single phone-call system will allow the first medic making the diagnosis to activate the primary PCI team. The emergency medical system is acquiring capability to track the exact position of each ambulance using GPS technology to give an accurate estimate of the time needed to arrive to the patient and/or to the hospital. We also plan for medical helicopter evacuation from remote or inaccessible areas. A comprehensive research database is being established to enable specific pioneering research projects and clinical trials, either as a single centre or in collaboration with other regional or international centers. The primary-PCI program is a collaborative effort between the Heart Hospital, Hamada Medical Corporation and the Qatar Cardiovascular Research Centre, a member of Qatar Foundation. Qatar will be first country to have a unified nationwide primary-PCI program. This clinical and research program could be a model that may be adopted in other countries to improve outcomes of patients with STEMI.

2. Dr. Christian Bollensdorff, Deputy Executive Director, Qatar Cardiovascular Research Center (QCRC)

A selection of research projects of QCRC in Qatar - from clinic to bench

The research at QCRC does start in the clinic, since our research aims to serve the patient's health. In that way QCRC has 3 inputs: genetic variation which leads to cardiac disease, especially we are interested in hypertrophied and dilated cardiomyopathy and the Brugada syndrome. These inherited cardiac diseases need to be validated and we used the zebrafish model and stem cells to test the functionality in the lab in order to have a model system which can be used for further investigations for rescuing and treatment, for example. A second important group are patients which are admitted to the hospital for treating obstructive coronary artery disease. Blood samples and additional echocardiography and MRI would help to identify biomarkers, in order to identify risk factors to be able to treat as early as possible. Last but not least the malfunction of the heart valve requires sometimes the complete replacement. Not always a donor heart is available and as an alternative we are involved to find solutions with artificial tissue engineered heart valves. In an ideal case these valves can be made available for children and adults with individual design and will be absorbed and replaced with functional tissue made of the persons own cells over time.

3. Dr. Irem Mueed PhD, Research Project Manager, University of Calgary Qatar

Int J Cardiol. 2014 Oct 20;176(3):1104-6. doi: 10.1016/j.ijcard.2014.07.118. Epub 2014 Aug 1.

Depression among cardiovascular patients living in a Middle Eastern country-- preliminary findings from a cross-sectional survey.

Donnelly TT, Al Suwaidi JM, Al-Qahtani A, Asaad N, Abdul Qader N, Singh R, Fung TS, Mueed I, Sharara S, El Banna N, Omar S.

Depression has been shown to have an association with increased morbidity and mortality among cardiovascular patients. A cross-sectional questionnaire survey study was carried out to determine the prevalence of depression or mood disturbances and find factors associated with depression among Arab cardiovascular patients. Face-to-face interviews utilizing the self reported Arabic version of the Beck Depression Inventory 2nd Edition (BDI-II) was conducted with Arab patients hospitalized with acute cardiac conditions at the Heart Hospital in Qatar between January, 2013 and March, 2014. Of a total of 1016 approached, 1000 patients participated in the study (response rate 98%). Subjects included 686 (69%) males and 314 (31%) females. Approximately half of the participants were Qatari nationals (46%) with the remaining participants from other Arab countries. The survey reported that 80% of the patients had no depressive symptoms, 15% of the patients had Mild Mood Disturbance and 5% had symptoms of clinical depression. Approximately, twice the number of female participants had Mild Mood Disturbance and Clinical Depression as compared to male patients.

4. Dr. Mohamed Goma, Clinical Fellow, Dept. of Cardiology, Hamad Medical Corporation

Prevalence of Conventional Versus Non-Conventional Cardiovascular Risk Factors in Patients Following Percutaneous Coronary Intervention for Acute Coronary Syndrome

Globally, cardiovascular disease (CVD) is the number one cause of death with a high prevalence in the Middle East and the United State accounting for over 1.5 million hospitalizations annually. Peripheral endothelial dysfunction (PED) is paramount to the initiation, progression and the complications of CVD. PED is associated with obstructive sleep apnea (OSA); however the prevalence of PED and OSA in patients hospitalized for acute coronary syndromes (ACS) following percutaneous coronary intervention (PCI) is yet unknown. Patients in the US (n=38) and Qatar (n=163) were consented then enrolled

following PCI for ACS and underwent endothelial function testing (EndoPAT[®], Itamar, Inc.) and home OSA testing (WatchPAT[®], Itamar, Inc.). Baseline demographics of the participants showed a high prevalence of traditional CVD risk factors (Table 1). Baseline PED testing revealed a combined mean EndoPAT score of 1.8±0.5, and a 74% prevalence of PED defined by EndoPAT score <2.0. The prevalence of PED in this cohort (defined by EndoPAT < 2.0) was 74%, and the prevalence of OSA was 82% (Figure 1). The prevalence of these non-traditional risk factors were overtly more prevalent than traditional risk factors such as prior CVD (56%), hypertension (50%), hyperlipidemia (48%), obesity (23%), diabetes (38%), smoking (33%), CHF (2%), or family history (36%). Thus, although we find a moderate prevalence of traditional CVD surrogate markers in patients following PCI for ACS, non-traditional risk factors such as PED and OSA are overwhelmingly prevalent in this population and should be further investigated for risk stratification in vulnerable populations.

5. Dr. Maguy El Hajj, Assistant Professor, Chair of Clinical Pharmacy and Practice Section, College of Pharmacy, Qatar University

Utilization of evidence-based secondary prevention medications at the time of discharge in patients with acute coronary syndrome (ACS) in Qatar

Background and Objectives: In Qatar, ACS (Acute Coronary Syndrome) has become the leading cause of morbidity and mortality. Guidelines recommend that ACS patients should receive indefinite treatment with antiplatelets, beta-blockers, angiotensin converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) and statins. The study objectives were to assess the use of evidence-based secondary prevention medication at discharge among ACS patients in Qatar and to determine the clinical and demographic characteristics associated with the use of these medications.

Setting and Methods: A retrospective medical record review was conducted at the Heart Hospital in Qatar. A random sample of 1068 ACS patients was selected. Patient characteristics were summarized. Prevalence of medications at discharge were computed for each medication as well as for medication combinations. Multiple logistic regression was used to detect patient variables that were associated with the outcomes. A $p \leq 0.05$ was considered significant

Main outcome measures: Percentage of ACS patients discharged on each of the following medications: antiplatelets (aspirin, clopidogrel), beta-blockers, ACEI or ARBs and statins and on the combination of these medications

-Association between the use of these medications and patient characteristics

Results: In total, 1064 records were reviewed. The majority were males (85.3%) and about 1 in 5 (18.7%) were Qatari. At discharge, patients were prescribed the following: aspirin (96.0%), clopidogrel (92.0%), beta-blockers (90.6%) and statins (97.7%). ACEI and ARBs were prescribed to 63.5 and 11.3%, respectively. The concurrent 4 medications (aspirin or clopidogrel, statins or other lowering cholesterol medication, beta-blockers and ACEI or ARB) were prescribed to 773 patients (77.8%; 95% confidence interval: 75.2–80.4%). Being overweight or obese, and having PCI (percutaneous coronary intervention) or hypertension were associated with higher prescription of the concurrent medications. Those with diabetes had a 52% increase in the odds of prescribing the 4 medications. Those with kidney disease had a 67% reduction in the odds of prescribing.

Conclusion: Most ACS patients were prescribed antiplatelets, beta-blockers and statins, but the use of ACEIs or ARBs was suboptimal. Strategies are needed to enhance ACEI or ARB prescribing, especially for high risk patients who would have the greatest therapeutic benefit from these drugs.

6. Dr. Hany Osman, Specialist, Anaesthesia, Hamad Medical Corporation **Kinetics of Highly Sensitive Troponin T after Cardiac Surgery**

Perioperative myocardial infarction (PMI) confers a considerable risk in cardiac surgery settings; finding the ideal biomarker seems to be an ideal goal. Our aim was to assess the diagnostic accuracy of highly sensitive troponin T (hsTnT) in cardiac surgery settings and to define a diagnostic level for PMI diagnosis. This was a single-center prospective observational study analyzing data from all patients who underwent cardiac surgeries. The primary outcome was the diagnosis of PMI through a specific level. The secondary Outcome measures were the lengths of mechanical ventilation (LOV), stay in the intensive care unit (LOSICU), and hospitalization. Based on the third universal definition of PMI, patients were divided into two groups: no PMI (Group I) and PMI (Group II). Data from 413 patients were analyzed. Nine patients fulfilled the diagnostic criteria of PMI, while 41 patients were identified with a 5-fold increase in their CK-MB (≥ 120 U/L). Using ROC analysis, a hsTnT level of 3,466 ng/L or above showed 90% sensitivity and 90% specificity for the diagnosis of PMI. Secondary outcome measures in patients with PMI were significantly prolonged. In conclusion, the hsTnT levels detected here paralleled those of CK-MB and a cut-off level of 3466 ng/L could be diagnostic of PMI.

7. Dr. Pradeep Bhaskar, Specialist, Pediatric Cardiac Anesthesia, Pediatric Cardiac Surgery, Hamad Medical Corporation**Bilateral diaphragmatic palsy after congenital heart surgery – Management options**

Diaphragmatic Paralysis (DP) following phrenic nerve injury is a major complication following congenital cardiac surgery. In contrast to unilateral paralysis, patients with Bilateral Diaphragmatic Paralysis (BDP) present a higher risk group, require different management methods, and have poorer prognosis.

We retrospectively analyzed seven patients, who had BDP following congenital heart surgery during the period from July, 2006 to July, 2014. Considerations were given to the time to diagnosis of diaphragm paralysis, total ventilator days, interval after plication, and lengths of ICU and hospital stays. The incidence of bilateral diaphragmatic paralysis was 0.68% with a median age of 2 months (0.6–12 months) and median weight of 4 kg (3–7 kg); five patients underwent unilateral plication of the paradoxical diaphragm following recovery of the other side, whereas the remaining two patients who did not demonstrate a paradoxical movement were successfully weaned from the ventilator following recovery of function in one of the diaphragms. The median ventilation time for the whole group was 48 days (20–90 days). The median length of ICU and hospital stay was 46 days (24–110 days) and 50 days (30–116 days) respectively. None of the patients required tracheostomy for respiratory support and there were no mortalities.

In conclusion, BDP following pediatric cardiac surgery is uncommon but can be a major cause of morbidity and result in prolonged hospital stay. The recovery time is variable and unpredictable. The role of diaphragmatic plication for BDP in children is uncertain as it has no impact on the outcome and may not have a fundamental impact on the natural course of recovery. We would recommend that plication is applied only if the patient remains ventilator dependent upon recovery of one hemi-diaphragm with paradoxical movement of the unrecovered side.

8. Dr. Dina Alwaheidi, Resident, Cardiothoracic Surgery, Hamad Medical Corporation**Coronary Artery Anomalies: The Role of CTA in the early Detection, Diagnosis and Management of CAA**

Coronary artery anomalies (CAA) are rare, but, important cardiac malformations, representing the second commonest cause of death in young athletes. We utilized Computerised Coronary Angiography (CTA) to screen and precisely delineate CAA in patients. During 3 and half year period we performed 2888 CTA's. 32 (1.1%) cases of CAA were identified, mean age 44yrs (15-70yrs). 22 pts (mean age 43) had malignant CAA with an inter-arterial course of the aberrant vessel: 4/22 had LCA arising from right coronary sinus, 18/22 RCA from left sinus. Of interest, 15/22 patients had atypical chest pain, insignificant ECG changes and breathlessness. 5/22 patients had palpitation and syncope and one patient (career athlete aged 15 yr) had severe chest pain on extreme exertion. All pts received appropriate advice regarding physical exertion and medical management. There was no incidence of sudden cardiac death.

3 pts overall (3/32) had significant symptomatic coronary artery disease requiring intervention: 1 PCI and 2 CABG surgery.

CTA has proved to be a reliable modality for the diagnosis of CAA in this group of patients.

9. Dr. Fatima Mraiche, PhD, Assistant Professor, Chair of Pharmaceutical Sciences, College of Pharmacy, Qatar University**The Role of Cathepsin B in Cardiovascular Remodeling**

The World Health Organization predicts that by 2030, 23.3 million people will die of cardiovascular pathologies with heart failure being the leading cause of death amongst them. A recent study has shown that ischemic heart disease is the primary cause of death

in Qatar. Clearly, heart failure is a serious health problem that needs to be addressed. The key pathophysiological process that ultimately leads to heart failure is cardiac remodelling. Proteolytic enzymes such as cathepsin cysteine proteases can degrade the ECM. An imbalance in the synthesis and degradation of cathepsins can lead to uncontrolled extracellular matrix remodelling, a hall mark of cardiac remodelling. Catherine B (Cat B) is activated under acidic conditions, a key stimuli of the Na⁺/H⁺ exchanger isoform-1 (NHE1). Enhanced NHE1 expression/activity have also been demonstrated to contribute to the progression of cardiac remodelling. Our findings demonstrate that Cat B protein expression is increased during cardiac remodelling, an effect which is regressed upon the inhibition of NHE1 or Cat B. Our study demonstrates for the first time that Cat B is involved in the NHE1 mediated cardiomyocyte hypertrophic response in cooperation with the activation of MMP-9.

10. Dr. Charbel Abi Khalil, Assistant Professor of Genetic Medicine Weill Cornell Medical College

Epigenetics in cardiovascular disease

Cardiovascular disease is the leading cause of death worldwide. With the continuous increase in the prevalence and incidence of cardiovascular disorders, it has become imperative to understand more in-depth their pathophysiology and search for novel biomarkers and therapies. Epigenetics refers to the heritable changes in gene expression that are not due to the DNA sequence itself. Mounting evidence suggests that cardiovascular risk factors such as hypertension, diabetes, obesity and smoking are associated with changes of epigenetic components. Additionally, these risk factors may trigger modifications within the epigenome, affecting the expression of several genes and inducing cardiac pathologies such as atherosclerotic disease, heart failure and hypertrophic cardiomyopathy. Emerging experimental data are showing that epigenetic-modifying agents can reverse some pathological cardiovascular conditions. However, it is still unknown whether these approaches will be successfully translated into cardiovascular drugs.

2nd Research Forum photo gallery



2nd Research Forum – Bring Your Research Group

| Designation | Dept. | Research Aspect Sought Help for | Details of Project | Details of Support Received | Research Forum Support member sought advice from |
|--------------------------------|---|--|---|--|--|
| Staff Nurse | Emergency & Urgent Care | Data collection | A descriptive study to identify preventable causes of Emergency department revisits in female patients presenting with abdominal pain to Emergency department | Discussed research question (PICO) and sample size | Dr. Sameer Pathan |
| Senior Consultant | Heamatology | Translational/Molecular | Basic science, translational or molecular research | Discussed research project | Dr. Shahab Uddin Khan |
| Medical Technologist | Lab Quality Management | Research proposal | Research proposal process and funding | Received support on how to prepare and submit a research proposal | Dr. Sameer Pathan |
| Research Scientist | iTRI | Ethics | Obtaining clinical samples for research and IRB regulations for collaborative research project | Received support regarding ethics approval for research project with a collaborator abroad | Dr. Furqan B. Irfan Uddin |
| Sr. Consultant | Nephrology | Which study design and methodology to utilize | Outcomes in end-stage renal disease patients on peritoneal dialysis versus hemodialysis in Qatar | Discussed research idea | Dr. Sameer Pathan |
| Clinical Fellow | Medical Education | Sample size and statistical analysis | Epidemiology of acute pancreatitis on Qatar | Discussed sample size | Dr. Prem Chandra |
| Staff Nurse | Critical Care | I have a research idea but have never done research before | How to form a research question and hypothesis | Discussed research idea | Dr. Furqan Bin Irfan Uddin |
| Graduate Registered Nurse (CF) | Pediatric Emergency | I have a research idea but have never done research before | Research idea | Discussed Research Idea (PICO) | Dr. Furqan Bin Irfan Uddin |
| Resident | Psychiatry | Research idea, Research question/Hypothesis | Research idea on “the relationship between Alzheimer’s disease & Hypothyroidism” | Guidance on how to start and get hands on research training. Refining research idea. | Dr. Furqan Bin Irfan Uddin, Prof Guillaume Alinier |
| Specialist | Geriatrics | Research idea, Research proposal | To study the prevalence of asymptomatic deep vein thrombosis in chronically immobilised hospitalised patients | Discussed research idea and study design | Dr. Furqan B. Irfan Uddin |
| Nurse | Nursing Education & Research Department | Had a research idea but have never done research before | Impact of education and training of nurses on enhancing nurses expertise and capabilities to deliver quality of care | Formulation of research idea “Comptency based” funding support Guidelines/Policies. | Dr. Jane Olsson |
| Program Manager | Cardiac Rehabilitation | Research grant | Quasi-experimental study on depression and cardiorespiratory fitness | Funding and grant requirements. | Dr. Furqan Bin Irfan Uddin |
| Graduate Registered Nurse (CF) | Critical Care | Research idea, Research question/Hypothesis | Quality of life in cancer patients | Discussed research Question & Hypothesis | Prof Peter Cameron |
| Specialist | Medicine | Research methodology, Research process | The ophthalmic burden on Emergency department in Al Khor Hospital | Discussed study design & process | Dr. Rafael Consunji |

| Designation | Dept. | Research Aspect Sought Help for | Details of Project | Details of Support Received | Research Forum Support member sought advice from |
|-------------|-------------------|---|---|---|--|
| Optometrist | Surgery | Sample size calculation, Ethics/IRB | The prevalence of refractive error in adults attending refraction clinic at Al Wakra Hospital | Discussed Ethics approval, study sample size, patient consent and research grant | Dr. Yahya Imam |
| Resident | Medical Education | Ethics, Study design and methodology | Retrospective study on cancer imaging | Guidance around ethics and policies, publishing and alternative projects | Dr. Furqan B. Irfan Uddin |
| Resident | Urology | Study Design and Methodology | A retrospective study regarding antibiotic sensitivity in surgical site infection | Received support on study design | Dr. Furqan B. Irfan Uddin |
| Resident | CT Surgery | Write a paper | Retrospective study on patients with Percutaneous coronary intervention and Coronary artery bypass grafting | How to write a paper, general outline of the abstract and relevant journals for publication | Dr. Cornelia Carr |
| Consultant | Endocrinology | Research question/hypothesis, Scientific justification and Research methodology | Frequency and severity of hypoglycemia in diabetic patients on hemodialysis | Received support through getting an overall idea on all the steps for my research project | Prof Peter Cameron |
| Consultant | Dental | Study Design and Methodology | Epidemiology of cleft palate and lip in Qatar | Discussed study design and how to form a database and registry | Dr. Furqan Bin Irfan Uddin |

Chapter 3: Infections

January 2016

The Third Research Forum on Infections was held on 27 January 2016 at Bayt Al Dhiyafah, Hamad Bin Khalifa Medical City. Dr. Abdul Latif Al-Khal gave the welcome speech and an overview of Infections and the importance of infectious disease research globally and in Qatar. This was followed by the 12 speakers presenting their research work relevant to the theme of Infections: infectious diseases, microbiology and micro-organisms, virology, infection control, infectious disease epidemiology and public health, antibiotics and anti-microbial therapy, vaccines, food borne disease research, antibiotics/drug-resistance. Speakers from **Hamad Medical Corporation** included Dr. Adila Shaukat, Dr. Hussam Al Soub, Dr. Saad Taj-Aldeen, Dr. Mohammed Abu Khattab, Dr. Sulieman Hassan S. Abu Jarir, Dr. Atqah Abdul Wahab and Mr Mazen Sid Ahmed. Associate Professor Asma Ali Al Thani presented an overview of ongoing research activity in Infections at **Qatar University**. Dr. Basirudeen Syed A. Kabeer and Dr. Ussama Abdel-Mottal represented **Sidra Medical and Research Center**. Associate Professor Laith Abu Raddad was the speaker from **Weill Cornell Medicine Qatar**. Associate Professor Walid Al Ali also joined the program from the newly established **College of Public Health, Hamad Bin Khalifa University**.

In the afternoon budding researchers in biomedicine and clinical research received research guidance and support in the ‘Bring your Research,’ segment by members of the Research Forum Support Committee.

Breakdown of attendees

| DESIGNATION | NUMBER OF PEOPLE |
|--|------------------|
| Directors and Chairs | 6 |
| Senior Consultants | 12 |
| Consultants | 13 |
| Specialists | 7 |
| Nurses | 12 |
| Fellows & Residents | 16 |
| Scientists | 9 |
| Researcher | 16 |
| Executives | 8 |
| Allied Health Professionals | 21 |
| Qatar Biomedicine Institutes (Qatar University, Weil Cornell Medical College-Qatar, Sidra, Hamad Bin Khalifa University) | 21 |
| Total | 141 |

Program

| TIME | TOPIC | PRESENTER |
|--|---|--|
| 8am to 8.30am | Registration | Ms. Indu Muralidharan Research Forum – Secretary |
| 8.30am to 8.40am | Research in HMC | Prof. Ibrahim Janahi Executive Director of Medical Research, HMC |
| 8.40am to 8.50am | Introduction to Third Research Forum | Dr. Furqan B. Irfan, Lead Research Forum, Co-Director Research, Emergency Medicine, HMC |
| 8.50am to 9am | Welcome Speech | Dr Abdul Latif Al Khal, Director of Medical Education, Head of Division & Senior Consultant of Infectious Diseases Division, Deputy Chief of Medical, Research and Academic Affairs, HMC |
| 9am to 12pm Present Your Research: Infections | | |
| 9am to 9.10am | 1. Streptococcus anginosus Infections: Clinical and Bacteriologic Characteristics. A 6-year Retrospective Study of Adult Patients in Qatar | Dr. Adila Shaukat Consultant, Division of Infectious Disease, Department of Medicine, Al Wakra Hospital, HMC |
| 9.10am to 9.20am | 2. Epidemiology, Risk factors, Clinical Features and Outcome of Adult Patients with severe pandemic A/H1N1/2009 influenza in Qatar: A retrospective study | Dr. Hussam Al Soub Senior Consultant, Division of Infectious Disease, Department of Medicine, Hamad General Hospital, HMC |
| 9.20am to 9.35am | 3. Infectious disease research activity at Qatar University | Dr. Asma Ali J F Althani Head and Associate Professor of Virology, Health Sciences Department, Qatar University Director of Biomedical Research Center – Qatar University |
| 9.35am to 9.50am | Questions and answers | |

| TIME | TOPIC | PRESENTER |
|--------------------|--|--|
| 9.50am to 10am | 4. Epidemiology of Bloodstream Candida infections in Qatar | Dr. Saad Taj-Aldeen Clinical Scientist, Department of Laboratory, HMC |
| 10am to 10.10am | 5. Pulmonary and Extra Pulmonary Tuberculosis in Qatar: A First Retrospective Population-Based Study | Dr. Mohammed Abu Khattab Division of Infectious Disease, Department of Medicine, HMC |
| 10.10am to 10.20am | 6. Identification of Antigens to improve the diagnosis of Tuberculosis | Dr. Basirudeen Syed Ahamed Kabeer Cardiovascular Division, Sidra Medical and Research Centre, Qatar |
| 10.20am to 10.35am | Questions and answers | |
| 10.35am to 10.45am | 7. Clinical Data and Molecular Analysis of Multidrug Resistance Pseudomonas aeruginosa isolates in Qatar | Dr. Sulieman Hassan Sulieman Abu Jarir Clinical Fellow, Department of Infectious Disease, Department of Medicine, HMC |
| 10.45am to 11am | 8. Microbiology of Cystic Fibrosis in Qatar | Dr. Atqah AbdulWahab Senior Consultant Pediatric Pulmonologist Dept. of Pediatrics, HMC |
| 11am to 11.15am | 9. Priorities for foodborne disease research in Qatar | Dr. Walid Alali, Associate Professor, Epidemiology, College of Public Health Hamad bin Khalifa University |
| 11.15am to 11.30am | Questions and answers | |
| 11.30am to 11.40am | 10. Antimicrobial Susceptibility and Molecular Epidemiology of Extended Spectrum Betalactamase Producing Enterobacteriaceae from Intensive Care Units in Hamad Medical Corporations, Qatar | Dr. Mazen Sid Ahmed Division of Clinical Microbiology, Department of Laboratory Medicine and Pathology, Microbiology Section, HMC |
| 11.40am to 11.55am | 11. A unique method for increasing immunogenicity of influenza (flu) and HIV vaccines | Dr. Ussama Abdel-Motal Sidra Medical and Research Centre, Qatar |

| TIME | TOPIC | PRESENTER |
|--------------------|--|---|
| 11.55am to 12.10pm | 12. Characterizing the epidemiology of hepatitis C virus in the Middle East and North Africa | Dr. Laith J. Abu-Raddad Associate Professor of Healthcare Policy and Research, Director of the Biostatistics, Epidemiology, and Biomathematics Research Core, Weill Cornell Medicine-Qatar |
| 12.10pm to 12.25pm | Questions and answers | |
| 12.25pm to 12.30pm | Writing for Publication | Prof. Richard Gray, Assistant Executive Director of Nursing, HMC |
| 12.30pm to 1.30pm | Prayer/Lunch Break | |
| 1.30pm to 4pm | Bring Your Research | |
| | Research Idea | Dr. Furqan B. Irfan, Dr Zain Bhutta |
| | Research Question/Hypothesis | Dr. Sameer Pathan |
| | Literature Search | Dr. Dominique Soekarman, Dr Palli Abdulrouf |
| | Scientific Justification | Prof. Richard Gray |
| | Study Design and Methodology | Dr. Rafael Consunji, Dr. Mohamed Ali Siddig |
| | Clinical and Public Health research | Prof. Ashfaq Shuaib, Prof Stephen Thomas, Prof Edward Hillhouse, Prof. Ibrahim Janahi |
| | Genetics and Molecular research | Professor Ramzi Mohammad, Dr Fayaz Ahmad Mir, Dr Muzammil Ahmad Khan |
| | Translational Research | Dr. Shahab Uddin Khan |
| | Citations and references | Dr. Yahia Zakaria Imam |

| TIME | TOPIC | PRESENTER |
|---------------|---------------------------|--|
| | Sample size calculation | Dr. Prem Chandra |
| | Research grant/ proposal | Dr. Naveed Akhtar, Dr. Ruben Peralta, Dr. Carma Bylund |
| | Ethics/ IRB | Ms Yael Hoogland |
| | Data collection | Dr. Ayman Ahmed ElMenyar |
| | Statistical Analysis | Dr. Rajvir Singh |
| | Write a paper | Dr. Cornelia Sonia Carr |
| | Write an abstract | Prof. Guillaume Henri Jean Alinier |
| | Submit a manuscript | Dr. Susanna Akiki |
| | Funding | Ms. Mary Anne Tourette |
| | Oral/ poster presentation | Dr. Jane Olsson |
| 4pm to 4.15pm | Closing | Dr. Furqan B Irfan |

Summary of research talks - 3rd Research Forum

1. Dr Adila Shaukat, Consultant, Division of infectious Disease, Al Wakra Hospital, Hamad Medical Corporation

Infectious Diseases in Clinical Practice: March 2016 - Volume 24 - Issue 2 - p 92-95. doi: 10.1097/IPC.0000000000000318

Streptococcus anginosus Infections; Clinical and Bacteriologic Characteristics: A 6-Year Retrospective Study of Adult Patients in Qatar

Shaukat A, SoubHA, Maslamani MA, Kadavil C, Khattab MA, Hasham S, Faraj H, Yasir AD, Deshmukh A, Mahmoud M, Abraham M; Al Khal AL.

Background: The aim of this study was to assess clinical presentation and antimicrobial susceptibility of *Streptococcus* (*S.*) *anginosus* group infections in Hamad General Hospital, a tertiary care hospital in the state of Qatar, which is a multinational community. The *S. anginosus* group is a subgroup of viridans streptococci that consist of 3 different species: *S. anginosus*, *S. constellatus*, and *S. intermedius*. Although a part of the human bacteria flora, they have potential to cause suppurative infections.

Method: We studied a total of 101 patients with *S. anginosus* group infections from January 2006 until March 2012 by reviewing medical records and identification of organisms by VITEK 2 and MALDI-TOF.

Results: The most common sites of infection were skin and soft tissue, intra-abdominal, and bacteremia (28.7%, 24.8%, and 22.7%, respectively). Abscess formation was seen in approximately 30% of patients. *Streptococcus constellatus* was the most common isolated species (40%) followed by *S. anginosus* (30%) and *S. intermedius* (7%). In 23% of specimens, the species was unidentified. The most common type of specimen for organism isolation was blood followed by pus and tissue (50%, 22%, and 8%, respectively). *Streptococcus constellatus* was more frequently associated with abdominal and skin and soft tissue infections than the other 2 species, whereas *S. anginosus* was isolated more frequently from blood. All isolates were susceptible to penicillin, ceftriaxone, and vancomycin. Susceptibility to erythromycin and clindamycin was also good, reaching 91% and 95%, respectively. Forty percent of patients needed surgical drainage along with antibiotic therapy.

Conclusions: Identification of *S. anginosus* group to species level is helpful in clinical practice because different species exhibit different pathogenic potentials.

2. Dr Hussam Al Soub, Senior Consultant, Division of infectious Disease, Hamad Medical Corporation

Infectious Diseases in Clinical Practice. 2014 Nov; 22(6):339–343. doi: 10.1097/IPC.000000000000148

Epidemiology, Risk Factors, Clinical Features, and Outcome of Adult Patients With Severe Pandemic A/H1N1/2009 Influenza in Qatar: A Retrospective Study

Soub HA, Saif IA, Maslamani MA, Al-Khal AL, Shaath S, Hamza NA.

Abstract

Objective: The aim of this research was to study the epidemiology, risk factors, clinical manifestations, and outcome of adults with severe pandemic A/H1N1/2009 influenza in Qatar.

The records of all polymerase chain reaction-proven cases of adults with severe pandemic A/H1N1/2009 who were admitted to the intensive care units at the Hamad General Hospital in Qatar between July 2009 and January 2011 were reviewed.

Results: During the 19-month study period, 40 adult patients with polymerase chain reaction-proven severe pandemic A/H1N1/2009 influenza were admitted to the intensive care unit at the Hamad General Hospital in Qatar. Qataris and those from the Indian subcontinent accounted for most patients, accounting for 52.5% and 32.5%, respectively. In addition, 82.5% of the patients had one or more risk factors, with diabetes mellitus, hypertension, and obesity being the most common. Fever, cough, and shortness of breath were the most common presenting symptoms, with a mean duration of symptoms of 4.3 days. Respiratory failure and septic shock were the most common reasons for intensive care unit admission. Laboratory abnormalities such as anemia, leukopenia, thrombocytopenia, and elevated serum creatinine level and transaminases were common at presentation. Chest radiograph abnormalities were seen in most patients (95%), with bilateral involvement in most of them. Treatment with oseltamivir was given to all except one. Sixty percent of the patients needed ventilatory support. Complications developed in 37.5%, with renal failure being the most common. Seventy-five percent of the patients survived. Factors associated with increased risk of death included smoking, high Acute Physiology and Chronic Health Evaluation II at presentation, and delay in initiation of oseltamivir therapy.

Conclusions: Most adult patients admitted with severe pandemic A/H1N1/2009 have one or more risk factors that increase their potential for a severe disease. Clinical features and laboratory findings are nonspecific and are similar to those reported by others, as well as hospital mortality. Being a smoker or having a high Acute Physiology and Chronic Health

Evaluation II score at admission increases the risk of death due to disease. Starting antiviral therapy as early as possible also increases the chance of survival.

3. Dr Asma Ali J F Althani, Head and Associate Professor of Virology, Health Sciences Department, Qatar University

Research Activities at Qatar University

The Director of the Biomedical Research Center at Qatar University, Dr. Asmaa Al-Thani, presented about the research activities at her institute. First, she briefed the audience about the current and proposed graduate programs at the Health Science Department that was recently transformed into college. She then focused her presentation about research activities in the newly established Biomedical Research Center (BRC), where she viewed the center's vision, mission, divisions, facilities and current and potential projects. Amazingly, in less than one year of its establishment, the center has generated more than 10 publications in international peer-reviewed journals, obtained several internal and external grants, and most importantly, attracted collaboration with national and international institutes. The center is currently attracting offers to purchase a mobile/modular BSL3 lab, which will be the first of its kind in the State of Qatar.

4. Dr Saad Taj-Aldeen, Clinical Scientist, Department of Laboratory, Hamad Medical Corporation

Epidemiology of Bloodstream Candida infections in Qatar

Bloodstream infections (BSIs) due to *Candida* spp. constitute the predominant group of hospital based fungal infections worldwide. The epidemiology, risk factors, demographic features, species distribution, and clinical outcome associated with candidemia in patients admitted to Hamad Medical Corporation, were analyzed. A single-center, retrospective analysis covering the past five years was performed. The study evaluated the performance of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) for the identification of BSI *Candida* isolates. The susceptibility profiles of 302 isolates to amphotericin B, itraconazole, fluconazole, voriconazole, posaconazole, anidulafungin, caspofungin, and micafungin were tested using Etest methods and following the CLSI standard (M27-A3 and M27 S4) guidelines. Statistical analyses were performed with the statistical package SPSS19.0. A total of 289 patients with 302 episodes of candidemia were identified. *Candida albicans* was the most common species isolated (30.1 %; n = 91), whereas non-*albicans* *Candida* species represented 69.9 % (n = 211) of the episodes.

Indicating an increase in the non-albicans *Candida* species. The species distribution and outcome of candidemia showed a difference in the crude (30 day) mortality between patients infected with *C. albicans* (n = 34; 37.3 %) and non-albicans *Candida* species. For example, *C. parapsilosis* candidemia was associated with the lowest mortality rate (14.8 %, n=8), and patients with other non-albicans species had the highest mortality rate (37.3–40 %). High mortality rates were observed among pediatric (≤ 1 year of age) and elderly patients (≥ 60 years of age). The overall resistance to voriconazole in vitro antifungal activity was 2.5 %. *C. glabrata* (n = 38) had an MIC₉₀ of 8 $\mu\text{g/ml}$ for fluconazole. Most yeast isolates were susceptible to anidulafungin (99.5 %) and 81.1 % to caspofungin. Resistance to anidulafungin was detected in 1/8 (12.5 %) isolates of *C. orthopsilosis*. According to new Clinical and Laboratory Standards Institute (CLSI) breakpoints, *C. glabrata* (n = 38) showed 100 % resistance, and 37/68 (54.4 %) *C. albicans* isolates were susceptible dose dependent (SDD) to caspofungin. Identification by MALDI-TOF MS was in 100 % concordance with molecular identification. Conclusion The Middle East epidemiology of candidemia has a unique species distribution pattern distinct from other parts of the globe. High mortality rates were observed among pediatric (≤ 1 year of age) and elderly patients (≥ 60 years of age). All strains were susceptible to isavuconazole. All isolates of *C. glabrata* were resistant to caspofungin based on M27 S4. MALDI-TOF MS is a highly useful method for the routine identification of yeast isolates in clinical setting to achieve successful therapeutic treatment.

5. Dr Mohammed Abu Khattab, Division of Infectious Disease, Department of Medicine, Hamad Medical Corporation

Advances in Infectious Diseases, 2015, 5, 148-153. doi: 10.4236/aid.2015.54018.

Pulmonary and Extra Pulmonary Tuberculosis in Qatar: A First Retrospective Population-Based Study

Khattab M, Khan F, Maslamani M, Al-Khal A, Gendy A, Soub H, Howady F.

Background: There is limited information about extra pulmonary tuberculosis (EPTB) in Qatar. The aim of this study is to describe the demographic characteristics of patients with Tuberculosis (TB) in Qatar, and to compare the characteristics of EPTB with those of Pulmonary Tuberculosis (PTB).

Patients and Methods: The study was conducted at Hamad Medical Corporation (HMC) in Qatar, from January 2005 to December 2008. It involves all cases of TB diagnosed in Qatar which do not include patients who are diagnosed by routine screening tests upon entry to state of Qatar.

Results: 1221 cases of TB were reported; 654 (53.6%) were EPTB; and 567 (46.4%) were

PTB. Nine hundred fifty-one (77.9%) were males and two hundred and seventy (22.1%) were females; the mean age was 32.7 ± 811.7 years; only 6.9% (84/1221) of them were Qataris. The most frequent associated condition was diabetes mellitus (DM) (30; 2.5%), and the most frequent site involved was lymph node (285 cases; 43.5%). One thousand two hundred patients continued on first-line drugs while 21 patients received second line treatment. The mean duration of antituberculous therapy was 6.7 ± 1.7 months. Hepatitis was the main drug toxicity. Eight hundred and forty seven patients (69.3%) cured and eight patients (0.7%) died, whereas the remaining three hundred and sixty-six patients (30.0%) had left the country before completing therapy. The proportion of EPTB among females was higher than males, whereas diabetes mellitus was strongly associated with PTB.

Conclusion: TB is still common in Qatar with predominance of EPTB. Although male predominated, the proportion of TB, EPTB among females was higher than males.

6. Dr Basirudeen Syed Ahamed Kabeer, Cardiovascular Division, Sidra Medical and Research Centre

Identification of Antigens to improve the diagnosis of Tuberculosis

Tuberculosis is an infectious disease known to mankind since antiquity. Tuberculosis is prevalent throughout the world including the developing and industrialized countries. In Qatar, tuberculosis remains a common health problem. Control of this disease depends largely on early detection and treatment of active cases. Identifying infected individuals most likely to progress to disease and treating such subclinical infections to prevent future disease provides a crucial opportunity to interrupt tuberculosis transmission and reduce the global burden of tuberculosis disease. Tuberculin skin test and Interferon gamma based assays detect latent TB infection while other methods detect only active TB cases. However, Tuberculin skin test and Interferon gamma assays do not differentiate latent and active TB. Therefore, identification of new TB antigens is required to improve the diagnosis tuberculosis. Two dimensional liquid phase electrophoresis (LPE) is a potential tool to identify diagnostic and vaccine targets. Using this approach, 10 protein fractions, which can differentiate latent and active TB, were identified. Mass spectrometric analysis revealed that 16 proteins, including novel proteins such as AcpM, Adk and Rv3716c, were present in those 10 fractions. Further studies are needed to identify the protein or protein combination responsible for the differential diagnosis of tuberculosis.

7. Dr Sulieman Hassan Sulieman Abu Jarir, Clinical Fellow, Department of Infectious Disease, Hamad General Hospital, HMC

Clinical Data and Molecular Analysis of Multi-Drug Resistance *Pseudomonas Aeruginosa* Isolates in Qatar

Nosocomial infection are significance source of morbidity and mortality in many hospitals affecting millions patients every year. The incidence of multidrug resistance gram negative bacteria is on rise including multidrug resistance *Pseudomonas aeruginosa* (MDR-PA).

Pseudomonas aeruginosa (*P. aeruginosa*) is frequently isolated from health care and hospital acquired infection. The organism is a concern due to its associated morbidity, mortality, impact on health care costs, increasing prevalence and lack of currently effective antimicrobial agents. The integration of molecular typing with conventional hospital epidemiologic surveillance has been proven to be cost effective due to associated reduction in the number of nosocomial infection. A prospective Hospital based cross-sectional study was conducted at Hamad Medical Corporation in Qatar for 1 year (from 1st October, 2014 to 30th September, 2015) to enhance our understanding of prevalence, risk factors and assess the current detection laboratory methods and antimicrobial resistant mechanism and molecular epidemiology of *P. aeruginosa* in Qatar. A total 208 MDR-PA isolates were included in the study. Identification and antimicrobial susceptibility test was done by BD Phoenix and E-test. The bacterial isolates were preserved at -80 C for further molecular analysis. Epidemiological data were collected including age group, patients location, underlying comorbidities, history of MDR infection or colonization and antibiotic exposure, site of isolates, invasive devices, acquisition, treatment received, length of hospital stay and clinical outcomes. From the 208 MDR- PA isolates, 71% of patients had history of Exposure to Antibiotics (Meropenem 13.8%, Tazocin 8.7% , Fluroquinolone 8.2% and other antibiotics 69.3%) within 90 days before isolating the MDR-PA. Majority of patients had extensive health care contact 92%. 62% of isolates were considered to be a cause of infections and remaining percentage considered to be colonization.

8. Dr. Atqah AbdulWahab, Senior Consultant Pediatric Pulmonologist, Dept. of Pediatrics, Hamad Medical Corporation

Microbiology of Cystic Fibrosis in Qatar

Cystic fibrosis (CF) is a genetic, inherited and multisystem disease. Intermittent and chronic bacterial infection of the airways is a hallmark of lung disease in CF. Accurate microbiologic diagnosis allows the CF care team to provide effective treatment for CF patients, detect

emerging pathogens, and ensure and monitor appropriate infection control practices.

Infect Drug Resist. 2015 Apr 30;8:83-8. doi: 10.2147/IDR.S80341.

Discrepancy in MALDI-TOF MS identification of uncommon Gram-negative bacteria from lower respiratory secretions in patients with cystic fibrosis.

AbdulWahab A, Taj-Aldeen SJ, Ibrahim EB, Talaq E, Abu-Madi M, Fotedar R.

Matrix-assisted laser desorption/ionization-time of flight mass spectrometry (MALDI-TOF MS) technique provides an early bacteria identification and antimicrobial therapy approach. A total of 123 lower respiratory isolates from 50 patients with CF at Hamad Medical Corporation using MALDI-TOF MS in parallel with conventional phenotypic. The MALDI-TOF MS results were 100% consistent to the species level with conventional phenotypic identification for isolates of *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Haemophilus influenzae*, *Streptococcus pyogenes*, *Achromobacter xylosoxidans*, *Stenotrophomonas maltophilia*, and other uncommon organisms such as *Chryseobacterium gleum* and *Enterobacter cloacae*. However, there was limitation in the diagnosis of rare and uncommon Gram-negative bacteria.

Eur J Clin Microbiol Infect Dis. 2014 Feb;33(2):265-71. doi: 10.1007/s10096-013-1954-1.

Genotypic diversity of *Pseudomonas aeruginosa* in cystic fibrosis siblings in Qatar using AFLP fingerprinting.

Abdul Wahab A, Taj-Aldeen SJ, Hagen F, Diophode S, Saadoon A, Meis JF, Klaassen CH.

Pseudomonas aeruginosa is one of the primary pathogens in patients with CF and a major cause of morbidity and mortality. We studied the genotypic relatedness of *P. aeruginosa* from lower respiratory samples using amplified fragment-length polymorphism (AFLP) fingerprinting in 27 CF patients with CFTR I1234V mutation belonging to 17 families. Twenty-three distinct genotypes of *P. aeruginosa* were identified. Eleven families each had one distinct genotype. In the other 6 families more than one genotype was observed. Siblings with CF from the same family harbored the same strain of *P. aeruginosa*, which were different from the genotypes in other families suggesting cross-transmission of *P. aeruginosa* or acquisition from common environmental exposure.

Int J Infect Dis. 2014 Jul;24:14-9. doi: 10.1016/j.ijid.2014.03.1380.

High prevalence of *Candida dubliniensis* in lower respiratory tract secretions from cystic fibrosis patients may be related to increased adherence properties.

Wahab AA, Taj-Aldeen SJ, Kolecka A, ElGindi M, Finkel JS, Boekhout T.

Although CF lung disease is classically dominated by bacteria, fungal isolates are increasingly isolated. *Candida* spp are the most common yeasts isolated from the airways of CF patients. Twenty-five clinical samples were collected from a cohort of 20 CF patients at Hamad Medical Corporation. Twenty-six isolates of *Candida* spp were isolated and identified by MALDI-TOF MS method. *C. dubliniensis* to be the most prevalent species (n = 18, 69%), followed

by *C. albicans* (n = 4), *C. tropicalis* (n = 3), and *C. glabrata* (n = 1). *C. dubliniensis* showed the strongest adherence under constant flow when compared to the other species of *Candida*. In conclusion: High prevalence of *Candida dubliniensis* in lower respiratory tract secretions from CF patients may be related to increased adherence properties.

9. Dr Walid Alali, Associate Professor, Epidemiology, College of Public Health, Hamad bin Khalifa University

Priorities for Foodborne Disease Research in Qatar

Foodborne disease continues to pose significant health problems globally, regionally, and locally in Qatar. Around 600 million (1 in 10 people) in the world get sick with foodborne disease annually with 420,000 deaths. About 500 cases of foodborne disease occur in Qatar annually; i.e., approximately 20 cases per 100,000 people. Food system in Qatar is mostly composed of local food production, imported food supply, food service, retail outlets, and consumers. The major challenges to Qatar's food safety system are associated with both imported food and food service. Qatar imports 90-95% of its food originating from many countries around the world with varying levels of food safety standards. Moreover, the food service industry in Qatar is very large, culturally diverse, and employs large numbers of expatriate population mostly from Southeast-Asian countries. There are a number of challenges and research opportunities available for Qatar to enhance their food safety system. These challenges include: 1) imported food inspection, 2) robust foodborne surveillance system, 3) food handlers lack of knowledge and training on food safety risks, and 4) scientific research to support policies and regulations. Given these challenges, top research priorities in response to these challenges can be on: 1) source attribution of foodborne disease, 2) ecology of contamination in imported food, and 3) baseline studies on food and environmental contamination risk factors at food services.

10. Dr Mazen Sid Ahmed, Division of Clinical Microbiology, Department of Laboratory Medicine and Pathology, Microbiology Section, Hamad Medical Corporation

Antimicrob Resist Infect Control. 2016 Feb 9;5:4. doi: 10.1186/s13756-016-0103-x.

Antimicrobial susceptibility and molecular epidemiology of extended-spectrum beta-lactamase-producing Enterobacteriaceae from intensive care units at Hamad Medical Corporation, Qatar.

Sid Ahmed MA, Bansal D, Acharya A, Elmi AA, Hamid JM, Sid Ahmed AM, Chandra P, Ibrahim E, Sultan AA, Doiphode S, Bilal NE, Deshmukh A.

Background: Emergence of extended spectrum beta lactamase (ESBL)-producing isolates has important clinical and therapeutic implications. A high prevalence of ESBL-producing Enterobacteriaceae has been reported in literature from various clinical samples. The present study was undertaken to evaluate the prevalence of ESBL-producing Enterobacteriaceae, as well as the molecular characterization and the antimicrobial susceptibilities in patients admitted in Intensive Care Units (ICUs) at Hamad Medical Corporation (HMC), Doha, Qatar from November 2012 to October 2013.

Method: A total of 629 Enterobacteriaceae isolates were included in the study. Identification and susceptibility was done by Phoenix (Becton Dickinson) and the ESBL-producers were confirmed by double disk potentiation as recommended by CLSI. Molecular analysis for the ESBL-producers was performed using polymerase chain reaction (PCR).

Results: 109 isolates (17.3%) were confirmed as ESBL-producers and all were sensitive to meropenem in routine susceptibility assay. Most of ESBL producers (99.1%) were resistant to amoxicillin/clavulanic acid and ceftriaxone and 93.6% to cefepime. Among ESBL producing genes, prevalence of blaCTX-M (66.1%) was highest, followed by blaSHV (53.2%) and blaTEM (40.4%).

Conclusions: Present study shows high prevalence of ESBL-producing Enterobacteriaceae within the ICU facilities at Hamad Medical Corporation, Qatar and emphasizes the need for judicious use of antibiotics and implementation of strict infection control measures.

11. Dr Ussama Abdel-Motal, Sidra Medical and Research Centre, Qatar

A unique method for increasing immunogenicity of influenza (flu) and HIV vaccines

The immunogenicity of some viral vaccines, including flu vaccine in particular for use in the elderly and HIV-1 vaccine, is viewed as suboptimal. Immunogenicity of such vaccine can be greatly improved if it is effectively targeted for uptake by antigen presenting cells (APC). This can be achieved by processing the vaccinating HA or HIV-1 protein to carry α -gal epitopes on their multiple carbohydrate chains. Injection of α -gal carrying HA or HIV-1 protein will result in an in situ binding of anti-Gal (produced in large amounts in all humans) to these epitopes and formation of immune complexes. APC, including macrophages, dendritic cells and Langerhans cells of the skin, all express Fc γ receptors (Fc γ R) that effectively bind the Fc portion of IgG molecules once these IgG molecules are bound to their corresponding antigens. Mice immunized with HA carry α -gal epitopes resulted in ~100 fold higher anti-flu virus antibody and T cell response in comparison to the immune response in mice immunized with the original inactivated flu virus lacking α -gal epitopes. Similar results were obtained with HIV-1 vaccine. Anti-Gal has potential for a variety of clinical uses, particularly in the areas of viral and cancer vaccines.

12. Dr Laith J. Abu-Raddad, Associate Professor of Healthcare Policy and Research, Director of the Biostatistics, Epidemiology, and Biomathematics Research Core, Weill Cornell Medicine-Qatar

Characterizing Hepatitis C virus prevalence and transmission in the Middle East and North Africa

The aim of the Middle East and North Africa (MENA) Hepatitis C Virus (HCV) Epidemiology Synthesis Project was to characterize HCV epidemiology and estimate the number of affected individuals across this region. Our findings showed that HCV prevalence in the population at large in most MENA countries is up to 3%, comparable to most countries globally, with the notable exceptions of Egypt (prevalence of 14.7%) and Pakistan (prevalence of 4.8%). HCV prevalence is high, and at times exceeds 50%, among populations at high risk of exposure such as hemodialysis patients, patients requiring blood transfusion, and people who inject drugs. HCV incidence in the region appears to be largely driven by health-care related exposures and injecting drug use. Mother-to-child transmission is also a significant contributor to HCV incidence in Egypt and to some extent in Pakistan but not in other MENA countries. Documented community-based exposures include the use of contaminated equipment for cultural practices (cupping, circumcision...) and the administration of non-sterile injections by non-healthcare professionals. Our preliminary estimate for the HCV antibody positive population in MENA is 14.2 million people out of whom 9.5 million are chronically infected with HCV.

3rd Research Forum photo gallery



3rd Research Forum – Bring Your Research Group

| Designation | Dept. | Research Aspect Sought Help for | Details of Project | Details of Support Received | Research Forum Support member sought advice from |
|---------------------------|------------------------|--|---|--|--|
| Staff Nurse | NCCCR | Research Idea | To design a bed for Palliative cancer patients | Discussed research idea | Dr. Yahya Imam |
| Nurse Educator | Nursing Research | Research idea | Challenges on communication between nurse and doctors towards implementation of Evidence based practice in the clinical area | Discussed research idea, research question and cross-sectional study design | Dr. Furqan B. Irfan Uddin |
| Consultant | Urology | Research proposal and ethics approval | Multi-centre study on Urosepsis | Discussed ethics requirement and IRB approval for all multi-centre study sites including HMC | Dr. Furqan B. Irfan Uddin |
| Staff Nurse | Mental Health | Research idea | Evaluation of patient care for patients at risk of pressure ulcer | Discussed the research idea | Prof Guillaume Alinier |
| Nurse | Nursing | How to do a literature search | Organizational climate versus job satisfaction among nursing teaching staff members and their assistants | Received support on literature search | Dr. Yahya Imam |
| Pharmacist | Pharmacy | Study design and methodology | Counselling diabetic patients by pharmacists on lifestyle management | Discussed research question and study design | Prof Guillaume Alinier |
| Ophthalmology | Surgery | Research idea | Survey of HMC staff regarding the difficulties and challenges to conduct 'Good Clinical Practice' research projects | Discussed research idea | Dr Furqan B. Irfan |
| Consultant | Obstetrics/Gynae | Citations and References, Oral/poster presentation | Research proposal | Discussed research project | Dr. Furqan B. Irfan, Dr. Yahya Imam |
| Speech Therapy Specialist | Cardiac Rehabilitation | Research proposal | Impact of nursing performance and interventions on complications in stroke patients | Received support on Citation & References and statistical analysis | Dr. Rajvir Singh, Dr. Yahya Imam |
| Resident | Internal Medicine | Research question/ Hypothesis, Genetics and molecular research | Age of onset of diabetes | Received support on research idea | Dr Muzammil Gandapur |
| Nursing Education | Nursing Research | Research Question/ Hypothesis, Scientific justification, Study Design & Methodology | Evaluating nursing education on patient outcomes | Discussed Research question and study design | Dr. Mohamed Ali Siddig Ahmed |
| Specialist | Dental Department | Research question/hypothesis, Literature search, Study design and methodology, Data collection | Systematic Review | Received support on literature search | Dr Carma Bylund |
| Resident | Ophthalmology | Research idea, Study design and Methodology | Innovative ocular surface probe as diagnostic tool for intra ocular inflammation including but not limited to endophthalmitis and uveitis | Received support on research idea and study design | Prof Guillaume Alinier |

| Designation | Dept. | Research Aspect Sought Help for | Details of Project | Details of Support Received | Research Forum Support member sought advice from |
|-------------------------------|-------------------------|---|--|---|--|
| Fellow | Emergency Medicine | Research proposal | Perspective towards 'Do Not Resuscitate' policy among critical care staff in HMC | Support received on how to submit research proposal in HMC | Dr Furqan B. Irfan |
| Clinical Dietitian Supervisor | Dietetics and Nutrition | Research idea | Malnutrition in external feeding patients | Discussed research idea and study design | Dr Yahya Imam |
| Specialist | Anaesthesia | Research idea, Study design and Methodology | Randomized controlled trial comparing two types of regional anesthesia for postoperative pain management | Discussed research idea and study design of randomized controlled trial | Dr Prem Chandra |
| Post-doctoral Fellow | Qatar University | Biomedicine Research processes | Gene sequencing facility at HMC | Gene Sequencing | Dr Fayaz Ahmad Mir |

Research Forum Support Committee:

Professor Ibrahim Janahi
Dr. Furqan B. Irfan
Dr. Carma Bylund
Dr. Zain Bhutta
Dr. Sameer Pathan
Professor Ed Hillhouse
Dr. Rafael Consunji
Ms Mary Anne Tourette
Dr. Naveed Akhtar
Dr. Yahia Zakaria Bashier Imam
Professor Ramzi Mohammad
Dr. Shahab Uddin Khan
Dr. Fayaz Ahmad Mir
Dr. Muzammil Gandapur
Professor Richard Gray
Dr. Dominique Soekarman
Dr. Ayman Ahmed El Manyar
Dr. Palli Valapila Abdulrouf
Dr. Cornelia Sonia Carr
Professor Guillaume Henri Jean Alinier
Dr. Rajvir Singh
Dr. Prem Chandra
Ms Sadaf Lynes
Professor Ashfaq Shuaib
Professor Stephen Hodges Thomas
Dr. Susanna Jane Lawson Akiki
Dr. Ruben Peralta Rosario
Dr.. Mohamed Ali Siddig Ahmed

Organizing Committee:

Professor Ibrahim Janahi
Dr. Furqan B. Irfan
Ms Indu Muralidharan
Ms Angela Heather Ball
Ms. Josephine Veronica Williams
Dr. Zain Bhutta
Mr. James Edward Woods
Mr Saad Mohammed Al Tamimi



As one of HMC's three pillars, research plays a vital role in the discovery of new treatments and care pathways for our patients.

CONCLUSION

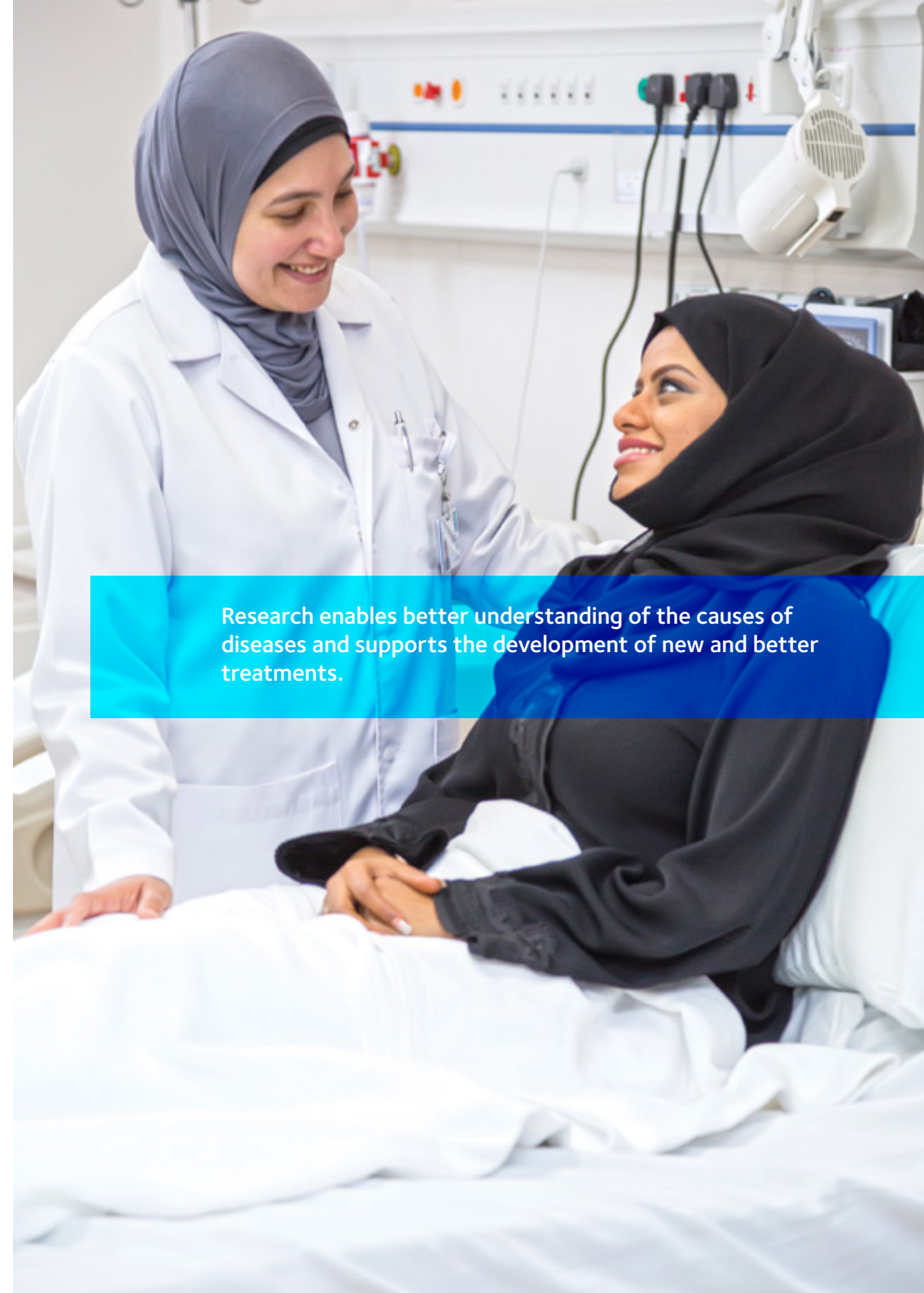
The three Research Forums achieved the aims of providing a research support system and bringing together Qatar's biomedicine and health research community across institutes and organizations.

Important and relevant topics to Qatar and the region including Neuroscience, Heart and Infections were covered. The talks by researchers across Qatar's institutes and organizations showcased their work and the following Questions and Answer sessions led to interesting discussions. New research ideas and projects were generated and multi-disciplinary collaborations and networks were established.

A research culture is gradually taking roots. From a health services delivery approach to a tertiary care and academic health system environment will require sustained efforts and continued investment. The Research Forum program is one of the most cost-effective and sustainable methods of developing and strengthening a health research system that spans across institutions and organizations.

The research support system has facilitated and enabled physicians, nurses, health professionals, fellows, residents and students to start conducting research. The fruits of this labor will be evident in time when projects supported by the Research Forum Support Committee are completed and high-quality research published. However, the results of new research ideas and projects, collaborations and discussions among senior researchers at the Research Forum are not quantifiable.

The Research Forum program is a unique model that has been developed to nurture and strengthen research in a developing health system. The Research Forum model should be generalizable and scalable. Our results would be interesting to other health systems in developing countries.



Research enables better understanding of the causes of diseases and supports the development of new and better treatments.

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