
Mohamed Khalifa
MD, DHCM, MSc, MRCSEd, CPHIMS
Consultant & Researcher
Health Informatics, Healthcare Management & Performance Improvement
95/188-190 Balaclava Road, Marsfield, Sydney, NSW 2122, Australia
Mobile: [+61 438 632 060](tel:+61438632060) - Email: dr@khalifa.com.au

Australian Permanent Resident - Granted Distinguished Talent Visa 124

Personal Statement

Over 18 years, I developed a unique career in health informatics. I started as a medical doctor in 2001, and then with hard work, persistence and dedication, I transformed my passion towards computers, data and information into my new profession. Actually I was fortunate enough to engage myself into the full spectrum of the health informatics practice, research and development along the three main perspectives of the industry; the vendor business side; developing and implementing health information systems at different hospitals and healthcare organizations, the professional hospital implementation and consultation side; utilizing systems in improving the performance of hospitals and healthcare services and finally along the academic research and training side; publishing my successful evidence based strategies and results oriented methodologies in conferences, journals and book chapters.

In addition to transferring my knowledge and experience to others, through establishing health informatics, healthcare management and healthcare performance improvement training programs in hospitals, I also share my experience with other healthcare executives and professionals around the world, through international publications, on how to utilize informatics and analytics resources to develop solutions to solve many contemporary healthcare challenges and achieve tangible positive results on two main dimensions; organizational healthcare performance and clinical patient outcomes.

Besides gaining diverse experience through moving among different healthcare organizations; as a consultant in health informatics, healthcare management and healthcare performance improvement, I boosted my career, over the years, with academic and professional qualifications from world class universities and organizations. I moved to Australia and joined the PhD in health innovation, in March 2017, at the Australian Institute of Health Innovation, Macquarie University, after I had been awarded a commonwealth government funded research training program scholarship. I decided to do my PhD research in a very practical and productive area; "Developing an Evidence Based Framework for Grading and Assessment of Clinical Decision Support Systems". Shortly after; in July 2017, I was granted the Distinguished Talent visa (subclass 124) and became an Australian Permanent Resident; thanks to my internationally recognized record of academic and professional achievements.

I am interested in joining highly distinguished organizations, where I can practice my passion for innovation, hard work and dedication to contribute to the success of the organization and enhance its constructive influence on the healthcare industry and the community. It is the need for achievement, distinction and success that drives my motivation and fuels my passion and persistence.

Knowledge & Experience Domains

- Health Informatics
- Health Information Management
- Health Analytics and Healthcare Big Data
- Healthcare Business Intelligence
- Health Information Systems Project Management
- eHealth Project Management
- Healthcare Management
- Healthcare Performance Improvement
- Healthcare Quality Management
- Healthcare Education and Training

Professional Profile

- PhD Candidate & Research Assistant, Centre for Health Informatics, Australian Institute of Health Innovation, Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia. Awarded a Commonwealth Government Funded Research Program PhD Scholarship.
- Previously; Consultant, Medical and Clinical Informatics, King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia.
- Formerly; Part-Time Instructor, Health Information Management and Healthcare Management, American University in Cairo, Egypt.
- FACHI - Fellow of the Australasian College of Health Informatics. Currently enrolled in the ACHI Fellowship by Training Program.
- MRCSEd - Member of the Royal College of Surgeons of Edinburgh, United Kingdom. College Reference Number: 89320.
- Advisor, CPHIMS Technical Committee, HIMSS - Healthcare Information and Management Systems Society, United States. Served the position from 2015 to 2017.
- Accredited Trainer, Healthcare Information and Management Systems Society, USA.
- CPHIMS - Certified Professional in Healthcare Information and Management Systems, by the HIMSS - Healthcare Information and Management Systems Society, USA.
- Member of HIMSS - Healthcare Information and Management Systems Society, USA.
- Member of AHIMA - American Health Information Management Association, USA.

Links to My Published Profiles

Macquarie University Researchers: <https://researchers.mq.edu.au/en/persons/mohamed-khalifa>

Australian Institute of Health Innovation: http://aihi.mq.edu.au/people/mohamed_khalifa

Google Scholar: <http://scholar.google.com/citations?user=v14bOcUAAAAJ&hl=en&oi=sra>

Research Gate: http://www.researchgate.net/profile/Mohamed_Khalifa9

LinkedIn: <https://www.linkedin.com/in/mohamed-khalifa-md-msc-mrcsed-cphims-3873976>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=56963548200>

ORCID: <https://orcid.org/0000-0002-5919-8352>

Professional Experience (2001 to Present)

2017 - Current

Casual Research Assistant

Center for Health Informatics, Australian Institute of Health Innovation, Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia

- Support different research projects and activities
- Participate in the design, administration and monitoring of research activities
- Analyze and evaluate clinical data gathered during research
- Ensure compliance with protocol and overall research objectives
- Manage the application to ethics committees and grants
- Coordinating the work among several researchers across multiple organizations

2012 - 2017

Consultant, Medical and Clinical Informatics

Executive Director Assistant, Medical and Clinical Affairs

King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia

Professional Achievements:

- Establishing the medical and clinical informatics department and sub-sections; nursing informatics, lab informatics, pharmacy automation, data warehouse team and clinical IT in 2013.
- Supporting the hospital successful accreditation of HIMSS level 6 in 2014.
- Establishing the health information technology affairs research group in 2014.
- Establishing clinical services and performance improvement research group in 2015.
- Publishing over 20 researches and studies on healthcare performance improvement methodologies.
- Directing health informatics and performance improvement projects over 5 years
 - Improving HIS & CDSS utilization by 20%.
 - Reducing unnecessary lab tests by 14%.
 - Improving laboratory results turnaround time by 12%.
 - Improving emergency department productivity and efficiency by 45%.
 - Developing hospital-wide strategic key performance indicators.
 - Developing departmental scorecards and operational dashboards.
- Establishing 8 academic and professional training programs in healthcare management and informatics
- Providing consultation support for over 10 hospital supreme and executive committees including strategic planning, enterprise reporting and policy and procedures committees.

2011 - 2017

Part-Time Instructor

AUC - American University in Cairo, Egypt

Logistics for Consultations and Development Inc., Jeddah, Saudi Arabia

Directing, managing and teaching different AUC joint programs including:

- Healthcare and Hospital Management Post-Graduate Diploma.
- Total Quality Management for Healthcare Post-Graduate Diploma.
- Human Resource Management Post-Graduate Diploma.

Academic Achievements:

- Designing teaching materials and developing case studies.
- Developing question banks and over 1200 MCQs.
- Designing evaluation methods; exams, quizzes and graduation projects.

2004 – 2017

***Founder and Director of the Medical Informatics Diploma Program
SIRA – Scientific Informatics Research Academy, Cairo, Egypt.***

Professional Achievements:

- Developing and launching the post-graduate diploma in medical informatics program in Cairo, 2004.
- Conducting marketing analysis and segmentation for local and international markets.
- Developing marketing strategies, targets, and goals.
- Introducing medical informatics program to third parties by preparing demos and orientation lectures for both management and technology levels.
- Teaching different modules of the medical informatics diploma program.

2002 – Present

***Independent Consultant
Health, Medical and Clinical Information Systems Project Management
Healthcare Management, Quality and Performance Improvement***

Providing on-site consultations for many Middle East and Arabian Gulf hospitals in the fields of:

- Strategic and performance improvement projects management
- Project management for health, medical and clinical information systems
- Developing health and clinical information systems RFP specifications
- Planning for phasing and implementation of the HIS, CIS and PACS
- Planning and selecting commercial HIS, CIS and PACS
- Evaluating current and proposed HIS, CIS and gap analysis
- Providing feedback on the HIS and CIS performance and periodic evaluation
- Acting as a facilitator and liaison between the hospital clinical staff and the vendor
- Developing end user training programs and teaching materials
- Developing system manuals, system guidelines and policies and procedures
- Analyzing departmental and specialty requests and problems' solving
- Optimizing HIS and CIS business workflows and processes
- Preparing statistics and information analysis for top level and strategic management

2006 – 2012

Director, Health Information Technology Department
Director, CME – Continuous Medical Education Department
Director, Business Development and Marketing
General Academic Director of the Institute
Capitals Institute of Health Sciences, Jeddah, Saudi Arabia.

Professional Achievements:

- Directing and managing all academic departments, sections and activities.
- Developing and launching three years under graduate health information technology diploma program.
- Developing program curriculum, teaching and training materials.
- Developing program assessment and evaluation methods.
- Developing and launching postgraduate healthcare professionals' short courses and CME – continuous medical education programs in healthcare management and health informatics.
- Designing strategies for business development and planning marketing management.

2004 – 2008

Part-Time Consultant
Health Informatics Feasibility, Strategy and Marketing
HIS - Health Information Systems Investment Projects
Veritas Analytics, Inc., United States - Middle East Investment Projects

Professional Achievements:

- Conducting feasibility studies, strategic management and marketing plans for health informatics, health information systems, electronic health records, and clinical databases products in the regional area of the Middle East and Arabian Gulf.
- Providing detailed information, in the form of market research documented with references and sources, about national plans and directions for health information technologies and applications.
- Developing recommendations through SWOT analysis to overcome challenges.
- Conducting market analysis for business opportunities and investment feasibility.
- Conducting analysis of the communication channels and business approach methodologies.

2002 – 2006

Health Informatics Consultant and Principal Systems Analyst
Health and Clinical Information Systems Project Manager
Business Development Manager
Health Insights (Healthcare Management Information Systems Vendor), ORASCOM Group Affiliate, Cairo, Egypt / Dubai, UAE / Riyadh, Saudi Arabia

Professional Achievements:

- Designing and developing health information system modules for different clinical specialties including medical content as well as visual interface using Active Medical Sheets framework tools.
- Designing and developing clinical pathways and clinical decision support tools.
- Developing and implementing hospital and clinical systems' training programs for hospitals staff.
- Supporting clinical information systems analysis, customer business and healthcare processes analysis and study, workflows design and system requirements gathering.
- Supporting project management and implementation at different hospitals and sites.
- Supporting business development and marketing through meetings and demo sessions held for customer organizations' top level management as well as end user clinicians.

2001 - 2002

Clinical Coordinator and Health Information Manager

Gamma Knife Center, Nasser Institute Hospital, Cairo, Egypt.

Gamma Knife Center is managed by Scandinavian Care Management AB, a Swedish Healthcare Management Organization running the center project as a BOT system for 10 years, a shared project between Egyptian and Swedish governments.

Achievements included setting up management, marketing and IT systems:

- Designing and developing the Gamma Knife Center Clinical and Management Information System, providing patient registration, scheduling, admission, assessment, reporting, treatment record, billing and follow up of treated patients in addition to generating automated performance statistics, progress indicators and management decision support information.
- Establishing patient workflow processes of clinical management and documentation.
- Directing and managing the center daily activities, conferences, maintaining contacts with local authorities and organizations (ministry of health, governmental insurance, governmental companies, ministries and organizations plus private sector organizations).
- Conducting market analysis and segmentation studies and SWOT analysis for both inside and outside Egypt markets (specially the gulf area), including data base marketing and business planning.

2000 - 2001

GP - General Practitioner Physician

Ministry of Health Hospitals and some private institutions, Cairo, Egypt.

1999 - 2000

House Officer Physician

Ain Shams University Hospitals, Cairo, Egypt.

Academic Qualifications

2017 – 2020 (Expected)

PhD Candidate – Doctor of Philosophy in Health Innovation

Center for Health Informatics, Australian Institute of Health Innovation, Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia.

Awarded a Commonwealth Government Funded Research Program PhD Scholarship

Research Title: Developing an Evidence Based Framework for Grading and Assessment of Clinical Decision Support Systems.

2009 – 2012

MSc – Master of Science in Health Informatics

The Faculty of Health Informatics

The Royal College of Surgeons of Edinburgh

The University of Edinburgh, United Kingdom

Masters Research Title: Overcoming Barriers of Health Information Systems and Electronic Medical Records Implementation in the Middle East Hospitals.

2001 – 2004

DHCM – Post Graduate Diploma of Healthcare and Hospital Management

AUC - The American University in Cairo, Egypt

Graduation Research: Healthcare Management Information Systems, Research Title: Computer Based Patient Record – Future Technology for Healthcare Security.

1993 – 1999

MBBCh – Bachelor of Medicine and Surgery

Ain Shams University, Cairo, Egypt

Professional Qualifications

- FACHI – Fellow of the Australasian College of Health Informatics. Currently enrolled in the ACHI Fellowship by Training Program.
- MRCSEd – Member of the Royal College of Surgeons of Edinburgh, United Kingdom. College Reference Number: 89320.
- Advisor, CPHIMS Technical Committee, HIMSS – Healthcare Information and Management Systems Society, United States. Served the position from 2015 to 2017.
- Accredited Trainer, CPHIMS – Certified Professional in Healthcare Information and Management Systems, Healthcare Information and Management Systems Society, United States.
- CPHIMS – Certified Professional in Healthcare Information and Management Systems, by the HIMSS – Healthcare Information and Management Systems Society, United States. Certificate Number: 000700299391.
- Member of the HISA – Health Informatics Society of Australia
- Member of the CXIO Network – Chief X Information Officers clinical leaders, affiliated with the Health Informatics Society Australia

- Member of the HIMSS - Healthcare Information and Management Systems Society, United States. Member ID: 000700299391.
- Member of the AHIMA - American Health Information Management Association, United States. Member ID: 1192766.
- Accredited and Registered Specialist, Hospital Administration, SCFHS - Saudi Commission for Health Specialties, Saudi Arabia. Registration No. 11-J-M-0032960.
- Board member, ESHMD - Egyptian Society of Hospital Management Development, Cairo, Egypt. (Healthcare Management and Medical Informatics Consultant).
- Member of the Egyptian General Medical Syndicate, Cairo, Egypt.
- Accredited and Registered Specialist, Healthcare and Hospital Management, Egyptian General Medical Syndicate, Cairo, Egypt.
- Member of the International Health Informatics Forum:
www.healthinformaticsforum.com

Professional Achievements

- Best Paper Award; Improving Emergency Room Performance by Reducing Patients' Length of Stay. The 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015, Athens, Greece, 9 - 11 July, 2015. Reference Professor John Mantas.
- Cerner Achievement and Innovation Awards 2013; Recognize Excellence in Adopting Healthcare IT Technology in the Middle East: King Faisal Specialist Hospital and Research Centre in Saudi Arabia was selected for Achievement and Innovation in Patient Care Delivery, having leveraged Cerner Millennium to automate and reduce the processing time for patient assistance requests.
- Professional healthcare management, research and development documentation, designing and developing professional healthcare manuals of policies and procedures such as the "Operational Manual of the Clinical Trials and Research Unit" of King Abdul-Aziz Hospital and Oncology Center, Jeddah, Saudi Arabia, 2010.
- Designing, developing and implementation of training programs on Medical Informatics and Health Information Management in joint projects with the Egyptian Medical Syndicate (EMS) and the Egyptian Society of Hospital Management Development (ESHMD), Cairo, Egypt, 2004 - 2006.
- Member of the foundation council for the Health Information Management education programs - Post Graduate Diploma and Master of Science in cooperation with Plymouth University and the Royal College of Surgeons of Edinburgh, UK - preparing to launch the programs at Faculty of Medicine, Alexandria University, Egypt, 2004.
- Regular Lecturer of Health Informatics and Health Information Management in scientific conferences and workshops, since 2001.
- Health information systems planning, implementation, and management for different medical facilities, hospitals, medical centers and clinics, since 2001.
- Founder of the Health Informatics professional group on facebook.com
- Founder of the Medical Research Center professional group on facebook.com
- Founder of the Business Research Center professional group on facebook.com

Personal & Professional Skills

- Naturally enthusiastic and leader personality.
- Advanced personal communication and public relations management skills.
- Well organized with an evidence-based strategic thinking and planning.
- Long experience in database marketing techniques, medical data mining concepts, and automated analysis tools used in market analysis and segmentation.
- Advanced statistical data analysis skills, both qualitative and quantitative, including professional use of SPSS and other data analysis software packages.
- Successful record in management and marketing for healthcare.
- Extensive experience in Health Informatics, HIS and CIS domains:
 - Analysis, design and development of health and clinical information systems.
 - Evaluation and assessment of health and clinical information systems.
 - Health and clinical information databases and information retrieval methods.
 - Health information standards, classification and coding systems: ICD-9-CM, ICD-10, ICD-10-AM, CPT4, DRGs, AR-DRGs, SNOMED, LOINC, HCPCS, HL7, HIPAA.
 - Medical imaging systems and protocols; PACS, DICOM.
 - Medical data acquisition, storage, analysis, and use.
- Wide experience in HIS and CIS modules:
 - Electronic health records.
 - Clinical modules of different departments and specialties.
 - Radiology information systems, PACS and other medical imaging modules.
 - Pharmacy, Laboratory, and pathology information systems and modules.
 - Drug interactions, clinical alerts and reminders of HIS and CIS.
 - Clinical order entry and results reporting modules.
- Expertise and demonstrated skills in computer, software, internet applications and research tools, Windows, Microsoft Office applications, MS Access, MS Word, MS Power Point, MS Excel, MS Front Page, MS Project, and MS Visio.
- Personal interests and skills in web design and internet applications.
- Professional and extensive skills in medical and clinical research using electronic databases and web based search tools.

Scientific Contributions, Research & International Publications

- 32 Scientific Contributions (Conferences, Seminars and Events).
- 46 International Publications (Papers and Book Chapters).
- Reviewer in +10 International Journals

Details are in the annexes

Signed
Mohamed Khalifa
10 February 2019

Annex One: Scientific Contributions

Lecturer, Speaker and Program Member in Conferences and Workshops:

- Developing an Evidence-Based Framework for Grading & Assessment of Predictive Tools for Clinical Decision Support. Health Data Analytics Conference, HISA - Health Informatics Society of Australia, Melbourne, Australia, 22-23 October 2018.
<https://hisa.eventsair.com/hda-2018/>
- Member of Technical Program Committee, The 8th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH 2018), Leuven, Belgium, November 5-8, 2018.
<http://cs-conferences.acadiau.ca/ictth-18/program-committees.html>
- Member of Technical Program Committee, The 7th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH 2017), Lund, Sweden, September 18-20, 2017.
<http://cs-conferences.acadiau.ca/ictth-17/program-committees.html>
- Member of Technical Program Committee, The 6th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH 2016), London, United Kingdom, September 19-22, 2016.
<http://cs-conferences.acadiau.ca/ictth-16/program-committees.html>
- Improving Utilization of Clinical Decision Support Systems by Reducing Alert Fatigue: Strategies and Recommendations. Speaker at ICIMTH 2016 - The 14th International Conference on Informatics, Management and Technology in Healthcare, Athens, 1-3 July, 2016 (<http://www.icimth.com/>).
- Developing Emergency Room Key Performance Indicators: What To Measure And Why Should We Measure It? Speaker at ICIMTH 2016 - The 14th International Conference on Informatics, Management and Technology in Healthcare, Athens, 1-3 July, 2016 (<http://www.icimth.com/>).
- Exploring Lab Tests Over Utilization Patterns Using Health Analytics Methods. Speaker at ICIMTH 2016 - The 14th International Conference on Informatics, Management and Technology in Healthcare, Athens, 1-3 July, 2016 (<http://www.icimth.com/>).
- Exploring Overtime Utilization Patterns in Healthcare Organizations. Speaker at ICIMTH 2016 - The 14th International Conference on Informatics, Management and Technology in Healthcare, Athens, 1-3 July, 2016 (<http://www.icimth.com/>).
- Improving Health Care Accessibility: Strategies and Recommendations. Speaker at ICIMTH 2016 - The 14th International Conference on Informatics, Management and Technology in Healthcare, Athens, 1-3 July, 2016 (<http://www.icimth.com/>).
- Utilizing Health Analytics in Improving the Performance of Healthcare Services: A Case Study on a Tertiary Care Hospital. Speaker at the First International Saudi Health Informatics Conference (ISHIC: <http://www.saudi-ishic.com/>), Health Informatics Emerging Trends and Technologies in Health Care, 12-14 April, 2016, King Fahad Medical City, Riyadh, Saudi Arabia, arranged by the Health Informatics and Promotion Research Chair, King Saud University, Riyadh, Saudi Arabia (<http://www.rchip.org/>).

-
- Member of Technical Program Committee, The 5th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2015), Berlin, Germany, September 27-30, 2015.
<http://icth-15.dai-labor.de/program-committees/>
 - Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital. Speaker at The 5th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2015), Technical University of Berlin, Berlin, Germany, September 27-30, 2015.
<http://icth-15.dai-labor.de/conference-program/>
 - Developing Strategic Health Care Key Performance Indicators: A Case Study on a Tertiary Care Hospital. Speaker at The 5th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2015), Technical University of Berlin, Berlin, Germany, September 27-30, 2015.
<http://icth-15.dai-labor.de/conference-program/>
 - Reducing Emergency Department Crowding Using Health Analytics Methods: Designing An Evidence Based Decision Algorithm. Speaker at The 5th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2015), September 27-30, 2015, Technical University of Berlin, Berlin, Germany.
<http://icth-15.dai-labor.de/conference-program/>
 - Developing an Emergency Physician Productivity Index Using Descriptive Health Analytics. Speaker at the 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015 (<http://www.icimth.com/>), Athens, Greece, 9 - 11 July, 2015.
 - Improving Emergency Room Performance by Reducing Patients' Length of Stay. Speaker at the 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015 (<http://www.icimth.com/>), Athens, Greece, 9 - 11 July, 2015.
 - Clinical Pathways: Identifying Development, Implementation and Evaluation Challenges. Speaker at the 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015 (<http://www.icimth.com/>), Athens, Greece, 9 - 11 July, 2015.
 - Clinical Decision Support Knowledge Management: Strategies for Success. Speaker at the 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015 (<http://www.icimth.com/>), Athens, Greece, 9 - 11 July, 2015.
 - eHealth in Saudi Arabia: Current Trends, Challenges and Recommendations. Speaker at the 13th International Conference on Informatics, Management and Technology in Healthcare - ICIMTH 2015 (<http://www.icimth.com/>), Athens, Greece, 9 - 11 July, 2015.
 - Member of Technical Program Committee, The International Workshop on Intelligent Technologies for HealthCare (ITCare-14), Halifax, Canada (22-25 September 2014).
<https://sites.google.com/site/comsenselab/itcare-14/tpc>
 - Member of Technical Program Committee, The 4th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2014). Halifax, Canada (22-25 September 2014). <http://cs-conferences.acadiau.ca/icth-14/#programCommittees>

-
- Improving laboratory results turnaround time by reducing pre analytical phase. Speaker at the International Conference on Informatics, Management, and Technology in Healthcare - ICIMTH 2014 (<http://www.icimth.com/>) held in Divani Palace Acropolis Hotel, Athens, Greece, 10 - 13 July, 2014.
 - Barriers to Health Information Systems and Electronic Medical Records Implementation in Middle East Hospitals: A Field Study of Saudi Arabian Hospitals. Main Speaker at the 3rd International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare - ICTH-2013: <http://cs-conferences.acadiau.ca/ictth-13/>), held in Crowne Plaza Niagara Falls - Fallsview Hotel, Niagara Falls, Ontario, Canada from 21 to 24 October, 2013.
 - EHRs Development and Applications, 4 hours' workshop, Sunday, 28 November, 2010, with two accredited CME hours from the Saudi Commission for Health Specialties presented in the First Health Information Management Symposium: Towards e-HIM: Current Situation and Future Direction, 27th and 28th November 2010, King Fahad Medical City, Riyadh, Saudi Arabia, under the patronage of His Excellency the Minister of Health, Dr. Abdullah Al Rabiah.
 - Electronic Health Records Development and Applications, 4 hours' workshop, Monday, 11 May, 2009, with two accredited CME hours from the Saudi Commission for Health Specialties and Health Information Systems Development and Evaluation Methods, 4 hours' workshop, Tuesday, 12 May, 2009, with two accredited CME hours from the Saudi Commission for Health Specialties. Both sessions were presented in the International Conference: Paradigm Shift in Healthcare, held 11-14 May, 2009, Jeddah Center for Forums and Events, Jeddah, Saudi Arabia, Under Patronage of Ministry of Health and The IMC - International Medical Center Hospital, Jeddah, Saudi Arabia.
 - Medical Informatics: The Future is Coming Soon (Lecture), Biomedical Engineering Department and Communication Department, Al Shorouk Academy for Technology and Engineering, April 2006, Shorouk City, Cairo, Egypt.
 - Medical Informatics: The Future is Coming Soon (Lecture), Biomedical Engineering Department, Faculty of Engineering, Helwan University, April 2006, Cairo, Egypt.
 - Teaching Medical Informatics in Egypt (Workshop Session), Alexandria Faculty of Medicine 27th Annual Conference, March 2006, International Conferences Center, Alexandria Library, Alexandria, Egypt.
 - Medical Informatics Industry in Egypt (Workshop Session), Alexandria Faculty of Medicine 27th Annual Conference, March 2006, International Conferences Center, Alexandria Library, Alexandria, Egypt.
 - Electronic Medical Records: Strategies for Success (Lecture), 3rd Annual Conference, Strategies for Healthcare Management, ESHM - Egyptian Society of Hospital Management, February 2006, Cairo Sonesta Hotel, Cairo, Egypt.
 - HMIS - Healthcare Management Information Systems Design, Engineering, Evaluation, and Assessment (4 hours' workshop session), 3rd Annual Conference, Strategies for Healthcare Management, ESHM - Egyptian Society of Hospital Management, February 2006, Cairo Sonesta Hotel, Cairo, Egypt.
 - Teaching Medical Informatics in Egypt: Self Experience (Lecture), EMMIT 2006 - Euro-Mediterranean Medical Informatics and Telemedicine 2nd International Conference, February 2006, Marriot Hotel (Alexandria Renaissance Hotel), Alexandria, Egypt.

- Survey about Medical Informatics Industry in Egypt (Lecture), EMMIT 2006 - Euro-Mediterranean Medical Informatics and Telemedicine 2nd International Conference, February 2006, Marriot Hotel (Alexandria Renaissance Hotel), Alexandria, Egypt.
- Electronic Medical Records and Recent Applications (Lecture), 2nd Annual Conference: Updates on Healthcare Management, ESHM - Egyptian Society of Hospital Management Development, December 2004, Cairo Pyramiza Hotel, Cairo, Egypt.

Annex Two: Reviewer in Journals and Scientific Publications:

- Australian Health Review Journal: <http://www.publish.csiro.au/ah>
- Journal of Artificial Intelligence in Medicine, Netherlands;
<http://www.aiimjournal.com/>
- Journal of Value in Health, United Kingdom; <http://www.valueinhealthjournal.com/>
- PLOS One Journals, United States; <http://www.plosone.org/>
- Journal of Medical Systems; <http://www.springer.com/public+health/journal/10916>
- Health Informatics Journal, United Kingdom; <http://jhi.sagepub.com/>
- Journal of Informatics for Health and Social Care, United Kingdom;
<http://www.tandfonline.com/toc/imif20/current>
- Journal of Health Organization and Management, United Kingdom;
<http://www.emeraldinsight.com/journal/jhom>
- Global Journal of Health Science, Canada;
<http://www.ccsenet.org/journal/index.php/gjhs>
- Journal of Health Informatics in Developing Countries, Canada;
<http://www.jhidc.org/>
- Journal of Medical Internet Research: JMIR; <https://www.jmir.org/>
- Journal of Public Health Reviews; <https://publichealthreviews.biomedcentral.com/>

Annex Three: Publications: Solving Various Healthcare Challenges

Through my work on research and development; designing realistic solutions to overcome different healthcare challenges, I have helped many hospitals and healthcare organizations to develop and implement new reliable key performance indicators to enable them monitor and improve the effectiveness and efficiency of their healthcare services. This includes as well developing and implementing new tools and methods that support cost effectiveness and financial benefits, through enhancing the feasibility of improvement solutions and their return on investment, in addition to supporting the social and societal benefits of such healthcare improvements, including improving clinical outcomes and patients' satisfaction.

1. Developing & Implementing HIS and EMRs

Developing and implementing hospital information systems and electronic medical records is still facing many challenges worldwide. In my published researches [1, 3, 17, 21, 32, 35, 39, 43 and 45]; I have focused mainly on exploring challenges and then

recommending the best practices to overcome different categories and types of challenges of implementing hospital information systems in hospitals and focused as well on the nature and priority of acceptance and satisfaction factors that make such systems easily accepted, adopted and properly used by end users, in addition to the perceived benefits of such systems. This research domain can be utilized to improve the cost-effectiveness of such systems and enhance their return on investment, reaping the benefits faster and easier.

2. Improving Healthcare Utilization in Hospitals

Healthcare industry all over the world is facing the huge challenge of increasing costs and most hospitals are suffering of the continuous practices of overutilization and wastage of resources. In my published researches [4, 26, 29, 30 and 40]; I focused mainly on developing new informatics methods and tools that can support accurate and reliable detection of overutilization patterns of healthcare and hospitals' resources, including unnecessary lab tests, wasted consumables and abused workforce overtime. I aimed at building informatics models that can mathematically, statistically and logically measure the baseline accepted utilization patterns, in relation to medical specialty, patient diagnosis and condition severity, and then explore the relative overutilization patterns. Moreover, I worked on developing feasible solutions and specific recommendations to fix these practices using multiple approaches, such as reducing length of stay by enhancing patients' discharge as a practical approach to improve hospital utilization and efficiency.

3. Improving Efficiency of Hospitals and Healthcare Services

Many aspects and dimensions of healthcare can be developed, the most important is to decide on what, how and why such aspects should be developed; the two questions that we need to answer are; what is the right priority and what is the cost-benefit of such developments? In my researches [2, 10, 11, 15, 23, 24, 25, 27, 28, 33 and 38]; I focused mainly on implementing health informatics methods and tools in setting the priority, and then improving the performance, of different healthcare services, such as laboratory results turnaround time, emergency room crowding, patients' length of stay and doctors productivity, the proper accessibility and appropriate timeliness of healthcare services in addition to healthcare staff motivation and satisfaction.

4. Improving CDSS Utilization

It is well documented and proved by evidence that clinical decision support systems have many benefits that can be realized when we consider several healthcare aspects, such as patient safety, healthcare effectiveness and efficiency in addition to improving the strategic utilization of resources not only for the sake of individual patients but also for the best of the community. In my researches [5, 8, 9 and 22]; I focused on providing the professional healthcare community with the best specific strategies and recommendations of developing and implementing feasible and successful clinical decision support systems, and providing their stakeholders with a complete

management plan to overcome different development, implementation and evaluation challenges.

5. Building Strategic, Tactical & Operational KPIs

In my researches [16 and 31]; I presented my experiences in building new strategic, tactical and operational key performance indicators, that can serve the planning of healthcare performance and improvement on different levels, starting from the day-to-day activity of different services and the departmental performance and finally the organizational strategic level. Because both are important; the detailed level as well as the big picture, it is essential to keep a good balance between the two levels of objectives; since none of them will work without the other.

6. Developing Health Informatics Applications, such as eHealth & mHealth

In my researches [6, 7, 12, 13, 14, 18, 19, 20, 36, 37, 41, 42 and 46]; I approached variable basic and practical research topics, such as the development of eHealth and health information technology domains, telemedicine, primary healthcare, technology acceptance and mHealth. I find mHealth (mobile health) very interesting and in fact inevitable, since smart phone technology is rapidly growing and highly penetrating the community, and many applications are developing, among these are the health and healthcare related ones, which can be utilized to enhance healthcare services and empower patients towards better awareness of, and control over, their medical conditions, including chronic conditions, infectious diseases as well as influencing the life style of people and their health beliefs.

7. Utilizing Health Analytics in Improving Healthcare Performance:

Health informatics industry and the professional community are heading slowly towards the new domains of healthcare business intelligence, big data and health analytics. The adoption rate of such innovations is still below expectations, and a lot of applied research, rather than basic research, have to be done into developing more feasible, applicable and cost-effective solutions. A significant gap still exists between what is known about health analytics and what is being utilized on the ground and in hospitals. My role comes here; bridging this gap and translating the results and findings of basic research into practical solutions that can produce tangible results and positively affect the health of individual patients as well as the public health. In my researches [11, 15, 26, 33, 34 and 44]; I presented my experiences in utilizing health analytics methods, business intelligence concepts and big data tools in developing new innovative models that can - in an accurate, valid and reliable way - evaluate the performance of healthcare services and consequently improve their defective aspects, using evidence based strategies and recommendations. My main objective was to provide healthcare professionals with practical applications of this new health analytics domain, showing how such innovative tools can be used in simple and feasible way to detect performance gaps and work on improving such defects and overcoming the challenges.

Publications List:

Macquarie University Profile:

<https://researchers.mq.edu.au/en/persons/mohamed-khalifa>

Google Scholar Profile:

<http://scholar.google.com/citations?user=v14bOcUAAAAJ&hl=en&oi=sra>

Research Gate Profile:

http://www.researchgate.net/profile/Mohamed_Khalifa9

- [1] Khalifa, M. (2013). Barriers to Health Information Systems and Electronic Medical Records Implementation: A Field Study of Saudi Arabian Hospitals. *Procedia Computer Science*, Volume 21, 2013, Pages 335-342.
<http://www.sciencedirect.com/science/article/pii/S1877050913008375>
- [2] Khalifa, M., & Khalid, P. (2014). Improving laboratory results turnaround time by reducing pre analytical phase. *Studies in health technology and informatics*, 202, 71-74. <http://www.ncbi.nlm.nih.gov/pubmed/25000018>
- [3] Khalifa, M. (2014). Technical and Human Challenges of Implementing Hospital Information Systems in Saudi Arabia. *Journal of Health Informatics in Developing Countries*, 8(1). <http://www.jhidc.org/index.php/jhidc/article/view/111>
- [4] Khalifa, M., & Khalid, P. (2014). Reducing Unnecessary Laboratory Testing Using Health Informatics Applications: A Case Study on a Tertiary Care Hospital. *Procedia Computer Science*, 37, 253-260.
<http://www.sciencedirect.com/science/article/pii/S1877050914010035>
- [5] Khalifa, M. (2014). Clinical Decision Support: Strategies for Success. *Procedia Computer Science*, 37, 422-427.
<http://www.sciencedirect.com/science/article/pii/S187705091401028X>
- [6] ALSADAN, M., EL METWALLY, A., Anna, A. L. I., JAMAL, A., KHALIFA, M., & HOUSEH, M. (2015). Health Information Technology (HIT) in Arab Countries: A Systematic Review Study on HIT Progress. *Journal of Health Informatics in Developing Countries*, 9(2). <http://www.jhidc.org/index.php/jhidc/article/view/138>
- [7] ALSULAME, K., KHALIFA, M., & HOUSEH, M. (2015). eHealth in Saudi Arabia: Current Trends, Challenges and Recommendations. *Studies in health technology and informatics*, 213, 233. <http://www.ncbi.nlm.nih.gov/pubmed/26153002>
- [8] KHALIFA, M., & ALSWAILEM, O. (2015). Clinical Decision Support Knowledge Management: Strategies for Success. *Studies in health technology and informatics*, 213, 67. <http://www.ncbi.nlm.nih.gov/pubmed/26152955>
- [9] KHALIFA, M., & ALSWAILEM, O. (2015). Clinical Pathways: Identifying Development, Implementation and Evaluation Challenges. *Studies in health technology and informatics*, 213, 131. <http://www.ncbi.nlm.nih.gov/pubmed/26152973>
- [10] KHALIFA, M. (2015). Improving Emergency Room Performance by Reducing Patients' Length of Stay. *Studies in health technology and informatics*, 213, 41.
<http://www.ncbi.nlm.nih.gov/pubmed/26152948>
- [11] KHALIFA, M. (2015). Developing an Emergency Physician Productivity Index Using Descriptive Health Analytics. *Studies in health technology and informatics*, 213, 167. <http://www.ncbi.nlm.nih.gov/pubmed/26152983>

-
- [12] Alajmi, D., Khalifa, M., Jamal, A., Zakaria, N., Alomran, S., El-Metwally, A., Al-Salamah, M., & Househ, M. (2015). The Role and Use of Telemedicine by Physicians in Developing Countries: A Case Report from Saudi Arabia. In M. Sheikh, A. Mahamoud, & M. Househ (Eds.) *Transforming Public Health in Developing Nations* (pp. 293-308). Hershey, PA: Information Science Reference. doi:10.4018/978-1-4666-8702-8.ch013
<http://www.igi-global.com/chapter/the-role-and-use-of-telemedicine-by-physicians-in-developing-countries/133691>
- [13] Alghodaier, H., Al-Nasser, L., Al-Shehri, A., Khalifa, M., Househ, M., Alsalamah, M., & El-Metwally, A. (2015). Barriers to Accessing Healthcare Services in Developing Nations: Reflective Lessons for the Gulf Cooperation Council Countries. In M. Sheikh, A. Mahamoud, & M. Househ (Eds.) *Transforming Public Health in Developing Nations* (pp. 121-132). Hershey, PA: Information Science Reference. doi:10.4018/978-1-4666-8702-8.ch006
<http://www.igi-global.com/chapter/barriers-to-accessing-healthcare-services-in-developing-nations/133680>
- [14] Bahkali, S., Househ, M., Bawazir, A., Khalifa, M., & Sheikh, M. (2015). The Role of Primary Health Care in Prevention, Early Detection, and Control of Cancer. In M. Sheikh, A. Mahamoud, & M. Househ (Eds.) *Transforming Public Health in Developing Nations* (pp. 52-67). Hershey, PA: Information Science Reference. doi:10.4018/978-1-4666-8702-8.ch002
<http://www.igi-global.com/chapter/the-role-of-primary-health-care-in-prevention-early-detection-and-control-of-cancer/133675>
- [15] Khalifa, M. (2015). Reducing Emergency Department Crowding Using Health Analytics Methods: Designing An Evidence Based Decision Algorithm. *Procedia Computer Science*, 63, 409-416.
<http://www.sciencedirect.com/science/article/pii/S1877050915024965>
- [16] Khalifa, M., & Khalid, P. (2015). Developing Strategic Health Care Key Performance Indicators: A Case Study on a Tertiary Care Hospital. *Procedia Computer Science*, 63, 459-466.
<http://www.sciencedirect.com/science/article/pii/S187705091502503X>
- [17] Khalifa, M., & Alswailem, O. (2015). Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital. *Procedia Computer Science*, 63, 198-204.
<http://www.sciencedirect.com/science/article/pii/S1877050915024692>
- [18] Al Ghamdi, E., Yunus, F., Da'ar, O., El-Metwally, A., Khalifa, M., Aldossari, B., & Househ, M. (2016). The Effect of Screen Size on Mobile Phone User Comprehension of Health Information and Application Structure: An Experimental Approach. *Journal of Medical Systems*, 40(1), 1-8.
<http://link.springer.com/article/10.1007/s10916-015-0381-5>
- [19] Alsulame, K., Khalifa, M., & Househ, M. (2016). E-Health Status in Saudi Arabia: A Review of Literature. *Health Policy and Technology*.
[http://www.healthpolicyandtechnology.org/article/S2211-8837\(16\)00013-7/abstract](http://www.healthpolicyandtechnology.org/article/S2211-8837(16)00013-7/abstract)
- [20] Househ, M., Hossain, N., Jamal, A., Zakaria, N., Elmetwally, A., Alsalamah, M., & Khalifa, M. (2016). A cross-sectional content analysis of Android applications for asthma. *Health informatics journal*.
<http://www.ncbi.nlm.nih.gov/pubmed/26940137>

-
- [21] KHALIFA, M. (2016). Organizational, Financial and Regulatory Challenges of Implementing Hospital Information Systems in Saudi Arabia. *Journal of Health Informatics in Developing Countries*, 10(1).
<http://www.jhidc.org/index.php/jhidc/article/view/143>
- [22] Khalifa, M., & Zabani, I. (2016). Improving Utilization of Clinical Decision Support Systems by Reducing Alert Fatigue: Strategies and Recommendations. *Studies in health technology and informatics*, 226, 51.
<http://www.ncbi.nlm.nih.gov/pubmed/27350464>
- [23] Khalifa, M., & Zabani, I. (2016). Reducing Emergency Department Crowding: Evidence Based Strategies. *Studies in health technology and informatics*, 226, 67.
<http://www.ncbi.nlm.nih.gov/pubmed/27350468>
- [24] Benslimane, N., & Khalifa, M. (2016). Evaluating Pharmacists' Motivation and Job Satisfaction Factors in Saudi Hospitals. *Studies in health technology and informatics*, 226, 201. <http://www.ncbi.nlm.nih.gov/pubmed/27350504>
- [25] Almorsy, L., & Khalifa, M. (2016). Improving Health Care Accessibility: Strategies and Recommendations. *Studies in health technology and informatics*, 226, 187.
<http://www.ncbi.nlm.nih.gov/pubmed/27350500>
- [26] Khalifa, M., Zabani, I., & Khalid, P. (2016). Exploring Lab Tests Over Utilization Patterns Using Health Analytics Methods. *Studies in health technology and informatics*, 226, 190. <http://www.ncbi.nlm.nih.gov/pubmed/27350501>
- [27] Khan, M., Khalid, P., Al-Said, Y., Cupler, E., Almorsy, L., & Khalifa, M. (2016). Improving Reports Turnaround Time: An Essential Healthcare Quality Dimension. *Studies in health technology and informatics*, 226, 205.
<http://www.ncbi.nlm.nih.gov/pubmed/27350505>
- [28] Khan, M., Khalid, P., Almorsy, L., & Khalifa, M. (2016). Improving Timeliness of Diagnostic Healthcare Services: Effective Strategies and Recommendations. *Studies in health technology and informatics*, 226, 183.
<http://www.ncbi.nlm.nih.gov/pubmed/27350499>
- [29] Almorsy, L., & Khalifa, M. (2016). Exploring Overtime Utilization Patterns in Healthcare Organizations. *Studies in health technology and informatics*, 226, 198.
<http://www.ncbi.nlm.nih.gov/pubmed/27350503>
- [30] Almorsy, L., & Khalifa, M. (2016). Lean Six Sigma in Health Care: Improving Utilization and Reducing Waste. *Studies in health technology and informatics*, 226, 194. <http://www.ncbi.nlm.nih.gov/pubmed/27350502>
- [31] Khalifa, M., & Zabani, I. (2016). Developing Emergency Room Key Performance Indicators: What to Measure and Why Should We Measure It? *Studies in health technology and informatics*, 226, 179.
<http://www.ncbi.nlm.nih.gov/pubmed/27350498>
- [32] KHALIFA, M. (2016). Evaluating Nurses Acceptance of Hospital Information Systems: A Case Study of a Tertiary Care Hospital. *Nursing Informatics 2016*, 78.
<http://www.ncbi.nlm.nih.gov/pubmed/27332166>
- [33] KHALIFA, M. (2016). Utilizing Health Analytics in Improving Emergency Room Performance. *Nursing Informatics 2016*, 138.
<http://www.ncbi.nlm.nih.gov/pubmed/27332178>
- [34] Khalifa, M., & Zabani, I. (2016). Utilizing health analytics in improving the performance of healthcare services: A case study on a tertiary care hospital. *Journal of Infection and Public Health*.
<http://www.sciencedirect.com/science/article/pii/S1876034116301368>

-
- [35] Al Dogether, M., Al Muallem, Y., Househ, M., Saddik, B., & Khalifa, M. (2016). The impact of automating laboratory request forms on the quality of healthcare services. *Journal of infection and public health*, 9(6), 749-756.
<http://www.sciencedirect.com/science/article/pii/S1876034116301411>
- [36] Al-Surimi, K., Khalifa, M., Bahkali, S., EL-Metwally, A., & Househ, M. (2017). The potential of social media and internet-based data in preventing and fighting infectious diseases: from internet to Twitter. *Emerging and Re-emerging Viral Infections: Advances in Microbiology, Infectious Diseases and Public Health Volume 6*, 131-139. https://link.springer.com/chapter/10.1007/5584_2016_132
- [37] Asiri, E., Khalifa, M., Shabir, S. A., Hossain, M. N., Iqbal, U., & Househ, M. (2017). Sharing sensitive health information through social media in the Arab world. *International Journal for Quality in Health Care*, 29(1), 68-74.
<https://www.ncbi.nlm.nih.gov/pubmed/28003369>
- [38] Aldardeer, N., Benslimane, N., & Khalifa, M. (2017). Medications Related Emergency Admissions: Causes and Recommendations. *Studies in health technology and informatics*, 238, 169. <https://www.ncbi.nlm.nih.gov/pubmed/28679915>
- [39] Khalifa, M. (2017). Perceived Benefits of Implementing and Using Hospital Information Systems and Electronic Medical Records. *Studies in health technology and informatics*, 238, 165. <https://www.ncbi.nlm.nih.gov/pubmed/28679914>
- [40] Khalifa, M. (2017). Reducing Length of Stay by Enhancing Patients' Discharge: A Practical Approach to Improve Hospital Efficiency. *Studies in health technology and informatics*, 238, 157. <https://www.ncbi.nlm.nih.gov/pubmed/28679912>
- [41] Atallah, N., Khalifa, M., Elmetwally, A., & Househ, M. (2017). The Prevalence and Usage of Mobile Health Applications among Mental Health Patients in Saudi Arabia. *Computer Methods and Programs in Biomedicine*.
<http://www.sciencedirect.com/science/article/pii/S0169260717306144>
- [42] Al Onezi, H., Khalifa, M., El-Metwally, A., & Househ, M. (2018). The impact of social media-based support groups on smoking relapse prevention in Saudi Arabia. *Computer Methods and Programs in Biomedicine*.
<https://www.sciencedirect.com/science/article/pii/S0169260718300592>
- [43] Almeshari, M., Khalifa, M., El-Metwally, A., & Househ, M. (2018). Quality and accuracy of electronic pre-anesthesia evaluation forms. *Computer Methods and Programs in Biomedicine*.
<https://www.sciencedirect.com/science/article/pii/S0169260718300622>
- [44] Khalifa, M. (2018). Health Analytics Types, Functions and Levels: A Review of Literature. *Studies in health technology and informatics*, 251, 137-140.
<https://www.ncbi.nlm.nih.gov/pubmed/29968621>
- [45] Alsharif, S., Benslimane, N., Khalifa, M., & Price, C. (2018). Healthcare IT Strategic Alignment: Challenges and Recommendations. *Studies in health technology and informatics*, 251, 207-210. <https://www.ncbi.nlm.nih.gov/pubmed/29968639>
- [46] Househ, M., Alshagathrh, F., Khalifa, M., Al-Surimi, K., Moll, S., Alsaab, Y., ... & Afzal, J. (2018). Developing a Policy and Procedure Framework and Manual for a National Comprehensive Implantable Medical Device Registry in Saudi Arabia. *Studies in health technology and informatics*, 251, 215-218.
<https://www.ncbi.nlm.nih.gov/pubmed/29968641>