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# QUALITY ASSURANCE PROCEDURES IN PRIVATE AND PUBLIC PRACTICE

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**Abstract:** 'Better Education and Training to prevent Medical Mishap' This paper describes the key quality issues in healthcare services and their impacts. The major determinants of service quality in healthcare delivery system are the doctors and the processes. A number of common and very important quality assurance procedures and practices are described, including basic and continuing education of doctors and nurses, process management and the roles of key stake-holders like the government, licensing authorities and professional colleges. Quality assurance programmes in both of the public and private sectors are illustrated with examples to allow for better understanding of some practical approaches in the two types of medical practices that are operating very differently.

**Keywords:** Quality Assurance; Quality Services; Continuing Medical Education; Process Management; Medical Audit; Evidence-based Medicine.

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## 1. Unavoidable Medical Incidents?

A medical or patient safety incident arises from the process of disease management or a clinical encounter, resulting in harm or no harm to the patient, or simply not meeting the expectation of the patient, family, doctor or the clinical team. Common causes include medication errors, drug allergies, wrong patients' identification, wrong operations, wrong part or side of the body being operated on, instrument or material left inside the body during surgery, complications from surgery.

Although many clinical incidents are unplanned or unintended, at the times unavoidable events, their occurrence is often questionable. Nonetheless, these are human errors committed by respectful professionals who are commonly medical practitioners and nurses in the clinical settings. This paper examines the practice of quality assurance in healthcare services in both the public and private sectors, based on the belief that better education and training of healthcare personnel is paramount to the prevention of medical mishap and incidents. Most of the issues discussed are related to the situation in Hong Kong, but they are applicable to most countries as both the Hong Kong health care system and legal system are derived from the British Commonwealth since the early colonial days in the 19th Century. Moreover, Hong Kong is unique in being the Asia's World City with an open and world-class standard, particularly in medical practices.[1] Moreover, Hong Kong is unique in operating a dual healthcare system, in which both private and public systems are playing their key roles in health services delivery. Please refer to the appendix for a brief outline of dual healthcare system in Hong Kong.

## 2. Myths in Medicine

The exciting, while at the same time rewarding, part of medicine is its complexity in practice and the unpredictability of outcomes and results of treatment. There are lots of myths surrounding medical practices, be they acute as in the hospital and disaster settings, or chronic and preventive as in the case of public health and disease prevention. In most circumstances in healthcare, 'one plus one never equals to two'. Historically, the "devils" are always those in-charge. Doctors, or traditional medicinal practitioners in China before the emergency and rapid development of Western medicine

1 https://www.brandhk.gov.hk/html/en/

2 Armstrong D. Clinical autonomy, individual and collective: the problem of changing doctors' behaviour. Soc Sci Med. 2002 Nov;55(10):1771-7.

in the nineteenth century, always hold the key to medical practice, despite the numerous control and steering measures in modern day clinical practice, such as protocols, checklists and the wider application of artificial intelligence in computer-assisted diagnosis programmes, etc. Governments, politicians, academics and health managers have been trying very hard to change the behaviours of doctors but the achievement is often marginal, particularly when clinical autonomy is on the agenda.[2] Continuing medical education (CME) has been found to work in changing doctors' behaviour and thus the performance in general practice.[3]

## 3. Impact of Quality Assurance

Quality is often defined and described in customer-dependent approaches such as conforming to specifications, fit for use, value for the charges, after sale supporting services and friendly staff. The study of quality originates from the manufacturing industry in which the design and production are expected to improve to achieve high standards and fit the requirements of the users. Efficiency and profitability are key drivers of the quality assurance (QA) procedures. QA also helps to build the brands, resulting in big sales and market share for the products and services, and more importantly retaining the customers and their loyalty.

The quality movement dated back to over a century ago when Frederick Taylor first wrote the famous scientific management theory.[4] The significant historical development began when W. Edward Deming, the Father of Quality Revolution, moved to consult for Toyota, the biggest car manufacturer in Japan, in the 1950's. Total quality management (TQM) and continuous quality improvement (CQI) have been the mainstream approaches in management since then and have been adopted by the service industry.[5] Quality healthcare is often described as making the right decision and doing the right thing at the right time in the right way to achieve the best possible outcomes, in the six dimensions of efficiency, effectiveness, accessibility, acceptability, equality and safely.[6]

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3 Mostofian F, Ruban C, Simunovic N, Bhandari M1. Changing physician behavior: what works? Am J Manag Care. 2015 Jan;21(1):75-84.

4 https://www.bl.uk/people/frederick-winslow-taylor

5 Swinehart K, Green RF. Continuous improvement and TQM in health care: an emerging operational paradigm becomes a strategic imperative. International Journal of Health Care Quality Assurance. 1995; 8(1):23-27.

6 World Health Organisation. Quality of Care - A process for making strategic choices in

### *3.1 Deming and Health Care*

In his classical book first published in 1982, Out of Crisis, Deming proposed his famous 14 Points for Management, which are essential in the transformation of management style to "new" quality.[7] Haughom suggests five of Deming's principles that are crucial to the improvement of quality in healthcare process: (i) Process management is the basis of quality improvement – "many interlinked processes in the very complex healthcare system" and " important to focus on the processes of care"; (ii) "If you cannot measure it, you cannot improve it" – data-driven and hence the big data approach; (iii) Managing healthcare is managing the processes of care – not the doctors or nurses; (iv) The right data in the right format at the right time in the right hands; (v) Engaging the doctors, who are extraordinarily committed, very intelligent, and highly educated.[8] In essence, the processes and the doctors are the key to quality assurance, which is data-driven, and hence the importance of evidence-based medicine (EBM).

### *3.2 Donabedian on Assessing Quality of Care*

Quality of care is not just about the performance of providers, the contributions of patients or the health care system. It is because medical care aims to get the most benefits with the lowest risks when doctors apply medical knowledge, skills and technology effectively in the practice with due consideration of patient's preferences. It is also a management of the inter-personal relationship in an ethical manner, in the context of social conventions and the legitimate expectations of the patient.[9] Moreover, information about the structural attributes, the processes of care, the outcomes of care, and the causal linkages among them, is necessary to formulate the appropriate criteria and standards for assessment of the quality.[10,11]

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health systems. France: World Health Organisation; 2006 [cited 2019 February 6]. Available from: https://www.who.int/management/quality/assurance/QualityCare_B.Def.pdf

7 Deming WE. Out of crisis. Cambridge: MIT Press; 2000.

8 Haughom J. Five Deming Principles that Help Healthcare Process Improvement. Health Catalysts [Internet]. 2017 [cited 2019 February 6]. Available from: https://downloads.healthcatalyst.com/wp-content/uploads/2014/11/Five-Deming-Principles-That-Help-Healthcare-Process-Improvement.pdf

9 Donabedian A. The Quality of Medical Care. Health Maintenance. 1978 May; 200(4344): 856-864.

10 Donabedian A. The quality of care: how can it be assessed? JAMA. 1988; 260(12):1743-1748.

11 Visnjic A, Velickovic V, Jovic S. Measures for improving the quality of health care. Scientific Journal of the Faculty of Medicine in Nis. 2012; 29(2):53-58.

Structure is the organisation, administration and processes supporting, and directing the care delivery, including facilities and equipment, qualifications of medical staff, administrative structure and operations, and financing. Process is concerned about the appropriateness and completeness of the care. Process assessment can be direct observation of practice or review of medical records. Outcome of care is the change in health and psychosocial status attributed to the process. The measures include deaths, emergency visits and patient satisfaction. The processes and information, or data, are major attributes to quality of care.[12]

## 4. Quality Assurance Procedures and Practices

According to Donabedian, much remain to be known about quality. Quality measurements are different from clinical research.[13] Thus the assessment, i.e. quality assurance, should not be taken simply as procedures to comply with the standards, or else the exercise becomes a bureaucratic process. QA procedures in service industries, including the airlines, are particularly difficult because of the high volume of transaction, immediate consumption of services, difficulty to measure and control processes, intensity of labour with a high degree of customisation, image and branding, and behaviour of both providers and customers. Comprehensive quality assurance programmes with uniform quality indicators should thus be developed, implemented, and evaluated to optimise the effect on different outcomes of health care, including patient satisfaction.

Commitment at all levels of the organisation is essential, but usually not natural, in quality management. In healthcare, safety and quality are closely intertwined as high quality of care is essential in attaining optimal patient safety and in recognising the possible threats of an accident. There are two levels of QA. At an organizational level, the concern is about meeting expectations and providing the services needed. At a process level, the focus is on the services most important to the customers, the process of offering such services and the key inputs. Above all, an organisation or service provider must identify the processes leading the most significant effects on the standards of performance.[14]

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12 Donabedian A. Evaluating the Quality of Medical Care. The Milbank Quarterl. 2005; 83(4), 691-729.

13 Supranote 9 Donabedian (1988)

14 De Jonge V, Nicolaas JS, van Leerdam ME, Kuipers EJ. Overview of the quality assurance movement in health care. Best Practice & Research Clinical Gastroenterology. 2011; 25:337–347

Quality assurance procedures are at all the time carried by everyone from an end user prospective. They should address issues up stream and take note of the service and the possible process defects or deficiency even at the design stage. The focus is also on the implementation and interfaces of the processes. Systemic process issues, when detected and confirmed, are fixed with the connotation of reoccurrence prevention.[15]

### *4.1 Medical Audit and Evidence-based Medicine*

This systematic approach of peer review of medical care helps to identify opportunities for improvement. In United Kingdom, doctors, including general practitioners, are required to engage in regular audits since 1991, while the Australian Medical Association had adopted the Policy on Peer Review in 1984. Interchangeable terms like quality assurance and medical care evaluation are more acceptable to doctors, rather than clinical audit or clinical appraisal. Doctors do not like to be criticised but this approach encourages doctors to judge their own performance, and aims to provide guidance to education needs, filling the knowledge gaps. Clinical procedures are modified to become more efficient, based on agreed standards in structure, process and outcome.[16]

Evidence-based medicine emerged in the 1990's, in which clinical practice are based on scientific evidence. The best research evidence is integrated with clinical expertise and patient values. EBM is a process of life-long and problem-based learning for clinicians in searching for evidence about diagnosis, prognosis, therapy, as well as other clinical and health-related issues concerning patient care. Quality care is essentially the expected outcome of EBM.[17]

### *4.2 Process Management*

In planning and managing service activities, it is necessary to attain high quality in the processes and to identify opportunities for making improvement of quality, and operational performance in process management, ultimately resulting in customer satisfaction and more business as well as profits. Variation in services is intrinsic in clinical practice. The variability can be introduced by the customers in their requests, subjective preference and even arrival time, and can be due to internal process of service provision such as process design,

15 Wingate G. Moving from quality control to quality assurance. Pharmaceutical Engineering. 2014;34(2):1-4.

16 Fong B. Medical audit. Newsletter of the Hong Kong Medical Association. l990 April.

17 https://www.cebm.net/

attributes of providers and equipment. Hence, process simplification reduces opportunities for errors.

Process control methods are the basis of effective management of processes to ensure the conformance to the requirements, by taking corrective action when necessary, based on findings of process monitoring. Short-term corrective action is taken by the process owners while the management is responsible for long-term remedial action. Nonetheless, every employee must strive for improvement. It is an organization wide initiative.

Effective quality control systems in healthcare should have (i) documentation of all key processes; (ii) clear understanding of appropriate services, equipment and working environment; (iii) monitoring and controlling critical quality characteristics; (iv) approval processes for procedures; (v) criteria for service delivery; and (vi) maintenance programmes. The challenges lie with the high input and the process variation in healthcare, and there is also a tradition of individuality and employee discretion. Quality metrics are often subjective, resulting in a lack of meaningful data and data-based decision-making.[18]

A practical QA procedure is process standardization because many service processes can be more standardized than they currently are, thus making services more efficient and effective into the best practice. The standardisation should aim to define a framework for action and customer interaction rather than a rigid sequence of steps. The standard operating procedures provide a basis for evaluating service processes and assessing the impact of process changes.

### *4.3 Training of Medical and Nursing Professionals and Quality Issues*

Things in the world often go back to the basics where they begin. Confucius taught us centuries ago that human beings were essentially innocent. Quality must begin with the education of the "innocent" medical and nursing students, who will become doctors and nurses as the key players in healthcare. The quality culture and practices of quality assurance should be "imprinted" upon these students when they are "plain and blank" sheets, and should constitute the characteristics of these future professionals as their second nature. A few key stake holders are identified in the basic training of health professionals.

18 Hijazi HH, Harvey HL, Alyahya MS, Alshraideh HA, Al abdi RM, Parahoo SK. The Impact of Applying Quality Management Practices on Patient Centeredness in Jordanian Public Hospitals: Results of Predictive Modeling. Journal of Health Care Organisation, Provision and Financing [Internet]. 2018 [cited 2019 February 6]; 55. Available from: https://journals.sagepub.com/doi/10.1177/0046958018754739

*'Better Education and Training to prevent Medical Mishap'* - The University of Hong Kong has the objective to train medical students to be competent practitioners and lifelong learners with professionalism, integrity and leadership qualities. Medical humanities subjects start in second year and community-based teaching starts in the first year.[19] In the much younger medical school at the Chinese University of Hong Kong, a significant part of the medical curriculum is engaged in teaching bioethical values and principles, and in putting knowledge of ethics into practice.[20]

The Government set the policy on the education and post-registration of health professionals. Through the Medical Registration Ordinance, the Hong Kong Government "control" the background of medical practitioners and hence the number. Only graduates of the two local medical schools can register with the Medical Council without passing the licensing examination. Graduates from the British Commonwealth no long "enjoy" this privilege since 1996 after the amendment of the ordinance to this effect. Nonetheless, the ordinance requires doctors to be "*of good character and up to such professional standard acceptable to the Counci*l".[21]

The Government was also instrumental in setting up the statutory Hong Kong Academy of Medicine in 1993 under the Hong Kong Academy of Medicine Ordinance (Cap 419), that has established the training and practicum requirements of medical specialists, who are required to practice with integrity, ethical conduct and standards for the improvement of health care for Hong Kong citizens.[22]

In the nursing profession, The Provisional Hong Kong Academy of Nursing Limited was established in 2011. It is committed to improving nursing care through continuing nursing education, fostering a spirit of collaboration in the nursing community, regulating the practices of nursing specialists and advanced nursing in accordance to the professional and ethical conduct and standards. The Academy safeguards safe and quality health care services to the public and promotes and protects the health of the community.[23]

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19 https://www.med.hku.hk/programme/bachelor-of-medicine-and-bachelor-of-surgery-programme-mbbs-130-curriculum
20 http://mbchb.med.cuhk.edu.hk/smart-curriculum/teaching-ethics-and-professionalism
21 https://www.elegislation.gov.hk/hk/cap161
22 https://www.hkam.org.hk/HKAMWEB/pages_1_37.html
23 http://www.hkan.hk/main/en/about-us/introduction

### *4.4 Roles of the Government*

The Food and Health Bureau, one of the 13 policy bureaux of the Hong Kong Government, shall promote and protect the health of all citizens in Hong Kong. It provides quality environmental hygiene services and quality, affordable and sustainable health services to the public. As the bureau's executive arm, the Department of Health is committed to providing quality client-oriented service to promote the health of the people of Hong Kong.[25]

### *4.5 The Medical Council and Nursing Council*

The Medical Council has the roles of assuring and promoting quality in the medical profession to protect the public, fostering ethical conduct, and developing and maintaining high professional standards. It issues Code of Professional Conduct and guidelines to registered doctors. There is a mechanism to deal with complaints lodged by members of the public and the Council may impose disciplinary actions to the medical practitioners concerned. The Ethics Committee and Credentials Sub-committee are among the six committees and five sub-committee under the Council.[26]

The Nursing Council, formerly the Nursing Board before 1999, has the statutory obligations to provide guidance and to ensure the quality of nursing practice. The Council publishes the *Code of Ethics and Professional Conduct for Nurses and the Guides to Good Nursing Practice*.[27]

### *4.6 Professional Colleges in Medical and Nursing Specialties*

There are 15 and 14 specialty colleges in the Hong Kong Academy of Medicine and Hong Kong Academy of Nursing respectively. Mandatory Continuing Medical Education (CME) and Continuing Nursing Education (CNE) are requirements for academy fellows to remain in the register as a measure of quality assurance and maintaining professional standards. However, Mandatory CME for all registered doctors has not been enforced because no decision has ever been made since this item was presented by the Government to the Health Services Panel of the Legislative Council in 2005.[28] Mandatory

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24 https://www.fhb.gov.hk/en/
25 https://www.dh.gov.hk/english/aboutus/aboutus_md/aboutus_md.html
26 http://www.mchk.org.hk/english/aboutus/welcome_message.html
27 https://www.nchk.org.hk/en/home/index.html
28 Legislative Council Panel on Health Services. Continuing Medical Education for Medical

CME is a requirement for license renewal in countries such as United States, Singapore and New Zealand, even for doctors in basic medical practice, i.e., general practice.

### *4.7 Medical Protection Society*

Founded in London in 1892, the Medical Protection Society (MPS) is not an insurance company. Most doctors and dentists in Hong Kong are MPS Members. They are provided access to in-house expert advice and supports to legal and ethical problems, and the right to ask for indemnity for complaints or claims resulting from professional and clinical practices. The MPS supports safe practice in medicine and dentistry, through regular risk management workshops, lectures and presentations, clinical risk assessments, publications, medicolegal articles, e-learning and conferences. The *MPS Case Reports* is an aid to members, with pitfalls that have caught doctors unawares.[29]

## 5. Quality Assurance Procedures and Practices in the Public Sector

### *5.1 Hospital Authority*

The Hospital Authority (HA) is a statutory body that has been managing public hospitals services in Hong Kong, including 43 hospitals, a workforce of about 76,000 and 28,000 beds, since 1991, being accountable to the Government through the Secretary for Food and Health. The vision of providing high-quality services and people-centred care aims to cure the patients, so that they will not have to be readmitted, and to enable the outpatients to enjoy the best-possible health and quality of life outside the hospitals. Improvement of service quality is one of the five Strategic Goals.[30] The *HA Quality and Safety Annual Report* publication and the Hospital Accreditation programme are two of the HA's endeavours to improve service quality and to sustain patient safety. Accreditation is a useful measure for continuous quality improvement, through self-assessment and external peer review of performance.[31]

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Practitioners [Internet]. 2005 [cited 2019 February 6]. Available from: https://www.legco.gov.hk/yr04-05/english/panels/hs/papers/hs0418cb2-120-1e.pdf

29 https://www.medicalprotection.org/hongkong/about

30 https://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=10009&Lang=ENG&Dimension=100&Parent_ID=10004

31 https://www.ha.org.hk/visitor/ha_visitor_index.asp?Parent_ID=10129&Content_ID=10223&Ver=HTML

### *5.2 Department of Health*

The Department of Health supports professional development and quality assurance activities within the organisation and primary health care. The Office for Regulation of Private Healthcare Facilities (ORPHF), established in 2016, helped to introduce a new registration system for private healthcare facilities, and to support the Food and Health Bureau in promoting private hospital development.[32] The Private Healthcare Facilities Bill was passed on 15 November 2018 by the Legislative Council to regulate hospitals, clinics, day procedure centres and health services facilities and to protect patient safety and consumer rights.

## 6. Quality Assurance Procedures and Practices in the Private Sector

### *6.1 Private Hospitals*

Private hospitals have a legitimate reason to implement QA procedures – their core business. Requirements for application of admitting rights for doctors are stringent, particularly in cases where clinical privileges in utilisation of specialised facilities and equipment, such as operating rooms and new technology services, are considered. Regular clinical audit reports are distributed to visiting doctors while CME programmes are conducted by hospitals.

The Department of Health, being the licensing authority of private hospitals in Hong Kong, published the *Code of Practice for Private Hospitals, Nursing Homes and Maternity Homes* in 2016, consisting of topics on clinical governance, quality management of services and risk management. Clinical governance has focus on accountability of quality and standards of patient care and safety. Quality Committee comprising members from multidisciplinary services will prescribe standards of care and service, with the chair trained in quality assurance activities.[33] In Australia, health provider compliance audits and reviews are conducted as stipulated by the legislation.[34] The Australian Council on Healthcare Standard has an international accreditation programme for private hospitals in Hong Kong.[35]

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32 https://www.dh.gov.hk/english/main/main_orphf/main_orphf.html
33 https://www.dh.gov.hk/english/main/main_orphf/files/code_english.pdf
34 http://www.health.gov.au/internet/main/publishing.nsf/Content/compliance-audits-and-review
35 https://www.achs.org.au/international/activities-by-region/hong-kong/

### *6.2 Union Hospital – A Case of Quality*

Union Hospital, a new private hospital owned and operated by a major land developer, is the first hotel-style hospital in Hong Kong since 1994. It still maintains its fame for being the most customer-oriented private health facility and this dates back to its foundation during commissioning with the philosophy in ensuring the provision of high quality health care services to the community, upholding the highest standards of professional ethics, and continuously improving and maintaining a pleasant hospital environment for the users and staff. Staff uniform took a revolutionary change by ridding of the white coats and traditional nursing dresses. Orientation and in-service training was conducted at the Training and Development Department, a unique practice among private hospitals at the time in 1993.[36]

Union Hospital was the first private hospital to pioneer these initiatives:[37] (i) Collaboration with the Faculty of Medicine of The Chinese University of Hong Kong and offering CME to affiliated doctors;[38] (ii) Delineation of clinical privileges of visiting medical staff; (iii) Setting up a Marketing Department; (iv) "Flat Rate Policy" – offering Package Charges in Maternity Services from its opening and later Set-price Operation Packages; (v) Quality Policy – quality achievement and commitment to a service culture, being the first to be awarded ISO-9002. The Hospital is committed "to provide a quality healthcare service for the people of Hong Kong and Asian Pacific Region" through identifying and meeting all of the customers' basic needs and expectations.[39]

### *6.3 Private Practice*

There are predominantly four types of non-hospital private practice in Hong Kong, including (i) clinics, that are small and most are solo practices; (ii) partnership, that can be within specialties, cross-discipline practices, largely for administrative and financial efficiency; (iii) large medical centres, which are spacious and well-equipped with diagnostic and procedural facilities; and (iv) medical groups or chains, which operate clinics in a few locations and districts. QA procedures are more evident in the last group in the form of

36 Fong B. Hospital profile. RACMA (Royal Australasian College of Medical Administrators) Newsletter. 1994 October; 23

37 http://www.union.org/new/english/about_us/uniqueness.htm

38 Fong B. CME at a new private hospital in Hong Kong - partnership with a medical school. HKMA News. 1996 September/October; 29.

39 http://www.union.org/new/english/about_us/mission.htm

in-house programmes because of the scale of the services and the number of practitioners involved. Doctors in the other groups normally attend CME programmes organised by medical associations, district doctors' networks, specialty colleges, medical schools and private hospitals. Most events are sponsored by pharmaceutical companies or equipment suppliers.

### *6.4 Certificate in Service Enhancement in Medical and Healthcare Clinics*[40]

This is a new course offered to clinic assistants, who provide receptionist and simple clinic services, including drug dispensing. Majority of them only hold a basic secondary school education and are trained on the job. In Hong Kong, private clinics give medicines to patients after consultations. It is "tolerated and allowed" by the law that the drugs are dispensed by clinical assistants, with the understanding that this process is under the supervision of the doctor, who assumes the full and ultimate responsibility. A new short course of 38 hours is being offered to these clinic assistants. The Government have tightened the control and monitoring of private healthcare practices and operations of some 5,000 medical clinics to enhance the safety, transparency and quality of private healthcare services by the new Private Healthcare Facilities Ordinance.[41] In conjunction with the legislation, the Draft Standard for Medical Clinics was released by the Department of Health in January 2018, which stated that "Clinical assistants work under the supervision of the registered medical practitioner, dentist or nurse... shall have received appropriate training relevant to their duties".[42]

## 7. Challenges of QA

Medical practitioners and health administrators in the public and private sectors are encountering different problems and issues all the time in our changing world in the time of globalisation in parallel with the constant movement of people around the globe.

In the public services, doctors encounter an ever-increasing community demand, especially from the increasing ageing population, and patient expectation as the society is becoming more transparent, and people are more vocal than ever. To meet the heavy workload while attending to quality and

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40 https://www.speed-polyu.edu.hk/shortcourses.php

41 https://www.fhb.gov.hk/en/press_and_publications/otherinfo/180500_phf/index.html

42 https://www.dh.gov.hk/english/main/main_orphf/files/Draft_Standards_for_Medical_Clinics.pdf

safety of care, is daunting challenge indeed. This is even worse in the acute care setting, more so during disease outbreak like the seasonal influenza. Although quality assurance measures are given due attention, medical incidents are not infrequent. The Hospital Authority and the Government must regularly review and update QA programmes as a commitment to ensure quality services to the community.

Like any business venture, the private sector always faces the competitive practice environment and the challenges of financial viability. Steady flows of customers will allow a good chance of sustainability, and hence the importance of recruiting and retaining users. Commitment to QA policy, as in the case of Union Hospital, will help to prevent medical incidents, and will gain the trust and confidence of the clients. Private health institutions and medical practitioners should invest time and money in customer-oriented services and quality assurance activities to ascertain quality of care in meeting the expectations of clients who pay for the services.

Everyone in healthcare should subscribe to enhanced clinical quality and administrative efficiency, in improving patient care, reducing costs, and ensuring sustainability. Attention to training and shaping future health professional, especially doctors and nurses, and to process management are paramount in QA procedures that will help to navigate the changes in the modern day health care industry.[43]

To the medical and nursing practitioners themselves, a simple and practical QA procedure is to ask the question, "*If the patient is your family member, would you have done it differently*?" If the answer is yes, there is much to be said about the service and to be reflected by the doctor or nurse.

## Appendix

### A Dual-track System of Health Care in Hong Kong

The health care system of Hong Kong runs on a dual-track basis encompassing the public and the private sectors.[44] Public healthcare is provided by the

43 Lighter DE The application of Lean Six Sigma to provide high-quality, reliable pediatric care. International Journal of Pediatrics and Adolescent Medicine. 2014;1, 8-10.

44 Speech by the Secretary for Food and Health, Dr Ko Wing-man, at the Asian Ministers panel discussion session of the World Health Summit Regional Meeting - Asia in Singapore. Hong Kong SAR Government; 2013 [cited 2019 February 6]. Available from https://www.fhb.gov.hk/en/press_and_publications/speech/2013/sp130409.htm

Department of Health on prevention and health education, the Hospital Authority on hospital and outpatient services, and non-government organisations (NGO) on supportive programmes such as residential homes for elderly and geriatric day hospitals. These services are heavily funded by the Government via taxation, and has been playing a very important role in acting as the safety net for the entire community of nearly 8 million. The private health care sector provides about 10% of the total inpatient services of Hong Kong in the twelve private hospitals and about 70% of total outpatient services in the 5,000 clinics, mainly general practice. These self-funded services, operating in the business and cost-recovery model, are the alternative, but expensive, choices but the very easily accessible options to individuals who are willing to and can financially afford to pay.

Health expenditure in Hong Kong has been fairly steady over the last three decades at around 5.7% GDP and is low for a developed society. Both the public and private sections have equal share of the total health dollars consistently over the years, despite the increase of Government's annual spending from 11% to 17% since 1990, or from 10 to 60 billion dollars, implying a similar trend in the private sector, which is funded predominantly by out of the pocket expenses with some insurance contribution, mostly through employee benefits. Nonetheless, Hong Kong has achieved excellent health statistics in having low infant and maternity mortality rates, and a rather unexpected result of achieving the longest life expectancy in the world among its residents in this tiny, crowded city, that is full of stressful urban life and activities. Life expectancies for male and female Hong Kong citizens were 81.9 years and 87.6 years respectively in 2017 while the corresponding projected figures would be raised to 87.0 and 92.5 in 2064.[45]

The health care system of Hong Kong is unique in having a dual track of mixed welfare and free market subsystems in the public and private sectors respectively. The two sectors are operating independently and efficiently.

45 Census and Statistics Department. Hong Kong Population Projections 2015-2064. Hong Kong SAR Government; 2016 [cited 2019 February 6]. Available from http://www.statistics.gov.hk/pub/B1120015062015XXXXB0100.pdf