

A Dream Come True



Faculty of Medicine

Macau University of Science and Technology

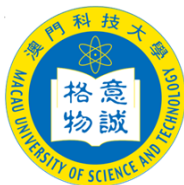
A Dream Come True

Monograph 1

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Foreword

Professor Manson Fok

Founding Dean, Faculty of Medicine

It is indeed a “Dream Come True” to see our initial efforts on establishing a medical school in Macau, turn into our first cohort of students taking their Hippocratic oath. This monograph will be the first of a series charting the growth and development of the historical first Medical School offering the Bachelor of Medicine and Bachelor of Surgery degree in Macau.



I am honored to be the Founding Dean for Macau’s first Medical School, fulfilling Dr Sun Yat Sen’s dream of training young medical doctors locally. Our “competency-based curriculum” has been designed according to the framework of modern education models in Hong Kong, Britain and the United States. Our students, the vast majority from Macau, are selected using a rigorous criteria in a “multiple mini interviews” format. We have a Faculty team consisting of world-class medical educators and exciting young academics to deliver our curriculum. All these factors ensure that, even as our Dream has turned into Reality, we build on a solid foundation to deliver on our promise to train “Tomorrow’s Doctors” to serve the city of Macau.

The Covid-19 pandemic has gripped the world since January 2020. This has been a real and huge test for our young Faculty. Our excellent Faculty team has risen to the challenge and quickly adapted all of our lectures for online delivery. We have even adapted team-based learning and practical classes, critical to our curriculum, for online delivery. In addition, members of our Faculty are actively involved in the search for a Covid-19 vaccine, and other high profile research activities. Some of our teaching innovations are published so that colleagues from other medical schools can also benefit.

Our Dream Come True has undergone a Baptism by Fire. At the time of writing, we have admitted our second cohort of Tomorrow’s Doctors. Our reality now is to strive for Excellence.

Acknowledgements

The establishment of our Medical School was only possible with the support of the Macau SAR Government and the Education and Health Bureau. We offer our most sincere gratitude to the authorities that enabled our establishment.

We also offer our deep gratitude and appreciation to our **Chancellor Dr Liu Chak Wan**, our **President Professor Liu Liang**, our **Vice President Dr Tong Ka Lok**, **Ms Eliza Iek Wai Song** and everyone at the University for their help in establishing our Medical School.

We would also like to thank Mrs Daisy Chan from the Faculty administration who translated this English version of the monograph into Chinese.

Finally, we thank all of our Faculty administration and technical staff for ensuring the Faculty runs smoothly during these difficult times of the Covid-19 pandemic, and always providing us with a reason to smile everyday.

Chapter 1

History is Made

Professor Niv Patil & Professor Manson Fok

At the age of 26, Dr. Sun Yat-Sen graduated as a medical doctor. In 1892, he came to Macau and set up the Western Medicine Department and also dreamt of training others.

In 1557, Portuguese settlers were given formal permission from Ming Dynasty authorities to erect a trading post along the western banks of Pearl River Delta at its mouth pouring into the South China Sea. Missionaries, military officers, and Traditional Chinese Medicine practitioners served as primary healthcare takers in churches and clinics in the territory's of main peninsula of Macau and its two southern islands of Taipa and Coloane.

The city saw its first hospital in 1871 with the Kiang Wu Charitable Association, offering traditional Chinese medical treatments. Dr. Sun Yat-Sen offered his Western medical services in 1892. The government opened their Centro Hospitalar Conde de São Januário in 1874. Seven years after the handover of Macau to China in March 2006, the University Hospital at Macau University of Science and Technology (MUST) opened with a Traditional Chinese Medicine clinic and later with Western medical services with both inpatient and outpatient services, and 60 beds.

Despite an increase in Western medical services, Macau had no formal medical schools under the Portuguese administration. For the 20th century, doctors who came to practice medicine in Macau were mainly trained in Portugal, mainland China, Hong Kong or elsewhere. Since 2010, the Faculty of Health Sciences of MUST (the predecessor of the Faculty of Medicine) has

Why create a medical school in Macau?

“Macau is a vibrant and well known international city attracting a large number of visitors (nearly 25 million per year) from mainland China and around the world. Expectations for expert basic and advanced medical care, education and training has increased over the years and are highly anticipated by both Macau residents and prospective visitors.

Medical college provides a centre for excellence in creating ‘tomorrow’s doctors’ and prospective specialists relevant to local needs; and also paves the way for quality care based on evidence-based practice of world standards.

In practice, a population of up to 1 million can cater for a medical college with 100 students per year to obtain adequate clinical exposure and experience. Advances in e-learning and information technology has also made significant contribution to teaching and learning of basic and applied health sciences in virtual reality.

Training tomorrow’s doctors who would be compassionate, caring and effective communicators has brought about study of humanities and ethics as a part and parcel of our medical curriculum in addition to learning of main-stream knowledge of basic and clinical sciences. In recent years, there is an increasing trend to build a medical curriculum on a ‘Competency-based medical syllabus’ to incorporate attributes essential to medical practice.

Establishment of a medical school will also provide a conversion program for returning overseas and China medical school graduates of Macau citizenship, to provide appropriate clinical teaching, accreditation and localization program, to meet the demand for Macau and to advance to an international standard. Opportunities will also be provided for inter-professional education with other health care professionals such as nursing, complementary & alternative medicine (e.g. TCM), rehabilitation medicine and pharmacy. It is timely for Macau to establish a medical school to complement its health care with quality education and training’.

First submission, 2015.

been exploring the possibility of providing medical education and training in Macau, through a series of consultations with experts in medical education. These culminated in a series of discussions with MUST administration led by Chairman of MUST Foundation and Chancellor of MUST Dr. Liu Chak Wan,

and on 25 September 2015 a proposal with details of a 'Competency Based Curriculum' of Bachelor of Medicine and Bachelor of Surgery (MBBS) was submitted to the Education Bureau for approval.

A short mission statement read :

To create and nurture tomorrow's Macau doctors who will practice with competence, compassion, care and interactive communication. As the medical school progresses with its undergraduate education, the faculty can also facilitate and undertake specialist training programs.

The Faculty of Health Sciences was a regular participant at the quarterly Sino Luso conferences. These conferences provided an opportunity for medical education experts such as Professor Ron Harden, Secretary General of Association for Medical Education in Europe (AMEE) and Professor Michael Lavell- Jones, President of Royal College of Surgeons of Edinburgh, to validate our MBBS program proposals. We were also given the understanding that the Education Bureau had consultations with overseas experts to review our syllabus. Encouragement from charitable organisations such as the Macau Henry Fok Foundation was also invaluable for our future and prospective developments.

A formal presentation to the Education Bureau of Macau SAR in late 2016 was an interactive session to discuss academic and infrastructural issues related to credentials of MUST to establish medical school.

The Education Bureau noted:

MUST already has a well established Faculty of Health Sciences; a state-of-the-art skills training centre and academic links with Hong Kong, Mainland and overseas institution for additional opportunities for collaboration.

After multiple consultations with stake holders, occasional anxieties and near frustrations, suddenly news of 'Dream comes True' appeared. The Education Bureau and Health Bureau had approved the submission.

On 14 January 2019, the Official Gazette of the Macau SAR announced the

第 4/2019 號社會文化司司長批示

社會文化司司長行使《澳門特別行政區基本法》第六十四條賦予的職權，並根據第6/1999號行政法規《政府部門及實體的組織、職權與運作》第五條第一款（一）項，結合第10/2017號法律《高等教育制度》第十四條第一款的規定，作出本批示。

一、在澳門科技大學開設內外全科醫學學士學位課程。

二、核准上款所指課程的學術與教學編排和學習計劃，該學術與教學編排和學習計劃載於本批示的附件一及附件二，並為本批示的組成部分。

三、本批示自公佈翌日起生效。

二零一九年一月七日

社會文化司司長 譚俊榮

Despacho do Secretário para os Assuntos Sociais e Cultura n.º 4/2019

Usando da faculdade conferida pelo artigo 64.º da Lei Básica da Região Administrativa Especial de Macau e nos termos do disposto na alínea 1) do n.º 1 do artigo 5.º do Regulamento Administrativo n.º 6/1999 (Organização, competências e funcionamento dos serviços e entidades públicas), conjugado com o n.º 1 do artigo 14.º da Lei n.º 10/2017 (Regime do ensino superior), o Secretário para os Assuntos Sociais e Cultura manda:

1. É criado na Universidade de Ciência e Tecnologia de Macau o curso de licenciatura em Medicina e Cirurgia.

2. São aprovados a organização científico-pedagógica e o plano de estudos do curso referido no número anterior, constantes dos anexos I e II ao presente despacho e que dele fazem parte integrante.

3. O presente despacho entra em vigor no dia seguinte ao da sua publicação.

7 de Janeiro de 2019.

O Secretário para os Assuntos Sociais e Cultura, *Alexis, Tam Chon Weng*.

The Official announcement in the Government, in Chinese and Portuguese, read:

1. Exercising the power conferred by Article 64 of the Basic Law of the Macau Special Administrative Region and pursuant to Article 5 (1) (1) of Administrative Regulation No. 6/1999 and functioning of public services and entities, and in conjunction with Article 14 (1) of Law 10/2017 (Higher Education Regime), the Secretary for Social Affairs and Culture has ordered that:
2. Bachelor of Medicine and Bachelor Of Surgery Program is launched by the Macau University of Science and Technology.
3. The academic and teaching arrangements and the study plan of the program referred are shown in the previous paragraph attached with Annexes I and II which are an integral part thereof, are approved.
4. This order shall be effective on the day following the announcement of its official gazette.

Dr. Alexia Tam Chon Weng
Secretary for Social Affairs and Culture
January 7, 2019

formal approval for the MBBS program at MUST.

The University administration renamed the Faculty of Health Sciences to the Faculty of Medicine on 1 March 2019. Aside from the newly approved MBBS program, the Faculty of Medicine also offered the Bachelor of Food & Nutritional Sciences (BFNS), Masters of Public Health (MPH), Master of Nursing (MN) and Doctor of Public Health (DPH) programs.

The BFNS program is designed to train specialists in the field of food and nutritional sciences, and incorporates disciplines ranging from organic chemistry, anatomy and physiology, other biomedical sciences courses, as well as management. Students are given the opportunity to undergo internships. The MN program aims to provide students with advanced theoretical knowledge and clinical practice in nursing. The MPH and DPH programs aim



Inaugural Oath-taking ceremony of our first cohort of medical students (top) and the first Faculty "family" photo (bottom).



to develop a critical understanding of the principles relating to public health at Masters and Doctorate levels. Both of these offer opportunities for focused research projects.

The newly reformed Faculty of Medicine had to fast-track admission procedures to recruit the first cohort of MBBS students. News of establishment of the medical school was welcomed by high schools in Macau and beyond. Open days were organized to brief prospective entrants. Talented and academically brilliant students had applied to join our MBBS course. Short listing of applicants for 'Multiple Mini Interviews' ensued.

6 September 2019 marked a historical day for Macau with the inauguration of Macau's first MBBS program in an opening ceremony held at MUST. This function was attended by our first cohort of medical students, their parents and many dignitaries. The students paid respect to their teachers and parents in a solemn and formal ceremony; and were sworn in with the Hippocratic Oath by the Founding Dean, Professor Manson Fok.

On that date students, Faculty and staff might have not absorbed the profound historical context of this moment as the city's first ever medical school. Nor indeed the historical storms they were about to endure just a few months later as SARS-CoV-2 consumed the planet as a pandemic.

At the time of writing, we are the only Medical School offering a comprehensive MBBS program authorized by the Macau SAR authorities. Despite misconceptions about our medical school mainly catering for overseas students for financial gains, the vast majority of students we admit are from Macau ([Chapter 5](#)). This monograph, the first in a series, serves to document the historic establishment of the first MBBS program in Macau, provide insights into our operations, and set the record straight where misconceptions exist.

Chapter 2

A Baptism by Fire

Professor Niv Patil & Mr. Christopher Cottrell

Our First Semester—2019

The hard work began after our Dream has come true. In our very first semester, we started with a flexible set of “Foundation Blocks” that included specialized weeks of intense lectures, seminars, and workshops ([Chapter 3](#)). This covered teaching & learning of basic sciences, medical humanities, ethics, law and communications in a clinical context. They were guided with Team Based Learning (TBL) and Case Based Learning paradigms in order to give the students a taste of what the practice of medicine is about. We also provided our students with access to the Harvard Medical School HMX courses online ([Chapter 8](#)) to further develop key medical concepts and their clinical applications.

This combined approach allowed for early assessment of student ability and necessary adjustments for cohort dynamics. Monthly mentorship meetings with students and faculty members were conducted and attended by all faculty and staff ([Chapter 6](#)). The focus of these meetings was to listen to student feedback and for faculty to reflect on courses. For this, the students also elected class representatives to make announcements. These hour long meetings served to provide further evaluation and seamless improvements as desired.

Formative Examination and Objective Structured Clinical Examination

In December 2019, the first formative exams were held. These involved a series of multiple choice questions and OSCE.

The Center of Excellence for Professional Medical Development and Center for Continuing Medical and Health Education feature several training simulation rooms—from a mock ambulance triage room to a surgical theatre to a maternity ward to an anatomy room ([Chapter 7](#)). These rooms were converted into OSCE stations.

On the morning of 11 December 2019, students parted with their phones and personal belongings, entered the mock-ambulance triage room and waited in turn to be called to six stations for their first OSCE. These stations covered CPR, general examination, simple suturing and tying knots to name a few.

The proceedings of the formative exams, OSCEs, and Harvard HMX ([Chapter 8](#)) helped the students to understand the format and dynamics of exams and assessment practices in the medical curriculum.

For most of them, this will be their first taste of assessment in their medical education.

Semester 2—COVID-19 Strikes

In January 2020, the new semester began with high hopes and pressure. Students were aware that their summative exam would be coming in six months' time. The faculty was busy preparing new courses for semester 2 and foundation block materials for the coming cohort of 2020-2021, in addition to setting a schedule for interviewing the new cohort of students.

During the first three weeks in January 2020 leading up to Chinese New Year of the Rat holidays, lectures were held as normal.

In the background, we began hearing medical chatter and news about an unknown pneumonia. On 31 December 2019, the National Health Commission in Beijing alerted the Macau SAR Health Bureau about the unknown pneumonia and the following day temperature checks were conducted on all flights from the Mainland. Macau SAR took more vigilant public messaging and hygiene steps.

And for those of us in the Faculty who remembers SARS in 2003, we were thinking of a repeat.

The first case appeared in Macau on 22 January 2020 and the city began more strenuous measures the following day. This was about to impact everyone, not least those of us in education.

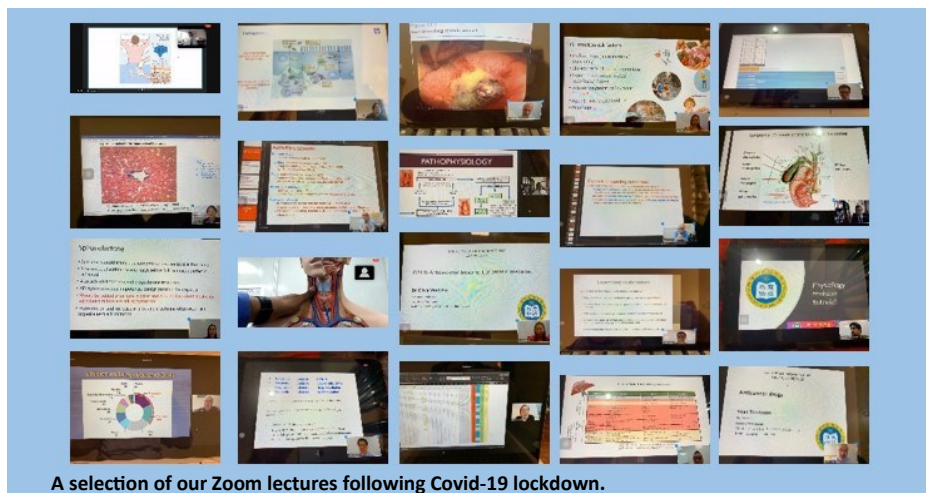
On 29 January 2020 the Macau SAR government announced that all classes at MUST and all educational facilities in Macau would be postponed until mid-February. In the meantime, courses could go online with conferencing software. On our MBBS social media chat group, faculty and staff scrambled to communicate the best ways to draft new lectures and modules as fast as possible with rolling contingency plans. Many speculated that if this was a SARS-like coronavirus, then it might possibly be over by spring or early summer.

That speculation could not have been more wrong.

As mid-February came and passed, no definitive timetable for higher education to resume face-to-face was feasible. We had to revise and move forward into the unknown.

Our classes went online with nearly 150 lectures held between February and May ([Chapter 4](#)). Assessment of coursework was achieved with a combination of multiple choice questions (MCQs), written assignments, and student video presentations.

While home-study allowed some students to attend online lectures in a relaxed manner, it presented a number of problems, particularly with student



A selection of our Zoom lectures following Covid-19 lockdown.

focus. Furthermore, for a hands-on program like MBBS, a prohibition of face-to-face teaching made delivery of our TBLs, practicals and clinical skills classes difficult since students could not meet in class. For these team-based learning projects, assessing individual contributions proved difficult except for general participation in the activities.

Our Language and Communication classes, a longitudinal module running through the 5-year MBBS program, continued through a series of individual-based projects. These included mock medical dialogue writing assignments, and also “Subjective, Objective, Assessment and Plan” (SOAP) note writing. Students were also tasked with making monologue videos with these SOAP notes to improve their English fluency.

The extra home time for students presented the opportunity to focus on their Harvard HMX online classes ([Chapter 8](#)). This resulted in the majority of our students attaining the “Achievement” result, scoring over 80% in the online assessments.

Multiple Mini Interviews (MMI) in Person and Online

In November 2019, before Covid-19 hit, we held face-to-face MMIs for potential Macau students for our second cohort ([Chapter 5](#)). Under the influence of Covid-19 and the restrictions on gatherings and the need for social distancing, our spring MMIs (in April and May) were conducted as a combination of “mask-to-mask” and online interviews. A number of Faculty members were in Hong Kong and prohibited to return to Macau following a second wave of restrictions implemented in late March 2020.

Those prospective medical student candidates who were in Macau at the time of the interviews arrived at the campus and were socially distanced in lines. We prepared ventilated rooms with a computer where the candidates could individually speak with their interviewers in Hong Kong.

Those MMI stations run by local Faculty members were conducted “mask-to-mask” with maximum social distancing measures.

Our First Summative Exam

Covid-19 presented further challenges where our summative examinations were concerned. Summative examinations consisted of written MCQs, short

answers questions (SAQs) and also Objective Structured Clinical Examinations (OSCEs).

While socially distanced, invigilated examinations could be arranged for the vast majority of our students based in Macau, special arrangements have to be made for those students who returned home to northern China, Taiwan and Hong Kong for the Chinese New Year holidays and could not return due to travel restrictions.

We arranged examination sites in Beijing, Taiwan and Hong Kong. The remaining majority of students who were based in Macau did their examinations on campus in three separate rooms invigilated by Faculty members.

The challenges were even greater with OSCE. Effectively running and scoring OSCE stations at different sites is impossible. We therefore improvised and turned our OSCE into OSC-Written-E (OSCWE), a written version of the OSCE. These were carried out at the same sites as our MCQ and SAQ examinations.

Student Experience With Online Teaching

The importance of face-to-face learning in a practical program such as MBBS is obvious. However, learning at home presented with additional challenges, not least an abundance of distractions with siblings and parents. Students also faced the challenge of separating social time and studying time, with the two often merging. In a classroom setting, social media, video games, and films are not ever-present.

One student submitted a presentation video with blaring construction cacophony in the background, highlighting the difficulty and pressure for students to focus. Additionally, as medical students, they have absorbed the news of the pandemic with particular sensitivity and open empathy. This has hit many of them emotionally.

For them, this really was a baptism by fire for their medical education, as well as a baptism of fire for us trying to deliver our MBBS curriculum in our inaugural year.



The new-normal: Socially distanced lecture in progress.

To gauge the effectiveness of our online teaching, with the ever present concern that the new-normal in the post-Covid-19 era will involve periodic lockdowns and “stay at home” orders, we asked our students for their feedback regarding their experience with online learning.

It is evident that the students prefer face-to-face classes even though online teaching has its benefits too. One student wrote to us saying:

“I have not been able to study very well due to remote education (too much freedom at home).”

The student ended this comment with two yellow happy face emojis laughing with a bead of blue sweat, trying to make the best out of a bad situation. Another student wrote:

“I miss our beautiful campus.”

Overall, the general impression from our students is that they miss the camaraderie, friendship and meeting teachers in normal campus life ([Chapter 14](#)). Some of them also yearn for the team sports and networking opportunities.

We felt the same way.

Student feedback for our teachers

At the end of the first year, after our Baptism by Fire, we asked our students for some feedback on their learning experience. Student

feedback is important for a young Faculty like ours, to enable development of our teachers as well as our

methods. We have summarized their comments in the form of a word-cloud (font size is proportional to the commonality of the feedback). Most of our students found the program fun and interesting. Moreover, students were impressed with the quality of teaching delivered and how our teachers were able to make complicated topics easy to understand. Student learning was enhanced by the fact that they found our teachers passionate, kind, encouraging, professional and generally nice people!



The Current Normal

At the time of writing, the Macau SAR government has permitted tertiary education to commence with strict preventative measures. These include the wearing of face masks by all teachers and students, and 1 meter social distancing measures in all classrooms. We are complying with these new rules and begun our second year with the full complement of face-to-face lectures, TBLs, practicals and clinical skills.

We are so pleased to see our entire Year 2 student group, fresh from their Baptism by Fire, returning to Macau for face-to-face teaching. We have missed them!

We also welcome our new cohort of Year 1 students who with the exception of three students in Canada and Vanuatu, are on campus. We are conducting hybrid face-to-face and online teaching for our Year 1 students.



Some of our second cohort of medical students.

On 24 September 2020 the University organized an opening ceremony for new entrants to all faculties. We welcome our second cohort with an open heart and a mask.

It has been a turbulent and challenging year for our new medical school. Fire is slowly diminishing but Fear remains. We shall prevail. Come what may!

Chapter 3

Curriculum for Tomorrow's Doctors

Professor Chan Lap Ki & Professor Manson Fok

The Bachelor of Medicine & Bachelor of Surgery (MBBS) program offered by the Faculty of Medicine, Macau University of Science & Technology (MUST), is six years long, the last year of which is internship. The aim of the program is to develop “Tomorrow Doctors”, who are compassionate, caring and competent in the delivery of effective and efficient patient care to people of Macau and the rest of the world. The program thus adopts a competency-based curriculum specifically designed to help students acquire the knowledge, skills, ethics and professionalism to perform their roles.

The MBBS curriculum at MUST is horizontally and vertically integrated (Table 1). In the first two years of the curriculum, the traditional basic science disciplines, such as anatomy, physiology, biochemistry, pathology, microbiology, pharmacology, etc are integrated, because such an integration of basic sciences (termed horizontal integration) is much needed in their successful application in clinical practice. Moreover, there is a deliberate integration, termed vertical integration, between basic sciences (typically taught early in the curriculum) and clinical sciences (typically taught later).



Lectures (left) and practical demonstrations (right) are key components of our curriculum.

**Table 1—The approved curriculum structure and syllabus
for the first MBBS programme in Macau.**

I	Year 1						
	Semester 1			Semester 2			Summer
	Foundation			Respiratory	CV	GI	Electives
	Year 2						
	Semester 1			Semester 2			Summer
	Haematology & Immunology	Endocrine	UG	Musculo Skeletal	CNS	Head and Neck	Electives
II	Year 3						
	Semester 1			Semester 2			Summer
	Introduction to clinical skills			Medicine	Surgery	Family & community medicine	Electives
III	Year 4						
	Semester 1			Semester 2			Summer
	Emergency Medicine	Special Senses	Psychiatry	Internal Medicine	Surgery	Obstetrics & Gynaecology	
IV	Year 5						
	Semester 1			Semester 2			Summer
	Paediatrics	Family & Community Medicine	Trauma & Orthopaedics	Revision	FINAL MBBS examination		Pre-internship
	Internship (Year 6)						
	Medicine, Surgery, Obstetrics & Gynaecology, Paediatrics, Family Medicine, Emergency Medicine, Orthopaedics, Psychiatry						



Our teaching modalities: lectures, team-based learning, practicals and clinical skills.

Medical students are exposed to clinical sciences even in their first year, to show how basic sciences can be applied in clinical context. Similarly, basic sciences will be revisited in their clinical years to emphasize the importance of basic sciences in clinical practice.

Throughout the MBBS curriculum, active learning is emphasized. In team-based learning classes, students work in teams to tackle authentic clinical problems. It is the main structured, active learning method in the curriculum. But students are engaged in active learning in most other classes. Therefore, in practical classes, students collaborate with, and sometimes even teach one another, in completing tasks that lead to discovery of new knowledge. Even in lectures, students are often engaged in activities that stimulate their thinking, especially in the application of what they are learning in clinical situations.

The first five years of the curriculum begins with the foundation block in the first semester of the first year, followed by four phases in the remaining four and a half years: Phase I, Biomedical Science in Clinical Context course; Phase II, Foundation Clinical Clerkships; Phase III, Advanced Clinical Clerkship;

Phase IV, Clinical Specialty Clerkship & Assistant Internship.

Phase I (Years 1 & 2): Introduction to Medical Education & Biomedical Science in a Clinical Context

Phase I of the course begins with three months of foundation program emphasizing on course structure, the importance of appropriate communication skills, language proficiencies, ethical and moral values, humanity and the duties of a doctor. It also introduces students to the application of basic sciences in a clinical context along with concepts of active learning and evidence based practice. This block is followed by a period of formative assessments to familiarize students with examination requirements.

Phase I continues with system (organ) blocks of five weeks each. Teaching in these blocks will be organized with integration of anatomy, physiology, biochemistry, pharmacology, pathology and microbiology based on clinical scenarios. There will be written and practical summative examinations at the end of Years 1 and 2, followed by four weeks of elective period before students progress to third year of Phase II programs.

Phase II (Year 3): Clinical Foundation Clerkships

Third year begins with a clinical foundation course with three rotations. These rotations will be held at hospitals, family medicine clinics and community health clinics. Students will learn basic clinical examination skills with real patients across various specialties. Students will have the opportunity to acquire abilities to make diagnosis based on comprehensive history taking and physical examinations prior to any routine and supportive investigation will be undertaken. The course will end with a third summative written and clinical examinations which will then be followed by four weeks of elective.

Phase III (Year 4): Clinical Advanced Clerkships

Advanced clerkship of six-months' duration will be an extension of the clinical foundation course to consolidate clinical diagnostic skills with interpretation of investigation and management of patients from paediatrics to geriatrics and mental health. These clerkships will be offered at a network of hospitals and clinics beyond the University teaching hospital (UH). Formative evaluation of students' logbooks and clinical competence will be undertaken as a part of a

continuous assessment.

Phase IV (Year 5): Clinical Specialty Clerkship & Assistant Internship

Specialty clerkship is a year long program related to Surgery, Internal Medicine, Obstetrics and Gynaecology, Paediatrics, Family Medicine, Community Medicine and other specialties. Emphasis in this clerkship will be on management issues. After progressing through Phase I, II and part of Phase III modules, it is expected that students will have acquired sufficient skills to participate in active management of patients as an Assistant Interns as a part of an interprofessional team. After completion of specialty clerkships and a period of revision students will appear for final examination to obtain their degree certificates of MBBS.

Electives

Students will be offered four weeks of electives in Macau and beyond at the end of the first, second and third years to broaden their learning and to participate in healthcare projects, volunteerism and international health projects. Students will work with nominated supervisors to guide and certify their active involvement. See [Chapter 9](#) for more details.

Internship

After successful accomplishment at the MBBS exam, medical students will undertake 12 months of compulsory and supervised internship at recognized training units in Macau and beyond. Macau University of Science and Technology will monitor internship programs to ensure interns have obtained good clinical experience; and supervisors have signed their logbooks to document satisfactory completion of internship.

Chapter 4

Innovations & Implementations During Covid-19

Professor Anand Bhaskar & Dr. Simon Mok

Team-based learning

We have been utilising team-based learning (TBL) as an important means of active learning. For our first cohort of students, TBLs were conducted face-to-face till January 2020 before the Covid-19 lockdown. From February 2020 following the lockdown, TBL sessions were conducted online using Zoom.

Anatomy, histopathology and physiology TBLs were facilitated using the online application, Socrative. We successfully carried out all the TBL components including individual readiness assessment test (iRAT), team readiness assessment test (tRAT) and application exercise (AE) using this method.

During each TBL session, students answered questions individually for iRAT and as teams for tRAT and AE. Importantly, students were able to carry out team discussions through Zoom breakout rooms, WeChat, and WhatsApp. This is probably the first instance of TBL being conducted remotely with online applications.

Our experience of doing online TBL has been submitted as an innovation to *Advances in Physiology Education Journal* published by American Physiological Society to share with medical educators all over the world.

Practical demonstrations

The Covid-19 pandemic also affected the practical training of our students. However, this did not stop us from delivering our practical classes. Practical demonstrations were done online via Zoom. Our resourceful teachers recorded videos of biochemistry experiments and showed recorded videos to

students through Zoom. This was complemented by a Socratic quiz at the end to ensure that students understood the material. Important clinical skills training also continued throughout the lockdown period. Demonstration of examination of peripheral pulses and the measurement of blood pressure on staff volunteers and mannequins were broadcasted live to students via Zoom.

Another innovative practical demonstration we performed was via computerized ECG and spirometry recordings carried out online on staff volunteers. Students were asked to perform analyses of the recorded traces through Zoom by remotely controlling the faculty laptop. This innovation was recognised and recently published in the *Advances in Physiology Education Journal* (See [Chapter 11](#)).

As our success with online teaching continued, we carried out more practical demonstrations through Zoom. One brilliant example was the gross anatomy practical demonstrations where the students actively participated. Students presented on various topics allotted to them online as teams using annotation and other tools available. These were similar to the student presentations in gross anatomy practical classes done face-to-face before Covid-19 lockdown. Other innovative tools like virtual reality systems, bronchoscopy simulation systems, Anatomage 3D software and hardware were also used to teach anatomy before the lockdown so that students became very used to innovative methods of learning anatomy. Online interactive tools was a hit amongst the students, as shown by favourable student feedbacks.

Virtual experiments

Virtual experiments were also an important part of our active learning program. Students performed a variety of virtual experiments which are usually done as wet laboratory experiments. These included haematology tests like measurement of haematocrit, haemoglobin estimation, differential leucocyte counting and blood typing using virtual simulation based experiments.

Chapter 5

Entry into Medical School

Dr. Olivia Monteiro

79% of our students admitted in 2019 are residents of Macau. We are fulfilling our promise to train tomorrow's doctors in Macau, for Macau.

There are 4 routes of admission into our MBBS program.

- 1) Principal's recommendation;
- 2) Joint Admission Examination (JAE) admission;
- 3) Direct admission;
- 4) Mainland admission.

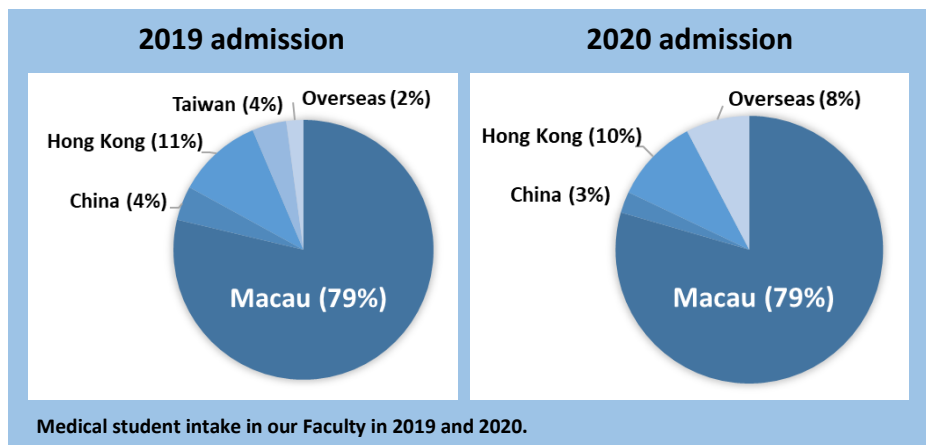
For each one of these admission routes, academic performance remains a crucial factor. Competition for admission into our Bachelor of Medicine and Bachelor of Surgery (MBBS) program is fierce. Potential applicants with high academic performance are invited for a series of multiple mini interviews (MMI). At different stations with Faculty members, candidates are asked questions about their motivation to study medicine, their extracurricular activities and how they cope with stress. The answers they give and their



Our very first multiple interview session.

performance at the MMI also play a role in our decision to admit a student.

Local students from Macau make up the biggest proportion of our students. In both our first and second cohorts of students, just under 80% are from Macau.



Students with outstanding academic performance can also apply for Merit Scholarships (25% subsidy of their tuition fees) and two tiers of tuition admission scholarships (50% and 100% subsidies of their tuition fees, respectively). In 2019, 7 scholarships were awarded in total. The good reputation of our MBBS course is far reaching after 1 year. As a result, 15 of our admitted students in 2020 received scholarships.

Students are the ultimate spokespersons for our Faculty and our MBBS program. We will strive to attract and admit the most talented students for our MBBS course.

Chapter 6

Mentorship Program

Professor Anand Bhaskar & Professor Sookja Kim Chung

Studying medicine is a tremendous undertaking. The phenomenal amount of information to assimilate, plus the pressures of assessment almost immediately upon starting medical school can put a huge amount of strain on the medical student. This is in addition to a new environment, new colleagues and new studying methods all students find themselves in their first year of University.

We provide a mentorship system for the social support of all our medical students, in order to guide them towards their development as doctors. All our first year MBBS students are immediately assigned a Faculty mentor as soon as they join our program. Each Faculty mentor is assigned 5-6 students. The assignment was done at random by our mentorship co-ordinator.

The mentor has a number of responsibilities. They meet with mentees once a month regarding their progress and social lives, in order to identify any social or academic problems early. The mentors offer advice to the students and, where necessary, refer the student to more senior or specialized support. Mentors are briefed about their roles and responsibilities before the launch of the mentorship program by the co-ordinator.

Mandatory meetings between mentors and mentees are held for the first four months of the MBBS program. The students meet their mentors individually in their office or any other convenient place and discuss the various issues that they faced. The frequent and mandatory nature of the meetings in the initial months was important since this was the time when the students needed most support while they were adjusting to their new environments.

After these initial mandatory meetings, the students were given the option to

make appointments with their mentors whenever they require any assistance. Emails, and messaging applications such as WeChat and WhatsApp are the primary means by which mentees contacted their mentors. Any interactions under the mentorship program are documented. The mentors are provided with the academic scores of their mentees so that the mentors can monitor the progress of their mentees in the course. The mentors guide the mentees in solving the various academic and non-academic issues faced by them.

The main function of our mentorship program is to provide social support rather than academic support. Students having academic problems are usually referred to the relevant teacher. Students identified as needing counselling are referred to the student affairs office. The mentors also advise their mentees regarding choosing an appropriate elective program.

Mentorship during Covid-19

Our mentorship program took on additional significance during the suspension of face-to-face teaching as a result of Covid-19. Our students were faced with additional challenges such as not being able to see their friends and colleagues, and also having to adjust again to the new normal of online lectures and practical sessions. Our mentorship program continued in earnest during the lockdown with mentors and mentees interactions conducted through online platforms such as e-mails, WeChat and WhatsApp.

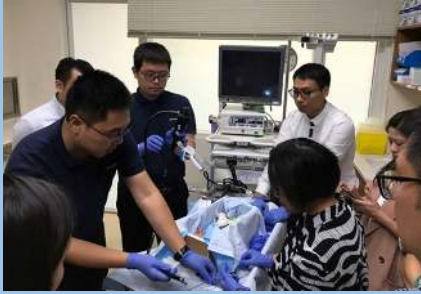
Chapter 7

Continuing Excellence

Dr. Billy Chan and Professor Lap Ki Chan



The Faculty has established the Center of Excellence for Professional Medical Development, the Center for Continuing Medical and Health Education and the Center for Medical Education in Medical Simulation, to take the lead in top quality undergraduate medical training and continued medical education,



Our Training Center has been conducting training for medical professionals since 2011.

with the aim of improving healthcare provision in Macau. These Centers have been conducting clinical practice skills training since 2011. Over 3,500 healthcare providers have been trained, including 800 medical specialists, 1,200 frontline doctors and 1,500 nursing staff.

These Centers house state-of-the-art virtual reality manikin-based system and innovative software tools. They include: 3D anatomy system, robotic surgery simulator, endovascular simulator, neurosurgical simulator, high-fidelity ultrasound simulator (one common platform with cardiac, lung, abdominal and obstetrics & gynecology functions), portable ultrasound machine, 3D



Our Training Center will take on a central role in our MBBS curriculum.

spinal surgery simulator, joint arthroscopy simulator, laparoscopic and endoscopic surgical simulator, bronchoscopy simulator, etc. The scope of study covers Critical Care Medicine, Cardiology, Cardiothoracic Surgery, Neurosurgery, Obstetrics and Gynecology, Pediatrics, Radiology, Gastroenterology, Orthopedics, Urology, General surgery and Anatomy. As a result, we have successfully established a learning platform for clinical practice skills, and through a series of medical academic courses, we provide high quality healthcare simulation training in Macau. These facilitate local medical staff to practice modern skills under a controlled and safe environment, and will therefore promote the highest standards of excellence and professionalism and enable patients to receive better medical services.

The center is proud to be recognised by the Royal College of Surgeons of Edinburgh, UK and The Chinese Medical Doctors Association and The People's Republic of China.

With the establishment of our Bachelor of Medicine and Bachelor of Surgery programme, the first of its kind in Macau, the Center of Excellence will take on the central role of delivering many of the clinical skills aspects of medical training, which is incorporated into our curriculum. Such simulation training will complement traditional teaching methods to allow experimental learning for our medical students to improve skills, teamwork, communication and safety.

Chapter 8

Benchmarking

Dr. Wong Io Nam & Professor Zhang Kang

Recognition on a global scale is important for any medical education institution. This is even more so for a young medical school like ours, in order to reassure the SAR Government, the public as well as stakeholders that our Medical School will produce students with the necessary credentials. There is therefore a need to benchmark our students to international standards.

To this end, we have partnered with Harvard Medical School and subscribed to their online teaching and assessment tool, HMX, to run alongside our own curriculum ([Chapter 3](#)). The HMX Fundamentals modules cover foundational topics in physiology, genetics, biochemistry, pharmacology and immunology. Each of these topics span 10 weeks with new material released each week. Year 1 and Year 2 students log onto the HMX website, study the material and take part in a scheduled exam on the particular module. Our first cohort of students have successfully



The Harvard HMX online course (top) and our students taking the HMX exam (bottom).

participated in HMX biochemistry and physiology in their first year (in 2019), with the majority of students attaining the “Achievement” award, scoring over 80% on the examination. They were each given a Certificate of Achievement from Harvard Medical School.

The global Covid-19 pandemic has forced the deferment of the remainder of the modules. However, at the time of writing, our Year 2 students will participate in HMX immunology, pharmacology and genetics examinations in December 2020.

Our Center of Excellence for Professional Medical Development ([Chapter 7](#)) is the only authorized clinical skills and simulation training centre of the Chinese Medical Doctor Association since 2011. It has also been awarded the Comprehensive Skill Development Certified Qualification by the Royal College of Surgeons of Edinburgh. This is the first of its kind in Greater China. Our Center of Excellence is also an American Heart Association authorized International Training Center in the Macau SAR.

Our Faculty is also part of a network of global medical schools. We have been listed in the World Directory of Medical Schools since October 2019. The



Prof. N.G. Patil presented with a souvenir as our Faculty became a founding member of the World Federation of Portuguese speaking Medical Schools.

Directory is published by the World Federation of Medical Education and the Foundation for Advancement of International Medical Education and Research.

We are also a founding member of the World Portuguese Speaking Countries Medical School Alliance, established in November 2019. This alliance has 12 other founding members from Portugal, Brazil and Mozambique.

Furthermore, our Medical School has a medical education collaboration agreement with the National Health Commission (formerly The Ministry of Health) of the People's Republic of China in order to enhance co-operation between mainland China and Macau S.A.R. in the fields of medicine and health, particularly in continued medical education and skills training for healthcare professionals. Correspondingly, our Center of Excellence for Professional Medical Development (see [Chapter 7](#)) will work closely with local medical organisations, such as the Macau Cardiology Association and Macau Society of Emergency and Critical Care.

Our Medical School has built key collaborations with international partners. Our curriculum is benchmarked by Harvard's HMX program. Our Center of Excellence is recognized globally. The foundations for Excellence are laid!

Chapter 9

Electives Program

Professor Sookja Kim Chung

A rich elective program is fundamental to the training of high-quality medical professionals. It allows a deeper knowledge and understanding of a specialist area, which the medical student is interested in, and it allows for the development of the aspiring doctor in different clinical and cultural environments. Our medical students are therefore required to take part in 3 self-initiated electives during their summer break, two during Phase I of their studies (Years 1 & 2) and the third during Phase II (Year 3).

Students are given opportunities to enrich themselves with hands-on experience in basic science research in wet or dry labs, and clinical research. Students are also encouraged to get involved with voluntary and community services in local or overseas organizations. They may also choose to work in a field that is not related to science or medicine.

These electives are self-initiated, and therefore the students are expected to learn on their own initiatives. Supervision and guidance is given from designated Faculty supervisors, as well as day-to-day supervisors in the hosting organizations. Students are expected to initiate contact with Internal Supervisors in the Faculty and the External Supervisor in the hosting organizations, to express their interest in doing an elective. Following agreement from the hosting organization to take the student, the elective itself has to be approved by the Internal Supervisor and Faculty Elective Subcommittee. Before the end of the first semester, students made arrangements for their elective by sending in the proposal to do their electives in local and overseas institutions.

However, the Covid-19 pandemic has affected our ability to organize electives

for our first cohort of students. As a result, our first group of students were engaged in a compulsory first year elective attachment on a volunteer basis in local institutions. Nevertheless, a number of our students were able to arrange electives over the summer of 2020, with some help from the Faculty. Successful student electives include attachments at the Virtus Clinic in Hong Kong, Hope Medical Clinic in Macau, Macau Special Olympics Clinic, Clinica dos Operarios da Federacao das Associacoes dos Operarios de Macau, Ian Chi Medical Centre, research electives at the Department of Biomedical Science, Department of Surgery and Department of Microbiology at The University of Hong Kong, Hong Kong, as well as attachments in the Departments of Pathology, Surgery and Gastroenterology at the University Hospital, Macau.

Our Student's Electives



(Left) Our students doing their gastrointestinal electives with Dr. Daniel Stagg at the University Hospital.



(Above) Student Faust did his elective with Dr. Roland Leung at Virtus Clinic, Hong Kong.



(Left) Our Year 2 student, Ruby Yen, at her Obstetrics and Gynecology elective at Alison Clinic, Taiwan.

Chapter 10

The University Hospital

Dr. Valencia Chang & Professor Christopher Lam



On 25 March 2006, the University Hospital (UH) was officially established under the Macau University of Science and Technology (MUST) Foundation with support from the government of Macau and approval of the Health Bureau. UH not only preserved the traditional Chinese medicine characteristics, but also imported the key elements of Western medical practice. On 16 August 2007, the In-patient Department was added to the UH with capacity of sixty in-patients. Combining both Western and Chinese medical services, UH became one of the most advanced hospitals in the region.

The UH is located on the campus of MUST, in the heart of Macau's Cotai Area. It aims to provide high quality healthcare for both Western Medicine and Traditional Chinese Medicine services, with advance medical facilities, to all of our patients in a pleasant and comfortable environment.

The UH also represents the teaching arm of the Faculty of Medicine, the Faculty of Chinese Medicine and the School of Pharmacy. This makes it the

only hospital in Macau fully supported by advanced academic faculties. Our in-patient department provides various types of rooms— semi-private, private and VIP, to suit patients' needs.

Current service centres at UH include :

- Western Medicine Department
- Chinese Medicine Department
- Executive Health Management Centre
- International Medical Service
- Specialist Centre of Chinese Medicine Faculty
- Clinical and Pathology Laboratory Diagnostic Centre
- Endoscopy Centre
- Medical Imaging Diagnostic Centre
- Integrated Rehabilitation Service Centre
- Hemodialysis Centre
- Integrated Chinese and Western Medicine Oncology Treatment Service
- “Zhi Wei Bing” (Preventive Medicine)

Services provided at these departments shall benefit our medical students to learn and participate in patient care during their clinical and internship years.

Physical infrastructures at UH will allow faculty to conduct Objective Structured Clinical Examinations, and assist students with their future career developments.

With further expansion of the University Hospital, it is anticipated that a comprehensive clinical training will be offered, from medical students and interns, to residents undertaking basic and higher specialist training as stipulated by the Macau Academy of Medicine.

Chapter 11

Aspiring for Excellence

Dr. Daniel Baptista-Hon & Professor Brian Tomlinson

Since the inauguration of our Faculty just a year ago, we have made an impact on the medical and scientific community, despite the difficulties imposed by Covid-19. We have also achieved major successes on the research front, with our Faculty producing important and impactful publications.

Teaching achievements

Driven by social distancing and local-regional lockdowns since January 2020, we successfully adapted our curriculum delivery for our students to continue their courses online ([Chapter 4](#)). All of our teachers adapted their lectures and team-based learning sessions for online teaching and achieved very favourable student feedbacks. Our teachers have also adapted our practical sessions, key to our Bachelor of Medicine and Bachelor of Surgery curriculum ([Chapter 3](#)), to be delivered online. Of particular note is our approach of delivering our spirometry practical over Zoom. This approach, led by our Professor Anand Bhaskar, first demonstrates the procedure remotely to the students, and the

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doi:10.1155/advan.00097.2020

ILLUMINATIONS

Zooming past the coronavirus lockdown: online spirometry practical demonstration with student involvement in analysis by remote control

● Anand Bhaskar, Anna Kit Man Ng, Nivritti Gajanan Patil, and Manson Fok
Faculty of Medicine, Macau University of Science and Technology, Taipa, Macau



Submitted 1 June 2020; accepted in final form 22 July 2020

Ang Ki Chan
Wai-chun Pankina
Editors

Teaching Anatomy

A Practical Guide

Springer



Prof. Bhaskar's publication on virtual spirometry and Prof. Chan's anatomy teaching guide.

students were subsequently able to analyse the data by remote control of the teacher's computer. This gives the students hands-on appreciation and handling of spirometry data, guided by teachers without needing to be on campus. Prof. Bhaskar published this [novel method](#) of practical delivery in the journal *Advances in Physiology Education*.

Our teachers are also at the forefront in terms of helping other educators deliver top quality teaching. Professor Chan Lap Ki is the editor of "[Teaching Anatomy—A Practical Guide](#)". Prof. Chan also authored a number of chapters in this book giving a comprehensive account on effective teaching.

Research achievements

In the past year, members of our Faculty have published a number of peer-reviewed educational, medical and scientific articles. Our research impact covers a wide range of topics, and illustrated as a keyword-cloud (size of the keywords denote more frequent occurrence).



The highlight of our growing research activity and impact is our work on vaccine development in the fight against Covid-19, led by our Professor Zhang Kang. Prof. Zhang and his team developed a recombinant vaccine against the

	<p>nature <small>https://doi.org/10.1038/s41586-020-2599-8</small></p> <p>Accelerated Article Preview</p> <p>A vaccine targeting the RBD of the S protein of SARS-CoV-2 induces protective immunity</p>
	<p>Cell <small>CellPress</small></p> <p>Resource</p> <p>Clinically Applicable AI System for Accurate Diagnosis, Quantitative Measurements, and Prognosis of COVID-19 Pneumonia Using Computed Tomography</p>
	<p>Article</p> <p>Identification of type 2 diabetes loci in 433,540 East Asian individuals</p>

Our high profile research publications in 2020.

Spike protein of SARS-CoV-2, the virus which causes Covid-19. This impairs the ability of the virus to infect human cells. This [study](#), published in the journal Nature, has attracted substantial media attention. Prof. Zhang and our Dean Prof. Manson Fok also co-authored [an article](#) in the journal Cell on using Artificial Intelligence algorithms and machine learning to improve the diagnosis of Covid-19-mediated pneumonia in patients.

Members of our Faculty are also involved in numerous other medical and scientific research activities. For example, Prof. Brian Tomlinson was involved in a large genome-wide association study of over 400k East Asians to identify over 180 genetic locations associated with Type 2 diabetes. This includes novel genetic locations not previously reported in similar studies on individuals with European ancestry, highlighting the importance of performing these type of studies in the Asian population. This [study](#) is published in Nature. Prof. Tomlinson and Prof. Chris Lam have also published a number of articles this year on the use of statins for lowering cholesterol levels.

Other notable research achievements from our Faculty members.

- Prof. Lam has also published 16 articles in the past year on allergy and inflammation.
- Prof. Sookja Kim Chung has published 10 articles on Parkinson's and Alzheimer's disease, skeletal muscle metabolism and stroke.
- Prof. Lap Ki Chan has published 10 articles and editorials on the state of Anatomy teaching and learning.

Community engagement

In August 2020, our Faculty successfully held a hybrid online/ offline symposium on forensic science, psychiatric health and patient safety. The symposium, organized by Dr Billy Chan and held at the Grand Lapa Hotel, had a strong Faculty and MBBS students attendance. Distinguished speakers from Hong Kong gave their presentations via Zoom. Dr Philip Swan-lip Beh from the Centre for Medical Ethics and Law (HKU) spoke about some of the practical aspects of Forensic Medicine. Professor Felice Lieh Mak from the Hong Kong Mental Health Association gave a comprehensive lecture on depression and its treatment. Prof. John Nicholls from the Li Ka Shing Faculty

of Medicine (HKU) gave an interactive online presentation on the issue of diagnostic errors in clinical practice. Dr Amelia Hui Pui-Wah from Hong Kong showed some data from her research regarding prenatal diagnosis of alpha thalassaemia, and the efficacy of prenatal blood transfusion. Our Vice Dean, Prof. Niv Patil spoke about the current state of delivering patient care in the digital age, and the evolving requirements of the modern physician.

Our young Faculty has had many exciting achievements in its inaugural year. As challenges continue around the world, our Faculty is committed to delivering the highest standard of teaching to our students and to achieve further success in terms of teaching and research.



Prof. Patil speaking about delivering patient care in the digital age (left), and the strong Faculty and student attendance at our hybrid online/ in person symposium (bottom).



Chapter 12

The Future of Our Medical Graduates.

Professor Manson Fok



Yet another history was made on 13 July 2019 with establishment of the Macau Academy of Medicine (MAM) with constituent specialist colleges to undertake the responsibility of structured specialist training programs and award of fellowships to specialists in various clinical disciplines. This is indeed great news for Macau's young medical graduates and trainees who aspire to become specialists in their chosen career path and clinical practice.

Seeds of academy were planted in February 2016 when the Secretary for Social Affairs and Culture put forward the government's proposal in Macau's

Legislative Assembly to establish an official institution for the training of local medical specialists.

The Macau Academy of Medicine has in place cooperation protocols with the Hong Kong Academy of Medicine (established in 1993) which offers postgraduate medical training and also functions as a professional association.

On 13 July 2019, the Secretary for Food and Health at Hong Kong SAR witnessed the signing of a Memorandum of Understanding between the Hong Kong Academy of Medicine and the Macau Academy of Medicine to strengthen co-operation between the two academies.

It is envisaged that the establishment of MAM will, in addition to specialist training, promote and elevate the quality of care and practice at the primary, secondary, tertiary and quaternary levels to benefit Macau population and encourage health tourism.

The Faculty of Medicine of Macau University of Science & Technology, as a continuum of medical education, shall work with the Academy to create a bridge between undergraduate and postgraduate training.

Chapter 13

AMSA-Macau: We Are Pioneers!

Asian Medical Students Association-Macau



Our students in the newly founded Asian Medical Students Association-Macau Chapter

Our Story

What does it take to be a pioneer undertaking one of the most demanding courses, pursuing a journey in the rapidly evolving medical scene of Macau? There are many facets to being a pioneer—to lead and discover, rather than be led, is one of the main aspect. As we have no forebears, how much we learn depends not only on the resources laid out by our professors, but also the experiences we pursue ourselves.

As future physicians, it is imperative for us to be aware of healthcare issues beyond our own community. Forming friendships with peers from all walks of life is crucial for us to expand our horizons, and understanding the altruistic, problem-solving mindset of a global citizen is only possible by taking action within an international context. We had goals, but were unsure of when and where to start. The founding of Asian Medical Students Association-Macau

(AMSA-Macau) was a valuable experience in demonstrating the importance of effective communication and persistence needed to establish a fruitful relationship with an international community.

We came across AMSA in our first year of study, and the key qualities we strive to develop as medical students: friendship, knowledge, and action, aligned with their values perfectly.

Our application to become an observer member for AMSA was unsuccessful the first time. Looking back, we underestimated our time commitments to our studying and the stressful adjustment period for some of us to university life. We were grateful for the learning opportunity, but we were not going to give up. Instead, this experience only increased our desire to succeed next year. Despite the Covid-19 pandemic in 2020, we reached out to AMSA International via countless emails and Zoom meetings, in order to establish our own chapter in Macau. We were much better prepared in our preparation of a formal Observer Membership application letter this second time and we were all good to go! At the first Executive Board Meeting of AMSA International on 10 October 2020, after voting from the National Executive Board of AMSA International and all Regional Chairpersons, our application was approved and AMSA-Macau was finally born!

The silver lining in our unsuccessful first application, aside from the valuable learning experience is that AMSA-Macau now has a very special birthdate: 10102020 (10 October 2020). However, the hard work begins now after all of the celebrations. We will strive to become a well established chapter in AMSA.

Our Vision

Macau is an integral part of the Greater Bay Area, and we will be its future healthcare providers. The establishment of AMSA-Macau will be the conduit between the medical community and the communities which we serve. We will hold public-awareness events and workshops related to public health, which will convey complex medical information in an easy-to-understand way to the public. We will also open collaborations with other medical schools in Asia, in order to explore the possibilities for student exchange programs or electives for all our members in the future.

The Founding National Executive Board of AMSA—Macau



Regional Chairperson—Ruby Yen Si-Ting:

I am very honored to be the Regional Chairperson of AMSA-Macau. My job is to lead and co-ordinate the activities of the AMSA-Macau Executive Board, and to officially represent AMSA-Macau. My goal for this year is to achieve a strong bond between members of the AMSA-Macau family, becoming the best chapter we can be.

Vice-Regional Chairperson—Yan Wa Li:

I'm very pleased and excited to take on a leadership role in helping a burgeoning medical school expand its connections internationally. As the Vice President of AMSA-Macau, I hope to spark meaningful discussion amongst members. I aim to provide a welcoming and proactive environment for members to experience the AMSA tenets of Knowledge, Action, and Friendship to the fullest. My goal for the years to come is to help fellow students achieve and grow into the identity of a prospective medical professional and a global citizen.



Director of General Secretary—Callis Wong Wai-Hang:

My role is to assist the Regional Chair and Vice-Chair to ensure meetings run smoothly. I am also the point of contact for any incoming queries, directing them to the relevant Directors.

Director of Public Relations and Promotions—Kyla Iong Man-Kei:

I will produce promotional packages relevant to AMSA-Macau and am the manager of our official website and social media, our window to the rest of the world! I'll spare no effort in promoting AMSA Macau, to increase awareness among our classmates, campus population and surrounding community with information about events, activities and opportunities. This year, I hope to increase AMSA student participation as well as AMSA membership, setting up the foundations for our big big family!



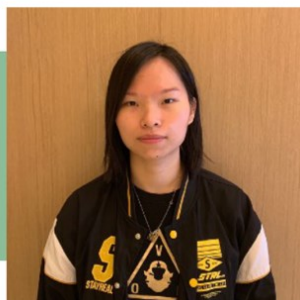


Director of Finance—Olivio U Hou-In:

I am responsible for membership fees as well as keeping records of all funds, incomes and expenditures, ensuring that our Chapter is financially well-organised. I am also responsible for communicating with AMSA International about the financial status of AMSA-Macau via yearly reports.

Director of Sponsorships—Michelle Yau Ut-Long:

am responsible for the implementation and co-ordination of approved charity and fund-raising programs. Working with the Director of Finance, I will also seek appropriate sponsorships to maximise AMSA-Macau's resources.



Director of Academic—Samantha Yu Suet-Wing:

My role is to promote and facilitate and encourage academic excellence through research amongst AMSA-Macau members through regular academic content in the e-Newsletter. I am of the opinion that scientific study has an unshaken role in health and medical aspects. I will endeavor to broaden the horizons of local and international medical students by working on regular academic content in our Newsletter with my fellow members. I aim to be an efficient middleman between members of AMSA-Macau and AMSA international concerning academic publications, as such promoting the awareness of international health issues and encouraging continuous medical studies.

Director of Membership and Development—Vanessa Ma Chi-Yung:

My duties are to enlist membership for AMSA-Macau and also to promote activities aimed at the development and welfare of the members. I am also responsible for collaborating with the Regional Chairperson and Vice-Chairperson in hosting official AMSA-International events as well.





Director of Student Exchange—Cecilia Sou Weng-Si:

It is my honor to take part in AMSA-Macau. The Asian Medical Student's Exchange Program is an integral program unique to AMSA. The program allows members of AMSA to participate in a 5-10 day pre-clinical or clinical exchange to a chapter of their choice. I will do my utmost to promote communication and cooperation of medical students between Macau and countries around the world.

Director of Public Health—Mason Iao Kai-Hei:

I am very much honored and pleased to become the first Director of Public Health of AMSA-Macau. We will work closely with other Directors of Public Health in AMSA International to host public health promotional activities in Macau.



Chapter Representative of Journal-AMSA—Amy Yang Nga-Si:

It is an absolute honor to be the chapter representative of Journal of Asian Medical Students' Association (J-AMSA). J-AMSA is an online open-access student-led biomedical journal which provides a platform for AMSA members to get their work published, with a vision of encouraging student-led research in the Asia-Pacific Region and beyond. I'm hopeful that Macau will have their first medical student-led research paper submission in the near future.

Chapter Representative of AMSA e-Newsletter—Kelvin Wong Yuk-Wing

I am responsible for publishing different articles on different health topics issued by the e-Newsletter AMSA International. Medical students from Macau can express their views for those health topics through submitting their piece of writing to me. I hope via the e-Newsletter, we can learn from our fellow medical students from around the world and at the same time, be able to deliver our views and let people understand our stand on various health issues.



Chapter 14

Students' corner—Reflections

Professor Sookja Kim Chung & Dr Daniel Baptista-Hon

Student reflections

We solicited reflections from our first cohort of students to get an idea of their thoughts and feelings of being the first batch of medical students in Macau.

I am very glad that I can be a student of MBBS in MUST. All the professors are very nice, taking care of us. They always try their best to help us when we have difficulty. I like team based learning very much as I can use what I learned and remember it well.



Although due to COVID-19 we couldn't have classes face to face, they tried to give us teaching using Zoom as good as face to face class. Also, I made some new friends. They are all very nice. We studied and solved problems together... I also want to thank Professor Chung for planning the elective... I really learned a lot from that.

It's been a great honor to be a member of the first ever MBBS program founded in Macau SAR. The Macau government and citizens have all waited for this day for so long as there wasn't any local medical school to train doctors in Macau.

I was born and raised in Taipei...a place full of delicious cuisines and fascinating view sites. So coming here all alone to study medicine is definitely an adventure for me...

I was highly motivated to continue my journey in the MUST. It is a really good opportunity for me to achieve my dream here, so I will continue to move forward and try my best to do it. This is my experience for the first year of the MUST MBBS, the first ever medical school in Macau SAR.

In the summer time, I joined an elective program at the University Hospital, I had a great learning experience. I believe the program allows students to learn more beyond the lecture time, stepping out of the classroom and learn in a different way, which set as a foundation of our medical pathway.

The opening day... All the Faculty staff and professors joined the introduction session. In the end, vice dean Professor Patil said, 'Welcome to the journey, pioneers.' This makes me feel proud of myself being the first ever medical students 'Made in Macau'. Many Macau government representatives also came to witness this...history-making ceremony. I stood on the stage, receiving doctor gown, reading oath, looking forward to my road towards a Macau homegrown doctor.



We also made a lot of memories during the first semester, which include the Portuguese-cultural Lusofonia, faculty basketball competition, food festival, etc. Among all these events, the one I like the most is a school-uniform day. At that day, we all changed our outfit to our own secondary school uniform. We took a lot of photos and recalled our secondary school lives.



Unfortunately due to the outbreak of the coronavirus...we have to stay home and have online teaching classes. We could not see each other but...due to the great effort by the faculty...there was little difference between online class and face-to-face classes, but we all agreed that it was better to see the professors during classes so that we can interact with the professors...

As any college freshman, I was very excited about the new year, to know the professors, the colleagues, and the program, but I could never imagine what would be happening this year.

First days of school, I knew no one so I tried to be friendly and talk to as many people as possible... And it worked well, now days I can say I deal well with all my classmates and my best friends are the best I could have.



Regarding the classes... CVS anatomy was so confusing at the time... But then with practice and many strategies failing, I finally figured what truly fits me! So if I could give a piece of advice for any MBBS freshmen, it would be definitely "keep trying"...



Now at the beginning of the second year, I feel like every challenge I faced in year one made me be 100% certain that medicine is my future and that having good support(from faculty staff, colleagues, and family) is essential to survive all the 6 years, and more, of Medical studies.

Chapter 15

Academic symposium: Medical Education in a Challenging Environment

Professor Niv Patil & Dr Billy Chan



Onsite speakers and guests for the academic symposium.

The global Covid-19 pandemic affected medical education, not only for a young faculty like ours, but many other institutions as well. On 1 November 2020, our Faculty chaired an academic symposium titled “Medical Education in a Challenging Environment”, and brought together world leading experts to share their experiences. The symposium proceeded in a hybrid manner, with onsite speakers in Macau, and with some distinguished guests speaking online, very much akin to medical education during the pandemic. The onsite symposium in Macau was well attended by members of the Faculty, our MBBS students as well as representatives from the Health Bureau and the Macau Academy of Medicine. There were 300 overseas delegates attending online.

Our Dean, Professor Manson Fok, opened the symposium with a brief introduction of the current state of medical education in Macau and the impact of Covid-19. We had keynote presentations from a number of distinguished speakers. Professor William Pinsky, Board Chair of the Foundation for Advancement of International Medical Education and Research (FAIMER), on the importance of accreditation and quality assurance in medical education. Professor Florentino Cardoso provided insights into how medical education could be improved during the pandemic. Professor Duck-sun Ahn, Vice-President for the World Federation for Medical Education (WFME), described the importance of its partnership with medical schools around the world. Professor Ming Kuang from Zhongshan School of Medicine gave an overview of the excellent and effective innovations in medical education in his institution.



Guest speakers: Prof. William Pinsky (top left), Prof. Florentino Cardoso (top right), Prof. Duck-sun Ahn (left) and Prof. Ming Kuang (above).

We also had keynote presentations from Professor Chi-Tim Hung, Chairman for Macau Academy of Medicine, speaking about the role of the Academy in training our future medical professionals. Professor Ronald Harden, General Secretary for The Association for Medical Education in Europe (AMEE), gave a presentation from the United Kingdom on his perspectives regarding the future of medical education. Professor Fausto Pinto, Dean of the Faculty of Medicine at The University of Lisbon, described the role of the Consortium of Portuguese-speaking Medical Schools, of which our Faculty is a member.



Guest speakers: Prof. Chi-Tim Hung (left), Prof. Ronald Harden (bottom left) and Prof. Fausto Pinto (bottom).

Members of our Faculty also presented at the symposium. Professor Kang Zhang spoke about his research on Covid-19 ([Chapter 11](#)). Professor Lap-Ki Chan gave an overview of our Faculty's experiences with transitioning to online teaching during the Covid-19 pandemic ([Chapter 4](#)). Professor Anand Bhaskar presented on some of our innovations in delivering practical skills teaching to medical students. Dr Billy Chan described our state-of-the-art simulation equipment housed in our Centre of Excellence ([Chapter 7](#)). Dr Io-Nam Wong gave a presentation on benchmarking our curriculum ([Chapter 8](#)). Finally, two of our Year 2 students, Yan-Wa Li and Si-Ting Yen gave an excellent presentation on their experiences as the first cohort of MBBS students, as well as their experiences of online medical teaching.



Teachers and students from our Faculty gave presentations and participated at the symposium.

Appendix 1

The Quest Continues

Professor Manson Fok, Professor Niv Patil,

Dr Daniel Baptista-Hon & Dr Olivia Monteiro

January 2021. Although the Covid-19 pandemic is still affecting our lives, the quest for consolidating our dream continues...

At the time of writing, we have admitted two cohorts of MBBS students undertaking lectures, TBLs, practicals and clinical skills sessions. These take place in MUST teaching buildings as well as our Center of Excellence ([Chapter 7](#)). As our first cohort heads into their third MBBS year, and into their first year of the clinical phase, our Faculty embarked upon creating a purpose built space for MBBS teaching.

This new facility at block P26 became operational in January 2021.

Anatomy & Physiology Teaching



Histopathology Teaching



Team Based Learning



Basic Laboratory



Clinical Skills



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