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EVOLUTION OF UNDERGRADUATE MEDICAL EDUCATION IN BRUNEI DARUSSALAM.

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BACKGROUND

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Medical education in Brunei began with overseas training of students who typically completed their higher secondary school education in the United Kingdom. This followed by a twinning programme, and later an articulated programme with partner medical schools (PMS) across the United Kingdom, Republic of Ireland, Australia, Canada and Hong Kong. The aim being to develop a 'full-fledged' medical programme in the near future. There have been further milestones achieved in the preparation of medical education, which will be reported in this article.

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schools (PMS) across the United Kingdom, Republic of Ireland, Australia, Canada and Hong Kong. The aim being to develop a 'full-fledged' medical programme in the near future. There have been further milestones achieved in the preparation of medical education, which will be reported in this article.

HISTORICAL OVERVIEW OF MEDICAL EDUCATION – MEDICINE TO HEALTH SCIENCES

Brunei has been building its cadre of local medical doctors by sending students who scored well in their secondary school education to pursue undergraduate medical degrees in countries such as the United Kingdom, Republic of Ireland, Australia, Canada and New Zealand. The significant need for local doctors had facilitated government scholarships for students to pursue a medical career abroad as early as the 1960's. During this time, the first local medical doctor was awarded the Brunei Government scholarship to study A-levels in the United Kingdom and consequently pursued a successful Bachelor's degree in Medicine and Surgery from the University of Glasgow.¹ The commencement of the Medicine programme under the auspices of Universiti Brunei Darussalam (UBD) com-

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menced in 2001 with the inauguration of the Institute of Medicine (IM) in the year 2000. The programme was initially a twinning programme with the University of Queensland (UQ) Australia. This was followed later in 2001 with a partnership with St George's, formerly known as St George's School of Medicine, University of London, United Kingdom.² The partnership was to facilitate the establishment of Brunei Darussalam's own internationally accredited Bachelor of Medicine, Bachelor of Surgery (MBBS) Programme,³ which commenced in the year 2004. In this programme, students were awarded Bachelor of Health Science after the three years programme in the Institute of Medicine (IM), UBD, and then proceeded to articulation medical degrees with partner medical schools in Australia, Canada and the United Kingdom.⁴

A Bachelor of Health Science, in Biomedical Sciences, was different from that designed for the twinning program with UQ, Australia, and commenced in IM, UBD in 2008. The Pengiran Anak Puteri Rashidah Sa'adatul Bolkiah (PAPRSB) College of Nursing merged with the IM in 2009. The IM was named the PAPRSB Institute of Health Sciences, after the merger, and the same year marked the expansion of various health sciences programme. This included the following: the Bachelor of Health Sciences in Nursing and Midwifery in 2009, Bachelor of Health Sciences Pharmacy in 2016, and Bachelor of Health Sciences Dentistry in 2017. Such approaches have enhanced the available health care professional education of all those in the health science disciplines in-keeping with the goal of establishing a 'fully-fledged' internationally accredited institute comprising of health sciences degrees.

The expansion of the health sciences programmes was integral to significant developments of infrastructure of the PAPRSB Institute of Health Sciences. The new building

of the PAPRSB Institute of Health Sciences was completed in November 2006. An additional extension building was further constructed, which officially opened in June 2014. The Simulation Centre was an integral part of the extension building, which is equipped with simulation wards, high fidelity manikins and other computerised and new technological advanced equipment. Additional resources included: Dental Chairs for the Dentistry programme and Pharmacy research and teaching equipment. Further milestones achieved in PAPRSB Institute of Health Sciences included the accreditation of the Institute as the American Heart Association Training centre in 2018.

TRANSITION OF MEDICAL EDUCATION: SPECIAL SCHEME TO DIRECT ENTRY PROGRAM.

The Ministry of Education (MoE), Brunei Darussalam, offered the 'special scheme' scholarship, where successful students pursued their A-levels in the United Kingdom and the Republic of Ireland, where they would apply for medical school admission. This scheme continued for several decades until the turn of the century when the scholarship converted itself into a direct entry mode, where students with successful A-levels, completed in Brunei Darussalam, could apply for the ministry's scholarship to continue their education in a well-established medical school across the United Kingdom, Republic of Ireland, Australia and New Zealand.

TWINNING PROGRAMME

The IM, UBD, was inaugurated in the year 2000 in line with the vision of the Government of Brunei Darussalam to provide medical training. The programme was initiated for Brunei students but also to students in South East Asia. This was expressed by His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin

Table I: Number of students enrolled UBD articulated medical programme and their completion status.

Cohort	Years in UBD	Years in PMS	UBD (n)	Pursued PMS (n)	Failed PMS (n)	Completed PMS (n)	Unknown status at PMS (n)
1	2005-2008	2008-2011	15	15	0	13	2
2	2006-2009	2009-2012	12	11	3	8	0
3	2007-2010	2010-2013	17	17	0	14	3
4	2008-2011	2011-2014	18	14	2	12	0
5	2009-2012	2012-2015	21	14	0	12	2
6	2010-2013	2013-2016	18	11	0	11	0
7	2011-2014	2014-2017	17	12	0	12	0
8	2012-2015	2015-2018	24	22	1	21	0
9	2013-2016	2016-2019	20	19	0	19	0
10	2014-2017	2017-2020	17	17	1	14	0
11	2015-2018	2018-2021	22	21	-	-	-
12	2016-2019	2019-2022	24	21	-	-	-
13	2017-2020	2020-2023	23	22	-	-	-
14	2018-2021	2020-2024	25	-	-	-	-
15	2019-2022	2022-2025	25	-	-	-	-
16	2020-2023	2023-2026	29	-	-	-	-
TOTAL			327	216	7	136	7

Waddaulah Ibni Al-Marhum Sultan Haji Omar 'Ali Saifuddin Sa'adul Khairi Waddien, Sultan And Yang Di-Pertuan of Brunei Darussalam in his Titah during the twelfth convocation of UBD.⁵

The first initiatives towards localisation of medical education was the establishment of UBD's Biomedical Science twinning programme with the UQ, Australia in 2001⁶ was initiated through a memorandum of understanding with the Brunei Government.⁷ Students in this programme completed three semesters in UBD and three semesters in UQ to qualify for the Bachelor of Biomedical Science, UQ. After successful completion of the twinning programme, the graduates then proceed to a further four year MBBS degree programme in the UQ School of Medicine.⁸ This initiative continued until 2005, with the completion of five cohorts of Bruneian students.

The reasons for adopting the twinning programme, with UQ, was a culmination of various development in Brunei Darussalam. Firstly, although more local doctors who were trained overseas were returning back home,

after completing their medical training, Brunei Darussalam was still highly dependent on expatriate doctors for the capacity of medical and health services required by the country. Secondly, the initiation of the twinning programme can be observed as an effort for rapid increases in numbers of locally trained doctors, alongside the overseas training. Thirdly, by having the twinning programme, partly run in Brunei Darussalam, has ultimately reduce the cost spent by the Government of Brunei when compared with a fully overseas training programme. Fourthly, as the IM, UBD, was still a young and developing faculty, the twinning programme is necessary for promoting collaborations in the delivery of its teaching. Lastly, the initiation of a Medicine programme, by UBD, has facilitate the development of the articulated medicine programme that significantly reduces the cost spent on a fully overseas training programme. As illustrated in Table I (shown later in Student and alumni section), the number of failures from the articulated programme also decreased, which suggested that the articulated programme was better at maintaining student retention.

ARTICULATED PROGRAMME

In 2005, the twinning programme was replaced by an articulated programme, defined as “the systematic recognition by an institution of a specified study at a foreign institution as partial credit toward completion of one or more of its programmes”.⁹ The articulated programme was developed with consultation from St George’s University of London, and in collaboration with clinicians from the Ministry of Health (MoH). Together, academics and clinicians worked on the curriculum and assessment delivery of the articulated programme. The first phase of this programme allowed students to complete their three year study period in UBD before being transferred to partner medical schools (PMS) for the second phase of the programme. A student who successfully completed the whole programme would be awarded a Bachelor of Health Science [BHSc], UBD, and MBBS from a PMS. Such an innovative move is observed for the development of future-ready ‘clinician scientist’ (and not just pure clinicians).³ Students who were not successful, or decided not to articulate into the MBBS programme, would have the opportunity to graduate with a BHSc (Hons) in Medicine by doing an additional year of research in the programme. The articulated medical programme significantly reduced training costs; in comparison with a half-way failure from a full-pledged overseas medical training. The BHSc Medicine programme, in PAPRSB Institute of Health Sciences, is fully accredited and undergoes annual validation by the International Advisory Board (IAB), whose committee consist of Deans from UBD and PMS.^{6,10}

The justifications for the commencement of the articulated programme can be seen from health and associated factors. Firstly, the IM, UBD, has progressively gained autonomy and is prepared to deliver the first of a two phase nationally constructed BHSc-MBBS programme. Secondly, the strong collaboration with clinicians from MoH and other

health science academics foster a sense of belonging, and ownership of the national medical curriculum, which is successfully delivered together. Thirdly, the programme strengthens the medical students with the national identity and is underpinned by the Melayu Islam Beraja (MIB) philosophy; prior to exposure to overseas medical training. Fourthly, it is anticipated that the development of the programme will instils a much broader vision of how to improve and enhance other health science disciplines. Evidence have shown that the establishment of a medical programme in a country, or region, typically has impact on the quality of other health sciences education. In addition, such programmes often improves the quality of training of young doctors and, inevitably, has an impact on the commitment to the Continuing Professional Development (CPD) of doctors already in practice. Lastly, the commencement of the articulated BHSc-MBBS programme has ultimately enabled a cost-effectiveness approach towards further reducing overseas training by delivering partial training by the national university.

Indeed, the evolution of medical education provision, in Brunei Darussalam, encompasses a rich history of transitions leading to the current international articulated programme. [Figure 1](#) summarized the overview of transition of different medical education models.

Even with the delivery of the BHSc Medicine programme, in UBD, scholarship applications for the direct entry programme overseas, recognised by MoE, remain an alternative route for high achieving students who received direct offers from medical schools in Universities abroad. For example, MoE awards scholarships for top students who scored high in the interviews in medical schools in New Zealand. This is based on a memorandum of understanding between New Zealand and Brunei Darussalam.^{6,10} [Figure 2](#)

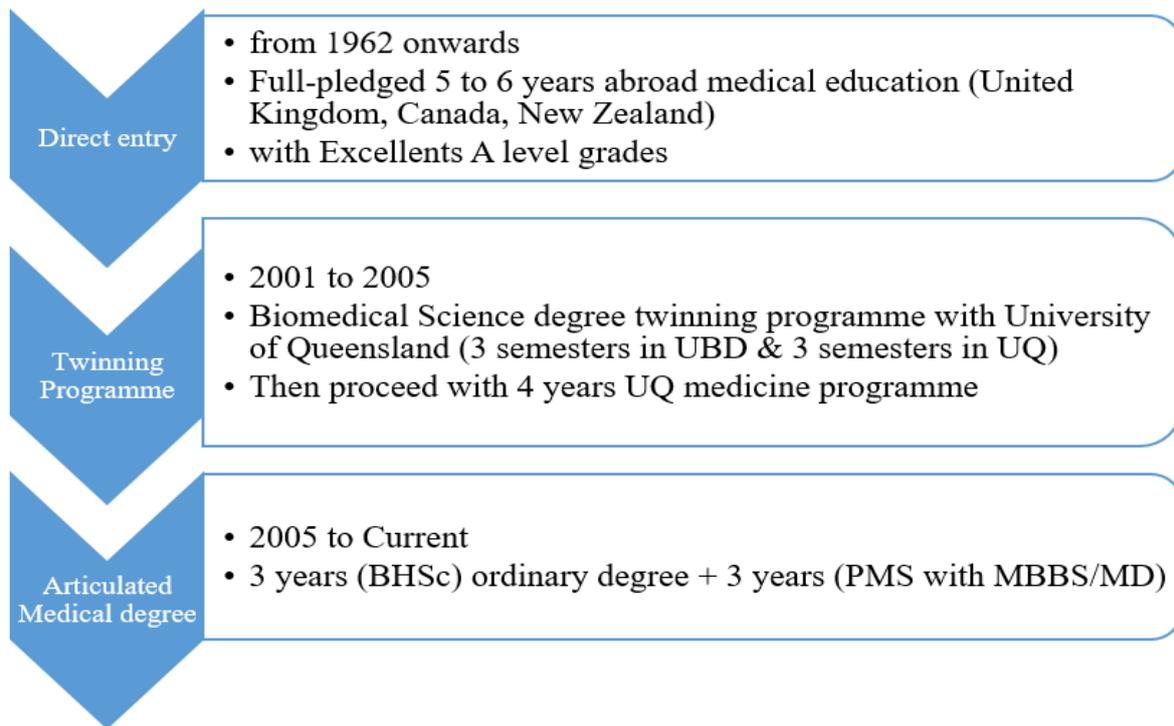


Figure 1: Transition of different medical education models in UBD, Brunei Darussalam, from 1962 to current day.

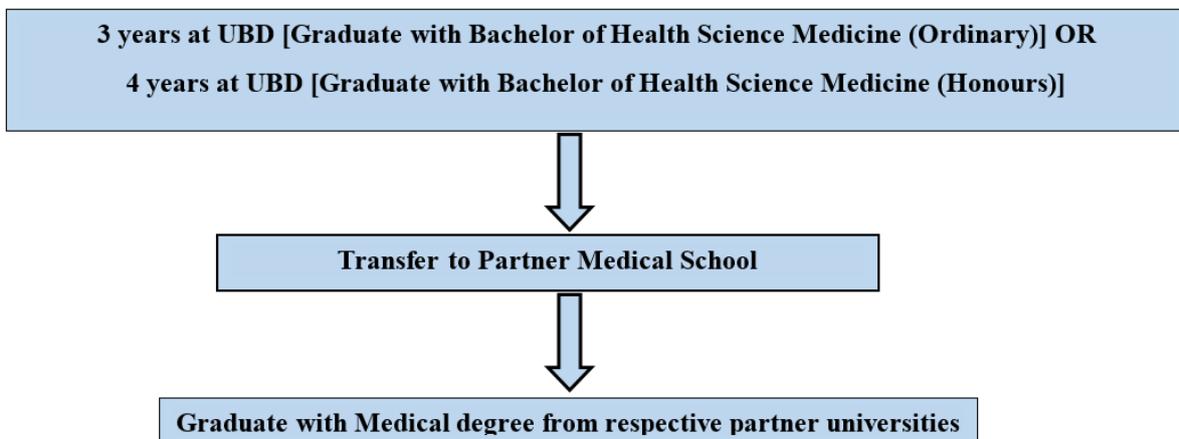


Figure 2: Articulated BHSc-MBBS undergraduate medical program of Brunei Darussalam.

demonstrates the articulated model of undergraduate medical program of Brunei Darussalam.

STUDENTS AND ALUMNI

From 2005 until 2020, 16 cohorts of students (n=327) were placed in the UBD articulated medical programme, where 13 cohorts (n=216) have proceeded to their respective PMS. A total of 136 doctors from cohorts 1 to 10

have earned their double degrees from UBD and PMS. The graduating students are currently working either in Brunei Darussalam or overseas. Details of the students' cohorts are summarised in [Table I](#) while their allocation to PMS are summarised in [Table II](#).

CONCLUSION

The BHSc-MBBS articulated programme was designed to meet the needs of the country,

Table II: Distribution of students registered in UBD articulated medical programmed and successfully registered to PMS (2005 to 2020).

PARTNER MEDICAL SCHOOLS	NO OF STUDENTS
UNITED KINGDOM	
St. Georges University Hospital, London	12
University of Glasgow	43
University of Southampton	26
University of Nottingham	23
King's College, London	10
University of Newcastle	4
University of Aberdeen	9
CANADA	
University of Calgary, Canada	1
AUSTRALIA	
Monash University	5
University of Queensland	14
University of Melbourne	3
Australia National University, Canberra	8
University of Adelaide	8
University of New South Wales, Sydney	7
IRELAND	
National University of Ireland, Galway, Ireland	12
Trinity College, Dublin, Ireland	13
University College Cork, Ireland	12
ASIA	
Chinese University of Hong Kong	6
TOTAL	216

Brunei Darussalam, coupled with the need to ensure that graduates of the programme are well trained, and able to compete in the international arena. The involvement of various participating PMS, from a wide range of countries, ensures that future Brunei doctors graduate with experiences from a diverse training background. It is expected that the BHSc-MBBS articulated programme will continue to serve as a way to provide the most cost-effective approach to initiating medical doctors' training in Brunei Darussalam. This will path the way to establishing Brunei Darussalam's own internationally accredited comprehensive Medicine Programme. This is envisaged for the future through a fully-equipped training hospital facilitating high quality teaching and assessment for students that meets international standards but re-

mains rooted in a context of Brunei Darussalam.

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