

**UBC Faculty of Medicine  
MD Undergraduate Education Expansion  
Funding Review**

***FINAL REPORT***

**September 26, 2006**

**Prepared for**



**MINISTRY OF  
ADVANCED EDUCATION**

**by:**



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## Executive Summary

### *Purpose*

The purpose of this review is consider, based on experience with the first two full years of operation, the adequacy of the funding provided for the expansion of undergraduate medical education at the UBC Faculty of Medicine. The review considers, among other things, Years 1 & 2 costs, Years 3 & 4 costs, the costs of further expanding undergraduate medical education by a further 32 student full time equivalents (FTEs) ("completing the doubling") and the funding implications associated with the distribution of the expansion across three sites. The review does not consider the proposed expansion to a further site at UBC-Okanagan.<sup>1</sup>

### *Background*

BC has traditionally not produced enough physicians to meet the demand for new physicians in the province and even after the current expansion of medical undergraduate and post-graduate medical education and further expansions under consideration, will still not produce enough physicians to meet demand within the province. The result is a reliance on physicians trained in other provinces and foreign trained physicians. One of the implications of that is that rural and underserved communities chronically face physician shortages due to recruitment difficulties and even worse retention problems. High turnover in rural and underserved communities affects the quality of healthcare in those communities.

Part of the solution to this longstanding issue is to expand and distribute the training of physicians in the province to encourage domestically-trained physicians to practice in rural and under-served communities.

Training of physicians consists of two years of university-based instruction centred on a problem-based learning model, followed by two years of clinical-based training in health care facilities and then two further years of post-graduate residency for those entering family practice and four further years of residency training for those entering specialties. That is, prior to beginning practice there are six to eight years of training, of which four to six years take place in health care facilities.

As a result, training of physicians involves a large number of organizations, including:

- the Ministry of Advanced Education (AVED) which is responsible for university education (including undergraduate physician training):
- the Ministry of Health (MoH) which is responsible for health care and post-graduate physician training:
- the Faculty of Medicine (FoM) which delivers both undergraduate and post-graduate training:
- the University of British Columbia (UBC) of which the FoM is a part:
- the University of Northern BC (UNBC) and the University of Victoria which host the university-based portions of distributed undergraduate medical education: and
- the six health authorities, in whose facilities the four to six years of clinical medical education take place as well as a large proportion of the research conducted by FoM faculty.

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<sup>1</sup> See Appendix II – Terms of Reference

All of these agencies have other roles and responsibilities and there are many areas in which roles and responsibilities overlap or are not clearly defined. Operational decisions by any of these parties related to their primary area of responsibility can affect other parties significantly, often in ways that are not readily apparent to the decision-maker. There is no mechanism at present to exchange information or raise and resolve issues among these various parties.

There are three interrelated activities that are required for physician training – instruction of students, research and patient care. Instruction of students requires both research and patient care. Research is needed to attract and retain the faculty required to support the training of physicians and that in turn requires and produces graduate students (masters and PHD students as distinct from post-graduate residents). In addition, research ultimately improves patient care. Patient care is necessary to teach medical students and conduct research, which ultimately benefit patient care through practice improvements and providing the health care professionals needed to provide patient care. Also, graduate students and senior residents undertake part of the teaching of undergraduates and residents and, to a lesser extent, undergraduate medical students provide direct patient care.

Physician training, both undergraduate and postgraduate, requires university and health authority infrastructure for both research and teaching, and imposes operating costs on both universities and health authorities. It is all necessary to be able to train the physicians needed to sustainably provide patient care on an ongoing basis.

In other words, it is not possible from a system perspective, to ignore the interrelationships and interdependency of research, patient care and the education of medical professionals. Although this report focuses on physician training, this applies equally to all medical professions.

## **Goals**

The goals of the undergraduate medical expansion include:

- To improve the health of the BC population by improving the BC health care system;
- Expanding the number of physicians educated in British Columbia to meet a higher proportion of the demand for new physicians in the province;
- Reducing physician shortages in rural and under-served communities in the province by encouraging more BC trained physicians to practice in those communities;
- Better prepare BC trained physicians for practice in rural and under-served communities;
- Enhance the ability to recruit physicians to the north due to the existence of the undergraduate medical program;
- Focus research activity outside of the Lower Mainland on health and medical education issues directly relevant to the communities being served;
- Use technology to enhance the efficiency, effectiveness and consistency of undergraduate medical education delivered at three distributed sites; and
- Prove the value of web-based audio-video technology as an effective teaching tool across distributed sites.

It should be noted that an alternative approach to achieving these goals would have been to establish another faculty of medicine at another university in British Columbia. While there is

not a detailed costing of such an option, it is generally believed that would have cost, on a per FTE basis, considerably more than the cost of undergraduate medication at UBC (about \$94,000 per FTE for the core program). The Northern Ontario School of Medicine has funding of \$95 million for its first three years of operation with annual enrollment of 56 compared to funding of \$48 million for the first three years of the expansion with annual enrollment of 96. It would also have taken significantly longer to become operational and would very likely have been less successful in achieving many of the goals listed above.

The alternative of expanding the UBC FoM only may have been less costly but clearly would have achieved fewer of the goals.

### ***Issues Identified***

This review has been conducted by initially interviewing a wide range of individuals associated with the undergraduate medical expansion in the Ministries of Advanced Education (AVED), Health (MoH), UBC Faculty of Medicine (FoM) at all three sites, UBC, UNBC and UVic administrations and health authorities to gain an understanding of how the undergraduate medical expansion has been planned and implemented and to identify issues related to the terms of reference for this review. In addition the FoM has prepared an extensive report entitled "Funding Review of the Medical School Expansion Phase 2" which details the background, goals, implementation planning and execution, and issues identified to date, together with documents related to the various issues identified as well as budget and financial information which have been reviewed.

Based on the information provided, it is clear that the undergraduate medical expansion implementation has been successful to date in meeting the considerable challenges presented by:

- The fact that a truly distributed undergraduate medical program involving three partner universities has never previously been implemented in North America;
- A very short timeframe from a government decision to proceed and fund the capital and operating costs of the expansion in 2002 to admission of the first cohort of new medical students in September 2004, occupying completed new buildings at the three universities;
- A rigorous accreditation process that required approval prior to both 1<sup>st</sup> and 3<sup>rd</sup> year being implemented, without any material deficiencies being identified;
- A significantly greater impact of the expansion and the operation at three sites on core undergraduate medical education operations and curriculum than was originally anticipated and a greater ongoing need for coordination and planning across the sites than was anticipated; and
- A significant information technology project to implement "Technology Enabled Learning" through which the three university sites are currently linked through web-based video-conferencing technology that allows lectures, labs and other teaching sessions to be conducted all at three sites with the full participation of students at the other sites. The technology will be available in the hospital teaching sites when the students begin the clinical phase of their education with clerkships beginning when the first 3<sup>rd</sup> year class begins that phase of their program in September 2006.



In discussion with the FoM the following issues have been identified:

**Governance and Coordination** – the level of complexity and ongoing effort required to plan and operate MD undergraduate education across three sites was initially underestimated. Not only does this put high demands on the new sites but also on the existing core program at UBC. The FoM has suggested that funding for several additional administrative and coordination FTEs are required in order to effectively and sustainably manage the program. The result would be to almost double the budget by adding about \$2 million annually for this function.

**Technology Enabled Learning** – the distributed program relies heavily on technology to provide instructional redundancy at distributed sites, make the program efficient and ensure that students receive the same education at all of the sites. The actual and expected future operating costs for the technology at the three university campuses for Years 1 and 2 are not materially different from budgeted costs at about \$2 million per year. There are three outstanding issues:

- Funding for the operations of the technology in the health authorities. The equipment is needed to operate Years 3 & 4 of the program beginning in September 2006 and its operation is projected to cost \$4.8 million, of which FoM proposes about \$2.1 million should be paid by AVED and about \$2.7 million by MoH;
- Funding for renewal of the equipment. The equipment will require replacement relatively quickly as the rapid pace of technological change continues in this area. The FoM projects that annual funding of \$2.7 million will be required and proposes that it \$1.6 million be paid by AVED and \$1.1 million paid by MoH;
- Funding required to make existing university capacity available to other users. The MD undergraduate education program does not fully utilize the AV/IT facilities that are currently in the universities and will not fully utilize the facilities being placed in the hospitals. About \$500,000 per year would give other users access to the equipment. This could be done for a 2 year pilot, after which incremental costs could be allocated to users based on usage.

**Research** – there are two issues:

- Research Support - to facilitate recruitment and maximize the benefits from research conducted by new faculty, especially at distributed sites, FoM is proposing additional funding of \$645 thousand annual funding of associate deans, including one in each health authority;
- Research Space – MoH is currently in the process of building teaching space in hospitals to accommodate the additional MD undergraduate students and the complementary expansion of post-graduate education. However, space has not been provided for additional research in the hospitals which will be undertaken by additional faculty – capital cost roughly estimated at \$12 million with annual operating costs of \$0.5 million. There is also an issue related to the operating cost of existing and planned research space, for example new space belonging to the BC Cancer Agency, that is not directly related to the MC undergraduate education expansion and is not being addressed in this report.



**Evaluation and Program Outcome** – Ongoing evaluation of the program against the goals established for the program and against the criteria established by the accreditation bodies are both important to provide for accountability and to allow the program to evolve and improved based on evidence. At present, the budget allows only the evaluation needed to satisfy accreditation requirements and does not permit monitoring against established goals. FoM believes that to fully monitor and evaluate the program on an ongoing basis will require that current budget of \$250,000 annually should be more than doubled to \$0.6 million.

**Clinical Faculty** – a large part of the teaching for MD undergraduates is provided by clinical faculty, who are physicians in practice who are appointed as UBC FoM faculty without an expectation of conducting research. Although clinical faculty teaches through lectures, problem-based learning sessions and tutorials, their greatest role is teaching with patient care in a clinical setting. The cost of clinical faculty was initially underestimated, largely because the additional residents who also provide clinical teaching will not be available to pick up their share of the load for about 6 years – \$0.9 million initial additional cost, reducing to about \$0.5 million in 2009/10.

**Faculty Start-up** – the implementation plan includes the recruitment of about 90 full-time faculty, including about 17 basic science faculty, 62 academic clinicians and 11 instructors. The budget includes about \$50,000 each for recruitment and start-up funding for each new faculty position. Based on actual costs for faculty recruited over the last five years, it is estimated that start-up costs will exceed the budget by about \$5.1 million in aggregate by 2010. Note these are one-time costs.

**Faculty Salary** – While the overall salary budget for full-time salary seems to be adequate and the FoM has not made a request for additional salary funding there are two issues. The first is the treatment of funding provided by government for mandated wage settlements and the inclusion of that funding in the expansion operating funding. The second is that delays in recruitment will generate about \$10 million additional expected under spending of the salary budget over the next four years.

**Further Distribution** – the current budget and the original implementation plan was based on Clinical Academic Campuses (CACs) at Vancouver General Hospital, St. Paul's Hospital, Children and Women's Hospital, the Academic Ambulatory Care Centre in Vancouver, Royal Columbian Hospital in New Westminster, Victoria General Hospital and Royal Jubilee Hospital in Victoria and the Prince George Regional Hospital in Prince George for providing 3<sup>rd</sup> and 4<sup>th</sup> year clinical teaching. During the past four years MoH, FoM and the health authorities have engaged in capital planning to expand the clinical sites by adding 10 Affiliated Regional Centres (ARCs) which will be used for both undergraduate and post graduate teaching, expanding the distribution of clinical teaching in the Lower Mainland, Northeast, Northwest, Fraser Valley, Vancouver Island and Okanagan regions. The additional annual program operating costs of these 10 sites (not including building occupancy costs) is \$2 million.

**3<sup>rd</sup> year Clerkship Stipends** – 3<sup>rd</sup> year clerks receive \$480 per month stipends to recognize their contribution to patient care. That has traditionally been funded by MoH but responsibility has recently transferred to AVED, There is no provision in the expansion funding for the stipends for the expansion students, about \$553,000 annually once phased-in.

**“Completing the doubling”** – government has announced that it will further expand MD undergraduate education by 32 additional FTEs to complete the doubling of the size of the MD undergraduate program with additional students entering in September, 2007. That would

require application for accreditation in September 2006, together with proof of funding from the government. These incremental FTEs are expected to cost slightly less on average because elements of the current program is designed to accommodate these additional FTEs (i.e. capital, AV/IT, library, etc). FoM proposes distributing the additional FTEs with 8 in the north, 8 on the island and 16 in the Lower Mainland since all three sites are already prepared to accommodate the extra students – any other breakdown would likely impose additional costs.

**Roles & Responsibilities** – There are a number of elements of the expansion that have not been established in a clear and transparent manner. One example is the apparent difference in understanding between the AVED and UBC and the other universities about the degree to which funding earmarked for the MD undergraduate education must be used exclusively for that purpose, whether allocated among the universities or not. Another is the fact that there is still not a research protocol among the universities. In general, the program would benefit from a clearer delineation of roles and responsibilities of the parties involved, which include AVED, MoH, UBC, UNBC, UVic, FoM, and the health authorities (VCHA, FHA, IHA, NHA, VIHA and PHSA) and a forum within which issues can be raised and resolved.

**University Funding** – the universities receive \$4,000 per FTE annually to cover the support costs imposed by the students on the university, including administrative, student and facility support. That amount is consistent with the proportion of average FTE funding devoted to support costs (about 50%). The universities have all noted that MD undergraduate students impose higher average costs on the institutions due to special purpose buildings. On the other hand, the universities receive the FTE funding for all four years despite the fact that the students do not use university facilities in 3<sup>rd</sup> and 4<sup>th</sup> years. UVic and UNBC have also asked that the current \$1 million direct funding that they receive be increased to more fully recognize their role as full partners.

#### Additional Requested Budget Summary

(in thousands of dollars)	06/07	07/08	08/09	09/10
<b>Operating Funding</b>				
<i>Governance &amp; Coordination</i>	1,782	2,068	2,028	1,989
<i>Technology Enabled Learning</i>	6,767	6,767	6,767	6,767
<i>Evaluation &amp; Program Outcome</i>	261	336	338	338
<i>Research Support</i>	1,115	1,115	1,115	1,115
<i>Clinical Faculty</i>	954	859	568	490
<i>Affiliated Regional Centres</i>	996	1,868	1,868	1,868
<i>3rd year Clerkship Stipends (\$480/mth)</i>	242	495	553	553
<b>Total</b>	<b>12,117</b>	<b>13,508</b>	<b>13,237</b>	<b>13,120</b>
<b>Capital &amp; One-time</b>				
<i>Additional Faculty Start-up</i>	5,566			
<i>AV/IT Utilization Pilot (\$500K x 2 yrs)</i>	1,000			
<i>Hospital Research Space</i>	11,750			
<i>ARC Start-up</i>	225			
<b>Total</b>	<b>18,541</b>			

## Experience to Date

The following table summarizes the MD undergraduate expansion budget and shows comparable actual results to date. The table shows that for the initial four years since the project began in 2002/03, there is an accumulated budget surplus of about \$15.8 million.

### Comparison Of Budget and Actual

(in thousands of dollars)

	Budget	02/03 to 05/06 Actual	Variance
Revenue	46,964	47,967	1,003
Expenditure	46,514	32,158	14,356
Net Revenue	450	15,809	15,359

Most of this budget surplus is due to delays in the hiring of full-time faculty.

Note that to date the 1<sup>st</sup> year has been operated only twice and the second year has been operated only once. The 3<sup>rd</sup> and 4<sup>th</sup> year have yet to be operated and, being focused in clinical settings, the complexity of planning and coordination associated with that activity will be even greater.

The core MD undergraduate medical education program costs about \$94,000 per FTE.

## Proposed Strategy

The following is a proposed strategy to deal with the fact that the FoM has raised legitimate questions about the sustainability of the program based on the current funding level of \$64,500 per FTE but that there is not yet sufficient experience with operating the program and the start-up phase is not yet complete, so it is not possible as yet to definitively establish the ongoing operating costs for the expansion. Essentially, the proposed approach is to:

- seek funding now for those elements of the program which are clearly additional requirements,
- make a decision now about "completing the doubling" based on the current average operating funding (\$64,500 per FTE), and
- review the funding of the program again once results are available for 2008/09 (i.e. once start-up and recruitment is complete and the entire program has been delivered for at least two years and all of the clinical centres are operational). Use additional revenue and accumulated unspent funds to operate the program on a sustainable basis in the meantime. This implies that expenditure will most likely exceed annual revenue for one or more years during this period, but the revised budget plan should be developed with the constraint that there not be a budgeted accumulated deficit at any point.

In particular, the following are the proposed recommendations:

- Additional annual operating funding should be provided now for operation of AV/IT technology in hospitals (\$4 million, ministry split to be determined) and technology



renewal (\$2.7 million, ministry split to be determined). 2 year funding for full utilization of AV/IT technology should be given as one-time funding (\$500,000 for each of 2 years);

- Additional program operating funding for ARCs and building occupancy costs for research space in CACs should be added as and if the facilities become operational over the next three years;
- Capital funding should be committed now to build required research space in CACs and capital planning should be undertaken;
- Other identified costs (i.e. governance and coordination, start-up, research coordination, program evaluation and clinical faculty) should be incurred to the extent necessary to operate the program, to be funded from accumulated surplus and unspent salary until recruitment is complete. Analysis indicates that the current surplus plus additional expected full-time faculty salary underspending will exceed the funding required to fully fund all of the identified additional costs by about \$4 million. The recommended additional funding in 2006/07 has therefore been reduced by that amount;
- It is recommended that government commit now to funding future severance or similar liability that may arise from the use of accumulated surplus to fund recurring costs if future funding for those costs is not forthcoming within a reasonable limit. Annual budgets will likely be in deficit for some years during the period as the accumulated surplus is used, and recurring salary costs will be incurred that may not be sustainable without a further future funding adjustment;
- In late August, 2006, AVED made a commitment to the FoM to fund the final tranche of 32 students (completing the doubling), at the same rate as the initial group (i.e. \$64,500 per FTE plus start-up funding to be determined based on an approved budget (see next bullet), paid over 5 years). The first of these students will enter the program in September, 2007. The request for \$5.8 million for a research building should be dealt with as part of the regular capital process. The 32 FTEs should be distributed with 8 to the north, 8 to Vancouver Island and 16 to the Lower Mainland. While the actual costs per FTE for the incremental FTEs will be less than the average costs for the initial group, it is unlikely that average costs for the entire group will be less than \$64,500 given the issues identified by the FoM;
- It is recommended that some changes be implemented to the approach taken to budgeting for the expansion. First, actual results should be prepared quarterly and compared to budget on an ongoing basis. Second, the budget should be reviewed at least annually and adjusted to take account of actual results and changes in circumstances. Third, an annual report should be provided to IUPC (or a successor committee, so long as both ministries are represented on the committee) summarizing the actual financial results in comparison to the budget and explaining material variances. Fourth, the budget should be adjusted for Round 1 of the expansion as soon as possible to operate the program on a sustainable basis in accordance with the recommendations of this report, which include operating at a deficit to the extent necessary in the coming four years provided that the budget does not indicate an accumulated deficit at any point. The budget should exclude the assumed wage and salary inflation component. This will require that current underspending at the three sites be reallocated and spent in accordance with the revised budget. Fifth, develop and gain approval from DPPC of a budget for the Round 2 expansion (completing the doubling) that minimizes required start-up funding through timing of full-time faculty recruitment.



- A further funding review should be held once reasonable estimates of actual results for the 2008/09 fiscal year are available to establish a sustainable level of operating funding for the MD undergraduate education expansion, including the "completing the doubling" if implemented. Since the final 32 students added to complete the doubling will be accommodated at the existing sites, there will be enough information about those costs after 2008/09 to complete the review, even though the final 32 students will not complete 4<sup>th</sup> year until 2011. In the meantime, budgeting should be based on use of the available funds, including the accumulated surplus, to sustainably manage the program.
- The expansion budget currently includes a 2% inflation factor applied to salary and benefits. Government has committed to fully funding mandated wage increases arising from recent negotiations. The budget should be recast to include actual wage increases resulting from mandated settlements and government should ensure that wage funding increases flow through to the FoM MD undergraduate expansion funding, which should match revenue and expense for wage inflation.
- It is recommended that a forum of the leaders of AVED, MoH, UBC, UNBC, UVic, FoM and health authorities be institutionalized. The purpose of the forum would be to raise, discuss and resolve matters of common interests.
- It is recommended that a comprehensive memorandum of understanding among the parties be drafted now to clarify the mutual expectations of the parties about the undergraduate medical education expansion. Despite the fact that this might have been more usefully and easily accomplished when this project was initiated, it is suggested it be done now. In fact, consideration could be given to a broader memorandum of understanding that also covers other elements of the relationships among the ministries, UBC, FoM and health authorities, including establishing the forum recommended above.
- It is not recommended that the \$4,000 per FTE amount for university support costs be increased or that the \$1 million contributions to UVic and UNBC be increased at this time.

The following table summarizes the recommended funding.

### Summary of Recommended Funding

(in thousands of dollars)	06/07	07/08	08/09	09/10	10/11	11/12
<b>Operating Funding</b>						
<i>Technology Enabled Learning</i>	6,767	6,767	6,767	6,767		
<i>Hospital Research Space BOC</i>	-	-	-	470		
<i>Affiliated Regional Centres</i>	836	1,568	1,568	1,568		
<i>3rd year Clerkship Stipends (\$480/mth)</i>	242	495	553	553		
<i>Less: Excess Accumulated Underspending</i>	(4,000)	-	-	-		
<b>Total Recommended Additional Operating Funding</b>	<b>3,845</b>	<b>8,830</b>	<b>8,887</b>	<b>9,357</b>		
<b>Capital &amp; One-Time Funding</b>						
<i>Enhanced Utilization of AV/IT Infrastructure</i>	500	500	-	-		
<i>ARC Start-up Costs</i>	120	105	-	-		
<i>Hospital Research Space</i>	-	-	11,750	-		
<b>Total Additional Capital &amp; One-Time Funding</b>	<b>620</b>	<b>605</b>	<b>11,750</b>	<b>-</b>		
<b>Completing the Doubling</b>						
<i>Total Additional Operating Funding</i>	-	2,064	4,128	6,192	8,256	8,256
<i>Start-up Funding (Maximum, subject to budget)</i>	66	1,055	1,532	1,702	1,470	229
<b>Total "Completing the Doubling" Funding</b>	<b>66</b>	<b>3,119</b>	<b>5,660</b>	<b>7,894</b>	<b>9,726</b>	<b>8,485</b>
<b>TOTAL RECOMMENDED ADDITIONAL FUNDING</b>	<b>4,531</b>	<b>12,553</b>	<b>26,298</b>	<b>17,252</b>	<b>53,620</b>	<b>52,380</b>

FINAL REPORT

September 26, 2006

## Purpose

The terms of reference for the review are attached at Appendix A. Among other things, the terms of reference set out the following requirements:

### Review of the First Round of Expansion

Identify and assess key funding issues / opportunities related to the first two years of delivery of the expansion to the undergraduate medical program and summarize the key lessons learned to date. For example, based on what we learned during the past two years, can we expect funding to be appropriate for 3rd and 4th years or do we need to adjust the level of funding?

Assess current expansion to determine if present funding level is appropriate with reference to start-up, capital and operating costs, including the specific items included in Appendix A.

Provide recommendations for funding of each of the four years of the program based on the assessment and other recommendations directed to a sustainable, high quality undergraduate medical education program.

### Review of the Second Round of Expansion

Outline options for expansion of the undergraduate medical program to 256 first year seats.

For each of the options identified, undertake a detailed assessment of the overall start-up and operating costs including the specific items included in Appendix A.

Based on the options analysis, recommend an approach and next steps (with reasonable time-lines) for expansion of the undergraduate medical program and make other recommendations, if needed, to ensure the second round of expansion is sustainable.

### Appendix A

In considering the costs of both the Round 1 and Round 2 expansion, the following cost items are to be considered:

- direct non-clinical costs;
- direct clinical costs including those associated with smaller centres and communities;
- indirect teaching costs (i.e., recruitment of undergraduate faculty to the three sites)
- costs of engagement/coordination with key stakeholders (e.g., Health Authorities, clinical faculty) and amongst the three institutions;
- costs related to governance (given that this is a distributed learning model);
- costs related to providing and maintaining infrastructure and other support for faculty and their associated research activities.
- infrastructure costs (e.g., information technology);
- costs that are not traditionally covered by AVED but may possibly be funded through other sources, including the Ministry of Health; and,
- other costs as identified.

This review has been conducted by initially interviewing a wide range of individuals associated with the undergraduate medical expansion in the Ministries of Advanced Education (AVED), Health (MoH), UBC Faculty of Medicine (FoM) at all three sites, UBC, UNBC and UVic administrations and health authorities to gain an understanding of how the undergraduate medical expansion has been planned and implemented and to identify issues related to the terms of reference for this review. In addition, the FoM has prepared an extensive report

entitled "Funding Review of the Medical School Expansion Phase 2" which details the background, goals, implementation planning and execution, and issues identified to date, together with documents related to the various issues identified as well as budget and financial information which have been reviewed.



## Background

For further detail on the background to the MD undergraduate education expansion, see "Funding Review of the Medical School Expansion Phase 2" prepared by the FoM as background to this review. In the following, quotes from that document are referenced as "FoM background document" and are taken from Version Six, dated June 1, 2006.

## History

The MD undergraduate education expansion arose from concerns in the late 1990's about acute physician shortages in the northern BC, as set out in the FoM background document:

The western world, including Canada, is experiencing physician shortages that are projected to become more severe over the next ten years. The shortage of physician supply has been well documented in British Columbia. At present, B.C. graduates only half the number of physicians per capita compared with the rest of Canada. Only 25.9% of the physicians currently practicing in B.C. graduated from the University of British Columbia's medical program. In addition, B.C. faces the same problems as other provinces with aging and attrition in physician ranks, and this will inevitably further diminish the available work force. The shortages are particularly acute in rural areas and small centres across the province, requiring urgent attention. The lack of physicians willing to take up practice in rural areas and small centres foreshadows even greater shortages in the future. According to Canadian Medical Association data, the number of rural physicians in British Columbia has dropped from 576 in January 1994 to 490 in January 1998. The significance of this has been well recognized in "Patients First: Renewal and Reform of British Columbia's Health Care System", a 2001 report of the Select Standing Committee on Health:

*"The need for B.C. to train more doctors is crucial and must be supported in B.C. through the expansion of seats in the medical school, increased residency positions, and targeted educational funding. The University of British Columbia trains 120 doctors each year and this year increased its allotment to 128 – still far short of the 350 necessary just to replace those physicians leaving practice."*

An initial impetus for expanding medical education in northern British Columbia was provided by the 7,000 people who attended the June 22, 2000, Health Rally in Prince George and other health rallies in the North. A major theme was the need to ensure a supply of physicians trained to meet the health needs of northern British Columbia.

In 2000, Mr. Gordon Campbell, while campaigning at UBC, promised to double the medical class size within ten years, and to ensure that at least 10% of these students would complete a majority of their undergraduate medical education in the North with a focus on rural and remote medicine, and at least 10% would complete the majority of their medical education on the Island with a focus on the health care needs of an aging population. In November 2000, the Ministry of Health created an advisory committee to explore options for undergraduate and postgraduate medical education for the purposes of addressing the supply of physicians to rural and northern British Columbia. A vision paper was prepared by Dr. Barry McBride, Vice President Academic and Provost, UBC and Dr. John Cairns, former-Dean, Faculty of Medicine, UBC, and tabled in January 2001, describing a vision for medical education in British Columbia focused on a collaboration with partner universities in British Columbia and with regional clinical campuses to build a distributed model of medical education.

The vision described by Drs. McBride and Cairns identified the following:

*"A decentralized model of medical education is desirable particularly with regard to the education of residents and clinical instruction of medical students. We will build upon current partnerships with 86 affiliated B.C. hospitals...and with the respective universities, regional hospitals and medical practices in these communities. This plan is based upon the well-established medical education program at UBC. While students will be awarded a UBC medical degree, a substantial number of students and residents will receive meaningful parts of their medical education in communities outside the lower mainland, thereby providing the background for them to practice effectively in these communities. The plan will encourage physicians doing their residency training to become integrated into the communities and to put down roots that will increase the likelihood of their remaining in the communities to practice. This model ensures that the additional resources associated with the expanded program will be distributed to both the lower mainland and to the communities around B.C."*

This early report identifies that while Prince George and Victoria will contribute clinical medical education, two further communities will also be involved in the provision of medical education to a cohort of undergraduate medical students. This first vision was intended to distribute *clinical* education only around the province, leaving little capacity building at either UNBC or UVic.

To support and direct the planning for implementation of this vision, The University Presidents' Council of British Columbia struck a planning committee, the Inter-University Planning Committee, in the Fall of 2000, with representation from the Ministry of Advanced Education and Ministry of Health. The Inter University Planning Committee struck a Strategic Planning Committee for the Northern Medical Program co-chaired by UNBC and UBC. The Strategic Planning Committee met for eight full days between February and August 2001, and constituted 18 subcommittees to examine and give direction in key areas. The Strategic Planning Committee for the Northern Medical Program tabled its report at an Inter University Planning Committee meeting in August 2001.

At this meeting, representatives from the Ministry of Advanced Education and the Ministry of Health agreed to support the implementation of the Northern Medical Program (NMP) and recommended that the NMP provide a model of distributed medical education that would utilize northern, rural, and community based teaching resources to build capacity while resting on a solid foundation of medical education at UBC. They identified the need for ongoing collaboration with the Ministry of Health in order to implement the program.

Similar discussions and processes were followed with the Strategic Planning Committee for the Island Medical Program which was struck to start expansion planning on the Island and to bring Island Medical Program planning and implementation into the same timeline as that of the Northern Medical Program. The Strategic Planning Committee for the Island Medical Program tabled its report in December 2001.

Both the IMP and NMP planning committees called for clinical undergraduate education, including clerkships, to be located within a wide range of rural and regional communities, in addition to the urban locations.

In March 2002, the Ministry of Advanced Education announced funding to support the expansion of the MD Undergraduate Program, including funding for capital facilities at university campuses. A funding letter to the universities supplemented the announcement, identifying a start up and implementation budget as well as a recurring operating budget to 2010. The Ministry of Health provided a capital fund of \$1.0M<sup>2</sup> to support the hospital-based clinical academic

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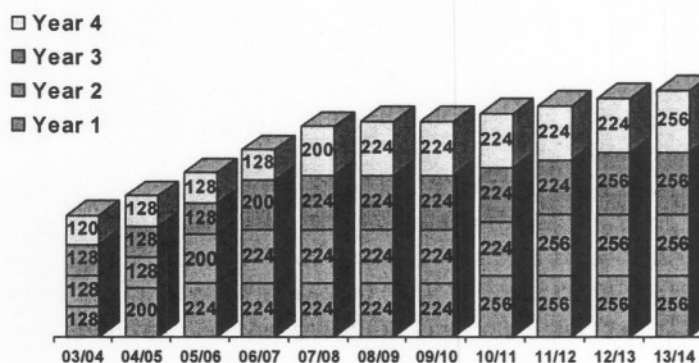
<sup>2</sup> That original commitment was increased in January, 2005 to \$27.6 million for the capital costs of academic space in CACs and Arcs and a further \$14.7 million to install AV/IT equipment in all the clinical sites.

teaching space needs for the Northern Medical Program and for the Island Medical Program. This funding remains unspent, but has been identified through a functional planning process as being inadequate to support the clinical academic teaching space development required.

Based on the funding letter from AVED, the Faculty of Medicine struck an MD Undergraduate Expansion Task Force to plan the expansion. A joint committee of the three partner universities was struck to oversee policy, budget, and resource allocation of the budget delivered by Advanced Education, namely the Implementation Planning Subcommittee for Medical Expansion (IPSME).

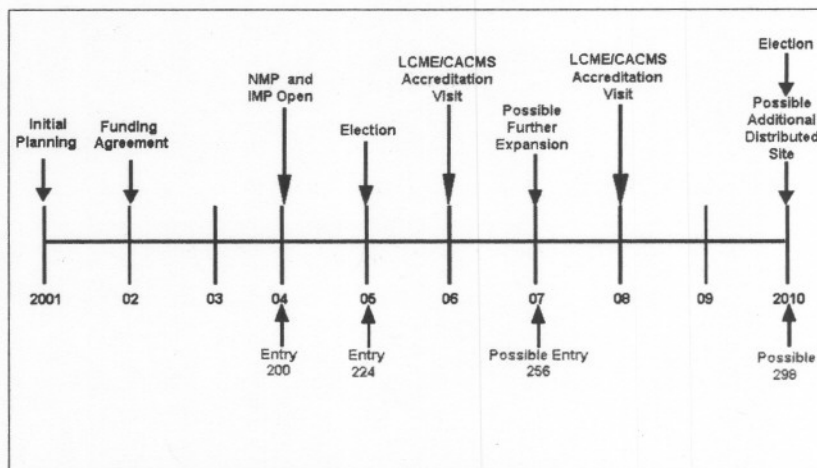
### Implementation Schedule

The following charts, taken from the FoM background document, show the original planned implementation timing of the expansion, increasing annual new enrollment from the previous 128 students by 72 students in September, 2004, a further 24 students in September, 2005 (Round One – total of 96 additional students per year) and a further 32 students in September, 2010 to complete the doubling (Round Two).



Timeline of Expansion

Since then, a 2005 campaign promise indicated that the doubling would be completed with additional enrollment in September, 2007, although a funding commitment has yet to be made. Accreditation requirements provide that to materially increase enrollment for a given year a funding commitment must be made by the previous September, requiring a funding commitment in September, 2006 if enrollment is to be increased in September, 2007.



### Goals

The following quote from the FoM background document discusses the outcomes expected from the distributed approach to expanding undergraduate medical education:

The bold vision of a distributed medical school expansion was expected to deliver outcomes and impacts well beyond just an increase in B.C. resident access to careers in medicine and an increase in physicians graduating from medical school in B.C. To meet these objectives only, a program of expansion at UBC alone would have been both feasible and less costly.



While B.C. needs more physicians, it also needs the right physicians, and physicians in the right places. The Northern Medical Program (NMP) was designed to recruit students into medicine from rural and northern areas, and educate them in northern settings with the expectation that they would complete rural residencies and ultimately settle in northern areas of B.C. The Island Medical Program (IMP) and the distribution to the Vancouver Fraser Medical Program (VFMP) similarly is expected to recruit students from small towns in B.C. with the same expectation of future placements for practice in under served areas of B.C. Additionally, UBC set up a process for facilitated admissions of aboriginal students, which was implemented prior to expansion in 2002. Current estimates place about 150 physicians in Canada as having aboriginal ancestry: for equity with aboriginal populations, Canada needs to aim for 3,000 Aboriginal physicians. Other goals of the NMP as outlined in the 2001 report to IUPC and accepted include:

- To recruit and retain more doctors in the north.
- To provide more opportunities for rural/northern and aboriginal students to enter the practice of medicine.
- Enhance awareness of opportunities for becoming a health professional among northern students.
- To produce physicians for rural and northern practice.
- To increase the number of students who select postgraduate training and/or establish practices in rural and northern communities.
- To support UBC's social responsibility to educate more doctors for all regions of B.C.
- To provide opportunities for professional development that will support the recruitment and retention in the North.
- To contribute to the health status of the population of the North.

The Northern Medical Program articulated other goals for the educational system:

- To develop a cost effective educational model.
- To learn more about how we can train health professionals in general for rural practice.
- To develop a socially responsible educational model.
- To provide a template of inter-institutional cooperation in the development of educational programs.
- To provide international leadership in community-based medical education.
- To expand interdisciplinary and inter-professional education in the training of health professionals.
- To promote the participation of First Nations/Aboriginal people in health care education as teachers and learners.
- To provide a student centered education that is sensitive to the needs of students.
- To achieve early success in program implementation, outcomes, and student participation.
- To plan an educational program that facilitates and enhances research opportunities for students and faculty.
- To involve the northern communities in the education of health professionals.
- To enhance opportunities for educational innovation and research.
- Ensure that students achieve the exit competencies of the UBC undergraduate MD program.
- Ensure a professionalism and ethos of service among graduates of the NMP.
- To ensure the program is sustainable.



However, expected benefits extend well beyond health care alone to university, government and economic issues in B.C. for example, the intended goals of the Northern Medical Program:

- To support economic development and sustainability in the north.
- To establish greater cooperation and an educational responsibility with the Ministries in support of health care in B.C.
- To be and to be seen to be responsive and accountable to the concerns of the northern communities re provision of health care.
- To establish an effective, dynamic long term partnership between UNBC and UBC.

The Island Medical Program (IMP) goals for the educational program are to:

- To develop a distributed undergraduate medical education curriculum that is of the highest quality and makes full use of the strengths of UBC and UVic, as well as those of the Island Health Region, practicing Island physicians and allied health professionals, and Island communities.
- To admit excellent students.
- To recruit and retain excellent basic science and clinical faculty.
- To develop a medical education program that uses interdisciplinary approaches to learning and places emphasis on:
  - practice in smaller centres and in rural and remote settings, including Island coastal communities; and
  - the health needs of underserved groups across B.C., particularly older adults, children and youth experiencing poverty, aboriginal communities, and those with complex mental health needs.
- To maintain full accreditation for the program.
- To graduate physicians who are prepared to enter various programs of postgraduate training.
- To monitor the learning needs of physicians in rural and remote practice settings so that the curriculum can continue to evolve to meet these needs.
- To develop research programs that will assist communities in addressing their specific health needs.

Additionally, the Island Medical Program aims to:

- To prepare graduates predisposed toward postgraduate training in areas of Family Practice, and general specialties including geriatrics.
- To prepare physicians from these disciplines to practice in community, rural and remote settings.
- To increase the recruitment and retention of physicians throughout Vancouver Island and the province of B.C.

### ***Alternative Expansion Approaches***

While no document has come to light which compares alternative approaches to the expansion of undergraduate medical education, it may be instructive to consider what those options might have been. It seems that there were at least three possible approaches to expansion:

**Alternative 1 – Expansion at UBC Only**

Under this alternative, the existing medical undergraduate education program would have been expanded with 1<sup>st</sup> and 2<sup>nd</sup> year instruction provided at UBC and 3<sup>rd</sup> and 4<sup>th</sup> year clinical instruction provided at Lower Mainland hospitals and other health facilities.

**Alternative 2 – Distributed Expansion in Partnership with UNBC and UVic**

This is the approach that was chosen, in which 1<sup>st</sup> and 2<sup>nd</sup> year instruction is provided in an integrated program delivered at all three university campuses and 3<sup>rd</sup> and 4<sup>th</sup> year clinical instruction provided at Clinical Academic Campuses (CACs) located in hospitals in the Lower Mainland, Victoria and Prince George, with planning ongoing to extend clinical teaching to 10 Affiliated Regional Centres (ARCs).

**Alternative 3 – New Medical School**

Under this alternative, a new school of medicine would have been established associated with one or more universities other than UBC. For example, the suggestion of new school of medicine centred on a new university in the Okanagan has been raised over the years, or the new school could have been established at UNBC or UVic or any combination. This was the approach taken with the Northern Ontario School of medicine recently established in Sudbury and Thunder Bay at Laurentian and Lakehead Universities.

It is apparent that the alternative chosen was preferable to either of the alternatives.

Alternative 1 may have been feasible and would have been less costly but it would have had considerably less scope to achieve important goals related to training of physicians who will serve in rural and underserved areas and to the beneficial impacts on Northern BC due to research activity and the fact that it is easier to recruit physicians to an area when there is a medical school there.

Alternative 3 has the potential to achieve the same objectives as the current distributed expansion, but would have had a significantly higher cost. For example, the Northern Ontario School of Medicine has a three year funding commitment of \$95 million for the first three years of a program that enrolls 56 students per year. The start-up and operating funding provided to the expansion in BC for the first three years of operations totaled about \$49 million for 96 students per year (72 students in 2004). The Northern Ontario program has cost more than three times as much on a per FTE basis.

It is also useful to compare the expansion funding with the funding of the core undergraduate medical education program. The following table shows that the AVED grant funding for the core program is about \$94,000 per FTE, as compared to the \$64,500 per FTE ongoing operating funding provided for the expansion.

### Medical Undergraduate Funding per FTE Core Program

UBC Recurring funding for Faculty of Medicine from GPO	53,836,505
Remove: Audiology and rehab GPO budget	<u>(3,122,000)</u>
	50,714,505
Benefits costs paid centrally (assume 80% salary)	8,114,321
25% Administrative costs of the budget at \$50.7M	<u>18,112,323</u>
Total assumed funding to the Medical Program (tuition and Grant)	76,941,149
Take out effective graduate funding at \$20K plus \$4K tuition @ 738 FTE	(17,712,000)
Other Science FTE at \$7.3Kgrant and \$4.3K tuition @ 543 FTE	<u>(6,244,500)</u>
Assumed tuition and grant related to the medical MD program only	52,984,649
Less Tuition (256 FTE @ 4.3K + 256 FTE @ 14K)	<u>(4,684,800)</u>
Total Grant Funding assumed for Core Program	<u>48,299,849</u>
Total Grant Funding assumed for Core Program per FTE at 512	94,336

### Accreditation

Faculties of medicine in North America require accreditation so that graduates' credentials are universally accepted. The following quote from the FoM background document explains the accreditation process and standards:

#### Process and Standards

CACMS (Committee on Accreditation of Canadian Medical Schools)/LCME (Liaison Committee on Medical Education) accredits the UBC Faculty of Medicine MD Undergraduate program. Accreditation of the Northern Medical program and the Island Medical Program depends on the accreditation process of UBC. The IMP and NMP are not accredited separately either from UBC or from each other, and do not receive separate accreditation, and attention has been paid to and must continue to be paid to CACMS/LCME accreditation requirements. While the UBC Expansion is the first fully geographically distributed expansion of a medical school in North America, there are many regional campuses in the USA delivering one or two years of the program: therefore LCME has thought through the issues that come with programs being run at distant sites, including distant university and hospital sites, and expect the new distributed programs in Canada to meet these same requirements. Because geographically separated programs are not uncommon in the USA, there is a specific section of the accreditation standards that deal with these kinds of programs. For CACMS/LCME accreditation standard detail see *Appendix 7: Purposes of LCME and CACMS Accreditation*. For example, some standards that have cost repercussions for the UBC program because of functional requirements include:

#### ED-39

The medical school's chief academic officer must be responsible for the conduct and quality of the educational program and for assuring the adequacy of faculty at all educational sites.



*ED-40*

The principal academic officer of each geographically remote site must be administratively responsible to the chief academic officer of the medical school conducting the educational program.

*ED-41*

The faculty in each discipline at all sites must be functionally integrated by appropriate administrative mechanisms.

*ED-42*

There must be a single standard for promotion and graduation of students across geographically separate campuses.

*ED-43*

The parent school must assume ultimate responsibility for the selection and assignment of all medical students when geographically separated campuses are operated.

*ED-44*

Students assigned to all campuses should receive the same rights and support services.

*ED-45*

Students should have the opportunity to move among the component programs of the school.

As well as the standards specific to geographically separated campuses, there are a set of standards that also require integrated oversight of the curriculum. The integrated oversight requires increased governance and coordination resources including staff, travel, and faculty integration.

*ED-8*

There must be comparable educational experiences and equivalent methods of evaluation across all alternative instructional sites within a given discipline.

*ED-25*

Supervision of student learning experiences must be provided throughout required clerkships by members of the medical school's faculty.

*ED-33*

There must be integrated institutional responsibility for the overall design, management, and evaluation of a coherent and coordinated curriculum.

*ED-34*

The program's faculty must be responsible for the detailed design and implementation of the components of the curriculum.

*ED-36*

The chief academic officer must have sufficient resources and authority to fulfill the responsibility for the management and evaluation of the curriculum.

In the above standards, the school refers to UBC, and the chief academic officer refers to the Dean of the Faculty of Medicine. The distributed programs at UVic and UNBC are not accredited separately: the UBC Faculty of Medicine is required to have authority over these students, faculty, programs and resources in order to maintain accreditation. Meeting these

standards has required a lot of complexity in terms of leadership and governance. This is one of the areas of strain in the budget where the complexity of communication and leadership across sites has been greater than anticipated. It is also important that the evaluation processes are robust, ensuring this has led to another area of strain in the budget.

**Maintaining full accreditation, managing complexity and ensuring curriculum quality.**

The present UBC curriculum was implemented in 1997 with the first students graduating in 2001. About the time the first cycle of the new curriculum was completed, planning began for the distributed program. In view of the recent major changes that had been implemented in the curriculum that were still being consolidated, a deliberate decision was taken not to change the educational program but to focus energies on how to deliver it in a distributed model. However, in order to maintain the quality and accreditation status of the UBC curriculum and keep it up to date, curriculum renewal will be required over the coming years. This renewal will need to include active involvement of faculty at each site.

The new curriculum was implemented at a time of financial difficulty in the Faculty of Medicine, and although the new expansion funding enabled expansion to go ahead, it did not deal with the chronic under-resourcing of the core program. The expansion of the program in 2004 therefore occurred on the top of shaky base funding for the core program.

UBC's medical program received full accreditation for seven years in 2001. Expansion and distribution of the medical program was viewed by the accrediting bodies as such a major change that we were required to have two limited site survey visits, the first in March 2004 prior to implementation and the second in March 2006 to review implementation of the first two years and readiness to implement clinical education. For the March 2006 visit we were specifically required to provide information on the steps taken to ensure comparability of the educational program across the geographically-separate campuses and to document how the committee structure and faculty across the sites communicate and work together to ensure curriculum comparability.

Prior to both visits, informal consultations were held with the LCME and CACMS secretariat in order to understand fully the accreditation implications of the UBC distributed model and obtain advice on potential areas of vulnerability. Two major issues were raised that have resource implications: program drift and the size and complexity of the program.

**Program Drift**

Program drift occurs when the learning objectives or assessment methods at the distributed sites are different from those at the home program but the sites are not accredited as a separate track. CACMS/LCME is watchful of programs at geographically distributed campuses shifting over time to become substantially different from the overall program. Attention to good communication, inclusion, and meaningful participation of faculty at the geographically distributed sites, as well as allowing them to contribute to the curriculum, are known strategies to prevent program drift.

**Size and Complexity of the Program**

The full accreditation visit scheduled for 2008 will look very carefully at the standard that requires the Dean to have adequate resources to manage the program. If UBC goes to the full expansion numbers it will be the largest medical school in North America. It is seen as one of the most complex already, because the distribution to geographically separated campuses has occurred through collaboration with other universities. We were advised to be alert to the scalability/complexity of the overall organization. The ability to continue to manage this complex organization depends on:

- Institutional memory
- Trust
- Shared knowledge base
- Shared culture

There needs to be enough face-to-face contact to ensure trust. We also must have planned renewal. Team-work should be nurtured. We must have budgeting of governance and integration of the organization related to the size of the organization and the complexity of medical schools. This requires the understanding that managing the relationship is real work that takes time and energy of all, especially the senior leaders.

The major focus of the distributed program has been on the establishment of the two new programs. Experience of the first two year of implementation has revealed the nature and extent of the impact on the management of the educational program in Vancouver in order to meet accreditation standards, support the new programs and manage the complexity (*see Appendix 5: Examples of Activities Required to Ensure Comparability of the Educational Program and Integrated Governance*). While additional work was to be expected because of the planning required during the start up phase, what has become apparent is that the activities required to maintain the comparability of the educational program will require an ongoing workload well in excess of that which was required to run the single site program at UBC.

Much of this is driven by the CACMS/LCME accreditation requirements.

### ***Undergraduate Medical Education Approach***

The FoM is a large enterprise that is engaged in several distinct activities, including:

- Undergraduate medical education, with the core program of 512 students (128 per year times 4) plus the expansion;
- Post-graduate training (residents), conducted under contract on behalf the MoH, which must provide entry spaces at least equal to the number of MD graduates each year. The total number of post-graduate students is significantly larger than the number of undergraduate students;
- Graduate student programs, currently with 738 student FTEs in medical programs;
- Audiology and rehabilitation professional education programs;
- Basic science teaching;
- School of dentistry; and
- Research.

Prior to 1994, undergraduate medical education was largely university based, with an emphasis on traditional classroom learning. Exposure of students to clinical settings was focused on a one year internship following fourth year, during which students rotated through a variety of practice areas, followed by residency programs for those that chose to pursue specialties.



Since 1994 undergraduate medical education has changed its focus to problem-based learning and clinical exposure throughout the four-year program, and with the final two years being undertaken entirely in the clinical setting. That is, while there are lectures and seminars in years 3 and 4 (academic half-days each week), the majority of the time during those years is clinical teaching, much of it involving patient care. Years 1 and 2 are undertaken on the university campus and, while they include some clinical exposure, Years 1 and 2 are focused on more traditional class-room learning, although much of that is in small group settings consistent with the problem-based learning approach.

The UBC FoM is unique in Canada because a large proportion of the clinical teaching and part of the classroom-based teaching undertaken by the FoM is done by clinical faculty. Clinical faculty are practicing physicians who have an appointment to the FoM as clinical faculty, which does not require them to undertake either research or provide other services. In comparison, full-time faculty, who are eligible for or have tenure, have an obligation to teach, engage in research and provide other service. A large part of the teaching undertaken by full-time faculty relates to the graduate students who they supervise and work with on research projects.

## **Research**

It is important to the FoM and accreditation bodies that undergraduate medical education be undertaken in a research rich environment and that the program foster a spirit of enquiry in the students and future physicians. The accreditation standards require that all students receive the same education and be exposed to the same opportunities. That implies that research activity must be present and available at all sites, including both university campus and clinical facility sites. The FoM background document includes the following discussion about research:

One of the goals of the distributed expansion was to enhance the research capability of B.C. to attract a greater proportion of federal research funding to B.C. and to distribute research capacity across the province, transforming the northern economy over time from a resource-based economy to a knowledge-based economy. While the program has distributed new faculty positions to the three university campuses, this goal has not yet been reached.

As well, LCME standards state:

### *IS-13*

The program of medical education leading to the MD degree must be conducted in an environment that fosters the intellectual challenge and spirit of enquiry appropriate to a community of scholars.

### *IS-14*

Students should have the opportunity to participate in research and other scholarly activities of the faculty.

### *IS-15*

All medical school faculty members should work closely together in teaching, research and health care delivery.

### *FA-5*

Faculty members should have a commitment to continuing scholarly productivity characteristic of an institution of higher learning.

Effective medical education requires a learning environment that is rich in research opportunities. Knowledge of medical conditions and interventions and the basic science underpinning them is a rapidly advancing and changing field. Future physicians will be faced with assessing and translating new knowledge into practice throughout their clinical careers. Students therefore must learn about how new advances are developed, how to assess the quality of research and should have some experience of basic research techniques. This is best achieved through exposure to basic science and clinical faculty who are actively engaged in research and scholarly work. This happens in basic science teaching, around the bedside and when students have opportunities to work with physician and non-physician researchers who are active in the health care field.

UBC is a leading biomedical and clinical research University with an international reputation for excellence. The expansion and distribution of the medical school has brought significant challenges in attempting to ensure that all students have comparable experiences in terms of opportunities (IS-14) to experience research environment. While acknowledged research leaders in their field teach all students from time to time, usually during video-conferenced lectures, there are differences across the sites in terms of students' access to personal contact with established researchers.

## **AV/IT**

A key element of the approach to undergraduate medical education is the extensive use of audio visual and information technology (AV/IT) to link and integrate the programs across the distributed sites. The FoM background document describes the purpose of the AV/IT technology as follows:

In the election announcement of the initial medical school expansion, Gordon Campbell announced that these buildings would be "smart buildings." As the program planning advanced, the parameters and deliverables of the technology infrastructure required to distribute the program became more apparent. The interactive videoconferencing used to distribute the expertise at all three partner sites has integrated the faculty across sites and is leading to a fully integrated program. Additionally, the ability to provide expertise at a distance to students at UNBC provides a security to those students that allows the program to fill with excellent students. Further, the risk of program delivery related to the relative paucity of faculty at UNBC is managed by the redundancy supplied through technology.

As a proof of concept, the technology infrastructure has actually been more effective and more accepted by both students and faculty than we originally anticipated. However, the recurring funding required to support the technology was under estimated at the time of the original budgeting, and the draw on the budgets for technology is now straining other areas of the budget.

The Ministry of Health is supporting similar technology infrastructure for clinical education: On January 12, 2005, B.C.'s government committed \$27.6M to the Ministry of Health to create academic teaching space within clinical facilities around the province to support the distributed medical education program. These funds are being used to upgrade or expand existing facilities, and to create new ones as required, in two different types of settings – Clinical Academic Campuses (CAC's) and Affiliated Regional Centers (ARC's).

Subsequent to the announcement of the \$27.6M funding for the clinical academic teaching space project, a \$14.9M proposal was submitted to the Ministry of Health to install the necessary technology within those clinical academic teaching spaces to deliver distributed medical education. The Medical Provincial Academic & Affiliated Campus Technology (MPAACT) will deliver an academic technology infrastructure across the province in regional centres as well as

smaller affiliated sites, enabling not just medical students, but also all learners to network and learn through a technological interface.

An integral component of the expanded medical program is the ability to deliver high-quality distributed training in real time between all of the Clinical Academic Campuses and Affiliated Regional Centers using audiovisual (AV) and information technology (IT). Building on the successful implementation of distance education for Years 1 and 2 in the MD undergraduate program, MPAACT will implement the AV, IT, and network systems necessary for distributed delivery of the Years 3 and 4 undergraduate, and postgraduate programs within clinical sites. The systems and facilities will foster the creation of a full academic environment by supporting activities such as faculty development, access to library resources, and Continuing Medical Education. The project will be completed by 2009.

While medical education and related activities will be given priority for using the new videoconference facilities, the facilities may be used for other purposes when not required for undergraduate or postgraduate education in order to ensure efficient utilization. The order of priority for the facilities will be:

- UBC Faculty of Medicine: Medical School academic and related activities;
- UBC Faculty of Medicine: School of Rehabilitation Sciences and School of Audiology and Speech Sciences academic and related activities;
- Other academic programs in Health Sciences and related activities;
- Other hospital activities such as videoconference/telehealth.
- Undergraduate students, postgraduate residents and faculty initiated programs.

While the capital funds have been committed, the MD Undergraduate program does not have funding for the operations of this equipment.



## **What I Have Heard**

### ***General Comments***

First and foremost, there is a strong consensus among those consulted that:

- expansion of undergraduate medical education in BC is necessary;
- the distributed model was the right model compared to alternatives such as expansion only at UBC or creating additional medical schools in terms of cost and outcomes; and
- the expansion is working well so far and is proving to be an important innovation in North American medical education.

There was no suggestion of a challenge to the model or any indication of any major problems. There is every indication that a strong collaborative and problem solving culture among the key players at the three institutions is enabling issues to be overcome on a daily basis. Outcomes so far in terms of student success and success in gaining accreditation have been positive.

Nevertheless, several issues were raised as having fiscal and sustainability implications for the expansion, including the following:

### ***Governance and Coordination***

Several commented that it has proven to be more complex than any imagined to manage and coordinate the program at the three sites through second year, and that the complexity will increase with clinical placements of the students in third and four years. While there is an element of start-up coordination involved, several people indicated that they do not expect the effort required to manage and operate the program across the three sites to decrease over time.

Concerns include lack of administrative and clerical staff and course director resources. Some have suggested that more people are required, at least in some types of positions. Others have indicated that more time is required from the many part-time people who are doing these jobs. These jobs are often budgeted at one day per week and utilize people who also maintain a medical practice and are involved in other activities. People doing the jobs are typically devoting considerably more time to the task than they are being compensated for and are in danger of burnout. There are also higher costs for travel than expected.

### ***Faculty Recruitment***

The plan for the expansion of the program includes recruitment of about 90 additional full-time faculty members, including basic scientists and academic clinicians. By the end of 2006/07 about one-half will have been hired, considerably fewer than originally planned. Some of these faculty members will be primarily appointed by and members of the Faculty of Medicine while others will primarily be part of other faculties at the three universities.

Two concerns have been raised about faculty recruitment:

- both the UNBC and UVic sites feel that they are only able to manage within their current annual budget because of unused faculty salaries and that, once recruitment is complete, their annual budgets will be inadequate; and
- the current budget provides only \$50,000 per new faculty member for the costs of recruitment and start-up. There is a consensus that recruitment and start-up costs are, on average, in the \$300,000 to \$400,000 range.

There is also a related concern about allocation of funding among the universities related to costs of recruitment, where the faculty member will be part of a UVic or UNBC faculty rather than the Faculty of Medicine. This is also linked to the issue of research, discussed below.

## **Research**

Two issues have been raised related to research:

- in order to recruit appropriate faculty, they must have appropriate research opportunities. That has been a particular challenge for UNBC in terms of providing needed facilities for basic scientists who will be UNBC faculty given the lower level and breadth of research activity at UNBC; and
- research facilities (i.e. capital and operating costs for wet labs and dry research space) for academic clinicians who will be working in hospital settings raises an issue of jurisdiction between the FoM and the MoH/Health Authorities. Exposure of undergraduate students to research opportunities and the spirit of enquiry related to medical clinical research is essential at all clinical sites in order to provide all students with the same quality of experience and is an accreditation requirement. MoH capital planning for health authority space has provided teaching space but does not include any research space. MoH has indicated that while it will continue to pay building occupancy costs for existing research space in health facilities, it will no longer pay the capital costs or the building occupancy costs of new research space. As a result, there is no current planning or funding for capital or building occupancy costs for research space to accommodate about 52 full time academic clinician faculty currently being hired.

## **Further Distribution of Clinical Activity**

Part of the reason for choosing a distributed model for the expansion was because of the benefits that would be generated by giving some students a clinical experience outside of major urban centres. The benefits expected include a greater likelihood of doctors choosing to practice in rural areas after completing their training and enhancing the clinical environment in rural areas because of the presence of clinical teaching and research.

At present, the MoH and FoM are jointly planning for the addition of academic space in 10 ARCs at additional sites in the northeast, northwest, Vancouver Island, Lower Mainland, Fraser Valley and Interior regions for both undergraduate and post-graduate education and capital funding has been committed. These additional sites are required both to fully distribute the clinical teaching aspects of the program and to provide sufficient physician and patient density to accommodate the additional students. However, further distribution of undergraduate medical education to the ARCs requires:

- operational funding. There is not currently funding for the building occupancy costs of the additional space or for the incremental program operating costs of coordinating student education at additional sites; and
- accreditation approval of an additional clinical education "stream" since, at the ARCs there will not be sufficient access to specialties to allow clinical education to be conducted as a rotation through practice areas but rather as a single ongoing program that deals with all of the practice areas as cases in those areas present themselves. This is a recognized approach to clinical education but not one currently in use in BC.

### ***AV/IT Infrastructure***

The distributed model relies heavily on technology to link the three sites for both teaching and administrative coordination purposes. Videoconferencing of instruction has proven very successful in delivering first and second year courses and in enabling coordination of the programs. Effective use of the technology in the hospitals and other clinical settings is essential to deliver third and fourth years. Capital costs of installing the technology in the hospitals has been provided by the Ministry of Health.

Two issues have been raised related to the technology:

- the technology infrastructure will have a relatively short life, in common with most AV/IT equipment. There is currently no provision for funding to replace the equipment; and
- there is not funding for operation of the technology being installed in the hospitals.

### ***Financial Management***

The expansion is being treated as a project in the sense that there is specific funding being dedicated to the expansion, there is a budget and budgeting process for the expansion and the amounts provided for establishment and operation of the new sites is clearly and separately identified. However, it is also being treated as an increase to the block funding provided to the FoM. At the UBC site the operation of the expansion part of the undergraduate medical education program is fully integrated into the other activities of the faculty of medicine, including the core, pre-existing undergraduate medical education program, making it difficult to clearly identify what the expansion funding has been used to pay for, except for the more clearly identifiable incremental direct costs at the two new sites.

The following issues related to financial management of the expansion have been raised:

- while there have been budgets and those budgets have been brought forward for approval, the budgets have not generally been approved prior to the start of the fiscal year and there has not been ongoing reporting of actual expenditure in comparison to the budgets. Actual spending reports for the 2004/05 and 2005/06 fiscal years were not initially available but have subsequently been provided. Concerns have been expressed about the overall financial management of the project;
- a fixed amount (\$4,000 per FTE) has been allocated to the overhead costs of the three host universities, based roughly on the general amount of per FTE operating grants used for overhead costs at the universities. Concerns have been raised that these students generate



higher than average overhead costs, for example in terms of space utilization since all three universities have new facilities that have high per FTE operating costs. In addition, there are concerns that the overhead costs of the students may not be equal at the three universities; and

- UVic and UNBC each directly receive \$1 million which they contribute to the overall cost of the expansion. Both would like to see this amount increased in better recognition of their importance to the success of the expansion. In addition, the student FTEs are recognized only at UBC, distorting per FTE indicators such as space utilization. While the number of FTEs in question is small compared to the total FTEs at UBC, it is a more significant proportion of UNBC's FTEs.

### ***Health Authority Operating Funding***

Prior to the expansion, all of the clinical teaching of MD undergraduate students in 3<sup>rd</sup> and 4<sup>th</sup> years took place in Lower Mainland facilities operated by Vancouver Coastal Health Authority or Provincial Health Services Authority. There is an operational cost to the hospitals of having MD undergraduate students on site in addition to the academic space the program occupies and this cost is reflected in the funding provided to the traditional teaching hospitals. The additional cost arises in part from loss of productivity associated with the time taken to teach in conjunction with patient care, as well as the cost of additional tests and procedures ordered by students.

The Ministry of health has indicated that it will adjust the Population Needs-Based Funding Formula to reflect the cost of MD undergraduate students in new sites and has undertaken a review of academic costs in the funding formula and a review of medical resident and undergraduate impacts. The health authorities have not yet been given any information by the MoH about how their funding will be adjusted to reflect the costs of students, who will begin to be in the hospitals in September, 2006.

## Financial Results to Date

Appendix III – Comparison of Budget and Actuals provides a summary table showing the revenue and expenditure budget for the expansion by year to 2009/10, with actual results for comparison for the years 2002/03 to 2005/06.

The following table is a summary of the undergraduate medical education expansion budget, as currently approved:

### Summary Budget Revenue and Expense

(in thousands of dollars)

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Total
	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	
<b>Revenue</b>	5,044	9,960	10,895	21,065	22,332	27,589	29,069	29,069	155,023
<b>Expenditure</b>									
Faculty Start-up	188	1,060	1,255	1,882	1,337	34	-	-	5,756
Workforce Costs	-	930	4,052	6,960	12,615	16,457	17,176	17,519	75,709
Non-salary Costs	3,587	4,771	9,279	7,608	8,382	8,836	9,057	9,157	60,677
Curriculum & Faculty Devel.	317	1,113	1,656	1,856	1,914	1,486	2,243	2,341	12,926
Total	4,092	7,874	16,242	18,306	24,248	26,813	28,476	29,017	155,068
<b>Net Revenue</b>	952	2,086	(5,347)	2,759	(1,916)	776	593	52	(45)
<b>Cumulative Surplus (Deficit)</b>	952	3,038	(2,309)	450	(1,466)	(690)	(97)	(45)	

The following table compares the budget with the actual results to date:

### Comparison Of Budget and Actual

(in thousands of dollars)

	Budget	02/03 to 05/06 Actual	Variance
<b>Revenue</b>	46,964	47,967	1,003
<b>Expenditure</b>	46,514	32,158	14,356
<b>Net Revenue</b>	450	15,809	15,359

The budget has been established based on two principles: a) at end of the start-up period, there should be no material accumulated deficit; and, b) the annual budget should be in balance. As can be seen, spending has been significantly below budget to date, resulting in a current accumulated surplus for the program of over \$15 million. As the following table shows, that surplus is largely due to slower than expected recruitment of faculty. While the unspent start-up costs will be spent when faculty are recruited, the unspent salaries and other costs will not be spent unless the budget is adjusted.

**Comparison Of Budget and Actual Expenditures**

(in thousands of dollars)

	Budget	04/05 to 05/06 Actual	Variance	% of Budget
Faculty Start-up	3,137	685	2,452	78%
Workforce Costs	11,012	5,774	5,238	48%
Non-Salary Costs	16,887	15,592	1,295	8%
Curriculum & Faculty Devel.	3,512	2,449	1,063	30%
Total	34,548	24,500	10,048	29%

The following table shows 2004/05 and 2004/05 spending by site. It shows that the IMP and NMP both had proportionally higher under-spending that the VFMP, particularly in the salary area. That reflects the fact that the VFMP has recruited new faculty more quickly than the other two sites. In 2005/06 all three sites used some of the salary savings to boost non-salary spending, with NMP showing the proportionally greatest additional spending. All three programs have made the point that they have only been able to survive by using unspent salary budget to pay other unbudgeted costs, particularly in the governance and coordination area and that, even so, the full costs of governance and coordination are not being covered. There appears to be increased scope, especially in the IMP, to at least temporarily cover additional governance and coordination costs from current under-spending.

**FoM Undergraduate Medical Expansion  
Expense Variance By Site**

\$ Thousands (Over) Under Budget

	Sec't	IMP	NMP	VFMP	Total	% of Budget
<b>2004/05</b>						
Faculty Start-up	-	336	170	293	799	64%
Workforce Costs	20	806	791	945	2,562	63%
Non-salary Costs	934	8	87	477	1,506	16%
Curr. & Fac. Dev.	(27)	165	133	281	552	33%
TOTAL	927	1,315	1,181	1,996	5,419	38%
Budget	1,878	2,867	3,027	6,344	14,116	100%
% of Budget	49%	46%	39%	31%	38%	
<b>2005/06</b>						
Faculty Start-up	58	328	334	934	1,654	88%
Workforce Costs	4	1,261	880	519	2,664	38%
Non-salary Costs	(100)	(273)	(331)	(128)	(832)	-11%
Curr. & Fac. Dev.	34	72	124	147	377	20%
TOTAL	(4)	1,388	1,007	1,472	3,863	22%
Budget	1,376	3,877	4,056	8,523	17,832	100%
% of Budget	0%	36%	25%	17%	22%	



## Discussion

The following discusses funding issues raised by the FoM or encountered during the review.

### *Faculty Recruitment*

Full-time faculty salaries represent a large proportion of the costs of the undergraduate medical education expansion, accounting for 37% of the 2009/10 approved budget. The number of full-time faculty required was determined based on analysis of the core undergraduate medical education program and the amount of full-time faculty support given to that program. As a result the FoM as a whole and each of the three programs will have full-time FoM faculty consistent with the principle of providing all undergraduate medical students with a consistent educational experience.

Due to the importance of full-time faculty salary and start-up costs in the budget, and the fact that recruitment delays are responsible for a large proportion of the budget variance to date, the FoM has provided further analysis of the full-time faculty recruitment situation. The following table sets out the number and type of full-time faculty to be recruited and the current expected timing of the recruitment. It has been adjusted based on 2006/07 recruitments to date and expected during the remainder of the fiscal year:

#### Full-Time Faculty Recruitment Summary

	To Date	06/07	07/08	08/09	09/10	Total
<b>VFMP</b>						
Basic Scientist	4.0	2.5	2.5	0.0	0.0	9.0
Academic Clinician	8.5	12.0	9.5	4.0	1.0	35.0
Instructors	5.5	0.0	0.0	0.5	0.0	6.0
Total	18.0	14.5	12.0	4.5	1.0	50.0
<b>IMP</b>						
Basic Scientist	1.0	1.0	1.0	1.0	0.0	4.0
Academic Clinician	0.0	5.0	4.0	2.0	0.0	11.0
Instructors	1.0	1.0	1.0	0.0	0.0	3.0
Total	2.0	7.0	6.0	3.0	0.0	18.0
<b>NMP</b>						
Basic Scientist	3.5	0.0	0.5	0.0	0.0	4.0
Academic Clinician	1.0	2.5	4.5	4.0	0.0	12.0
Instructors	0.0	0.0	2.0	0.0	0.0	2.0
Total	4.5	2.5	7.0	4.0	0.0	18.0
<b>Other</b>	0.0	0.0	3.5	0.5	0.0	4.0
<b>Total</b>	<b>24.5</b>	<b>24.0</b>	<b>28.5</b>	<b>12.0</b>	<b>1.0</b>	<b>90.0</b>

As can be seen, less than 1/3 of full-time faculty have been recruited to date and there are ambitious recruiting efforts under way for 2007/08 and 2008/09.

### **FT Faculty Salary**

The FoM has used all recruitments over the past 5 years to estimate average salary and recruitment/start-up costs for new full-time faculty. The following table shows average salaries:

**Average Academic Clinician Salary & Benefits by Rank**  
**From start date July 1, 2001 to June 15, 2006**

Rank	Number of Hires	Academic Salary	Clinical Salary	Combined Salaries	Expected % Hired	Weighted Salary
Assistant Professor	59	91,232.86	16,322.44	107,555.29	25%	22,808.21
Associate Professor	9	132,012.20	52,300.23	184,312.43	50%	66,006.10
Professor	10	177,041.30		177,041.30	25%	44,260.33

**Weighted Average Academic Salary 133,074.64**

Given actual salaries for the full-time faculty hired to date and average salaries for the remaining faculty to be hired, expected salary costs can be estimated for the next 4 years. The estimates in the following table assume that, on average, new hires during a fiscal year will start on September 30 (i.e. 6 months salary):

**Full-Time Faculty Expected Salary & Benefits**

	To Date	06/07	07/08	08/09	09/10
Number of Faculty Recruited	24.5	24.0	28.5	12.0	1.0
Additional Base Salary <sup>1</sup>	2,359	2,429	3,002	1,385	91
Expected Salary Costs <sup>2</sup>	2,359	3,340	5,811	7,986	8,872
Other Costs due to recruiting delays		1,183	1,000	700	400
Total Cost	2,359	4,522	6,811	8,686	9,272
Budget Faculty Salary		7,834	10,209	10,519	10,729
Expected Underspending		3,312	3,398	1,833	1,457

**Total Expected FT Faculty Salary Underspending 9,999**

<sup>1</sup> Base salary to date uses actual salaries.

<sup>2</sup> Expected Salary Costs increases by less than the Additional Base because most new faculty begin during the fiscal year.

This calculation shows that, if future recruitment is at the time expected and at the rank expected (i.e. 1/4 assistant professors, 1/2 associate professors and 1/4 full professors) then there will be an accumulated saving of about \$10 million over the four years starting with 2006/07 as compared with the budget. If hiring is delayed or the average rank of new hires is reduced, the savings will be increased.

The budget includes a 2% per year inflation adjustment for all compensation costs, intended to reflect increases in salaries and benefits due to wage settlements. Government has committed to fully funding wage increases within mandated settlements. However, that additional funding is generally provided directly to institutions without specific targeting to specific programs or faculties. The earmarked nature of funding for the medical undergraduate education expansion makes it somewhat of an anomaly and it is not clear how general funding increases such as those provided for mandated wage settlements should be recognized in the funding of earmarked initiatives such as this.

It seems that the most appropriate approach would be to:

- Incorporate inflation of wages in the budget only when the actual amount of the increase is known; and
- When general funding increases are provided by AVED for inflation, including wage inflation, the earmarked operating funding for the expansion be increased specifically to ensure that the increased funding flows to the initiative. This applies equally to other inflation funding provided to the university, such as the base funding increase provided in 2006/07 as a result of the Post-Secondary Budget Review Phase I.

Since information is not available at present about the effect of wage settlements on the expansion budget or the amount that the operating grant should increase as a result of funding for wage settlements, the data in this report is being prepared on the basis that the cost of wage settlements should be added to both revenue and expense budgets at a later point. Deduction the 2% annual inflation from the other compensation costs in the budget (i.e. Clinical Faculty Payments, Clinical teaching Fellows and Support Staff costs, would create additional accumulated under-spending by 2009/10 of about \$1.2 million.

### FT Faculty Recruitment

The budget includes provision of \$50,000 per FT faculty FTE for the costs of recruitment and start-up, which is low especially for basic scientists. Basic scientists usually have relatively high start-up costs associated with establishing wet labs. For the 25 FTEs recruited to date, actual start-up and recruitment costs have averaged only \$50,000 each, but that is the result of the use of other funding sources to cover some start-up costs, such as the use of donated funding to establish an animal facility at UNBC to recruit a high profile basic scientist.

FoM initially suggested that start-up and recruitment costs should be funded at \$300,000 to \$400,000 per FTE. However, analysis of recruitment and start-up costs associated with FoM recruitment of basic scientists and academic clinicians over the past year showed somewhat lower costs. Based on that analysis, FoM has projected that future FT faculty recruitment will have the following average recruitment and start-up costs:

#### Average Recruitment and Start-up Costs

	Recruitment		Start-up
	VFMP	IMP & NMP	
Basic Scientists	23,715	31,933	231,333
Academic Clinicians	23,715	31,933	120,613
Instructors	-	-	10,000

The following table shows the results of applying these assumptions to the remaining recruitments:

#### Full-Time Faculty Expected Salary & Benefits

\$ Thousands						
	To Date	06/07	07/08	08/09	09/10	Total
Number of Faculty Recruited	24.5	24.0	28.5	12.0	1.0	90.0
Cost of Recruitment	209.0	615.3	715.7	334.4	23.7	1,898.1
Cost of Start-up	1,080.0	3,171.6	3,548.5	1,502.8	120.6	9,423.5
Total	1,289.0	3,786.9	4,264.2	1,837.1	144.3	11,321.6
Average	52.6	157.8	149.6	153.1	144.3	125.8

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The current budget includes a total of \$5.8 million for recruitment and start-up, indicating that expected expenditure will be about \$5.5 million over budget. Note that this is one-time spending and does not represent recurring costs.

### ***Governance and Coordination***

The level of complexity and ongoing effort required to plan and operate MD undergraduate education across three sites was initially underestimated. Not only does this put high demands on the new sites but also on the existing core program at UBC. The FoM has suggested that funding for several additional administrative and coordination FTEs are required in order to effectively and sustainably manage the program. The result would be to almost double the budget by adding about \$2 million annually for this function.

The following table summarizes the additional budget request:

#### **Governance & Coordination Costs**

**\$ Thousands**

	<b>Budget</b>	<b>Request</b>	<b>Total</b>
Administration Salary	2,392.3	235.3	2,627.5
Education Coordination	793.7	707.1	1,500.8
Non-Salary Costs	-	1,004.0	1,004.0
<b>Total</b>	<b>3,185.9</b>	<b>1,946.4</b>	<b>5,132.3</b>

It is noted that much of the concern was expressed by IMP and NMP. The request includes \$183,000 for non-salary costs and about \$180,000 for administration salary at each site, with the remaining \$1.2 million being for the secretariat and VFMP.

### ***Technology Enabled Learning***

The distributed program relies heavily on technology to provide redundancy, make the program efficient and ensure that students receive the same education at all of the sites. The actual and expected future operating costs for the technology at the three university campuses for years 1 and 2 are not materially different from budgeted costs at about \$2 million per year. There are three outstanding issues.

### **Operational Funding**

The Ministry of Health is funding the capital costs of AV/IT infrastructure in clinical academic space at the CACs. The current budget does not include any amount for the operation and maintenance of the equipment. The following are the estimated costs together with the allocation of those costs suggested by FoM:

**Clinical Academic Space AV/IT Operating Costs**

\$ Thousands	AVED	MoH	Total
AV Maintenance		1,500	1,500
AV Operations	1,227	1,227	2,454
IT - Desktop	850		850
Total	2,077	2,727	4,804

The allocation is based on MoH paying the maintenance cost, consistent with their funding of the capital costs, splitting the operating cost equally because both ministries will benefit and AVED paying 100% of the costs of desktop computers dedicated to MD undergraduate program use. The desktop computers cost includes software licensing and full operation and service of the workstations by the health authority on an "evergreen" basis.

**Equipment Renewal**

The AV/IT equipment will require replacement and renewal relatively quickly in order to stay abreast of rapid technology development in this area. The equipment installed in the universities has been expensed from the expansion funding but there is no provision in the budget for replacement of the equipment. The equipment being installed in CACs by the MoH also does not have a funding source for renewal.

The FoM estimates annual renewal costs of \$2.6 million, comprised of \$1.6 million for university-based equipment and \$1.0 million annually for health authority-based equipment. These amounts result from a detailed analysis of the expected replace time for various pieces of equipment, which varies from 3 to 12 years. The \$2.6 amount provides for level funding of the equipment replacement over time and the funds would be reserved for equipment replacement costs.

FoM proposes that the funding be split according to the location of the equipment, with MoH paying for the cost of replacement of equipment in the health authorities, consistent with their funding of the initial capital costs, and AVED being responsible for the renewal of equipment in the universities.

**Additional Usage**

The undergraduate medical education uses only part of the potential capacity of the AV equipment. The limiting factor for further usage of the equipment at present is the availability of trained technicians. The FoM funds technicians only for the time needed to operate the equipment for the undergraduate program and there is currently no mechanism to provide funding to expand the availability of the equipment. This is expected to be an issue with the hospital-based equipment as well.

It is estimated that the annual cost of making this equipment available for a full 10 to 12 hours on weekdays and 7.5 hours on weekends so that there would significant opportunities for other users to benefit from the technology would be about \$500,000, which would be about \$250,000 for the university-based equipment and \$250,000 for the health authority-based equipment.

It is suggested that AVED provide the necessary funding to provide this capacity on a one-time basis for a two year pilot project. That would provide other potential users with a good opportunity to find opportunities, use the equipment and determine the benefits of that usage. At the end of that period, usage data would be used to establish a fair funding arrangement among the users of the equipment if there is ongoing demand, or to decide to limit the equipment to undergraduate education if there is not sufficient demand.

## Research

### Research Support

The 90 additional full-time faculty FTEs associated with the medical education expansion provides a significant opportunity for additional research associated with the faculty of medicine. In particular, the location of medical researchers in the North and on the Island with a focus on primary medicine, geriatrics and rural and under-served community medicine provides a unique opportunity to undertake research with immediate practical benefits for health care in British Columbia. However, there are challenges associated with this, including bringing the new faculty up to speed, winning research grants and creation of effective research consortia. The FoM is suggesting that in order to reap the full benefit of this additional research potential will

#### Leadership for expanded health research

Associate Dean Research	Vancouver/Fraser	100%	\$	150,000
Associate Dean Research	VIHA	50%	\$	75,000
Associate Dean Research	NHA	50%	\$	75,000
Associate Dean Research	IHA	50%	\$	75,000
Associate Dean Research	PHSA	50%	\$	75,000
1 support staff person for Vancouver/Fraser Associate Dean			\$	55,000
1 support person VIHA & NHA Associate Deans			\$	55,000
1 support person PHSA & IHA Associate Deans			\$	55,000
Travel & Consumables for Associate Deans -----			\$	30,000
Total			\$	<u>645,000</u>

require additional coordination and support. They are proposing the following:

Many health authorities already have vice-president level staff jointly appointed and funded with FoM to coordinate and support research activities. While support for research is needed due to the integrated nature of physician training, research and patient care, health authorities are not convinced that additional FoM associate deans are the type of support required.

### Research Space

Traditionally, teaching hospitals in Vancouver have included both teaching space and research space, recognizing that in effect these facilities are the university campuses for the purpose of clinical medical teaching. MoH has traditionally paid for the capital and building occupancy costs of this space although its allocation and usage has been under the control of the FoM through agreement.



As the clinical teaching component of medical education shifted from almost entirely post-graduate teaching of interns and residents traditionally to now including 3<sup>rd</sup> and 4<sup>th</sup> years of the medical undergraduate program being taught entirely in a clinical setting, the question of roles and responsibilities for research space has not been resolved. When additional space was being planned for CACs, MoH decided that it would provide only teaching space and, although it would continue to support existing research space, it would no longer pay the capital costs of new research space or the building occupancy costs of new research space built with funding from other sources. That has caused issues beyond the medical education expansion initiative, but is also a significant problem for the expansion.

The issue is that a total of 57 additional academic clinicians are being hired to work, teach and undertake research at 8 CACs in 4 cities and there is as yet no planned space within which they can conduct their research. FoM estimates the capital cost of required research space in CACs to be about \$12 million and the building occupancy costs to be about \$0.5 per year, but no facilities planning or design has yet been undertaken to confirm these estimates.

### ***Evaluation and Program Outcome***

Ongoing evaluation of the program against the goals established for the program and against the criteria established by the accreditation bodies are both important to provide for accountability and to allow the program to evolve and improved based on evidence. At present, the budget allows only the evaluation needed to satisfy accreditation requirements and does not permit monitoring against established goals. FoM has a program evaluation unit with an annual budget of \$250,000. The FoM is requesting that funding be provided to increase the budget by \$350,000 to about \$600,000.

### ***Clinical Faculty***

A large part of the teaching for MD undergraduates is provided by clinical faculty, who are physicians in practice that have been appointed as UBC FoM faculty without an expectation of conducting research. Although clinical faculty teach through lectures, problem-based learning sessions and tutorials, their greatest role is in providing teaching with patient care in a clinical setting. Thus the majority of the clinical faculty costs of the expansion will be incurred for 3<sup>rd</sup> and 4<sup>th</sup> year.

FoM has recently adopted a different approach to the compensation of clinical faculty and has received funding from MoH and AVED to cover the costs of clinical faculty compensation increases related to the core medical undergraduate program. At the time that funding was discussed, FoM indicated that the medical education expansion budget would be sufficient to pay clinical faculty based on the new compensation approach.

FoM has now determined that, although the rate used in originally estimating the cost of clinical faculty for the expansion was sufficient, the amount of clinical faculty resources are now expected to be larger than originally thought. The reason was that budgeted clinical faculty usage was based in usage in the core undergraduate program. However, the core program relies on senior residents to conduct about 30% of clinical teaching. In about 6 to 8 years when the expansion of the post-graduate medical education programs is complete, there will be sufficient additional senior residents to again provide a full 30% of clinical teaching, but at present there are not enough senior residents available to contribute to the expanded teaching requirements.

FoM has requested funding to cover an additional clinical faculty expenditure of \$500,000.

### ***Further Distribution***

The current budget and the original implementation plan was based on 8 CACs to provide 3<sup>rd</sup> and 4<sup>th</sup> year clinical teaching:

- Vancouver General Hospital, Vancouver
- St. Paul's Hospital, Vancouver
- Children and Women's Hospital, Vancouver
- Academic Ambulatory Care Centre, Vancouver
- Royal Columbian Hospital, New Westminster
- Victoria General Hospital, Victoria
- Royal Jubilee Hospital, Victoria
- Prince George Regional Hospital, Prince George.

During the past four years MoH, FoM and the health authorities have engaged in capital planning to expand the clinical sites by adding 10 Affiliated Regional Campuses (ARCs) which will be used for both undergraduate and post graduate teaching, expanding the distribution of clinical teaching in the Lower Mainland, Northeast, Northwest, Fraser Valley, Vancouver Island and Okanagan regions. Note that these ARCs will contribute to the distribution of both undergraduate and post-graduate medical education.

Five of the ARCs are currently planned to be completed and operational in July, 2007, with the remainder completed the next year. FoM is requesting operating funding for the undergraduate operating costs of these centres, to be funded one year in advance of completion to allow for the work necessary to have them operational immediately upon completion.

It is noted that these centres need accreditation as a separate academic stream, since the student experience in clinical education will differ from the experience of students at CACs. At CACs there will be a scheduled rotation through several areas of practice. At ARCS, the focus will be on primary care and on the cases available in the facility at any given time.

There are two types of ARCs, depending on the size of the facility – 5 of each are planned, with costs as shown on the following table.

Note that this does not include the clinical faculty costs, which are already covered in the current budget and does not include capital costs, including AV/IT, which are already being covered by MoH.

**ARC Operating and Start-up Costs**

	Projected Budget per Type One ARC:	Projected Budget per Type Two ARC:	
<b>Operating Costs</b>			
Support Staff	\$ 64,000	\$ 32,000	
Clinical Director	\$ 50,000	\$ 25,000	
Curriculum Stipends	\$ 10,000	\$ 5,000	
Faculty travel	\$ 25,000	\$ 12,500	
Professional Fees / Projects	\$ 10,000	\$ 5,000	
Faculty Development	\$ 25,000	\$ 12,500	
Non-salary operating costs including catering	\$ 30,000	\$ 15,000	
Technical support	\$ 25,000	\$ 12,500	
Library support	\$ 10,000	\$ 5,000	
<b>Annual Recurring Operating Costs per ARC</b>	<b>\$ 249,000</b>	<b>\$ 124,500</b>	
Total for 5 TYPE One and 5 Type Two ARC			\$ 1,867,500
<b>One-Time Startup Cost per ARC</b>			
Non-salary operating costs	\$ 30,000	\$ 15,000	
Total for 5 TYPE One and 5 Type Two ARC			\$ 225,000

It is suggested that the annual operating budget be reduced by \$40,000 for each ARC Type One and \$20,000 for each ARC Type Two to recognize that the operating costs in areas such as faculty development, technical and library support will also support post-graduate education and should be paid for as part of that funding. That reduces the annual requested funding by \$300,000.

**Third Year Clerkship Stipends**

Third year clerkship students receive a stipend of \$480 per month to recognize their contribution to patient care. Until 2006/07 clerkship stipends have been paid by the Ministry of Health but the responsibility for funding the stipends has now been transferred to AVED. There is no provision in the expansion budget for the additional stipends that will be paid to 3<sup>rd</sup> year students beginning this Fall when the first expansion students enter 3<sup>rd</sup> year. Since those students will only receive 7 months of stipends in the 2006/07 fiscal year (since they start September 1, 2006 and the year ends March 31, 2007) the required funding ramps up as follows:

	06/07	07/08	08/09	09/10
FTEs	72	96	96	96
Months	7	5+7	12	12
Cost \$480/month	241,920	495,360	552,960	552,960

**Round Two – the “Completing the Doubling”**

Government has announced that it will further expand MD undergraduate education by 32 additional FTEs to complete the doubling of the size of the MD undergraduate program with additional students entering in September, 2007. That would require application for accreditation in September 2006, together with proof of funding from the government, which has been provided.



The FoM has provided a draft budget for the costs of the additional 32 students, which shows average annual operating costs of \$64,5000 per student FTE. Nevertheless, these incremental FTEs are expected to cost slightly less on average because the fixed cost elements of the current program are already designed to accommodate these additional FTEs (i.e. capital, AV/IT, library, etc). The draft budget also assumes that faculty will be hired in 2006/07 to begin teaching in 2007. Given the delays in hiring full-time faculty so far, it is more likely that full-time faculty will be hired during the period 2008 to 2010, once the current round of hiring is complete. That will produce salary-savings in much the same way that the current budget is being under-spent.

One-time start-up costs of \$6 million over 5 years are proposed, comprised primarily of recruitment and start-up costs for full-time faculty. The number of faculty and the rates used to estimate salary and start-up costs are the revised rates discussed above under Faculty Recruitment.

Capital of \$5.8 million for a research building is proposed as part of the expansion. There would be ongoing building occupancy costs of about \$230,000 per year.

FoM proposes distributing the additional FTEs with 8 in the north, 8 on the island and 16 in the Lower Mainland since all three sites are already prepared to accommodate the extra students – any other breakdown would likely impose additional costs. It is noted that 32 students is believed to be the optimal “section” size for teaching undergraduate medical students during 1<sup>st</sup> ad 2<sup>nd</sup> years and the proposed distribution would result in 1 section of 32 at UNBC, 1 section at UVic and 6 sections in total at UBC.

The expansion budget produced by the FoM is not analyzed in detail here for two reasons. The first is that budget is not realistic in the way that it treats all costs as variable to be increased proportionally for the additional students and the assumptions it makes about when faculty salary costs will begin to be incurred. What is ultimately required is an integrated operating budget for the full medical undergraduate education program (i.e. the combined core, round one expansion and round two completing the doubling) and that will not be possible until there is experience operating all four years of the expanded program.

The second reason is that there are clearly cost pressures facing the FoM expansion that need to be addressed in the long run. The FoM has taken the reasonable position that accreditation for the Round Two expansion will be difficult if it is funded at a lower rate than the Round One expansion of \$64,500 per FTE in operating costs. It is expected that funding Round Two at the same rate as Round One will ease some of the identified pressures such as governance and coordination, reducing any adjustment that will be required in future years.

### ***Roles & Responsibilities***

There are a large number of parties involved with physician training that overlapping and sometimes conflicting interests, roles and responsibilities. In many cases those roles and responsibilities are not clearly delineated. There is no forum for discussion, raising and resolving issues and conflicts. In addition, there are expectations and other aspects of the medical undergraduate education expansion that are not clearly understood by all parties or clearly documented.

The interested parties include the two government ministries, FOM, UBC, UNBC, UVic and the health authorities.

Examples of issues raised that relate to the relationships among the various parties include:

- Funding for research space in health facilities for additional full-time faculty related to the expansion;
- Lack of research affiliation agreements among the universities;
- Apparent differences in understanding about the degree of protection to be afforded to earmarked funding for the expansion once it has been allocated to the universities; and
- Funding for the operational costs of health authorities resulting from the teaching of health professionals in health facilities.

### University Funding

There are two issues related to university funding.

The first is that universities receive \$4,000 per FTE annually to cover the support costs imposed by the students on the university, including administrative, student and facility support. That amount is consistent with the proportion of average FTE funding devoted to support costs (about 50%) but is considerably below the average support cost funding that UBC receives in respect of the core undergraduate medical education program (about \$24,500 based on 25% of average FoM grant funding of \$94,000). The universities have all noted that MD undergraduate students impose higher average costs on the institutions due to special purpose buildings and additional library costs.

On the other hand, the universities receive the FTE funding for all four years despite the fact that the students do not use university facilities in 3<sup>rd</sup> and 4<sup>th</sup> years, effectively outlining the per FTE support funding. In addition, the universities knew the level of support funding that they would receive when they agreed to the Round One expansion.

The second issue relates to the funding provided directly to UVic and UNBC as part of the funding for the expansion. Both universities wanted, from the start, the funding for costs incurred at the two distributed sites to be provided directly to the universities. That was not initially done because it was then (and still is) unclear what the annual funding of the IMP and NMP will ultimately be. However, in 2004 it was decided to provide each university with \$1 million funding, which they are obligated to contribute to the IMP and NMP respectively. Both universities would like the amount increased to more fully reflect their roles as full partners in the expansion.

It is difficult to see how flowing more funds to the two universities on the condition that they must contribute them to funding the expansion would increase the influence of the universities on the process. On the other hand, so long as the amount of the contribution is less than the costs of the IMP and NMP, it is difficult to see how providing the funding directly to the universities on appropriate conditions creates any risk for the program.

This does raise another issue related to the allocation of budgets for the program. IMP and NMP are each allocated specific amounts within the budget and those amounts are transferred to the universities (net of the amounts paid directly to UVic and UNBC). The budget is allocated based on the principle of recurring operating funding per FTE are the same for all three programs, ensuring fairness. The issue is that the IMP and NMP are both relatively small

operations that therefore have relatively little flexibility to manage within the annual budget they receive. For 2005/06, IMP and NMP both had budgets for recurring costs of about \$1.6 million and VFMP had a recurring cost budget of about \$3.1 million. However, the VFMP budget was then integrated within and managed as part of the overall FoM budget from the UBC general operating fund of over \$50 million, giving it considerably more flexibility.

There are good reasons for managing the budget as at present to maintain transparency and equity across the three programs. This issue has not been raised to suggest that the general approach should be changed. However, there may be mechanisms that could be considered to overcome the relative disadvantage faced by the IMP and NMP of having to manage in the context of a relatively small, fixed budget.



## Summary of Requested Funding

The following table summarizes the additional requested budget associated with the issues raised by the FoM in the course of this review. It shows that in 2009/10 ongoing funding for the expansion would increase by about \$13 million, which is about \$34,000 per student FTE. In addition, capital and one-time costs of about \$17 million are being requested.

### Additional Requested Budget

(in thousands of dollars)

	06/07	07/08	08/09	09/10
<b>Operating Budget</b>				
<i>Governance &amp; Coordination</i>				
Total Requested Budget	4,339	4,339	4,339	4,339
Less Current G&C Budget	(2,557)	(2,271)	(2,311)	(2,350)
Additional Request	1,782	2,068	2,028	1,989
<i>Technology Enabled Learning</i>				
Year 1 & 2 Operating	1,982	1,982	1,982	1,982
Year 3 & 4 Operating	4,021	4,021	4,021	4,021
Equipment Renewal	2,697	2,697	2,697	2,697
Less Current TEL Budget	(1,933)	(1,933)	(1,933)	(1,933)
Additional Request	6,767	6,767	6,767	6,767
<i>Research Support</i>				
Total Requested Budget	1,115	1,115	1,115	1,115
<i>Evaluation &amp; Program Outcome</i>				
Total Requested Budget	511	586	588	588
Less Current E&PO Budget	(250)	(250)	(250)	(250)
Additional Request	261	336	338	338
<i>Clinical Faculty</i>				
Total Year 1 & 2	815	815	815	815
Total Year 3 & 4	2,471	3,643	3,643	3,643
Total Expected Clinical Faculty	3,286	4,457	4,457	4,457
Less Current CF Budget	(2,332)	(3,598)	(3,889)	(3,967)
Additional Request	954	859	568	490
<i>Affiliated Regional Centres</i>				
Total Requested Program Budget	996	1,868	1,868	1,868
<i>3rd year Clerkship Stipends (\$480/mth)</i>				
Total Requested Budget	242	495	553	553
<b>Total Requested Additional Budget</b>	<b>12,117</b>	<b>13,508</b>	<b>13,237</b>	<b>13,120</b>
<b>Add'l Operating Funding Per FTE</b>				<b>34.2</b>
<b>Capital &amp; One-time</b>				
Total Expected Faculty Start-up				11,322
Less Current Start-up Budget				(5,756)
Additional Faculty Start-up				5,566
AV/IT Utilization Pilot (\$500K x 2 yrs)				1,000
ARC Start-up				225
Hospital Research Space				11,750
<b>Total</b>				<b>18,541</b>

## Recommendations

The following is a proposed strategy to deal with the fact that the FoM has raised legitimate questions about the sustainability of the program based on the current funding level of \$64,500 per FTE but that there is not yet sufficient experience with operating the program and the start-up phase is not yet complete, so it is not possible as yet to definitively establish the ongoing operating costs for the expansion. Essentially, the proposed approach is to:

- seek funding now for those elements of the program which are clearly additional requirements,
- make a decision now about "completing the doubling" based on the current average operating funding (\$64,500 per FTE), and
- review the funding of the program again in 2008/09 once results are available (i.e. once start-up and recruitment is complete and the entire program has been delivered for at least two years and all of the clinical centres are operational). Use additional revenue and accumulated unspent funds to operate the program on a sustainable basis in the meantime. This implies that expenditure will most likely exceed annual revenue for one or more years during this period, but the revised budget should not indicate that there is a planned accumulated deficit at any point..

In particular, the following are the proposed recommendations:

- Additional annual operating funding should be provided now for operation of AV/IT technology in hospitals (\$4 million, ministry split to be determined) and technology renewal (\$2.7 million, ministry split to be determined). 2 year funding for full utilization of AV/IT technology should be given as one-time funding (\$500,000 for each of 2 years);
- Additional program operating funding for ARCs and building occupancy costs for research space in CACs should be added as and if the facilities become operational over the next three years;
- Capital funding should be committed now to build required research space in CACs and capital planning should be undertaken;
- Other identified costs (i.e. governance and coordination, start-up, research coordination, program evaluation and clinical faculty) should be incurred to the extent necessary to operate the program, to be funded from accumulated surplus and unspent salary until recruitment is complete. Analysis indicates that the current surplus plus additional expected full-time faculty salary underspending will exceed the funding required to fully fund all of the identified additional costs by about \$4 million. The recommended additional funding in 2006/07 has therefore been reduced by that amount;
- It is recommended that government commit now to funding future severance or similar liability that may arise from the use of accumulated surplus to fund recurring costs if future funding for those costs is not forthcoming within a reasonable limit. Annual budgets will likely be in deficit for some years during the period as the accumulated surplus is used, and recurring salary costs will be incurred that may not be sustainable without a further future funding adjustment;
- In late August, 2006, AVED made a commitment to the FoM to fund the final tranche of 32 students (completing the doubling), at the same rate as the initial group (i.e. \$64,500 per FTE plus start-up funding to be determined based on an approved budget (see next

bullet), paid over 5 years). The first of these students will enter the program in September, 2007. The request for \$5.8 million for a research building should be dealt with as part of the regular capital process. The 32 FTEs should be distributed with 8 to the north, 8 to Vancouver Island and 16 to the Lower Mainland. While the actual costs per FTE for the incremental FTEs will be less than the average costs for the initial group, it is unlikely that average costs for the entire group will be less than \$64,500 given the issues identified by the FoM;

- It is recommended that some changes be implemented to the approach taken to budgeting for the expansion. First, actual results should be prepared quarterly and compared to budget on an ongoing basis. Second, the budget should be reviewed at least annually and adjusted to take account of actual results and changes in circumstances. Third, an annual report should be provided to IUPC (or a successor committee, so long as both ministries are represented on the committee) summarizing the actual financial results in comparison to the budget and explaining material variances. Fourth, the budget should be adjusted for Round 1 of the expansion as soon as possible to operate the program on a sustainable basis in accordance with the recommendations of this report, which include operating at a deficit to the extent necessary in the coming four years provided that an accumulated deficit is not incurred at any point. The budget should exclude the assumed wage and salary inflation component. This will require that current underspending at the three sites be reallocated and spent in accordance with the revised budget. Fifth, develop and gain approval from DPPC of a budget for the Round 2 expansion (completing the doubling) that minimizes required start-up funding through timing of full-time faculty recruitment, to be used as the basis for AVED start-up funding.
- A further funding review should be held once reasonable estimates of actual results for the 2008/09 fiscal year are available to establish a sustainable level of operating funding for the MD undergraduate education expansion, including the "completing the doubling" if implemented. Since the final 32 students added to complete the doubling will be accommodated at the existing sites, there will be enough information about those costs after 2008/09 to complete the review, even though the final 32 students will not complete 4<sup>th</sup> year until 2011. In the meantime, budgeting should be based on use of the available funds, including the accumulated surplus, to sustainably manage the program.
- The expansion budget currently includes a 2% inflation factor applied to salary and benefits. Government has committed to fully funding mandated wage increases arising from recent negotiations. The budget should be recast to include actual wage increases resulting from mandated settlements and government should ensure that wage funding increases flow through to the FoM MD undergraduate expansion funding, which should match revenue and expense for wage inflation.
- It is recommended that a forum of the leaders of AVED, MoH, UBC, UNBC, UVic, FoM and health authorities be institutionalized. The purpose of the forum would be to raise, discuss and resolve matters of common interests.
- It is recommended that a comprehensive memorandum of understanding among the parties be drafted now to clarify the mutual expectations of the parties about the undergraduate medical education expansion. Despite the fact that this might have been more usefully and easily accomplished when this project was initiated, it is suggested it be done now. In fact, consideration could be given to a broader memorandum of understanding that also covers other elements of the relationships among the ministries, UBC, FoM and health authorities, including establishing the forum recommended above.



- It is not recommended that the \$4,000 per FTE amount for university support costs be increased or that the \$1 million contributions to UVic and UNBC be increased at this time.

The following table summarizes the recommended funding. Note that it includes an reduction in the amount recommended to be provided in 2006/07 of \$4.0 million (Excess Accumulated Underspending). This amount has been deducted to reflect additional information provided since the draft report was circulated which indicates that faculty salary underspending will likely be higher than earlier believed. This amount was arbitrarily chosen to arrive at a modest expected cumulative surplus at the end of 2009/10 fiscal year.

### Additional Recommended Funding

(in thousands of dollars)

	06/07	07/08	08/09	09/10	10/11	11/12
<b>Operating Funding</b>						
<i>Technology Enabled Learning</i>						
Additional Request	6,767	6,767	6,767	6,767		
Recommended Funding	6,767	6,767	6,767	6,767		
<i>Research Space in Health Authorities BOC</i>						
Total Requested Budget	-	-	-	470		
Recommended Funding	-	-	-	470		
<i>Affiliated Regional Centres</i>						
Total Requested Program Budget	996	1,868	1,868	1,868		
Recommended Funding	836	1,568	1,568	1,568		
<i>3rd year Clerkship Stipends (\$480/mth)</i>						
Total Requested Budget	242	495	553	553		
Recommended Funding	242	495	553	553		
<b>Less: Excess Accumulated Underspending</b>	(4,000)					
<b>Total Recommended Additional Operating Funding</b>	<b>3,845</b>	<b>8,830</b>	<b>8,887</b>	<b>9,357</b>		
<b>Original Operating Funding (\$64.5k/FTE)</b>	<b>17,028</b>	<b>23,220</b>	<b>24,768</b>	<b>24,768</b>		
<b>Total Recommended Operating Funding</b>	<b>20,873</b>	<b>32,050</b>	<b>33,655</b>	<b>34,125</b>		
<b>Operating Funding Per FTE</b>	<b>79.1</b>	<b>89.0</b>	<b>87.6</b>	<b>88.9</b>		
<b>Capital &amp; One-Time Funding</b>						
Enhanced Utilization of AV/IT Infrastructure	500	500	-	-		
ARC Start-up Costs	120	105	-	-		
Hospital Research Space	-	-	11,750	-		
<b>Total Additional Capital &amp; One-Time Funding</b>	<b>620</b>	<b>605</b>	<b>11,750</b>	<b>-</b>		
<b>Completing the Doubling</b>						
Recommended per FTE Operating Funding	-	64.5	64.5	64.5	64.5	64.5
Additional FTEs	-	32	64	96	128	128
Total Additional Operating Funding	-	2,064	4,128	6,192	8,256	8,256
Start-up Funding (Maximum, subject to budget)	66	1,055	1,532	1,702	1,470	229
<b>Total "Completing the Doubling" Funding</b>	<b>66</b>	<b>3,119</b>	<b>5,660</b>	<b>7,894</b>	<b>9,726</b>	<b>8,485</b>
<b>TOTAL RECOMMENDED ADDITIONAL FUNDING</b>	<b>4,531</b>	<b>12,553</b>	<b>26,298</b>	<b>17,252</b>	<b>9,726</b>	<b>8,485</b>

The following table compares the requested funding with the funding that is available now, is expected to be provided by underspending due to recruiting delays and would be provided through the recommendations for the period 2006/07 to 2009/10. The table indicates that there would be an accumulated surplus of \$0.9 million at the end of the period.

### Comparison of Requested and Available Funding

Period 2006/07 to 2009/10		\$ 000
<b>Additional Requested Funding</b>		70,522
<b>Less: Available Funding</b>		
Recommended Funding	43,894	
Accumulated Surplus	15,809	
Expected Faculty Salary Underspending	10,000	
Removal of Salary Inflation	<u>1,232</u>	
		70,936
<b>Net Funds Required (Available)</b>		<u><b>(414)</b></u>

The following table summarizes the expected results in 2008/09, showing a predicted deficit of \$1.4 million that year. Comparison of actual results with this prediction will inform the recommended review to be undertaken when results for 2008/09 are available. Note this deficit would be possible because of the accumulated surplus currently available to the FoM.

### Expected Annual Results

2008/09		\$ 000
Total Budget Revenue		29,069
Plus: Additional Recommended Operating Revenue	<u>8,887</u>	
Total Revenue		37,956
Total Expense Budget		28,476
Less: Faculty Salary Underspending	(1,810)	
Inflation removed	(550)	
Plus: Additional Requested Costs	<u>13,237</u>	
Total Expense		39,353
<b>Expected Surplus (Deficit)</b>		<u><b>(1,396)</b></u>

## Appendix I – Glossary

ARC	Affiliated Regional Centre, a regional primary care hospital at which clinical teaching takes place
AV/IT	Audio Visual/Information Technology
AVED	Ministry of Advanced Education
CAC	Clinical Academic Campus, a secondary or tertiary care facility at which clinical teaching and research take place, formerly known as a teaching hospital.
CACMS	Committee on Accreditation of Canadian Medical Schools, Canadian medical school accreditation agency
DPPC	Distributed Program Planning Committee – FoM and the 3 university bursars
FoM	UBC Faculty of Medicine
FTE	Full Time Equivalent, a concept to allow for consistent comparison of student, faculty and staff numbers across programs where there may be different mixes of full and part time students/faculty/staff. Undergraduate medical students are all full-time.
IMP	Island Medical Program, the distribution of MD undergraduate education on Vancouver Island, based at UVic
IUPC	Inter-University Planning Council – FOM, 3 university presidents, TUPC, AVED, MoH
LCME	Liaison Committee on Medical Education, US medical school accreditation agency
MD	Medical Doctor
MoH	Ministry of Health
NMP	Northern Medical Program, the distribution of MD undergraduate education in northern BC, based at UNBC
TEL	Technology Enabled Learning, use of AV/IT to provide integrated educational programs across distributed sites
TUPC	The University Presidents' Council
UBC	University of British Columbia
UNBC	University of Northern British Columbia
UVic	University of Victoria
VFMP	Vancouver Fraser Medical Program, the core and expanded MD undergraduate education program in Vancouver and the distribution of the program in the Fraser Valley, based at UBC



## Appendix II – Terms of Reference

### Background

In March 2002, the provincial government announced an expansion of undergraduate medical education. The medical school expansion ensures that medical students are being trained in a wider variety of communities and clinical settings than ever before. The first round of expansion was described as “almost doubling” the number of medical school spaces, from 128 first year student spaces in 2003/04 to 224 in 2005/06. More specifically, the new model for distributed medical education provided for a first year intake as follows:

Vancouver-Fraser Medical Program	176
Island Medical Program	24
Northern Medical Program	24

A second round of expansion of 32 spaces was also contemplated during the planning of the initiative in 2002, and notionally allocated among the three sites. The second round would result in an intake of 256 to complete the doubling of the total number of seats.

The Life Sciences Centre at the University of British Columbia (UBC), the Dr. Donald Rix Northern Health Sciences Centre at the University of Northern British Columbia (UNBC) and the Medical Sciences Building at the University of Victoria (UVic), were constructed on the basis of these allocations including the anticipated completion of the doubling of the class.

Important to note is that the medical undergraduate educational program within the Faculty of Medicine at UBC, and specifically, the expanded and distributed undergraduate program, is undergoing an extensive accreditation review by the accrediting body for Canadian and American medical schools (LCME / CACMS). Continued examination of the program is therefore a key factor during the first years of the program delivery to ensure quality education and sustainability.

In February 2002, the Ministry of Advanced Education (AVED) committed to undertake a comprehensive funding review of the medical expansion in 2007 and to consider “completing the doubling” of the class to 256 if the review supported it.<sup>3</sup>

In April 2005, during the provincial election campaign, the Liberals announced that they would expand and further distribute medical undergraduate education to UBC-Okanagan (UBCO), with “over 30 first-year spaces” by 2009. (Note: Due to program design, the minimum number of first-year spaces would actually be 32.) There was also a follow-up announcement that the second round of expansion would be implemented at the three existing sites. Detailed costing of both of the second round of expansion and the UBCO expansion has yet to be developed and funding approval must still be sought for both.

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<sup>3</sup> Note: Ministry of Health (MoH) is responsible for the post graduate medical education program (residents) and has already committed to increasing the number of first year graduate spaces to 256. This further graduate or “resident” training is required of medical graduates in order for them to be licensed to practice as doctors.

From September to November 2005, AVED undertook the Phase 1 Review, which focused on reviewing the issue of financial recognition of clinical faculty who teach undergraduate medical students in a patient care setting. The Phase 1 review was prompted by UBC Faculty of Medicine's (FoM) identification of funding challenges it faced with respect to clinical teaching resources for the Core Program. The final Phase 1 report defined the issue, described UBC's proposal to recognize clinical faculty, explained how UBC's proposal addressed the issue of recognition, and assessed the costs and implications of the proposal and made recommendations.

## **Phase 2 Review Scope**

As noted above, in keeping with earlier commitments, AVED is undertaking a funding review of the undergraduate medical school expansion.

The purpose of the review is to determine a sustainable funding basis for the expansion to 224 (round one) first-year spaces and then to 256 first-year spaces (round two). This includes: assessing the experience gained from implementing years 1 and 2 of the expansion, and planning for years 3 and 4 of the first round of expansion to better understand the level of funding required to operate sustainably, the expanded program through all four years at a level of 224 first year entry students; and, assessing the level of funding required to expand the medical school to 256 first-year students.

The Phase 2 review is not a review of the base funding for the core program (i.e. the original 128 first year intake), except to the extent that the expansion has or is expected to affect the costs of the overall program. (e.g. The incremental complexity of the current model for the FoM). The scope of the Phase 2 review also includes the need for the expanded program to provide an appropriate research-intensive environment.

The Phase 2 review will not include an assessment of the April 2005 UBCO announcement. Options related to UBCO will be assessed via a process separate from the Phase 2 review and will involve key UBC/UBCO Executive, the UBC Faculty of Medicine (FoM), MoH, AVED, The University Presidents' Council of British Columbia and others as necessary. While the UBCO analysis will be a separate review, there are clear linkages between it and the Phase 2 Medical Review (i.e., information from the Phase 2 Review can be used to help inform discussions about UBCO). The Phase 2 review will not consider implications of the non-UBCO expansion for the UBCO expansion or vice-versa. These issues will be addressed only in the UBCO review.

## **Matters to be Addressed in the Phase 2 Review**

The specific matters to be included in the review have been divided between those associated with the first round of the medical education expansion (96 additional first year seats introduced in 2004/05) and the second round of the expansion (32 additional first year seats).

### **Review of the First Round of Expansion**

- Identify and assess key funding issues / opportunities related to the first two years of delivery of the expansion to the undergraduate medical program and summarize the key lessons learned to date. For example, based on what we learned during the past two years, can we expect funding to be appropriate for 3rd and 4th years or do we need to adjust the level of funding?
- Identify any issues already known related to 3rd and 4th years.
- Assess:
  - Current expansion to determine if present funding level is appropriate with reference to start-up, capital and operating costs, including the specific items included in Appendix A.
  - Funding allocations to UBC, UNBC and UVIC to determine if they are being funded on an appropriate and sustainable basis.
  - Policy implications in relation to the impact on postgraduate spaces, the impact of the accreditation review and approval process and overall regional impacts.
  - Anticipated cost pressures and cost savings for years 3 and 4.
- Provide recommendations for funding of each of the four years of the program based on the assessment and other recommendations directed to a sustainable, high quality undergraduate medical education program.

#### **Review of the Second Round of Expansion**

- Outline options for expansion of the undergraduate medical program to 256 first year seats.
- For each of the options identified, undertake a detailed assessment of the overall start-up and operating costs<sup>4</sup> including the specific items included in Appendix A.
- For each option, also determine:
  - what the base for ongoing funding would be once the expansion is rolled out; and,
  - what reasonable funding allocations should be provided to UNBC and UVIC to ensure they are being funded on a sustainable basis.
  - Assess policy implications for postgraduate medical education, accreditation, and regional impacts if alternative structural approaches are to be implemented.
- Based on the options analysis, recommend an approach and next steps (with reasonable time-lines) for expansion of the undergraduate medical program and make other recommendations, if needed, to ensure the second round of expansion is sustainable.

#### **Deliverables**

- Report Due April 14, 2006 - Consultant will undertake consultations with interested parties to identify initially, issues and opportunities related to both rounds of the expansions and prepare a brief report on what has been heard to be distributed to and discussed with the

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<sup>4</sup> Note: Capital costs for additional facilities are not anticipated.



Advisory Committee on a confidential basis (note: Advisory Committee meeting to discuss report will have to take place no later than April 21, 2006);

- Draft Report Due June 2, 2006 - Consultant will prepare a draft report addressing all of the "Matters to be Addressed in the Phase 2 Review" except not including recommendations, to be distributed to and discussed with the Advisory Committee (note: Advisory Committee meeting should take place no later than June 9, 2006; and
- Final Report Due June 30, 2006 – Consultant will prepare a final report based on the draft report, including recommendations, to be provided to the AVED.

All materials developed will be provided to AVED in both paper and electronic (MS Word 2000 compatible) formats.

### **Advisory Committee Membership**

The Committee will provide direction to the consultant and advise AVED's Deputy Minister.

Advisory Committee members include:

Paul Goyan, A/Assistant Deputy Minister, Post Secondary Education Division, AVED  
 Lorne Whitehead, Vice President Academic and Provost, UBC  
 Howard Brunt, Vice President Academic and Provost, UNBC  
 Jamie Cassels, Vice President Academic and Provost, UVIC  
 Gavin Stuart, Dean, FoM, UBC  
 Joanna Bates, Senior Associate Dean, Education, FoM  
 Angela Towle, Associate Dean, Curriculum, FoM  
 Oscar Casiro, Associate Dean, Island Medical Program, FoM  
 David Snadden, Associate Dean, Northern Medical Program, FoM  
 Don Avison, President, The University Presidents' Council of British Columbia  
 Libby Posgate, Director, Physician Human Resource Management, MoH  
 Juanita Berkhout, A/Manager, Universities, AVED  
 Alison Buchan, Senior Associate Dean, Research, FOM

### **Appendix A – Specific Cost Items to be Considered**

In considering the costs of both the Round 1 and Round 2 expansion, the following cost items are to be considered:

- direct non-clinical costs;
- direct clinical costs including those associated with smaller centres and communities ;
- indirect teaching costs (i.e., recruitment of undergraduate faculty to the three sites)
- costs of engagement/coordination with key stakeholders (e.g., Health Authorities, clinical faculty) and amongst the three institutions;
- costs related to governance (given that this is a distributed learning model);
- Costs related to providing and maintaining infrastructure and other support for faculty and their associated research activities.

- infrastructure costs (e.g., information technology);
- costs that are not traditionally covered by AVED but may possibly be funded through other sources, including the Ministry of Health; and,
- other costs as identified.

## Appendix III – Comparison of Budget and Actuals

### Summary Budget and Actual Revenue and Expense

(in thousands of dollars)

	02/03	02/03	03/04	03/04	04/05	04/05	05/06	05/06	06/07	07/08	08/09	09/10	Total
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Budget	Budget	Budget	Budget
<b>Revenue</b>													
Onetime and Start-up	5,044	5,044	9,960	10,961	5,445	5,447	8,347	8,347	2,347	337	-	-	31,480
Per FTE Operating					4,644	4,644	10,836	10,836	17,028	23,220	24,768	24,768	105,264
Tuition (@80%)					806	806	1,882	1,882	2,957	4,032	4,301	4,301	18,279
<b>TOTAL REVENUE</b>	<b>5,044</b>	<b>5,044</b>	<b>9,960</b>	<b>10,961</b>	<b>10,895</b>	<b>10,897</b>	<b>21,065</b>	<b>21,065</b>	<b>22,332</b>	<b>27,589</b>	<b>29,069</b>	<b>29,069</b>	<b>155,023</b>
<b>Expenses</b>													
<b>Faculty, Clinical Faculty and Support Staff</b>													
Faculty Recruitment Costs	188		396		590	42	707	90	332	9			2,222
Faculty Start-up Allowances			664		665	415	1,175	138	1,005	25			3,534
<b>Sub-total Faculty Startup</b>	<b>188</b>	<b>N/A</b>	<b>1,060</b>	<b>N/A</b>	<b>1,255</b>	<b>457</b>	<b>1,882</b>	<b>228</b>	<b>1,337</b>	<b>34</b>	<b>-</b>	<b>-</b>	<b>5,756</b>
Faculty Salary and Benefits			808		2,638	984	4,819	2,289	7,834	10,209	10,519	10,729	47,556
Clinical Faculty Payments					204	72	541	423	2,332	3,598	3,889	3,967	14,531
Clinical Teaching Fellows									240	245	312	318	1,115
Support Staff			122		1,210	432	1,600	1,574	2,209	2,405	2,456	2,505	12,507
<b>Sub-total Workforce Costs</b>	<b>-</b>	<b>N/A</b>	<b>930</b>	<b>N/A</b>	<b>4,052</b>	<b>1,488</b>	<b>6,960</b>	<b>4,286</b>	<b>12,615</b>	<b>16,457</b>	<b>17,176</b>	<b>17,519</b>	<b>75,709</b>
<b>Non-Salary Costs</b>													
University Overhead					288	288	672	672	1,056	1,440	1,536	1,536	6,528
Non-salary Operating Costs					105	118	134	274	230	321	323	323	1,436
Teaching Equipment	262				624	279		193				45	931
Student Evaluations					194	122	322	277	368	378	389	393	2,044
Admissions	90		624		517	440	517	518	517	517	517	517	3,816
Student Support & Travel			214		407	202	763	316	971	1,226	1,298	1,310	6,189
Governance & Coordination	2,157		2,990		2,447	2,699	2,517	3,056	2,557	2,271	2,311	2,350	19,600
Research Support			109		166	-		-					275
Technology Enabled Learning	978		630		3,795	2,676	1,933	1,976	1,933	1,933	1,933	1,933	15,068
Library Costs	100		107		486	407	500	614	500	500	500	500	3,193
Evaluations and Program Outcomes			97		250	251	250	214	250	250	250	250	1,597
<b>Sub-total Non-Salary</b>	<b>3,587</b>	<b>N/A</b>	<b>4,771</b>	<b>N/A</b>	<b>9,279</b>	<b>7,482</b>	<b>7,608</b>	<b>8,110</b>	<b>8,382</b>	<b>8,836</b>	<b>9,057</b>	<b>9,157</b>	<b>60,677</b>
<b>Curriculum and Faculty Development</b>													
Curriculum Development & Pilots	185		162		311	191	147	178	313	40	540	540	2,238
Curriculum Management Stipends	132		810		1,219	876	1,284	1,049	1,219	1,152	1,160	1,169	8,145
Faculty Orientation & Development	-		141		126	37	425	118	382	294	543	632	2,543
<b>Sub-total Curr. &amp; Fac. Development</b>	<b>317</b>	<b>N/A</b>	<b>1,113</b>	<b>N/A</b>	<b>1,656</b>	<b>1,104</b>	<b>1,856</b>	<b>1,345</b>	<b>1,914</b>	<b>1,486</b>	<b>2,243</b>	<b>2,341</b>	<b>12,926</b>
<b>TOTAL EXPENSES</b>	<b>4,092</b>	<b>2,282</b>	<b>7,874</b>	<b>5,376</b>	<b>16,242</b>	<b>10,531</b>	<b>18,306</b>	<b>13,969</b>	<b>24,248</b>	<b>26,813</b>	<b>28,476</b>	<b>29,017</b>	<b>155,068</b>
<b>NET REVENUE</b>	<b>952</b>	<b>2,762</b>	<b>2,086</b>	<b>5,585</b>	<b>(5,347)</b>	<b>366</b>	<b>2,759</b>	<b>7,096</b>	<b>(1,916)</b>	<b>776</b>	<b>593</b>	<b>52</b>	<b>(45)</b>
<b>CUMMULATIVE NET REVENUE</b>	<b>952</b>	<b>2,762</b>	<b>3,038</b>	<b>8,347</b>	<b>(2,309)</b>	<b>8,713</b>	<b>450</b>	<b>15,809</b>	<b>(1,466)</b>	<b>(690)</b>	<b>(97)</b>	<b>(45)</b>	