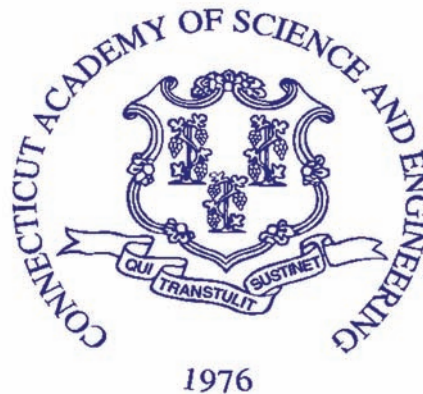


A NEEDS-BASED ANALYSIS OF THE UNIVERSITY OF CONNECTICUT HEALTH CENTER FACILITIES PLAN

MARCH 2008

A REPORT BY

THE CONNECTICUT
ACADEMY OF SCIENCE
AND ENGINEERING



FOR

THE CONNECTICUT GENERAL ASSEMBLY
APPROPRIATIONS COMMITTEE
COMMERCE COMMITTEE
FINANCE, REVENUE AND BONDING COMMITTEE
HIGHER EDUCATION AND
EMPLOYMENT ADVANCEMENT COMMITTEE
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ORIGIN OF INQUIRY:

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ADVANCEMENT COMMITTEE

PUBLIC HEALTH COMMITTEE

DATE INQUIRY

ESTABLISHED:

AUGUST 17, 2008

DATE RESPONSE

RELEASED:

MARCH 18, 2008

This study was initiated at the request of the Connecticut General Assembly on August 17, 2007. The project was conducted by an Academy Study Committee with the support of Project Consultant, Tripp Umbach. The content of this report lies within the province of the Academy's Economic Development, Health Care and Medical Technologies, Human Resources and Public Health Technical Boards. The report has been reviewed by Academy Member Paul D. Cleary, PhD, Dean, Yale University School of Public Health and Jordan J. Cohen, M.D., President Emeritus, Association of American Medical Colleges, and Professor of Medicine and Public Health, George Washington University. Martha Sherman, the Academy's Managing Editor, edited the report. The report is hereby released with the approval of the Academy Council.

Richard H. Strauss
Executive Director

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A NEEDS-BASED ANALYSIS OF
THE UNIVERSITY OF CONNECTICUT HEALTH CENTER FACILITIES PLAN

EXECUTIVE SUMMARY

INTRODUCTION

In January 2007 the University of Connecticut Health Center (UCHC) Board of Directors and the University of Connecticut (UConn) Board of Trustees voted to authorize construction of a new 352-bed hospital to replace and expand the UCHC John Dempsey Hospital (JDH).

The replacement hospital proposal was included in the Connecticut General Assembly's Raised Bill No. 1316 and was referred for consideration to the Committee on Higher Education and Employment Advancement, which held a public hearing on March 8, 2007, that featured numerous speakers both in support of and in opposition to project. Following the hearing, legislation was adopted naming the Connecticut Academy of Science and Engineering (CASE) to conduct a Needs-Based Analysis of the UCHC Facilities Plan on behalf of the General Assembly. The study was conducted in consultation with the Office of Health Care Access. The legislation required that CASE issue a final report of its analysis to the Committees on Appropriations; Commerce; Finance, Revenue and Bonding; Higher Education and Employment Advancement; and Public Health no later than June 30, 2008.

The opinions voiced at the March 8, 2007, public hearing were a continuation of a debate that began more than 50 years ago about the best location for the UConn medical school and the optimal relationship between a medical school located in the Hartford area and the area's community hospitals. The need to develop a suitable clinical base for the medical school was recognized early on as an issue that would require significant ongoing attention, and continues to be a key factor in UCHC's desire to build an expanded clinical care facility as a replacement for JDH. At the same time, hospitals in the Greater Hartford region remain keenly concerned that an expanded JDH replacement would adversely affect their financial health and consequently their ability to deliver quality health care. All parties agree on the paramount need for UCHC to achieve excellence in the schools of medicine and dental medicine.

CASE convened a Study Committee that was responsible for overseeing the study and the work effort of the project study consultant, Tripp Umbach. Details of the scope of work mandated by the legislation requiring the study and additional areas of analysis identified by the Study Committee are included in the Introduction section of this report.

The Study Committee developed the study's suggestions and findings based on meetings, briefings and discussions, and analyses conducted throughout the study process. The Study Committee actively sought and received input from UCHC, the regional hospitals potentially affected by UConn's replacement hospital proposal, individuals with knowledge of the history of UCHC's founding and its relationship to the regional hospitals, as well as from UConn's 4th year medical school students.

The analyses included in Tripp Umbach's report (Appendix A) provide an important foundation and context for the development of the Study Committee's suggestions and findings. The following represents an overview of Tripp Umbach's analyses.

TRIPP UMBACH: RESEARCH FINDINGS (APPENDIX A)

American Association of Medical Colleges (AAMC) Benchmarking Data US Medical School Hospital Benchmarking Analysis See Page 30 (Appendix A – Tripp Umbach Report)

Among schools that own their hospitals, there is a strong relationship between bed capacity and research productivity as measured by external funding received from the National Institutes of Health (NIH). None of the hospitals of the top ten medical schools has less than 450 beds and only two of the second ten have under 400 beds. The top three schools (University of Washington (UW), University of California, San Francisco (UCSF), and UCLA) list two primary hospitals but many of the others also control non-owned public (county, Veterans Administration) hospitals on or near their main campus. Among the schools with hospitals separate from their university, the bed capacities are much more variable. As a group these institutions are substantially less academically productive than those of the owned hospital group. None is in the NIH top 20 and only nine are in the top 50. The schools without primary teaching hospitals place a low priority on research and, as expected, group at the bottom.

UConn does surprisingly well in national comparisons with other public medical schools despite a very small hospital and no adjacent county or VA hospital. UConn's \$62 million in federal funds and NIH rank of 63rd competes with those who enjoy hospitals twice as large. The two institutions with smaller hospitals rank 96th and 118th respectively. Connecticut might want to consider the history of Washington, another state with a single public medical school. The UW University Hospital opened 175 beds in 1959 and gradually expanded to 360 by the early 1960s, followed by additional expansions in 1984 and 1995 bringing the hospital to its current capacity of 450. Washington is currently the top public medical school for federal funding and for the last 25 years has rarely, if ever, been out of the top five. UConn is not unusual in starting with a small university hospital. They are unusual in staying at the same size for so long.

There is great diversity in organizational and ownership structures for academic health centers throughout the United States. As noted in the Tripp Umbach report, there are numerous financial and research ranking relationships between the ownership of hospitals and medical schools. However, with regard to ownership/management of the medical school, hospital and practice plan there is no industry standard – "if you have seen one, you have seen one." The key to success is often relationships, governance structures and clearly articulated financial relationships.

- **Similarities:** Integrated health delivery systems must work together to teach students and graduate trainees, conduct clinical research and provide clinical care to the populations they serve.
- **Differences:** The structure of the relationship between the medical school, teaching hospital and practice plans varies from place to place. There is no standard.
- **Key findings from previous Tripp Umbach research** show that regardless of ownership or governance structure, it is critical to develop strong relationships and structures that work for each individual academic health center.

- Leaders of the top American schools of medicine and hospitals favor different structures; it is often the structure under which they work or are most familiar.
- Regardless of the governance and leadership structure, an integrated health delivery system must meet its inherent responsibilities to teach, advance medical knowledge, and provide exemplary clinical care.
- Research suggests that success depends largely upon the character and ability of its faculty and its leaders rather than on the structure under which they are governed.
- “There isn’t an ideal governance model. It’s locally defined and impacted by whoever fills the roles.” – Philip A. Pizzo, MD, Stanford

The issues of governance and organization are critical for medical schools when forming strategic partnerships and affiliations with clinical partners. The key components to consider when changing the current structures of an existing academic health center parallel many of the same discussions that need to occur when beginning a new medical school, specifically governance, faculty, and finances.

If UCHC is no longer in direct control of its teaching hospital, negotiations about the structure of the relationship will be extremely important. The type and level of interaction between the medical school, the hospital and the practice plan will be essential to building a stronger academic health center. The difficulty of forming a strong bond with a clinical affiliate is not to be underestimated. Relationships and trust are key components to building success. Guarantees will need to be made to preserve the integrity of academic medical education.

Key Findings from Stakeholder Interviews ***See Page 42 (Appendix A – Tripp Umbach Report)***

One component of the study was to complete interviews and tours with key stakeholders in the region regarding the future of UCHC and JDH. Names of potential interviewees were provided to Tripp Umbach by the regional hospitals and UCHC. An interview guide was developed collaboratively between Tripp Umbach and members of the Study Committee. The interview guide was distributed in advance of each meeting and discussions were conducted by Tripp Umbach.

Interviews were scheduled and completed via telephone or in person with 54 individuals. Leadership at each hospital was contacted including (in alphabetical order): Bristol Hospital, Charlotte Hungerford Hospital, The Hospital of Central Connecticut, Hartford Hospital, Middlesex Hospital, St. Francis Hospital and UCHC. Participants in the interview process included: clinical faculty from the regional hospitals and UCHC, and key leadership at the regional hospitals and at UCHC. The interviews covered three main topic areas: 1) Proposed expansion of John Dempsey Hospital; 2) Relationships with UCHC and/or Regional Hospitals; and 3) Academic Medical Education in the State of Connecticut. Following are the key findings from the interviews:

KEY FINDING 1: MARKET SHARE, BED NEEDS AND FINANCIAL VIABILITY

From a Regional Hospital Perspective

In nearly all interviews, the issue of market share, financial issues and payor mix were raised by the respondents. The Greater Hartford and State of Connecticut markets are small with limited population size and slow population growth. Patients, especially those with health insurance, are a commodity. It was the contention of many regional hospital leaders and clinical faculty that any expansion of JDH would negatively impact their bottom line and potentially cause their facility to close because of market share shift.

It was stated by many respondents that Connecticut is over-bedded and does not need to add additional beds to meet the health needs of its residents. Many felt that the expansion of JDH by 120 beds would just further overcrowd the market, cause a significant market share shift and not bring any real efficiencies to healthcare in the area. With profit margins so tight and the financial stability of many regional hospitals at risk, growing JDH would exacerbate the problems and issues. Respondents stated that there were better and more efficient ways for UConn to meet their needs for medical education without spending \$500 million on an expansion project.

It was clearly stated by many regional hospital leaders that the patient population served by the regional hospitals value the regional hospitals presence in the local community setting and that financial constraints imposed upon them by JDH's expansion would cause significant community outcry.

From UCHC's Perspective

According to leadership at UConn, it is mission critical to address the clinical component of medical education at UConn. JDH is not a state-of-the-art facility and does not have enough beds to support medical education or research, thereby hindering the fulfillment of the mission of the UConn School of Medicine to the state of Connecticut and its residents.

UConn respondents stated that their limited hospital size, in conjunction with their encumbered bed numbers (NICU, psychiatric beds and prison floor), with only 108 medical surgical beds to see patients and fulfill their academic mission, have not allowed them to advance clinically and increase their financial independence. There are three legs on the stool in academic medicine: education, research and clinical care. Without working on all three aspects of academic medicine, the school will not rise up in the ranks and will become increasingly unable to recruit top-level students, faculty and research.

KEY FINDING 2: RELATIONSHIPS BETWEEN REGIONAL HOSPITALS AND UCHC

There is strong evidence of collaboration and partnership between the regional hospitals and the University of Connecticut Health Center. In nearly all interviews with the regional hospitals and the University of Connecticut, examples of joint facility and academic appointments, cooperation on medical education of students and residents, and joint recruiting of top-notch clinical faculty were shared. Regional hospitals and UConn collaborate frequently to meet the educational needs of the school of medicine.

However, relationship issues do exist between the regional hospitals and the UConn School of Medicine. There has been a long history of competition, political wrangling and infighting both between the regional hospitals and the regional hospitals and UConn. Since UCHC was built out in Farmington, its role as the safety-net hospital has been questioned along with its level of state financial support. Corporate (organizational) culture issues abound between the regional hospitals and UCHC, which cause misunderstandings and mistrust between the parties involved.

KEY FINDING 3: IN SUPPORT OF ACADEMIC MEDICAL EDUCATION

While there is much disagreement on how UConn should move forward with their plans to grow and advance medical education, all parties agreed that it is critical to support medical education in the state. When specifically asked if the state should continue to have and support medical education, the response was unequivocally “yes,” but it was unclear from the interviews how much state support should be given and what level of financial support should come from the state.

Discussions about how the school could function in an even more distributed model were held with respondents from the regional hospitals. Leaders at the larger hospitals felt that they could continue to grow their financial and administrative support of UCHC’s medical education mission at all three levels – education, research and clinical care.

From the perspective of UCHC, there is clear acknowledgment of the support it receives from its clinical partners in educating medical students and residents throughout the region. There is no doubt that they are not “going it alone” in their educational endeavor and the collaboration between regional partners has been invaluable.

With regard to partnerships and different medical school models to enhance UCHC, there were varied opinions (both positive and negative) about pursuing a more distributed model than currently exists. Many interviewed at UCHC, especially those involved in research, felt that the strength of having research space, clinical space and education co-located was invaluable to providing synergy for scientific and clinical discovery, thereby favoring an integrated approach to academic medicine.

KEY FINDING 4: MEDICAID REIMBURSEMENT, CERTIFICATE OF NEED (CON) AND STATE HEALTH PLAN

Issues were raised by the regional hospitals about the disparities in Medicaid reimbursement between their facilities and UCHC. In addition, it was stated by many that the absence of a statewide health plan and the current structure of the CON process in the absence of a state plan creates an even more politically charged healthcare environment for all entities. It was clear that there is a great deal of misunderstanding about how Medicaid reimbursement rates are set as well as why the supposed disparities exist.

KEY FINDING 5: BETTER DEFINING UCHC’S ROLE

Throughout the interviews, it became apparent that there is not a solid understanding of UConn’s role as the state medical school within the community and among the regional

hospitals. Tripp Umbach believes that this is a great opportunity for the regional hospitals and UCHC to further build relationships and partnerships. Strategically for UCHC, it is critical that the broader healthcare community and residents of the state understand the value that academic medicine can bring to the region. UCHC needs to work to communicate and continue to assert its role as the state's academic health center.

Based on all the interviews, it is clear that the discussion of building a replacement hospital and its impact on market share and patient volumes needs to be addressed but should not be the primary focus of any decision regarding academic medicine in the state of Connecticut. It is Tripp Umbach's opinion that the discussion must be elevated to a broader and more visionary level regarding how to best support and enhance medical education in the state, so that yet another opportunity will not be lost.

***Key Findings from University of Connecticut Medical Student Survey
See Page 46 (Appendix A - Tripp Umbach Report)***

An online survey was developed in cooperation with the UConn School of Medicine, Study Committee and Tripp Umbach. A total of 43 responses from 4th year medical school students were analyzed for the purposes of this report. A full summary of results is presented in Appendix A of the Tripp Umbach report.

The goal of the survey was to gather information about the educational and learning experience at John Dempsey Hospital, Hartford Hospital, St. Francis Hospital, the Hospital of Central Connecticut and Connecticut Children's Medical Center. Question by question there are variances in overall response, but it is clear that all regional hospitals are providing quality educational experiences. JDH performs consistently at parity or above the other regional players.

Overall results show that JDH rates very highly in comparison to the other regional hospital with 50% of students reporting that the overall learning environment "Exceeds Expectations" or is "Superior." The Connecticut Children's Medical Center received the top score of 65%. The other regional hospitals performed quite well in this category as well.

***Bed Analysis Study
See Page 47 (Appendix A - Tripp Umbach Report)***

Tripp Umbach completed a comprehensive bed study for the State of Connecticut, Greater Hartford Area and JDH Primary Service Area. Tripp Umbach sought to examine current staffed beds¹ as compared to licensed beds² in the above three geographies and project potential growth in the market out to 2030 by 5-year intervals. To accomplish this task, Tripp Umbach utilized a market standard CON methodology based upon establishing historical, current and projected data in the following categories: population and demographic growth rates; inpatient utilization trends per 1,000 population; average length of stay; patient days; and target occupancy rate of 80%.

¹Staffed Beds: Beds that are licensed and physically available for which staff is on hand to attend to the patient who occupies the bed. Staffed beds include those that are occupied and those that are vacant.

²Licensed Beds: The maximum number of beds for which a hospital holds a license to operate. Many hospitals do not operate all of the beds for which they are licensed.

Projecting future bed requirements required Tripp Umbach to develop numerous assumptions and scenarios to quantify how many beds will be required to effectively serve the state, region and JDH PSA. Based upon previous studies completed for other CON states, Tripp Umbach believes that the most likely scenario for bed requirements is based upon actual 2005 US reported inpatient utilization rates remaining flat to 2030 for four age demographic groups. This scenario looks at utilization rates broken out by: 0-17 years of age, 18-44 years of age, 45-64 years of age and 65 and older. Given the conservative 2005 US average utilization rates, this scenario reflects the significant shift in the demographic makeup of the population in the respective age groups, most notably the dramatic growth in the population aged 65 and older. Tripp Umbach would like to emphasize that these projections are based upon current healthcare trends and considering the volatility of the healthcare industry as a whole, should be continually evaluated and monitored based upon industry shifts and trends.

Of equal or possibly greater significance is the tremendous growth in the 65+ population and the implications for the healthcare system in Connecticut. As shown, this segment of the population has the highest utilization of inpatient healthcare services and providers must prepare for the demands this group places on physicians, clinical staff, and technology.

A summary of the key findings of the bed analysis is as follows:

- It appears that additional staffed beds are required throughout the state at this time. However, additional licensed beds may not be necessary in the state until between 2025 and 2030.
- In the JDH PSA, additional staffed beds should not be necessary until between 2020 and 2025 at the earliest. Moreover, based upon projections, additional licensed beds are not needed through 2030.
- By 2015, additional staffed beds should be brought online at the hospitals in the Greater Hartford Area to accommodate projected need. Newly licensed beds may be necessary in the area between 2020 and 2025 in order to meet patient demands.

University of Connecticut Health Center Physical Plant Review (Burt Hill)
See Page 76 (Appendix A - Tripp Umbach Report)

To complete the physical plant review, Tripp Umbach retained Burt Hill, an award-winning national firm specializing in integrated design solutions for academic health centers, universities, hospitals and research facilities. Burt Hill conducted a three-day onsite review of UCHC in November 2007, to determine the state of the physical facility and review the options of their master facility plans.

Since the early 2000s, the UCHC has commissioned several department-specific studies including the NICU and the Surgical Suite; in addition they have developed several master facility plans varying in size from a large addition to an entire hospital facility replacement. These studies show a thoughtful progression in vision and scope. The pros and cons of each plan/schematic can be debated on cost; services offered; constructability; or beds and services.

However, it is quickly obvious that the 40-year old physical plant is obsolete in terms of modern healthcare delivery and extremely constricted both by geography and geometry.

The hospital is located in three buildings: H (204,753 sq. ft.), F (91,466 sq. ft.), and C (335,518 sq. ft.), for a total gross area of 631,737 sq. ft.

Equipment in the corridors; excessive noise on the inpatient levels; lack of privacy for surgical and emergency patients; mechanical and electrical systems that are either maxed out or beyond their anticipated life; and a total absence of swing space all point to a much needed major capital construction project. The top three findings of the evaluation included

- The building is space tight, and additional space is needed to expand or modify any existing department. Without additional space, adjacent departments will need to sacrifice their already inadequate space for the benefit of another department.
- The current standard of care is for private inpatient rooms. The existing configuration cannot incorporate this concept without reducing the total bed count and increasing inefficiencies.
- Many of the existing pieces of mechanical equipment are at the end of their serviceable life and cannot be replaced or upgraded without a new location for the equipment.

The Master Plan options developed since 2000 represent a very “thoughtful progression in vision and scope.” For purposes of this analysis, Burt Hill categorized four primary Master Plan options into the following generic categories as defined by the amount of new construction/renovation:

- 60/40 Option (2003), Proposed Cost Range: \$300,000,000
- 60/40 Option (2005), Proposed Cost Range: \$300,000,000
- 80/20 Option (2005) (Option presented to the CT General Assembly), Proposed Cost Range: Approximately \$495,000,000
- 100% New Option (2008) (Burt Hill Option), Proposed Cost Range: Approximately \$507,000,000

Each option was evaluated based on how well it would meet the needs of UCHC and cost. Based on our comprehensive analysis, Burt Hill concludes that a 60/40 option would not meet the needs of UCHC. It is Burt Hill’s belief that the only plans that would meet UCHC’s ultimate goal of being an academic center of excellence would be either the 80/20 plan or the 100% plan.

Burt Hill has reviewed the cost assumptions for these plans and is in agreement with the planning level assumptions. Utilizing their own project cost projection and multipliers, Burt Hill determined that the proposed costs are within an acceptable range. However, any selected option must be adjusted for inflation once a project schedule is determined. The table below provides cost estimates for both the 80/20 and 100% option for JDH hospital only, the UConn School of Medicine (SOM) and the combined totals. The combined total for each option includes an estimated cost of approximately \$88 million for the renovation of the vacated JDH for research and academic use.

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	80/20 % Option			100% Option		
	JDH/SOM	JDH	SOM	JDH/SOM	JDH	SOM
New Construction	\$ 417,415,441	\$ 417,415,441		\$ 473,758,146	\$ 473,758,146	
Renovation	\$ 36,353,711	\$ 36,353,711		\$ -	\$ -	
Parking	\$ 33,283,260	\$ 33,283,260		\$ 33,284,742	\$ 33,284,742	
Affected Areas		\$ 7,938,630				
Research	\$ 87,657,516		\$ 87,657,516	\$ 87,657,516		\$ 87,657,516
TOTAL	\$ 574,709,928	\$ 494,991,042	\$ 87,657,516	\$ 594,700,404	\$ 507,042,888	\$ 87,657,516

Notes:

1. Inflation is calculated to the mid-point of construction 2010
2. The 80 / 20 % Option includes a contingency of -- \$ 66,124,401
3. The 100 % Option includes a contingency of -- \$ 69,391,402

CLINICAL FACILITY

Overall, the hospital is limited in what it can modify or add by virtue of the strong geometry and absence of open spaces within the building. The lack of privacy within the facility should be corrected, but this cannot be accomplished within the existing building envelope without severely compromising the existing services offered or the maintenance of a safe patient and family environment.

Any additional square footage any place in the complex would require additional chiller and boiler capacity. Any renovated space in the complex with equipment older than 15 years must incorporate air side equipment and floor system replacement. Aged units should be replaced with modern equipment including steam or hydronic reheat and variable frequency drives. Floor systems should be variable volume reheat where applicable with hydronic reheat. Hydronic or steam heating is recommended since the current utility rates have electric heat costs at 2.4 times that of natural gas. 100% outside air air handling units should be converted to return air where applicable. If 100% outside air is required, heat recovery should be incorporated.

RESEARCH FACILITIES

In order to enhance the research space and research productivity at UCHC, the following is recommended:

- Provide more open plan research lab areas in building H (Patient Tower, with ER below, part of Surgery) and L (Research building (Long/Narrow))
- Undertake incremental renovations to buildings H and L
- Coordinate renovations in order to maintain adequate “swing space” during renovation process
- Convert “swing space” to expansion space at conclusion of renovation process
- Optimize research productivity/sq. ft. by adjusting allocations for underperforming groups

- Co-locate these groups with high performers in larger open lab areas, modulate space allocations as appropriate
- Focus on developing research activities in conjunction with targeted clinical “centers”
- Pair clinical areas with research activities that require close proximity to patient populations

ACADEMIC FACILITIES

With a maximum class size of 80 students per class in medical school, 40 per class in the dental school, and 125 students enrolled in PhD programs, the current facilities are excellent for this population. Facilities appear to be well utilized and some renovation has occurred in order to keep pace with changes in pedagogy/technology. However, it is noteworthy that expansion of the academic facility would be required if class sizes were to increase, and the facility will need to be modernized to keep pace with other medical schools around the country. Students continue to look for certain amenities and technologies as essentials to their lifestyle and education needs.

The academic facilities are among the best in the country because of their strong integration with research and clinical facilities. The library is well located and well equipped. The dental school and medical schools are well respected. Moreover, the medical and dental students are instructed side-by-side for the first two years. The curriculum has been lauded as one of the most innovative in the country. The direct proximity of the academic side of the house to the clinical and research programs offers UConn a competitive advantage when compared to other facilities around the country.

Economic Quantification Study: University of Connecticut Health Center See Page 98 (Appendix A – Tripp Umbach Report)

Tripp Umbach conducted a comprehensive economic impact study of the current and projected economic impact of UCHC. To accomplish the task, Tripp Umbach calculated the direct and indirect economic impact for three distinct years (1995, 2000 and 2007).

Tripp Umbach developed customized models that calculate the economic, employment, and government revenue impacts associated with UCHC’s operations. Data used in the analysis was provided through materials provided by UCHC and supplemented by Tripp Umbach’s previous research with 125 research medical schools, 400 teaching hospitals and research enterprises throughout the United States. It is important to note that much of the data included in Tripp Umbach’s models were based on actual historical data from similar-sized organizations and entities.

To calculate the economic impact of UCHC, Tripp Umbach used a methodology derived from the original set of research tools and techniques developed for the American Council on Education (ACE). The ACE-based methodology employs linear cash flow modeling to track the flow of institution-originated funds through a delineated spatial area. Traditional economic impact studies are based on direct spending and re-spending within the economy (multiplier effect) driven from the institution itself. Forward-linkage models measure the broader impacts that

occur or may occur in the economy as a result of the research and development activities of an institution—beyond the traditional direct and indirect impact. The data presented in this report represent annual, point-in-time economic snapshots of UCHC's impact on the state economy.

Overall Economic Impact: The overall state-level economic impact (direct and indirect) of UCHC's enterprise on the state of Connecticut in 1995 was \$412.8 million (17% of AAMC CT Total), in 2000 it was \$703.4 million (11% of AAMC CT Total) and in 2007 was \$897.4 million (12% of CT Total).

Employment Impact of UCHC: The overall employment impact (direct and indirect) of UCHC's enterprise on the state of Connecticut in 1995 was 4,348, in 2000 it was 7,409 jobs and in 2007 was 9,452 jobs.

Government Revenue Impact of UCHC: In order to quantify the financial returns to state government, the models include a government revenue impact component, which calculates the total tax revenue generated by UCHC's operations. Overall government revenue impact (direct and indirect) of UCHC's enterprise on the state of Connecticut was \$24.8 million in 1995, \$42.2 million in 2000 and \$53.8 million in 2007.

CONCLUSIONS

Based on the economic impact study, UCHC has a strong economic impact on the state's economy. With an overall economic impact of \$897.4 million, an overall employment impact of 9,452 jobs and a government revenue impact of \$53.8 million, there is no denying that UCHC is an economic engine for the state.

- Based on Tripp Umbach's modeling, JDH (separated from the academic and research functions of UCHC) has a current overall economic impact of \$380.1 million.
- When modeling the proposed 350 bed replacement hospital, Tripp Umbach estimates that the new hospital would have an economic impact of \$625 million, generate 3,250 jobs and create \$38 million in state government revenue. It is important to note that this is a comparison of replacing the hospital only. This impact is of a new 350 bed hospital and would replace the current facility which generates \$380.1 million in economic impact. The difference in impact is related to the increase in size and number of employees.
- Moreover, Tripp Umbach believes that enhanced clinical facilities would increase UCHC's overall ability to generate clinical revenues, increase research and enhance medical education thereby increasing its overall impact. UCHC's overall impact has not increased between 2000 and 2007.
- Tripp Umbach does not believe that the state of Connecticut needs to own/operate the new facility but does believe that clinical operations need to be enhanced or improved at UCHC.
- Based on the AAMC economic impact analysis, which includes UCHC and its teaching affiliates, Tripp Umbach believes that further collaboration with regional hospitals to achieve excellence would also increase the impact of academic medicine within the region and state.

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING: SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUDING REMARKS

Findings

The Study Committee used the following key findings from the study process to develop options for consideration:

- UCHC has a strong economic impact on the state's economy.
- Current relationships between UCHC and its regional clinical care partners are neither sufficiently defined nor adequately enough developed to fully support UCHC's ability to achieve excellence in medical education.
- The existing facilities at JDH are outdated and too small to adequately support UCHC's goal of excellence in academic medicine. Additional investment is required for replacement and renovation for continued use for academic medicine purposes.
- Continuation of the status quo, i.e., no change in existing relationships with existing clinical care partners and no new or renovated UCHC facilities, jeopardizes the goal of achieving excellence in medical education explicitly.
- There is no need for additional licensed hospital beds in the Greater Hartford region at this time and for the foreseeable future.

Based on these findings and Tripp Umbach's analyses, the Study Committee identified two options which achieve the goal of strengthening UCHC and undergraduate and graduate academic medicine in the state. These options were then used to develop the committee's study recommendations.

OPTION 1

UCHC builds a new teaching hospital, either of similar size or larger than that proposed by UCHC, with the state owning and operating the facility.

Although this option provides UCHC with a larger, state-of-the art hospital that will be a significant upgrade in hospital facilities, it also adds additional hospital beds to the Greater Hartford region that cannot be justified based on the Bed Analysis and could result in possible negative financial impacts to the regional hospitals. This option solves UCHC's current hospital facility needs, but does not address its need for the development of strong regional clinical care partnerships to achieve excellence in its academic and research missions.

Also, Tripp Umbach's research findings highlight the need for a broader understanding within the Greater Hartford region regarding the value and support of academic medicine.

OPTION 2

This option involves UCHC formalizing, strengthening, and reinforcing relationships with current clinical care partners, and exploring relationships with other interested clinical care partners. This option offers several scenarios regarding construction of new clinical facilities on the UCHC campus that would not necessarily be owned and/or operated by the state.

This option would also provide UCHC with an opportunity to strengthen undergraduate and graduate medical education, grow research opportunities and continue to provide high-level clinical care.

UCHC leadership has long recognized the importance of its relationships with its clinical hospital partners to provide its students with academic medical clinical care education. However, it is noted that UCHC's past efforts to affiliate with a primary clinical care partner have been unsuccessful, most recently in the late 1990s.

The development of an effective framework in which UCHC can flourish as a leading and nationally recognized academic and research center is critical to its success. To accomplish this goal, it is necessary for UCHC and its regional partners to have a common vision of academic medicine that is integral to each partner's clinical care operations in order to achieve and sustain the collective mission of excellence in academic medicine.

The Study Committee maintains that regardless of the option selected, UCHC should have a strong voice in determining its destiny. The key to success in this endeavor is collaboration and mutual vision of academic medicine. Also, it is critical to note that UCHC, as the state-owned and operated academic health center, should be expected to require continued financial support from the State to maintain its education and research missions.

Recommendations

The Study Committee's recommendations are intended to be useful in shaping and motivating productive discussions among multiple parties with a goal of developing a productive regional environment for academic medicine and research. It is noted that UConn and its affiliated clinical care partners recently have been engaged in discussions in an attempt to address the issues that are the topic of this study.

The Study Committee believes that a continuation of the status quo, i.e., no change in existing relationships between UCHC and existing partners and no new or renovated UCHC facilities, jeopardizes the General Assembly's goal of UCHC achieving excellence in academic medicine and is not in the best interests of the state.

Consequently, the Study Committee recommends that efforts should immediately be focused on the implementation of Option 2 as the best opportunity to provide for the full range of UCHC's clinical needs, while simultaneously increasing opportunity and reducing or eliminating possible negative financial impact on the regional hospitals. Importantly, the Study Committee believes that its recommendations not only will provide UCHC the best opportunity to be fully recognized as an asset to the healthcare systems of the Greater Hartford region and the state, but also offer the potential for significant growth in economic impact as a result of its activities.

The strength of Option 2 is the focus on collaboration between UCHC and its regional partners. Option 2 involves formalizing, strengthening and reinforcing existing clinical hospital affiliate relationships. As stated in Tripp Umbach's analysis, key issues to resolve in the development of effective sustainable clinical affiliate relationships include, among others, governance and financial perspectives and faculty relationships.

Additionally, the Study Committee believes that there is a market for clinical healthcare facilities on the UCHC campus that should be owned and/or operated by a selected clinical care hospital partner. Having clinical facilities in close proximity to UCHC's principal academic and research base, along with that of the principal hospital of the selected hospital operating partner, will be an important asset to UCHC and its faculty in achieving their educational and research goals.

It is suggested that a two-step process be utilized to implement these recommendations, and that an independent monitor be named by the General Assembly to report on progress and outcomes of the process to ensure that the best interests of the state are taken into consideration:

1. Within a two-month time period, UCHC and regional hospital partners would develop a mutually agreed upon vision and set of guiding principles that will form the basis for establishing affiliation agreements between UCHC and its partners that include:
 - a. UCHC's role in the state, region and community
 - b. the value of undergraduate (dental and medical) and graduate medical education and the potential expansion of both programs
 - c. potential cross-educational programs with allied health professional schools located at UConn's Storrs Campus and public health professionals, and development of new ways to team train all healthcare students
 - d. potential of research and how research collaboration could elevate the entire economy of the region and state
 - e. identification of what is necessary to strengthen academic medical education in the state
2. Within a six-month period, UCHC should conduct an RFP/RFQ process to select and articulate the detailed working relationships with clinical care hospital partners to support excellence in medical education in the state, while taking into consideration the needs of the stakeholders: UCHC, regional hospitals, and the residents of Connecticut.

This process will also need to include decisions on the type of clinical facilities and clinical services that will be provided on the UCHC campus. It is noted that the existing licensed beds currently allocated to JDH and those beds that the selected clinical care hospital partner could reallocate to a new hospital under its existing license will likely be sufficient for new clinical facilities that would be located on the UCHC campus without seeking any increase in the total number of licensed beds of the two existing hospitals.

Concluding Remarks

The study process put in place by the General Assembly has encouraged renewed discussions between UCHC and several regional hospitals. It is in the best interest of UCHC and the regional hospitals to develop a system that will enable UCHC to flourish as a comprehensive academic health center of excellence for the benefit of the region and the state. The elimination of UCHC as a clinical care provider and competitor with the regional hospitals will remove a significant obstacle to the development of sustainable partner relationships. However, the Study Committee also strongly suggests that the General Assembly establish, as recommended, a workable, but aggressive, timetable to reach a successful conclusion to UCHC's selection of its clinical care hospital partners and the articulation of these relationships in affiliation agreements, as well as the selection of a clinical care partner to construct, own and operate new clinical facilities on the UCHC campus.

Further, it is suggested that in the development of the vision of academic medicine, consideration should be given to building upon UCHC's innovative 1st and 2nd year common curriculum for its dental and medical school students. There exists the opportunity to consider the development of a new approach to the clinical education of medical students that focuses on inter-professional education by placing medical students in teams with other healthcare professionals during their clinical rotations. Through the promotion of teamwork and inter-professional training, students will be able to be trained in a clinical environment that is characteristic of the current healthcare delivery system. If this is accomplished, UCHC and the Greater Hartford region would be at the cutting edge of training for the next generation of healthcare professionals.