

**Recent Efforts in GME Rightsizing:  
A Status Report and Literature Review**

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## **Preface**

In 1997, in response to a number of factors, including a federal Medicare demonstration in New York, many hospitals in the state agreed to reduce their number of physicians in training. This represented a major shift in direction for most of the teaching hospitals. Historically, teaching hospitals in New York have trained a disproportionate share of the nation's physicians; with about 7% of the nation's population, the state has 15% of the physicians in training.

The Center for Health Workforce Studies, working in collaboration with the Greater New York Hospital Association (GNYHA), has provided technical assistance to hospitals in the State participating in the Medicare GME downsizing project as well as other hospitals considering reducing residency positions. The Center and the GNYHA received support from the Robert Wood Johnson Foundation for these activities.

This paper is designed to provide additional information to teaching hospitals in New York. Section I provides an update of a 1997 Association of American Medical Schools (AAMC) study on hospital decision making around rightsizing GME. Section II provides a review of recent studies on the use of hospitalists, non-physician clinicians and service redesign, and several of the key strategies being used by hospitals as alternatives to residents.

This report was prepared by Steven Schreiber, Ph.D. and Edward Salsberg, from the Center for Health Workforce Studies. The Center is a not-for-profit research organization located at the School of Public Health, University at Albany, State University of New York. The views expressed in this report are those of the Center and do not necessarily reflect the views of the University at Albany, the GNYHA or the Robert Wood Johnson Foundation.

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## SECTION I: STATUS REPORT ON EFFORTS TO RIGHTSIZES GME

### Background

In 1997, The Association of American Medical Colleges (AAMC) published a study of nine institutions that had reassessed or were in the process of reassessing the size and scope of their graduate medical education (GME) programs. Entitled *Reaching Informed Decisions About Graduate Medical Education Program Size*,<sup>1</sup> the study reported on the goals and assumptions underlying the proposed changes, the numerical targets for change, and the process used to decide the size and scope of GME at each institution. The study institutions were quite diverse and included:

- Partners HealthCare System (Massachusetts General Hospital/ Brigham Women's Hospital) – Boston, Massachusetts;
- The Henry Ford Health System - Detroit, Michigan;
- Duke University School of Medicine/ Duke University Medical Center -Durham, North Carolina;
- Maimonides Medical Center - Brooklyn, New York;
- Maine Medical Center – Portland, Maine;
- The University of Minnesota Medical School - Minneapolis, Minnesota;
- The University of Colorado Health Science Center - Denver, Colorado;
- The University of Medicine and Dentistry of New Jersey- The Robert Wood Johnson Medical School – Piscataway, New Jersey; and
- The Department of Veterans Affairs.

### Goals of the Follow-up Study

This follow-up study of the AAMC report had several goals:

- ❑ To determine if the institutions whose GME rightsizing processes were described in the AAMC report had in fact changed the size and/or mix of their residents;
- ❑ To determine if changes had been made in GME, whether they were consistent with the original plans, and if not, why not;
- ❑ To identify the strategies that were used to provide services in lieu of residents if the number of residents in training had been reduced;
- ❑ To assess if the initial process used to decide whether and how to reduce residents was continuing to inform GME decision making at the institution; and
- ❑ To assess whether these institutions had plans for future rightsizing of GME.

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<sup>1</sup> *Reaching Informed Decisions About Graduate Medical Education Program Size: Issues for Teaching Institutions, A Resource Document of Teaching Hospitals and Medical Schools- October 1997. Group on Resident Affairs, Work Group on GME Sizing, Association of American Medical Colleges. Washington, D.C.*

## Methods

Eight of the nine original study institutions were selected for follow-up.<sup>2</sup> The principal method of data collection was a phone interview. A cover letter, an interview questionnaire and a copy of the write-up on the institution that appeared in the original report were sent to the institution (see Appendix A). Interviews were scheduled with the GME director or designee and lasted an average of 35 minutes.

The purpose of the interview was to give the respondent an opportunity to state what he/she thought were the important lessons learned as the institution pursued its GME modification plans. The interview questionnaire was meant to be a general guideline for the discussion; there was no effort to have the institutions respond to every question. Therefore, this study should not be used to make comparisons between institutions.

Copies of the draft interview notes were given to the respondent with the request that he/she make any necessary changes. The Veterans Health Administration chose to write its own response to the survey questions. Respondents were also requested to fax the Center numerical data on changes in size or specialty distribution of the institution's GME programs that had occurred over the past three years and/or were planned for the coming year.

## Summary of Findings

### *Downsizing has not been implemented as planned.*

All of the institutions have re-evaluated their workforce targets that had been set through their GME rightsizing process. Most institutions have paused in their downsizing or realignment activities after reaching between 25% and 50% of their numerical goals, some of which were quite modest. Table 1 presents the original goals for change at each institution, the extent of change through spring 1999, and any planned future changes.

Table 2 depicts changes in resident positions, by specialty. In reporting changes, it is important to try to differentiate changes that occur because of normal year to year variations, such as the ability to match residency positions with suitable candidates or the ability to sustain a fellowship position with grant funding, from changes that reflect a planned effort to increase or decrease resident numbers. Table 2 is intended only to show the planned changes. However, the responses cannot always be neatly categorized. Decreases in fellowship positions might represent a conscious effort to downsize or they may simply reflect a normal fluctuation in funding. This report relies on the comments of the respondent from each institution to classify the changes.

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<sup>2</sup> Because Maimonides was the only hospital in the AAMC study also participating in the Medicare GME demonstration in New York State, the hospital was not included in the follow-up study.

**Table 1**

**Percent Change in Residents, 1996-2000**

| <b><i>Institution</i></b>                         | <b><i>Original 3 -year target for change as of 1996-1997</i></b> | <b><i>Change accomplished as of spring 1999</i></b> | <b><i>Planned future change</i></b>                   |
|---|--|---|---|
| Partners Health Care System                       | overall 20% reduction  | 6% reduction  | under review  |
| The Henry Ford Health System                      | reduce Internal medicine by 33%                                  | reduced Internal medicine by 33%                    | restore the eliminated positions in Internal Medicine |
| Duke University School of Medicine/Medical Center | overall 30% reduction  | 12% reduction                                       | under review  |
| Maine Medical Center                              | 40% reduction in Anesthesiology                                  | 40% reduction in Anesthesiology                     | under review  |
| University of Minnesota Medical School            | overall 25% reduction  | overall 13% reduction                               | under review  |
| University of Colorado Medical Center             | no reduction target specified                                    | none  | under review  |
| UMDNJ - RWJ Medical School                        | no reduction target specified                                    | none  | under review  |
| Department of Veterans Affairs                    | 3% overall reduction; 8% increase in primary care                | 2.5% overall reduction; 6% increase in primary care | original plan to be completed in 2000                 |

TABLE 2  
Summary of GME Program Changes by Institution and Specialty  
I=Increase D=Decrease ( )=Planned Future Changes

|                                  | Partners Health Care System  | The Henry Ford Health System                        | Duke University School of Medicine/Medical Center | Maine Medical Center                             | University of Minnesota Medical School | University of Colorado Medical Center | UMDNJ - RWJ Medical School    | Department of Veterans Affairs |
|----------------------------------|--|---|---|--|--|---------------------------------------|-------------------------------|--------------------------------|
| <i>Specialty</i>                 | Changes 1995/6 to spring 1999 (Planned Changes)                            | Changes 1995/6 to spring 1999; (Planned Changes)    | Changes 1995/6 to spring 1999                     | Changes 1995/6 to spring 1999 (Planned Changes ) | Changes 1995/6 to spring 1999          | Changes 1995/6 to spring 1999         | Changes 1995/6 to spring 1999 | Changes 1995/6 to spring 1999  |
| Family Practice                  |  |   |   | I  |  | I                                     | I                             | I                              |
| Internal Medicine-General        | D<br>(Increase to a level higher than that at the start of the reductions) | D<br>(Restore the eliminated positions in medicine) |   |  |  | I                                     | D                             | I                              |
| Obstetrics & Gynecology          |  |   |   |  |  |                                       |                               | I                              |
| Psychiatry                       |  |   |   |  |  |                                       | I                             |                                |
| Surgery-General                  |  |   |   |  |  | D                                     | I                             | D                              |
| Internal medicine Subspecialties |  |   |   |  | D                                      |                                       |                               |                                |
| Cardiology                       |  |   |   |  |  |                                       |                               | D                              |
| Geriatrics                       |  |   |   |  |  |                                       |                               | I                              |
| Pulmonary Disease                |  |   |   |  |  |                                       | D                             |                                |
| Endocrinology                    |  |   |   | D<br>(To be eliminated)                          |  |                                       |                               |                                |
| Preventive Medicine              |  |   |   |  |  |                                       |                               | I                              |
| Occupational Medicine            |  |   |   |  |  |                                       |                               | I                              |
| Anesthesiology                   |  | I   | D   | D  |  |                                       | I                             | D                              |
| Neurosurgery                     |  |   |   |  |  |                                       |                               | D                              |
| Pathology                        |  |   |   |  |  |                                       | D                             |                                |
| Radiology (Diagnostic)           |  |   |   |  |  |                                       |                               | D                              |
| Neurology                        |  |   |   |  |  |                                       |                               | D                              |



Further, although the institutions each provided data on changes in resident numbers, it is not always easy to interpret the changes. For example, Partners and UMDNJ reported acquiring residents through hospital mergers, which significantly raised the number of residents in the several departments but did not reflect a strategy to increase the institutions' residents. We excluded such cases from Table 2. Of the eight survey institutions, the Veterans Health Administration reflects the most comprehensive and specific planning effort to resize GME programs.

***Residents provide extensive and valuable services, making downsizing difficult.***

All of the respondents emphasized the importance and cost-effectiveness of residents in providing patient care. The long hours worked, the relatively low salaries of the residents, and higher Medicare reimbursement for residents compared to alternatives present compelling reasons for the institutions to maintain residency programs to meet patient care needs. UMDNJ and Partners commented specifically that their initial plans to downsize residency positions were premised, in part, on an assumption that inpatient admissions would be declining. This has not occurred. Indeed, the fact that there has been an increase in admissions has led those facilities to reverse their original plans to downsize residents in certain specialties.

***All of the institutions are re-evaluating their original workforce targets.***

Reasons for this re-evaluation include the perceived negative effects of resident cuts on patient care delivery, attending physicians, the hospital's bottom line, and the continuing availability of jobs for graduating residents in specialties that were thought to be in oversupply. Henry Ford, Minnesota, and Maine also articulated concerns about the lack of consistent national and regional workforce data or goals and the problems this creates for planning GME program modifications.

Even where there is agreement that a physician oversupply exists, hospitals are reluctant to cut their residency programs and lose the benefits of residents as a patient care resource if other hospitals will not follow suit. The Henry Ford respondent also suggested the need for a regional workforce plan to insure that all institutions participate in necessary GME program resizing so that no single/individual institution receives a competitive advantage.

Partners, UMDNJ, Duke, and Colorado reported that the job market was strong for their graduates. However, the Minnesota respondent, located in a state with high managed care penetration, noted that physicians were having to work harder to earn the same income they earned a few years ago. This could be seen as evidence of a tighter job market. The respondent from Maine also noted that the job market may be saturated for certain specialties in urban areas but that this was not the case in rural areas.

***Many responding institutions have reduced fellowship positions.***

Duke, Colorado, Partners, and Minnesota reported that although their hospital-funded residency positions had remained largely unchanged, there were reductions in fellowship programs funded through grants or faculty practice plans. (While the definition of “fellow” can vary, the term as used here is a resident training in a subspecialty.) In some cases the reductions appeared to be the result of an explicit decision to downsize. In other cases, the changes may have reflected year-to-year variations in the external funding of fellowship programs.

On the other hand, UMDNJ reported that the internal medicine department decided to retain its fellowship positions consistent with the department’s belief that it was appropriate for a regional academic medical center to train subspecialists.

***Primary care specialties do not appear to have been reduced as part of the GME rightsizing efforts and some training has shifted to ambulatory care settings.***

The rightsizing efforts at many responding institutions led to an increase in family practice residency positions. While the original plans for general internal medicine were mixed, with some institutions planning downsizing while others planned increases, two of the institutions that initially planned downsizing, Partners and Henry Ford, decided against cuts and Partners actually decided to increase internal medicine positions. In general, although overall cuts were limited, non-primary care specialties were more likely to be downsized.

The Veterans Health Administration (VHA) GME rightsizing plan in particular gave strong priority to an increase in primary care and a decrease in non-primary care positions. Unlike many other institutions that focused on downsizing total positions as the principal GME modification strategy, the VHA sought a realignment of existing positions with the goal of emphasizing primary care. As a result, 1,000 residency positions, representing 11% of the total in the VHA system, were affected: 250 (3% of all positions) were to be abolished and 750 non-primary care positions were to be shifted to primary care over a three year period. The overall goal of the initiative was to increase the percent of primary care residency positions from 38% to 48% of the total. The VHA planned increases in general internal medicine, family practice, geriatric medicine, Ob/Gyn, preventive medicine and occupational medicine. A major mid-course correction occurred in the second year: subspecialty residency programs were allowed to count those residents who provide primary care as an adjunct to their subspecialty services as primary care practitioners. The programs had to have an enhanced curriculum for primary care education and meet other program standards in order to receive credit toward primary care totals.

A number of respondents noted the growing number of residents training in ambulatory settings. A major challenge to GME training programs is how to fund residents training in outpatient settings. A related issue is how to select appropriate faculty from the community and integrate them into medical school and graduate medical education programs. Henry Ford noted that even though it is an integrated delivery system that includes a wide range of ambulatory care settings, Henry Ford faces real challenges in ensuring the quality of graduate medical education in ambulatory care locations. Hospitals that are not part of integrated systems face even more difficult challenges.

***The teaching hospitals have not generally adopted formal strategies as alternatives to residents. For the most part, attending physicians are assuming additional responsibilities where the number of residents has been reduced.***

Where residency programs have been downsized, the resultant increase in workload has mainly been assumed by the faculty attending staff. In some cases, this strategy was augmented by moonlighting residents.

Henry Ford created a 90-bed unit on the internal medicine service 12 years ago as part of a plan to reduce residency positions. The unit is currently staffed by 12 hospitalists and 10 non-physician clinicians (a mix of physician assistants and nurse practitioners). Although the hospital believes that residents are the most cost-effective providers of patient care, the unit is continuing to operate even though the internal medicine program is restoring the positions originally reduced. There has been no formal evaluation of the hospitalist/non-physician clinician unit at Henry Ford in terms of its impact on patient satisfaction, resident and attending physician needs, and costs. However, it is the impression of the Henry Ford respondent that there is no difference in quality of care or patient satisfaction on this unit when compared to units served by residents.

Minnesota reported the employment of non-physician clinicians in various sites where there is resident training but the use of these staff was not associated with a strategy to downsize residency programs.

## UPDATE ON CASE STUDIES

### Case Study 1: Partners HealthCare System

Massachusetts General Hospital (MGH)

MGH and Brigham Women's Hospital (BWH)

The interview was conducted with Debra Weinstein, M.D., Director, Graduate Medical Education, Partners HealthCare Systems.

The original goal of the GME modification program undertaken in 1996 was to reduce total hospital-supported residency positions 20% by the academic year 2000-01. By 1997, one quarter of the reductions had been implemented with the balance planned in the latter years of the initiative. In 1998 a survey of the clinical chiefs was taken to assess what effect the changes had had on finances, education, and patient care. The chiefs were also asked to assess the future impact of continuing the residency reductions. In general, department heads and service chiefs believe there has been a negative impact on their programs and on their faculty and residents.

Two assumptions that influenced the original decision to downsize are now subject to challenge. The first was that the Partners System hospitals would, overall, experience a decline in inpatient volume. While there has been a modest decrease in total inpatient beds, admissions and ambulatory visits have significantly increased. The second assumption, based on available literature, was that there would be a national oversupply of physicians by the year 2000. This now seems less certain; medical students are heeding market forces and specialty organizations are taking a more active role in controlling the number of trainees for their programs.

In 1998 the issue of downsizing was revisited by the chiefs of service and, unlike the initial rightsizing planning effort at Partners, service needs were allowed to be presented in the justification for residency positions. There were several criteria used in considering the size of residency programs. The total number of residency positions allowed for each hospital is limited to the cap established under the Medicare rules of the Balanced Budget Act of 1997 (BBA). Requests from programs seeking reductions in their residency positions are approved. Programs proposing to remain unchanged are tentatively approved. The balance of available "extra slots" is allocated to programs requesting to increase their residency position based upon service needs and/or educational criteria. As the final step, the unmet requested needs are weighed against the needs of the programs which seek to remain unchanged to see whether a reallocation of positions between programs should occur. These guidelines apply only to hospital funded positions. Departments can continue to fund residents from faculty practice plan income and/or research grants as long as the Residency Review Committees and the hospital's education committee agree. The number of such positions, the majority of which are fellows, has declined over the past few years. However, quantifiable data on these changes are not available.

Internal medicine will be restoring positions to a level higher than before the downsizing began. While Internal medicine produces some specialists, the growth in positions may be due, in part, to increased inpatient coverage needs resulting from the increase of resident time in ambulatory settings. Another factor complicating a simple interpretation of an increase in residency positions is the continuing change in the health care delivery system. As an example, BWH recently merged with another hospital and assumed responsibility for that hospital's residents. Thus, in

spite of reductions in residencies at some facilities there was an overall gain in total resident positions.

From the point of view of service chiefs, residents can be more flexibly scheduled, and perform a broader range of tasks than non-physician clinicians. In some cases, programs that have reduced their resident numbers have met their service needs by hiring attending physicians or other clinical providers. Another response to resident reduction, which was described in the 1997 AAMC report on downsizing, is the establishment of a short stay unit at Brigham that is staffed by attendings and some moonlighting residents. This was determined to be an important educational experience for residents, so they will now rotate on the Short Stay Unit. Preliminary data from the Short Stay Unit showed that patients treated by attendings in this unit had a shorter length of stay and lower cost per case than comparable patients on other inpatient units where residents were used in more traditional ways.

There have been some improvements in care as a result of re-engineering initiatives in the hospitals and some of these efforts have involved the employment of non-physician clinicians, such as “case managers”. However, these efforts are separate and distinct from the GME downsizing strategy.

## **Case Study 2: Maine Medical Center**

The interview was conducted with Robert Bing-You, M.D., Director of Graduate Medical Education.

Overall, not much has changed from the time of the original case study. The number of residents was 188 in 1996-97 and 190 in 1999-00. The endocrinology residency program, which had two positions in 1998-99, will be eliminated next year. There is no active process to identify additional cuts despite the hospital being above the BBA cap. The original plan called for increasing family practice resident positions from 6 to 8, but the program is now being held at 7. The Medical Center is continuing to develop training sites in community practices. Beginning with internal medicine, training in community sites is being expanded to include pediatrics, family practice, and surgery.

The criteria used in determining GME program size include: the ability to recruit qualified applicants; the educational resources in the community – facilities, faculty, patients; and the commitment of faculty. The local and state workforce needs are not as significant a factor in determining residency size as the above criteria, principally because workforce projections vary widely and do not provide a firm basis for planning. In general, the job market has been good for the graduates, especially in rural areas. Urban areas may have more limited opportunities, especially for specialists. For example, Portland appears to have met its needs for obstetricians/gynecologists and radiologists.

Currently, the medical center is 15 positions over the cap established by the BBA. However, the view of the Center is that the current level of GME programs is an integral part of the Center's mission. Therefore, there is no active process to reduce resident numbers. There may be some gradual attrition in fellowship positions. Also, some residencies such as radiology and surgery may discontinue if they are not able to recruit qualified applicants.

The increased attending workload resulting from any GME program reductions will probably be accommodated in the same way the attendings have adjusted to changes in Medicare physician payment rules. Attendings have experienced increased patient care responsibilities and documentation requirements as a result of the change in Medicare reimbursement policies for attending physicians.

### **Case Study 3: Henry Ford Health System**

The interview was conducted with Peter Coggan, M.D., Director of Medical Education.

The original GME rightsizing plan involved downsizing the internal medicine residency program by 12 positions per year or 36 slots, from 108 to 72, beginning in 1997. Currently there are 84 Internal medicine resident slots but a decision was made this year to restore the 12 eliminated positions per year. Thus, within three years there will be 108 internal medicine residents - the size of the program prior to downsizing.

The main reason for the restoration of the residency positions in internal medicine is the fact that the hospital is "100% filled." In the view of the hospital, a residency position is still more cost-effective than alternatives when GME reimbursement through Medicare is considered.

Internal medicine was the only department that implemented a specific strategy to modify its resident count. All other changes in resident counts reflect the normal year-to-year variations resulting from: 1) funding changes, such as when grants are obtained or terminated; or 2) the residency match process. Many residency programs, if they do not fill their available positions through the National Residency Match Program, will not recruit outside of the Match Program due to concerns with the quality of the applicants not in the Match Program. This can lead to marginal fluctuations in the number of residents in a residency program.

It is difficult to build a constituency to downsize residency programs, especially when there are patients in need of services and a belief that the existing training programs are of high quality. Institutions are disinclined to downsize their residency programs if other institutions are not doing likewise. There is also a concern that if residents are reduced, the faculty, who have become used to evening and weekend coverage by residents, will object and perhaps even withdraw from involvement in the hospital. Finally, there is the desire to maintain residency programs to continue to be on the "cutting edge" of new developments and to improve the quality of care.

From a cost point of view, Henry Ford has found it extremely advantageous to preserve the size of their residency programs, especially when considering the lack of funding for alternative arrangements. Alternatives to residents do not receive any Medicare subsidies. In the absence of any realistic cost-effective alternatives, hospitals still find it beneficial to maintain their GME programs. Nevertheless, as the BBA provisions are phased in over the next several years, hospitals may find it difficult to maintain the current size of their GME programs.

Changes in Medicare GME financing policy could impact on GME decisions at Henry Ford - for example, if GME funding were removed from the Medicare reimbursement stream and placed into a special pool. If this pool were targeted to the needs of the inner city or rural populations, this could have a drastic effect upon teaching hospitals. Henry Ford Hospital serves a substantial inner city population but has no rural presence. Another potential policy change that could have an impact is shortening the length of time that GME funding is available, such as, limiting GME funding to the first three years of a residency.

The Henry Ford Health System is putting together a task force to study the issue of residency size and its impact on the quality of a GME program. Program quality is difficult to assess but a number of measures are being considered. This includes: qualifications of applicants, such as the exam scores, the schools from which they graduated, other academic or personal characteristics; performance during residency training; and outcomes, such as board scores, percent board certified, and the number and quality of the positions offered to graduates. The relationship between future demand by specialty and decisions on the number of residents to train in each specialty is also of concern. However, it is very difficult to forecast future demand by specialty and to know how a specific institution's decisions will affect total supply.

When the Henry Ford went through the initial downsizing of its internal medicine residency program, it created an internal medicine service floor staffed by hospitalists and mid-level practitioners. This arrangement will continue to exist even as new internal medicine residency positions are added (restored). Although there has been no formal evaluation of the unit's impact on patient satisfaction, resident and attending physician needs, or costs, the impression is that there is no difference in quality of care or patient satisfaction on this unit when compared to units served by residents.

A major challenge for GME is how to fund residents in ambulatory settings. A related issue is how to select appropriate faculty from the community and integrate them into medical school and graduate medical education programs in outpatient settings. Henry Ford is an integrated system and includes a wide range of ambulatory care settings, yet even their system faces challenges in ensuring the quality training in ambulatory settings. Hospitals that are not operating as part of integrated systems will likely face even more difficult challenges.



#### **Case Study 4: University of Minnesota Medical School – Minneapolis**

The interview was conducted with Robert Howe, M.D., Associate Dean of Faculty and Graduate Affairs.

The Twin Cities area contains 18 teaching sites that are affiliated with the University of Minnesota Medical School. Allocation of residency positions results from annual negotiations between the sites and the Dean's office. A Community Council on Graduate Medical Education, which consists of the four major teaching hospitals, has a coordinating and advisory role in determining the size of residency programs.

Since the downsizing process began in 1996, there has been a 13% reduction in residency positions. The original target of a 25% reduction is under review, with some questioning whether this target is excessive. The reductions that have occurred to date have been largely voluntary and mostly confined to the fellowship programs. Simultaneous with the reduction in residency positions has been a decrease in the medical school entering class size from 239 to 165 students.

The medical school is piloting a residency evaluation process at one hospital. Criteria for evaluation include: quality of students attracted to the residency; degree of success in the resident match process; in-service exam scores; board pass rate; local and regional market needs; and percentage going into academic medicine. The review process includes two reviewers who present their findings to a committee which then assigns a score to the facility. The score becomes the basis for the budget for the residency program. Under this arrangement, funding is transferred from training programs in the lowest quartile to programs in the highest quartile. However, under the present practice a program will not lose more than 10% in any year.

The increased workload associated with residency program reductions has been borne by the faculty who are doing less research and more clinical care. In the past, subsidies for fellowship training programs had come, in part, from faculty practice plan income. However, this income has declined sharply with the growth of managed care. One estimate is that a physician must work 25% more to acquire the same income he/she earned before the advent of managed care. Minnesota's level of managed care penetration is high, second only to California. The medical school has lost a significant number of faculty as a result of these changes. There are nurse practitioners and physician assistants employed in the various sites that train residents, but employment of these non-physician clinicians was not the result of a strategy for downsizing residency programs. Hospitalists are not yet being used in any significant number as there is a reluctance on the part of primary care physicians to relinquish responsibility for their patients to another physician.

The future is hard to predict. At the national level, pressures will probably continue to reduce funding for GME and perhaps to develop an all-payer pool. The state of Minnesota has a relatively new program that provides several million dollars a year to medical teaching institutions. This has helped to offset the GME funding losses associated with the BBA. Funds from the program go to the training sites, including ambulatory care sites, but not the medical school.

Another factor making the future uncertain is the poor quality of health workforce data and the lack of certainty regarding the future balance of supply and demand by specialty. While managed care has reduced the demand for many specialties, at the same time managed care may also be reducing the productivity of physicians who work for plans on a salaried, 40 hour week, basis. Many specialty societies have done their own studies of workforce needs, but these can be biased. The fact that some specialists also provide primary care complicates assessments of physician need. Some observers believe the Twin Cities needs additional cardiologists and obstetricians but the data supporting such assertions are limited.

## **Case Study 5: University of Colorado Health Science Center (HSC)**

The interview was conducted with Mr. Greg Olender, Administrator of the Office of Graduate Medical Education.

There is no overall plan for reductions in the number of residency positions, although, some fellowship positions have been eliminated due to a loss of grant funding. Additionally, the mix of specialties has changed due to some reductions in surgery and anesthesiology and increases in internal medicine and family practice. The resizing of residency programs implemented by the Veterans Health Administration also contributed to reductions in subspecialty residency positions at the HSC and increases in primary care positions. These modifications involved an estimated 12 to 20 residents. However, the impact of such changes on the total size of the HSC, GME program, which includes nearly 800 residents, has not been significant. With the exception of the cap on residency positions eligible for Medicare reimbursement, as of spring 1999, the changes authorized by the BBA have not yet had a major impact on GME.

An analysis of the costs of using hospitalists or non-physician providers in lieu of residents to meet patient care needs has not been conducted at the central level by the HSC. Although the issue may have been analyzed more specifically by some of the five teaching hospitals that are part of the HSC.

From the point of view of the residency programs, there does not currently appear to be an oversupply of physicians. Each year, HSC surveys currently graduating residents. None of the programs have reported problems in their graduates finding jobs; this includes subspecialties. Although the anesthesiology department did not fill all of its resident positions for a few years, it did not formally downsize its program and it was able to get by with fewer residents. This year the department has filled all of its positions. The survey of graduates asks if they were able to find employment in their area of interest and does not specifically identify the specialty in which the resident was employed. There could be instances of doctors not working in the specialties in which they were trained, for example, cardiologists working as general internists, but this is probably not a widespread occurrence.

An HSC GME Committee consisting of all of the clinical department chairs (16) plus a representative of the housestaff meets once a month. The Committee does internal reviews of programs and addresses policy issues concerning the size of the residency programs. The Committee has to approve any increases or decreases in residency positions

## **Case Study 6: UMDNJ- Robert Wood Johnson Medical School**

The interview was conducted with Marie Trontell, M.D., Associate Dean, Academic Affairs.

Total residency positions have increased from 371 in the academic year 1995-96 to 427 in academic year 1998-99. The original plan for downsizing GME involved hiring, as junior faculty, any graduate who could not find a job upon completing their training. For every graduate so employed, there would be a corresponding reduction in a residency program. However, because all graduates have been able to find jobs, this proposal has not been implemented.

The increase in positions under UMDNJ sponsorship largely reflects the development of service delivery networks and consolidation of programs rather than an actual system-wide increase in residency positions. UMDNJ assumed responsibility for residency programs at several other hospitals. UMDNJ currently operates a medical education consortium on behalf of 9 teaching hospitals. Both family medicine and surgery residency programs increased their resident numbers because additional hospitals joined the consortium and integrated their own free-standing programs with the UMDNJ programs.

In addition to the increases caused by system reorganization, there were some net increases unrelated to the system reorganization. This includes: an increase in family medicine, reflecting an increased commitment to primary care; an increase in psychiatry, from 28 to 30, reflecting an expansion in the educational program in geriatric psychiatry; and an increase in anesthesiology positions from 18 in 1995-96 to 24 in 1998-99, reflecting the belief that it is appropriate for a major academic medical center to increase training in a specialty in which it considers itself a center of excellence.

Pulmonary medicine and pathology, two specialties that have been experiencing surpluses, are the only specialties that have downsized to date based on an explicit planning decision. However, recently a decision was made to downsize the internal medicine program in order to rightsize training in the specialty at UMDNJ. This decision reflects the fact that two medicine programs were combined in 1998, resulting in a program with 114 residents. A decision has also been made to retain the fellowship positions at their current level. This reflects the department's belief that academic medical centers are best qualified to train sub-specialists.

Other departments may experience marginal decreases in residency positions but this is a reflection of normal year-to-year changes in circumstances, not a formal decision to downsize.

Because there has been no significant downsizing, there is no formal strategy for alternatives to residents, such as the hiring of non-physician clinicians and hospitalists. To ensure the teaching mission, the core teaching hospital already spends over \$1 million a year for physicians to supplement the care for patients not on the teaching service.

There is some concern for the future of the GME programs in light of the Balanced Budget Act. The UMDNJ consortium has funding commitments from each hospital for the residency programs. However, there is concern that BBA mandated decreases in DME, IME, and Disproportionate Share Hospital payments, will cause hospitals to cut back on residency funding, resulting in gradual downsizing and the elimination of certain residency funding.

## **Case Study 7: Duke University School of Medicine**

This interview was conducted with Tom Anderson, Ph.D., Administrative Director, Offices of Medical Education.

In October 1996, there were 905 residency positions sponsored by Duke University Medical School. In October 1998, there were 796 positions, representing a decrease of 12%. While the original goal set in 1995 was for a reduction of 30 percent, there are no plans for further reductions beyond the initial 12%.

The 1996-1998 decrease was in residency positions not directly funded by the hospital. This includes positions funded by affiliated hospitals, the Veterans Health Administration (VHA) and positions funded by grants and faculty practice income. For example, the VHA funds 126 positions. Because of reductions of external funding for positions, the departments of pathology, medicine, and psychiatry have all experienced declines in residents. The one hospital-funded specialty that was downsized was anesthesiology, which decreased from 42 to 34 positions, a 19% drop.

GME planning is a process that involves trying to reconcile two sets of goals: the service needs of the hospital; and the training objectives of the GME programs. Currently, funding for residency positions goes from the hospital to the chairs of departments. Departmental funding is based upon a judgment of need rather than an explicit formula. Department directors have some discretion to allocate the funds within their department. Departments that are able to fund residents from outside sources, such as grants and faculty practice plan income, are not dissuaded from doing so. In the future, should funding become more limited due to changes in GME subsidies and other revenue sources, a more explicit process for determining resident numbers for departments might be implemented.

There are no formal criteria for determining the allocation of hospital-funded residency positions among specialties; however, a number of factors are considered. This includes such factors as the quality of the applicants, employment experiences of graduates, and the availability of external funding sources for positions. Many departments follow the employment experiences of their graduates; for example, pediatrics and surgery do exit surveys each year for their graduating residents.

One factor not considered in the distribution of hospital GME funding is the cost of training in a specialty. There is no agreed upon method to determine the costs of residency training. The nature of graduate medical education makes cost accounting quite complex. Residents perform multiple tasks and residents are funded through multiple sources including grants, GME subsidies through Medicare, faculty practice plans, and endowments. The incremental impact on costs of their educational activities and their contributions to increased productivity difficult to measure.

There has been no specific resident replacement strategy or transitional funding made available to departments that reduced residency positions. This includes medicine and surgery. The hospital's bed capacity has not changed significantly and admissions are up slightly. It appears that residents and attendings in departments that have downsized are working harder.

There is also no clear strategy to increase the proportion of total residency positions allocated to primary care specialties. Total Family Medicine residency positions funded by the hospital have remained essentially constant since 1995. Pediatrics positions funded by the hospital have increased from 45 to 49 (9%) in the same period.

Institutional changes are occurring as The Duke University Medical Center continues to evolve into a health care system through the purchase of practices and various institutional mergers and affiliations. Also, over the past eight years more than half of the clinical chairs have retired, many of whom have been replaced by people who see their interests as aligned with the institution as well as their departments.

## Case Study 8: The Veterans Health Administration (VHA)

This interview was conducted with David Stevens, M.D. Chief Academic Affiliations Officer and Gloria Holland, Ph.D., Special Assistant to the Chief Academic Affiliations Officer. The Veterans Health Administration prepared the following written response to the GME survey in June 1999.

### *1. What process was used to decide whether to downsize residency programs?*

In fall 1995, the Under Secretary for Health appointed an expert committee, the Residency Realignment Review Committee (RRRC), to advise him on changes that were needed to ensure that VHA's graduate medical education programs would meet present and future health care needs of both the VA and the nation. The RRRC recommended a restructuring of VHA's 8,900 medical resident positions to move from 38% to 48% primary care. Unlike many other residency programs that set out to reduce the total size of their residency programs, the goal of the VHA was to realign VHA's GME participation by decreasing involvement in more specialized residency training programs and increasing generalist residency training programs. Accordingly, by the year 2001, VHA will shift 1,000 specialty resident positions (approximately 11% of VHA medical resident positions): 250 positions will be eliminated; and 750 will be filled as primary care positions. This realignment of VHA's graduate medical education portfolio will continue the progress that VHA has made since the early 1990's, when through several voluntary initiatives, VHA increased the percentage of medical resident positions in primary care disciplines from 33% to 38%.

Implementation of VHA's residency realignment is being phased in over three years, from academic year 1997-1998 to 1999-2000. It classified the various residency training disciplines into four categories based on level of specialization. Category I includes generalist disciplines while Categories II- IV consisted of progressively more specialized disciplines. The realignment process gave preference to the Category I disciplines.

- ✓ **Category I:** General internal medicine, family practice, geriatric medicine, OB/GYN, preventive medicine and occupational medicine.
- ✓ **Category II:** Psychiatry, geriatric psychiatry and physical medicine and rehabilitation.
- ✓ **Category III:** Neurology, urology, general surgery and most of the surgical specialties; and
- ✓ **Category IV:** All other specialties.

The RRRC recommended formation of a Residency Oversight Council (ROC) to advise the Under Secretary and the Chief Academic Affiliations Officer on implementation details of VHA's GME realignment. This committee of VHA experts was charged with considering a number of policy questions implicit in the realignment. They have provided advice and suggestions for improvement throughout the implementation process. Concurrent with beginning implementation of VHA's plans for residency realignment in 1996, a new management and organizational structure for VHA facilities formed 22 networks, each constituted by 5-13 facilities and their associated clinics. These networks are known as Veterans Integrated Service Networks (VISNs). Leaders of these VISNs were given line authority over their facilities and the responsibility to organize the delivery of healthcare services for veteran patients in their networks. The new organizational structure has fostered strategies for regional planning and cooperative service delivery that did not exist in VHA in the past. This new management

structure was charged with the responsibility to meet residency realignment goals for *their* network.

2. *If your institution downsized its residency programs, what funding arrangements, resident replacement strategies and decision-making processes were adopted, and what was the impact of the decision to downsize?*

VHA's residency realignment processes took place during the implementation of a capitation based funding allocation model known as the Veterans Equitable Resource Allocation (VERA) System. While there was no explicit financial recognition of specialist to generalist changes in network GME allocations, the model continued to include an indirect educational adjustment based on the total number of medical resident positions allocated to the network. The difficult tasks of meeting specialty clinical care service needs were left to local management determination with no centrally prescribed or funded resident replacement strategies.

The first phase of residency realignment implementation occurred in academic year 1997- 1998 and encompassed 25% of the changes. The second phase occurred in academic year 1998-1999 and encompassed 50% of the total changes. The third phase will occur in academic year 1999-2000 and will encompass the final 25% of the changes. Each year, results of the Networks' plans were entered into a national data bank by VA facilities, and the Headquarters Office of Academic Affiliations aggregated national totals and analyzed the results. Even though VISNs were allowed to meet their realignment goals for decreasing specialty training by making changes from any discipline in the RRRC Categories, with some exceptions, national changes in residency training disciplines were in relative proportion to the recommendations of the RRRC. The national totals from the network's three-year planning process are shown in Table 1.

First Year Implementation: Academic Year 1997-1998 National goals for residency realignment were translated into 22 regional goals and met through a consensus process by Committees established in each network. Each VISN Director was asked to convene a Network Education Committee (NEC) comprised of representatives of VHA and academic affiliates to advise the Director on residency allocations within the VISN. Networks were asked to make their plans based upon a review of the historical allocation among facilities and relationships with academic affiliates, the specific goals for distribution between generalists and specialists positions, and the respective VISN health care delivery plans that were emerging. The negotiation process required collaboration in making residency allocations between local clinical, administrative and graduate medical education leadership. The local VHA facilities and their respective affiliated schools of medicine made the difficult decisions about specific programs to downsize, as well as identifying where opportunities existed to increase generalist programs.

Second Year Implementation: Academic Year 1998-1999 The second year of residency realignment provided significant challenges for the network committees. Fifty percent of the total changes in VHA's medical resident portfolio were accomplished. The collaborative processes developed in the first year of realignment were enhanced. Schools of Medicine have long perceived VA as an integral partner; however, the restructuring of the VHA system into networks has provided new challenges as well as new opportunities for partnerships. The new organizational structure has fostered strategies for local decision making, regional planning, and cooperative service delivery. All of these opportunities were deployed in the difficult task of network planning for half of VHA's residency realignment.



Third Year Implementation Academic Year 1999-2000 The third year of residency realignment accomplished the final twenty-five percent of the total changes in VHA's medical resident portfolio. In this final phase, the network committees struggled with difficult decisions of where to make reductions, wrestling with definitions of program quality and academic intensity while trying to accommodate clinical demand. Network planning processes worked exhaustively to accomplish the best mix of residency training for the healthcare delivery needs of the Network. These results will be implemented in academic year 1999-2000, beginning July 1, 1999.

Throughout the realignment process, concerns have surfaced about the effects that reducing the subspecialty positions have on caring for the seriously and chronically ill patients that make up a substantial portion of veteran patients. A mid-course correction was instituted in the second year of the realignment process to recognize the contributions that subspecialties make to the care of certain groups of patients, and to provide primary care “credit” for that portion of the residency curriculum that met program criteria. The primary Specialist Program consists of two companion programs, Access and Continuity in Education of Specialists (ACCESS), and the Psychiatry Residency Primary Care Education Program (PsyPCE). These residency experiences take advantage of contexts of patient care in VHA where medical subspecialties provide primary care for panels of patients with major health problems in their area of expertise. In order to be considered for designation as a training site, VHA facilities had to have an identifiable enhanced curriculum for primary care education. Beginning in academic year 1999-2000, 59 sites will be participating in the Primary Specialist Program, and 52% of internal medicine sub-specialty, neurology and psychiatry residents in VHA will participate in an innovative program of primary care delivery within their discipline's residency training program.

Over the period that VHA implemented its residency realignment, the VHA health care delivery system has undergone rapid changes, making an aggressive change from a hospital system to a series of regionally based health care systems. At the same time that VHA increased the total number of patients cared for by 19%, inpatient beds were reduced by 52%, inpatient admissions reduced by 250,000 per year (25%), and ambulatory visits increased by 6 million (33%). The changes made in VHA's residency portfolio will support VHA's new health care delivery system while maintaining VHA's commitment to its academic partnerships with the nation's schools of medicine. The local and regional collaborations that have developed and the lessons learned from this process will stand VHA in good stead as it strives to meet its tri-part missions of patient care, education and research in times of ever-shrinking resources.

## **SECTION II: ALTERNATIVES TO RESIDENTS - A REVIEW OF THE LITERATURE**

### **A. Introduction**

One of the major concerns of teaching hospitals considering reducing the number of residents in training is the significant amount of services provided by residents, particularly to the uninsured. For example, hospitals in the federal Medicare GME demonstration in New York were uncertain how to replace the services provided by residents and how to do it in a cost-effective manner.

Residents generally work long hours for relatively low pay. Even in New York State, where resident work hours are limited to 80 hours per week, this is more than twice the number of hours of a typical workweek for most other occupations. Residents are also available on nights and weekends, whereas other caregivers are not available at all or only at an elevated price. Not only are residents relatively inexpensive, especially per hour worked, Medicare (and Medicaid in most states) reimburses teaching hospitals to offset the costs of providing residency training. This additional reimbursement is not available if the same services are provided by other practitioners.

Because so many teaching hospitals are located in inner city areas and serve a high number of uninsured patients, residents are critical providers of care to this population. In the absence of reasonable cost alternatives, there is a concern that reducing residents will either lead to a reduction in needed services or create fiscal burdens for teaching hospitals.

To help hospitals assess the alternatives to residents, the Center for Health Workforce Studies reviewed the literature on strategies that have been used as alternatives to residents. These strategies fall into three basic categories:

- use of “hospitalists”;
- use of non-physician clinicians, i.e., physician assistants and nurse practitioners; and
- other reorganization of health care in teaching hospitals.

The sources reviewed include the citations in the original AAMC study, *Reaching Informed Decisions About Graduate Medical Education Program Size 1997*, plus other sources identified through searches of Medline and EBSCOhost. In addition, in some cases where no citation is listed, the point being presented reflects the general belief within the health community and/or the Center staff.

### **B. The Hospitalist Model**

One definition of a hospitalist, used by an author who has written widely on the subject, is: “A hospitalist is a physician who spends at least 25% of his or her time serving as the physician of record for inpatients, during which time he or she accepts ‘hand-offs’ of hospitalized patients from primary care providers, returning the patients to their primary care providers at the time of hospital discharge”(Wachter, 1999). Variations in this model include differences in the amount of time hospitalists spend on the inpatient service, the degree to which the hospitalist maintains an ambulatory practice, the extent to which hospitalists themselves specialize and become part of multidisciplinary hospitalist teams, and whether the handover by the primary care provider is voluntary or mandatory.

There has been a significant increase in the use of hospitalists over the past several years. This reflects the potential for hospitalists to improve productivity and the quality of care rather than the explicit use of hospitalists as an alternative to residents. Along with the increased use of hospitalists, there has been an increase in the number of studies of the hospitalist model. While no studies were found that evaluated the hospitalist role specifically as a replacement for residents, hospitalists have the potential to affect the entire hospital system, including residency training, and many of the studies have relevant findings for hospitalists as alternatives to residents.

This section examines the *ADVANTAGES* and *DISADVANTAGES* of the hospitalist model from the point of view of five interested parties:

- Hospitals
- Primary care physicians
- Hospitalists
- Patients
- Residents and graduate medical education providers

There is some overlap among the above categories. For example, the improved inpatient service that is said to be provided by the hospitalist benefits not only the patients but primary care physicians as well. Accordingly, the assignment of an item to a particular stakeholder category is based on what fits best. Many of the points presented below were mentioned by more than one author but only one citation is given for each point.

## **1. Hospitals**

### *Advantages*

- Preliminary evidence suggests that hospitalists can reduce the length of patient stay and reduce costs. That the hospitalist model has developed particularly rapidly in California, a state with higher than average managed care market penetration, is seen as evidence that managed care organizations believe hospitalists can reduce the costs of inpatient care. (Morasch, 1998).
- Only two evaluations comparing the costs of the hospitalist model to more conventional models of inpatient service delivery have appeared in the peer-reviewed literature. The first study presented results from a randomized controlled trial that assessed the impact of an inpatient reorganization strategy which included the employment of full time attending physicians (Wachter et al., 1998). Because none of the physicians met the threshold level of at least 25% of their time spent in inpatient care, the authors stated that their study could not directly assess the impact of the hospitalist model. Nevertheless, inpatient length of stay was 4.3 days for the group treated by the hospitalists and 4.9 days for the group treated under typical arrangements, or approximately one-half day of potential savings. Costs were reduced from 10-20% (Wachter et al., 1998). No reductions in satisfaction on the part of patients, housestaff, or faculty were observed.
- The second study found significant reductions in use of services with the hospitalist model. This includes: a 17% decline in length of stay from 6.01 to 5.01 days; a decline in

readmission rates from 9.9 to 4.64 per 100 admissions; and a 14% decline in the average costs of an hospital stay from \$4,139 to \$3,552 (Diamond et al., 1998).

- Another study found a decrease of 0.64 days in inpatient stay and a cost reduction of 25% in the 12 most expensive DRGs following adoption of a hospitalist model (Freese, 1999).
- A study of a hospitalist model implemented by Kaiser Permanente in California found reductions in length of stay and reductions in the use of specialists but not a corresponding decrease in costs. However, the authors indicated that the study lacked sufficient controls to isolate the influence of the hospitalist model from the other changes affecting the health care delivery system (Craig et al., 1999).
- Costs of care are said to be reduced through two ways under the hospitalist model: shortened length of stay and reduced number of consultations. The length of stay is said to be shortened mainly due to the daily availability of the hospitalist who can, as needed, order and interpret tests or perform procedures without waiting for the primary care provider to visit the hospital. With hospitalists there is also more “curbside” consultation, which can benefit the patient. At the same time, there is a reduction in the number of “anticipatory” consultations. An example of the latter occurs when the patient is admitted in stable condition with a suspected cardiac problem, but it is known that the attending is at the hospital only for brief visits. Because of concern that the patient’s condition might deteriorate while the attending is away, an anticipatory “consultation” with the cardiologist is ordered rather than waiting to see if it is actually needed (Freese, 1999).
- Quality of care may be improved with the use of hospitalists. Primary care practitioners, who are increasingly focused on outpatient care, are less able to develop and/or maintain the skills that are needed to care for inpatients. Further, this comes at a time when patients are being admitted to the hospital sicker than in the past and, therefore, more likely to benefit from the services of a physician with special inpatient skills (Morasch, 1998).
- Hospitalists have greater skills than primary care doctors for treating and managing the patient in an inpatient setting. The nature of outpatient practice has changed over the past 20 years. Managed care has created financial incentives that have emphasized outpatient services as the preferred mode of care. As a result, patients are presenting in doctors’ offices sicker with fewer being admitted to the hospital. A 1978 study found that, on average, general internists spent 40% of their time attending to 10 to 12 patients in the hospital. Although not an updated comparison on the general internist, but probably relevant, in 1997 an American Medical Association study found that family physicians saw two patients a day in the hospital (Brink, 1998).

### *Disadvantages*

- Implementation of the hospitalist model requires changes in practice patterns for both primary care and non-primary care physicians. For example, primary care physicians may be resistant to turning their patients over to hospitalists, fearing loss of control and possible loss of income. If the hospital has residents, the role of the hospitalist in the education process needs to be determined.
- Hospitalists are far more expensive than residents and non-physicians and hospitals do not incur costs when inpatients are cared for by attending physicians. Since hospitals are not reimbursed extra for having hospitalists under Medicare, Medicaid and most other payers, hospitalists can add significantly to hospital costs.

## **2. Primary Care Physicians (PCPs)**

### *Advantages*

- Physicians' ambulatory care practices are less disrupted by inpatient visiting. Schedules are more predictable although the PCPs' outpatient panels have grown as a result of the reductions in inpatient responsibilities (Freese, 1999).
- Stress and fatigue in the primary care office the day after covering inpatients is avoided (Milstein, 1999).
- The continuous presence of the hospitalist benefits the primary care physician who has a colleague to provide information on the patient that is more complete than what can be obtained by a brief daily visit. The hospitalist, by virtue of continuous presence in the hospital, is also better able to arrange and coordinate the services of the subspecialists.

### *Disadvantages*

- The PCP loses control of the patient. The possibility exists for gaps in communication to arise, and for patients to react negatively to the loss of the primary care provider's services in the hospital. (Brown, 1998). Computerized acquisition and transmission of medical information offer potential solutions to the problem of sharing information between the hospitalist and the PCP (Wachter, 1999).
- The PCP loses prestige by no longer being responsible for inpatient care. This comes at a time when the PCP may already be feeling a loss of status in the outpatient arena as physician assistants and nurse practitioners assume a larger role in the delivery of primary care (Sox, 1999).
- General internists are already facing a challenge from family physicians in providing primary care to adult patients; the hospitalist now presents an additional challenge from within the internal medicine department (Nolan, 1998).

### **3. Hospitalists**

#### *Advantages*

- A clinically challenging and rewarding role (Lindenauer et al., 1999).
- Upon completion of their training many physicians would like to continue to work in the facility and area where they trained. They are knowledgeable of the facility and the community. It also may minimize the disruption to the physician's family. The transition costs are minimal.
- A hospitalist position may allow for flexible scheduling and regular hours. There are also no start-up costs as there might be in private practice. The hospitalist also does not become tied down and obligated to a specific set of patients, which is an advantage if the physician is uncertain about their long term plans.
- The current demand for hospitalists appears to be growing; although the long term demand for hospitalists is less clear. The National Association of Inpatient Physicians estimates that there are currently about 2,500 to 3,000 hospitalists employed in the U.S. and that only 10% of hospitals employ hospitalists (Jaklevic, 1998 in Chaty, 1998). Thus, if all hospitals were to employ hospitalists, there might be a potential demand for over 25,000 hospitalists. A 1997 survey of the 955 members of the National Association of Inpatient Physicians, which represents the interests of hospitalists, found that most hospitalists cared for between 11 and 15 patients (Lindenauer et al., 1999).

#### *Disadvantages*

- The high intensity work of the hospitalist may only be suitable for younger physicians and may lead to burn out. When these physicians want to leave hospitalist work it is not clear how successfully they will be able to transition into office-based or primary care practice (Goldman, 1999).
- Hospitalists as full time inpatient clinicians may also have less status than more academic physicians and derive less income than their colleagues in private practice (Goldman, 1999).
- Greater inpatient specialization could lead to less ability for the hospitalist to care for a wide range of critical conditions, at least in the larger hospitals. Rural hospitals might then become a more likely employment site for the hospitalist (Schroeder et. al., 1999).

#### **4. Patients**

##### *Advantages*

- Many of the benefits cited above also benefit patients.
- Hospitalists are available to patients and concerned family members over a wider range of hours than the primary care physician (Milstein, 1999). This can improve patient understanding and cooperation and increase patient satisfaction.
- The hospitalist model has resulted in better communication between subspecialists, such as coronary care or intensive care physicians, and the physician responsible for the overall care of the patient while in the hospital. Where the primary care physician remains in charge after a patient is admitted to the hospital, fragmented communications can result since the PCP is usually only available for a brief period during the day. In addition, the hospitalist will be more familiar with the critical care inpatient system than the primary care physician and is better able to manage it in the patient's interests. (Wachter, 1999).
- The advent of the hospitalist has led to improved communications between inpatient and outpatient services because the hospitalist has required the involved parties to focus on the issue of communication. For example, some hospitalists use fax machines to send daily progress notes to the primary care physician (Wachter, 1999).
- With the hospitalist model there are fewer occasions for cancellations of office appointments with the primary care physician, who will need to spend less time in the hospital dealing with unpredictable events (Milstein, 1999).

##### *Disadvantages*

- Upon admission, the patient loses continuity of care from the primary care physician, who may be more aware of the patient's history and who probably has an existing relationship with the patient. However, some believe this point is overstated. In reality, patients often switch providers. Also, the primary care physician is often not available on evenings and weekends for the hospitalized patient, further countering the argument that there is more continuity of care when the primary care provider remains in charge (Freese, 1999)
- Lacking a full history on the patient, the hospitalist may be more likely to pursue aggressive treatment rather than "watchful waiting" (Schroeder et al., 1999).
- Advanced planning directives may not be fully known by the hospitalist, resulting in types of end-of-life care that are not desired by the patient (Sox, 1999).

## **5. Residents and Graduate Medical Education Providers**

### *Advantages*

- The focus and expertise of the hospitalists may improve the quality of graduate and undergraduate medical education. The practice of having one month per year attending physicians serve as faculty is seen by some as of questionable educational value to resident training (Goldman, 1999). Hospitalists spend more time in the hospital than other physicians and may thus be more available to residents.

### *Disadvantages*

- Hospitalists, concerned with outcomes, efficiency and controlling costs, may limit access of residents to their patients (Morasch, 1998).
- Subspecialty fellowship training might be affected adversely if hospitalists reduce the number of subspecialty consults. The increased physical and intellectual presence of hospitalists may reduce the autonomy of residents and the attractiveness of internal medicine as a specialty training choice. (Goldman, 1999)
- By removing the primary care physician from the care of the inpatient, the medical resident loses contact with an important source of information about the patient's life previous to the admission. Opportunities to learn about the continuum of health become more difficult (Schroeder et al., 1999).

## **6. Other Possible Impacts on GME**

- The advent of hospitalists could affect the way in which internal medicine residents are trained. There may evolve two tracks in internal medicine: one emphasizing ambulatory and primary care; the other emphasizing hospital-based care (Goldman, 1999).
- The hospitalist may usher in a new research agenda for physicians. "With the advent of modern cellular and molecular biology...the link between research and inpatient care has weakened. The hospitalist movement creates an opportunity for the inpatient physician to be linked to the problems seen on the inpatient service by a different kind of science: outcomes research, quality assessment and improvement, development of clinical guidelines and pathways, and development of clinical trials to improve diagnosis or therapy."(Goldman, 1999 p.366.)



## **C. The Use of Non-Physician Clinicians (NPCs) As Replacements for Residents**

Many of the articles reviewed in this section do not directly address the question of the use of non-physician clinicians as part of a residency program downsizing strategy. However, studies which demonstrate that resident tasks can be performed by NPCs are relevant to this report and are therefore included in the literature review. This review is organized into the following sections:

- reasons for substitution of NPCs for residents;
- the nature of the replacement substitution versus role enhancement;
- the hospitals and departments in which the NPCs work;
- the tasks performed by the NPC;
- the skill level of the tasks performed by the NPC; and
- costs of replacing residents with NPCs.

### **1. Reasons for Substitution of NPCs for Hospital Residents**

- Concern that there are too many physicians training in certain specialties (Knickman et al., 1992).
- Legislative/regulatory requirements for reducing resident work hours (e.g. the New York State regulation limiting residents to 80 hour work weeks) (Knickman et. al., 1992).
- Increased interest in training residents in ambulatory care sites and locations other than hospitals leaving a gap in service on the inpatient side (Knickman et al., 1992).
- Maintaining the quality of residency training in specific departments, e.g. reducing the size of a neonatal residency program because of concerns for preserving educational quality - leading to the need for replacement staff to meet service needs (Carzoli et. al., 1994).

### **2. The Nature of the Replacement: Substitution Versus Role Enhancement**

One distinction to be made in analyzing the question of resident replacement by the NPC is whether the NPC represents a substitution for the physician (resident) role or an enhancement of that role. Substitution is defined as the “actual completion of one or more tasks by a person other than the one originally intended to complete such tasks” whereas role enhancement refers to the “use of one person to go beyond what others do usually with the intent to improve the overall outcome of the service provided.” (Riportella-Muller et al., 1995: 182). The studies in this review concern substitution rather than role enhancement.

In a 1992 study of the 391 hospitals that were part of the Council of Teaching Hospitals, 87% of the hospitals that had employed NPCs to substitute for residents stated that they had no plan to downsize their residency programs (Riportella-Muller et al., 1995). Most of the literature on NPC substitution for physicians is based on the need of the hospitals to increase their service

capacity rather than to reduce the size of their residency programs. Current and future developments in GME funding may change this situation.

### **3. The Hospitals and Departments in which the NPCs Work**

Resident substitution by NPCs occurs in a wide range of departments including pediatric intensive care units (DeNicola, et al., 1994), ob/gyn (McGill et al., 1990), surgical service (Heinrich, et al., 1980), neonatal intensive care (Carzoli et al., 1994; DeNicola et al., 1984) and trauma service (Spisso et al., 1990).

One review of the substitution of PAs for housestaff found PAs working in medical intensive care, emergency medicine, cardiology, gastroenterology, general surgery and surgical subspecialties, orthopedics, neurology, and radiology (Stoddard et al., 1994). That same review found nurse practitioners to have replaced residents in pediatrics, neonatology, gastroenterology, neurology, and trauma surgery, internal medicine service and pediatrics service.

### **4. The Tasks Performed by the NPC**

The specific tasks performed by NPCs in comparison to residents were analyzed for an internal medicine program. Tasks were grouped into three categories: 1) those that can only be performed by physicians; 2) those that are educational only; and 3) those that could be done by non-physicians such as NPCs, nurses, laboratory technicians and others. In a traditional model of hospital care, in which the physician is the primary medical manager, almost half of the patient care activities required a physician, with only 7% of the functions being able to be performed by an NPC. Under a “midlevel” practitioner model, where the NPC monitors and coordinates care and implements the decisions of the doctor, 20% of the services had to be provided by a physician while 35% could be performed by an NPC (Knickman et al., 1992).

### **5. The Skill Level of the NPC**

- The skill level of the NPC has been equated to that of a second or third year medical resident in several studies. For example, in the Council of Teaching Hospitals survey referred to above, the mean PGY level for the nurse practitioner was 3.03 and for the physician assistant, 2.85. However, that study did not determine if the NPCs were performing tasks that were at the same skill level as those performed by the more advanced residents, i.e., those beyond the PGY 3 level (Riportella-Muller et al., 1995).
- NPCs in pediatric and neonatal ICUs were observed to function at the level of a second year resident (DeNicola et al., 1994).
- A study of a neonatal intensive care unit found no differences between NPCs and a team consisting of one third year resident and three second year pediatric residents with respect to patient management, outcomes, and charges (Carzoli et al., 1994).

## **6. The Costs of Replacing Residents with NPCs**

- All of the studies examining the question of costs have reported that NPCs cost more than a resident for an equivalent amount of service. The basis of this position is the long hours worked by the resident coupled with the low wages received. For example, one study of an academic medical center contrasted the 40 hours a week worked by the nurse practitioner with 84-120 hours a week worked by the housestaff (Spisso et al., 1990).
- A study to estimate the costs in New York City of a residency downsizing strategy that uses NPCs as replacements to residents considered two different analytical approaches (Green et al., 1995). One approach estimated the cost of replacing each resident with three NPCs based on the assumption that residents work at least 80 hours a week and operate at a higher proficiency level than NPCs. The second approach was based upon the “midlevel practitioner” model (Knickman et al., 1992) referenced above. This approach would involve a mix of physicians and NPCs replacing residents. Based on this analysis, the authors conclude that the reduction of Medicare indirect medical education payments to hospitals that occurs as residency programs are downsized creates a major financial loss for the institution.
- Another study using a replacement approach following the midlevel practitioner model (Knickman, et al., 1992) above, found that the net annual direct costs of substitution was \$58,000 per resident (Stoddard et al., 1994).

## **D. Other Reorganization of Health Care in Teaching Hospitals**

The articles reviewed in this section address other approaches to replacing residents that were not described as being a part of an NPC or hospitalist strategy.

- One analysis of the house staff replacement issue illustrates the range of variation that can occur in the staffing configurations associated with resident replacement strategies. These staff include full time staff physicians, voluntary attending physicians, moonlighting physicians, primary care residents, PAs, nurse practitioners and other advanced practice nurses, medical students, staff nurses, and ancillary support staff (Stoddard et al., 1994). To implement these replacement strategies usually requires a major reorganization of services.
- In principle, replacing residents in over-supplied subspecialties with subspecialist physicians should not be that difficult. The supply of physicians would be available to meet the service demands created by the reduction of the subspecialist residency positions (Stoddard et al., 1994).
- Another potential source of personnel to replace residents is medical school faculty. Between 1980 and 1990 full-time medical school faculty increased 40%, with most of the increase occurring in clinical departments (Stoddard et al., 1994). The extent to which this substitution can occur is still uncertain given the lack of data which describe the apportionment of the faculty physician’s time between clinical and teaching activities.
- Efficiencies in the substitution of attending staff for residents have been noted as partially offsetting the increased costs associated with losing residents as service providers.

Substitution of attendings has resulted in shorter lengths of stay. In a randomized, controlled trial patients were assigned to a staff (non-teaching) service or a resident (teaching) service. Patients admitted to the staff service when compared to the resident service had a 1.7 day lower length of stay, lower average charges, and lower laboratory and pharmacy charges. No statistical differences between the two services were found for readmission rates or mortality rates (Simmer et al., 1991).

- Others have speculated that there are hidden costs in morbidity, mortality, and related litigation that are reduced when attendings (or experienced NPCs) replace residents (Spisso et al., 1990).
- One study examined strategies for replacing pediatric residents in nine hospitals. Most hospitals used multiple strategies with the primary strategy being the employment of moonlighting physicians and the secondary strategy being the increase of the responsibilities of nurses. The authors noted that the type of strategy selected is influenced by the location of the hospital, the availability of alternative personnel such as RNs, NPs, and PAs and the preferences of community physicians and hospital staff (Honigfeld et al., 1990).
- Another strategy is the use of the “night float” system. (Trontell et al., 1991) This system assigns one or more residents on a scheduled basis to assume some or all of the nighttime duties thereby allowing other housestaff to go home or sleep in the hospital. A study of this system employed in internal medicine residency programs found generally high satisfaction with its use including decreased resident fatigue, increased morale, and a general improvement in the quality of care. The problems with the system included decreased continuity of care and inadequate education of the night float team, and discontinuity of care. Implementation of the night float strategy included decreasing elective time in 43% of the programs, hiring additional residents in 27% of the programs and creating a non-teaching service in 13% of the programs. Thus, the night float system is not a means to reduce residency positions per se but a method of organizing residents’ hours to achieve better educational and patient outcomes. The night float system, however, could be a useful adjunct to a resident reduction strategy.

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## APPENDIX

### Survey Cover Letter

Dear

The continuing debate at the national and state levels over the future of Graduate Medical Education funding has increased the need for a clearer understanding of the problems and options associated with GME. The participation of your institution in the original AAMC study published in 1997 as *Reaching Informed Decisions About Graduate Medical Education Program Size* was an important contribution to this understanding.

The Center for Health Workforce Studies at the University at Albany has been working with teaching hospitals in New York that have downsized or considered downsizing their residency programs. The Center, with support from the Greater New York Hospital Association (GNYHA) and in consultation with the AAMC, is updating the information provided to the AAMC in the original study. Funding for this project comes in part from a grant from the Robert Wood Johnson Foundation to the GNYHA to provide technical assistance to the hospitals participating in the GME demonstration in New York State.

We would like to conduct a half-hour phone interview with you that will focus on what modifications occurred in your GME programs, what process was followed in deciding to make the modifications or leave the programs unchanged, and the effects of any changes on education, patient care, and/or research. In the case of institutions that reduced their residency programs, we are also interested in what measures, if any, were taken to replace residents such as the employment of "hospitalists", the use of non-physician clinicians, or the restructuring of the service delivery system.

A copy of the survey instrument is enclosed for your information. Also enclosed is a copy of the report on your institution that appeared in the 1997 AAMC publication. The lead staff for this project is Steven Schreiber, Ph.D. He will call you shortly to set up a time for the interview. We will be happy to share with you the results of this study. If you have any questions please feel free to call me at 518/402-0250. We appreciate your assistance.

Sincerely,

Edward Salsberg  
Director, Center for Health  
Workforce Studies

Enc.



**Follow-up Survey of Institutions in  
Reaching Informed Decisions About Graduate Medical Education Program Size  
(AAMC, 1997)<sup>3</sup>**

***BACKGROUND DATA - GME MODIFICATIONS***

**Please complete the attached tables and fax to 518/402-0252, prior to the interview.**

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What process was used to decide whether to downsize residency positions?

- A. Who was involved in the decision?**
- B. What procedures were followed?**
- C. How important were the following factors in the decision(s) to reduce, leave unchanged, or increase residency positions?**
  - 1. National, regional, and local physician supply and requirements
  - 2. Employment and practice opportunities for GME Graduates
  - 3. Financial factors related to the cost of GME
  - 4. and state health care reform; Balanced Budget Act
  - 5. Market changes e.g. managed care, networks, institutional mergers and integration, cost reduction programs
  - 6. Competitive status of GME programs and the degree to which they are consistent with the other missions of the institution
    - undergraduate medical education
    - training of other health professions
    - research and academic writing
    - patient service.
  - 7. Institutional resources available for physician training
    - training sites
    - number and types of patients available for training of physicians
    - size and preparation of faculty which trains residents.

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<sup>3</sup> This study is based in significant measure on the survey instrument used in the original AAMC study and a questionnaire used by the Partners Healthcare System/Massachusetts General Hospital to assess the impact of GME modifications at that institution. We are indebted to these organizations for their good work.

**A. Were transition or replacement funds made available to departments which had to function with fewer residents?**

1. Transition funds (temporary support pending patient care re-engineering).
2. Replacement funds (a more permanent way to deliver services formerly provided by residents).
3. What was the magnitude of the funding (dollars per resident replaced)?

**B. Did your program implement a resident replacement strategy(s)?**

1. Strategy selected
  - No strategy
  - Increased clinical responsibility of attending physicians
  - Hiring of “hospital” MDs. Total number of full time equivalents hired and in which departments.
  - Hiring of physician assistants or nurse practitioners to replace residents. Total number of full time equivalents hired and in which departments. Estimated PGY level of the services performed by the PAs or NPs.
  - Hiring of moonlighting MDs. Total number of full time equivalents hired and in which departments.
  - Other strategies (describe).
2. Funding sources
  - **Funding sources for the resident replacement strategies: hospital, faculty practice group, other.**
3. Decision-making
  - The decision-making process followed in the selection of the resident replacement strategy(s).

**C. What was the impact of the decision to downsize?**

1. Impact on patient management
  - Designation of certain patients not to be “covered” by residents
  - Assignment of specific activities previously performed by residents to other non-physician personnel
  - Creating “night float” systems
  - Shifting coverage among different resident levels
  - Other (describe)
2. Impact on workload distribution
  - Increased workload for residents/fellows (e.g. #admissions # patients, # procedures or cases, etc.)
  - Increase in work hours for residents/fellows
  - Increased frequency of overnight call for residents/fellows
  - Decrease in redundant work (e.g. duplicative admission work-ups, progress notes, other documentation)
  - Increased workload for full-time, clinical, or volunteer faculty
  - Other (describe)

3. Impact on training experience/training program
  - Increased availability of training resources per resident (e.g. ambulatory space, faculty time, operative cases)
  - Decrease in elective time for residents/fellows
  - Elimination of “service” (i.e. minimally educational resident tasks or rotations)
  - Reduced role of residents in research activities
  - Reduced role of residents in education and supervision of medical students and junior residents.
  - Other changes in rotation schedule or curriculum for residents
  - Changes in the clerkship experience
  - Changes in recruiting
  - Impact on resident-faculty interactions
  - Impact on program director (e.g. increased time available for mentoring/counseling per resident)
  - Other
4. Impact on quality and costs
  - the quality of training
  - the quality of care
  - acceptance by patients
  - acceptance by attending physicians, residents, and other staff
  - costs and revenue

**Follow-up Survey of Institutions in  
Reaching Informed Decisions About Graduate Medical Education Program Size  
(AAMC, 1997)**

**DATA ON GME MODIFICATIONS**

Please complete the tables below and fax to 518/402-0252, prior to the interview.

*In the column below, enter the name of each specialty for which there was a net increase or decrease in resident/fellow totals between 1996 and 1999. Enter the figures showing the total count of residents/fellows, by the applicable specialty, for the base year as of August 1996 and the current year as of August 1998. Please indicate any planned changes for the year 99-00.*

|   | Number of Residents and Fellows |           |           |
|---|---------------------------------|-----------|-----------|
|   | 1996-1997                       | 1998-1999 | 1999-2000 |
| Specialties with increases or decreases |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |
|   |                                 |           |           |

Please indicate total number of residents and fellows in your program for the years listed below.

| Year  | Total Residents and Fellows |
|-------|-----------------------------|
| 95-96 |                             |
| 96-97 |                             |
| 97-98 |                             |
| 98-99 |                             |
| 99-00 |                             |

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