United States General Accounting Office

GAO

Briefing Report to the Honorable Marty Russo, House of Representatives

November 1992

HEALTH CARE

Reduction in Resident Physician Work Hours Will Not Be Easy to Attain

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GAO

United States
General Accounting Office
Washington, D.C. 20548

Human Resources Division

B-251008

November 20, 1992

The Honorable Marty Russo
House of Representatives

Dear Mr. Russo:

On September 19, 1991, you requested that we determine whether the quality of care delivered by resident physicians could be improved if the current regulations governing resident work hours from the Accreditation Council for Graduate Medical Education (ACGME) were made more restrictive.[1] If so, you asked whether these changes might be made through federal legislation. On May 12, 1992, we briefed your staff on the preliminary results of our work and agreed to prepare a report for you on this effort.

Physician residency programs are designed to be educational within an experiential framework or clinical setting. Traditionally, resident physicians enrolled in graduate medical education programs have been expected by members of the medical community to work long hours with little time off. Consequently, it is not unusual for a resident, particularly in the surgical specialties, to work 36 hours without sleep and 100-120 hours per week.

In doing our work, we reviewed literature to try to find studies of (1) resident sleep deprivation and its impact on quality of care and (2) the effects of sleep deprivation on nonphysician job performance, safety, and health. We interviewed officials of relevant medical and health care associations, such as the Association of American Medical Colleges (AAMC) and ACGME. We also interviewed officials of the New York State Department of Health and the New York City Health and Hospital Corporation about the state experience in implementing regulations to limit the hours residents may work.

Results in Brief

Patients receiving care from sleep-deprived resident physicians may be more at risk of being exposed to medical errors. ACGME has recognized this, but has not mandated a specific work-hour limit for all of its 24 specialty residency programs. The primary reason for this is that ACGME

[1]The ACGME is a private, national accrediting body for approximately 6,789 residency programs throughout the United States. It establishes educational standards (for example, Essentials of Accredited Residencies) and conducts periodic site visits and program reviews to determine the degree to which these standards are met. Once a program is accredited, reviews are conducted every 3 to 5 years.

membership cannot agree on whether limits should be set on resident work hours. Instead, in February 1992, ACGME adopted compromise guidelines stating that it is desirable for on-call duty[2] to be limited to 1 night out of 3 and for residents to have at least 1 day off in a 7-day workweek. However, under these guidelines it is still possible for a resident to work 96 hours or more per week.

New York is the only state that limits the number of hours a resident can work in a week (that is, no more than an average of 80 hours per week over a 4-week period). But, implementation of the New York regulations has been costly primarily because additional staff are needed to take the residents' place. Further, several private hospitals and numerous surgical residency programs in the state have not fully complied with the regulations. Resident hour reforms, including reduction of hours, have been made in England, New Zealand, Canada, and Australia.

The number of hours worked by resident physicians can be legislatively mandated by amending the Medicare conditions of participation. But such factors as the cost of replacing residents with other health care professionals and possible limits on access to care in public hospitals must be considered before any legislative action is initiated.

Principal Findings

Research Shows Increased Error Risk for Fatigued Residents

Studies of the effects of long work hours and sleep deprivation on the performance of resident physicians do not conclusively demonstrate that the quality of care provided by these residents is jeopardized. But, several studies on resident stress, indicate that resident physicians cite excessive fatigue as the cause of errors made in patient care.[3]

[2]On-call duty refers to the time a resident provides patient care outside of usual duty hours. On-call duty generally runs from about 5 p.m. to about 7 a.m. but varies by specialty and hospital.

[3]The Office of Technology Assessment's (OTA) 1991 report, Biological Rhythms: Implications for the Worker, cited numerous research reports that demonstrate the adverse effects of sleep deprivation and shift work on the health, work performance, and job safety of nonphysician workers. OTA observed that this large body of literature demonstrates that fatigue and sleep deprivation have a negative effect on the performance of most tasks.

ACGME Requirements Do Not Set Limits on Resident Work Hours

Medical associations have been discussing the issue of long resident work hours for several years. But no nationwide limitations have been established because of disagreements on the need for such limitations within and among these groups. Since 1988, the American Medical Association (AMA) and the Association of American Medical Colleges (AAMC) have worked with ACGME to insert language in the ACGME General Requirements specifying the maximum number of hours that residents may work. Their efforts were initially opposed by the American Boards of Medical Specialties (ABMS), who were acting primarily on behalf of the surgical specialties.[4] However, in October 1991, compromise language was agreed upon by AMA representatives, the American Board of Surgeons, and the American College of Surgeons. In February 1992, ACGME adopted the compromise language as the minimum standard language for the Special Requirements. The compromise language, however, states only that

> "It is desirable that residents' work schedules be designed so that on the average, excluding exceptional patient care needs, residents have at least one day out of seven free of routine responsibilities and be on-call in the hospital no more often than every third night."

Before ACGME's adoption of this language, 15 of the 24 specialty programs had comparable accreditation criteria that limited on-call time to at least every third night and provided 1 day off per week. Another four programs had either on-call or day-off criteria but not both. The remaining five programs—primarily surgical—did not have any accreditation criteria for on-call frequency or days off.[5] Under the compromise guidelines, residents can work 96 hours or more per week.

Regulation of Resident Hours Is Costly and Difficult to Monitor

New York is the only state that restricts the number of hours a resident can work; its regulations mandate that (1) resident work hours be held to no more than 80 hours per week averaged over a 4-week period and (2) appropriate supervision be provided for residents according to their levels of experience. Implemented in July 1989, the New York regulations have produced mixed results. From January 1, 1990, to December 31, 1991, the New York State Department of Health (DOH) received 53 complaints of regulation violations from residents and their families, 36 of which were substantiated through investigation. In addition, of 24 hospitals surveyed by DOH during this period, 15 were cited for exceeding resident work

[4]The surgical specialties oppose limits on resident work hours on the basis that such limits interfere with the development of the resident's sense of commitment to the patient and impede the continuity of care necessary for patient safety.

[5]These programs, Colon and Rectal Surgery, Neurological Surgery, Thoracic Surgery, General Surgery, and Preventive Medicine, adopted the compromise criteria for implementation by June 1992.

hours, and 9 were cited for not meeting the supervisory requirements. Seven of these nine hospitals were also cited for failing to meet the work-hour requirements. The majority of the complaints came from residency programs located in New York City (43). Six of the 43 were Health and Hospital Corporation (city-managed) hospitals, and 37 were private or university hospitals. The survey data also indicate that most of the noncompliance with hour limits occurred in surgical or obstetrical/gynecological programs (10 out of 15).

The costs of implementing and maintaining New York state's requirements are high. DOH estimated the initial cost of statewide implementation at $227 million ($65.8 million for ancillary support services, $82.2 million for supplement or replacement of resident work hours by physician assistants and nurse practitioners, and $78.8 million for supervision of residents). In addition, state officials estimate that the cost of adhering to the regulations will be $3.1 billion over the next 10 years, and $5.7 billion over the next 15 years.

Officials of the American Hospital Association (AHA), AMA, ABMS, and ACGME told us that compliance with mandatory limits on resident work hours, such as New York's, would be especially difficult for public hospitals. An estimated 28,350 resident physicians are enrolled in 1,970 residency programs at more than 200 public institutions. Further, resident physicians are often the sole providers of medical care to largely indigent, uninsured, and underinsured populations.[6] Medical associations warn that rigid enforcement of mandatory limits on work hours could force closure of some of these hospitals.

Other Nations Place Limits on Resident Hours

In several foreign countries governmental entities have successfully reduced the number of hours worked by resident physicians. In Ontario, Canada, residents and interns are permitted to work one full weekend in three and work one night-duty shift every third night. Residents working in emergency departments in Ontario are restricted to 60 hours per week. In England and New Zealand, the work week is limited to 72 hours or less. Australia requires providers to pay overtime for hours worked in excess of 40 hours per week. This provides a financial incentive to hospitals to limit the number of hours worked by residents.

[6]AMA, Department of Data Systems, Medical Education Group, 1991 (see app. I).

Federal Legislation Is an Option but Cost and Other Factors Need Consideration

The number of hours worked by resident physicians can be limited legislatively by amending the Medicare conditions of participation.[7] Specifically, the Congress could require that hospitals receiving Medicare funding, limit the number of hours a resident may work to 80 hours per week or less. But there are several consequences that need to be considered if such action is taken. Decreased or "lost" resident hours generally need to be replaced. Replacement may be done by (1) increasing the amount of direct medical care and supervision provided by faculty and attending physicians; (2) utilizing nurse practitioners, nurse midwives, or physician assistants for on-call hours; and (3) providing additional auxiliary support staff to carry out a variety of tasks traditionally performed by the resident. Thus, the ability to implement an initiative to limit the number hours worked by a resident physician would also be affected by the availability of nonphysician health care personnel, many of whom are in short supply. Further, according to officials of several medical organizations, there may be other undesirable effects, such as decreased access to care should a hospital be unable to replace the lost hours, forced to close, or curtail services provided to indigent patients. Also, as occurred with implementation of the New York regulations, hospitals will likely object to a Medicare requirement that will increase their costs, unless the government reimburses them for that cost.

Conclusions

Residents working long hours and with minimal supervision are likely to be more at risk of making errors than are properly rested and supervised personnel. However, it is not anticipated that the ACGME will impose any mandatory limits on the number of hours a resident can work. Thus, it is likely that ACGME guidelines will be loosely applied, and residents in some specialties or geographic areas will continue to work 96 or more hours per week.

Federal legislation could be enacted to address this issue. However, excessive hours for residents are most likely to persist in physician shortage areas, such as inner city urban hospitals where supervision may be lacking as well. At these locations residents are often used to fill a staffing void. Thus, the cost of any legislative mandate to reduce resident hours could be high for those hospitals that rely primarily on residents to provide medical care.

[7]Conditions of participation are health, safety, and quality standards for hospitals participating in the Medicare program and are prescribed in the Code of Federal Regulations.

We are sending copies of this briefing report to interested congressional committees, and will make copies available to others on request. If you or your staff have any questions concerning this report, please contact me at (202) 512-7101. Other major contributors to the report are listed in appendix III.

Sincerely yours,

David P. Baine

David P. Baine, Director
Federal Health Care
Delivery Issues

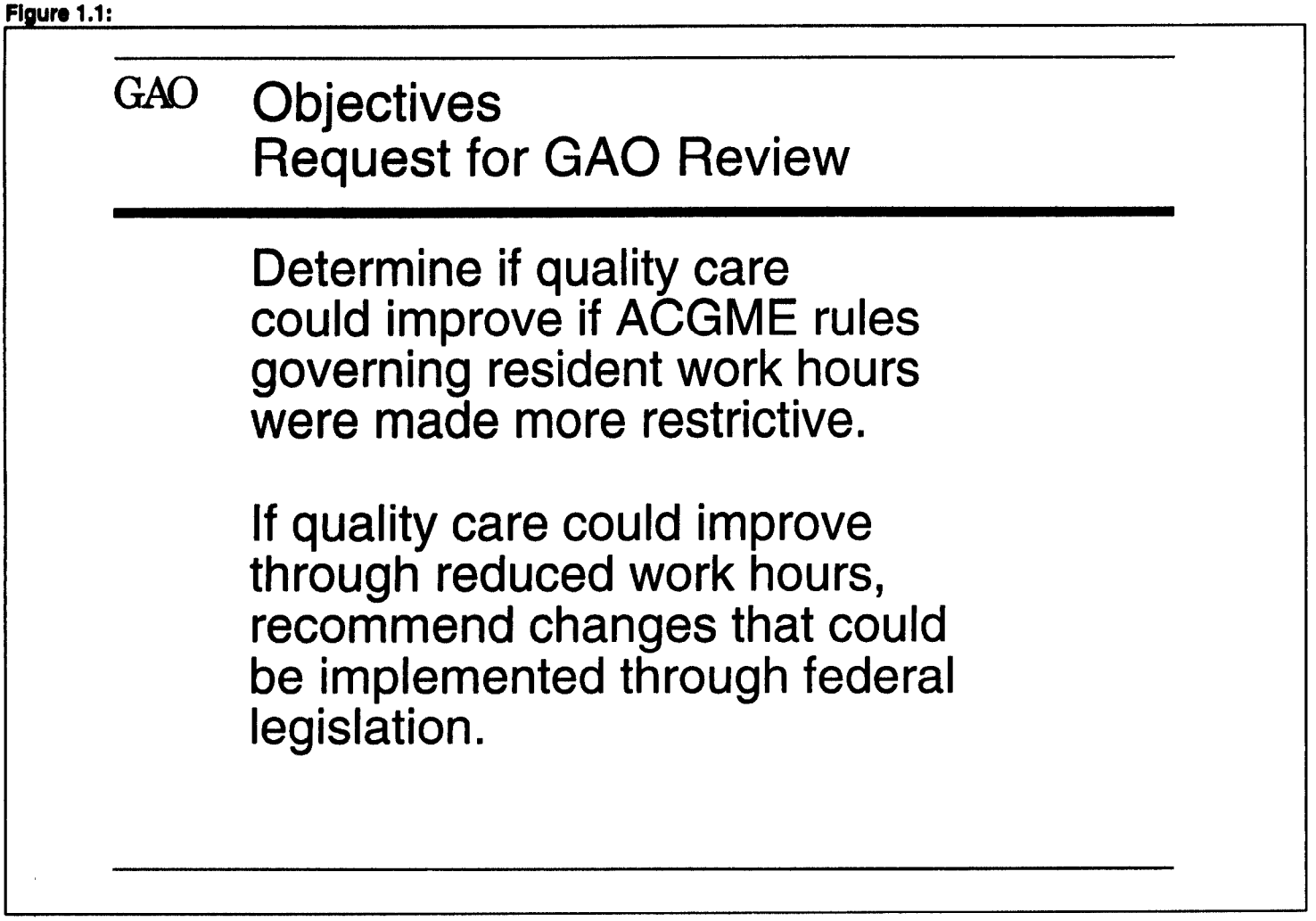
Contents

Abbreviations

AAMC	Association of American Medical Colleges
ABMS	American Board of Medical Specialties
ACGME	Accreditation Council for Graduate Medical Education
ACS	American College of Surgeons
AHA	American Hospital Association
AMA	American Medical Association
DOH	New York State Department of Health
GAO	General Accounting Office
GME	graduate medical education
NFHO	National Federation of Housestaff Organizations
OTA	Office of Technology Assessment
PAIRO	Professional Association of Interns and Residents of Ontario
PGY	post graduate year
RRC	Residency Review Committee
RPS	Resident Physician Section (AMA)
VA	Department of Veterans Affairs

Introduction

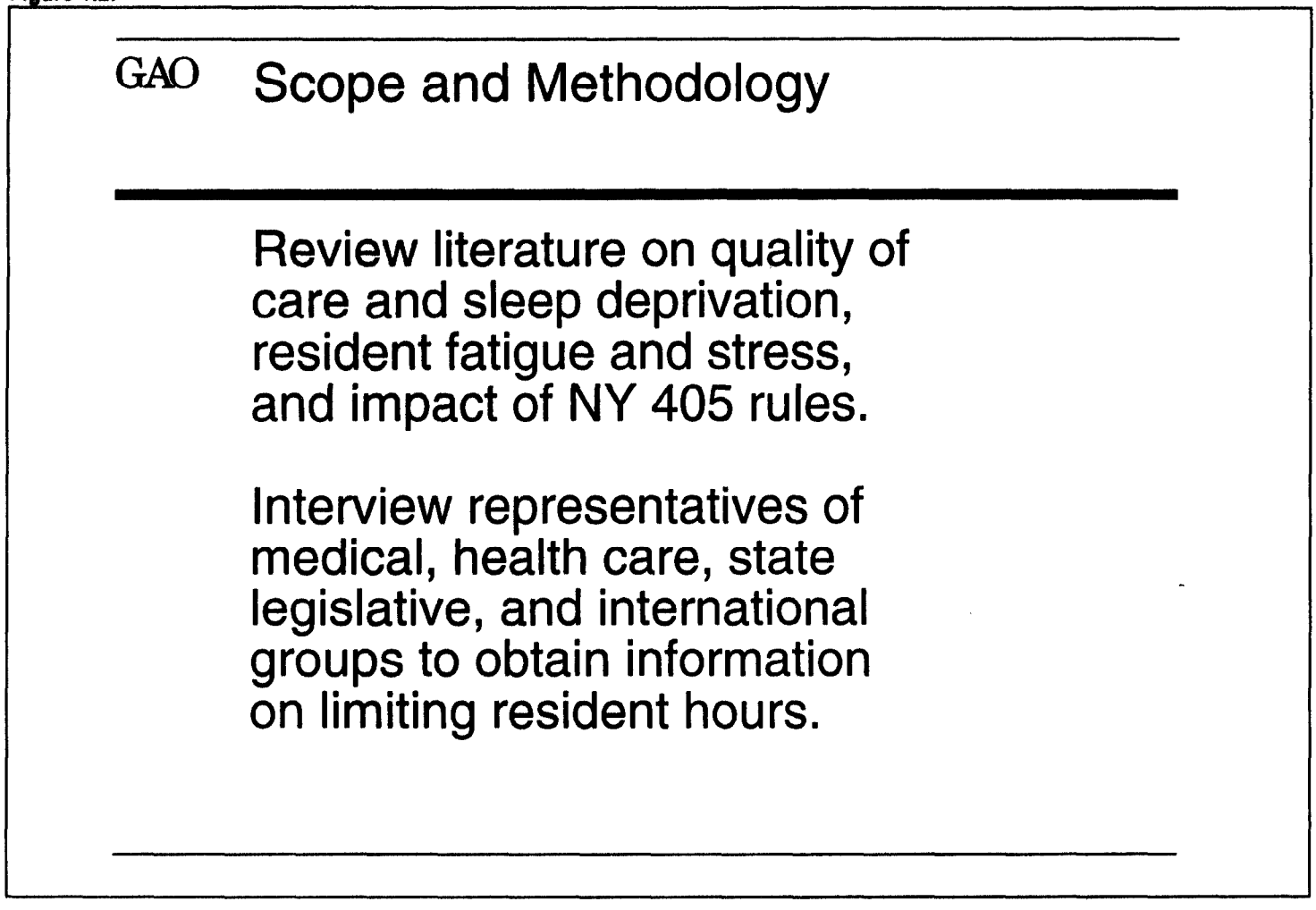
Figure 1.1:



Objectives

Concerned about the quality of medical care delivered by resident physicians who are tired from working long hours with little or no sleep, Congressman Marty Russo asked us to (1) determine whether the quality of care delivered by resident physicians could improve if the Accreditation Council for Graduate Medical Education accreditation criteria was made more restrictive with respect to the number of hours a resident physician can work in any given week and, if so, (2) assess whether changes could be made to limit resident hours through federal legislation or regulation.

Figure 1.2:



Scope and Methodology

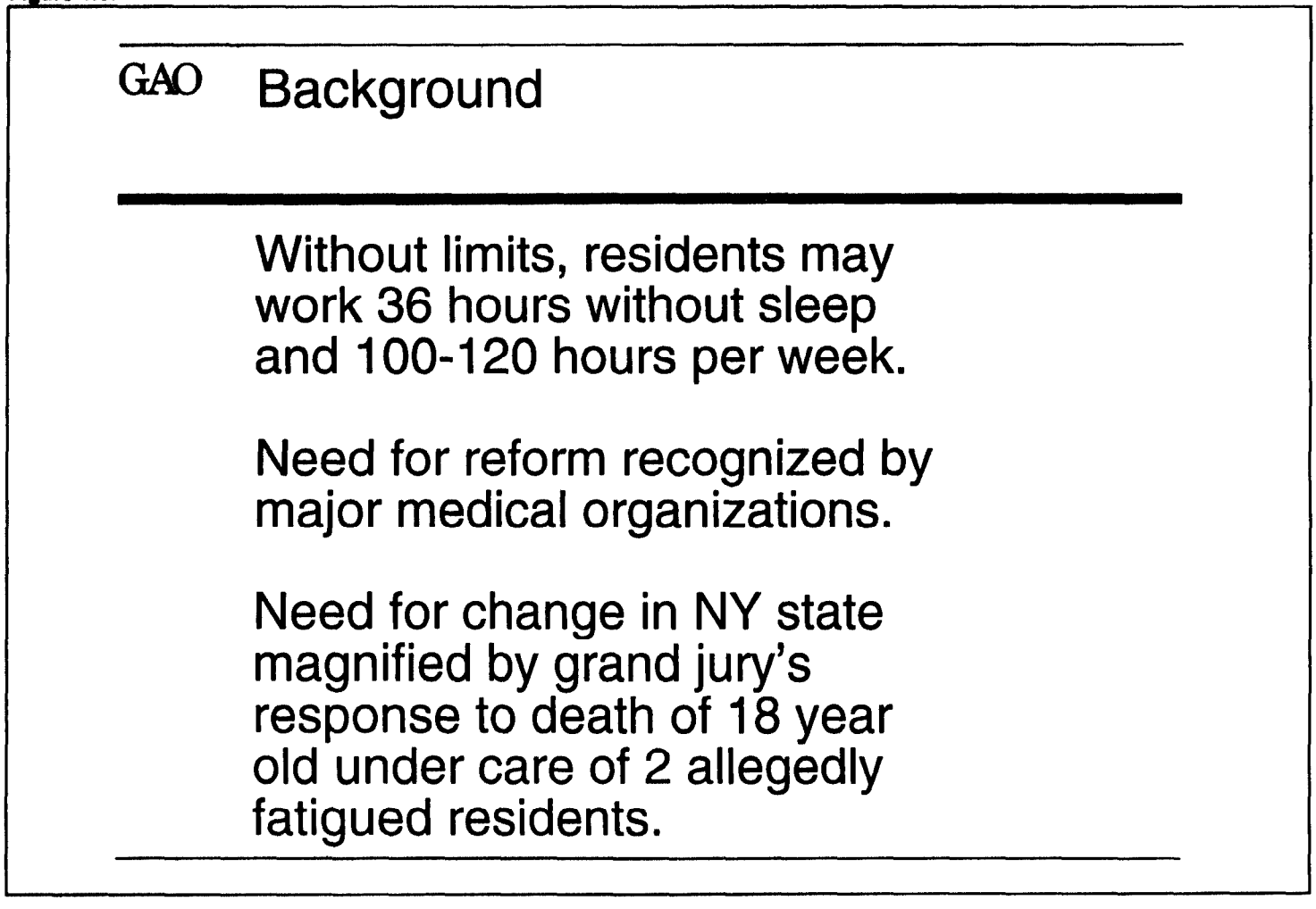
In performing our work, we reviewed relevant literature on the relationship between sleep deprivation and quality of care, resident fatigue and stress, and the physiological and behavioral effects of sleep deprivation. We also reviewed literature pertaining to the impact of a recently implemented New York state regulation that restricts the number of hours a resident physician may work in any state-licensed facility.

To determine organizational perspectives on the regulation of resident hours, we interviewed representatives of the American Medical Association, National Federation of Housestaff Organizations (NFHO), American Hospital Association, American Boards of Medical Specialties,

Association of American Medical Colleges, ACGME, New York State Department of Health, and New York City Health and Hospital Corporation. We also interviewed sponsors of state legislative initiatives to reduce resident hours and collected information on resident work-hour limitations in England, New Zealand, Australia, and Canada. Finally, we obtained information from AMA on the number of residents enrolled in public hospital programs.

We performed our work between January and August 1992 in accordance with generally accepted government auditing standards.

Figure 1.3:



Background

Physician residency programs are designed to be educational within an experiential framework or clinical setting. Traditionally, resident physicians enrolled in graduate medical education programs have been expected by members of the medical community to work long hours with little time off.[8] Consequently, it is not unusual for a resident, particularly in the surgical specialties, to work 36 hours without sleep and 100-120 hours per week.

[8]The original concept of a "resident physician" carried with it responsibility for a patient 24 hours per day, 7 days per week. Recent public and media attention to the issues of resident supervision and work hours has led to governmental efforts to restrict their hours and set minimum requirements for supervision.

In the United States, resident salaries range from $27,200 for post-graduate year one (PGY-1) to $34,500 for PGY-6. Residents are usually paid by the hospital. However, they work under the supervision and direction of the residency program faculty and are considered students by the medical schools. Educational activities are not covered under labor laws, and residents are not eligible for overtime payment of hours worked beyond 40.

Of the approximately 83,000 resident physicians in graduate medical education programs throughout the United States,[9] there are at least 28,350 residents participating in some 1,970 residency programs in more than 200 public institutions (see app. I). These residents are often the major providers of medical care for the poor and uninsured.

The need for reform of resident working conditions is recognized by medical groups, such as AAMC, the Resident Physician Section (RPS) of AMA, and the National Federation of Housestaff Organizations. Research as far back as 1973 cites the psychological problems associated with resident sleep deprivation reflecting the concerns raised by these organizations. For example, Friedman (1973) questions the educational purpose of work schedules that make repetitive sleep deprivation a mandatory part of residency training programs and links more effective and compassionate patient care with well-rested residents.

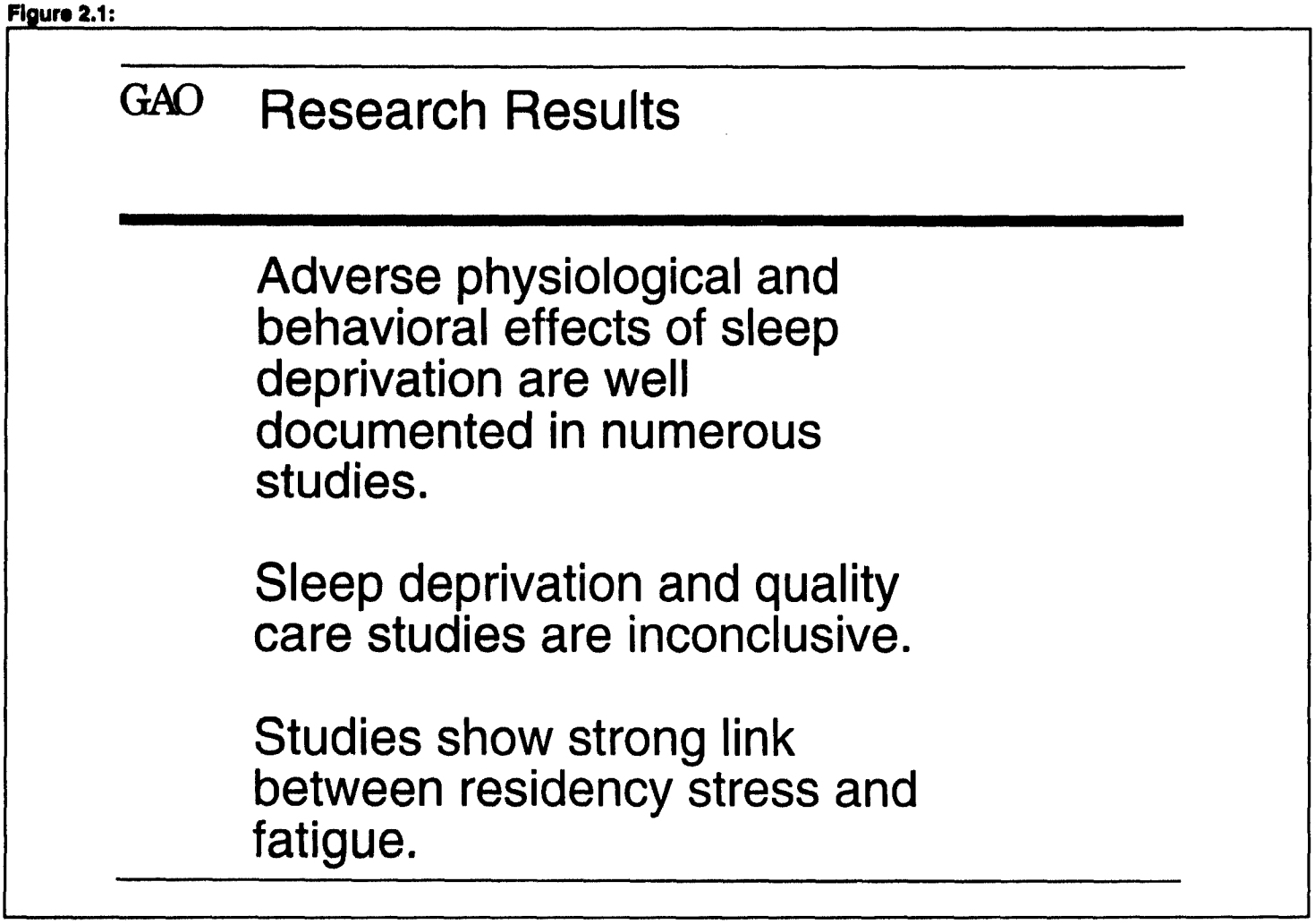
The need for change intensified in 1986 when a New York County grand jury investigated the death of an 18-year-old woman named Libby Zion. Ms. Zion died within 24 hours of admission to New York Hospital where she was admitted and treated by two allegedly fatigued and undersupervised residents. The grand jury concluded that the number of hours residents are required to work is counterproductive to providing quality medical care. In addition, it called for the development of regulations to limit the number of consecutive hours a resident may work in New York. This led to the formation of the Bell Commission by DOH and the subsequent publication of regulations in 1989 to limit the maximum number of hours a resident physician may work per week including moonlighting hours.[10]

[9]B.D. Rowley, D.C. Baldwin, and M.B. McGuire. "Selected Characteristics of Graduate Medical Education in the United States," Journal of the American Medical Association, Vol. 266 (1991), p. 933.

[10]Moonlighting represents time spent in employment outside of the residency program.

Research Results

Figure 2.1:



Research on adverse physiological and behavioral effects of sleep deprivation and shift work among nonphysicians is extensive and is well documented in a 1991 Office of Technology Assessment report, Biological Rhythms: Implications for the Worker. This report notes that circadian (internal body clock) disruption, sleep loss, and fatigue are factors in specific incidents involving all modes of transportation: airline, railroad, maritime, and highway driving. These studies coupled with studies of resident physician stress and fatigue indicate that risks to patients may be high when they are under the care of a fatigued resident.

However, studies on the effect of residents' sleep deprivation on the quality of care delivered in clinical settings are inconclusive because they are (1) somewhat contradictory, (2) not studies of real tasks, that is, sleep-deprived residents' actual performance in providing clinical care (see annotated bibliography), and (3) based on small sample sizes. For example, of the studies we reviewed, only one, Wu's study of 114 residents' mistakes (1991), has a study population larger than 59.

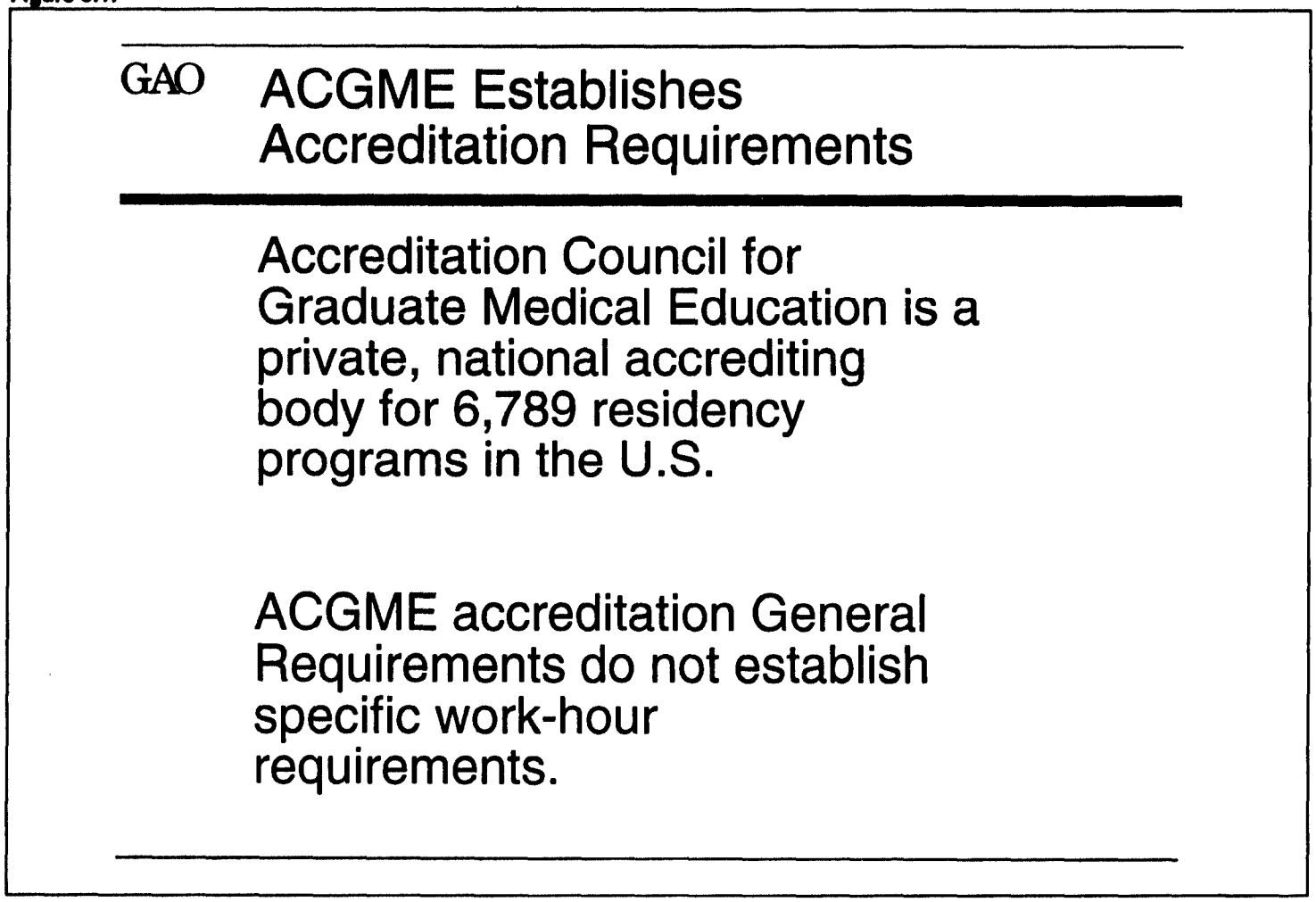
Deaconson (1988) and Resnick (1987) found that sleep deprivation has no significant effect on residents' cognitive and complex motor skills. However, both studies observed residents' responses in a laboratory, that is, a nonpatient care setting. Conversely, Friedman (1971) found an increase in error rates for interpreting electrocardiograms by sleep-deprived residents. Again, however, the electrocardiograms used for this study were read by the residents in a laboratory setting, rather than in a clinical environment. Only Lurie (1989) examines resident activities while the resident is actually on call. The purpose of the Lurie study was to determine how residents spend their on-call duty time. The study found that residents spend most on-call time on charting patient records, not on direct patient care. The study also showed that residents are frequently interrupted while working or trying to sleep.

When long work hours are coupled with other stresses of the residency program, such as fear of getting a less than perfect recommendation for specialty boards or stress related to a disintegrating marriage, the risk of resident error in delivering patient care may increase (Colford 1989). Related studies on resident stress document that resident physicians cite excessive fatigue as the cause of errors made in patient care (Strunk 1991; Wu 1991).

Long hours and fatigue also can be unhealthy for some residents. Klebanoff's study of pregnancy outcomes (1990) for residents found that pregnant residents who exceed 100 work hours per week are at increased risk for preterm delivery. The study concluded that the increased risk of preterm delivery for residents working long hours, suggested that the New York state law limiting resident work hours to 80 per week was well-advised with respect to pregnant residents.

Accreditation Council for Graduate Medical Education Establishes Resident Work-Hour Criteria

Figure 3.1:



ACGME is a private, national accrediting body for approximately 6,789 residency programs in the United States. It is governed by a 23-member council, consisting of four representatives from each of the five sponsoring parent organizations—the American Medical Association, the American Hospital Association, the Association of American Medical Colleges, the American Board of Medical Specialties, and the Council of Medical Specialty Societies, a resident physician, a public member, and a

nonvoting representative of the federal government.[11] ACGME is financially supported by the parent members and accreditation fees.

In addition to the Council, there are 24 specialty Residency Review Committees (RRC) within ACGME. Each RRC consists of representatives appointed by AMA, the appropriate specialty board, and sometimes a representative from a national specialty society. RRC must approve specialty accreditation criteria before they are sent to the ACGME Council for approval.[12]

In order to operate, all graduate medical education (GME) programs must be accredited by ACGME. Accrediting reviews are conducted every 3 to 5 years. Residents must complete their residencies through accredited programs in order to sit for specialty board certification, and hospital-based GME programs must be accredited in order for the hospital to receive direct and in-direct GME reimbursement under Medicare.

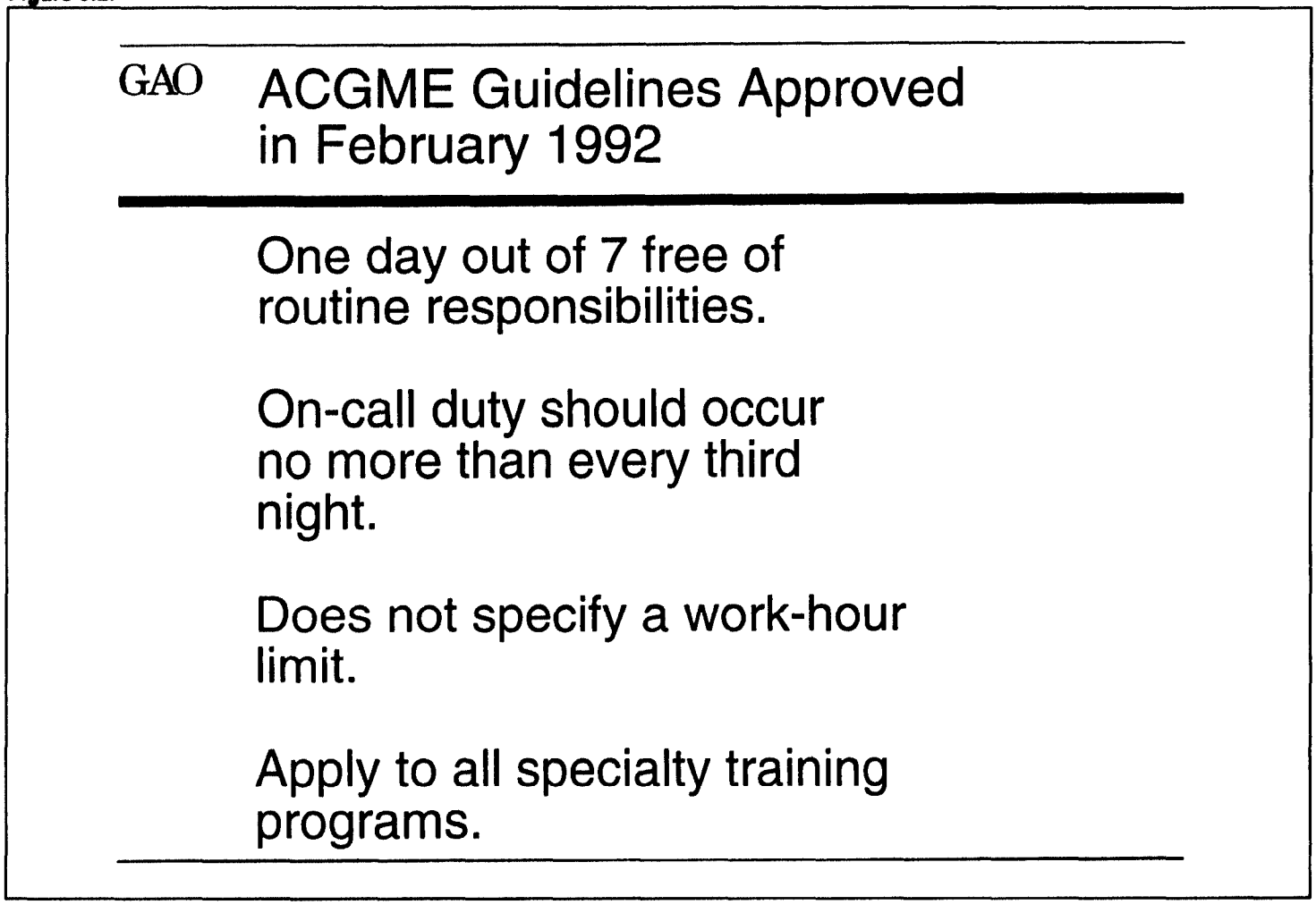
A program either may lose its accreditation or be given provisional accreditation if it is not in compliance with ACGME requirements, fails to follow directives associated with accreditation action and procedures, or has a serious program deficiency. Accreditation may be granted provisionally for the first evaluation visit to a new program and for the reasons listed previously. Provisionally accredited programs are revisited within 2 to 3 years to determine whether full accreditation should be granted. If a program loses its accreditation and later makes corrections recommended by ACGME, it must go through the application procedure again in order to become reaccredited.

ACGME members cannot agree on whether limits should be set on the maximum hours a resident may work per week. Consequently, ACGME developed accreditation guidelines, which recommend only that each specialty residency program provide adequate rest for residents by scheduling on-call duty no more than every third day and providing 1 full day off per week.

[11]Current federal representative is from the Division of Medicine, Bureau of Health Professions, Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, Md.

[12]ACGME provides two categories of criteria for accreditation: (1) General Requirements that delineate training program requirements and responsibilities common to all RRCs, institutions, and programs regardless of specialty, and (2) Special Requirements that are developed by individual RRCs and establish the educational content, instructional activities, patient care responsibilities, supervision, and facilities to be provided by the programs in the particular specialty.

Figure 3.2:



The American Boards of Medical Specialties opposes insertion of language in the ACGME guidelines that mandate (1) a specific number of hours, (2) rotation of on-call duty, or (3) time off duty for residents. From June 1990 through June 1991, ABMS vetoed one proposal and halted several others before the proposals could be presented to ACGME for approval. Each of these proposals would have required programs to provide 1 day off per week and to schedule on-call duty no more than every third night. Ultimately, in October 1991, AMA presented a compromise proposal to the surgical RRCs for comment. In February 1992, the proposal was adopted by

ACGME's Council as the minimum standard for Special Requirement language relating to work hours. The language approved is as follows:

"It is desirable that residents' work schedules be designed so that on the average, excluding exceptional patient care needs, residents have at least one day out of seven free of routine responsibilities and be on-call in the hospital no more often than every third night.

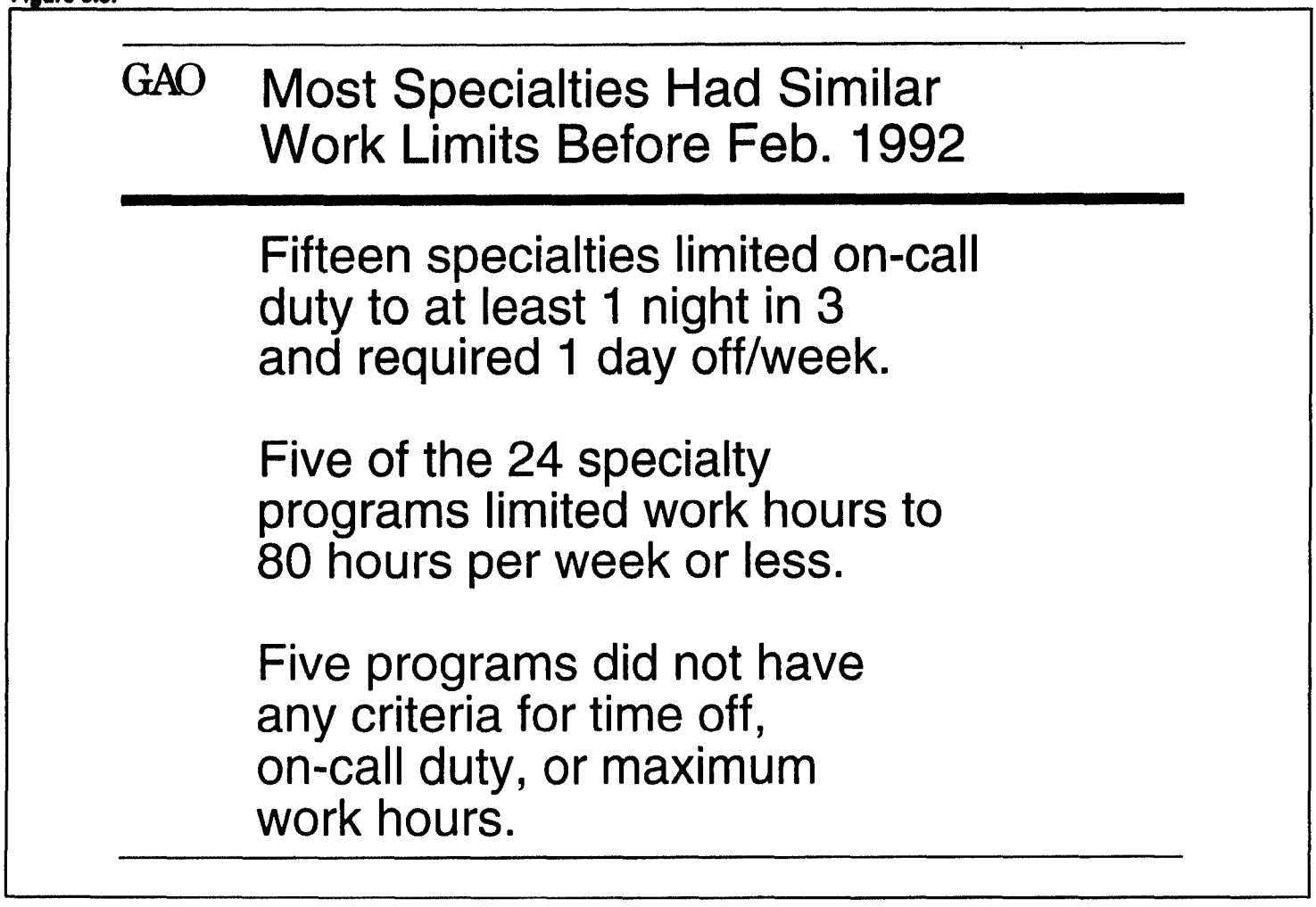
The ratio of hours worked and on-call time will vary, particularly at the senior levels and therefore necessitates flexibility."

AMA's Council on Medical Education and its Governing Council of the Resident Physicians Section had reservations about the vagueness of the new language. However, because ACGME's surgical RRC was firmly committed to the proposal's implementation, both councils withdrew their objections and approved it.

Although this compromise does not limit work hours, it is believed by both AMA and ABMS to (1) provide the flexibility in scheduling required by some of the surgical specialties and (2) be a reasonable solution for what had become an impasse. The new criteria, effective June 1992, apply to all 24 specialty programs.

In addition, ACGME adopted language for insertion into the General Requirements relating to resident supervision and working environment. The new language included prohibitions against excessive reliance on residents to fulfill institutional service obligations, excessive hours, and on-call duty. Specifically, each resident program must ensure that its residents are provided backup support when patient care responsibilities are especially difficult or prolonged. The General Requirements apply to all residency programs.

Figure 3.3:



Before adoption of the new ACGME requirements, fifteen specialty programs were already limiting the frequency of on-call duty to at least every third day and were requiring that residents be allowed 1 full day out of 7 off (see app. II). A day of on-call duty may involve up to 24 consecutive hours of duty immediately followed by a regular shift of another 8 to 12 hours for a total of 32 to 36 hours without rest or sleep. Limiting on-call duty to 1 out of every 3 days and providing for 1 full day off per week may help reduce the hours worked to 80 hours. However, since there is no limit on the maximum hours a resident may work,

program hours could go as high as 96 hours per week and still provide 1 full day off per week and on-call duty no more than every third night.

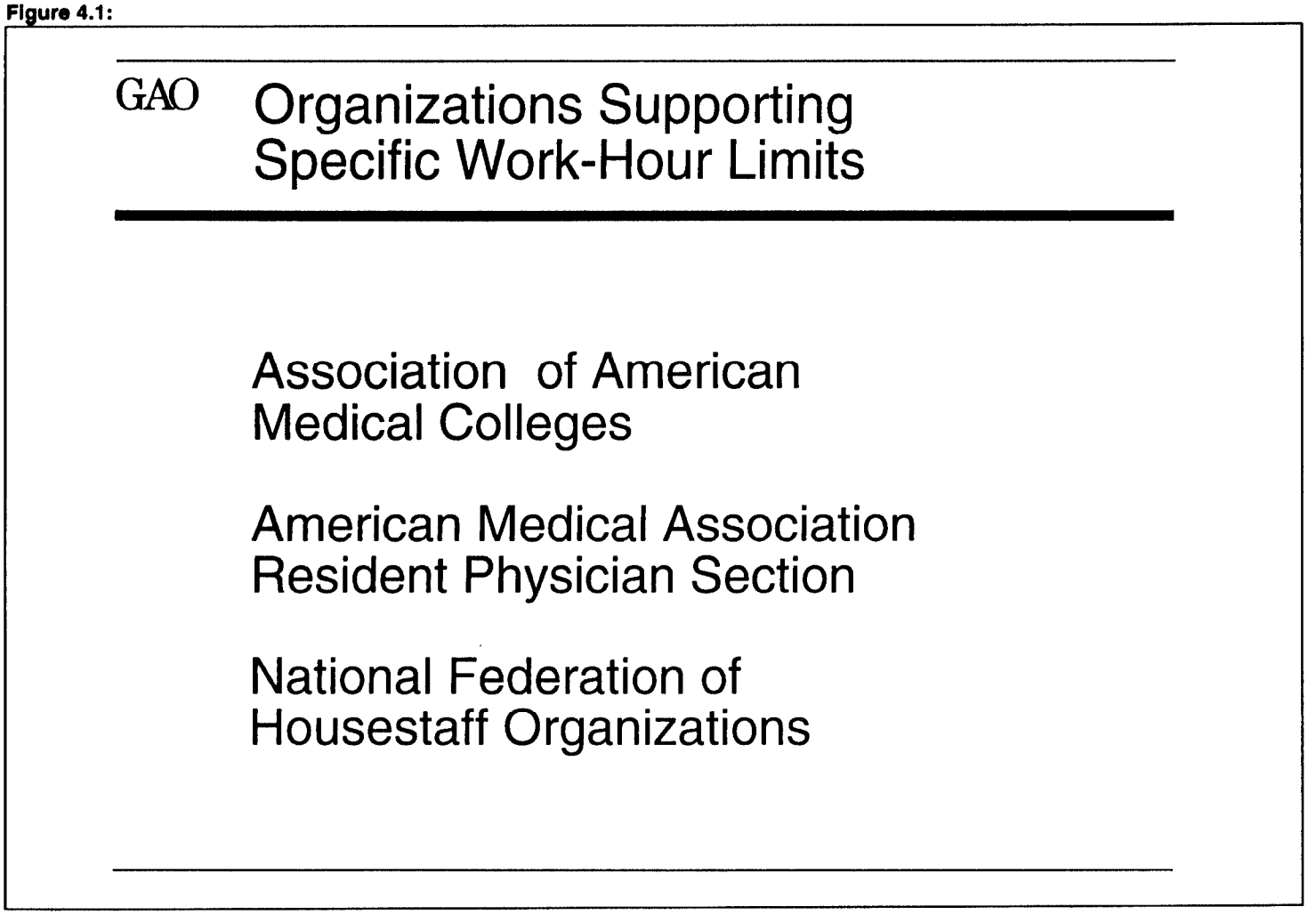
As of December 31, 1991, only 5 of the 24 specialty groups:—Allergy and Immunology, Emergency Medicine, Ophthalmology, Internal Medicine, and Orthopaedic Surgery—had implemented more restrictive criteria limiting work hours per week to 80. Further, the requirements for Emergency Medicine programs also limit hours to 12 hours per shift followed by at least 12 hours off duty. These criteria, which are stronger than ACGME's new guidelines, will stay in place according to ACGME.

Five specialty areas that did not specify hours, time off, or on-call rotation are now covered under the new guidance approved in February 1992. These areas include Preventive Medicine,[13] Colon and Rectal Surgery, Neurological Surgery, General Surgery, and Thoracic Surgery. Prior to agreement on the new requirements, the criteria statements on hours for the four surgical specialties all reflect a collective position that continuity of care must take precedence over any consideration for work hours or time off.

[13]Residency programs in Preventive Medicine generally do not entail the kind of on-call or weekend-call duty that is more typical for residency programs, which are hospital-based programs.

Physician/Health Care Groups Split on Reform

Figure 4.1:



The need for reform of resident working hours is an active concern of medical groups, such as AAMC, the Resident Physician Section of AMA, and the National Federation of Housestaff Organizations. However, other medical and health care organizations, such as the American College of Surgeons, the American Boards of Medicine, and certain state hospital associations, actively oppose limiting the maximum number of hours resident physicians may work.

The American Medical Association: AMA is a professional organization of physicians. It supports voluntary limitation of resident hours, but does not

support mandatory limits set by state or federal government entities. For example, AMA opposed and testified against the implementation of New York state regulatory proposals, designed among other things, to (1) limit the number of hours worked by emergency room residents to 12-hour shifts and (2) limit the hours worked by other residents to 80 hours per week. AMA representatives believe that rigid regulation of work hours could create problems for residency programs that have a legitimate need to operate outside the regulations. They further stated that the regulation of resident work hours rightfully belongs to ACGME and the Joint Commission on Accreditation of Healthcare Organizations.[14] Similarly, AMA officials told us that they do not support federal intervention to limit the maximum number of hours a resident may work.

The Association of American Medical Colleges: AAMC is a nonprofit association comprised of all 126 accredited U.S. schools of medicine and all 16 accredited Canadian medical schools; more than 400 teaching hospitals, including 70 Department of Veterans Affairs medical centers; over 90 academic and professional societies, which represent 72,000 faculty members; and the nation's medical students and residents. AAMC believes that the maximum number of hours a resident is required to work should be limited to 80 hours per week, including moonlighting hours when they are averaged over a 4-week period. In 1988, AAMC urged ACGME to adopt this requirement as part of the General Requirement program review criteria. Several ACGME Residency Review Committees, notably Internal Medicine, adopted the 80-hour standard as a program review criterion. However, because others opposed the 80-hour limit, the proposal was not presented to ACGME for approval.

AAMC's support for limiting resident work hours is based on its concern that the educational goals of residency programs are being sacrificed to allow hospitals to provide inexpensive patient services. In addition, AAMC believes that limiting resident work hours to 80 per week is a more effective restriction than limiting hours by reducing on-call frequency and providing for 1 day off per week. In the latter two instances, scheduled time could still rise to 96 hours. Further, a general policy that specifies only 1 day off per week and on-call every third night, does not reduce moonlighting hours. Moonlighting is a big concern for AAMC. It believes that teaching hospitals and residency programs should have policies that (1) prohibit unauthorized moonlighting and (2) authorize moonlighting

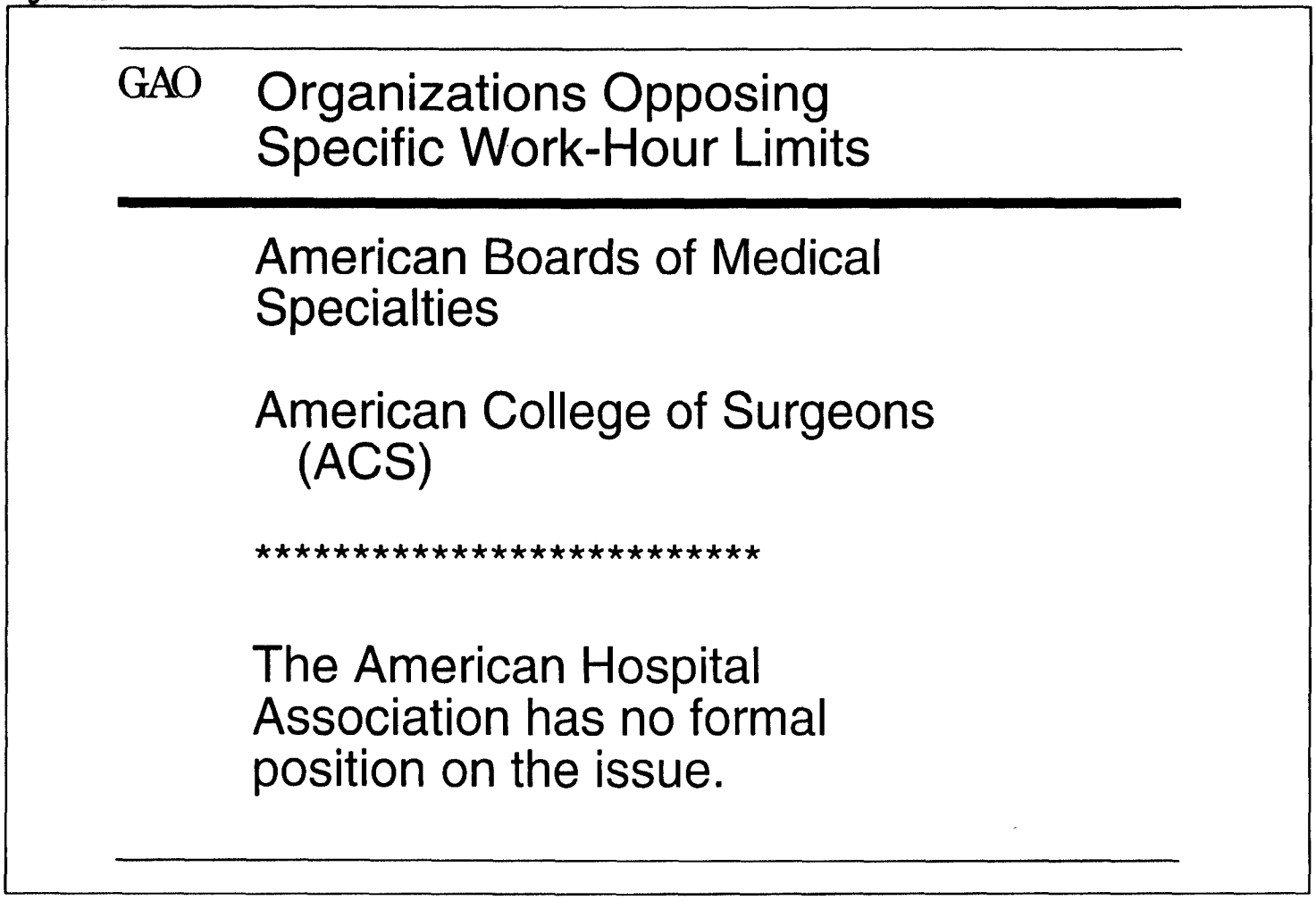
[14]Joint Commission on Accreditation of Healthcare Organizations criteria address requirements for adequate supervision of residents and do not directly or indirectly mention hours, time off, or scheduling of on-call duty.

hours only to the extent that it is conducted within the overall 80-hour workweek cap.

AAMC officials maintain that government intervention should be avoided. However, they are concerned that residents may unionize if hours are not reduced. AAMC alleges that unions would destroy the collegial relationships residents have with faculty and attending physicians.

National Federation of Housestaff Organizations: NFHO is an organization of housestaff unions. NFHO believes that limiting resident hours is a collective bargaining issue. However, it has also actively supported reform legislation in California, Illinois, and Michigan.

Figure 4.2:



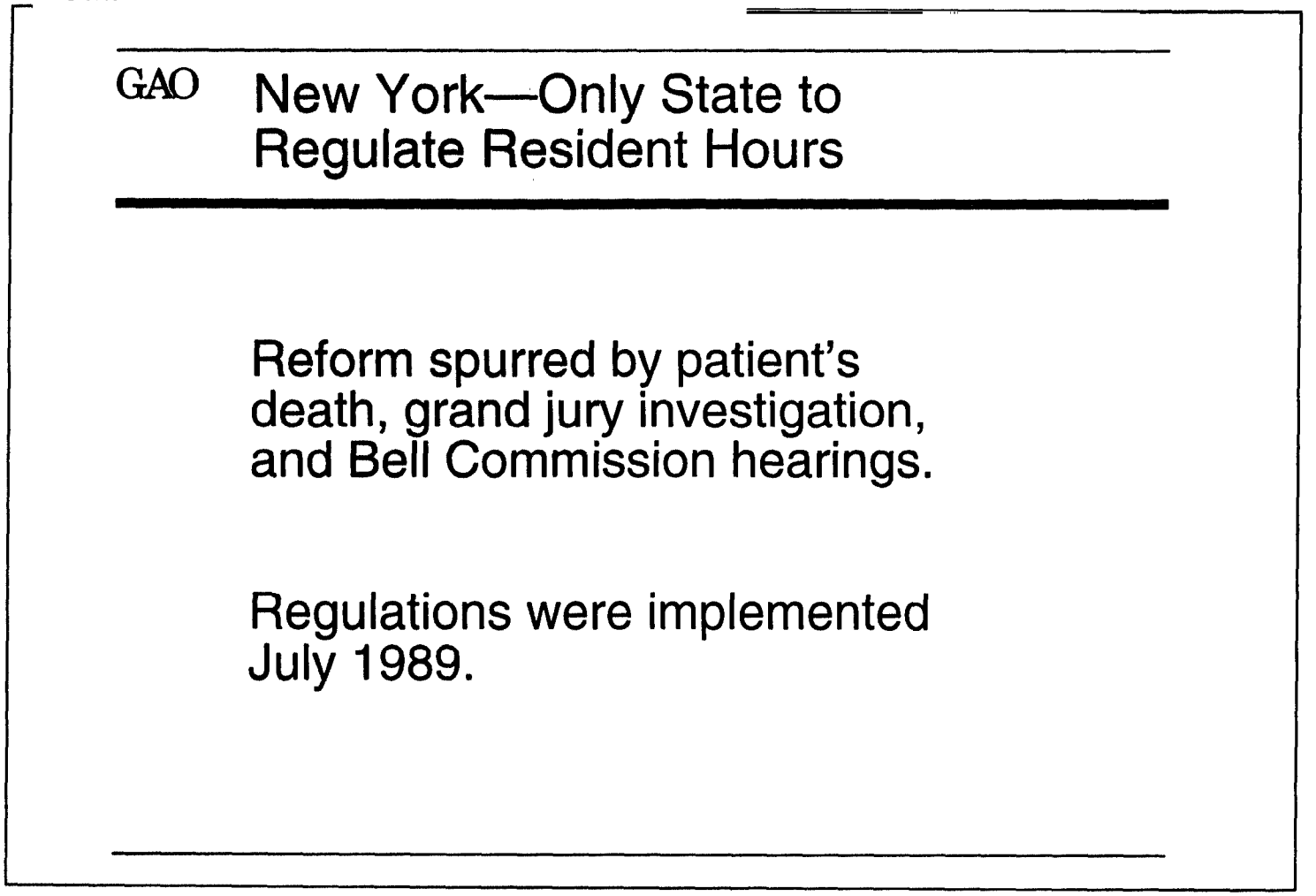
The American Boards of Medical Specialties: ABMS is the parent organization for the 23 recognized medical boards responsible for certifying physicians for specialty medical practice. Acting primarily on behalf of the surgical specialty boards, ABMS opposes efforts to mandate limits on resident work hours, days off, or on-call rotation. ABMS, however, has accepted the work-hour criteria adopted by ACGME because it does not require residents to have 1 day off per week and to be on-call no more than every third day—it merely recommends that this action be taken.

The American College of Surgeons: ACS is a scientific and educational association of surgeons that was organized to improve the quality of care for surgical patients by setting surgical education and practice standards. ACS opposes mandatory limitations placed on residents' work hours, including time off and on-call scheduling. It claims that such limitations could easily interfere with the development of the residents' sense of commitment to patients and impede the continuity of care necessary for patient safety.

The American Hospital Association: AHA does not have a formal position on this issue although it is a parent member of ACGME. An association representative stated that AHA supported the recent compromise accepted by the ACGME because it provided flexibility. However, state legislators report that AHA's constituent state associations have opposed initiatives to restrict resident work hours because of the costs associated with replacing the hours and work covered by the residents.

New York—Only State to Regulate Resident Work Hours

Figure 5.1:



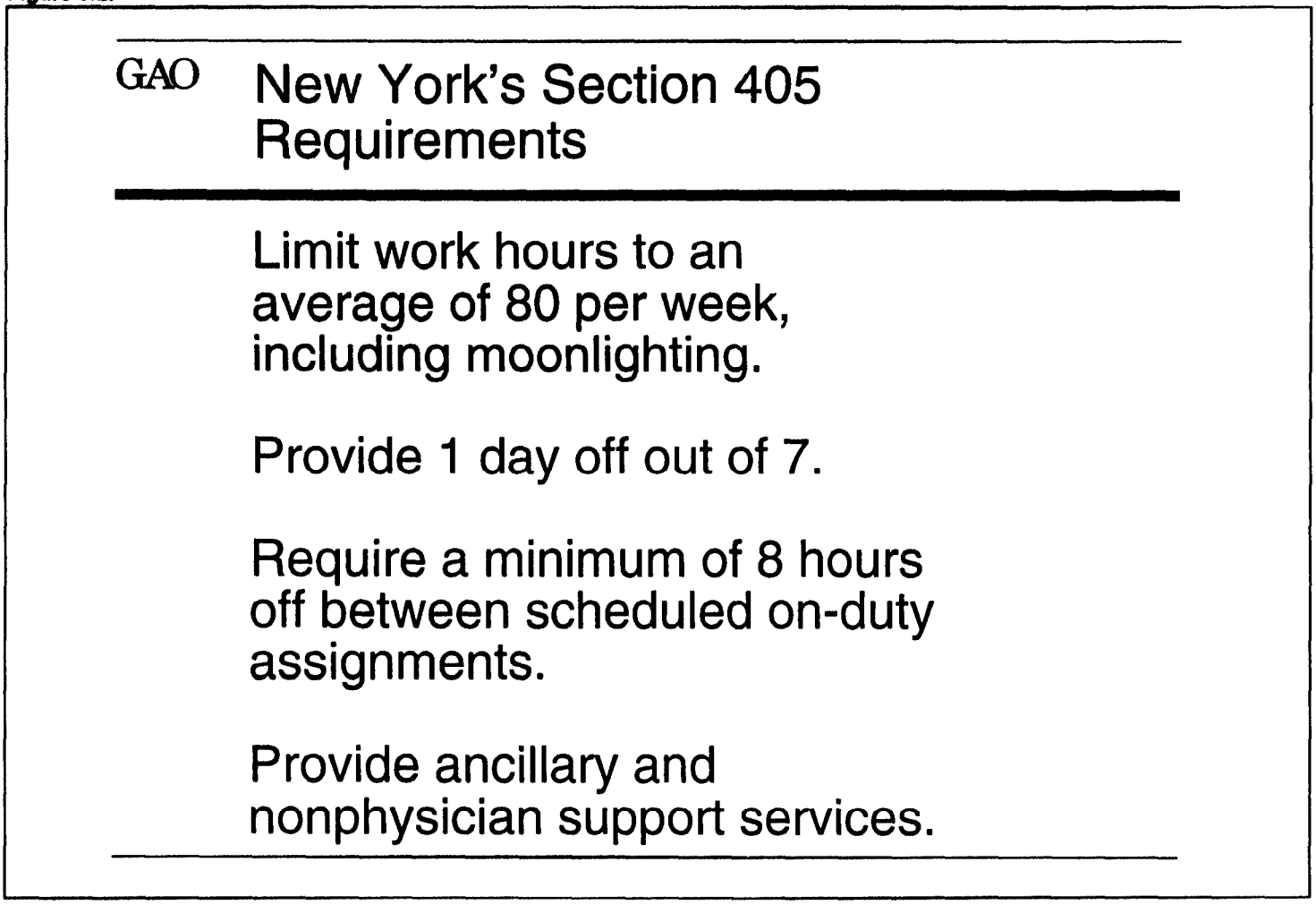
New York is the only state with regulations mandating that (1) resident work hours be limited to an average of 80 hours per week over a 4-week period and (2) appropriate supervision be provided for residents according to their experience levels.

The New York State Department of Health published regulations in July 1989 limiting the working hours of resident physicians and requiring increased levels of supervision and ancillary support in all hospitals sponsoring residency training programs. The regulations, known as the "405 regulations," were promulgated following hearings by the New York

State Ad Hoc Advisory Committee on Emergency Services (known as the Bell Commission). The hearings responded to public concern and grand jury recommendations, over the death of a young woman, Libby Zion, who died in a New York hospital within 24 hours of admission through the Emergency Department. She was admitted and initially cared for by two residents who had been working more than 16 consecutive hours.

Ms. Zion's father, a lawyer and writer for the New York Times, claimed that his daughter was treated by residents who were undersupervised and overworked. The grand jury investigation did not blame the residents or the hospital, but cited the system of medical education that permitted the circumstances to develop. The incident showcased the growing concern of professionals inside and outside the medical community that residents in New York programs were working excessively long hours, under stress, and with inadequate supervision.

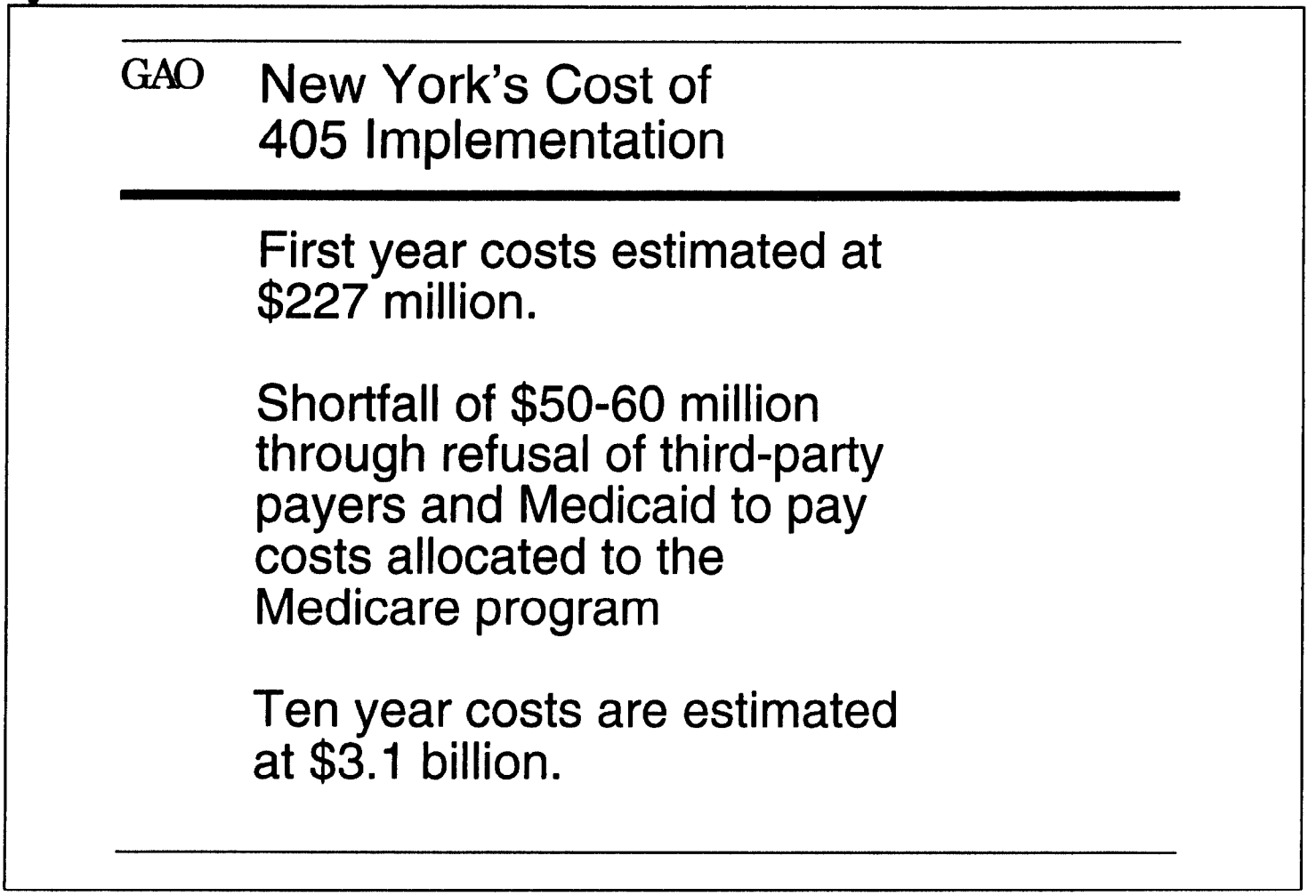
Figure 5.2:



The New York 405 regulations limit the hours worked by a resident, including moonlighting, to an average of no more than 80 hours per week over a 4-week period. Other requirements include 1 full day off per week and a minimum of 8 hours off between scheduled on-duty assignments (for example, if a resident is on call, and the on-call duty ends at 7 a.m., the resident may be assigned for additional duty no earlier than 3 p.m. or 8 hours after the on-call duty ended). The regulations also provide for alternative scheduling arrangements for certain specialties, such as ophthalmology, where on-call duty is light and the resident gets sufficient rest time. The regulations have specific requirements for supervision,

including on-site supervision during evening/night hours, and require hospitals to hire sufficient auxiliary personnel, nurse practitioners, and physician assistants to provide for nonphysician tasks and the less acute medical services.

Figure 5.3:



In February 1989, the New York State Department of Health surveyed 220 teaching hospitals in the state to determine the costs of implementing the 405 regulations. Based on the information obtained from the survey, DOH determined that the cost of statewide implementation was approximately

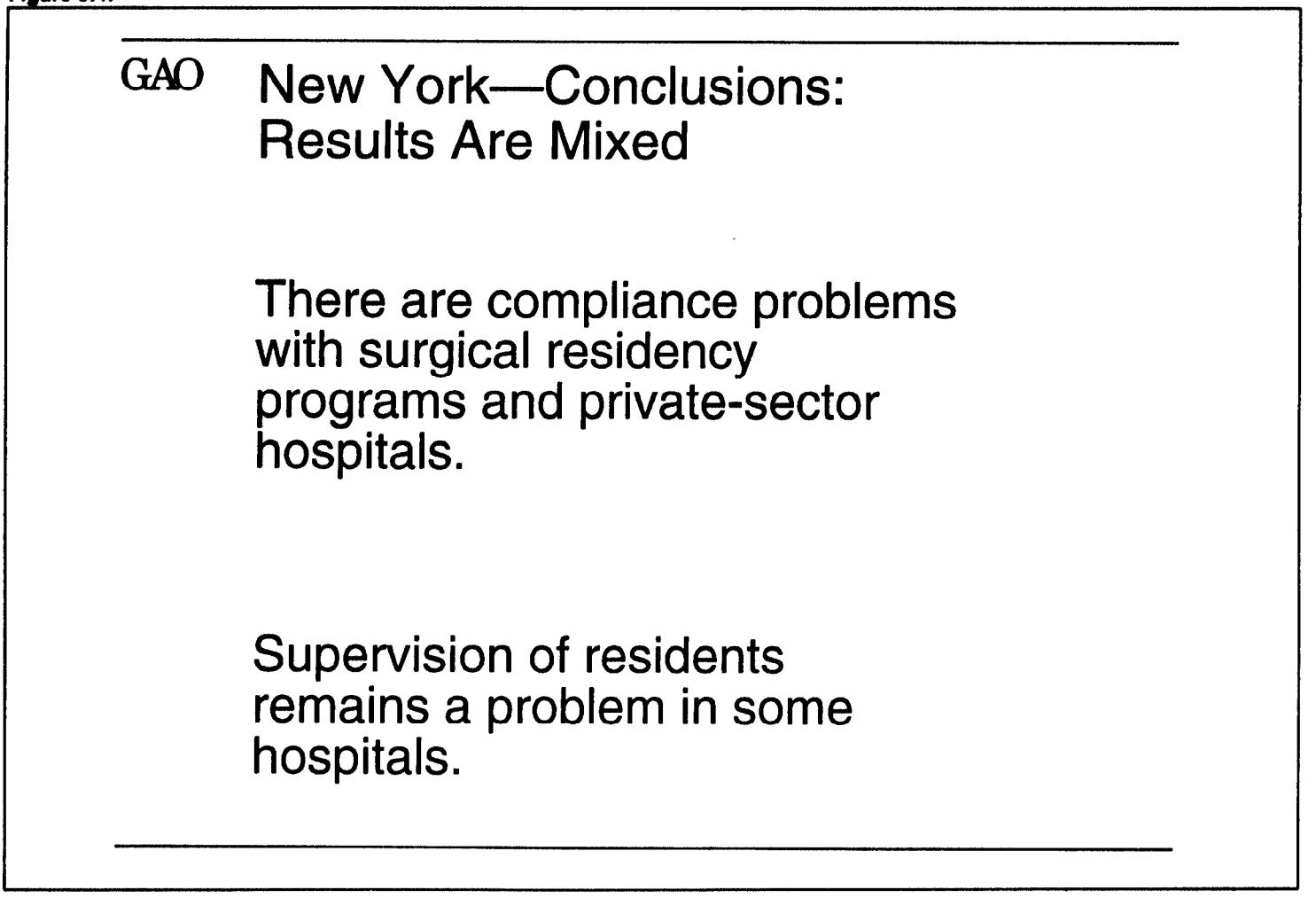
$227 million. The estimated cost for the next 10 years is estimated at $3.1 billion; $5.7 billion for the next 15 years. This cost was to be distributed between the state (Medicaid) and other third party payers. Medicare was not obligated to pay its proportionate share of the cost. Rather, the New York State Health Commissioner allocated the Medicare costs to all other payers controlled by the state, that is, Medicaid, Blue Cross, and the commercial insurers.

In 1989, DOH experienced a shortfall of $50-60 million. This was caused by the fact that Blue Cross filed a successful suit to avoid payment of the Medicare costs apportioned to it. The commercial payers and the state Medicaid program also refused to pay their allocated Medicare share. This meant the hospitals received less funding than what was promised based on the DOH survey of their needs. There has been no change in this situation, and hospitals are currently urging Medicare to pay its fair share of costs.

Other health care providers have also determined that the cost of placing limitations on the number of hours residents may work is high. For example, the Department of Veterans Affairs (VA) using the same methodology as did DOH, estimates that it cost $28.9 million to implement the 405 regulations in VA's New York hospitals for fiscal year 1991, and would cost an additional $413.6 million to initially implement the ACGME requirements in approximately 130 VA hospitals with residency programs. One-third of the $413.6 million represents the cost of hiring additional attending physicians to supervise the resident staff.

The University of Cincinnati Hospital also reviewed its residency programs and found that all but the surgical programs would be able to meet the standards set by the New York Regulations. However, it will cost the hospital $407,000 to $562,00 per year to provide the required additional ancillary services (EKG technicians, phlebotomists, respiratory care therapists, and radiologists) for evenings, nights, and weekends. Hospital officials indicated that they would have sufficient nursing support if they could fill their current vacant nursing positions.

Figure 5.4:



A comprehensive assessment of the New York experience is planned by Troyen Brennan, M.D., J.D., M.P.H., Associate Professor of Medicine, Harvard Medical School, but as of September 1992, it had not been funded. However, preliminary assessments of the effects on patient care of reduced resident hours indicate that limiting resident work hours may create problems with continuity of patient care.[15] These studies suggest that the use of cross-coverage staffing to reduce resident hours may result in a decrease in the continuity of patient care. The on-call residents may

[15]University of Minnesota VA hospital study by Gottlieb and Lofgren (1991); Laine's (1991) study of the impact of NY 405 regulations on patient care; and O'Neil's (1992) study of patient injuries related to resident schedule changes at Boston's Brigham Hospital.

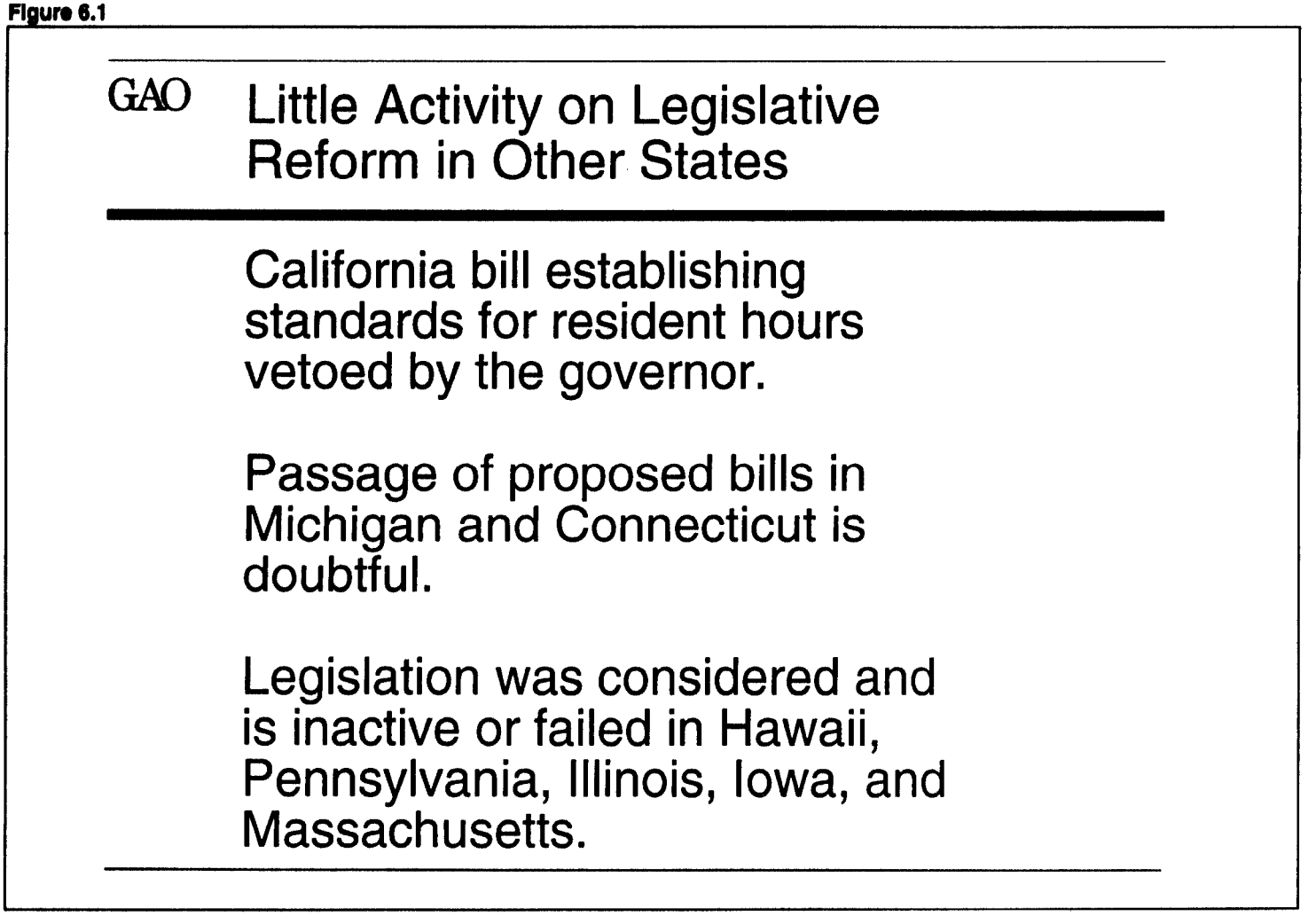
have too many patients to cover and, thus, be unfamiliar with the patients' diagnoses and treatment plans. Further, on-call residents who admit patients may not adequately communicate patient information to the residents assuming the care of newly admitted patients. On the other hand, the residents assuming the care of a patient admitted by an on-call resident, may not be comfortable or confident in planning the care of a patient they did not admit. Consequently, the studies contend that staffing patterns used to support decreased hours must be carefully reviewed for the effect on continuity of care.

Officials from DOH and the Committee on Interns and Residents (union representing many resident physicians in the greater New York City area) told us that since the residents like the changes brought about by the 405 regulations, it would be difficult for them to return to the old system. However, assessments by DOH indicate that compliance with the 405 regulations is not universal. DOH collects information on 405 compliance by investigating complaints of violations and through a triennial survey of hospitals in the state. In the period between January 1990 and December 31, 1991, DOH received 53 complaints from such sources as residents and their families, 36 of these complaints were substantiated through investigation. Further, of the 24 hospitals surveyed during this period, 15 were cited for exceeding resident work hours, and 9 were cited for not meeting the supervisory requirements, (includes 7 that were also cited for failing to meet the work hour requirements). The majority of the complaints identified programs located in New York City (43). However, only six of those hospitals were from Health and Hospital Corporation hospitals, the rest were private or university hospitals. These data also indicate that most of the noncompliance with hour limits occurred in surgical or obstetrical/gynecological programs (10 out of 15).

When we interviewed representatives of the New York Committee on Interns and Residents, we were told that residents are intimidated by the program faculty who are against work-hour limits. This is particularly true of surgical faculty. According to the Committee, complaints to DOH are frequently investigated by having the resident who made the complaint present it to DOH representatives in front of the program or department chair. As a result, the Committee stated, many complaints are dropped or go unsubstantiated because the residents fear they will lose their residency slot or receive a poor recommendation from the department chair for specialty board certification.

Little Activity on Legislative Reform in States Other Than New York

Figure 6.1



Legislation to limit the number of hours worked by residents has been introduced in some states. However, only California has legislation that was recently passed by the state legislature.

California: California recently passed legislation that establishes standards, where resources allow, for all public and private hospitals to limit the number of hours a resident can work. However, the bill does not require additional resources to be added in order to facilitate implementation of these standards. The sponsors of the bill said that it would be particularly difficult for hospitals serving the indigent to obtain

the necessary resources for implementation of the standards. The legislation was vetoed by the governor on September 26, 1992.

Connecticut: 1992 is the third consecutive year that a bill has been introduced in the state legislature to limit resident hours. The bill's sponsor believes that introduction of the legislation in each session has encouraged hospitals to voluntarily cut back on resident hours. The bill is opposed by surgeons and surgical residency programs.

Hawaii: Legislation to limit resident work hours was considered in 1988, but the bill's sponsor believes ACGME guidelines will handle the problem. No new legislation has been proposed.

Illinois: Legislation was introduced in 1988, but the Illinois Hospital Association lobbied against it and the bill died in session. Follow-up legislation has not been initiated because the sponsor was told by medical groups that ACGME was taking action to reform the work-hour requirements for residents.

Iowa: A bill to limit resident work hours was introduced in 1989 by a legislator who was later defeated in the next election. There has been no further activity.

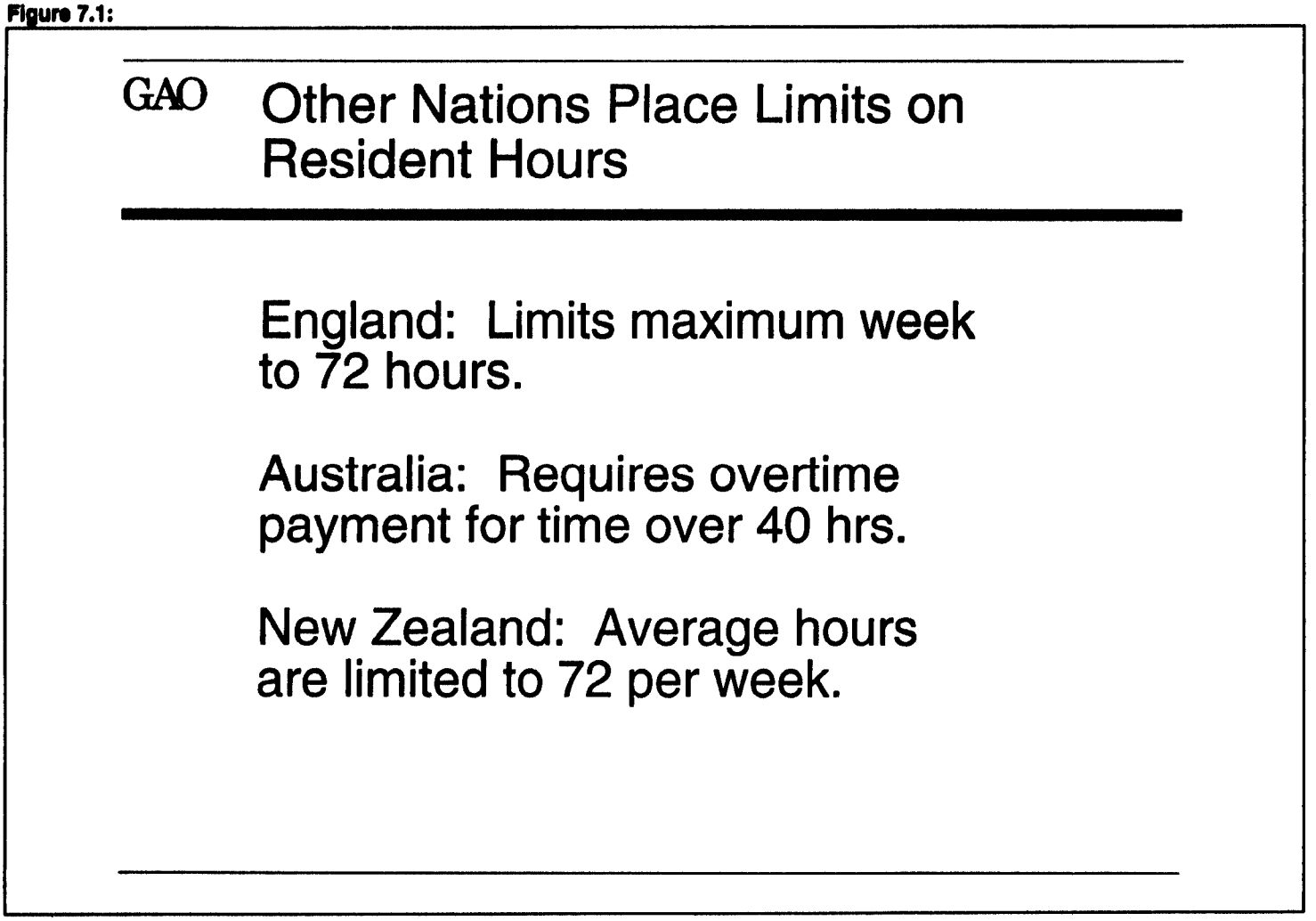
Massachusetts: A bill to limit resident work hours was introduced in 1990 and opposed by the Massachusetts Medical Society on the basis that the Coordinating Committee on House Staff Training Issues, under the auspices of the Massachusetts Academic Medical Centers, was voluntarily working on this issue. The legislation died in legislative committee. In 1990, the Coordinating Committee published guidelines for voluntary implementation of limits on resident hours (80 hours/week), and no new legislation has been introduced.

Michigan: Legislation to limit resident hours has been introduced in 1990 and 1992. The Michigan Hospital Association has opposed the legislation and promised reform. However, according to the sponsor's staff, there has been little evidence of reform.

Pennsylvania: Legislation to limit resident work hours was introduced in the 1989-90 session and opposed by physician faculty, the osteopathic society, and hospitals. Each expressed concern that without long resident hours there would be no one to care for uninsured patients. The bill died in legislative committee.

Other Nations Place Limits on Resident Hours

Figure 7.1:



England: British "junior doctors" won an agreement in 1991 with the Ministry of Health to reduce the maximum workweek to 72 hours or less. The Ministry's agreement apparently preceded by 2 days the refusal by a court of appeals to throw out the claim of a former senior house officer who is suing the Bloomsbury Health Authority for damages resulting from being required to work 88 hours or more per week. The physician claims that the work hours were so intolerable that his and the patients' health and safety were at risk.

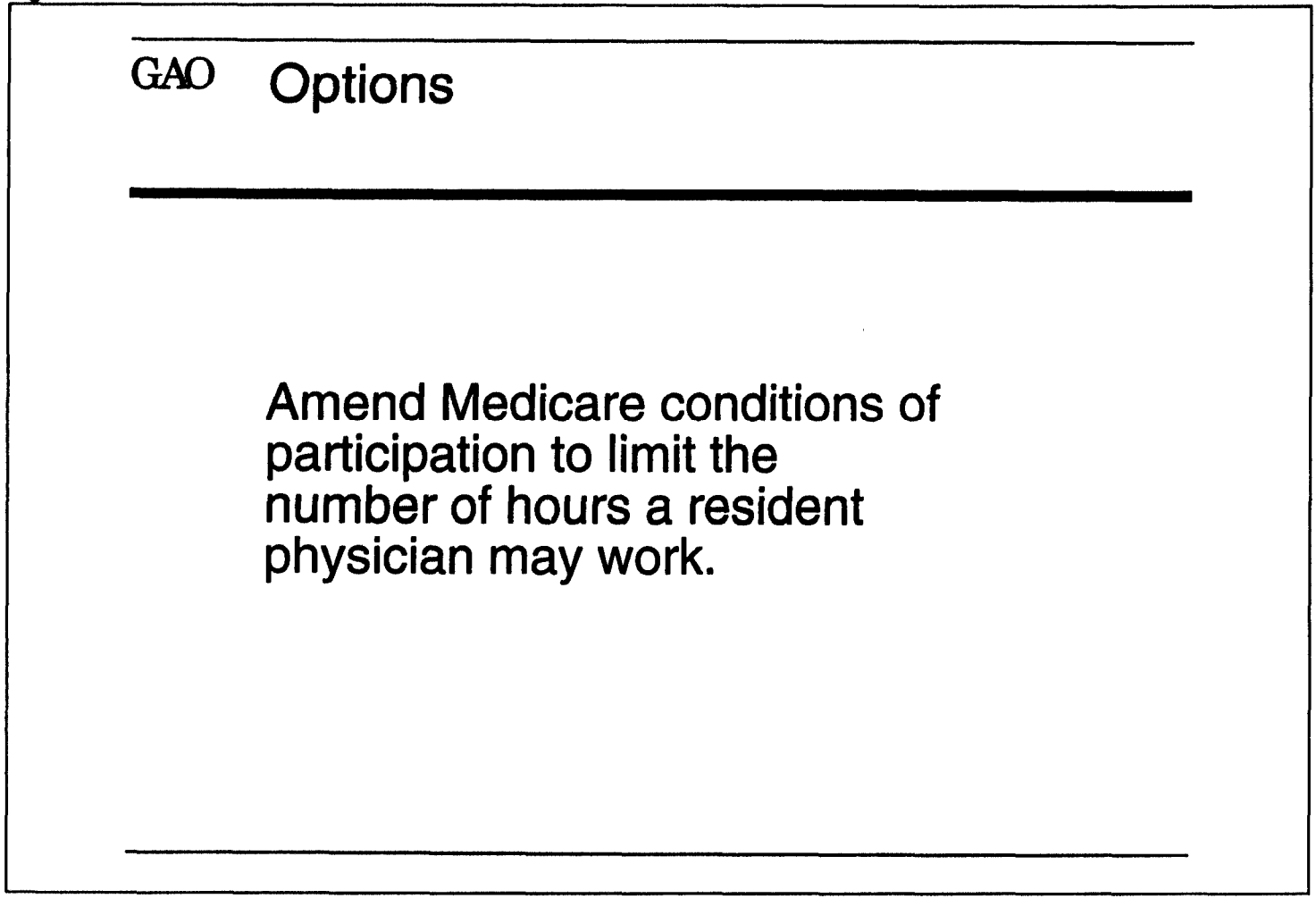
Australia: In an effort to reduce the number of hours worked by junior medical staff and to reimburse them for excessive hours, most Australian hospitals control the maximum number of hours worked by providing overtime payment for hours worked in excess of 40 hours per week. However, in those hospitals willing to pay, hours may still be excessive. For example, in southern Australia, overtime was so frequent that a 16-hour limit per shift was imposed by an arbitration court in order to prevent excessive reliance on the extra hours.

New Zealand: In 1985, the New Zealand Resident Medical Officer's Association successfully negotiated reform of resident hours, limiting total hours per week to 72 averaged over 4 weeks. A work shift is limited to 16 consecutive hours followed by 8 hours off duty, and overtime is paid for any time over 40 hours per week. In testimony before New York's Bell Committee, Jeremy Cooper of New Zealand, stated that the overtime serves as incentive for the hospitals to keep the hours under 72. According to Cooper, the program has worked well since implementation. The average number of hours currently worked by residents is 54 per week. This represents a 19-percent decrease from the average before reform.

Canada: The Professional Association of Interns and Residents of Ontario (PAIRO) annually negotiate hours for Ontario's house staffs. PAIRO is not a union, and the negotiations are part of the Canadian health system. Currently, residents and interns are permitted to work one full weekend in three and take one night duty shift every third night. Residents working in emergency departments are restricted to 12-hour shifts and a total of 60 hours per week.

Options

Figure 8.1:



The number of hours worked by resident physicians can be legislatively mandated by amending the Medicare conditions of participation. However, any federal legislative or regulatory initiative to limit hours worked by resident physicians must take into consideration that decreased or "lost" resident hours must be replaced. Replacement may include increasing the amount of direct medical care and supervision provided by faculty and attending physicians; utilizing nurse practitioners, nurse midwives, or physician assistants for on-call hours; and providing additional auxiliary support staff to carry out a variety of tasks traditionally performed by the residents. Thus, the success of any strategy to limit the number of hours

worked by a resident physician has an associated dollar cost and is dependent on the availability of health care personnel many of whom are in short supply. According to officials of several medical organizations, there may be other undesirable effects, such as a decreased access to care, should a hospital, unable to replace lost hours, be forced to close or curtail services provided to indigent patients. Forcing change through Medicare is also the surest way to bring the cost of implementation to the federal level. Hospitals will object to any Medicare requirement that will increase their costs unless the government reimburses for the cost.

In considering the possible need for legislation one must also recognize that approximately 4,000 hospitals in the United States have no residents, function quite well, and are able to provide increasingly sophisticated surgical procedures and advanced diagnostic testing. Thus, it is possible to provide patient services without residents.[16]

[16]B.C. Vladeck. "Where Do We Go From Here?" Bulletin of the New York Academy of Medicine, Vol. 67 (1991), pp. 382-84.

Public Institutions With Residency Programs—by Ownership

	City	City/ county	County	State
Institutions reporting	24	7	45	130
Programs reporting	125	11	262	1,571
Number of residents	2,375	234	4,272	21,469

Note: The above information was gathered through a survey by AMA. Not every institution or program responded to the AMA survey. Not all institutions reporting are hospitals. The major weakness of the data is that resident physicians do not spend all their time in the place where they are being counted. Consequently, there could be both underreporting and overreporting of residents.

Source: American Medical Association, Department of Data Systems, Medical Education Group, 1991.

ACGME Resident Work-Hour Requirements by Specialty Program—(Dec. 1991)

Program	Maximum hours	On-call duty	Day off
Allergy & Immunology	80/week	1/3	1/7
Anesthesiology	No	1/3	1/7
Colon & Rectal Surgery	No	No	No
Dermatology	No	1/3	1/7
Emergency Medicine	12 hrs./shift	12 hrs. between shifts	1/7
Family Practice	No	1/3	1/7
Internal Medicine	80/week	1/3 or 1/4	1/7
Neurological Surgery	No	No	No
Neurology	No	1/3	1/7
Nuclear Medicine	No	No	1/7
Obstetrics-Gynecology	No	1/3	1/7
Ophthalmology	80/week	1/3	1/7
Orthopaedic Surgery	80/week	No	No
Otolaryngology	No	1/3	1/7
Pathology	No	1/3	1/7
Pediatrics	No	1/3 or 1/4	1/7
Physical Medicine & Rehabilitation	No	1/3	1/7
Plastic Surgery	No	1/2	1/7
Preventive Medicine	No	No	No
Psychiatry	No	1/3	1/7
Radiology	No	1/3	1/7
General Surgery	No	No	No
Thoracic Surgery	No	No	No
Urology	No	No	1/7

Source: American Medical Association, 1991-1992 Directory of Graduate Medical Education Programs.

Major Contributors to This Briefing Report

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Annotated Bibliography

Research on Resident Work Hours and Quality of Care

Deaconson, T.F. and others. "Sleep Deprivation and Resident Performance." Journal of the American Medical Association, Vol. 260 (1988) pp. 1721-27. Cognitive and complex motor performance was measured for sleep-deprived residents (n=26) who were on call every other night. It was found that sleep deprivation did not affect overall cognitive or motor performance.

Friedman, R.C., T.J. Bigger, and D.S. Kornfield. "The Intern and Sleep Loss." New England Journal of Medicine, Vol. 285 (1971), pp. 201-3; and "Psychological Problems Associated With Sleep Deprivation in Interns." Journal of Medical Education, Vol. 48 (1973), pp. 436-41. This series of investigations has formed the basis for most of the concern about long hours for residents and the effect on patient care. Friedman found that there was an increase in errors made by sleep-deprived interns in reading electrocardiograms.

Lurie, N. and others. "How Do House Officers Spend Their Nights?" New England Journal of Medicine, Vol. 320 (1989), pp. 1673-77. An observational study of 35 house officers' on-call activities at three teaching hospitals. The study found that while on call, house officers spend little time in direct patient care and spend considerable time charting. They are frequently interrupted while working or trying to sleep.

Reznick, R.K. and J.R. Folse. "Effect of Sleep Deprivation on the Performance of Surgical Residents." American Journal of Surgery, Vol. 154 (1987), pp. 520-25. Twenty-one, randomly selected surgical residents were studied for the effects of sleep deprivation by measuring the residents' performance on factual recall, concentration ability, and manual dexterity tests. Sleep deprivation was defined as having less than 3 out of 24 hours sleep. No significant difference was seen in performance for sleep-deprivation versus nonsleep-deprived conditions.

Strunk, C.L. and others. "Resident Work Hours and Working Environment in Otolaryngology." Journal of the American Medical Association, Vol. 266 (1991), pp. 1371-74. This is a survey with a self-reporting daily log of activities. The study of 59 residents from six programs (three public and three private institutions) in six states found that at least a third of the residents believed fatigue resulted in substandard care 10 percent of the time. Residents working the longest hours expressed concern about rendering substandard care and developing negative attitudes toward patients. Seventy percent of the residents also believe that an 80-hour

workweek, including being on call every third night with no more than 24 hours of continuous work without sleep is a reasonable schedule.

Wu, A.W. and others. "Do House Officers Learn From Their Mistakes?" Journal of the American Medical Association, Vol. 265 (1991), pp. 2089-94. A study of 114 internal medicine residents and their self-reported follow-up response to medical mistakes. Forty-one percent of the study group reported fatigue as a factor in making errors.

Related Research

Colford, J.M. and S.J. McPhee. "The Ravelled Sleeve of Care Managing the Stresses of Residency Training." Journal of the American Medical Association, Vol. 261 (1989), pp. 889-93. The article provides an overview of the various stress factors associated with graduate medical education and identifies sleep deprivation as a great source of stress. In addition, the study cites sleep deprivation and working conditions as the two stressors most frequently identified by residents as problems. Residents also identify other stressors in graduate medical education, such as fear of reprisals in disagreeing with attending physicians or department chairmen, loss of control over schedule, long on-duty assignments, unstructured teaching, fear of contracting illness, lack of faculty support, and fear of malpractice suits.

Gottlieb, D.J. and others. "Effect of a Change in House Staff Work Schedule on Resource Utilization and Patient Care." Archives of Internal Medicine, Vol. 151 (1991), pp. 2065-70. Study shows that a schedule change that decreased total working hours, but increased continuity, resulted in fewer laboratory tests per patient and fewer medication errors.

Klebanoff, M.A., P.H. Shiono, and G.G. Rhoads. "Outcomes of Pregnancy in a National Sample of Resident Physicians." New England Journal of Medicine, Vol. 323 (1990), pp. 1040-45. The study, building on previous studies of stress and adverse pregnancy outcomes, investigates the premise that because of long work hours, women residents have a greater incidence of adverse pregnancy outcomes than nonresident women who are not exposed to long work hours without sleep. The study found no significant difference for miscarriage, ectopic gestation, and stillbirths and similar rates for frequency of preterm births and low weight infants. Women residents were more likely to have preterm labor (not delivery) and diagnosis of preeclampsia. The study also showed that residents who work more than 100 hours per week are at increased risk for preterm

delivery. The study did not define long hours or provide a specific mean for the populations studied.

Koran, L.M. and I.F. Litt. "House Staff Well-Being." Western Journal of Medicine, Vol. 148 (1988), pp. 97-101. A survey of 281 housestaff of a single university medical center found that 46 percent of the residents were afraid to complain about their training program. Another 46 percent were concerned that their relationship with their significant other would not outlast the residency program. In addition, 40 percent of the residents reported depression so severe as to affect their performance and lasting more than 4 weeks. Eighty-five percent frequently found that they had little compassion for patients or referred to patients in derogatory terms, and 12 percent reported problems with increased use of drugs and alcohol. In reporting work hours, 6 percent said that they were on call daily, and 33 percent were on call 3 or more times a week. One-third of the respondents moonlighted, but only 5 percent (16 residents) did so more than 8 hours per week. The researchers found differences in severity of stress and existence of pathological behaviors according to the program specialty area of practice, but did not publish this information because of confidentiality considerations.

Laine, C.A. and others. "The Impact of a Law Restricting Medical Housestaff Working Hours on the Quality of Patient Care." Clinical Research, Vol. 39 (1991), p. 603A. A retrospective study of the impact of the NY 405 regulations on the quality of patient care at New York Hospital Cornell Medical Center pre- and post-405 implementation found that more patients suffered at least one complication in 1989 (post 405) than in 1988 (pre 405). In addition, the ordering of diagnostic tests by housestaff was more often delayed in 1989 than in 1988.

Lofgren, R.P. and others. "Post-Call Transfer of Resident Responsibility: Its Effect on Patient Care." Journal of General Internal Medicine, Vol. 5 (1990), pp. 501-05. In a study of the effects on the efficiency and quality of patient care of two staffing methods, one utilizing a senior primary resident to admit patients assigned to the admitting resident's team and the other involving the transfer of patients admitted by a cross-covering resident (a resident from another team different from the one to which the patient is transferred) to another senior resident. It was found that patients transferred to a different resident the day after admission, had more laboratory tests performed, and longer lengths of stay (study is related to Gottlieb, 1991).

O'Neil, A. and others. "Summary of the Brigham House Staff Study of Medical Injuries." Study, 1992. This study found that a cross-coverage method of staffing used to meet reduced resident work-hour requirements was associated with preventable patient injuries. The researchers suggested that this finding may reflect either lower physician-to-patient ratios during cross-coverage periods or mismanagement by housestaff unfamiliar with the patient.

Related Research Nonmedical

U.S. Congress, Office of Technology Assessment. Biological Rhythms: Implications for the Worker, OTA-BA-463. Washington, D.C.: U.S. Government Printing Office: September 1991. OTA reviewed numerous research reports demonstrating the adverse effects of sleep deprivation and shift work on the workers' health, work performance, and job safety. OTA concluded that a greater portion of shift workers than day workers suffer general health complaints, that is, muscle aches, gastrointestinal disorders, increased risk of miscarriage, preterm birth, and low birth weight babies.

In the area of performance, it was OTA's observation that the large body of literature demonstrates that fatigue and sleep deprivation clearly have a negative effect on the performance of most tasks. The relatively few studies recording 24-hour real task data show that (1) task speed decreases at night; (2) the probability of making an error, missing a warning signal, or nodding off while driving is highest at night; and (3) the risk of trucking accidents is highest between midnight and 2 a.m. OTA concluded that "while it is possible that the performance decrements that occur in shift work will translate into an increased rate of mishaps and injuries in the workplace, the published data in this area is meager . . . Thus there is some indication that shift work can result in decreased safety in an industrial setting; however, there is no complete characterization of the types of settings most likely to be affected." Consequently, one of the options suggested by OTA was for the Occupational Safety and Health Administration to collect more complete information on workplace injuries, including time of day.

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