

The Condition of Surgery: An Analysis of the American College of Surgeons' and the American Surgical Association's Report on the Status of Surgery

ERWIN A. BLACKSTONE

Department of Economics, School of Business Administration,
Temple University

Some writers evaluating the performance of the medical profession have suggested that the United States has too many surgeons at a time when there seems to be a shortage of primary care physicians (Fuchs, 1974:57; Blackstone, 1974). Today there is also a strong public interest in the subject of unnecessary or excessive surgery (Brody, 1976a:1). It is therefore timely that the major surgical associations have conducted a study to evaluate the current status of surgery. As their Report, *Surgery in the United States* (Am. College of Surgeons, 1975:15), notes: "This comprehensive study should provide the basis for appropriate action." (Hereafter the study will be referred to as the Report.)

The purpose of this paper is to examine critically the Report's major findings and recommendations since it is quite possible that they will provide the basis for public policies that could profoundly influence medical practice for a considerable time. If so, the Report and its associated articles may well become the counterpart of the Carnegie Commission's 1910 Flexner Report (to be discussed later). I shall concentrate on the current Report's analysis of the supply of surgical services, because this subject seems to have been the most extensively studied.¹ Indeed, almost one-third of the summary

¹ "Of the nine completed sections, the four-part manpower study predominates. More research, money, and time went into it than into any of the other sections. . . ." (Medical World News, 1975). The other sections dealt with such topics as surgical research, allied surgical workers, academic surgical manpower, legal and ethical issues, community physician relations, and government relations.

volume was devoted to the manpower issues, and this subject certainly seems to be the most important and the most controversial.

What the Report Says

After considering surgeons' workloads, the Report concludes that the United States has a surplus of surgeons and implies that, as a result of the expected large increase in the number of medical school graduates over the next five to ten years, the surplus will increase unless corrective action is taken.² In particular, questionnaire results (confirmed by actual hospital reports of surgeries in four regions, each with populations between 600,000 and 1,350,000) showed that the median workload was 170 operations per surgeon per year (Hauck, 1976:1869). This result is similar to that of E.F.X. Hughes et al. (1972:319) in an earlier study of general surgeons around the New York metropolitan area. The reported surgical workload (and the associated office practice) is far below what the surgeons claim they can easily handle; for example, the 1972 Hughes study disclosed that while surgeons believed a weekly workload of 10 hernia equivalents to be desirable, the median workload in their sample was only 3.1 hernia equivalents (p. 324). That a workload of 10 hernia equivalents is not excessive is confirmed by the fact that chief surgical residents performed about 10 hernia equivalents worth of operations and by the fact that surgeons in a prepaid group practice did approximately that amount of work (Hughes, 1973 and 1974). One should keep in mind, though, as Hughes et al. (1972: 324) note: "The problem of determining underutilization of surgeons is complicated by the lack of an adequate standard of what comprises a well-balanced, productive surgical workload."

In any case, the reported workloads are considered light. If operations (except normal deliveries and other noncomplex procedures) were restricted to board-certified surgeons and assuming that interns and residents do half the current work, the operative work of the average board-certified specialist would only increase 16 percent

² The Report (p. 86) notes that "The data both in the questionnaire study and the area studies suggest that most surgeons could carry a higher operative workload." Also their total professional work weeks typically involve around 35 to 40 hours. Moreover, since these estimates come from surveys, the bias is likely to be on the high side. For example, Hughes et al. (1975:381) found substantial differences between self-reporting of work weeks and their study which involved clocking general surgeons.

(Nickerson, 1976b, p. 987). The Report accordingly states that “. . . between 50,000 and 60,000 board-certified surgeons, together with 10,000 to 12,000 interns and residents, would prove sufficient for surgical care in the United States for the next 40 to 50 years.” Since the Report (p. 27) finds that there are about 94,000 persons doing surgery, there is currently a surplus, conservatively estimated, of 20,000 surgeons. But if the 54,000 board-qualified or board-certified surgeons were the only ones performing surgery (thereby excluding the thousands of non-certified specialists and other practitioners who also perform surgery), it turns out that the United States would have a “satisfactory” number of such practitioners. The study then comes close to recommending that only board-certified surgeons be allowed operating privileges at hospitals: “The term ‘surgeon’ should be strictly defined to include board-certified and board-qualified persons or those older persons who have demonstrated long service in their communities as effective surgical specialists” (Report, p. 83). New surgeons would for all practical purposes be prevented from practicing surgery unless they were board-certified or board-qualified, that is, unless they had completed approved residencies.³ The Report (p. 85) also recommends reducing the number of surgical residency positions:

The number of surgical residency positions offered in this country, approximately 16,000, is excessive by any standard. The number of persons now entering and completing surgical residency each year (2500 to 3000) is larger than that required by population needs. A conservative manpower goal involves the reduction of residency output and board certification rates to 1600 to 2000 persons per year in the next decade.

An important, if not the major, basis for the Report’s recommendation that the number of surgeons be reduced is the claim that surgical workloads are on the average less than optimal, with the following consequence:

A certain number of operations and of difficult operations is essential for the maintenance of the surgeon’s skill. Fewer such operations might militate against skill if continued for several years; many more might be associated with inadequate attention to other details of the patient’s care.⁴

³ One would have to be careful that such restrictions would not eliminate the only surgeon in areas short of doctors.

⁴ Report, p. 81. The same point has been made by other writers on such surgical areas

Thus, according to the Report, too many surgeons means that operative workloads may become insufficient to maintain or improve skill, thereby reducing the quality of surgical care. A kind of market failure exists in the sense that a person entering surgery does not take into account the subsequent reduction in the skills of the currently practicing surgeons whose workloads are reduced. Of course, it should be noted that this excessive “spreading of the work” brought about by the entry of new surgeons may be offset somewhat to the extent that surgeons can create their own demand. However, to the extent that there might be a reduction in quality with excessive entry, society may well want to consider a policy to limit entry to a rate which permits quality to be maintained at some desirable level (to be discussed below).

A problem with the Report’s conclusion that there are too many surgeons and consequently a danger to the level of surgical quality is that it is based upon a purely technological criterion: what may be optimal in a medical (only) sense may not be optimal in a larger social sense (considering all costs and benefits). On purely medical grounds, for example, a few very active open-heart surgery units may provide the United States with the highest quality care. Consumers may, however, want more widely dispersed facilities despite the somewhat lower quality that may result. The optimal quality level or the optimal quantity of surgeons obviously depends upon some factors other than surgical workload. For example, if the social cost of training another surgeon is very high (which is probably the case), it may be best to “overwork” our surgeons. On the other hand, some consideration should also be given to increasing the number of surgeons to lower (if possible) their monopoly power and their prices. Some reduction in quality may therefore be considered satisfactory if it reduces surgical prices. Unfortunately, doctors do not engage in much price competition, so prices may not decline significantly even with considerable entry (a subject to be discussed later).

Furthermore, the Report’s argument lacks empirical evidence that in fact quality is being reduced by insufficient workloads. While

as neurosurgery and pediatric surgery. For example, referring to insufficient pediatric surgical work, Ravitch and Barton (1974) state: “The predictable result would be a progressive decline in the operative, diagnostic, and therapeutic skills of the pediatric surgeon from the level at which he left his residency training with an inevitable reflection in the results obtained in the treatment of the occasional patients.”

that conclusion seems quite reasonable (and such a belief is evidently widely held in the profession) “hard” evidence on such an important point would have been helpful. The argument would have been much more convincing if it could have shown, for example, that the least active open-heart surgery units have the greatest incidence of complications (see the study by a presidential commission cited in Lee, 1971). Moreover, even if skills deteriorate with lack of use, the difference in quality might be barely perceptible until the workload was very light. The rate at which skills deteriorate is therefore important as is the notion of some minimum threshold.

Additionally, the policy recommendation that, in general, only board-certified or qualified surgeons should perform surgery does not seem to be based on empirical evidence of the higher quality of these surgeons’ work. The basis for the Report’s conclusion (p. 63) seems to be the fact their study found that board-certified surgeons had higher workloads (which included more difficult operations) than non-board-certified surgeons. For example, in one geographical area board-certified surgeons had an average surgical workload about 28 percent greater than uncertified surgical specialists (192 versus 150 operations), but the workload was almost 50 percent greater when operations were weighted by their complexity (1,864 versus 1,245).⁵

A presumption of quality differences due to smaller workloads seems reasonable, but it is after all an empirical question and hard, empirical evidence should have been provided. The Report finds substantial differences in workloads; accordingly some indications of quality differences might be expected if workload differentials were important. The fact that malpractice insurance rates are apparently unrelated to certification status in such states as Pennsylvania, for example, would lend some small support to the contention of equal quality. As in the skill deterioration argument, the degree of difference in quality of certified versus non-certified surgeons is important. Moreover, some lower quality might be considered acceptable by consumers if accompanied by substantially lower prices. Finally, the Report presents insufficient evidence to conclude that general practitioners and other non-certified surgical specialists

⁵ Report, p. 40. For a brief discussion of the weighting procedure see Nickerson et al., 1976a:924–925. For a fuller discussion see the Report, especially pp. 36–54. For seminal work on such a weighting procedure see Hughes et al., 1972, especially pp. 316–317.

cannot do the less complex procedures. Even if there were differences in quality in the complex procedures, there might not be any difference in the simpler procedures. In fact, "overtraining" can also be costly to society, in terms of both the higher prices paid by consumers and, probably more significantly, the additional resources required to train the specialists (Rayack, 1971:453).

In summary, the Report finds a considerable excess of surgical capacity and suggests that the low workloads probably yield lower quality surgical care. The policy advocated by the surgeons is to reduce the number of new entrants and to limit surgical privileges at hospitals to board-certified surgeons.

*The Failure to Explain Why Excess Supply Exists
and the Failure to Consider Excessive Surgery Adequately*

That the Report finds that there are too many surgeons and too many in surgical training programs is not surprising. Several years earlier, Fuchs (1972), Hughes et al. (1972), and others presented evidence suggesting the same conclusion. The Report, however, fails to go beyond documenting the surplus and ignores the causes of the problem.

Many physicians are attracted to the surgical specialty by financial reward and higher status. Surgical earnings have traditionally been higher than earnings in either the non-surgical specialties or general practice. In part, the higher earnings of surgeons can be attributed to the greater prevalence of price discrimination in surgery (Kessel, 1958). The insurance situation has also led to more surgical specialization. Feldstein (p. 151) states: ". . . because surgical services and other specialists' care are more completely insured than care by general practitioners is, insurance distorts the use of physicians' services. The more heavily insured specialties are able to charge higher fees, which attracts more physicians into those fields." In 1939, for example, the average net income of specialists (including medical specialists) was 60 percent greater than that of general practitioners (Rayack, 1971:449). In 1973, the median income of surgeons exceeded that of general practitioners by 30 percent (calculated from data in Owens, 1975a, 1975b). Moreover, recent evidence (to be discussed below) suggests that the disparity in earnings has ceased to narrow despite a surplus of surgical manpower. The rate of return for general surgical training is still substantial: assuming,

for example, that an individual earns during the three years of general surgical residency training one-half the median income of a general practitioner, and given a 10 percent discount rate, less than twelve years of such a 30 percent differential is required to make surgical training profitable. Finally, surgeons tend to have shorter work weeks than general practitioners: in 1971 the average surgical work week ranged from 34 to 48 hours (depending upon surgical specialty), whereas the average general practice work week was about 60 hours (Report, p. 69; Owen, 1972:77).

Organized medicine, moreover, attempted to control the number of graduating physicians, but has allowed almost free entry into the specialties (Blackstone, 1974:335–341). For example, there were almost 6,000 first year surgical residency positions available in 1973, enough to accommodate fully 67 percent of the U.S. medical school graduates; by 1975 there were 8,000 such positions (Macy Commission, 1976:78). In addition, even though 93 percent of the first year general surgical residency positions were filled during 1973–74, a substantial percentage of such positions were held by foreign medical graduates. In fact 29 percent of all surgical residency positions were filled by foreign medical graduates (Hughes, 1974:179). It has not been difficult for an American medical graduate to obtain a surgical residency. One explanation for the marked difference here in the policy of organized medicine toward entry may be the likely opposition from hospitals to any reduction in their “cheap labor.” The Report does not at all explain what determines the supply of residency positions. For example, residencies are probably offered, among other reasons, because hospitals are interested in status; a teaching affiliation allows hospitals to attract high quality physicians, raising their status, which in turn enables them to attract more patients. In any case, it is clear that the demand for residents (resulting recently in a fairly marked rise in their salaries) has made surgical specialization quite easy. Moreover, as evidenced by the large number of uncertified surgeons, such certification (and the preliminary training) is often not even required to practice surgery.

Let us now examine what is happening in the surgical market; a surplus of surgical capacity should after all result in lower prices and incomes (at least relative to such other fields of medicine as general practice) until the surplus is eliminated. For three common surgical procedures, herniorrhaphy, tonsillectomy and adenoidectomy, and obstetrical operations, the price increases between 1967 and May of

1976 were, respectively, 68, 80, and 92 percent (U.S. Dept. Labor, 1976:85). General practice fees, as measured by office visits, increased over the same period by about 92 percent. Despite the fact that these are limited surgical statistics, there does appear to be some restraint in surgical fees compared to general practice fees. This impression is reinforced by the fact that hernia repairs, which had the lowest increase in price, are usually done by general surgeons, the group considered to have the greatest excess surgical capacity. In addition, the median appendectomy fee charged by general surgeons rose only 25 percent between 1970 and 1973, substantially less than the 42 percent rise for general practice office visits over that same period (Owens, 1974:138). Prices for office visits to general surgeons, moreover, did not increase at all between 1967 and 1973 (Owens, 1975b:87). Other surgical specialists also raised office visit prices much less than did general practitioners: neurosurgeons' initial office visits increased 40 percent, urologists' about 7 percent, and obstetrician-gynecologists' 33 percent (Owens, 1975b:82). Surgical prices have increased less rapidly than general practice prices and this is especially noticeable in the case of office visits.

On the other hand, between 1967 and 1973 the median income of general practitioners increased 27 percent, compared to 28 percent for all surgical specialists and 25 percent for general surgeons (Owens, 1970:106; Owens, 1975a:83; Owens, 1975b:77). Moreover, general surgeons' 1975 median income went up 14.5 percent over the previous year; family practitioners' median income went up 11.4 percent and that for general practice increased 6.3 percent (Owens, 1976:147). These figures suggest that the market is either working slowly or not at all and yet the Report, in essence, fails to deal explicitly with the issue of earnings which prevail even in the presence of excess capacity.⁶ Moreover, status and work week considerations suggest that surgical incomes would probably have to fall markedly before entry would be reduced sufficiently.

Prices for surgical work are increasing less rapidly than general practice prices but the incomes of surgical practitioners are remaining constant relative to general practitioners (or perhaps even increasing). One explanation is the fact that surgeons are doing more

⁶ For example, the median income of general surgeons in 1971 was \$43,600 while that of comparable neurosurgeons was \$54,700. The 1971 median income for all surgeons was \$46,100. See Report, p. 64.

general practice work (Owens, 1974:140). It is also possible but unlikely that they are working harder despite still having excess capacity. Board-certified surgeons may also be gaining patients at the expense of the non-certified surgeons who happen to charge lower prices. This explanation is also consistent with the fact that the median income for non-certified surgeons in 1971 was \$36,000 compared to the \$50,700 median income for board-certified surgeons. Correcting for age (the uncertified surgeons tend to be older) still leaves a 20 percent differential (Hauck et al., 1976:1869–1870). Moreover, that prices for surgical office visits in particular are increasing slowly may suggest that surgeons faced with excess capacity do not want to discourage potential customers (including those requiring only general practice work).

Given the resulting surplus of surgeons, why haven't surgical prices and surgeons' incomes fallen sufficiently to eliminate excess surgical capacity? One explanation is that there are too many impediments to competition in the physicians' services market. Price cutting and advertising have been considered "unethical" and hence have not been employed. That price discrimination on the basis of income could have persisted suggests a lack of effective competition. Additionally, consumers don't shop around partly because they can't evaluate quality but also because they aren't paying directly for most of the surgery: insurance reduces the restraint normally exercised by consumers. Moreover, since consumers lack adequate information about the necessity of medical and surgical treatment, they often rely upon physicians to make the decisions for them. All of this makes the probability of price competition quite low. Excess capacity then may persist as idle capacity which the Report documents or may take the form of unnecessary or marginally necessary surgery about which little is said.⁷ The Report even presents some evidence that is consistent with the creation of demand by surgeons: for example, in the geographic area with the greatest number of surgeons per 1,000 population, the total number of operations per

⁷ Some excess capacity may be an option demand phenomenon and hence be socially desirable. Also, what the surgeons do with their idle capacity is surely relevant; for example, the implications are presumably different if idle surgeons play golf or engage in research and development of new surgical techniques. But much improvement in technique requires considerable experience with the same type of case, so even improvements in health care may require reasonably active surgeons. In any case, what surgeons do with their idle time is certainly a question warranting further study.

1,000 is greater but the number per surgeon is lower than in other regions (Report, p. 38). Demand or cultural factors could explain such relationships (Moore, 1976), but at the least the Report should have examined the reasons why operation rates differ so much. The Report also does not consider the possibility that excessive or unnecessary surgery may be symptomatic of excess surgical capacity, and that surgeons with insufficient business can err on the side of performing surgery.⁸ The Report seems implicitly to accept the fact that the number of operations can be influenced by factors other than medical criteria:

If surgical manpower planning were based solely on the number of operations or weighted average of operations undertaken per year, it might provide a stimulus for surgeons to carry out large numbers of operations so as to maintain status, rank, or some type of certification. This would clearly be disastrous for the standards of surgery and would provide an artificial stimulus for surgeons to increase operative workloads (Report, p. 81).

The Report stresses the lower quality associated with too much "spreading of the work" but does not consider adequately the fact that consumers lack sufficient information to guard against excessive or unnecessary surgery. (To be sure, what constitutes unnecessary surgery is subject to considerable disagreement, but the subject still deserves more attention.) It is the lack of information that in part provides justification for restricting entry. If, for example, we have too many engineers, their (relative) incomes fall since they have more difficulty generating work than do surgeons. Ordinarily, consideration might be given to imposing a penalty tax on those who perform less than the optimal number of operations, but with inadequate consumer information, that penalty tax could induce the performance of unnecessary work. The point is that given the

⁸ That excess surgery can happen because of too many surgeons is indicated by the statement of a former president of the American Medical Association: "We're going to have so many general surgeons trained that the only way they could make a living would be to cut everything human that looks like a bump" (Lavin and Busek, 1973:73). Moreover, that excessive work is likely to occur as a result of too many doctors has even served as an argument for restricting entry: "An oversupply [of physicians] is likely to introduce excessive economic competition, the performance of unnecessary services, an elevated total cost of medical care, and conditions in the profession which will not encourage students of superior ability and character to enter the profession" (Rayack, 1968:671).

presence of an externality (the quality denigration brought on by excessive “spreading of work”) and the lack of adequate consumer information, an unregulated market will not necessarily yield optimal results. And given the substantial evidence of idle capacity and unnecessary surgery, the surgical market is evidently not performing very well.⁹ The market is also not working to reduce surgical prices and incomes enough to discourage surgical specialization. In addition, the social cost of training physicians is high, considerably greater than \$100,000 (Hughes, 1972:315). Idle resources impose substantial costs upon society. It seems quite clear, therefore, that a policy of either restricting entry or improving the functioning of the market is in order.¹⁰ The key issues then are, first, what type of policy is appropriate, and, second, if entry restriction is deemed desirable, what agency or group should set the controls and what guidelines should be used.

The Similarity Between This Report and the Flexner Report

The Flexner Report of 1910 set in motion forces which eventually permitted organized medicine to control the medical schools’ output of physicians. While the purpose of the Flexner Report was to improve medical education, it later was used to facilitate organized medicine’s restrictive policies. It is the thesis of this paper that surgeons today are in roughly the same situation as physicians in general were prior to the Flexner Report. Accordingly, we shall now consider the Flexner Report, which raised both the quality of medical schools and the costs of medical education. It appears that neither Flexner nor his sponsors anticipated the consequent rise in the prices of medical care.

⁹ For evidence on unnecessary surgery see references cited in Blackstone (1974) and for a discussion of idle capacity, see Fuchs (1972:57). It has been estimated recently that two million out of 20 million operations done annually in the U.S. are unnecessary (Brody, 1976b:58). It is interesting to note that operations per 1,000 population increased by about 20 percent between 1970 and 1974 (Report, p. 28).

¹⁰ A contrary view to controls on entry is given by Reuben Kessel (1972:124) who (in discussing the Flexner Report) states: “The Flexner revolution emancipated the medical schools from dependence upon student fees. As a consequence it created a non-system: the desires of the public could not be translated into physicians willing to provide medical services.”

From its inception until approximately 1900, the A.M.A. advocated licensing laws for doctors; the states adopted this policy. The medical profession at the turn of the century was still competitive and doctors' earnings were comparatively low. The next step in improving the financial status of doctors involved gaining control over medical schools. In 1904, the A.M.A. established the Council on Medical Education. In 1906, the Council inspected the country's one hundred and sixty-two medical schools and found that only eighty-two were completely acceptable (Kessel, 1958:27). The Council sought help from the Carnegie Foundation:

If we could obtain the publication and approval of our work by the Carnegie Foundation for the Advancement of Teaching, it would assist materially in securing the results we are attempting to bring about (Kessel, 1958:27).

Abraham Flexner was selected to examine the nation's medical schools: his standard was the Johns Hopkins University Medical School. There was no examination of the graduating physicians of the various schools; only the method by which physicians were produced was evaluated (Kessel, 1970:268–269). As Reuben Kessel (1970:268) states:

. . . the [Flexner] Report discredited many medical schools and was instrumental in establishing the A.M.A. as the arbiter of which schools could have graduates sit for state license examinations. Graduation from a class A medical school with the ratings determined by a subdivision of the A.M.A. became a prerequisite for licensure.

The A.M.A. now had effective control over the supply of physicians through its ability to accredit schools, since only graduates of such approved schools could be licensed. As one would probably expect, the number of medical schools declined from one hundred and sixty-two in 1906 to sixty-nine in 1944 (Kessel, 1958:28).

Organized medicine (which largely means the A.M.A.) also used its power in the 1930s to reduce the output of medical schools—evidently because of concern about the declining income of physicians. In 1934 Dr. Walter L. Bierring, then president of the A.M.A., stated:

One is forced to the conviction that more doctors are being turned out than society needs and can comfortably reward. . . . The time has arrived for the American Medical Association to take the initiative and point the way (Rayack, 1971:430).

The Flexner Report did raise the average quality of medical schools. But organized medicine's control over the supply of doctors has also led to a marked rise in the relative income of physicians, a widely acknowledged shortage of (primary care) doctors, and an inflow of foreign-trained doctors. In addition, the Flexner Report led to both excessive standardization of the medical curriculum and little innovation in the production of physicians. Such are the dangers in granting control over an industry's output to the industry itself.

Now let us turn to the current report on the surgical segment of the physician market to examine its major manpower recommendations. The surgical segment is in a position similar to that of the entire physician population around the turn of the century.¹¹ There is a manpower surplus, idle capacity, and evidence of excessive surgery. Entry into the surgery market (for a physician, of course) is easy: any licensed doctor can perform surgery even without additional surgical training.

The Report's emphasis upon certification could provide the future basis for similar restriction of entry as occurred in medicine generally. For example, the Report (p. 86) recommends:

An agency representing several educational organizations should finance, mount, and conduct a continuous program of monitoring residency output in all fields of medicine and surgery, relating this to the currently available manpower by age group, and predicting national physician population ratios over future decades. This information should be made available to all residency review boards so that they may arrive at guidelines for the number of residency positions to be approved.

The agency should not come under the control of the surgeons so that entry could be unduly restricted.¹² If board-certification will

¹¹ A former head of the A.M.A.'s Council on Medical Education, referring to the large reduction in the number of medical schools after the Flexner Report, stated: "We had anticipated this and felt that this was a desirable thing. We had . . . a great oversupply of poor mediocre practitioners" (quoted in Kessel, 1970:271). Moreover, the then head of the Carnegie Foundation wrote in the introduction to Flexner's report that overproduction of physicians had been a problem for twenty-five years (Kessel, 1972:123).

¹² For example, there have been many suggestions that organized medicine in the past has restricted entry. The Federal Trade Commission has recently announced an investigation "into whether the AMA has illegally restrained the supply of physician or health-care services" (Wall Street Journal, 1976:1).

soon become necessary for admission to hospital staffs, organized medicine will be able to restrict output as has been the case for total physician output with all the problems that has created. If necessary, pressure might then be applied to hospitals to allow only board-certified surgeons to perform surgery. Rather than relying completely upon organized medicine to determine the number of surgeons, one may prefer a governmental body, perhaps composed of physicians, biological scientists, economists, consumers, and others, to develop rough measures of desired output of surgeons (perhaps using such criteria as numbers of operations/surgeons, foreign surgeon/population ratios, surgical prices). The federal government could use such financial resources as scholarships or direct grants to medical schools to achieve contraction or expansion of surgical output. In fact, recent manpower legislation already mandates that by fiscal 1980, 50 percent of the nation's residencies must be in primary care if the medical schools are not to lose substantial federal support (Science, 1976). The problem is to make the supply of surgeons reasonably responsive to consumer demand under conditions of significant market imperfection.

Restricting the number of new surgeons will raise surgical incomes. For example, the Report presents income data for surgeons and recognizes that where there are fewer surgeons, operations and income per surgeon both tend to be higher: the Report (p. 88) estimates that an increase in operative work of 20 percent will raise surgeons' lifetime earnings by 10 percent. Such an estimate is evidently based on a simple increase in surgical workload without consideration of price increases, but it is quite possible that surgical prices will also rise with less competition; accordingly, surgical incomes could increase much more than 10 percent. Recognizing that such high incomes could cause public discontent, the Report (p. 126) suggests that such incomes can be justified by the long training period and the early retirement age for surgeons:

Increasingly, the incomes of physicians are coming under public scrutiny. . . . Surgeons' are among the highest of all physicians' earnings. Society is demanding justification for these incomes. Failure to justify them will understandably result in increasing pressure, from government and private third-party payors, to reduce traditional fee-for-service payments, to extend controlled prepaid programs, to develop a specified wage for all physicians, or all three.

An important area of controversy in the medical profession is the issue of appropriate jurisdiction: for example, surgeons argue over which group of surgical specialists should do hysterectomies. The Report does not address this issue at all. Such jurisdictional disputes may be an important source of competition. It is possible that the surgeons will next decide that only orthopedic surgeons should do X and neurosurgeons Y, albeit in some cases there may be advantages to surgery patients by increasing the experience level of their physicians. If so, the result will be even more market power.

Society should recognize that surgeons have on occasion tried to exclude general practitioners from performing surgery. According to a past president of the American College of Legal Medicine, this occurs usually “. . . when a horde of surgical specialists moves into an area only to discover there's not enough surgery around. . . . Board-certified men tried to freeze out the competition completely, although local G.P.s have been there for thirty years doing good work” (Rayack, 1971:444). Excess surgical capacity has also led to similar restrictions on non-board-certified surgeons who, on occasion, have had to resort to building their own hospitals or affiliating with proprietary ones (Rayack, 1971:453). This exclusion probably contributed to their lower earnings. Care must be taken that unnecessary restrictions on competition do not occur: the danger of this would be heightened if surgeons were to gain more control over entry.

Also, if surgical (as well as medical) certification becomes equivalent to licensure for specialists, care must be taken to avoid the same rigid controls on residency programs as were brought about by the Flexner Report. Innovation and cost cutting should be encouraged by establishing tests for competence but not by requiring completion of an approved residency program as a prerequisite to taking the examination. This would allow programs to experiment with different, perhaps shorter, training periods. Again, certification should not be employed to specify how knowledge was gained but only to verify that the person does in fact possess the requisite skill to practice surgery. The current report (like the Flexner Report) equates the quality of physicians produced with the methods of training. Excessive regimentation and standardization may result. The possibility of greater reliance on examination has not been sufficiently analyzed. Of course, it may be difficult to devise

an effective and accurate test of competence, but the issue at the least should have been examined.

In summary, while it may be desirable to control the supply of surgeons, organized medicine should not do it, since that group may overdo it (as it did once before for medicine overall). Care must be taken to consider the possible costs that might be incurred if the surgeons were to gain greater control over their own numbers—higher costs and prices, and possibly less innovation than would exist under an alternative arrangement. Moreover, the output of new surgeons might become much less sensitive to consumer demand.

Some Additional Implications

The Report does not address some important implications of adopting its recommendations. For example, if the number of new board-certified surgeons is cut by 33 to 50 percent, how should the reduction be achieved? Should some programs be eliminated entirely or should an across the board cut be made by reducing each program by the same percentage? The Report does not consider the different effects of alternative ways of reducing output. In cities like New York, resident physicians currently provide almost all of the services available to the poor and the elderly (Hughes, 1976:1438). In 1974, for example, residents handled 1,031,000 outpatient visits in Brooklyn alone. This is mainly because the New York metropolitan area has so many residents, one-sixth of all the residents in training in the United States in general surgery and internal medicine (Hughes, 1976:1438). If the number of residency positions is to be reduced, one can expect considerable pressure to remove many of New York City's (and other similarly situated large cities') residency positions. If the number of such training positions is reduced substantially, serious short-run consequences are likely for many consumers of surgical care, especially the poor and the elderly.

As Hughes states:

This could become an especially bitter problem as regions could seek a given specialty position for different reasons: one in hope of eventually filling a perceived shortage for that specialty in their region through the settlement there by the resident, while the other region sought the position to meet definitive service needs of its inner city populations (Hughes, 1976:1440).

Additionally, there is already increasing discontent among interns and residents about low wages and long hours of work. One can conclude from the Report (p. 79) that trainees in fact do work long hours and receive low incomes; the average work week ranged from a high of 94 hours for surgical interns to a low of 60 hours for ophthalmology residents. (The portion devoted to surgery is however not reported.) If the number of residency positions were cut drastically, it might be very difficult to reduce the workweek for interns and residents. The reduction in residency positions might require greater use of nurses and other allied personnel. Additionally, reducing the number of residents would give impetus to the training of nurses or others able to assist surgeons in pre- and postoperative care. Such a development might well be desirable, however, as it would permit surgeons to concentrate on the work that requires their skill. Surgeons would also probably find their workloads increased substantially as a cooperating factor of production (resident) is reduced.

Reducing the number of residents would also tend to raise hospital costs since residents' salaries tend to be low and since their probable in-hospital replacements, specially trained nurses, are not perfect substitutes. For example, if a surgical resident works 80 hours per week, replacing that individual would presumably require two highly trained nurses; and given the roughly comparable salaries of each, hospital costs would almost certainly be higher. It is possible that some hospitals would try to require physicians on their staffs to devote time to general hospital patients rather than only treating their own patients. But given the increased market power of surgeons, hospitals might have great difficulty in doing so. Finally, the cost to the hospitals of employing surgeons directly would be considerably greater than currently because of the surgeons' higher incomes from alternative activities.

Restricting entry into surgery would also probably mean that surgical prices and incomes would rise relative to primary care prices and incomes. The rate of return to surgical training would increase substantially. Such a development would increase the attractiveness of becoming a surgeon, but by increasing the number of would-be surgeons but not actual surgeons, rationing of supply might become necessary—perhaps making admission subject to political or other pressure. On the other hand, restricting entry into surgery would also probably help alleviate the currently perceived

shortage of primary care physicians. It is, of course, possible that many unable to enter surgery would enter such fields as pathology and anesthesiology. Additionally, the possible consequences of adoption of national health insurance would be affected by restricting the number of surgical entrants. For example, despite the fact that substantial excess surgical capacity exists, overall medical prices would probably be driven up quite rapidly if national health insurance were implemented as a result of the shortage in the primary care areas. One estimate is that a 25 percent coinsurance plan would increase in-hospital demand by, at most, 8 percent but outpatient visits (ordinarily to primary care physicians) would increase 30 percent (Newhouse et al., 1974:1346). Increasing the numbers of primary care physicians by reducing the number of new surgeons would help restrain such price increases.

Moreover, reducing the number of residents could shorten the time required to train a competent surgeon. Hughes et al. (1973:665), in an intensive study of one residency program, found what appeared to be substantial underutilization of residents: "The relatively low operative workloads over the first four years of general surgical residency in the hospital studied suggest that the operations could be performed over a shorter period of training." Assuming that the non-operative workload was also small, costs of surgical training could be reduced. It should be noted, though, that such a shortening of training time would also increase the desirability of becoming a surgeon, adding to the rationing problem, and would provide a once-and-for-all increase in the number of surgeons (Hughes, 1973:665). If the number of residency positions were reduced, the increased experience with particular cases might also lead to greater innovation in surgical technique (Bergland, 1973:1045).

Reduction of the number of surgical residency positions (and the number of practicing surgeons) would also reduce the time required for a young surgeon to attain an adequate number of cases and obviate the necessity to engage initially in general practice work (for which presumably he is "overtrained" and which accordingly represents an inefficient use of resources). An article associated with the Report (Nickerson, 1976b:987) notes:

. . . 10 to 15 years [is] required by young surgeons to build up their practices to a modest workload peak. This drawback represents serious under-utilization of young surgeons with the greatest capacity and skills.

To the extent that surgery might thus become more attractive (and presumably it would), rationing of positions would become even more important.

A reduction in the number of residencies or residency programs might also lead several hospitals to collaborate in offering a program. It is conceivable that such hospital coordination might help to rationalize the use of expensive equipment and facilities, as well as generate sufficient patients to provide an active residency program. And, as a matter of political reality, such a method of reducing residencies might be more palatable.

The method of reducing the number of training positions may also be important in terms of residents' salaries: if all (or most) programs are retained but the number of trainees per program is reduced, competition for residents might still be strong as less prestigious places try to get good residents by offering higher wages than the more prestigious institutions. On the other hand, if the less prestigious programs are eliminated, less intensive competition and therefore lower wages would probably result.

Another implication of reducing the number of surgeons, resulting in a rise in their relative incomes (and probably their relative prices, as well), is the increased likelihood that groups outside the control of organized medicine may try to enter the surgical market. The most likely potential entrants are osteopaths, who are fully licensed in all states to practice medicine and surgery. Osteopaths have traditionally emphasized general practice work, in part because that field was largely relegated to them by medical doctors. If osteopaths begin to enter surgery in much greater numbers (out of the 900 who currently enter practice each year), this may well entail a more widespread establishment of osteopathic hospitals and surgical training programs. Currently, osteopaths who serve an A.M.A.-approved internship are eligible to enter residency training programs if the particular Board accepts. Conflicts between osteopaths and M.D.-surgeons over hospital privileges are likely to intensify. The result might be a gradual weakening of the market power of surgeons as such substitutes as osteopaths enter the market in response to entry restrictions imposed on M.D.s.

If surgeons' incomes are to be increased even further, one might raise an equity issue. Those selected to be surgeons will rank among the highest earning individuals in our society. In 1971 surgeons already ranked in the top 1 percent of wage and salary earners and in the top 5 percent of all income recipients (Hauck et al.,

1976:1871). It seems clear that at the least such individuals should bear most of their training costs; however, if surgeons must pay the full cost of their education, given an imperfect capital market, only the rich may be able to become surgeons. Schools that train surgeons could, for example, provide free tuition but require a prospective surgeon to contribute some percentage of future income as payment for the education. Such a policy, commonly referred to as the "Yale Plan," would help alleviate the problem of an imperfect capital market. Taxpayers or hospital patients should not be expected to pay completely for the training of surgeons. The Report in general raises implicitly the difficult issue that efficiency (that is, higher quality through higher workloads) will lead to greater monopoly power than currently exists and to higher earnings for surgeons because of more work and perhaps (although it is not mentioned) because of the increase in monopoly power. Perhaps special taxes should be imposed on surgeons, to reduce their high earnings. In effect, society may want to treat surgeons like a natural monopoly or oligopoly: reduce the number of sellers and restrict entry in exchange for a regulated price or income (although regulation is not without its own problems) (Posner, 1969). In any case, the issue of high surgical earnings merits further study.

The restrictions on competition usually necessary to maintain incomes at a high level can also impose costs on consumers in the form of lower quality care. For example, non-board-certified surgeons and general practitioners may be attracted by the high surgical fees. However, they will be denied access to the better teaching hospitals and will not be exposed to the newest techniques. The quality of surgical care they deliver is not likely to improve and, in terms of what could be achieved by advancing technology, is likely to deteriorate (Rayack, 1971:454).

Finally, basic changes in the delivery of health services may reduce the significance of the surgeons' recommendations. For example, the widespread establishment of such institutions as Professional Standards Review Organizations (PSROs) to monitor the quality of medical care should reduce excessive surgery and thereby reduce to some extent the need to restrict entry: the excess capacity would be more likely to remain idle than take the form of excessive surgery. Similarly, rising malpractice rates should reduce the number of part-time surgeons. The Report also does not address such proposals as shifting to a regional center form of organization for

some surgical specialties like neurosurgery so as to create a large enough market to provide sufficient neurosurgical cases to maintain the surgeon's skill. Again, market power would presumably be increased over the current situation through employing regional centers but quality would probably be higher and resources would be saved. Other ways of organizing the health care delivery system besides the traditional fee-for-service (such as prepaid group practice) receive only very brief attention.

Alternatives to Entry Restriction

Restricting entry and reducing the number of sellers of a product is a fairly extreme proposal and not without some important costs. Another way to try to alleviate the problem of a surplus of surgical manpower is to focus upon the imperfections which prevent the surgical market from working. For example, the federal government is already trying to stimulate price and advertising competition among physicians. Changes can be made in insurance reimbursement so as to encourage the consumer to be more sensitive to prices: for example, the consumer could be required to pay a higher percentage of the final bill or a flat payment might be given to the consumer who would then presumably have the incentive to get the surgery performed at the lowest price given equal quality. Institutional devices to provide the consumer with better information could be adopted; an example would be to require a "second opinion" prior to having non-emergency surgery performed in order to have insurance pay for the surgery. More intensive use of such devices as tissue review committees and Professional Standards Review Organizations might ferret out unnecessary work.

Together, the above institutional changes might facilitate the working of the surgical market and gradually reduce excess surgical capacity through a lowering of surgical prices and surgeons' incomes. The market might work as follows: surgeons with idle time might advertise lower prices, and consumers with a heightened interest in lower prices would be likely to use such practitioners. The "second opinion" requirement and post-operative analysis of the necessity for surgery would help guard against unnecessary work and maintain quality. Other surgeons would be forced to lower their prices. Since demand for surgery is probably price-inelastic, total surgical income would fall. Some surgeons would be induced to

leave and other individuals would be less inclined to enter the profession.

It is not, however, clear that a policy of removing imperfections¹³ would be adequate to insure an improvement in the surgical market's functioning—for example, in many geographical markets, oligopolies or even natural monopolies may exist for such specialties as neurosurgery (Bergland, 1973). Such imperfect markets, moreover, are not famous for flexible prices: excess capacity may simply arise. Moreover, consumers might be somewhat reluctant to use “price cutters” for fear of possible lower quality.

An alternative policy that might be considered is to make surgeons pay for their training (in addition to what they “pay” in the form of low salaries and long hours of work while residents). Such a policy would reduce the rate of return from becoming a surgeon. Even were entry restricted by other means, surgeons might still be required to pay for their training since it is one way to reduce their economic profits (or excessive earnings). Such a policy would also make surgical residents more sensitive to the real costs of their education and the state of the markets for their services.

The main point is that restricting entry in the manner suggested by the surgeons completely prevents the market from working; other policies should be considered where feasible to improve the allocation of medical resources. It is conceivable that a small experiment might be conducted in some area (as was done in the case of the negative income tax) to determine the consequences of removing imperfections. The removal of imperfections and the requirement that surgeons pay for their training have the added virtue of a connection between consumer demand for surgeons and the output of surgeons that is stronger than under the alternative proposed by the surgeons.

Conclusions

In summary, the Report provides further evidence of the existence of excess surgical capacity. Given the very complex nature of the costs and benefits of further restricting entry, it would seem desir-

¹³ An imperfection also probably exists in the market for residents. Hospitals probably possess considerable power over residents' salaries. If residents unionized to try to counter that power, their salaries would probably increase considerably. The increased cost of residents might induce the hospitals (and doctors) to offer fewer

able that careful consideration be given to proposals to reduce the number of surgical residency positions. While an economist feels on dangerous ground even mentioning the possible desirability of further restricting entry in the medical profession, the evidence of excessive surgery and the hypothesis of quality denigration due to insufficient work seem important enough to justify consideration of such a policy. Before a policy is adopted, however, careful thought must go into the possible consequences of an abrupt change in the surgical segment of the medical profession. Especially important is presentation of convincing empirical evidence that quality actually deteriorates with insufficient work. Moreover, despite the fact that the market seems at best to be working very slowly to eliminate excess surgical capacity, strong consideration should be given to removing impediments to competition. Other policies (besides further entry restriction) should be considered as well. Above all, care must be taken to prevent this Report from having the same effect on surgery as the Flexner Report did on medicine generally. Entry into the profession should not be in the control of the profession itself.

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residencies. If salaries increased markedly, say 50 or 75 percent above current levels, such a reduction in quantity demanded of residents might well occur. Fewer individuals would then become board-certified surgeons and to the extent that board-certification is required, fewer new surgeons would be produced.

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Address reprint requests to: Erwin A. Blackstone, Department of Economics, School of Business Administration, Temple University, Philadelphia, PA 19122

Statistics, a science of modern origin, seems to have been first applied to observations on the public health, and to have derived its birth from bills of mortality. It has become the key to several branches of knowledge, opening, in a manner the most convincing, simple, and summary, their gradual progress, their actual condition, their relations to each other, the success which they have attained, or the deficiencies which remain to be supplied. Its application to the objects of government has created political economy; and there is reason to believe, that a careful cultivation of it, in reference to the natural history of man, in health and disease, would materially assist the completion of a philosophy of medicine, by pointing out to physicians of every part of the world the comparative merits of various modes of practice, the history of disease in different ages and countries, the increase and decrease of particular maladies, the tendency of different situations, professions, or modes of life, to protect or to expose; and, finally, by indicating, as the basis of prognosis, the extended tabular views of the duration and termination of illness . . .

Medical statistics afford the easiest proof of the efficacy of medicine in opposition to the vulgar notion (sometimes carelessly countenanced by medical men), that nature is generally alone sufficient for the cure of disease, and that art as frequently impedes as accelerates her course. If we form a statistical comparison of fever treated by art, with the results of fever consigned to the care of nature, we shall derive an indisputable argument in favor of our profession. . . .

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