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ATTRITION IN SURGICAL RESIDENCY PROGRAMS

Virginia Adams O'Connell

A DISSERTATION

in

Sociology

Presented to the Faculties of the University of Pennsylvania in Partial Fulfillment of
the Requirements for the Degree of Doctor of Philosophy

2001

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Supervisor of Dissertation

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Graduate Group Chairperson

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2001

Dedication

        This dissertation is dedicated to the memory of my parents, Rosemarie Chesney Adams and Edward Arthur Adams, and to my wonderful family: my husband, Stephen A. O'Connell; my daughter, Hilary Rose O'Connell; my son, David Adams O'Connell; and my sister, Mary Kay Adams. Your love and unwavering support made this possible.

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I also want to thank the American Association of University Women for awarding me a Dissertation Fellowship during 2000-2001. I greatly admire the organization and its mission and I am proud to have been an AAUW Fellow. Being honored by the AAUW was a crowning moment of my graduate school experience.

And finally, I want to thank my family. Without their love, joy and support, I could not have completed this thesis. My family gives meaning to my life and hope for the future.

ABSTRACT

ATTRITION IN SURGICAL RESIDENCY PROGRAMS

Virginia Adams O'Connell

Charles L. Bosk

The national attrition rate from medical school averages about 1%, but attrition from surgical residency programs is much higher, roughly 16%. The risk of attrition is greater for white women and racial minority men and women than for white males. This research examines the factors that lead to attrition in these graduate residency programs by looking at the dynamic interplay between the medical institution and individual residents. We collected data from 556 certified residency programs in anesthesiology, general surgery, neurosurgery, orthopedic surgery and plastic surgery, and conducted 75 interviews with the attending physicians, residents and nurses from five neurosurgery programs. While we analyze the current shortcomings in the selection process, we also look at how the culture, structure, and organization of these educational programs affects the risk of attrition once residents have been accepted. Since surgery is one of the last stalwarts of the "old boys' network" in medicine, an analysis of the culture of these programs helps account for the greater risk of attrition among female and racial minority residents. Additionally, surgical residency programs have demanding schedules and workloads. Residents who have trouble making a total commitment to the training program face a higher risk of attrition. But an examination of the process of resident evaluation reveals another risk. In addition to being graded on cognitive knowledge and clinical judgment, faculty evaluate residents on personal characteristics, the most important being "honesty." We demonstrate how the medical faculty's subjective assessment of elusive and contestable qualities can help identify the morally deficient among the technically proficient. It can also, however, enable discrimination. White women and racial minority men and women are hampered on a number of counts, including fewer and poorer interactions with program faculty. Poor interactions impair faculty's assessment of personal characteristics. These findings suggest that the medical profession should review the evaluation process for potential abuses since being non-white or female increases residents' attrition risk across these specialties and institutions, even after we control for objective measures of performance.

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Attrition in Surgical Residency Programs

Introduction:

From the moment of our birth and throughout our lives, we join together with people in various social organizations. We both seek to join and are recruited to various vocational and social organizations. In many instances, the interplay between self-selection and recruitment is a dynamic and complex process. What motivates anyone to seek membership in a particular group? How do the members of that group decide whether to allow that person to join? And how is the "goodness of fit" between the person's talents and values and the group's shared talents and values assessed and evaluated?

In this study, we look at this dynamic process by studying residents in surgical residency programs in the United States. The data for this study come from two sources: 1), a two-part survey on resident attrition that was sent out in 1990, and 2), 75 interviews which were conducted with the faculty, residents and nurses of five neurosurgery programs. The survey collected data on both the structure and organization of the participating residency programs and on residents from these programs. Five specialties are represented in this sample: anesthesiology, general surgery, neurosurgery, orthopedic surgery and plastic surgery. All of the residents in this study entered into residency training in order to become surgeons or anesthesiologists. After an undergraduate program and another four years of medical school, these graduates pursued residency training in a surgical specialty—they actively sought and were provisionally granted membership in the profession of surgery. Not all the residents in this study, however, sustained their membership in this occupational group. They are the failures of the dynamic process of recruitment and training. While some of them voluntarily resigned from their programs, others were terminated. People in these two categories, captured by attrition statistics, left for a variety of reasons. The residents who resigned either decided that the work did not bring the anticipated rewards, or felt that they did not have "what it takes" to complete training. In the latter scenario, the residents decided that their talents were not sufficient to fulfill the role. The medical faculty fired residents when the senior physicians concluded both that these residents did not possess the skills and/or personal traits to be a surgeon, and that the skills and traits could not be taught within the normal context of a residency training program. The resident who resigns typically rejects the group. The group rejects the

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resident who is terminated.

We will also be looking at a third category of resident—the problematic completer. The problematic completer is the resident who fulfilled all official requirements of the program but about whom the program faculty still has reservations. Worried that the problematic completer will make major errors without close supervision, the program director and the attendings are reluctant to see the resident leave the program, but they are unable to force the resident to stay for additional training. The requirement for group membership-- the completion of a residency training program--fails to produce the desired product, an independent competent surgeon. But by completing the process, the resident becomes a legitimate member of the group. The problematic completer has become a surgeon, even if he or she is not a very good surgeon.

This study focuses specifically on the failures, on the residents who either resigned or were terminated. Why do we focus on the failures? As Becker noted in his research on medical education:

"The point of concentrating on instances where things do not work well is that it helps one discover when they do work well, and these are discoveries that are more difficult to make in situations of harmony because people are more likely to take them for granted." (Becker et al, 1961: 21)

We do not often reflect on what makes a successful employee. When a colleague resigns or is terminated, however, our collective attention is drawn to the case. Assessing the reasons why these residents either rejected or were rejected by the community of surgeons sheds light on the nature of the work, on the process of evaluation, on how the medical faculty judges residents' performance. Studying attrition illustrates good performance precisely by contrasting it against unacceptable performance. In this context we pose the question: how are the criteria used to judge performance related to the jobs which these residents perform?

Why else study attrition? Failures in the process of joining members and groups can be costly for the individual and the group alike. For individuals who want to join a profession like medicine, the route to membership is typically through an educational program. As we noted before, the residents in this study had already invested quite a lot in their education, having completed both an undergraduate and medical school degree prior to starting the residency program. For the individual who has already paid tuition and/or postponed other pursuits while pursuing a degree or certification, dropping out may engender regrets about wasted time and finances. Leaving the program may also signal for the resident the end of a dream since he or

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she may be permanently blocked from pursuing a particular career path. The psychological cost may be as great or greater than the financial one. Program faculty may feel similar sentiments, viewing their efforts with and scholarship support of students who drop out as squandered. For the hospital programs in this study, resident attrition is especially costly because it may leave the hospitals understaffed. Studying when the process does not work may lead to revisions in both the recruitment and socialization process that reduce attrition and therefore the costs borne by both the individual and the group.

Specialized education programs like residency programs not only teach a unique body of knowledge and technique, they also convey the morals and values associated with the professional work. In our analysis of the culture of surgery, we will explore some of those morals and values. Students, in this case the residents, demonstrate their mastery of the knowledge by passing tests and performing proficiently. They display their acceptance of the profession's morals and values by adopting certain modes of conduct, obeying certain rules of interaction, and using a specialized vocabulary. Evaluators bemoan the fact that it is much harder to judge trainees on their morals and values than to test their grasp of knowledge, but they claim the former a far more important task. We will explore the different ways the medical faculty evaluates technical proficiency vs. the moral character of the residents, and explore how the residents' race and gender impact the evaluators' assessment of the residents' elusive, contestable, and non-quantifiable moral fiber.

Since we are examining the interplay between the characteristics of the individuals seeking membership and the characteristics of the group, both will factor in our analyses. We will evaluate both the institutional effect and the resident effect on overall attrition rates and on factors related to attrition risk. We will see what characteristics of the residency program are associated with higher and lower rates of attrition and what characteristics of the resident predict whether he or she will successfully complete the program.

The first chapter will be a description of the culture of surgery, focussing on the culture of the training programs, and in particular, on neurosurgery programs. Since both this study and others have indicated that women and minorities are at a greater risk of leaving these training programs, we will isolate features that potentially make these programs inhospitable to women and minorities. In the second chapter, we will describe the application process and evaluation procedures used by educators in surgical programs. This

section will be followed by a review of some attrition studies, focussing on attrition in medical education. The analysis of both the culture of surgery and the evaluation procedures will help to decipher both the implicit and explicit "yardsticks" employed by evaluators when assessing a resident's "goodness of fit."

Chapter 3 will focus specifically on the relationship between the culture and organization of the residency programs and attrition rates. How does the presence or absence of social activities affect the rates? Does using a standardized form for evaluation raise or lower problem rates? Who does the evaluating and how does the mixture of people involved affect the identification of problems? Do larger or smaller programs have higher rates of resignation, termination or problematic completion?

In Chapter 4, we will turn our focus on the residents who resigned from their programs. Why did the residents resign? Did men resign for different reasons than women? How were those residents performing compared to their peers at the time of resignation? Did program directors try to convince these residents to leave or to stay? What characterized the resident who was likely to resign? What was the resident likely to do after resignation? How was the resignation process different for the female or minority resident than for the white male resident?

Chapters 5 and 6 will pose many of the same questions as Chapter 4, but these chapters will focus on the experiences of the residents who were terminated or who problematically completed their training. In Chapter 5, we will examine why the residents who were terminated were considered unredeemable in the context of a normal residency training program—what was so bad about their performance that they had to be expelled from the group? In contrast, when we examine the problematic completers, we will see the redeemable qualities these residents displayed despite their poor performance. What kept these residents from being fired? Again, while we raise this multitude of questions, we will also be addressing how race and gender affects the risk of termination and problematic performance.

In Chapter 7, we focus on a particular aspect of the evaluation process that we mentioned earlier—the evaluation and assessment of non-quantifiable traits. In this chapter, we will focus specifically on the evaluation of honesty. Program directors are quick to state that honesty is the most important quality a resident can possess, but what do these directors mean by "honesty" and how are residents judged as "honest" or

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"dishonest?" We will show that race and gender play a significant role in whether program directors judge a resident as honest or not. Being labeled as honest gives a resident some protection against termination. The poorly performing, honest resident is significantly less likely to be terminated than his or her counterpart who displays equal technical proficiency yet is considered "dishonest." We will show that an honest resident is good at interacting with medical faculty, basically displaying strong interpersonal skills. Honest residents know how to behave in the culture of medicine.

A number of key themes emerged from our analysis. We note that despite some minor changes in the structure of residency training in the last decade, the education of the surgical resident remains an extremely arduous program and the toxic effects of this environment do take their toll on residents. Although many medical educators believe that a crushing and demanding program produces great surgeons, there is little evidence other than anecdotal accounts to support this theory. Demanding and inflexible schedules cannot continue to be justified on the basis of unsubstantiated claims. Can we make the schedule of residency training more humane and still produce quality surgeons? We cannot know unless we are willing to try.

We also note in our analysis of the culture of the residency program a driving desire for group harmony among the members of the program staff. We find this same desire for group harmony in many different occupational settings. As we will note, however, this desire is heightened by the unique nature of doctoring. Doctors, entrusted with patients' lives, need to trust that each member of the group will provide the very best of care to patients and be willing an able to coordinate treatment plans. This is an ideal greatly desired but rarely achieved. In order to create this group harmony and keep the unit running smoothly, program faculty tend to create homogenous groups of white male residents. The process of producing homogenous and harmonious groups, however, leads to discrimination and is therefore inherently unjust.

Ironically, program faculty's appetite for harmony leads to attrition and will continue to feed attrition as the pool of medical students continues to become more and more diverse. If women and racial minorities are at a greater risk for leaving simply because of their race and gender, as they continue to represent a greater proportion of potential candidates for residency posts, we will see an increase in attrition rates across surgical specialties. Program faculty are challenged to keep units running smoothly while also insuring fairness in

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selection and training. The solution may be re-organizing residency programs in such a way to facilitate harmony among a diverse staff.

We also note that wider social forces and pressures affect the experience of both faculty and residents in these residency programs. We cannot leave our non-professional identities at home when we come to work. Our views about men and women, whites and other racial categories, and what characterizes a "good person," affect how we think and function in our work settings even if we try to limit their effect. We hope that our demonstration of how race and gender impact the interpersonal contacts between faculty and residents, and the assumptions about goodness of fit, will lead to a self-conscious re-evaluation of the process of resident education and evaluation.

Research Population

As stated earlier, the data for this study came from two sources: 1) a two part-survey, and, 2) interviews with a sample of 75 attendings, residents, and nurses from six neurosurgery programs. The interviews were conducted by Dr. Charles L. Bosk, principle investigator on a resident attrition project funded by the Pew Foundation and the Society of Neurological Surgeons (SNS)[1]. The interviews were conducted at six different hospitals in the Northeast and Mid-Atlantic.

The grant staff designed the surveys with guidance from nine neurosurgeons who served on the project steering committee.[2] Survey I gathered information about the overall rates of resignation, termination, and problematic completion for five different specialties: anesthesiology, general surgery, neurosurgery, orthopedic surgery, and plastic surgery. The first survey collected data about support systems available in the programs and other hospital characteristics. Survey I also gathered information on the process of selection, specifically information on what traits, aptitudes and characteristics are sought in new recruits. We also

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learned about the forms and frequency of resident evaluation, as well as pay structures. At the time the survey was sent out, 767 programs in these five specialties qualified to be included in the study. Of these, 625 (81%) returned Survey I. Of these, 69 of the surveys were unusable (blank, incomplete or filled-out incorrectly), so the final return rate was 556 (72%).

Survey II was sent to the 418 programs (75% of our final Survey I respondents) that reported any resignations, terminations or problematic completions on Survey I. A separate survey was mailed for each resignation, termination or problematic completion so we could gather specific information on each resident. A total of 2153 second surveys were sent out. We gathered demographic information on the residents as well as background information on training and on the dynamics of each resident's experience. The total response rate for Survey II was 53% (n=1144). There were no systematic differences between the programs that returned either Survey I or II and those that did not.

Both Survey I and II were completed by program directors. In many cases, this was not problematic since program directors can accurately report on program characteristics, hospital structure, and other factual information. Program directors are also the appropriate respondents when we are seeking information on how programs select and evaluate residents. However, in Survey II, program directors were also called upon to report on the residents' perceptions of problems and stresses. We are aware throughout our analysis that our survey data suffer from not having a better representation of the residents' voices. We are aware that some of our findings may represent the selective (biased) recall of program directors rather than the truth about residents' performance and/or experience. We try to make this prospect apparent throughout our analysis. From a review of the surveys, however, it is our opinion that many program directors did try to fairly represent residents' perspective when asked. We still proceed with caution.

Our survey data also suffer from a lack of information about the residents who successfully completed their programs without being labeled a problematic completer. In Survey II, program directors were asked to compare the problem resident with his or her successful peers, but this indirect measure does not give us a rich picture of the comparison group's experience. We do not know, for example, how much of what we describe as the experience of these problem residents is also experienced by the successes. For example, do successful

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residents not have problems, or is the difference between the successful and the problematic resident a matter of degree. Numerous studies on the experience of residency training suggest that the latter is a more accurate perception of the reality of graduate medical education (for example, Bosk 1979, Mizrahi 1982, Marion 1989). Even successful residents have their fair share of trouble, but we surmise that their troubles are less frequent and less severe.

We conducted interviews with the staff of six prominent university-based neurosurgery programs on the East Coast. These programs were in varying stages of development. Some were already well-known while others were trying to make a name for themselves. The number of interviews at each institution ranged from nine to 17. In three of the programs, we interviewed nurses as well as residents, attendings and program directors. Overall, we collected interviews from 6 program directors, 19 attendings, 34 residents, and 12 nurses. All of the program directors were white males, accurately reflecting the majority of neurosurgical program directors. All of the attendings were also white males. The residents were predominantly white males with the exception of one white female and two non-white males. The nurses were all white females.

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Chapter I. The Culture of Surgical Residency Programs

Why Study Surgery?

The reasons we chose to study surgical specialties are multiple. The first is that the study was initiated by the Society of Neurological Surgeons (SNS), whose members were concerned about the high rate of attrition from neurosurgical residency programs. At the time the study was begun in 1990, the rate of attrition from neurosurgical programs was hovering around twenty-five percent. Dr. Charles L. Bosk was approached by the SNS because he had done ground-breaking work on the definition and management of mistakes in surgical residency programs in the 1970s. He noted in his classic study, Forgive and Remember, that there were two kinds of errors that residents committed: errors in technique and moral errors. Errors in technique, according to Bosk, were of two varieties. Residents either failed technically or made a wrong judgment about a course of action. Bosk similarly separated moral errors into two types, normative and quasi-normative. Normative errors were a breach in the "code of conduct on which professional action rests" (Bosk 1979:168). Quasi-normative errors involved failing to meet the particular conduct demands of a particular attending or group of attendings, a subset of the greater professional culture. The surprising result of Bosk's field work was that breaches in moral conduct were treated much more harshly than breaches in technical performance—in fact, technical mistakes were expected within the normal context of residency training, but moral breaches were not tolerated:

> "As far as the control of performance is concerned, we would expect impersonal evaluations of technique to have priority over personal judgments of an individual's moral performance. How are we to account for the fact that the opposite is the case?" (ibid: 169)

Bosk concludes that the explanation for this discrepancy lies in the "nature of the professional-client relationship." As we will discuss in greater detail below, doctors have special privileges in our society and with those special privileges come unique responsibilities. In order to fulfill their professional duties, doctors must honestly and conscientiously do everything within their power to help their client, the vulnerable patient. Residents-in-training must demonstrate through their words and actions that they are honest and conscientious, ready and able to assume a physician's responsibilities. Among the pool of residents in this study who left, just under 25% left their programs because of an inability to master surgical techniques. The remainder left

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because of social and behavioral problems that rendered them unfit in the eyes of teaching faculty to assume the professional duties of a physician. What Bosk found in the 1970s still rings true in the 1990s.

A second reason for studying surgery is that surgical errors are at least theoretically more obvious than errors made in other realms of medicine (Hafferty 1991: 9). Morbidity and mortality statistics can be calculated not only for organizations but for individuals as well. The time spent with a surgeon is often of short duration. The kind of care and treatment a surgeon provides is time-bound—"quick and episodic" (Rosenberg 1992:328)--therefore the effect of the care is more directly related to the surgeon's intervention. When something goes wrong during an operation, it is hard for the surgeon to claim that he or she had no hand in the outcome, even if the surgeon was not directly responsible for the bad turn of events (Parmer 1982:2). As stated by one of the residents in our sample, "you feel like if there is one false move, it's like leaving a trail of blood on the water" (R27). This more direct level of intervention imposes a heavier burden on the surgeon, suggesting that a surgeon needs to be even more scrupulous in his or her work than the internist. Shoddy surgical work risks far greater damage to the integrity of the patient's body than other less invasive medical procedures—"the potential for a major disaster from a brief error in judgment or technique is ever present" (Spencer 1989:141). As one attending commented:

"The stakes are just too high to have anyone in the field who is not conscientious." (A14)3
Errors in technique should be more obvious in surgical fields than in other medical fields that rely more on pharmacological interventions.

Surgery also occurs in a surgical theater. In this forum, the surgeon's performance is accessible to colleagues and support staff. The internist consulting with his or her patient behind closed doors does not perform as "publicly" as the surgeon does. Therefore by studying surgeons, we expand the number of respondents who can comment on the quality of a surgeon's work. This does not mean that respondents necessarily agree on what constitutes a good performance, only that a greater network of people is involved in the evaluation.

But even with this direct link of the surgeon's intervention and the patient's outcome, we are left with

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3 Respondents have been coded as follows: A=attending, R=resident, and N=nurse. The number that appears after this identifier is randomly assigned and does not correlate with a particular institution. This random ent

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the ironic but reassuring result that the majority of residents in this study who did not complete their programs

was not terminated because the residents were leaving a trail of dead bodies in their wake, but because they had

failed to convince their teachers that they could assume the responsibilities associated with surgical work.

We will now take a look at the culture of surgical work in America.

Section 1: The Culture of Medicine and Surgery

"Do not go gentle into that good night,
Old age should burn and rave at close of day,
Rage, rage against the dying of the light"
Dylan Thomas

This stanza captures the sentiment toward death held by many in modern Western cultures, including

American culture. We strive to extend our lives by investing great sums of money and energy in scientific

attempts to thwart and overcome death. The group in our society that best embodies this sentiment is our

medical practitioners. In fact, one cannot understand the behavior of doctors without understanding their

internalization of the value of life and the fight against death. Doctors believe that "human life is precious,

that it is better to search and improve than to accept what is, that scientific investigation is good, and that

human suffering should be alleviated" (Mumford 1970: 19). Not only is human life precious, but doctors hold

"reverence for life above everything else" (Hafferty 1991:40). Socialized to believe that death is the ultimate

failure (Swazey 1985: 48, Rhoden 1988: 379), physicians protect life without necessarily questioning the

quality of the life they are saving (Bosk 1995). Numerous physicians and other healthcare workers express

this reverence for life in their reflections on medical work:

"Where there's life, there's hope." (Nolen 1968:199)

"To think that patients can go through hell…can go through everything people go through when they
are sick and have terrible things happen to them and still have life—well, it's really magnificent."
(Anderson 1978:294)

There is an active inculcation of this sentiment during the young physician's training. In many

biographical accounts of residents' experiences, we are exposed to story after story of the young resident being

ordered to do everything feasible to keep a patient alive (for example, Shem 1978:286, see also Glantz 1985:

65). This view about and proactive stance toward life result in part from a physician's direct experience with

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was done in order to assure anonymity.   11

the "dramatic save." Every physician will have had at least one direct or indirect experience with the dramatic save—when the procedure, the code, worked and saved the life that would have otherwise been lost (Bosk and Frader 1992). Just as every non-physician knows at least one account of a person who has been saved by a dramatic medical intervention (Dubos 1959), so too, the physician who has had this experience is unlikely to forget it. As Shem points out, all the futile attempts are to help you prepare for the one time that it is not futile (Shem 1978:50). As reported by some of our respondents, the dramatic saves are the best moments in their careers:

> "We got them to CT scan and to the OR, got the blood clot out, got the brain decompressed and they wake up the next day and they're talking to you and the girl is twenty-three years old who is a nursery school teacher in the community and you get a card from her students, or you see the cards from the students up there on the wall and you just sort of feel you brought this person back from the dead and that feels good..." (R15)

> "I sort of feel close to her because I feel that I played an important role in allowing her to be here today. I think that is probably one of the most rewarding things about this profession—when you can take someone who is near death, or there is a very good likelihood that they will be dead, and help bring them back, or allow them to recover. That to me is the single most rewarding thing." (R13)

This reverence for life motivates doctors' work, especially when they are working against all odds for success.

Doctors hold not only a reverence for life, but also a reverence for activist therapy and the positivistic pursuit of cures and understanding, a value again shared and supported by the wider culture (Starr 1982:3).

> "I'm just talking about the culture, the civilization of Western Hemisphere... doctors are forced to do instead of standing back and letting nature take its course." (A22)

Coupled with these values is doctors' focus on individuality and the ideal of the traditional doctor/patient relationship. Taken together, the activist approach and the centrality of the individual, the culture of medicine ideally epitomizes the interests and values of the middle class in modern Western cultures (Haas and Shaffir 1987:20).

As is characteristic of professions in general, physicians believe that their work is special and worthy of note and esteem. Laymen also accord it prestige, treating physicians, even if unknown as individuals, with an "awe and reverence" (Light 1980: 301) that testify to the authority of the medical profession. Doctors are given special privileges because of the special nature of their work:

> "Taboos that exist for all other members of society are put aside for physicians—they alone are entitled to authorize the injections of poisonous substances, to cut into living flesh, to cause disability in the pursuit of cure. The primary value is health, physicians are taught, and all values must give way to

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