Medical School Tuition and Young Physician Indebtedness

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Introduction

Recent increases in medical school tuition and high levels of graduating student indebtedness are a matter of concern to the medical education community. In response to this concern, the Executive Council of the Association of American Medical Colleges asked AAMC staff to develop a staff paper, presenting the facts about tuition and indebtedness and what is known about the burdens the debt and its repayment place on medical students, residents, and young physicians. This report responds to that request.

A previous study on this subject was published in 1996, describing what happened in the decade 1985-1995.¹ In this paper, the trends identified by Kassebaum et al. are confirmed; in fact, there has been an acceleration in the rate of increase for both tuition and debt. The Medical Student Section of the American Medical Association is also preparing a comprehensive report on this subject.²

How much has tuition increased over the past two decades?

In the two decades since 1984, median tuition and fees have increased by 165% in private medical schools and by 312% in public medical schools³, growing far more rapidly than the consumer price index (Figure 1). In constant dollar terms, the increases have been 50% and 133%, respectively. The cost of a medical education is far less affordable to students and their families today than it was two decades ago.

For public medical schools, increases have accelerated in recent years, presumably in response to tight state government budgets. In a single year, from academic year 2001-02 to 2002-03, median tuition and fees increased by 4.4% in private schools (2.8% in constant dollars) and 11.9% in public schools (10.2% in constant dollars). In the most recent year, the increases from academic year 2002-03 to 2003-04 were even greater, 5.7% in private schools (3.4% in constant dollars) and 17.7% in public schools (15.1% in constant dollars). In six public medical schools, the increases in tuition and fees exceeded 45%. The magnitude and rapidity of these increases have raised serious concerns among affected medical students.

Note: Schools have reported some changes in tuition and fees since the analysis reported here was completed. For the very latest data on tuition and fees, see https://services.aamc.org/tsf/TSF_Report/report_intro.cfm.

² A draft of the report is available on the AMA web site at http://www.ama-assn.org/ama1/pub/upload/mm/15/debt_report.pdf
³ Public schools generally have much higher tuitions for non-resident students; a few private schools have lower tuitions for resident students. Only a single tuition value was reported for private schools prior to 1995-96. Throughout this report, figures reported for private schools are for non-residents; figures reported for public schools are for residents.
How much has indebtedness increased over the past two decades?

In 1984, 87% of public medical school students graduated with medical school debt, and the median amount for those who had debt was $22,000. For private medical schools, 90% had debt, and the median amount was $27,000 (Figure 2 and Figure 3). While the fraction of 2003 graduates who have medical school debt has declined to 85% for public school medical students and 81% for private school medical students, the median amounts for those who have debt have enormously increased, to $100,000 and $135,000, respectively.
Figure 2

Fraction of Graduates Who Are in Debt

Includes graduates with undergraduate education debt, medical education debt, or both.

Source: AAMC Graduation Questionnaire

Figure 3

Median Educational Debt of Indebted Graduates

Source: AAMC Graduation Questionnaire
The amount of debt reported by medical graduates varies from none at all to over $350,000. Among 2003 graduates, 17% reported no educational debt, while 15% reported educational debt totaling less than $50,000. Almost five percent of 2003 graduates reported educational debt of more than $200,000 (Figure 4).

It is reasonable to assume that higher tuition costs will lead to higher debt. This year’s entering class is facing median levels for tuition and fees $5,381 higher in public medical schools and $5,741 higher in private medical schools than did the class who graduated in 2003. If all of the increases in tuition and fees lead to increased debt, and if the fraction of graduates with educational debt remains the same, public and private medical school graduates of the class of 2007 will have median educational debt levels of $117,000 and $150,000, respectively, even if tuition does not increase at all beyond this year’s level. If it continues to increase over the next four years as it did over the past four, median debt levels will be $122,000 and $158,000, respectively (Figure 5). If expenses other than tuition also increase, indebtedness may be higher yet.

With low inflation and with continued stability in physician incomes, repayment difficulties and other undesirable consequences will certainly increase.
Are Loans Readily Available?

There are a variety of loan programs available to medical students that provide ample funds under very favorable terms. Students can borrow up to $8,500 per year under the federally subsidized Stafford loan program, and they can increase the amount to $38,500 per year on an unsubsidized basis. The current interest rate on the unsubsidized Stafford loans is at or near historic lows at 2.82%. When combined with undergraduate Stafford indebtedness, the total borrowing limit for Stafford loans is $189,125, and students have ten years to repay. Additional borrowing is available under alternative loan programs like MEDLOANS at 4%, with up to 20 years to repay.

Loans are readily available to medical students at very favorable terms.

Premedical Debt and Non-Educational Debt

Does indebtedness carried forward from undergraduate college borrowing account for a significant part of the increase in medical school graduate indebtedness? Approximately 37% of 2003 graduates entered medical school with debt incurred for undergraduate education, with a median amount for those in debt of $16,000 for public medical school graduates and $17,000 for private medical school graduates (Source: AAMC Graduation Questionnaire).
Medical students also take on consumer debt, credit card debt, automobile loans and perhaps in some cases home mortgages. The median reported level for this debt for 2003 graduates was $10,000 for the 42% of public medical school graduates who report this kind of debt. The corresponding figure for private medical schools is $9,000 for the 34% who report consumer debt. To show the combined effect of the three kinds of debt, the percentage of students having each kind was combined with the median amount for those with that kind of debt to produce Figure 6, which shows estimated mean debt of all types, where students with zero debt of each type are included in the averages. It is clear from these data and this diagram that, while premedical education debt and non-education debt are not insignificant and may for some students be rather substantial, on average they are very small in comparison to medical education debt.

Figure 6
Components of Debt

Why has debt increased so much?
Figure 7 displays the growth of tuition, indebtedness and consumer prices, reduced to a common scale. Medical education debt is 4.5 times as high in 2003 as it was in 1984, while tuition in private medical schools is 2.7 times as high, and in public medical schools it is 3.8 times as high. The consumer price index is less than twice as high as it was twenty years ago.

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4 Some student affairs staff believe that credit card debt is under-reported.
5 If one confines one’s attention to the most recent five years, however, tuition has risen faster than debt for public medical school graduates.
It is interesting that indebtedness has increased more rapidly than tuition, because this implies that other components of the cost of attending medical school have risen faster than tuition. Tuition is obviously an important part, but other expenses are important as well.

Figure 7

Debt has grown faster than tuition and fees. Tuition and fees have grown faster than CPI.

Special Mean = Product of the median for indebted students and the fraction of students who have debt.

Tuition made up less than half of the total cost of attendance in 2002 at public medical schools and about two-thirds of the cost at private medical schools (Figure 8). Living expenses are the second largest cost after tuition, with transportation, computers, health insurance and books and equipment comprising a relatively small part of the total. Many have pointed out that the lifestyle of students today is quite different from what it was when today’s senior physicians were in medical schools. Then, students lived in dormitories and dined in institutional cafeterias. Today, students live in apartments, often have families, and have transportation and other expenses that students in earlier days did not have.
Changes in the structure of medical education are one reason for increased transportation costs. Students often need to travel to separate physician offices, outpatient facilities or affiliated hospitals for clerkships and preceptorships. Sometimes these offices and clinics are in rural areas. To attend these programs, owning or operating a car may be essential.
Have scholarships offset the increases in tuition?

Scholarships are a significant help to students in coping with the cost of medical school attendance, amounting to 28% of tuition cost in public schools and 27% of tuition cost in private schools in 2002. Over the past five years, scholarships have increased to keep pace with increases in tuition, continuing to provide a little more than one-quarter of tuition cost (Figure 9). For students in public medical schools, tuition costs are lower than in private schools, but the other costs of attendance are roughly the same. Scholarships provide only 12% of the total cost of attendance in public schools, but 18% of the total cost in private schools.\(^6\)

Figure 9

Total Cost of Attendance (Partially Covered by Grants)

Some students receive full scholarships and may have no need to borrow during medical school. The 170 graduates of the class of 2002 from the Uniformed Services University of the Health Sciences paid no tuition and were paid while students as commissioned officers in the Army, Navy, or Air Force. A total of 1950 students (in all four years) at other medical schools received armed forces health professions scholarships in 2002; those who graduated may well have had no medical school debt. The NIH-sponsored Medical Scientist Training Program provides full

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\(^6\) These data are derived from aggregates provided by medical schools on the annual medical school questionnaires and maintained in the AAMC Medical School Profile System. The percentage of tuition provided by scholarships was obtained by comparing grants to students to nominal tuition revenue, assuming that all students are charged full tuition. If some schools do not report tuition remission as grants, the percentages may be understated.
support for almost 930 students each year in the MD-PhD program, and there are state-supported scholarships with a service requirement as well. The National Health Service Corps provides scholarships and a stipend for students willing to practice in a health professions shortage area. Programs of this type may account for a substantial part of the group of students graduating with little or no medical school debt.

**How do students expect to finance their medical education?**

Data from the AAMC Matriculating Student Questionnaire demonstrate that student expectations for financing their medical education have shifted substantially toward loans and scholarships (Figure 10). In 1987, the average student expected to pay 40.5% of the cost of his or her medical education from family, personal, and other sources, with the balance from loans and scholarships. By 2003, expectations of support from family, personal and other sources had all substantially declined, with the aggregate percentage for these sources reduced to 21.5%. This change is an indication that the cost of a medical education is becoming more difficult for students and their families.

**Figure 10**

*How do students pay for medical education?*
Do high tuition and high indebtedness differentially affect students from racial and ethnic minority groups?

Most or all U.S. medical schools try to enroll a diverse class of medical students. Although diversity may be sought by geographic origin and social class as well as by other characteristics, most or all schools seek to enroll a critical mass of persons who are members of minority groups underrepresented in medicine. It is well known that African Americans, Latinos and Native Americans typically come from families with lower incomes than whites, and it is widely believed that they are particularly concerned about incurring debt. AAMC data show that minority students who become medical students do incur debt, and at about the same rate as white students (Figure 11).

Figure 11

Most Medical Students of all Races and Ethnicities Borrow

There are small differences in the incidence of educational debt. The percentage is somewhat higher for Black and Mexican American students, lower for Asians and slightly lower for Puerto Ricans. Many Puerto Rican students are in Puerto Rican medical schools, and those schools have lower tuitions than mainland medical schools. The reason for the lower borrowing level for Asians is unknown.

When they do borrow, the median debt among minority groups is similar. Figure 12 shows median indebtedness of those who have educational debt. The levels are slightly higher for Black graduates and somewhat lower for Asians, Mexican Americans and Puerto Ricans.
Do students from families with lower incomes borrow more?

Some medical students are supported by their parents while in school; others may be financially emancipated from their parents. It seems likely, however, that students from wealthy families receive some financial support. While more than eighty percent of all medical students graduate with educational debt, AAMC data show that only 60% of students who have reported parental income between $200,000 and $500,000 have educational debt, and only 55% of those with parental incomes greater than $500,000 do. The amounts borrowed are also somewhat less for those with wealthy parents, but one might well ask, why do they borrow at all? There are two possible answers: either they are financially independent of their parents, or their parents simply take advantage of the highly favorable terms for educational borrowing. Wealthy people typically understand and use debt, and they may decide that these loans allow alternative uses of funds that return more in earnings than the interest on the loans.

Average borrowings for educational debt for all students with parents at various income levels are shown in Figure 13. The average educational debt for students from the wealthiest families is far less than the amount for families of low or modest income. The lower average stems primarily from the greater number with no debt at all.
A concern of many is the fear that the financing requirements of a medical education will put it beyond the reach of students from middle class and working class families. This concern is well founded, as the fraction of medical students who come from families in the top quintile of family income has been in excess of 60% for at least the last two decades (Figure 14), while the bottom three quintiles of family income together account for only about 20% of medical students. Students from families in the lowest quintile of family income account for less than 3% of the class.

The percentage of matriculants from the top quintile has varied over the period shown from 56.4% to 64.9%, with no clear trend. In 2002, the top quintile included all families with income in excess of $74,392.7

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7 Data for recent years are available on the web site of the Bureau of Labor Statistics, http://www.bls.gov/cex/csxstnd.htm  Data for earlier years were obtained in a private communication from the Bureau of Labor Statistics.
Of course there are many reasons why in general children from poor families are disadvantaged. Parents with little education, poorer schools, no money for college, and low expectations are a few of these reasons. It is hard to say that the expense of a medical education is a principal reason for this disproportion, but it is likely to play some part.

### Debt Repayment

Repayment during the residency period would be difficult for most young physicians. In cases of economic hardship, however, repayment on Stafford loans may be deferred during the residency for a maximum of three years. With loans as high as they are, many students will be eligible for deferral until the end of their third year of residency training. Students who are in longer residencies will be eligible for forbearance, which allows them to defer payment until the end of their residency.

Anecdotal information from student financial aid officers indicates that many students do not really begin to be concerned about their level of indebtedness until they enter repayment. But

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8 With deferral, interest accrues only on the unsubsidized portion of Stafford loans, and the interest is not capitalized until the end of the deferral. Forbearance differs from deferral in that interest accrues on previously subsidized loans, interest capitalization generally occurs, and the interest rate is higher by 0.6%.
then they are faced with rather substantial payments (Figure 15). For a debt at the end of residency of $150,000, the monthly repayment will normally be $1761, if interest rates remain at the current 2.82%. If this is a burden, the student will be permitted to consolidate the loans and stretch out the payments for up to thirty years. Consolidation considerably reduces the monthly payments, but it may extend the time to repay for a substantial part of a professional career.

**Figure 15**

MONTHLY PAYMENTS REQUIRED

It should be noted that interest rates on student loans are currently at historic lows. If these rates should rise to their statutory maximum of 8.25%, the rate in effect as recently as 2000-2001, the repayment burden would substantially increase. Required monthly payments at the $150,000 debt level would increase from $1761 to $2436 without consolidation, and they would increase from $676 to $1349 with consolidation.

**Debt repayment programs help some students**

In addition to the scholarship program, the National Health Service Corps (NHSC) also has a program to repay a part of a graduating student’s debt in return for contracted service in a shortage area. NIH has several debt repayment programs for graduates who agree to participate

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9 Consolidation allows the borrower to combine most federal loans into one new loan at a blended rate and to stretch out the payments for up to thirty years.
in medical research for a specified period in a sponsored program, and there are also state sponsored loan repayment programs tied to service in medically underserved areas.

The NHSC program now expends most of its funds, $31.4 million in 2003, for loan repayments rather than for scholarships. In 2003, there were 70 scholarship awards, and 320 physicians participated in the loan repayment program. A program like this can ease the repayment burden for new physicians, especially those with high educational debt. There are more applicants than can be accommodated, however, and the program is quite small in relation to the need.

Can young physicians afford to repay their loans?
Physician incomes are far higher than in most occupations, allowing repayment of even relatively high levels of debt, once a practice is established. The estimated median physician income in 2003 was $187,600. In recent years, however, physician incomes have increased only slowly, and in constant dollars the amounts have trended slightly downward (Figure 16).

![Figure 16: Physician Income](chart.png)

Source: AMA

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10 The American Medical Association reports physician income in 2000 after expenses and before taxes as $175,000. Assuming that physician incomes have continued to keep pace with inflation, the estimated level for 2003 is $187,500.
Since 1990, median physician income has increased by 34.6%, almost exactly in line with consumer prices. Since medical graduate indebtedness has increased much more rapidly, repayment of educational loans is clearly more difficult today than it has ever been.

With current median physician income levels, repayment of debt at levels common today could become very burdensome, unless consolidation is employed (Figure 17). Consolidation allows the borrower to combine all federal loans in one package, at a blended rate of interest, and to stretch out the payments for up to thirty years. Figure 17 provides the percentage of a median physician income that would need to be devoted to loan repayment for various levels of debt, with and without consolidation.\footnote{Loan repayment computations are complicated by the mix of Stafford and alternative loans and by complex rules relating to capitalization of interest, deferral and forbearance. These data were provided by the AAMC Medloans staff.}

\begin{figure}[ht]
\centering
\begin{tikzpicture}
\begin{axis}[
    title={Required Payment Relative to Income},
    xlabel={Indebtedness at end of residency},
    ylabel={Percentage of Income},
    xmin=0, xmax=600000,
    ymin=0, ymax=20,
    xtick={50000,75000,100000,125000,150000,200000},
    xticklabels={$50,000$,$75,000$,$100,000$,$125,000$,$150,000$,$200,000$},
    ytick={0,5,10,15},
    yticklabels={0\%,5\%,10\%,15\%},
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    ytick pos=both,
    xticklabel style={font=\small},
    yticklabel style={font=\small},
    legend pos=north east,
]
\addplot[red] coordinates{(50000,7) (75000,11) (100000,15) (125000,19) (150000,23) (200000,27)};
\addplot[green] coordinates{(50000,11) (75000,15) (100000,19) (125000,23) (150000,27) (200000,31)};
\addplot[orange] coordinates{(50000,15) (75000,19) (100000,23) (125000,27) (150000,31) (200000,35)};
\addplot[blue] coordinates{(50000,19) (75000,23) (100000,27) (125000,31) (150000,35) (200000,39)};
\addplot[yellow] coordinates{(50000,23) (75000,27) (100000,31) (125000,35) (150000,39) (200000,43)};
\legend{No Consolidation, With Consolidation}
\end{axis}
\end{tikzpicture}
\caption{Required Payment Relative to Income}
\end{figure}

Starting salaries for employed physicians are lower than the median for all physicians used in preparing the above graph, and of course they vary by specialty. The mean starting salary for general internists in 2002 was $124,000, and for pediatricians it was only $109,000, according to a recently published survey.\footnote{Private Practice Success 2(7); 1-3 (2003), quoted on medscape.com.} A starting pediatrician with $125,000 in debt would be paying 6\% of income with consolidation and 16\% of income with no consolidation, considerably higher
than the rates shown above. As income improves, with a fixed obligation, the repayment will become less burdensome.

**Do higher debt levels push students toward more remunerative specialties?**

Physician incomes are somewhat higher for self-employed physicians than for employed physicians, and of course they vary considerably by specialty (Figure 18). Repayment will clearly be easier for a radiologist than for a pediatrician.

*Figure 18*

**Estimated Physician Incomes in 2003 by Specialty and Type of Employment**

It would be reasonable to assume that graduates with high indebtedness would gravitate toward the specialties that promise greater incomes. There have been many studies that have looked for a relationship between indebtedness and specialty choice, but there is as yet no convincing evidence of a connection. The most recent AAMC data show, for example, that students seeking careers in pediatrics are more likely to report educational debt and report more debt than students aiming for radiology (Table 1).\[^{13}\]

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\[^{13}\] AAMC Graduation Questionnaire, 2003
Perhaps one reason for the lack of a major effect of indebtedness on specialty choice might be that the higher practice incomes of the more specialized disciplines are offset, at least in part, by the longer training times they generally require. A graduate with a large amount of debt may be motivated to choose a discipline where it is possible to begin practice sooner.

The motivations of graduates in choosing a specialty involve a number of factors – lifestyle, intellectual challenge, desire to serve, and employment opportunities, as well as income level and required training time. As indebtedness goes higher and higher relative to income, however, it is possible that there may be some threshold beyond which specialty choice will be affected.

### Table 1

#### Debt and Choice of Specialty

<table>
<thead>
<tr>
<th></th>
<th>Number Reporting</th>
<th>Percent with Debt</th>
<th>Median Debt for Graduates with Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Medical Schools</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>420</td>
<td>86.7</td>
<td>99,000</td>
</tr>
<tr>
<td>Radiology</td>
<td>506</td>
<td>78.9</td>
<td>90,000</td>
</tr>
<tr>
<td><strong>Private Medical Schools</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>275</td>
<td>87.3</td>
<td>141,500</td>
</tr>
<tr>
<td>Radiology</td>
<td>245</td>
<td>74.1</td>
<td>120,000</td>
</tr>
</tbody>
</table>

#### Is a medical education a good investment?

There is no question that a medical education is a costly investment in human capital, but is it a good investment? Completing a medical education is certainly worthwhile compared to stopping with a bachelor’s degree. The median income for college graduates in 2003 is estimated at $45,965, less than a quarter of estimated physician income. This may be an unrealistic comparison, because those who qualify for medical school admission are among the best and brightest college graduates, who would surely do better than the average college graduate in a career in engineering, information technology, or running a business and would have alternative incomes higher than average. The differences are so great, however, that it seems clear a medical career is financially advantageous.
Figure 19 compares physician income with incomes of other health professionals, using data on employed persons published by the U. S. Bureau of Labor Statistics (BLS). These data show lower incomes for physicians than reported by the American Medical Association, but the BLS reports may still be useful in assessing relative incomes. Dentists earn almost as much as physicians with a shorter period of training. It is interesting that veterinary medicine, a career for which entry is known to be even more competitive than medicine, pays much less.

Figure 19

Estimated 2003 Incomes in the Health Professions

Source: BLS 2000 data, adjusted by CPI

Other comparisons, in some ways more interesting, are to the other fields requiring professional degrees, business and law. Unfortunately, it is difficult to carry out reasonable comparisons with either one.

The M.B.A. degree is commonly awarded in the United States, but there are vast differences in the reputations of business schools. While graduates of prestigious schools such as Wharton, Harvard, Stanford and the University of Chicago are in great demand and have exceptional starting salaries\(^{14}\), the graduates of less well known programs may earn much less or even have difficulty finding employment. By contrast, medical schools are much closer in reputation and quality, and few if any graduating physicians have trouble finding employment.

\(^{14}\) According to Business Week, 2002 graduates of Wharton, Stanford, Harvard and the University of Chicago had starting salaries ranging from $88,000 - $95,000.
There is also great variation in law schools. Some states even license the graduates of correspondence schools, and there are numerous law schools that are only minimally selective in their admissions policies. The variation in income among lawyers is tremendous. While graduates of the top schools are snapped up by big law firms at six-figure salaries, many beginning lawyers earn much less, and unemployed or underemployed recent law school graduates are not a rarity.

The variance in law incomes is tremendous as well. Data from a major employment service provides figures on employed attorneys, which can be compared with physician incomes (Figure 20). In this diagram the bars labeled Attorney I, II and III are for lawyers with no, two and five or more years of experience.

**Figure 20**

![Physician Incomes and Law Incomes](image)

Source: AMA and monster.com

When one looks at this picture, it appears clear that the extra time required to become a physician is well worthwhile in pecuniary terms when compared with a career as an employed lawyer. On the other hand, if one is very successful as a lawyer and becomes a partner in a major firm, the median income is almost $800,000, more than twice the median income of any physician specialty.
One way of looking at the value of an investment is to compute a net present value, based on assumptions of future costs and revenues. The costs for a medical education are primarily tuition, and the revenues are stipends expected as a resident and income expected as a practicing physician. One must also take into account as a cost the foregone income a medical student or physician would have received as a college graduate. Finally, a net present value calculation must use an assumed discount rate, which determines how future values are reduced to take account of the fact that funds received in the future are not as valuable as funds received today.

When this calculation is made for medicine using a 6% discount rate, the net present value of the investment is $1.1 million for a private medical school education and $1.2 million for a public medical school education. If, instead of going to medical school, one were given a million dollars to invest at 6% interest and pursued a career as a college graduate instead, the financial returns would be roughly the same as going to medical school.

The calculation certainly indicates that a medical education is very worthwhile as a financial investment.

It is difficult to make a valid comparison of the investment value of a medical education and the investment value of a law education with available data. Since all medical schools are rather selective, while some law schools are not, it is likely that the average medical student is better qualified academically than the average law student. Using data for employed lawyers for the comparison may understate the value that an alternative law education would have for a typical medical student.

With this reservation, a physician’s career can be compared with a career as an employed lawyer, using data on employment searches from the employment service. The mean salaries offered for these law positions are $79,893 to start, $105,184 for years two to five, and $143,169 for experienced lawyers. Average law school tuitions are somewhat lower than average medical school tuitions, $24,517 for private and $8,295 for public law schools. Using these figures, and again taking into account the opportunity cost of the foregone income as a college graduate, the net present value of a law education is $0.89 million for private law schools and $0.94 million for public law schools.

A law education does begin to pay returns sooner than a medical education, but medicine is still a better investment at any reasonable discount rate. Figure 21 shows net present values for medical education and legal education, using various discount rates. Only at the highest discount rate do returns for law surpass returns for medicine.\(^{15}\)

\(^{15}\) A 1994 study by William B. Weeks and others found procedure based medicine to be a better investment than law, but primary care medicine to be a worse investment. New England Journal of Medicine (May 5, 1994), pp. 1280-1286.
Do expectations of high tuition and high indebtedness deter students from applying to medical school?

The leadership of American medical education would like to have diverse classes of medical students, including members of racial and ethnic minority groups underrepresented in medicine, and including students from a broad spectrum of socioeconomic class. A serious concern is that the high cost of medical education may deter applicants, particularly applicants from racial and ethnic minority groups underrepresented in medicine and from lower socioeconomic classes.

In a recent national survey conducted for AAMC by a national polling organization, students who appeared to be qualified for medical school on the basis of academic achievement were asked why they did not apply to medical school. A number of reasons were given, including the cost of attending medical school, the time it takes to become a doctor, and the demands of the physician lifestyle. As Figure 22 shows, cost was a major deterrent for all students, and it was the number one deterrent for minority students.
Figure 22

Respondents were then asked to pick the top two reasons, of the 17 tested, that had the greatest impact on their decision not to apply to medical school. The top two reasons were “the time it takes to become a doctor” and the “cost of attending medical school.” There is a difference in the top three reasons by ethnicity.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Majority</th>
<th>Minority</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of attending medical school</td>
<td>20%</td>
<td>33%</td>
<td>31%</td>
</tr>
<tr>
<td>The time it takes to become a doctor</td>
<td>32%</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td>The demands of the physician lifestyle</td>
<td>25%</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>Concern about not being accepted</td>
<td>13%</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td>Unsure medicine is the right career</td>
<td>19%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>The pursuit of another post-graduate degree</td>
<td>20%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>The pursuit of another health profession</td>
<td>26%</td>
<td>13%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Note that the inhibiting effect was not limited to minority applicants. It is reasonable to assume that a continuing increase in cost not offset by an increase in physician income will increase this inhibition. Eventually, in the worst case, it could reduce the pool of applicants so much that it would be difficult to fill entering classes with well-qualified students.

Conclusion

Over the past two decades and especially in recent years, tuition in both private and public medical schools has very substantially increased. Indebtedness among graduating medical students has increased even faster. Loans are readily available, however, and repayment terms are generous. It seems clear that medical school graduates can repay the loans. If they stretch out the payments over thirty years, the payments can be accommodated within the income of even primary care physicians. A medical education remains an excellent investment.

Students graduating with a high level of indebtedness will need to take future income potential into account when choosing a specialty, a practice location and a type of practice. This may lead to an inclination toward specialty practice in areas where remuneration is highest and may worsen the distribution problems that already exist.
Service related scholarships and service related loan repayment plans are one avenue of relief for some students. Unfortunately, the availability of these alternatives is limited, and not all students who would like to take advantage of these alternatives can do so.

Increases in tuition seem likely to continue, and increasing indebtedness is almost a certainty. While loan repayment is not yet a serious hardship for most physicians, continued increases in tuition and fees may hinder recruitment of a diverse class and may eventually even lead to difficulty in filling the entering classes with well qualified students.