The Pathology and Laboratory Medicine Workforce Shortage: an Impending Perfect Storm

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University of Michigan
American Society for Clinical Pathology
President
The bulk of the data and charts I will show come from the following:

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<th><strong>AAMC reports:</strong></th>
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<tr>
<td>The Complexities of Physician Supply and Demand: Projections through 2025</td>
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<td>Recent Studies and Reports on Physician Shortages in the US</td>
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<td>2008 Physician Specialty Data</td>
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<td>Statement on the Physician Workforce</td>
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<th><strong>Health Resources and Services Administration:</strong></th>
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<td>Physician Supply and Demand: Projections to 2020</td>
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<td>Changing Demographics: Implications for Physicians, Nurses, and other Health Workers</td>
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<th><strong>Council on Graduate Medical Education:</strong></th>
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<td>Physician Workforce Policy Guidelines for the United States, 200-2020</td>
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<td>2007-2008 Wage and Vacancy Survey</td>
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“I love to hear a choir. I love the humanity...to see faces of real people devoting themselves to a piece of music. I like the teamwork. It makes me feel optimistic about the human race when I see them cooperating like that.”

Paul McCartney
The people who do the clinical work in our laboratories are much like the members of a choir or orchestra.
It takes talented individuals with special skills to keep laboratory instruments calibrated, just as it does to keep musical instruments tuned.
Will we be able to keep our laboratories staffed with well-trained pathologists and laboratory professionals to handle future demand?
When we have sufficient qualified staff to meet the demand, we can deliver high quality patient care.
Laboratory utilization
Anatomic pathology
Clinical laboratories

Size and demographics of the population we serve

Pattern of use of the medical system

Extent to which new testing and testing guidelines increase or decrease utilization.
The US population continues to grow.
The growth will not be the same for all age groups. In 2010 the Baby Boomers create a bulge in the population that is 45-65.

![Projected U.S. Population by Age and Sex: 2010](source: Population Division, U.S. Census Bureau, Released: August 14, 2000)
Over the next 2 decades the Baby Boomers will expand the population that is >65 years.
The proportion of the US population 65+ years old will grow to about 20% and remain there...
...so that the number of older Americans will grow from 40 to nearly 90 million over the next 40 years.

Projected U.S. Population Aged 65 and Older: 2010 to 2050
(in millions)

Source: Population Division, U.S. Census Bureau
Released: August 14, 2006
So, I have told you what you probably already knew, we are an aging population.
As people age, they use more physician (and other medical) services......

Source: Analysis of data from the National Ambulatory Medical Care Survey, National Hospital Ambulatory Medical Care Survey & the Nationwide Inpatient Sample.
...and the trend is for increasing utilization of the health care system, especially for older Americans.

Figure 33. Average Physician Visits by Age, 1990 to 2005

Source: Analysis of data from the National Ambulatory Medical Care Survey, National Hospital Ambulatory Medical Care Survey & the Nationwide Inpatient Sample.
Women, who constitute a larger proportion of the elderly, use more medical services than men.
Forecasters also attempt to take into account other factors that may lead to more or less utilization than historical trends suggest.

**The economy:** During times of economic expansion, demand for physician/medical services increases at a faster rate than during economic downturns.

**Changing utilization rates:** Utilization is increasing for the population over 45 years of age, due to the population having higher levels of education, higher income levels and higher expectations than previous generations.
More factors to consider:

**Universal health coverage:** If the 47 million Americans who are currently uninsured or under-insured use medical services in ways similar to other Americans, this additional use has to be figured into the physician supply/demand equation.

**Elimination of unnecessary services:** It is thought that a significant amount of the medical care delivered is unnecessary or not beneficial. Effective measures to eliminate these services could affect utilization rates.

A practical look at increasing laboratory volumes using surgical pathology as an example…..
Surgical pathology volumes at the University of Michigan have consistently increased at a rate of 5.5% per month.

Who is going to do this clinical work?
If the rate of growth increases slightly, to 6%, we will have over 18,000 cases per month in 2021!

6% increase/year

Who is going to do this clinical work?

This is just one area of the laboratory.
We are just going to have to get more people.

Supply of pathologists, residents, technologists, PAs

Laboratory utilization
Anatomic pathology
Clinical laboratories

 Provision of high quality pathology and laboratory medicine services
Will the US have enough physicians to meet this demand?

Will the US have enough pathologists to meet this demand?

Will the US have enough laboratory professionals to meet this demand?
Medical schools expanded dramatically in the late 1960’s through the 1970’s with funds provided by the Health Professions Education Assistance Act of 1963. This was in response to projections of future physician shortages.

The expansion largely ended with the 1980 report of the GMEAC that predicted an oversupply of physicians by 2000.

Figure 3. Medical School Graduates, U.S., 1961-62 to 2005-06

Source: AAMC Data Warehouse: Student section; Student Records System(SRS); Journal of Medical Education.
Despite the continued steady, high output of medical graduates, no clear surplus of physicians has developed.

In fact, there are currently shortages in some specialties.
Based on population growth and a physician supply that continues its present growth rate, a physician shortage is projected to develop and become significant over the next 15 years.

Figure 1. Baseline Physician FTE Supply and Demand Projections, 2006 - 2025

Baseline Supply: 734,900 MDs practicing
Baseline Demand: 859,300 MDs needed
124,400 shortfall

734,900 MDs practicing
859,300 MDs needed
124,400 shortfall
As with the demand side of the equation, there are number of variables that may affect the physician supply positively or negatively.
The physician workforce, like the general population, is aging. There is a peak of physicians in their early to mid-50’s.
Exhibit 3. Age Distribution of Physician Workforce under Age 75, 2000 to 2020

Source: Physician Supply Model
Using historical retirement data, mortality rates, and information about intention to retire, it is estimated that 34% of male and 23% of female physicians will still be active at 65.

Figure 39. Retirement Patterns for Male and Female Physicians

Physicians begin to retire at age 60, most are retired by age 70.

Source: Analysis of AAMC-AMA Survey of Physicians Over Age 50.
**Women physicians** make up half of the medical school classes, and will make up more and more of the physician workforce. Women physicians work an average of **7.4 hours/week less**, and expect to **retire sooner**.

*Figure 19. US Medical School Graduates Percent Female*

Source: Historical MD graduate data from AAMC Data Book, 2006. Historical DO graduate data from 2006 Annual Statistical Report on Osteopathic Medical Education.
Female physicians are more likely to take leave, or work part time.

And physicians of both genders who have recently entered practice are more likely to be part of 2-career families, report more desire for work/life balance, and are working fewer hours than their predecessors.
Graduate Medical Education is also part of the equation. Currently 25,000 new residents enter residency each year, a relatively flat number since 1997 due to the Medicare cap on GME positions.

If the GME cap is increased, the number could increase to as many as 32,000 per year.
However, even robust increase in GME positions will not solve projected shortfall of physicians.

Figure 48. Projected National Supply & Shortfall of Physicians with GME Expansion
Overall, analysts using **most plausible scenario of all variables** forecast shortfall of nearly 160,000 physicians by 2025.

Much of the attention is going to the shortfall of **primary care** MDs.

**Figure 2. Projected FTE Physicians, Most Plausible Scenario, 2006-2025**

159,300 projected shortfall
Many states have conducted their own studies of physician supply and demand:

**Florida (2005):** a quarter of the state’s practicing physicians are > 65, only 10% under 35. Population projected to increase by 60% by 2030, aged population increasing 124%.

**Georgia (2008):** without changes in the state’s medical education system (too few schools/students), Georgia will rank last in US in per capita physicians by 2020.

**North Carolina (2007):** projected shortages of physicians and other health professionals due to population growth and aging workforce.

**Virginia (2007):** projected shortage of 1500 physicians by 2020, partly due to low retention of trainees in state.
I can only find pathology addressed in one state study:

Maryland Physician Workforce Study (2007):
Every region in Maryland has a shortage of pathologists.
The big concern of most studies is the shortage of primary care physicians.

What about pathology?

Will there be shortages of pathologists?
Percent change in the number of active physicians by specialty, 1996-2006

Figure 11. Percent Change in the Number of Active Physicians by Specialty, 1996-2006

Not a growing specialty!

Anatomic/Clinical pathology
+1.8%

Percentage of active physicians age 55 or older, by specialty, 2007

Anatomic/Clinical pathology
52.8%

But an aging specialty!
Percent change in number of 1st yr ACGME residents by specialty, 2002-2007

Anatomic/Clinical pathology 3.7%

And not enough in the pipeline
Projects 25,000 pathologists needed by 2020, a 44% increase from the 2000 number of 16,757.

AAMC lists number of active pathologists in 2007 as 15,558.

It doesn’t look like we are going to get there.
What are the projections for the demand and supply of laboratory professionals over the next decade or two?

Data about the situation today is best determined by looking at the ASCP 2007-2008 Wage and Vacancy Survey.
American Society for Clinical Pathology
2007-8 Wage and Vacancy Survey

A survey accepted as the best information about current wages, as well as extent and distribution of shortages of laboratory professionals.

The 11th Wage and Vacancy Survey (first in 1988).

Hospitals, reference laboratories, and physician office laboratories from all regions of the US were surveyed.

A total of 1594 surveys were completed to compile the report.
Vacancy rates for staff level positions (ASCP W&V survey)

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2005</th>
<th>2007-8</th>
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<tbody>
<tr>
<td>MT</td>
<td>4%</td>
<td>6%</td>
<td>10.4%</td>
</tr>
<tr>
<td>MLT</td>
<td>6%</td>
<td>6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>HT</td>
<td>6%</td>
<td>4%</td>
<td>8.0%</td>
</tr>
<tr>
<td>HTL</td>
<td>4%</td>
<td>7%</td>
<td>7.2%</td>
</tr>
<tr>
<td>CT</td>
<td>4%</td>
<td>3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>PA</td>
<td></td>
<td></td>
<td>2.4%</td>
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Rates tended to be higher in larger hospitals, and in private/reference labs than in smaller hospitals.
To look at projected demands for medical technologists (MT) and medical laboratory technicians (MLT) we can look at data from the US Bureau of Labor Statistics.
<table>
<thead>
<tr>
<th></th>
<th>2006 employment</th>
<th>2016 projected employment</th>
<th>Number needed (%)</th>
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<tbody>
<tr>
<td>MT</td>
<td>167,000</td>
<td>188,000</td>
<td>21,000 (12%)</td>
</tr>
<tr>
<td>MLT</td>
<td>151,000</td>
<td>174,000</td>
<td>23,000 (15%)</td>
</tr>
<tr>
<td>MT and MLT</td>
<td>319,000</td>
<td>362,000</td>
<td>43,000 (14%)</td>
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We need to increase our laboratory workforce by a net of 4300 per year.
To have the numbers of MTs and MLTs we need, we must also replace those who leave, either by leaving the profession or through retirement.

The average age of the laboratory workforce is 49.8 years.

According to the ASCP Wage and Vacancy Survey, laboratory managers expect to lose up to 30% of their staff to retirement over the next 10 years.
Employment projections for 2006-2016
Medical Technologists and Medical Laboratory Technicians

» Current: 319,000

• Projected need by 2016: 362,000
  
  *Net increase of 4300 per year needed*

• Projected loss due to retirees: 95,700
  
  *Must take into account loss of 9570 per year*

To meet projected needs, we must add nearly **14,000 new MTs and MLTs** to the workforce each year. How are we doing? .........
Over the past 10 years, one third of MT and MLT schools have closed.
Why are MT programs (and others) closing?

Expense—small programs, high faculty/student ratio

Curriculum—lack of faculty with certain types of expertise

For some—lack of interested students

For some—lack of clinical training sites
To meet projected needs, we must add nearly **14,000 new MTs and MLTs** to the workforce each year.

We are currently training about 5000 students per year.

Where there are no training programs, lab workforce shortages are more severe (rural locations).

Los Angeles and Miami have no MT or MLT training programs.
Programs at risk to close in 2009

Medical Technologist Programs

San Francisco State (CA)
Florida Hospital (FL)
Rosalind Franklin (IL)
OSF Saint Anthony (IL)
Berkshire Medical Center (MA)
Texas A&M University (TX)
Heritage University (WA)
Programs at risk to close in 2009

Medical Laboratory Technician Programs

South Arkansas (AR)  Northern New Jersey (NJ)
Hartnell College (CA)  New Mexico State (NM)
Housatonic Community (CT)  University of Rio Grande (OH)
Indiana University (IN)  Orangeburg – Calhoun (SC)
Wichita Area Technical (KS)  Presentation College (SD)
Our Lady of the Lake (LA)  Tyler Junior College (TX)
Central Maine (ME)  Lamar State College (TX)
Minnesota State (MN)  Salt Lake Community (UT)
Middlesex County (NJ)
Programs at risk to close in 2009

Histotechnician Programs
SUNY at Cobleskill (NY)

Phlebotomy Programs
Indiana University (IN)
Christus Hospital (TX)
# Hiring Difficulties by Region

<table>
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<tr>
<th>Region</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Northeast</td>
<td>43%</td>
</tr>
<tr>
<td>(CT, ME, MA, NH, NJ, NY, PA, RI, VT)</td>
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<tr>
<td>South Central Atlantic</td>
<td>43%</td>
</tr>
<tr>
<td>(AL, DE, DC, FL, GA, KY, MD, MS, NC, SC, TN, VA, WV)</td>
<td></td>
</tr>
<tr>
<td>East North Central</td>
<td>32%</td>
</tr>
<tr>
<td>(IL, IN, MI, OH, WI)</td>
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<tr>
<td>West North Central</td>
<td>36%</td>
</tr>
<tr>
<td>(IA, KS, MN, MO, NE, ND, SD)</td>
<td></td>
</tr>
<tr>
<td>West South Central</td>
<td>46%</td>
</tr>
<tr>
<td>(AR, LA, OK, TX)</td>
<td></td>
</tr>
<tr>
<td>Far West</td>
<td>59%</td>
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<tr>
<td>(AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY)</td>
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*ASCP 2007 Wage & Vacancy Survey, Preliminary Results*
Despite the vacancies, and hiring difficulties, our labs are getting the work done...now.
How can we straighten out this problem?

This may be your laboratory in the center of the coming storm.
We will need more physicians.
This will take increased medical school positions

AAMC and AMA have both issued statements in support of increasing medical school positions, suggesting a 30% increase by 2015.

Many allopathic schools are already expanding enrollment and 10 new schools are opening, so that first year enrollment is expected to reach the goal of 30% increase by 2017.
Increased medical school positions

Colleges of osteopathic medicine have been aggressively growing for 20 years. In 2008 osteopathic schools expect to graduate 3463 students (up from about 1700 in 1990).

However, without a commensurate increase in GME positions, this increase in US medical school graduates will only displace international graduates in GME programs, without increasing the number of physicians.
So we will need more GME positions.

In pathology.
Maybe the government will help us increase the number of pathologist trainees?
Medicare perspective on increasing the GME cap

Small increases in GME positions have been proposed to favor underserved areas and primary care positions.

An broad, general increase in GME caps is likely to be used to fund the institution-supported GME slots that are predominantly in fellowship-level positions. This will not result in increased entry-level positions.
Increasing the number of PGY-1 slots will not necessarily increase the number of trainees in primary care. In the latest match, specialties with “controllable lifestyles” were, again, the most popular.

Increase primary care payments?

COGME and MedPAC (Medicare Payment Advisory Commission) expressing concern about access to primary care, and are interested in tying future federal support of GME to training in primary care specialties.
Pathology perspective on increasing the GME cap

Increased GME positions are not likely to benefit pathology much, if at all.
Maybe the government will help us increase the number of laboratory professionals in the pipeline?
Under the Bush administration, Title VII of the Public Health Service Act, which helps to support health professions training, has been unfunded.

ASCP Volunteers and Public Policy Staff have been lobbying on behalf of renewed funding whenever we visit Capitol Hill.

Renewed funding of Title VII is included in the current version of the economic stimulus package……keep your fingers crossed.
Even with renewed Title VII funding, we are not likely to recruit and train sufficient numbers of laboratory professionals.

Where else can we look for help?
September, 2008

ASCP representatives met with the **Reforming States Group** of the Milbank Memorial Fund.

Reforming States Group: state legislators who chair health committees and state health department officials.

We presented the data about the current and projected laboratory workforce shortage and asked for their advice on solutions.

What do you think they told us?
1. Get in line.

We are just one of many constituencies with the same lament. It did not move them.

2. Think local.

To act, or even care, they need local data, and they need to hear about real problems in their own states.

3. Own the problem.

We, as a profession, will have to design our own solutions. No one else is going to do it for us. The cavalry is not coming.
How does an academic department of pathology own the problem? own the solution?

Can we create your own pipeline?
GME positions: get them when the getting is good.

Keep them filled.

Will you have to consider funding additional GME positions?
Recruiting the best medical students into pathology

Top Ten US Medical School sources of pathology residents, 1995-1999

| Medical University of South Carolina | 56 |
| University of Minnesota             | 51 |
| UT San Antonio                       | 45 |
| University of Iowa                   | 44 |
| University of Illinois Chicago       | 44 |
| Wayne State University               | 43 |
| Louisiana State University           | 40 |
| Indiana University                   | 38 |
| Thomas Jefferson University          | 35 |

What are they doing that we could all do better?
Even with a few more residents, Anatomic Pathology cannot be organized the way it is now in most academic departments.

Who is going to do this clinical work?

2021, over 18,000/mo
We will need to re-examine pathology GME and restructure the work flow in our departments.

But offloading work onto faculty-only services brings its own set of problems.
How will you recruit and retain clinical faculty in an increasingly competitive job market?

Identify and recruit your best residents to stay in your practice.

Benefits that only academic institutions can offer: eg. tuition support for children, training opportunities, sabbaticals.

Other solutions? You are going to own the problem.
How can faculty engage in scholarly activities with all this clinical work, and no significant increase in residents? Who is going to do this clinical work?

Solutions?

You are going to own the problem.
Who is going to crossmatch all that blood?
What solutions to the laboratory professional shortage can we own?
Institutional Strategy

Recruitment and retention strategies at Michigan:

• High school and college career fair and shadowing programs
• Affiliations with multiple MT and MLT training programs
• Active efforts to recruit best students to stay in department
• Bonuses for staff who teach students
• Placement of senior technologists as faculty MT and MLT schools.

Result: Despite shortages around the state of Michigan, we have virtually no vacancies at the University of Michigan.
Support of existing training programs

In Michigan, an key limitation on the number of trainees is a shortage of clinical sites.

Staff technologists (who may be working short-staffed) feel burdened by interns in laboratory.

Can your laboratory affiliate or expand its affiliations to train more laboratory professionals?
Support of existing training programs

Curriculum support: ASCP is investigating ways the Society may be able to support schools with curriculum development in esoteric fields.

Your department may be able to do the same thing in your region.
Support of existing training programs

Efforts to keep threatened schools open.

ASCP is launching “Save the ASU MT Program” campaign on eAdvocacy website next week, reaching out to ASU alums and others.
It will take many creative solutions, nationally, regionally, locally, to keep our laboratories in equilibrium.

- Laboratory utilization
  - Anatomic pathology
  - Clinical laboratories
- Provision of high quality pathology and laboratory medicine services
- Supply of pathologists, residents, technologists, PAs
So the storm won’t prevent our labs.....
From making beautiful music