AN ARIZONA POLICY PRIMER

Better, Quicker, Cheaper: Educating Nurses and Allied Health Workers in Arizona

ARIZONA HEALTH FUTURES

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Policy Primers: *a nonpartisan guide to a better understanding of key terms and issues in the Arizona health policy landscape.*

Better, Quicker, Cheaper:

Educating Nurses and Allied Health Workers in Arizona

National reports document a shortage of specific categories of healthcare workers. In Arizona, the shortage is severe and expected to be especially acute in the future, given the state's growth of nearly a million and a half people a decade for the last 20 years and the projection that such growth will continue for the next two decades.[1] If people keep coming and shortages persist, health care will likely become more difficult to access, result in more medical errors, be more expensive, and adversely affect Arizona's economy and quality of life.

But there's an irony here. Amid shortages for physicians, nurses, pharmacists, allied health personnel and others, thousands of applicants who seek to enter the healthcare field are turned away each year because Arizona programs can't accommodate them or students can't afford the cost. What we need, many in the field say, are new methods to educate healthcare workers that are *better, quicker and cheaper* than the methods we're employing now.

However, the standard refrain applied to healthcare access, quality and cost can be applied to *better, quicker and cheaper* workforce preparation programs as well: You can get two of the three, but not all three together.

St. Luke's Health Initiatives
A Catalyst for Community Health

To better understand healthcare workforce training issues and ways to more effectively address them in Arizona, we collected relevant data and conducted interviews with over 25 experts and others knowledgeable about the subject. We limited our inquiry to the fields of nursing and selected allied health (clinical laboratory personnel, respiratory therapists and radiologic technologists); the physician shortage in Arizona has recently been addressed elsewhere.[2] The careers in question require post-secondary training or at least an Associate Degree for entry into the field, and all are ranked in the top 25 fastest growing occupations with such requirements (2004-2014).[3]

To a surprising degree, those interviewed expressed the same frustrations and identified the same general problems facing healthcare educational programs and students. As one might expect, there was less agreement on what to do about them. We explore these issues in this *Arizona Health Futures* Policy Primer and conclude with recommendations for practice and policy.

Drivers

To set the context, we briefly recap the well known drivers on both the demand and shortage side for healthcare workers in Arizona:

Demand Drivers

Population Growth

The general population is growing, but the numbers of healthcare workers moving to Arizona or being educated in the state are not keeping pace with the increased demand for services, and hence more workers. That demand is skewed by our population distribution. Fully 60% of the state's population lives in Maricopa County, with most in the Phoenix metropolitan area. Pima County and the Tucson metropolitan area have 16% of the population, with the remaining 24% scattered throughout the state.[4] Demand is high everywhere, but it is especially difficult to attract trained healthcare professionals to rural and remote parts of the state.

Diversity and a Multi-Cultural Society

Accompanying Arizona's growth in population is a shift to a multi-cultural society. By 2025 the population is expected to be 50% White and 50% people of color. In order to provide appropriate care for patients within the context of specific cultural traditions and beliefs, the state has a growing demand for healthcare professionals who reflect the diversity of their patients. Even though diverse groups of people are entering healthcare professions, the current mix does not begin to mirror that of the state's population.

An Aging Population

Like the rest of the nation, Arizona's population is aging, with large numbers of baby boomers set to retire over the next decade. People are living longer with chronic disease, disability or other health problems and conditions. The healthcare workforce, too, is aging, with large numbers of physicians and nurses expected to retire within the same time frame. This compounds the demand for workers as fewer are available to provide increasing

numbers of often complex services. The fastest growing segment of Arizona's population – those 85 years of age or older – will further contribute to the demand for in-home, long-term care and end-of-life services.

Increased Burden of Chronic Disease

While Arizonans are living longer and enjoy better health due to medical advances, they increasingly require the care and long-term support of healthcare personnel for chronic diseases that once would have caused death, such as congestive heart failure or HIV/AIDS. People with chronic diseases of all types increase the demand for healthcare workers with the necessary skills to care for them.

Healthcare Facility Expansion

New hospitals are under construction primarily in the Phoenix and Tucson metropolitan areas, where the greatest population growth and demand for services are occurring. Each new facility must recruit staff (including roughly two full-time nurses per bed). To the extent that staff are drawn from other existing hospitals and organizations, those facilities must then replace the departing workers. Since there are insufficient numbers of workers throughout the system, the result is a shuffleboard game of moving workers from one location to another.

Regulatory Requirements and Quality Initiatives

Regulatory and quality initiatives often specify caregiver/patient or faculty/student ratios in an effort to assure the quality and safety of the education or care provided. To the extent that educational settings, hospitals, nursing homes, public health departments and other service delivery organizations establish minimum staff-to-patient ratios, the result is an increase in the demand for workers.

Shortage Drivers

More Career Options

For a great portion of the twentieth century, nursing and teaching were the primary options open to women. Today, both sexes have career options that may be more lucrative and less physically or emotionally demanding than health care, which now faces greater competition on the economic and lifestyle choices front. Nursing particularly holds less interest than it once did for young women, and fewer are choosing it as a career.[5]

"There is a move to populate nursing with those who can't or don't expect much. The potential workers and their supporters are not doing a cost-benefit analysis for the workers or for health care."

Nursing Faculty

What Kind of Life?

"What kind of life can I have with what kind of investment?"

These were the words that guided a young woman's career choice. Her mother was a physician, and her father was a nurse practitioner. She saw how they lived their lives, and concluded that she wouldn't have the time to live her life the way she wanted if she chose either field.

So she didn't, and is now a new graduate in a field outside of health care.

Employers are left to absorb a revolving door of costs for recruitment and orientation of personnel who may not become invested in the organization.

More Options for Healthcare Workers

The demand for healthcare workers gives them leverage in the workplace. Certainly that leverage has resulted in wages for nursing and allied health fields that are more competitive than they once were. Others see salaries as a secondary issue and suggest that nurses and allied health workers are frustrated because they do not believe their skills are fully utilized in a health care hierarchy where physicians are still designated the "captain of the ship." To the extent these health workers are unhappy, they are open to recruitment offers from other institutions and states providing jobs in and outside health care. More options and a high demand for their services mean they can move freely between employers, which are left to absorb a revolving door of costs for recruitment and orientation of personnel who may not become invested in the organization. The same can be said for those looking at retirement. If they are unhappy in their employment setting, they may be quite willing to leave. But, if they feel valued, they may delay retirement and remain at their institution longer.

Hospitals are acutely aware of all this. The Arizona Hospital and Healthcare Association surveyed 2003 position vacancy rates and RN turnover rates (rate at which RNs leave an organization). Turnover rates fell from 27% in 2001 to 15% in 2003 – a 12% decline that reflected a concerted effort by hospitals to respond to nurse concerns about work satisfaction. At the same time, a continuing 15% RN vacancy rate (Table 1) suggests a nurse shortage remains, as well as other workforce issues.

TABLE 1: Arizona Hospital Vacancy Rates 2001, 2003

PROFESSION	AZ VACANCY 2001	AZ VACANCY 2003	U.S. VACANCY 2003
Registered Nurse (RN)	16%	15%	15.5%
Respiratory Therapist	—	8%	14%
Medical/Laboratory Technologist	11%	8%	10.7%
Radiologic Technologist	11%	11%	12%

Sources: Arizona Hospital and Healthcare Association (AzHHA) Survey (2001) and AzHHA Health Care Institute (HCI) Survey, 2003 (the last year for which complete data are available).

Shortage of Faculty

Nursing and allied health faculty preparing students for careers are part of the population retiring, or contemplating retirement, over the next decade. Many are well into their 50s and 60s. Younger workers who might be tempted to get the education needed to teach too often find clinical salaries to be more attractive than those in teaching and opt to stay in the clinical setting, leaving schools searching through a shrinking pool for those who will teach the students of the future. Close to 50% of qualified faculty now hold part-time positions,[6] leaving the decision making for curriculum and student advisement to a small cadre of full-time faculty.

Rising Educational Costs

The clinical component of preparation programs in nursing and allied health are based, to the greatest extent, on a mentoring environment with a significant amount of face-to-face clinical or laboratory experience with one faculty and small numbers of students. In nursing, the average is one faculty for 10-12 students; in some clinical laboratory settings it can be as low as one faculty for 4-5 students. General course work (English, statistics, pharmacology, etc.) can have higher ratios allowing larger classes. The low faculty-to-student ratio required in healthcare training programs results in higher costs to both students and schools (see Table 2).

TABLE 2: The Cost of a Healthcare Education

	ESTIMATED ANNUAL COST TO STUDENT	ESTIMATED COST FOR DEGREE	ESTIMATED FACULTY SALARIES
Associate Degree (AD) – 1½-2 Years			
Public Community College	$3,000-5,000	$6,000-10,000	$40,000-70,000 9 months
Private School	$10,000-18,000	$20,000-36,000	$65,000-95,000/year
Bachelor of Science (BS) – 3-4 years			
Public University	$4,690	$12,070-$18,760	$55,0000-116,000 9 months[7]
Private University	$12,000+	$36,000-$48,000	

Note: Costs do not include living expenses, etc.

Source: Interviewees from Arizona preparation programs.

The Ladder: Preparing Nursing & Allied Health Personnel

A prime strategy for attracting students to select healthcare careers is to support the "ladder" concept – allowing students to enter at the lowest rung of the ladder and work their way up by increasing their experience, educational attainments and credentials.

The strength of the approach is that it works. Many students who have a good secondary education are able to get started with training for an entry level position and gradually work their way up toward higher level positions and responsibilities. The problem is that any failure on the part of the educational system to *support* the student's progression at each rung of the ladder – to say nothing of the student's own responsibility to progress – can mean they fall off the ladder and all too often fail to return.

Both the student and schools need to be strongly invested, beginning in elementary school and progressing through secondary and postsecondary education. Without this investment, fewer students can climb the ladder.

"If students don't pass their licensing exams, cheaper and quicker does nothing to improve the supply."

Nursing Administrator

It's Not Rocket Science – But it *is* Science

All students, including those from disadvantaged backgrounds, must meet the minimum requirements set by the schools at whatever level they enter the educational pipeline. Although healthcare careers offer wonderful opportunities, the fields are science-based and require a student who is willing and able to learn the necessary information. This includes a strong high school sciences background or subsequent course work in health, biology, chemistry, physics, mathematics and, for some, computer science.

The fields discussed here have their own credentialing organizations for schools and practitioners. In fact, most of these programs have multiple credentialing requirements. The issue for students is to make certain that the school they attend has an accepted course of study that qualifies them to take the state or national licensing/certification exams accepted by employers and educational institutions further along the career ladder. For those who wish to advance in their field or teach, further study will be needed.

In some private schools, the general course work is woven into the overall class schedule of studies rather than being taught as separate courses. Such integrated studies may or may not be accepted, however, by other schools, particularly the public university system. The issue of transferring courses and credits across different preparation programs can loom large for students and limit them to more costly private schools for their advanced studies.

Program Regulation

In Arizona, nursing, radiology and respiratory therapy have their clinical preparation and work regulated by the state. The fourth, clinical laboratory personnel, has no state license or certificate, but requires national certification from professional organizations. Review of clinical laboratory work at the state level is controlled more by the licensure and regulation of the work site than the individual practitioner. Table 3 provides an overview of the occupations under discussion:

TABLE 3: Overview of Selected Healthcare Practitioners and Technical Occupations

	STATE REGULATING ENTITY	SPECTRUM OF REGULATION	NUMBER ACTIVE IN AZ PER BOARD[8]	EMPLOYMENT 2004-14 PROJECTED TO INCREASE[9]	MEAN ANNUAL SALARY[10]
Professional Nurses – RN (Registered Nurse or Graduate Nurse)	Board of Nursing *www.azbn.gov*	Licensed	64,328 (6/07)	27% or more (17,368+)	$59,730
Practical Nurses – LPN (Licensed Practical Nurse)			11,664 (6/07)		$37,530
Radiologic Technologists/ Technicians	Medical Radiologic Technology Board Of Examiners *www.arra.state.az.us*	Certified	7,529 all categories (7/07)	18-26% (1,355-1,958)	$49,320
Respiratory Therapist/ Respiratory Care Practitioner	Board Of Respiratory Care Examiners *www.rb.state.az.us*	Licensed	3,800 (6/07)	18-26% (684-988)	$48,610
Respiratory Technologist/Technician					$39,860
Clinical Laboratory Technologists	None in AZ	Voluntary professional credentialing (11 states license)	Uncertain. 2004 DES estimate: 4,000[11]	18-26% (720-1040)	$50,550
Clinical Laboratory Technicians					$34,620

Note: A more detailed discussion of the regulation of healthcare workers is provided in the SLHI Arizona Health Futures Policy Primer, *Controlling the Curve: Health Workforce Regulation in Arizona*, 2004.

Nurses comprise the largest segment of the healthcare workforce and at the same time are one of the largest segments of the national and Arizona workforce in general.[12] The current shortage of personnel began in the late 1990's and continues today, making it one of the longest.[13] Nursing shortages have drawn the most attention simply because of the sheer magnitude of the workforce and the problem. There were 2.9 million registered nurses (RNs) in the nation in 2004, with each of the allied health groups representing fewer than 200,000 workers – between 6%-10% the number of nurses. Roughly the same ratio holds true between Arizona's 64,000+ nurses and allied health workers.

However, as one former director of nurses said, "Allied health personnel may be smaller in number, but if they aren't there it can cause the whole system to grind to a halt."

"Nursing programs are plagued by two problems:
trying to use an outdated model and
a lack of resources to do it.
You can't fly a Conestoga wagon down the freeway."

Former Dean, School of Nursing

Arizona Nursing and Allied Health Programs

A list of existing Arizona nursing and allied health schools with selected available data is provided in Table 4 (Nursing Programs) and Table 5 (Allied Health Programs). While the schools listed have specific locations in the state, they may provide web-based courses and degrees to people in almost any city in Arizona. Where clinical experiences are required, schools make arrangements with students to either have those experiences in their local community or have them travel to another city for a period of time. One trend is evident: there are a number of private schools competing with public institutions, and their number grows every year, both from in-state and out-of-state institutions.

TABLE 4: Nursing Programs 2006

	LOCATION	TOTAL PRE-LICENSURE ENROLLED 10/15/2006	RN GRADUATES JAN TO DEC 2005	LPN GRADUATES JAN TO DEC 2005	RN TO BS GRADUATES
Apollo College	Phoenix	51	0	0	0
Arizona State University	Phoenix	520	250		30
Arizona Western College	Yuma	141	67		
Baptist Health Systems	Phoenix	86	17		
Central Arizona College	Coolidge	55	25		
Cochise College	Douglas	116	61		
Coconino Community College	Flagstaff	59	30		
East Valley Institute of Technology	Mesa	10		0	
Eastern Arizona College	Thatcher	119	29		
Estrella Mountain Community College Southwest Skill Center	Avondale	87		67	
Ethel Bauer School of Nursing	Phoenix	93	20		
Gateway Community College Fast Track Practical Nurse	Phoenix	105		64	
Grand Canyon University	Phoenix	240	110		151
Maricopa Community College District Nursing Program	Tempe	1741	692		
Maricopa Skill Center	Phoenix	65		58	
Mohave Community College	Lake Havasu City	229	79		
Northern Arizona University	Flagstaff	339	67		19
Northland Pioneer College	Holbrook	80	24		
Pima Community College	Tucson	454	174		
Pima Community College Center for Training and Development	Tucson	64		47	
Pima Medical Institute	Mesa	50			
University of Arizona	Tucson	315	148	0	0
University of Phoenix	Phoenix	4	26		114
Yavapai	Prescott	206	80		
TOTALS		**5,229**	**1,899**	**236**	**314**

Associate Degree (AD) Bachelor of Science (BS) Licensed Practical Nurse (LPN)

A clinical experience is required.

Distance education programs may be offered by some or all of the above and out-of-state schools.

Source: Arizona State Board of Nursing, 2006 Annual Report.

TABLE 5: Allied Health Programs

	LOCATION	PER CLASS CAPACITY *
Clinical Laboratory Technologist/ Technician		
Arizona State University – BS (Public)	Phoenix	24
Phoenix Community College – AD (Public)	Phoenix	15
Pima Community College – AD (Public)	Tucson	15
Respiratory Therapist/ Technician		
Apollo College – AD	Mesa & Phoenix	25
Gateway Community College – AD (Public)	Phoenix	30
Long Technical College – AD	Phoenix	20
Pima Community College – AD (Public)	Tucson	30-35
Pima Medical Institute – AD	Mesa	25
Pima Medical Institute – AD	Phoenix	25
Radiologic Technologist/ Technician		
Apollo College – AD	Phoenix	25
Arizona Western College – AD (Public)	Yuma	20
Bryman School (Limited License)	Phoenix/Tempe	25
GateWay Community College – AD (Public)	Phoenix	64
Pima Community College – AD (Public)	Tucson	30-35
Pima Medical Institute, Mesa – AD	Mesa	30
Pima Medical Institute, Tucson – AD	Tucson	25
Grand Canyon University (starts Fall 2007) BS Degree Completion Program	Phoenix	25

A clinical/laboratory experience is required.

*One to multiple classes/year dictated largely by clinical space and demand.

Distance education programs may be offered by some or all of the above and out-of-state schools.

Source: Data received during interviews reported by each school.

School Waiting Lists

"Good students usually get in somewhere. They are not waiting."

Dean, School of Nursing

Waiting lists and delays in getting into programs are viewed as a significant problem in the state's effort to prepare more healthcare workers. *Waiting lists, however, appear to be largely confined to the public education system.* Community college waiting lists are particularly long – as much as five years for radiology in some schools. University waiting lists appear to be shorter. In programs such as clinical laboratory, there is only one class offered each year, but students can usually get into it.

Community college nursing programs report waiting lists of 1000 or more. Maricopa Community Colleges (MCC) nursing programs have a waiting list of slightly over 1400 students (6/07). Students are encouraged to list their names with at least five of the MCC schools to give the student a better chance at being admitted when they wish. The multiplicity of schools and the more than 1700 student nursing slots available give them a choice – to the extent they are willing to avail themselves of it – and wait times vary depending on a multitude of options that are open to students working with the school and employer-generated programs. If a student insists on going to one particular school, their wait time is extended. In Tucson, the number of schools and slots are more limited, with roughly 450 slots available and a two-year waiting list.

Private Schools Do Better

In general, we found that the private schools do not have waiting lists per se but rather adjust the number of classes and the start dates to respond to demand. If there are waiting lists, they are usually only as long as it takes for the next class to start – usually no more than 4-8 months. While private schools are more expensive than public programs, they report having full classes, even if students must borrow money to attend.

Waiting lists, however, have an imprecise quality to them. Students may have applied to several schools and be on a list at more than one. Conversely, they may have given up and moved on to another field inside or outside of health care, or they may have adjusted their life to wait for a later start date. As one nursing director for a community college said, "I have called students to tell them there is an opening [due to another student's canceling enrollment] and they say they can't come right now." When students are told their start date is unknown, no career "planning" is possible.

"In many of the health professions,
the courses are 'front loaded'
and students do clinical and laboratory experience
after their course work in a clerkship.

Nursing hasn't changed its approach in 100 years.
Nursing needs more faculty,
but it is not looking at other strategies
for how to use faculty more effectively."

Former Dean, College of Nursing

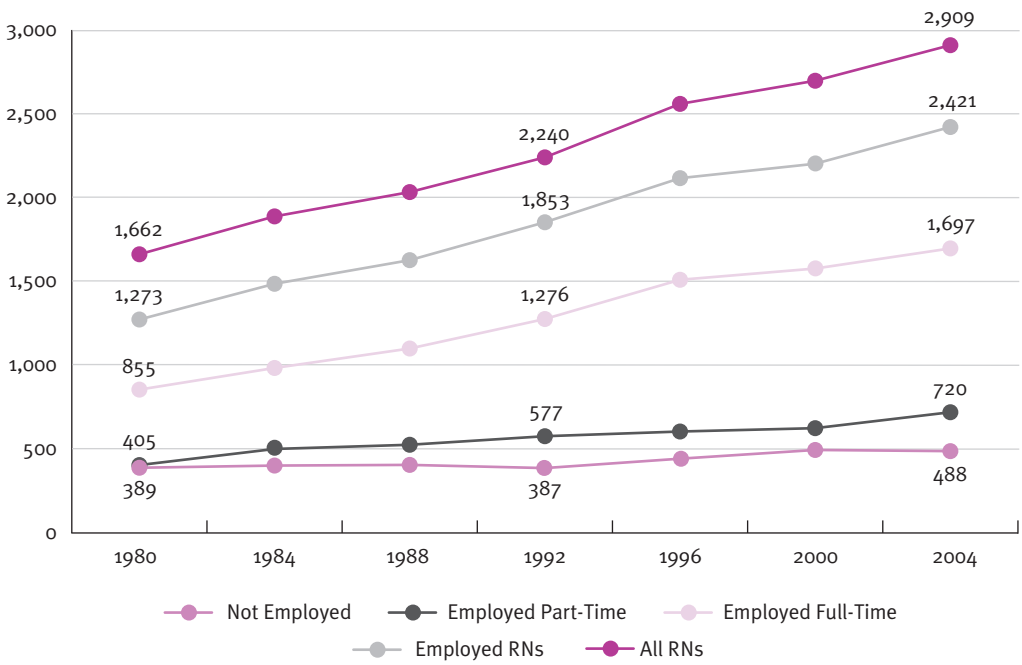
Nursing – the National Picture

Earlier reports pegged the shortage of nurses at the national level to be 760,000 by 2020, but this has been revised "downward" to 340,000 as more people are entering nursing in their late 20s and early 30s after concluding that nursing stacks up well against other professionals in terms of good pay, flexibility and professional satisfaction.[14] That, plus hospitals and educational institutions are fast-tracking programs and stepping up recruitment efforts, as we have seen in Arizona.

The accompanying charts offer a capsule overview of national trends:[15]

The number of nurses has been steadily increasing, but not fast enough to keep up with population growth and demand for services.

CHART 1: Registered Nurse Population
By Nursing Employment Status, 1980-2004



Most RNs receive their initial nursing education at the AD level.

CHART 2: Distribution of Registered Nurses
According to Initial Nursing Education, 1980-2004

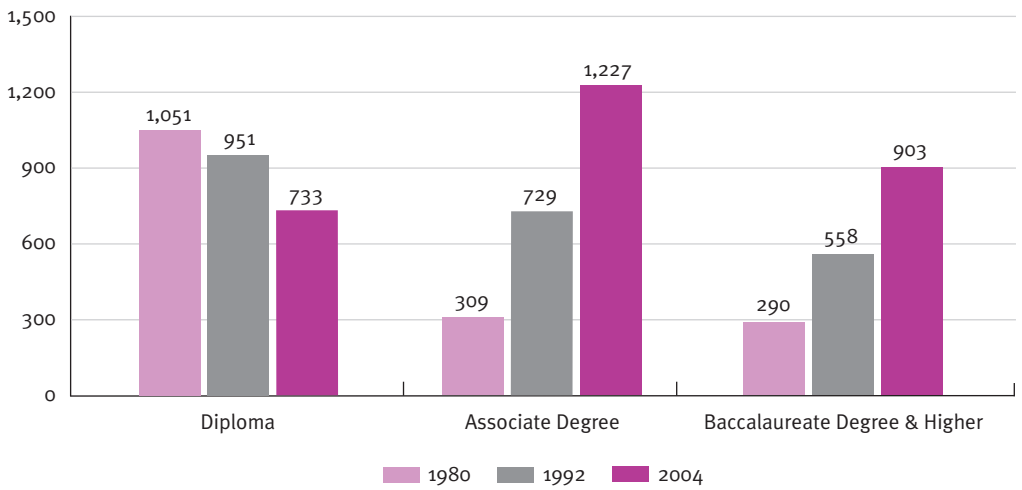
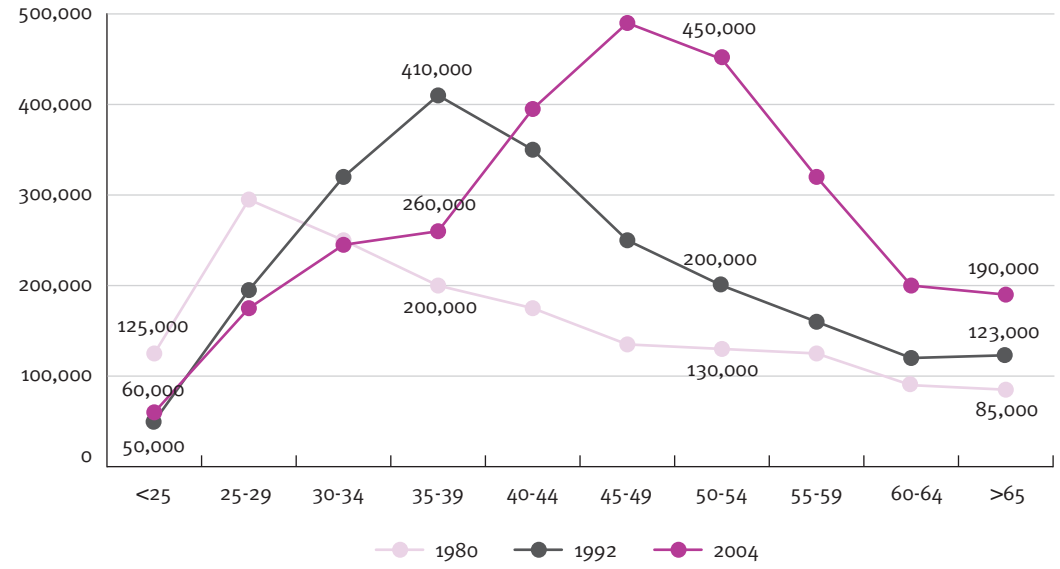
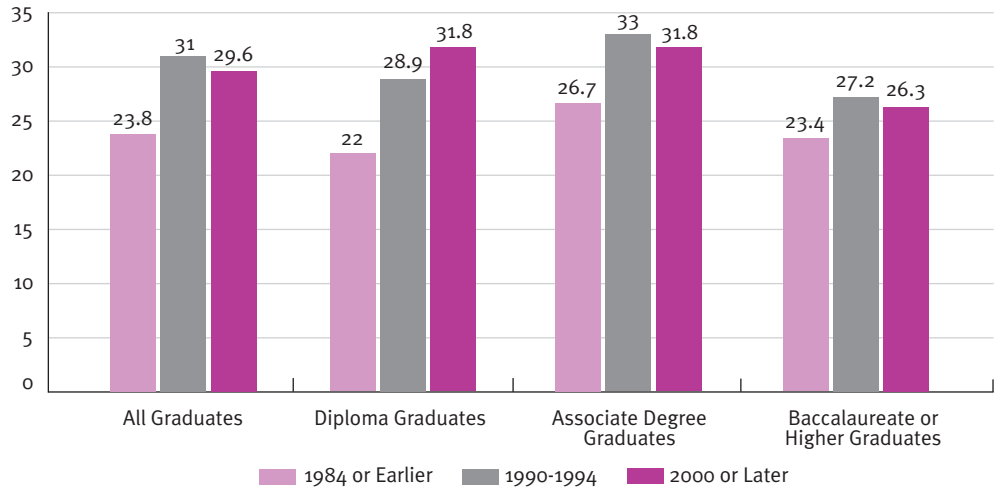


CHART 3: Age Distribution of Registered Nurse Population 1980-2004



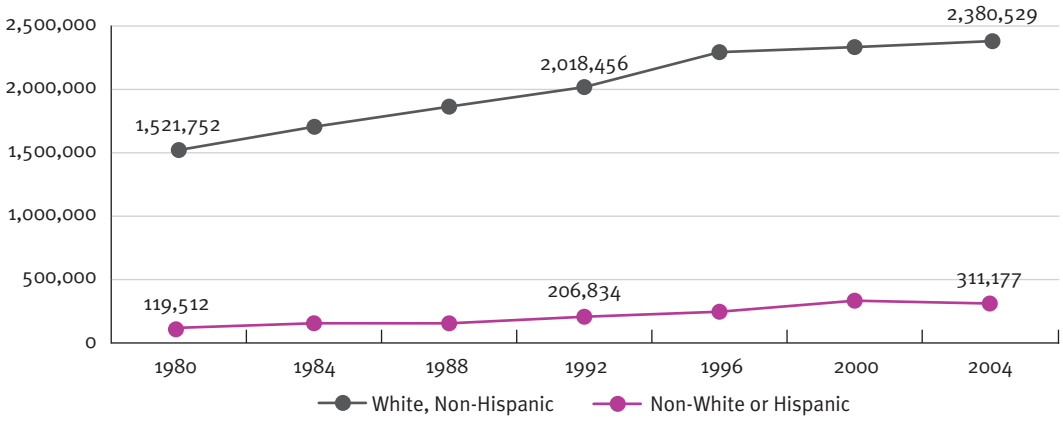
Nurses are getting older.

CHART 4: Average Age of Registered Nurses at Graduation
From Initial Nursing Programs, March 2004



AD and Diploma graduates tend to be older (over 30), while BS graduates tend to be younger (under 30).

CHART 5: Trend in Registered Nurses by Race/Ethnicity 1980-2004



The number of minorities in the profession is increasing, but not fast enough.

Non-white, Hispanic or Latino persons comprised about 13% of the nursing population in 2004, compared to about 32% in the general population.[16]

Nursing Education
Programs in Arizona

All "pre-licensure" RN programs in Arizona are offered either in an Associate Degree (AD) or Baccalaureate Degree (Bachelor of Science – BS) program of study. There are no diploma schools of nursing in Arizona. Both the AD and BS graduates described below must meet state requirements to sit for and pass the same RN licensing exams. Their clinical practice then differs based on the scope of their education.

Professional Nurse/Registered Nurse (RN)[17]

Associate Degree (AD)

An Associate Degree RN completes a two-year nursing program at a community or private college. The program may be preceded by 2-3 semesters of prerequisite courses. There are 14 such programs in the state, with five in the Phoenix metropolitan area and one in Tucson. Each of the following communities also has one AD program: Yuma, Coolidge, Douglas, Flagstaff, Thatcher, Lake Havasu, Holbrook and Prescott.

Bachelor of Science Degree

A Bachelor of Science RN completes a four-year degree at a university. The first 3-4 semesters of the program consist of prerequisites and general education courses. There were five such programs in 2006: three in Phoenix and one each in Tucson and Flagstaff.

Advanced Academic Degrees

Many RNs pursue advanced academic degrees. An AD graduate would continue with courses to complete a BS, often with the assistance of the hospital where they work. Similarly, those RNs with a BS degree might move on to complete a master's and then a doctorate if they so choose. An RN needs advanced education to meet the requirements for some positions, and certainly to qualify to teach in a school of nursing. The same five schools that offer a BS degree in the state also offer some type of nursing related Master of Science (MS) degree. Only two schools offered doctoral preparation in a nursing field in 2006, one each in Phoenix and Tucson.

The Problem of Articulation

As briefly noted earlier, AD graduates, even from public community colleges, often have difficulty transferring course credits to some of the state public universities, especially Arizona State University (ASU) and the University of Arizona (UA). One interviewee noted that "NAU (Northern Arizona University) is different. They will work with the students and usually transfer as many credits as they can. The other two will usually only approve English and a few other courses taken." When AD courses are denied for transfer, students must spend time and money repeating courses, or they may choose to move on to a private college that will accept their course work towards a BS, sometimes in fields other than nursing.

To the extent there is a lack of articulation between schools and students have difficulty progressing, one option suggested as a solution was to allow community colleges to offer a BS degree so students can maintain their credits and continue with the living and work situations they have already established. Many are 'non-traditional' or adult students who have families and work schedules to maintain. Having to move to another school disrupts all that, particularly if they have to repeat work.

Licensed Practical Nurse (LPN)[18]

A licensed practical nurse (LPN) generally completes a vocationally oriented program of 6-12 months at a community college, skill center or private vocational college. Graduates must pass an exam to qualify for a license to practice in the state. The 2006 Annual Program report from the Arizona Board of Nursing noted there are five LPN programs in the state, with four in Phoenix and one in Tucson. An LPN can move on to complete an AD degree and continue moving up the nurse career ladder. Again, whether and how many LPN courses will be accepted by an AD program for transfer will depend on both the LPN school attended and the criteria of the AD program. For many students, they find out too late that the work completed does not meet the requirements for transfer. Schools try to accommodate such transfers, but it is not always possible to do so.

One educator expressed frustration with the perception that "Hospitals don't want to hire LPNs, even if they want to go on to be an RN, and most of my LPN students do." If true, LPNs may be an untapped source of future RNs, since many hospitals help staff to advance in their education.

"Hospitals don't want to hire LPNs, even if they want to go on to be an RN, and most of my LPN students do."

Certified Nursing Assistant (CNA)

A nursing category that is growing as a healthcare support occupation but requires significantly less educational preparation is the nursing assistant or Certified Nursing Assistant (CNA). In Arizona, a CNA has a minimum of 120 hours of preparation (the equivalent of 3 weeks of study) focused on meeting the basic needs of long-term care residents. As of June 2007 there were a total of 21,316 active CNAs and a total of 144 healthcare facilities and educational institutions across the state offering a certification program.[19] Depending on the program, CNAs can seek to apply some of their course work and experience toward an LPN course of study, but it depends on the program attended for the CNA and the school to which they apply, necessitating pre-planning and understanding of requirements.

Arizona Nursing Demand and Supply

In response to the demand for nurses, the Arizona Governor's Task Force on the Nursing Shortage (2001-2006) worked with stakeholders to develop a strategic plan for increasing the number of nurses. Arizona Senate Bill 1260 was passed in 2002 with the intent of doubling the capacity of the educational programs for the RN population; however, no funding was attached.

In 2005, SB1517 was enacted with the strong support of the Arizona Hospital and Healthcare Association. A legislative appropriation of $20 million over five years ($4 million annually) was approved to fund nurse faculty. Approximately $13.5 million is awarded through the Arizona Department of Commerce (ADC) to community colleges through a competitive grant process, while $6.5 million goes to the state university colleges of nursing. The money has resulted in the hiring of additional faculty, but one criticism is that, "This funding is only for new faculty and can't be used to raise faculty salaries. It will go away." Efforts are underway to pursue federal funding. Between 2001 and 2005 the colleges of nursing doubled enrollment, as Table 6 indicates.

TABLE 6: Growth in Arizona RN Programs, 2001-2005

YEAR	ADMISSIONS	CAPACITY
2001	1614	1773
2002	1652	1701
2003	2083	2160
2004	2308	2369
2005	3211	3308

Source: Arizona State Board of Nursing Annual Reports.

Structural and Economic Limitations

Even with additional state funds and a doubling of enrollment between 2001-2005, there are structural and economic limitations to increasing the supply of nurses in Arizona fast enough to keep up with the demand. Here are three of the most salient:

Aging Faculty and Lack of New Faculty

The aging of faculty who will retire shortly and the lack of new faculty with the appropriate credentials to replace them remain the leading issues hindering continued growth in educational programs. The Maricopa Community Colleges host a Clinical Coordination Collaborative that coordinates nursing school clinical sites in Maricopa County. They did an informal survey in February 2007 of nursing colleges that *identified 156 positions that will need to be filled by fall of 2007.* Programs have already had to cancel clinical experiences due to faculty shortages. This does not bode well for students being able to graduate on schedule.

Competitive Faculty Salaries

Second only to the difficulty in *finding* faculty is the difficulty community colleges have in *paying* faculty salaries that are competitive with those in clinical practice. Community college faculty practices do not support differentiated salaries for people with essentially the same degrees (M.S., Ph.D., etc). Only some slight exception may be made on appeal, citing market competition. One of the more rural community colleges, for example, provided $10,000 stipends to both new and old faculty this year in order to compete

Lack of Clinical Space

A third key issue is access to clinical space for student experiences. This doubling of enrollment has had a predictable effect on the clinical sites in which the students practice. Faculty are finding it increasingly difficult to place students for a clinical experience, and some facilities are refusing to take any more students.

AD and BS students spend an average of 577 hours in an acute care setting (mostly hospitals) during their educational experience.[20] That means the 3211 students admitted in 2005 will spend *nearly 2 million hours* in the hospitals in the state compared to nearly 1 million hours in 2001. And, this does not include the time all other healthcare students will be in hospitals for clinical experiences. Even though these numbers are estimates, the magnitude of the problem is clearly evident. Hospitals are being overwhelmed with students, and the problem will worsen as programs grow larger for nursing and allied health.

> "Being an educator is not seen as a full time goal, clinical work is. There needs to be more emphasis on seeing hospitals as teaching hospitals for nursing, not just for doctors."
>
> Nursing School Dean

Clinical Laboratory *Technologist/Technician*

The clinical laboratory position has its genesis in the clinical pathology field and is involved in collecting and analyzing body fluids, tissues and cells for diagnostic, treatment and monitoring purposes.

Laboratory technologists usually have a bachelor of science degree in medical technology or life sciences, while technicians usually have either an associate degree or a certificate. In Arizona, there is one baccalaureate program located at ASU in Tempe, and there are two AD programs located in community colleges, one in Tucson and one in Phoenix.

Workers include those listed below and several other specialized groups not discussed here:

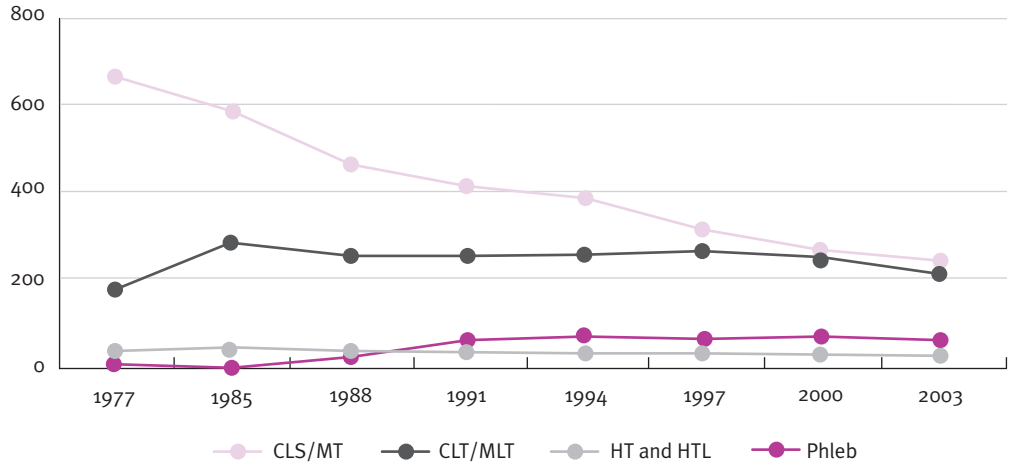
- **Generalists –** clinical laboratory technologists (CLT), clinical laboratory scientists (CLS), medical technologists (MT), and clinical laboratory technicians or medical laboratory technicians (MLT).
- **Practitioners who go on to specialize**, such as histotechnologists (HTL) and histotechnicians (HT) dealing with body tissue.
- **Phlebotomists (PBT)** collecting blood samples, usually under supervision.

Declining Programs

In 2002, 60% of clinical lab technicians and technologist workers were employed in hospitals and clinics, 15% in physician's offices, and 14% in medical laboratories, with the rest scattered in research, education and other settings.[21] Fully 79% were female and 71% White, non-Hispanic. Chart 6 illustrates the trends in available educational programs for the various groups described. Clinical laboratory programs usually have small numbers of students but require significant laboratory space, thereby generating little revenue for the sponsoring institution.

In 2002, 60% of clinical lab technicians and technologist workers were employed in hospitals and clinics, 15% in physician's offices, and 14% in medical laboratories, with the rest scattered in research, education and other settings.[21]

CHART 6: NAACLS-Accredited Educational Programs in Clinical Laboratory Sciences[22]



The decline in medical technologist (MT/CLS) schools is due in part to a perceived decrease in the attractiveness of the field as a career, the advent of prospective payment (PPS) and managed care, and increased costs for administering a laboratory.[23] With the initiation of PPS and managed care, laboratories went from being a valuable source of revenue with a per test charge to being a cost in a per case payment system where each additional service for a patient increases the cost of that hospital stay. Given the reduced revenue stream from these programs, it's no surprise that "most of the closed MT programs were hospital based."[24]

Changing Use of Laboratory Personnel

Two other factors in the clinical laboratory field that may affect job growth, in addition to those identified earlier for all healthcare workers, are the increased use of diagnostic services in all clinical settings, and efforts to improve technology so tests can be safely done by non-laboratory personnel. While both will increase the number of tests done, the increased use of non-laboratory personnel outside a clinical laboratory could depress demand for skilled workers. This is already occurring with a number of tests "waived" from being under the supervision of the Clinical Laboratory Improvement Amendments (CLEA), a federal program administered through the Arizona Department of Health Services. If tests are waived, they can be done according to package directions by non-laboratory personnel.

Another less visible trend may be seen with the expansion and maturing of the biotechnology industry in Arizona. According to one observer, "They are hiring Ph.D., masters and BS prepared people right now, but once the programs are going they will need AD graduates to help staff the labs. When that happens, they will be competing with the hospitals for staff."

Lack of Qualified Faculty, Visibility

Other issues affecting teaching of clinical laboratory programs matched those expressed for nursing – the aging of faculty and the lack of new faculty who have the educational credentials to teach. Compared to nursing, salaries appear to be less of an issue for clinical laboratory faculty, and for students, wait times are generally restricted to the start of the next class. On the other hand, a clinical laboratory education program director suggested the reason there were so few students waiting to start the program was that, "We have little visibility. People have no clue the program even exists."

"Most people don't realize students entering nursing must have a strong science background. It isn't for poorly performing students."

Dean, School of Nursing

Radiological Technologists
Radiological Technicians

Radiological technologists and technicians take x-rays and produce x-ray films (radiographs) of parts of the human body. They conduct diagnostic tests with non-radioactive materials administered to the patient. As this and related technology changes, the scope and nature of the work changes as well. For example, the growth of magnetic resonance imaging (MRI) falls under the purview of the national Joint Review Committee on Education in Radiologic Technology. Hospitals employ the majority of people in the field, but as in other dimensions of health care, there is a movement to outpatient venues with technology that allows more procedures and diagnostic tests to be performed in less intensive settings.

The preparation in radiography ranges from one to four years. State exams result in certification for the various levels of radiography. There are currently seven radiography educational programs in Arizona – four in the Phoenix metropolitan area, two in Tucson and one in Yuma. A new BS degree completion program, which will be the only one in the state, is scheduled to start at Grand Canyon University in the fall of 2007. One formerly located at Northern Arizona University closed, but BS degrees are offered in related fields. Like nursing and the other allied health professions, a BS is required for career advancement, and certainly for teaching.

Regulatory requirements in Arizona specify that students have 1800 hours of clinical experience, which must include supervision. According to more than one radiography educational program director, "clinical placements are one of the primary limitations to expanding the programs." This echoes a concern of practically every healthcare prepa-ration program in the state.

As Table 7 illustrates, there has been a gradual increase in the number of educational programs in radiography and in the number of graduates nationwide. Although there is a projected demand for radiography practitioners, especially with the increasing use of CT and MRI technology, one educator noted that "some hospitals have begun to hire them on a per diem basis to limit their costs since they don't pay benefits and so forth. There is concern there may be a glut down the road."

TABLE 7: Trends in Radiography Educational Programs

YEAR	TOTAL PROGRAMS	TOTAL ENROLLMENTS	GRADUATES
2001	583	19,323	7,219
2002	584	21,343	7,820
2003	587	23,586	9,000
2004	591	26,018	10,487
2005	605	28,532	11,713

Source: Joint Review Committee on Education in Radiologic Technology, 2005 Annual Report.

Respiratory Therapist
Respiratory Therapy Technician

"Twenty somethings only want the information necessary. If they think something isn't relevant, they don't pay attention."

Respiratory Therapy Education Program Director

The general term of Respiratory Therapist covers the entire occupation (therapists, technicians, respiratory care practitioners) who evaluate, treat and care for patients with breathing or cardiopulmonary (heart/lung) diseases and disorders. While respiratory therapists act in a supervisory role for the technicians, their work and training overlap.

An AD is required for entry into the field and represents the majority of those in practice. There are six programs in Arizona at different levels: four are in the Phoenix area and two in Tucson. Nationally, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited 51 entry-level respiratory therapy programs and 329 advanced programs in 2005. One respiratory care faculty person noted, "If people can't get into nursing, respiratory care is sometimes a fallback option."

AD and BS graduates take the same exam to be a Certified Respiratory Therapist (CRT). A CRT who meets experience requirements can take examinations leading to a Registered Respiratory Therapist (RRT) credential.

Four out of five respiratory therapists work in hospitals, but increasingly they are being employed in community-based settings.[25] As more patients with serious chronic respiratory and cardiopulmonary diseases remain in the community for their treatment, therapists will be needed outside the hospital and in the home.

Like the other groups we surveyed, respiratory care faculty identified access to clinical space as a critical issue in any expansion of programs. There was specific reference to "a severe lack of access to pediatric patients" in clinical settings.

"Dumb people don't get around to getting educated. If you have students trying to get in, get them in and work with them. Keep the students and support them so they are successful."

Dean, School of Nursing

Recommendations for Educational Practice

1. Coordinate and standardize clinical experience expectations.

Increasing the number of students is necessary to expand the healthcare workforce, but there are consequences. Hospitals and other clinical sites are saying they can't, or won't, take any more students, and that when they do, they want better and more standardized practices and expectations for the experience.

Currently, every preparation program is unique and functions differently. In today's healthcare system where patients are often sicker and move more quickly through the system, better coordination and management of student experiences are essential. With dozens of schools and thousands of students, healthcare facilities cannot be expected to be responsible for meaningful clinical experiences if there is not greater support from the educational programs themselves.

At a March 2007 Town Hall meeting of the Maricopa Community College Clinical Coordination Collaborative and the Arizona Organization of Nurse Executives (AZONE), hospital and nursing program representatives identified issues to be resolved around student clinical experiences. A summary of the recommendations from six work groups is worth noting for both nursing and allied health programs:

- Clarify and standardize role expectations of staff and faculty.
- Standardize expectations for student competencies.
- Clarify and standardize the expected number of hours in an acute clinical setting and how it relates to demonstrating competencies.
- Standardize orientation for faculty (and students).
- Decrease scheduling conflicts by improving systems of communication between faculty and hospital programs (and between schools).
- Standardize expectations for staff preceptors working with students; have hospitals and schools provide incentives or recognition for their work.
- Explore greater utilization of sites other than hospitals for acute care experiences.
- Create a library of standardized scenarios for simulation experiences.

"You can boil it [issues] down to clinical placement. It is difficult to expand without more clinical space."

Radiology Education Program Director

"If we don't have the clinical spots to meet requirements [set by the Board of Nursing], we will reduce admissions."

Nursing School Administrator

2. Increase and coordinate simulated learning experiences between schools.

"Technological advances have made it possible for students to gain experiences through simulations of clinical events with patients. The technology is so advanced that bodily functions and medical conditions are replicated as though in a real patient. While simulation has long been a strategy used by educational institutions for what has been considered low fidelity or "practice" demonstrations to prepare students to enter a clinical experience, the simulations now being tested and implemented go much farther."[26]

Creating high quality simulation experiences requires a significant commitment of faculty time and training, and an investment in any technology used. Faculty must also learn to use simulations at the right point in the curriculum. To the extent a shared simulations library could be created and open to all Arizona schools, the burden on clinical sites and faculty might be reduced, and the quality of the experience for the student improved. This could be extended by sharing and coordinating the use of simulation classrooms and equipment between health educators, which could conceivably improve efficiency and reduce total costs.

"We can give them the knowledge base, but they need to develop their skills in the clinical setting. We think simulations will mean we can reduce the hands on time students need with patients to develop the skills. They give the opportunity to control what the students are exposed to."

Respiratory Care Educational Program Administrator

3. Support expedited progress toward teaching credentials.

Arizona might consider several changes to increase the number of students who go on to teach in their respective fields:

- Allow community colleges to offer a BS degree so students can remain at their established schools to complete the next level of their education. As contentious as this recommendation is (opposition by state and private universities, funding issues, etc.), it could improve continuity of place and practice for the student and, assuming better articulation and curricula oversight with the four-year programs, even improve quality. Barring this, the minimum recommendation is to greatly improve the articulation and flow between the community colleges and the public and private universities. Students who wish to pursue a baccalaureate, master or doctoral degree should have as seamless and efficient a transition as possible.
- Expand state and private university programs that allow associate degree RNs to enter an RN to MS program of study. This will accelerate their progress toward credentials that will allow them to teach.
- Expand Accelerated Second-Degree BSN programs to increase the opportunities for students who already have a non-nursing degree and demonstrate the academic aptitude to move through advanced programs more quickly. For example, one educator suggested that programs could "move students who already have a degree through in one year. Any student going through faster has to have a higher grade point average – at least a B average."

4. Support telecommunications technology and infrastructure development.

More healthcare students are taking advantage of web-based courses, even if only for part of their course work. Easy access and sustained connections to the web require a telecommunications technology and infrastructure that are well developed and maintained, including in rural areas. If we want healthcare workers to complete their education and then maintain their skills, easy access to the web facilitates that process. Similarly, it is just as important for elementary and high school students to have that access to lay the foundation for their future studies.

Technology is changing the face of education, and faculty at all levels must be competent to take advantage of the possibilities offered through on-line education, webinars, live chats and other communications approaches. According to some of the faculty we interviewed, there are those in the field who see movement toward technologies such as web-based courses as "inappropriate or of lesser quality." Others, however, are finding that some of the content required can be more efficiently and effectively delivered online, and with the same academic rigor as traditional classroom approaches.

Recommendations for Policy

1. Expand state and private funding of healthcare education programs.

As much as everyone would like things to be quicker, cheaper and better in the education of healthcare personnel, it takes money to do quicker and better – and few things come cheaper. If we are to rapidly prepare more people to work in health care, we need:

- more school facilities and classrooms
- competitive faculty salaries
- money to prepare faculty with the appropriate education and skills
- money to help prepare and support clinical and faculty mentors and preceptors
- money for student stipends, grants and scholarships
- money for telecommunications
- money to support the development of simulations and the necessary technology

"What are the issues? Faculty, faculty, faculty."

Dean, School of Nursing

Money is not the answer people want to hear, but with the necessary pace of growth in healthcare workers for a growing population, more funding is critical. The State is to be commended for recent additional investments, but we need to do much more. For example, community colleges could be allowed to differentiate funding for faculty, allowing them to pay more for nursing and allied health faculty to better compete with private industry. In any case, mandates without the required funding are not an answer. Healthcare preparation programs in Arizona are responding to the challenge and increasing enrollment rapidly. But that same rapid growth has created the problems documented here, and without additional funding, they are likely to get worse.

"It is like a speeding train. If something doesn't happen soon, we are going to crash. The issues are only getting worse."

Dean, School of Nursing

2. Clarify and simplify scope of practice.

Nurses and allied health workers are legally approved to provide a wide range of services to patients. To the extent they are prohibited from functioning within their scope of practice due to turf arguments between them and physicians, or due to historical practice patterns, the healthcare environment is left the poorer for it. In our 2004 report, *Controlling the Curve: Health Workforce Regulation in Arizona*, we recommended the State review scope of practice requirements to clarify and simplify them. The suggestion remains today. To quote a passage from that report:

> Blurred and conflicting boundaries between scopes of practice do not facilitate care for the public. Arizona should review its licensure and scope of practice acts to ensure that they are flexible enough to allow health professionals to practice to the fullest extent of their technical training and ability. 'Narrow definitions of practice will make shortages worse with technical rules and limits on practice. A proliferation of different and narrowly defined levels of skills will leave everyone trying to protect their turf and few paying attention to society's needs.'[27]

"How you are trained is not how you are used on the job."

Clinical Lab Professional

3. Review state regulation of educational requirements.

"People don't realize there is still a problem. Someone said to me the other day, 'Isn't that nursing shortage fixed yet?'"

Director,
Nursing Program

For many practitioners discussed in this report, Arizona specifies the number of hours students must be involved in a clinical setting. In nursing, the educational requirements also specify that a majority of faculty must have a master of nursing degree or a closely related field, leaving trained nurses with MBAs and other professional degrees largely out of the count. All the regulations, of course, are intended to ensure quality and safety. Nationally, accrediting and licensing bodies are beginning to call for a review of requirements in light of today's shortages, access to clinical space, the availability of simulation technology that can enhance student learning, and other factors. Each of the regulatory boards should review their requirements for students and schools with the goal of clarification and simplification, and incorporate this approach for any new groups regulated in the future.

4. Broaden student financial incentives.

Providing public and/or private financial support of healthcare career students in return for service in specified communities or institutions is one way to help students and the State develop an adequate healthcare workforce. Such programs already exist to a limited extent, but given the size of the workforce demanded in Arizona, significantly broadening these options would seem prudent. For example, if students had financial incentives to attend *any* school meeting specified criteria that had an open slot – and not just a state-supported school – graduation rates and good work placement might be improved. Certainly public funds are more often tied to a requirement to attend a State school, but at this point State schools cannot accommodate student demand. If we are to increase the number of qualified healthcare professionals, the State might consider looking beyond its own schools to help prepare students.

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To improve the health of people and their communities in Arizona, with an emphasis on helping people in need and building the capacity of communities to help themselves.

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