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Physician Assistants and Nurse Practitioners in Acute Care Settings: Research and Perspectives

2011 NP/PA Acute Care Summit
Baltimore, Maryland

James F. Cawley, MPH, PA-C
Professor of Prevention and Community Health
Professor of Physician Assistant Studies
The George Washington University

September 9, 2011

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America's Health Care Workforce

- There are approximately 800,000 physicians in practice at present
- Two-thirds of the U.S. physician workforce practice as specialists
- The number of young physicians indicating an interest in primary care is static (not growing)
- There are approximately 110,000 nurse practitioners (NPs) and 80,000 physician assistants (PAs) practicing in the United States (2011)

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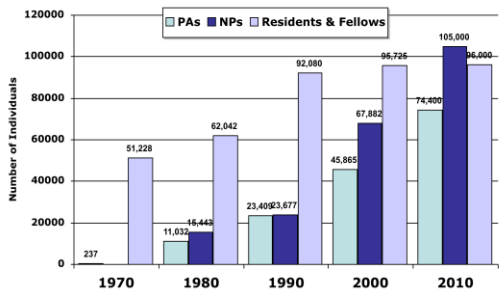
Decennial Growth of US PAs, NPs, Residents & Fellows (1970-2010)



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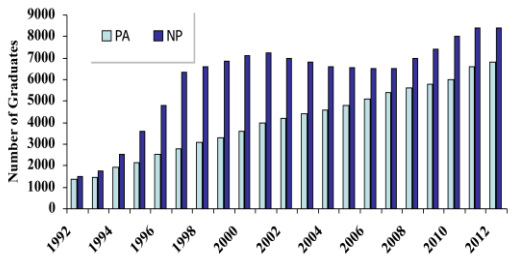
US PA and NP Graduates Per Year
(1992-present)



Hooker and Berlin, 2002; AACN, 2009;AAPA, 2010

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Profile of PA - 2010

Characteristic	2010 AAPA Census
Actively Practicing PAs	83,
Female	61%
Primary Care	31%
Age (mean)	38 years
Length in Practice (mean)	7 years
Length in Current Specialty (mean)	4 years
Inpatient Hospital Unit	14%
Emergency Department	14%
Hospital Based (includes OR, Outpatient, ED, and Inpatient)	47%

American Academy of Physician Assistants, Physician Assistants Annual Census Report, 2010. Alexandria, VA, 2011.

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NP Distribution by Specialty, Mean Years of Practice and Mean Age of Clinician

Specialty	Percent in Specialty	Mean Years in Practice	Mean Age
Acute care	5.3	7.0	45
Adult	17.9	10.9	50
Family	49.2	9.5	48
Peds	9.4	13.3	49
Gero	3.0	12.3	47
Neonatal	2.3	12.3	47
Oncology	0.8	8.3	47
Psych/mental health	2.9	14.7	49
Women's health	9.1	14.7	49

Average NP is female (94.6%) and 48 years old; she has been in practice for 10.5 years as a family NP (49%)

AANP National NP Database, 2009

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Educational Preparation

- **Nurse Practitioners**
  - MSN;DNP by 2015
- **Physician Assistants**
  - Masters;mean length =26 months
  - student mean age = 26yrs

PAs and NPs in Acute Care Settings: Historical Context

- Even from the early days, not all NPs and PA were employed in primary care and ambulatory practices
- Throughout the 1980s and 1990s, there were sporadic reports of NP and PA utilization in emergency departments and inpatient hospital units
- In 2000, the Committee on Manpower for the Pulmonary and Critical Care Societies indentified a shortfall of intensivists; they projected a 22% undersupply by 2020 and 35% by 2030
- In 2004, the regulations placing limits on resident workings hours of the Accreditation Council for Graduate Medical Education (ACGME) took effect
- In the past decade (2000-2010), there have been an increased number of reports and formal studies on the utilization and the effectiveness of utilization of NPs and PAs in acute care settings, in academic health centers, in emergency and trauma centers, and in ICUs

Systematic Review

- A 2008 systematic review of the English literature on NPs and PAs
- About 145 articles were reviewed;31 met inclusion criteria (focus on NPs and PAs in the care of acute and critically ill patients)
- Of the 31, 14 focused on ICU settings; 17 focused on acute care settings including EDs, trauma centers, and inpatient units
- Of the 31, 20 pertained to NP care, 5 pertained to PA care, and 6 examined both
- Only 2 randomized controlled trails were in the examined studies
- Existing research findings support the use of PAs and NPs in acute care settings, the evidence was graded as low; there was little data available regarding the financial aspects of NP and PA utilization in these settings

Kleinpell, R.M., Ely, W., Grabenkort, R. Nurse Practitioners and Physician Assistants in the Intensive Care Unit: An Evidence-Based Review. Crit Care Medicine 2008;36:2888-2897.

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Observations and Benefits -NPs

- ACNPs in an MICU – No differences in readmission rates, mortality, duration of mechanical ventilation, LOS, or disposition (Hoffman, 2003)
- RCT of ED patients cared for by NP (n = 704 patients) vs. MD resident (749 patients) – no differences in NP and MD resident accuracy of examinations, adequacy of treatment, planned follow up, or radiography requests (Sakr, et.al., 1999).
- ACNP care in cardiac ICU – decreased mean time to extubation, lower rates of ventilator-associated pneumonia, shorter LOS, decreased use of arterial blood gas studies (Gawlinski, 2001).
- NPs on inpatient cardiology service; 180 patients post coronary angioplasty – comparison of baseline as 12 month data sets measuring impact of NP care related to guideline adherance;showed increase in rates of lipid screening, smoking cessation counseling, increased use of beta-blockers, and ACP inhibitors attributable to NP care (Bargardi, 1999)

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Observations and Benefits - PAs

- PA use in medical ICU compared with MD – Over 2 years there were no differences in occupancy, mortality rate, complications, or quality of charting (Dubaydo, 1991)
- PAs in inpatient care) stroke, pneumonia, CHF, MI, GI bleeding patients) – no differences in LOS;PAs used fewer ancillary resources for patients with pneumonia, stroke, and fewer laboratory tests for patients with stroke, pneumonia, and CHF (Van Rhee, 2002)
- PA care in trauma center compared to resident care – Decreased LOS with PA care (2.54 compared to 3.4 day;PAs had 100% participation in trauma care alert compared with 51% of residents (Oswansky, 2004)
- Evaluation of PA-led cardiac rapid-response team – PA-led team care was associated with lower rates of in-hospital cardiac arrests and unplanned ICU admissions ($p < .05$) (Dacey, 2007)

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NPs and PAs in Academic Health Centers

- A national survey of academic health centers from University HealthSystem Consortium;74 members invited, 26 completed survey
- The primary reason cited by AHCs for employing PAs and NPs was ACGME work hour restrictions;other reasons cited were increasing patient throughput, increasing access, improving patient safety/quality of care, reducing LOS, and improving continuity of care
- More than 2/3 (69%) reported that they have not successfully documented the financial impact of using PAs and NPs or outcomes of care

Moote, M., Krsek, C., Kleinpell, R., Todd, B. Physician Assistant Assistant and Nurse Practitioner Utilization in Academic Medical Centers. American Journal of Medical Quality 2011; published online at: DOI: 10.1177/1062860611402984, May 9, 2011, pps.1-9.

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Key Findings-Numbers

Institution	Nurse Practitioners	Physician Assistants
Penn State/Hershey	78	67
UMaryland	150	5
U Pennsylvania	275	70
UMichigan	192	181
UWisconsin	120	95
Brigham and Women's	150	130
UNebraska	88	62
Wake Forest/Baptist Hospital	68	69
Barns-Jewish Hospital	109	17
Mean	119	49
Maximum	352	181

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Additional Observations – Moote, et.al.

- Of the 26 respondents, 16 (57%) tracked work RVUs for some positions; 77% track ambulatory encounters, 31% track hospital encounters, 58% track gross encounters, and 42% track the number of shared visits for Medicare patients.
- The majority (69%) did not track outcomes associated with individual PA or NP care
- Most were more likely to track complications by service, comparisons across services, or overall outcomes by service.
- Eleven (42%) indirectly measured patient and family satisfaction related to PA and NP care (generic comments/ratings of specific service)
- Difficulty among most AHC to track NP and PA productivity/financial impact; missed opportunity to bill for provided services

Moote, M., Krsek, C., Kleinpell, R., Todd, B. Physician Assistant Assistant and Nurse Practitioner Utilization in Academic Medical Centers. American Journal of Medical Quality 2011; published online at: DOI: May 9, 2011, pps.1-9. 10.1177/1062860611402984, May 9, 2011.

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PA Utilization in GME

- PA utilization in GME described in numerous papers from GME programs
- Survey of 21 pediatrics residency program directors assessing their strategies in dealing with resident working hour restrictions
- Ten postgraduate programs hired an increased number of nonresident staff (PA, NP, along with more attending physicians)
- Experiences with PAs in such roles were reported as positive
- The respondents indicated that resident educational experiences were enhanced

Samuels, RC, Chi, GW, Rauch, DA, et.al. Lessons from Pediatrics Residency Program Directors' Experience with Work Hour Limitations in New York State. Academic Medicine 2005;80:467471

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Team Practice - Some Evidence

- Primary care team (PCT) functioning was assessed by surveys of practitioners and support staff of 14 primary care practices
- Measures were: perceived task delegation, role collaboration, patient orientation, and team ownership
- On average, patient physical and emotional health declined over 2 years.
- Medicare beneficiaries empanelled to relatively high functioning PCTs had significantly better physical and emotional health at 2 years following baseline assessment than those empanelled to relatively low functioning PCTs.

Roblin, D.W., Howard, D.H., Ren, J., Becker, E. An Evaluation of the Influence of Primary Care Team Functioning on The Health of Medicare Beneficiaries. Medical Care Research and Review 2011;68:177-201.

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Adding PA/NPs to Cardiology

- **PA/NPs add significant value to cardiology practices**
  - *We estimated a cardiology group practices gains about $300,000 per additional PA/NP employed per annum (2009)*
  - *This is a labor offset and routine work is delegated to PA/NPs maximizing cardiologist time*
  - *An additional cardiologists adds about $700,000*
- Analysis of cardiology suggests that PA/NPs are an efficient and possibly underutilized resource in cardiology practice
- **The value of PA/NP cardiologists will depend on practice size and other factors**
- We estimate a practice "production function" – to provide insights on the efficient mix of practice resources and the demand for practitioners

Hogan & Bouchary (Lewin) 2010 - unpublished

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