



POSTER ABSTRACTS

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Proposed Population Based Approach for Funding General Practitioner Services Newfoundland and Labrador

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Background

In Canada, public health care resources are intended to be equitably allocated to achieve the desired objectives of the population including health promotion, disease prevention and restoration of public health.

Objectives

The objectives of this research were to develop three types of explicit criteria to determine general practitioner funding allocations for specific geographic areas within Newfoundland and Labrador. They include: the relative health status of residents; the increased inefficiencies (mostly associated with travel) of providing comparable services to sparsely populated areas; and, the financial enhancements necessary to attract general practitioners to rural areas.

Methods

Memorial University of Newfoundland's Division of Community Health was contracted to develop an empirical model to determine the statistical relationship between population demographics and individual health characteristics associated with fee-for-service general practitioner use. The three main databases used in this component of the research included: Medical Care Plan (MCP) administration data for the years 1996-2004, the 1995 Newfoundland Labrador Adult Health Survey (NLAHS), and the 2001 Canadian Community Health Survey (CCHS).

Adjustments for population density were based on an empirical assessment of the specific area's relative population density and

assumptions relating to the maximum distance that area residents would be expected to travel for routine primary health care services, the appropriate number of annual clinic days per provider, and the necessary size of a remote population that would warrant providing a regular clinic day by a general practitioner.

To calculate a relative rurality value, population densities were calculated for geographic areas that are within 45 minutes, 90 minutes and 180 minutes of travel time from the location of interest. These distances were chosen because they correlated with a ranking of relative rurality for forty-nine sentinel communities by an expert panel. The individual community population density values (for each category of travel time) were then summed and expressed as a proportion of a base population of 1,000,000 to provide a relative rurality value. Researchers then applied a weighted rurality factor value to each community based on the historical cost of bonuses. A formula was estimated that converted the calculated rurality factor to the existing and historical bonus allocation approach.

Results

The results demonstrate a clear pattern between the populations' age-gender pattern and their use of fee-for-service general practitioner services. The inclusion of chronic conditions further enhances the models' predictability. The appropriate provincial adjustment for population density is approximately 6.14% of the current general practitioner budget. The formula for calculating the rurality component is $RF = \text{LOG}_{(\text{base}1.22)} [1,000,000/\text{relative population density}]$.

Conclusion

Each primary health care team would receive a general practitioner funding allocation that reflects the three elements and unique to their registered population. The model will ensure a more equitable distribution of available funds consistent with the *Canada Health Act*. This approach is initially intended to be used to allocate resources from the physician services budget. However, it could be used for estimating equitable funding levels for health care services provided by other professionals.

The UBC Health Clinic, an Inter-professional Teaching Practice, and a Step towards Improved Patient Care and Efficient Health Resource Management

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Background

Health human resources planning, including the way we educate health providers is key to achieving system change and to ensuring that health providers have the necessary knowledge and training to work effectively in inter-professional teams within the evolving health care system. An innovative inter-professional teaching clinic was introduced at the University of British Columbia in January 2006. One function of the clinic is to serve as a 'working laboratory' for the development, modification and evaluation of a sustainable inter-professional service-learning primary care model, including the team, the space and the model of care.

Objectives

To describe the process of clinic development, implementation and evaluation; and outline a new inter-professional service-learning model of care.

Results

Clinic blueprints, evaluation methods and an inter-professional service-learning model of care are presented.

Discussion

Introduction of this inter-professional teaching clinic will significantly benefit both the community, in health outcomes, and the students in inter-professional education and practice. Ongoing modification and evaluation of the clinic will also help inform system change for improved health human resource management.

Professional Satisfaction among Canadian Physicians: A Retrospective Look at Survey Results

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Purpose of study

The purpose of the study was to synthesize results from various physician surveys, focusing on how professional satisfaction levels influence workload and other practice characteristics.

Data sources and study design

This paper focuses primarily on the results of the 2004 National Physician Survey (NPS), complemented by information from other surveys and reports. Satisfaction with various aspects of professional life and the ability to balance this with personal commitments was

examined and compared with workload volumes, practice setting, family responsibilities, etc. A maximum hours scenario was created based on the European experience.

Key findings

When rating balance between personal and professional commitments, just 54% of physicians indicated they were satisfied. Determinants of satisfaction with balance include both workload and the number of on-call hours worked per month. While on-call hours play a role in determining satisfaction with balance, they seem to have little effect on satisfaction with current professional life. Physicians providing main patient care in Academic Health Sciences Centres and hospitals indicated greater degrees of satisfaction with current professional life than those in private offices. Greater satisfaction with hospitals as well as with non-physician health care workers is seen amongst those whose primary patient population is rural rather than urban. For women in particular, having young children affects their professional workload. However, women spent considerably more time providing child care each week. Physicians with onerous on-call duties were more likely to be dissatisfied with their balance when there were children at home. Enforcing a maximum work hours scenario in Canada would cause an immediate shortfall of almost 9,000 physicians (14% of current supply).

Implications of findings and policy relevance

Having considered satisfaction as a whole and how it pertains to physician demographics, work/ patient care setting, remuneration, and on-call hours/ week, future scenarios can be approached in an informed manner. The awareness of what factors in particular influence a physician's satisfaction as well as detract from it allow for better workforce planning.

Alternative Funding Plans for Physicians in Canada

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In early 2006, a study on *Alternative Funding Plans* (AFP) for physicians in Canada was carried out. The prime objective of this work was to provide clear and comprehensible information on the various AFPs (i.e.: salary, sessional, capitation, independent contractor, blended remuneration systems and others) used across the country and in selected international jurisdictions, as well as on the evaluation of Canadian AFPs, their outputs and outcomes.

The study included a national and international Literature Review of both academic and grey literatures on physician AFPs, as well as an Environmental Scan on physician AFP goals, objectives, best practices and evaluation (outputs and outcomes) in Canada. The Literature Review presents information on AFPs for physicians, both generalists and specialists, practicing in the following jurisdictions: Canada, U.S., U.K., France, Australia and New Zealand. The Environment Scan focused on specialists' AFPs and surveyed five audiences: the Provincial/Territorial Ministries/Departments of health; the federal departments involved in delivery of health services to mandated populations; the Medical Associations (P/T); the Faculties of Medicine; and, the National Associations.

The study provided no evidence that one system, capitation, or salary, was more effective or efficient than the traditional fee for service system, or delivers better value for money or quality of care. Neither theoretical arguments, nor empirical evidence pointed toward **one** system of physician remuneration as superior in **all** aspect of health care delivery. It also highlighted the fact that the effect of remuneration structures on health outcomes is scant. Likely due to the difficulty of attribution and the lack of solid data, effect on health outcomes is generally not investigated. It stressed that while AFPs have been found successful in recruitment and retention and have affected physician choice of specialty, financial incentives were still only one of several motivating factors.

The research provided evidence that physician remuneration systems, and their administration, are now seen to be essential instruments of effective health care policy and management. Remuneration systems have been the object of increased experimentation and now are the subject of growing interest in the literature. In Canada, alternative forms of remuneration currently account for close to 20% of total payments to physicians and this percentage seems to be growing. However, there appears to be a wide variation of AFPs' use across Canadian jurisdictions.

Finally, the survey indicated that, the driving objectives for the implementation of AFPs

(namely providing for greater efficiency of resources while maintaining control over costs) were not realized.

The research showed that jurisdictions need to place more emphasis on evaluation, monitoring and audit (financial and value for money) of remuneration systems, including AFPs, in order to more fully understand how remuneration affects practice patterns.

Vancouver Coastal Health Interprofessional Collaboration Project

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Overview

This overview describes the Interprofessional Collaboration project that was submitted by Vancouver Coastal Health (VCH) to the IECPCP Steering Committee in December 2004. The Interprofessional Collaborative project is focused on enhancements to the practice environment at a rehab centre within VCH. The project is focused on creating a healthy workplace and to create opportunities for student and staff education that is related to interprofessional collaboration. The integration of students from academic partner programs will assist in achieving sustainability of healthy workplaces through positive collaborative influences on future generations of health care professionals.

Background

There is growing evidence that suggests that attractive health care environments are characterized by high job satisfaction, lower employee turnover, lower sick time and injury rates, and reduced patient mortality. These organizations are able to recruit and train employees in times of severe shortages of personnel. Components that appear to be critical to the healthy practice environment include quality of leadership, empowerment of the labour force, and consistent practices around teamwork or the collaborative working relationships of employees both within their discipline and among members of the health care team. Interprofessional education literature suggests the best way for health care professionals to learn to practice collaboratively is to experience it in field education.

Methodology

This project is comprised of four major phases:

Phase 1: Comprehensive assessment of key characteristics of the clinical practice environment will be conducted. This has been completed through questionnaires, participation in focus groups, and the collection of unit-based and organizational data.

Phase 2: Participating sites received their unit's baseline assessment results collected in Phase 1.

Phase 3: Interventions are in progress. Planning and implementation of interventions has been based on the assessment results from Phase 1.

Phase 4: Post-intervention evaluation will be conducted to determine the impact of the interventions. This evaluation will use the same measurement tools as the pre-intervention assessment in Phase 1.

Derivation of Geographic Pay Differentials To Equalise the Recruitment and Retention of General Practitioners

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Objectives

There are persistent problems in the UK with the recruitment and retention of General Practitioners (GPs) in areas of high cost-of-living and workload intensity. The current national remuneration system does not financially compensate for high cost-of-living, and compensates for the volume but not the intensity of workload. This research was commissioned as part of national pay negotiations and seeks to estimate the adjustment to wages required to compensate for working in under-served areas.

Design

Regression analysis of vacancy rates on standardised wage differentials for GPs and comparable private sector workers and indicators of the workload generated by the local population.

Setting

England, 2003/4.

Participants

6,000 general practice partnerships.

Main outcome measures

The sensitivity of vacancy rates to pay variations and workload factors, and the implied rates of substitution between them. Estimated wage differentials required in each local area to equalise geographical recruitment and retention possibilities.

Results

Vacancy rates are decreasing in GP wages ($p < 0.001$) and increasing in the compensation paid to similar workers in the private sector ($p < 0.05$) and the proportion of the local population with chronic health conditions ($p < 0.001$). The implied rates of substitution suggest wage differentials ranging from 94% to 105% of the national average to compensate for cost-of-living differences and from 87% to 118% of the national average for the intensity of workload associated with variations in the prevalence of chronic health conditions.

Conclusions

Failure of the current national pay system to compensate for cost-of-living and the intensity of workload contributes to higher recruitment and retention difficulties in traditionally under-served areas. The proposed wage adjustment has been incorporated into recommendations for a revised formula for calculating GP remuneration. This formula is budget-neutral, implying wage reductions in some areas and wage increases in other areas. The adjustment will require regular updating and monitoring of its distributional impact on the recruitment and retention of GPs.

Distributing Public Funding To the NHS: Taking Account of Differences in Local Labour Market Conditions on NHS Recruitment and Retention

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Objectives

Central government funds for the health service in England are distributed according to a formula. The formula measures the need for health services and variations in the costs of providing these services. The adjustment for cost takes account of unavoidable differences in the local price of labour, land and the other inputs that are required to provide these services and is called the Market Forces Factor (MFF). This research analyses the economic theory underlying the MFF and it tests the theory empirically. The research was commissioned as part of a review of the resource allocation formula which was commissioned by the Department of Health in England.

Design

The theory underpinning the MFF proposes that the labour markets for NHS professional staff are connected to private sector labour markets. The spatial pattern of pay in the private sector therefore indicates the appropriate pattern of differentials for NHS staff and it is used to generate the MFF. Where the spatial pattern of pay for the private sector differs from the pattern for NHS staff the NHS will experience higher indirect labour costs which will result from difficulties attracting and retaining staff. The research maps the patterns of pay in the private sector and NHS and tests for an association between any differences in these patterns and measures of recruitment and retention difficulties in the NHS. Vacancy rates are used to measure recruitment and retention and multiple regression techniques are used to estimate the relationship between them and the patterns of pay.

Data

The empirical analysis uses improved data from the Annual Survey of Hours and Earnings (ASHE). The data is available at the individual level for 2003-5. The data include part-timers, use the ASHE employee population weights and pool observations across three years.

Results

The analysis reveals a significant association between the spatial pattern of pay in the private sector and the vacancy rates of nurses, regardless of whether the pattern is measured for the private sector as a whole or for a more narrowly defined comparator group. The

findings provided empirical underpinnings for the application of an MFF for nurses.

In contrast the analysis reveals that there is no association between the spatial pattern of private sector pay and NHS doctor vacancy rates. Indeed the analysis suggests that doctors are attracted to areas where there are higher private sector MFFs: where the cost of living is higher and area amenities are lower. The analysis shows that the choice over job location for medical staff is determined less by current pay than by other factors and hospitals located in high cost areas find it easier to fill medical vacancies.

Changes in Job Satisfaction and Attitudes to Workload Following Contractual Reform

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Objectives

New contracts were implemented for consultants and General Practitioners across the UK from 1st April 2004. This study compares job satisfaction and workload attitudes reported in 2001/2 and 2006 to understand the impact of these new contracts relative to the conditions for a third doctor group (Staff and Associate Specialists), whose contracts are still under negotiation.

Design

Comparative analysis of responses to postal surveys across three different doctor groups at two time points.

Setting

Scotland, 2001/2 and 2006.

Participants

Consultants, General Practitioners and Staff and Associate Specialist (SAS) doctors working in the health service in Scotland.

Main outcome measures

Job satisfaction is measured using the Warr-Cook-Wall seven-point scale. Nine specific domains of job satisfaction and the overall level of job satisfaction were elicited. Attitudes to workload and working practices were measured

using a four-point scale. The 2006 survey also included direct questions on the attribution of changes in job satisfaction to the new contracts.

Results

Overall job satisfaction increased substantially between 2001 and 2006. These increases are largest for the two groups of doctors who have moved onto new contracts. The changes also differ across the domains of job satisfaction. Consultants and GPs recorded the largest increases in job satisfaction on remuneration, recognition for good work and hours of work. However, when asked directly, less than a third of consultants and GPs perceived an increase in their job satisfaction in the last two years. Consultants are less likely to attribute an increase in their job satisfaction to their new contract than are GPs.

There have also been positive changes in attitudes to workload and working practices. Whereas a majority of consultants and GPs agreed with most of the negative statements about their workload in the first survey, a minority agreed with these statements in the second survey. However, a majority of doctors continue to express concern about the capacity for them to delegate tasks to staff that they perceived could perform them equally well. Many more GPs than consultants consider that their new contract has resulted in improvements in the quality of patient care.

Conclusions

The new contracts were designed to affect the working lives of doctors with the aim of improving patient care. There have been substantial improvements in the job satisfaction and workload attitudes of doctors working in the NHS in Scotland in the last five years. These increases have been largest for the two groups for whom there has been contractual reform.

Evidence from previous studies suggests that these improvements in job satisfaction and workload attitudes should have longer-term consequences for quality, productivity and the recruitment and retention of doctors and these are worthy of future research.

The Supply and Demand of Physician Assistants in the United States: A Trend Analysis

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Purpose

The physician assistant (PA) profession role in the U.S. continues to expand. At a time when healthcare workforce researchers concentrate on doctors, attention to non-physician clinicians (NPCs) is under studied. At more than 110,000 clinically active PA/NPs the supply of NPCs, such as PAs, could significantly influence demand requirements in medical workforce projections. We predict supply of and demand for PAs: a supply model utilized the number of certified PAs, the educational capacity (at 10% and 25% expansion) with assumed completion rates, and retirement assumptions. Gross domestic product (GDP) chained in 2000 dollar and U.S. population were utilized in trend analyses with the number of PAs as the dependent variable.

Historical analyses revealed strong correlations between GDP and US population with the number of PAs ($R^2 = 0.979$ and 0.983 respectively) similar to Cooper's correlative findings for doctors. The number of currently certified PAs (as of 2006 = 59,629) represents approximately 75% of the projected demand. At 10% growth, the supply and demand equilibrium for PAs will be reached in 2012.

Robust application trends in PA education enrollment with 2.2 applicants per seat for PAs (same as for allopathic medical school applicants) and PA program capacity support this predicted increase. Factors affecting the supply and demand for PAs are needed in the areas of retirement age rates, gender, and lifestyle influences. Specialization trends and visit intensity levels are potential variables. Implications of increases in medical school output and declination of nurse practitioners are required adjustments.

Maximising Our Options: The Future of Medical Delegation in Queensland, Australia

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Objectives

To influence government policy on the adoption of delegated roles within the Australian healthcare sector and to canvas a

consensus pathway for the implementation of such programs.

Design

This poster presents the outcomes of part of ongoing advocacy for the uptake of delegated roles to address Australia's health workforce shortage, particularly in rural and remote areas. The component presented here involved consultation with health workforce stakeholders aimed at examining the impact of existing national legislative barriers and training requirements for delegated practitioners including how this could articulate with existing professional pathways.

Setting

This workshop considered the potential of delegated roles within the context of both state and national healthcare systems.

Participants

The workshop was aimed at key stakeholders in health workforce innovation. Organizations and sectors represented included general practice, Indigenous health including Aboriginal Medical Services, Queensland state government departments (Queensland Health and the Department of Emergency Services), Australian armed forces, health workforce agencies, and Universities.

Main outcome measures

The key short term measure of the success of this consultation process is the development and dissemination of a consensus statement arising from the workshop. Long term measures include progress towards the recognition of delegated roles within the Australian healthcare system including the description of a delegated roles suitable for this context, a formal trail of delegated practice roles in Australia, legislative changes to support the uptake of these roles, and ultimately the development of a local training program for practitioners operating within a delegated practice model.

Results

A consensus document titled "The Mount Isa Consensus Statement on Delegated Medical Practice" was generated by workshop attendees. This includes key considerations and recommendations for the uptake of medical delegation in Australia such as the need to:

- be innovative in the delivery of Australian healthcare services;
- extend the scope of practice of existing health workforce roles through appropriate training;
- expand the health workforce through developing career pathways attractive to

people not currently working within the health sector; and

- support, both legally and financially, the uptake of a truly team-based approach to the delivery of health care.

The Mount Isa Consensus statement is available in its entirety from <http://www.micrrh.jcu.edu.au/>.

In addition, this event facilitated the further development of rural placement opportunities for American physician assistant students and the establishment of links to these programs with a view to implementing a pilot of the physician assistant role.

Conclusions

The movement towards the uptake of delegated practice models of service delivery in Australia is gathering momentum with key stakeholders across the health sector agreeing that this approach would be of significant benefit to Australian healthcare. It is likely that this will culminate in the implementation of a pilot project trailing the use of physician assistants in rural or remote Australia.

Physician Experiences with Diversity and Discrimination in Health Care: Results of a National Survey

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Background

Diversifying the U.S. physician workforce is a national priority. This goal arises from the rapidly changing demographic composition of the general population and the higher rates of morbidity and mortality among racial/ethnic minority group members. The Institute of Medicine recommended research into health care discrimination and physician workforce diversification to better understand these complex health care inequalities. Prior studies have begun to explore patients' perceptions of discrimination in health care settings, but our previous qualitative work found that physicians also witness and personally experience discrimination at work. However, the prevalence of these physician experiences has not been comprehensively studied. We, therefore, designed a national survey of practicing physicians to test the hypotheses

generated by our qualitative research with the following objectives:

1. To describe the prevalence of workplace discrimination personally experienced by practicing physicians
2. To describe the prevalence of workplace discrimination witnessed by practicing physicians
3. To identify the characteristics associated with reports of workplace discrimination by practicing physicians

Methods

We conducted a cross-sectional survey of a nationally representative random sample (n= 376 respondents, 37% response rate after mailing wave two of three) of practicing physicians in the U.S. using the AMA Masterfile and the membership roster of the National Medical Association to oversample for physicians of African descent. We used descriptive and bivariate analyses to examine the prevalence of two major outcomes: personally-experienced discrimination and witnessed discrimination and to examine the personal and professional characteristics associated with each outcome. We will use linear and logistic multivariable regression models to identify independent predictors once data collection is complete (Survey close date: February 2, 2007). We also queried participants on a range of views and experiences on diversity and discrimination in the health care system.

Results

Overall, 27% of respondents reported personally experiencing discrimination in their current work setting. Personal characteristics that were significantly ($p < .05$) associated with a report of personal discrimination included: gender (45% of women, 21% of men), race (47% of blacks, 22% of whites, and 30% of Asians, Native Hawaiians and Other Pacific Islanders, and Other), and nativity (38% of non-US born, 23% of US born). Significant ($p < .05$) professional characteristics associated with a report of personal discrimination included: number of promotions at current workplace (34% of zero, 33% of one to two, 26% of three to four, and 10% of five or more), exposure to AMA code of ethics (28% of exposed, 15% of unexposed), and work setting (19% of those in hospital-based practice, 20% in private group practice, 24% in academics, 30% in community health centers, 35% in industry, 36% in solo practice, and 53% in group/staff model HMOs).

When asked if they sometimes, often, or very often witnessed unfair treatment at work, participant's affirmative answers ranged from

10% due to physical disability to 32% due to race/ethnicity. Unfair treatment was most often directed towards patients and their families (28%), nurses (28%), and support staff (28%) and less often directed towards colleagues (24%) and supervisors (14%). When asked if the healthcare system sometimes, often, or very often treated individuals unfairly based on personal characteristics, the number of affirmative responses increased considerably, ranging from 25% due to religion to 71% due to insurance status. The majority of respondents (59%) were exposed to the AMA's Code of Ethics, but only 30% reported that issues of discrimination are discussed in their workplace.

Conclusions

Practicing physicians report witnessing and personally experiencing discrimination in the workplace and state that the healthcare system treats individuals unfairly based on personal characteristics. Understanding the provider perspective is essential to support a diverse workforce and design interventions that counteract discrimination in the health care system for both providers and patients. The insight gained from this project has important policy implications as the results can inform efforts to:

- prevent discrimination in healthcare workplaces and
- recruit, retain, and support a diverse medical workforce

Supporting the Remotely Interested – The Role of University Departments of Rural Health in Recruiting and Retaining a Remote Australian Health Workforce

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Objectives

To outline the outcomes of the University Department of Rural Health Program in Mount Isa and provide a brief synopsis of the national program from accumulated data.

Design

A descriptive study outlining:

- Health student placements, professional assistance and infrastructure including accommodation, IT support and the provision of a Library services

- Local delivery of nursing and Indigenous Health Worker training.
- Delivery of clinical and research related professional development as well as support of clinical Grand Rounds and other educational opportunities
- The development of innovative programs in health workforce planning.

Setting

In 1996 the Commonwealth Government of Australia commenced implementation of the University Departments of Rural Health (UDRH) initiative and currently funds 11 of these organisations nationwide. UDRHs have developed an approach compatible with the community in which they operate which has resulted in considerable variability in organisational form and structure. National key performance indicators have been defined. These include the outcomes:

- To increase and improve rural experiences for health science students (key measures are number of student placement weeks, and level of satisfaction with placement)
- To expand educational opportunities that are relevant for rural and remote practice – key measures are: number of students attending courses delivered through the UDRH
- To support rural health professionals, consumers, and communities – key measures are: number of hours of professional development activities delivered.
- To embrace a strong population or public health focus; and contribute to the development of innovative service delivery models in rural and remote health – key measures include: report on involvement in the development of innovative models of service delivery.
- To enhance the development of Indigenous health through education, training and research, affirmative employment opportunities for Indigenous people in Universities.

The Mount Isa Centre for Rural and Remote Health (MICRRH) was established in the city of Mount Isa (population 25,000 approx.) in 1997. Mount Isa is located in the north west of Queensland, Australia, and is the centre of the Mount Isa Health Service District (MIHSD) which includes 10 settlements with state government health facilities. The population of the MIHSD is approximately 34,000 although these people are distributed over an area of more than 380,000 square kilometres (approx 146,000 sq miles).

Participants

MICRRH and the other UDRHs in Australia have collected individual and collective data describing the key performance indicators for the programs.

Main outcome measures

National data relating to the implementation of the UDRH program is compiled by the Australian Rural Health Education Network (ARHEN). Each UDRH collects its own data which is reported to the funding body separately. This poster will present a summary of the last 5 years of data relating to the key results areas outline above from both ARHEN and MICRRH.

Results

These results will include data currently being compiled for 2006 and available at the IMWC conference.

Conclusions

Understandably the impact of the UDRH initiative on the recruitment and retention of health professionals in rural and remote areas is difficult to determine. However, the UDRH program has been instrumental in the expansion of rural placement opportunities for students of health professions as well as providing ongoing professional support for existing rural health professionals.

The MICRRH program in particular has also filled an important role in the development and implementation of workforce innovations including the development of a curriculum for expanded practice for paramedics and a training package for community based workers to function as therapy assistants for allied health professionals.

Extending the Capacity of an Available Rural and Remote Workforce Using Paramedics in Australia

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Objectives

Research completed by the Queensland Ambulance Service (QAS) demonstrated an underutilization of the ambulance paramedics sited within rural and remote communities which is an environment lacking in appropriately skilled health professionals. This presented an opportunity to provide an extended scope of practice for rural and remote paramedics. This project aimed to develop and implement a curriculum to provide clinical and population health skills which would integrate within the legislative and structural framework of rural and remote health services.

Design

This is a descriptive study into the rationale and structure of the curriculum, its policy implications and implementation across government and department sectors.

Setting

Queensland is characterised by a decentralized population with some 50% of the population living in provincial and regional communities. West of the Great Dividing Range all of the communities are of less than 25,000 people, the majority less than 10,000. Health Services are provided by a mixture of small hospitals, remote nursing stations, with a mixture of private, public and shared medical practitioners. The Royal Flying Doctor Service (RFDS) and QAS provide outreach primary health care and emergency retrieval services.

Participants

The participants in this study are rural and remote paramedics who in general spend between 5 and 20% of their working time on emergency services for which their training is targeted.

Main outcome measures

The curriculum identified two initially significant areas for expansion of Rural and Remote Paramedic Practitioners (RRPP) skills:

1. Clinical skills in examination, assessment, management and administration of pharmaceutical and other therapies.
2. Population health skills including Aboriginal health, mental health, chronic disease and diabetes, infectious disease and health promotion.

Results

Consultation and research completed by the QAS demonstrated the capacity and desire of the QAS paramedics to be enrolled, trained and integrated into the state health system. In the 2004 Queensland election the Premier, and the respective Ministers of Emergency Services and Health, announced funding for three cohorts of

20 rural and remote paramedics to complete this Graduate Certificate of Rural and Remote Paramedic Practice.

To integrate the clinical component of the paramedic practice into the broader context of the health system, they are to complete a modified Remote Isolated Practice for Enhanced Rural Nursing (RIPERN) curriculum, which has been standardized for Queensland nursing and utilizes the shared text "The Primary Health Care Manual" to coordinate protocols across all sectors of rural and remote health in Queensland.

The Population Health component is provided by modules developed for a national curriculum which was designed to integrate population health into generalist practice in the context of a multidisciplinary team approach.

Two cohorts (40) rural and remote paramedics are completing their RIPERN courses and will then proceed to their population health component. Sixty students will have completed this course by mid-2008.

Conclusions

The use of available health personnel to their maximum potential makes sense in an area of significant workforce shortage. Integration of these extended roles into health services requires support, education, policy change and political will to overcome professional and legislative barriers.

Allocation Methods to Enhance Graduate Medical Education

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Background/Rationale

In 2005, an external, federally-chartered advisory committee recommended that the Department of Veterans Affairs (VA) should

increase the number of physician residents in geographic areas and at sites of care where there are increased capacities to train and in areas of high relevance to VA. Based upon the recommendations of the advisory committee, VA leadership committed to the expansion over a 5-year period of VA's proportionate share of US physician resident positions from the existing 8.5% (about 8,900) to its historic 10-11% (an increase of 1,500 to 2,000, total).

Purpose

The abstract addresses critical policy, planning, and methodological objectives regarding expansion and the distribution of additional physician residency slots in a national healthcare system through an innovative, competitive, and geographically sensitive allocation process.

Methods

Our objective was to develop a process and methods to increase the number of VA physician resident positions across in the VA system of 127 affiliated hospitals by taking into account:

- a) the quality of the training experience and the facility's educational infrastructure;
- b) the existing uneven distribution of resident positions by geographic region within the VA system when demographics are taken into account; and
- c) the projected physician shortage, the attempts of medical schools to increase the number of undergraduate medical students, and VA plans for construction of new facilities.

VA databases regarding the distribution of residents, resources, and clinical workload were used for analyses of the 'capacity' to train residents. A sophisticated econometric measure of resident involvement in patient care, the Resident Education Index, was designed to compare facilities and broad specialty groupings (i.e., medicine, surgery, and mental health) within facilities. The allocation method took into account the priority (quality) score from a review panel of education experts and the Resident Education Index for each facility and specialty grouping.

Outcomes

In August of 2006, Office of Academic Affiliations (OAA) used a competitive process to award 300 new positions to 50 facilities who applied to a request for proposal (RFP) for "critical needs and emerging specialties." An additional 42 positions were awarded to 13 facilities under a "new affiliations and new sites

of VA care" RFP. The system wide allocation process developed resulted in more than twice as many positions going to areas of greatest need for patient services – i.e., the Southeast and the West (including Southwest and Northwest) – as compared to the Northeast, Mid-Atlantic, and Midwestern states. Overall, only about 50% of requested positions could be approved for funding due to resource limitations. However, subsequent allocation cycles should provide for additional expansion using similar methodology.

Findings/Implications

The presentation will provide an update on one of VA's most important GME initiatives in over 10 years. Of note, we will report on the development of sophisticated methods to effect systemwide, demographically appropriate allocations of resident positions that not only take into account the quality of the educational infrastructure but also are defensible from a public health and public policy perspective.

Growth and Change in the Physician Assistant (PA) Workforce in the U.S.: 1967-2001

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Purpose of study

Since the late 1960s, the number of PA training programs and practicing PAs has experienced meteoric expansions. By 2000, there were 40,000 clinically active PAs in the U.S., and the total continues to expand. Likewise, PA clinical scope of practice has continued to broaden and standardize, although it varies across the nation's states. PA's now account for a significant proportion of both the primary and specialty care in many states and especially critical in providing access to primary care. The purpose of this study is to provide a numerical and geographic portrait of the PA expansion in the U.S.

Data sources and study design

PA data on member and non member were obtained from the American Academy of Physician Assistants and covers the period from 1967 to 2001. The PA data were then linked to county information from the BHP's Area Resource File. Geographic analyses included Census divisions, states, and rural-urban status using aggregations of the Economic Research Service's county-based Urban Influence Codes.

Key findings

Over half of the practicing PAs in 2000 were women – a dramatic increase over the study period. By 2000, 62% of graduating PAs were women compared to the late 60s and early 70s when nearly all graduates were men. About 18% of PAs practice in non metro (rural) counties, a decrease. PAs mirror the nation's population with 82% of PAs located in urban areas compared to 80% of the population. The PA to 100000 population ratio in 2000 was 14.4 for urban and 13.0 for rural areas compared to 1980 ratios of 4.7 and 4.3). Primary care participation has decreased but has stabilized at about 48%. Of the PAs practicing in primary care in 1991, 25% were practicing in specialty care in 2000. More than half of all PAs were practicing within the state where they were trained. The profession has grown rapidly; 56% of all PAs were trained during the 1991-2000 period. All or nearly all PAs practicing in many states were trained in other states (e.g., Virginia, Montana, and Maine) but many states train a large percentage of their practicing PAs (e.g., Kansas, West Virginia, and New York). In 2000 over 42% of accredited PA programs offered a Master's degree while in 1986 there were none. The number of PA programs in the U.S. has increased from six in 1969 to 116 in 2000, with a substantial number of programs opening in the late 1990s.

Implications and policy relevance

Though many critical issues of scope of practice and patient and physician acceptance of PAs have been resolved, the PA profession remains young and continues to evolve. Whether or not the historical contribution of PAs to primary care for rural and underserved populations can be sustained in the face of increasing specialization and higher level academic credentialing is not clear. In a time of waning interest in primary care by medical students, these trends are especially significant and can have an important influence on access to primary care.

Physician Distribution in the United States

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Purpose of study

An enduring characteristic of the rural health care delivery system is the shortage and maldistribution of health care providers.

Despite a cornucopia of federal, state, local, and institutional initiatives, most of the important shortage issues persist. The purpose of this study is to provide an updated description of the nation's allopathic and osteopathic physician geographic distribution using Rural-Urban Commuting Areas (RUCAs) and travel time.

Data sources and study design

Allopathic physician data were obtained from the AMA master file and Osteopathic physician data were obtained from the AOA master file. Physicians were included in the analyses if they were under 70 years old, not residents, not federally employed, and patient care physicians. RUCAs were used to categorize physician location based on community population and work community work commuting patterns. RUCAs were aggregated into four categories: urban, large rural (LR), small rural (SR), and isolated small rural (ISR). Travel times were calculated along the fastest paved road route from the population centroids of ZIP code areas to the population centroids of the shortest travel time urban area and/or urban cluster. Analyses were performed by physician specialties at the national, division, and state scales. Generalist physicians were narrowly defined as family medicine, general pediatrics, and general internal medicine.

Key findings

While the nation's rural areas had 19% of the population they had 11% of the patient care physicians (the comparable percentages for only SR and ISR areas were 9.5 and 5.3). In ISR areas, 68 percent of physicians were generalists (mostly FPs) with 5% general surgeons, 4% emergency medicine physicians, 3% psychiatrists, and 3% OB/GYNs. In LR areas, only 42% of the physicians were generalists. By state, the rural generalist physician to 100000 population ratios varied dramatically. For instance, the national average ratio for ISR areas was 36 but in 15 states the ratio was below 30 – the LR national ratio was 61. Over 10% of rural generalist physicians were DOs and over 19% were international medical graduates (IMGs). The percentage of generalists who were DOs by the nine Census divisions ranged from 7% to 15% and the similar figures for IMGs ranged from 9% to 31%. By state, DOs represented more than 20% of rural generalist physicians within 5 states and less than 10% in 32 states. IMGs represented more than 30% in 6 states but less than 10% in 10 states. Among all generalists, rural generalists were relatively older and more male than in urban areas. For patient care physicians, the physician to population ratio for ISR areas 60 minutes or greater one-way travel time to an urbanized area was 53 compared to 210 in urban areas.

Implications and policy relevance

There are dramatic variations in the distribution of physicians across urban and different types of rural areas, Census divisions, and states with regards to physician specialties and characteristics, MD/DO status, and IMG status. The RUCA geographic taxonomy proved to be an excellent analytical tool for analyzing physician distribution.

What Contributes to Physician Assistant Retention In Rural Communities?

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Introduction

The raison d'être for developing, educating and deploying physician assistants (PAs) in the United States was to enable physicians to meet the medical needs of vulnerable populations. One such population consists of rural residents; PAs have historically been part of meeting their needs. However, for the past two decades PAs have been seeking employment opportunities in urban rather than rural areas. This dwindling medical workforce in remote locations has created a challenge for health policy makers and PA educators. However, in spite of the trend towards urban practice, a significant cadre of PAs continues to work in rural areas with needy populations.

We set out to understand what factors contribute towards retention of PAs in rural clinical practices. Our hypothesis is that there are common elements in the town or individuals that strongly contribute to their retention.

Method

We undertook a *qualitative* study on autonomous and isolated rural PAs in Texas. Eight PAs and the town residents were interviewed. Retention of PAs in isolated locations seems to be a determinant of the ability to work alone and rely on their skills as PAs.

- (1) Work autonomously in a rural clinic;
- (2) Average no more than 8 hours per week of face-to-face interaction with the supervisory physician (who is at least 30 miles away);
- (3) Work as the sole medical provider in the community;

- (4) Have worked in the community for more than 24 months prior to interview.
- (5) The town is less than 5,000 population

A research team consisting of a medical workforce researcher, a medical anthropologist, and a research assistant visited each town or "census defined population" (some towns were unincorporated). Interviews were conducted with the PA, the clinic personnel, the postmaster, the mayor or city clerk and staff, and the supervising doctor. Following this a focus group session of 8-14 town residents was convened to probe for issues surrounding the role of a PA in a small town and what enablers and barriers existed for healthcare access.

Results

Eight Texas towns and PA practices were visited and they range in population from 450 to 3,500. All are geographically isolated from other towns and none are near interstate highways. Quantitatively the degree of "ruralality" ranged from 5-10 (*Rural Urban Commuting Area Score: 1-10*). The median age of those living within the census defined population is 41.6 years. In the aggregate 44% of all residents in the town surveyed are 65 years old or older (Medicare age). Most of the towns receive limited tax revenue with ranching and farming often a primary industry. Economically a school or a small industry such as a lumber company tends to be the largest employer in the town.

All of the PAs worked in the town for more than two years (range 2.5 to 10.5 years). The variety of diagnoses are typical for a family medicine oriented practice and caseloads ranged from 1600 to 3500 patient visits per year. All but one PA was salaried, but some receive additional remuneration for patient visits. The compensation of the PA was not identified as a factor in their retention.

Most of the PAs maintain a prominent role in the town through civic involvement outside the clinic (e.g., President of the Lion's club, County Coroner, Civic Achievement Award, County Health Officer, etc.). The issue of a PA versus a physician was one of the questions; the prevailing town resident view was that a PA was better than no provider and the town was not large enough to sustain a doctor.

Half of the medical clinics were constructed within five years and most are owned by a hospital located in an urban area more than 30 miles away. Accounts are administered by the home institution and the lack of correct invoices was a contentious issue mentioned by many of the PAs and patients. Specifically the billing department did not always assign the correct diagnostic or procedure codes for a

visit, which spilled over to patient complaints regarding the PA.

Assessment

The critical elements for retention of rural and autonomous PAs in this study is the desire to live in a remote area; the support of the town for a PA staffed clinic, and the confidence of the PA to work without direct supervision.

Discussion:

We suggest that the role of a PA in a rural community is both an economic and a social stabilizing force for many rural residents. For example, the presence of a medical provider in the town was mentioned as a determinate for families with young children as to whether they will remain in the town or leave for locations where more medical care is available. Medicare age and Medicaid eligible residents are the least mobile of all town occupants, tend to rely on the PA for select needs more than comprehensive ones (minor injury, hypertension management, prescription refill, forms completed, etc.), and may benefit the most by a clinic nearby. For the rural health PA we observed that he or she ranks second or third in terms of social prominence in the town and postulate that this may contribute to their retention. Most (but not all) PAs have the option of moving elsewhere for employment but we hypothesize that the amenities of small town society may contribute to their retention. Deterrents to retention center on relationships with the employing hospital.

Conclusion

Rural towns that wish to attract PAs to staff small volume clinics may want to identify individuals who have the confidence to work alone, enjoy rural life and have an adequate clinic infrastructure in place for their employment.

'Hospital at Night' – Safer Care, Safer Training

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Purpose

The 'Hospital at Night' (H@N) concept is a radical whole system approach to service provision out of normal working hours. It is designed to improve the safety of patient care and the quality of physician training. The

concept is that out of hours care between midnight and early morning should be organised on a hospital-wide basis, and not by departments or staff groups. The tasks that are required for patient care at night in that hospital must first be analysed; the skills need to deliver care agreed and a coherent multiprofessional team approach developed in which physicians in training participate according to their competence and not to learn by experience. The Working Time Directive (WTD), which reduced the working hours of doctors to 56 hours per week, gave English hospitals the incentive to implement this concept, and four pilot sites were set up. The results suggested that the concept worked and patient safety was enhanced by this team approach. The concept has since been implemented in many other hospitals with varying degrees of success. The current study was designed to reveal the degree of uptake and factors leading to successful implementation.

Method

Nine factors or 'enablers' associated with success were identified. A survey instrument was developed to explore whether these were in place in hospitals across England. These enablers were as follows:

- Organisational ownership
- Clinical leadership
- Handover and communication
- Infrastructure
- Clinical and risk governance
- Competence based practice
- Training
- Clinical audit
- Whole systems working

Key findings

45% (83/182) of acute general hospitals responded to the survey.

48% of these were implementing Hospital at Night (H@N) and had a project team. 40% were planning to implement H@N but had no project team. 12% had no plans to implement H@N.

Hospitals that were successfully implementing H@N had an implementation team and dedicated project management time; support from executive directors; and clinical leadership. These hospitals also reported that they were making progress with handover, clinical risk assessment and training in H@N competences. Challenges identified were as follows: 49% of hospitals identified financial obstacles. Lack of clinician 'buy in' was identified by 16% as the reason for slow implementation. 14% of hospitals were having difficulty adapting the H@N model for their

service. Ten hospitals highlighted areas of good practice that they recognised would benefit the wider health community, including electronic handover and audit systems.

Implications and policy relevance

This study encourages us to develop the H@N model further to meet the challenge of a 48 hour working week in 2009. A good practice reference group has been set up to explore 'benefits realisation' with a focus on the financial benefits of successful implementation. These include direct savings eg reduced out of hours payments to trainees, and indirect, e.g. reduced length of bed occupancy resulting from better management. The extension of the H@N model to 24/7 is being piloted in several hospitals and the areas of good practice identified in the survey will benefit these projects.

Is Community Based Medical Education the Answer to Rural Doctor Workforce Shortages?

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Objectives

To determine the critical factors that has influenced the career pathways of graduating medical students of the internationally recognised Parallel Rural Community Curriculum since its inception in 1997.

Design

This study explores the evidence on factors that have influenced the career pathways of Australian medical graduates. The analysis will inform a further study of graduates of the Parallel Rural Community Curriculum (PRCC) with the aim of improving curriculum design and medical education policy development.

Setting

The Australian Government has invested heavily in a national strategy to address the rural doctor workforce shortage in the past decade. As part of this strategy the Parallel Rural Community Curriculum was established as a pilot program in 1997 in the Riverland region of South Australia in collaboration with Flinders University and the private medical practices and health services of the Riverland.

Students studying in the PRCC spend their entire third year based in rural general practice as compared to the majority of students who

study in the tertiary teaching hospitals in Adelaide. The students in the tertiary hospital setting study Surgery, Medicine, Paediatrics, Women's Health, Psychiatry and General Practice in separate sequential blocks. Students in the Parallel Rural Community Curriculum study these disciplines in an integrated fashion throughout the whole year as their learning is based around the patients they see in their consulting sessions at the medical practice. As one student explained, "Our curriculum is determined by whatever patient walks through the door. By the end of the year we have covered the whole course many times over". All students sit the same exams at the end of the year.

The PRCC is a leading community based medical education program in Australia and has demonstrated the feasibility, effectiveness, and sustainability of basing medical education in private community-based practice. There is a need to examine the workforce outcomes of this initiative.

This study synthesises the current literature on the outcomes of the Australian Government's national strategy to address the rural doctor workforce shortage. The study of the graduates of the PRCC adds to this body of knowledge and links this educational initiative with workforce outcomes.

Participants

The participants are the alumni of the PRCC (n=100).

Main Outcome measures

The main outcome measure of the study is the identification of the key elements that have influenced the career pathways PRCC graduates.

Results

This study informs a future study of graduates of the Parallel Rural Community Curriculum. The PRCC is unique in providing an opportunity to explain why medical students choose a rural career.

Conclusions

International literature has shown that rural origin students and students experiencing early and repeated rural exposure in undergraduate and postgraduate training are more likely to practise in a rural location.

The relative short history of the Australian intervention strategies has resulted in a lack of empirical evidence of their workforce outcomes over the past decade. This study will add to this body of knowledge.

Retention of U.S. Physicians in Rural Counties, 1991 to 2003: Sex and Race Affect Probability of Long-Term Rural Practice

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After years of projecting an imminent physician surplus in the United States, policy makers have reversed their positions and are predicting an emerging physician shortage. A range of policy interventions to increase the overall supply of physicians have been proposed but policies specifically aimed at improving the distribution of physicians in rural areas have been less forthcoming. The vast majority of research on the distribution of physicians in rural areas has focused on factors that predict the physician's decision to locate in a rural area, not his/ her decision to continue practicing there. What are not well-understood are the characteristics of the U.S. physician workforce that predict long-term retention in rural practice.

Understanding the dynamics of rural physician retention is important in the context of an emerging physician shortage and given the rapidly changing demographics of the physician workforce. Researchers have documented that female physicians are less likely than their male counterparts to practice in rural areas, and that important gender differences exist between male and female physicians regarding the choice to locate in a rural area and the issues that face them once in practice. While both women and minorities represent an increasingly important component of the physician workforce, research that investigates how being female or from an under-represented race or ethnic group predict retention in rural areas is largely absent from the literature.

This analysis employed a logistic regression model to predict the probability that a physician remained in a rural county between 1991 and 2003. Data used in the analysis are from the American Medical Association (AMA) Physician Masterfile. The full files for 1991 and 2003 were merged by AMA unique identifier and physicians who had records in both years, were clinically active in both years, and who had a primary practice location in a rural county in 1991 were extracted. Variables included in the model were the physicians' sex, race, age, specialty, length of time in practice

and medical credential (DO vs MD), as well as county-level changes between 1991 and 2003 in population; per capita income and education; physician supply; and the number of hospitals in the county.

Results from the logistic regression reveal that female physicians have a predicted probability of remaining in a rural area that is 8 percentage points lower than their male counterparts. Being Black, Hispanic, or of another race or ethnicity decreases the probability of remaining in a rural area by an average of 12.5 percentage points relative to white physicians. Being an Asian physician has a smaller marginal effect, decreasing the probability by 3.7 percentage points relative to white physicians.

This analysis suggests that policy levers designed to increase retention of rural physicians should be aimed specifically at women and minorities who not only make up an increasingly large proportion of the workforce but who are also more likely to leave rural counties. Current policy interventions such as the National Health Service Corps and AHEC programs are not specifically designed with these two physician populations in mind.

Indigenous Alaskan Community Health Workers Transitioning to Physician Assistants: The MEDEX Northwest Experience

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The MEDEX Northwest Physician Assistant Program at the University of Washington was created in the late 1960s. Since 1982, this program has been actively involved with Alaskan tribal groups to identify, recruit and train Alaska Native and American Indian health workers for training as physician assistants (PAs). These graduates of the MEDEX program have returned to their home communities or regions for employment as both PAs and supervisors of community health workers, and they have also become community leaders.

Alaska tribal groups are known for their unique solutions to healthcare and community problems. Often these situations arise through the unusual and remote circumstances of Alaskan village life. Faced with the problem of consistent delivery of new tuberculosis (TB) medications in the 1950s, Alaska village groups created the occupation of community health aides (CHAs) to serve local communities through daily home visits to deliver and monitor oral TB treatments. Village governments selected candidates, who were

often the “best mom” in the village, for training. Soon the new CHAs were trained for and assigned expanded responsibilities to deliver basic primary care services in the villages supervised by physicians—and now also by PAs and nurse practitioners—through the regional Native hospitals. Before long these health workers were eligible to receive more advanced formal training at the level of community health practitioners (CHPs). Currently, over 540 CHAs and CHPs provide 24/7 coverage for Native villages throughout Alaska.

In the early 1980s, there was recognition that the CHA and CHP careers were losing their attraction due to a lack of potential for upward mobility. One proposed solution was to create a pathway into the MEDEX program to allow some health aides to achieve new professional status as physician assistants. Alaska Native health corporations agreed to support this training for individuals who promised to return to their home communities or regional centers. Since 1982 the MEDEX program has trained over 40 CHAs and CHPs as PAs, with almost all of them currently practicing in Alaska, and most returning to their communities of origin.

Augmenting PA programs that draw upon the culture, custom and the tradition of local people has created an opportunity to improve the health and well-being of indigenous people in North America and at the same time provide opportunities for upward mobility and career enhancement for health workers in rural and medically underserved communities.

**Converting Military Corpsmen to Civilian
Physician Assistants:
The MEDEX Northwest Experience**

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MEDEX Northwest, the University of Washington’s Physician Assistant Program, has a 40-year history of recruiting military healthcare personnel for training as physician assistants (PAs). The deployment of these individuals to medically underserved communities, especially in the rural communities of the Pacific Northwest, has been a key component of the MEDEX program’s success in meeting the primary care needs of the region.

As one of the first PA programs, MEDEX was designed to serve the doctors of the region by providing additional medical training to military corpsmen and medics returning from Viet Nam and other medical posts. Jointly sponsored by

the Washington State Medical Association and the University of Washington School of Medicine, the program was launched in the late 1960s. Designed for the creation of a new health profession, it included an active recruitment process, the development of a receptive framework (to facilitate licensure laws and reimbursement regulations), a selection process that included physicians who would be the first employers, and the development of a curriculum that drew on prior experience. It also included prospective physician employers, a deployment strategy to assure that graduates settled in communities of need, and a life-long learning process through continuing medical education.

The MEDEX program is recognized as being one of the most active programs that converts armed forces healthcare staff into PAs, with 25–40% of the class composed of former military personnel. This is accomplished by including former uniformed services PA role models throughout the region, informal networks among corpsmen and medics, promulgating the MEDEX program’s supportive culture, and the program’s tradition of valuing military medical experience. MEDEX conducts program information sessions on military bases throughout the Northwest, and the program’s selection interview process includes former military PAs as evaluators. In addition, many MEDEX faculty members and clinical instructors have a military background, which allows the program to offer unique support for students experiencing transition issues between military and civilian healthcare roles.

Longitudinal data from the MEDEX Northwest program demonstrates that graduates remain in PA roles at high retention rates, and often work in medically underserved areas.
