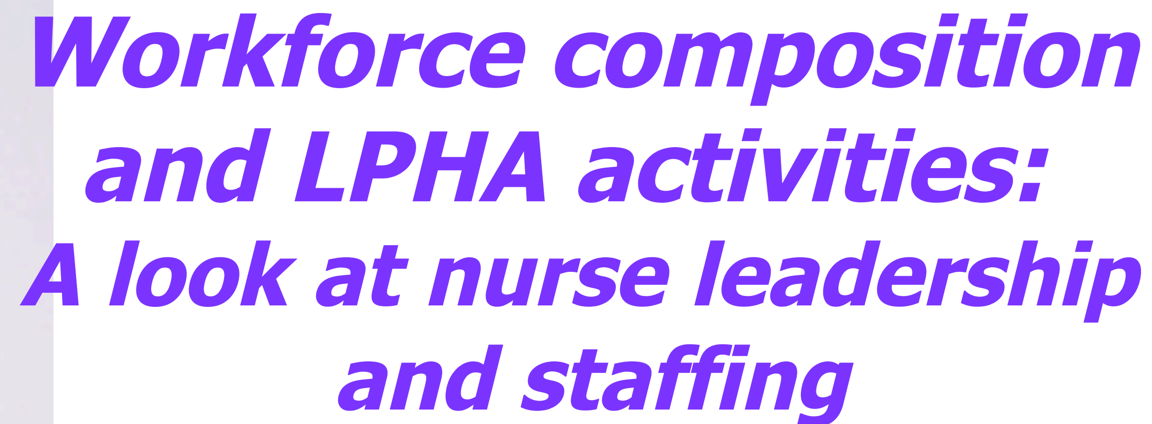

Workforce composition and LPHA activities: A look at nurse leadership and staffing

April 10, 2008

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Research Question

- Is there a relationship between
  - An agency having a nurse as their "top executive,"
  - the proportion of nursing staff in a LPHA, &
  - the activities that the LPHA performs?

Research Significance

- Research has shown:
  - Nurses comprise the "largest identified professional group" in the LPHA workforce Gebbie (2001)
  - Significant differences exist in some areas of LPHA performance when LPHAs are led by a nurse (Scutchfield, 2004)
  - Nursing leadership may have a direct influence on LPHA capacity (Scutchfield, 2004)
- PHSR leaders have called for:
  - Exploring ways in which "PHNsg differs from other PH professions" (CoL, 2005)
  - Examining "the effects of alternative staffing levels and models employed within state and local public health agencies" (AcademyHealth, 2007)

Research Approach

- Cross-sectional, descriptive design
- Use of secondary data
  - NACCHO *2005 National Profile of LPHAs* (N= 2,300 LPHAs)
- Analyses
  - Bivariate correlational tests
  - ANOVA
  - Linear & Logistic Regression

Definitions

- Nurse as “lead executive”
  - Lead executive with “any nursing degree”—RN, BSN, MSN
- Proportion of nurse staff
- Programmatic activities
  - NACCHO activity domains

Public Health
Prevent. Promote. Protect.

LPHA Activity Domains

Domains	# of item in Domains (Range of Scores)	Sample Items
Immunizations	0-2	Adult immunizations, Childhood immunizations
Screening for diseases/conditions	0-8	HIV, TB, STDs, CVD
Treatment for CD	0-3	HIV, TB, STDs
MCH	0-5	Family Planning, WIC, EPSDT
Other Health Services	0-5	Comprehensive primary care, Oral health
Epidemiology and Surveillance	0-6	Infectious disease, Injury, Environmental health
Population-based Primary Prevention Services	0-7	Injury, Obesity, Tobacco
Regulation, Inspection, and/or Licensing	0-19	Daycares, Solid waste disposal, Private drinking water
Other EH activities	0-11	Indoor air, Food safety education, Vector control
Community Health Assessment (within the last 3 years)	Yes/No	N/A
Developed/Participated in health improvement planning (within the last 3 years)	Yes/No	N/A

Findings:
Nurses as "top executives"

- 34% (n=786) of LPHAs had a "top agency executive" who held a nursing degree

- Almost 60% of the nurse "top executives" led LPHAs serving fewer than 25,000 people

Findings:
Nurses as "top executives"

When compared to LPHAs led by NON-nurses….

- Nurse Lead Executives were significantly *more* likely to
  - Lead in a jurisdiction of <100,000 residents (mean population size = 62,757)
  - Work full time
- Nurse Lead Executives were significantly *less* likely to
  - have a graduate degree (although 40.7% masters or doctoral preparation)

Findings: *Proportion of Nurse FTEs*

- Has a significant inverse relationship w/ population size
- Significantly associated with having a nurse "top executive"

Findings:
Proportion of Nurse FTEs

Pearson Correlation between Activity Domains and **Proportion of Nurses** in an LPHA

Activity Domains (n = 1744 - 1812)	Proportion of Nurses
Immunizations	.263(**)
Screening	.088(**)
Treatment	.011
MCH	.107(**)
Health Services	-.024
Epi	-.026
Prevention	.059(*)
Regulation	-.317(**)
Environmental Health	-.252(**)

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Findings:

LPHA Activities relative to RN leaders

When compared via t-test to LPHAs led by NON-nurses….

- With an RN as leader, LPHAs tended to do significantly *more*:
  - MCH
  - Prevention (E.g. Injury, Tobacco, Pg)

  ….particularly in the jurisdictions of <100,000
- With an RN as leader, LPHAs did significantly *less* (generally regardless of population size):
  - Regulation/Inspection
  - Other EH Activities (e.g. Food Safety, Vector Control)

Significant relationships between Activity Domains and **Nurses as Lead Executives**

	All Populations	Mean	Score range	Std Deviation
Immunizations	p=000 (+)	1.892	0-2	.431
Screening	p=.030 (+)	4.763	0-8	2.233
Treatment		1.482	0-3	.977
MCH	p=.004 (+)	2.234	0-5	1.330
Health Services		.844	0-5	.999
Epi		2.879	0-6	1.708
Prevention	p=.000 (+)	3.016	0-7	2.184
Regulation	p=.000 (-)	5.046	0-19	4.472
EH	p=.000 (-)	2.221	0-11	2.437

Findings:

LPHA Activities relative to RN leaders

When compared to LPHAs led by MDs (n=370; 16%)….

- Both RN-led LPHAs and MD-led LPHAs provided significantly *more* **immunizations** than non-RN or non-MD led LPHAs
- MDs provided significantly *more* **regulatory** services than their non-MD counterparts
- No significance among MDs relative to screening, MCH, prevention, or EH

Assessment & Planning

- When compared to LPHAs led by NON-nurses....Nurse Lead Executives were significantly *more* likely to
  - Be at a LPHA that had completed a community health **assessment**
  - Be at a LPHA that had participated in a health improvement **plan**

  ....particularly in jurisdictions of <100,000
- Proportion of Nurse FTEs was positively and significantly associated with
  - Having completed a community health **assessment**
  - Having participated in a health improvement **plan**

  ....particularly in jurisdictions of <50,000

Preliminary Regression

- Population size is the strongest predictor of LPHA activity in any domain
- Nurses explain some of the variation in services provided by LPHAs
  - Nurse leaders appear related to *more* **immunizations** and **prevention** activities
  - Higher proportions of nurse staff appear related to *more* **immunizations**, **treatment**, and **health services** activities
  - Both nursing leaders and more nursing staff appear related to *less* **environmental health** and **regulation**

Preliminary Regression (con't)

	DV-Nurse Top Executive (Logistic Regression)		DV-Proportion of Nurses (Linear Regression)	
	Sig.	Relationship	Sig.	Relationship
Immunizations	**	+	**	+
Screening		0		0
Treatment		0	*	-
MCH		0		0
Health Services		0	*	-
Epi		0		0
Prevention	**	+		0
Regulation	**	-	**	-
Environmental Health	**	-	*	-

Controlling for population size as a continuous variable

Discussion

- Nursing leadership and staffing in an LPHA may have a predictable impact on the constellation of services provided and the amounts of a service type
- Nursing leadership and staffing appear to add positively to the level of population-based activities provided or conducted (prevention, assessment, planning) by a LPHA
- There is an apparent disconnect between nursing staff and leaders and activities related to environmental health and regulation

Discussion:

Reflections from PHNs in Practice

- Why is there such a strong negative relationship between Nurses & Environmental Health?
  - "Nurses not adequately educated in EH"
  - "Nursing perspectives are antithetical in some ways to the regulatory processes"
- Why might LPHAs w/ a nurse as leader be more likely to have done a community assessment and a PHIP?
  - "Nurses educated in the nursing process (including assessment & planning) & a broad, holistic view of health"

Discussion:
Reflections from PHNs in Practice

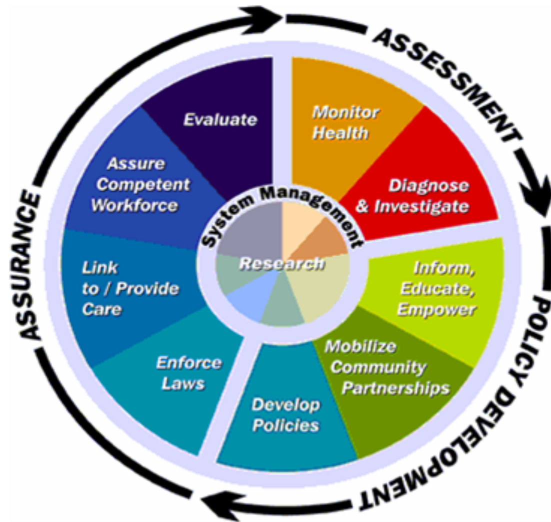
- What is it about RNs that they are more likely to offer clinical services when this doesn't hold true for MD's?
  - "MDs are often 'absent' & RNs provide what appears to be the community need"
  - "RNs are socialized to provide more direct services"

Limitations

- Cross-sectional design
- The number of items in Activity Domains vary widely—less variation among the non-EH domains
  - Did not account for the truncation related to the limited range of scores for some activities
- Causation could not be determined between nurse staffing/leadership & LPHA activity

Implications

- Workforce and leadership configurations in LPHAs
  - may have an impact on important health outcomes being addressed by LPHAs
  - should be taken into account in strategic planning for core service delivery and population level assessment/planning activities
- Nurses & nurse leaders have a strong relationship with the types of activities conducted in a LPHA—particularly in rural areas
  - The "grave shortage of nurses" (ASTHO, 2008) could have a particularly heavy impact on rural jurisdictions
- Stronger efforts are needed to educate nurses in environmental health



Next Steps

- Determine the influence of LPHA workforce configuration (e.g. disciplines, educational levels, diversity) changes over time on changes in LPHA activities
- Determine the relationship between public health workforce configurations and LPHA performance
- Examine the ability of changes in workforce configurations & activities to predict health outcomes (e.g. levels of mortality)