

# The impact of adding nursing support workers on patient, nurse and system outcomes

*REDESIGNING THE NURSING WORKFORCE*

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Introduction & Context

Nurse Outcomes

Patient Outcomes

System Outcomes

Summary & Conclusion

# Nursing Support Worker Titles

- Unregulated nursing workers are known by a range of titles including:
  - Unlicensed assistive personnel (United States)
  - Health care assistants (United Kingdom and Australia)
  - Personal care attendants or assistants in nursing (Australia)
  - Medical assistant, patient care technician, care extender, nurse aide, nursing orderlies and attendants
- In our study we will talk about **assistants in nursing** (AINs) or **nursing support workers**
  - They undertake delegated nursing tasks under the supervision of regulated/licensed nursing staff within a nursing team
  - They have limited educational preparation – at most a few weeks of theory followed by clinical practice
  - In some jurisdictions in Australia they may be pre-registration undergraduate nursing students

# Redesigning Nursing Work

- Two ways to introduce nursing support workers to a ward or unit
  - Either can potentially change the mix of staff, approach to care on a ward/unit, and impact on patients and staff
- The first is a substitutive model of nurse staffing whereby regulated staff (RNs) are **replaced** by unregulated nursing support workers
  - Hours of care remain the same but provided by less qualified staff (Roche et al., 2012)
- The second is a supportive or complementary model whereby unregulated nursing support workers are **added** to ward staffing
  - The total number of hours of patient care provided increases and the number of hours provided by RNs is maintained (Carrigan, 2009)
- Both methods have implications for the way patients are assigned to caregivers and the work caregivers may then undertake

# Implications for the Model of Care (Duffield et al. 2010)

- Task assignment was used:
  - With a poorer skill mix (fewer RNs)
  - When staff were unfamiliar with the ward and patients
- Can lead to issues with continuity of care because work is divided into tasks and different staff members undertake different tasks for the same patients
- Usually the RN addresses more complex tasks, whereas lesser skilled staff (nursing support workers) undertake more routine tasks
- Patient allocation was used when staffing included:
  - More RNs
  - More RNs with degrees
  - More advanced practice clinical nurse consultants

# Drivers for Change (1)

## 1. Workforce shortages

- Nursing workforce “sustainability” is “...a focus on maintaining numbers in the workforce, or achieving a predefined target of net growth in staffing, or reducing the relative level of reliance on international recruitment” (Buchan, 2015 p. 6)
- In this context workforce supply in Australia is unsustainable (Duffield in Buchan, 2015)
  - Australia continues to rely on migration
- Projections of nursing shortages estimated to be 123,000 nurses by 2030 (Health Workforce Australia, 2014)
  - AINs account for 25% of the Australian health workforce (ABS, 2013; AIHW 2008, 2012, 2014)
    - We will require a 16.5% increase (13600) in AINs by 2016/2017

# Drivers for Change (2)

## 2. Increased workload:

- Limits the time nurses have for patient contact (Duffield et al., 2011; Williams et al., 2008)
- Results in insufficient time to provide care to patients
- Critical tasks such as the administration of pain relief, hygiene and skin care undone/delayed (Duffield et al., 2011; Roche et al., 2016)
- Decreases opportunity to deliver quality emotional-care (Williams et al., 2008)
- Contributes to nurses' job dissatisfaction, influencing their decision to resign from their positions (Duffield et al., 2009; Roche et al., 2015a, 2015b)

# Potential Outcomes of *Adding* AINs on Nursing Work

- **Task shifting** between regulated and unregulated roles such as:
  - A decrease in the amount of time registered nurses spend on non-value adding tasks (e.g. administration and transport)
  - Increased direct patient care activities for registered nurses (e.g. assessment, clinical procedures)
  - Reduced nurses' workloads
  - Increased patient contact and the provision of emotional care



# Potential Outcomes of *Adding* AINs on Approach to Care

- **Rounding**

- Scheduled visits made to patients in hospital rooms to address immediate patient needs
- A common use of nursing support workers
- Associated with positive patient outcomes & improved patient safety:
  - Reduced patient falls (Woodard, 2009)
  - Reduced use of the call bell (Woodard, 2009)
  - Fewer work interruptions (Shepard, 2013)
  - Consistency and continuity of patient care (Meade, Bursell, & Ketelsen, 2006)
  - Improved patient satisfaction (Meade, Bursell, & Ketelsen, 2006)

# Background to Research

- Increasing registered nurse numbers to mitigate work intensification is unlikely given projected workforce shortages
- Previous studies have looked at the *replacement* of registered nurses with nursing support workers
- No study was found which examined the impact of the *addition* of nursing support workers to existing staffing in acute care settings
- The potentially positive aspects of adding nursing support workers to the quality of care patients receive and staff perceptions of changes to workload, job satisfaction and the work environment have not been systematically evaluated
- Western Australia is the first and only State to *complement* nurse staffing with AINs

## PROTOCOL

## A protocol to assess the impact of adding nursing support workers to ward staffing

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Accepted for publication 16 February 2016

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DUFFIELD C., ROCHE M., TWIGG D., WILLIAMS A. & CLARKE S. (2016) A protocol to assess the impact of adding nursing support workers to ward staffing. *Journal of Advanced Nursing* 00(0), 000–000. doi: 10.1111/jan.12965

### Abstract

**Aim.** To assess the impact of adding nursing support workers to ward staffing.

**Background.** Nurses' capacity to provide safe care is compromised by increased workloads and nursing shortages. Use of unregulated workers is an alternative to increasing the number of regulated nurses. The impact of adding nursing support workers on patient, nurse and system outcomes has not been systematically evaluated.

**Design.** A mixed longitudinal and cross-sectional design using administrative data sets and prospective data from a sample of wards.

**Methods.** Payroll data will identify wards on which unregulated staff work. To assess the impact on nursing-sensitive outcomes, retrospective analysis of morbidity and mortality data of all patients admitted to Western Australia hospitals for over 24 hours across 4 years will be undertaken. For the cross-sectional study, a sample of 20 pairs of matched wards will be selected: 10 with unregulated workers added and 10 where they have not. From this sample the impact on patients will be assessed using the Patient Evaluation of Emotional Care during Hospitalisation survey. The impact on nurses will be assessed by a nurse survey used extensively which includes variables such as job satisfaction and intention to leave. The impact on system outcomes will be explored using work sampling of staff activities and the Practice Environment Scale. Interviews will determine nurses' experience of working with nursing support workers.

**Discussion.** The study aims to provide evidence about the impact of adding nursing support workers to ward staffing for patients, staff and the work environment.

**Keywords:** assistants in nursing, nursing support workers, nursing work organization, nursing workload, skill mix

# Aims

Determine the impact of the addition of AINs to nursing wards on...

Nurse  
outcomes

Patient  
outcomes

System  
outcomes

# The Study

- Longitudinal
  - Two years of data *before* and two years *after* the addition of AINs
- Prospective
  - 5 pairs of wards
    - 5 wards where AIN resources were *added*
    - 5 wards where AIN resources were *not added*
      - 3 pairs of wards (6 wards) from large teaching hospitals
      - 2 pairs of wards (4 wards) from smaller non-teaching & regional hospitals

# Ward Matching – Prospective Data

Hospital	NHpPD Category
X	B
Y	D
Z	B
Z	B
Z	C

- For prospective data collection, wards were **matched** using workload categories:
  - e.g. a Category B ward with no added AIN staff was matched with a Category B ward where AIN resources had been added

# Patient Outcomes

# Patient Outcomes

## Nursing Sensitive Outcomes

- Longitudinal Data
  - NSOs (Needleman, et al 2001, 2011)
  - n=256,302

## The Patient Evaluation of Emotional Care during Hospitalisation

- Prospective Data
  - PEECH (Williams & Kristjanson 2009)
  - n=141



# Staffing Model in Western Australia

- NHpPD model introduced in 2002 to ensure adequate nurse staffing
- Each ward assigned to a category (A-D) dependent on the complexity and diversity of patients, and the nursing tasks required to care for them
- Each category is allocated a staffing level per occupied bed day
- The required staffing is determined by multiplying the occupied bed days by the category staffing level to give the hours per day
- Wards are then expected to staff at this level
- Monitored by NMO

# Nurse Sensitive Outcomes

- Administrative patient data obtained from WA Data Linkage Branch
- Staffing data obtained from NMO
- Data from 11 hospitals in Perth metro area
- 33 AIN wards and 31 non-AIN wards

# NHpPD of Wards Included in Longitudinal Data Analysis

Category	NHpPD	AIN wards		Non-AIN wards	
		n	%	n	%
A	7.5	2	6.06	6	19.35
B	6.0	15	45.45	15	48.39
C	5.75	8	24.24	5	16.13
D	5.0	8	24.24	5	16.13
<b>Total</b>		<b>33</b>		<b>31</b>	

# Longitudinal Data Sample

	Pre-test n=125,762				Post-test n=130,540			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Age (years)	63.65	19.85	18	107	63.40	19.98	18	105
DRG cost weight	2.34	2.88	0.13	37.06	2.27	3.13	0.13	57.51
Length of stay (days)	8.09	9.83	1	90	7.76	9.48	1	90
Group	N		%		N		%	
Surgical	80,605		64.09		86,543		66.30	
Medical	45,157		35.91		43,997		33.70	
Gender								
Male	64,043		50.92		67,682		51.85	
Female	61,719		49.08		62,858		48.15	
Season								
Autumn	31,613		25.14		32,704		25.05	
Winter	32,326		25.70		33,646		25.77	
Spring	32,108		25.53		34,180		26.18	
Summer	29,715		23.63		30,010		22.99	

# Analytical Approach

## Pre/Post Analyses

- Based on data from the pre-test period, data were modelled to predict the NSO numbers for the post-test period
- Adjusted logistic regression models were developed for each NSO
- Predicted probabilities were adjusted by the proportion of time spent in AIN/non-AIN wards to provide an expected number for each NSO
- Chi-square was used to test the differences between the expected and observed frequency

## Post-Only Analyses

- Adjusted logistic regression models were developed for each NSO
- Three explanatory variables:
  - Proportion of length of stay on AIN wards
  - The number of ward changes (transfers)
  - Proportion of length of stay spent on a low skillmix ward
    - Defined as RN% < 72.87% (the lowest quartile of skillmix)

# Patient Outcomes: Pre-Post Analysis

All AIN wards

NSO	Observed	Expected	Difference	Increase or decrease (of observed NSOs to expected NSOs)	p
Failure to rescue	485	417	68	<b>Increase</b>	0.018*
Mortality	1122	1230	-108	<b>Decrease</b>	0.024*
Urinary tract infection	4025	3821	204	<b>Increase</b>	0.017*
Pressure injury	633	623	10	Increase	0.777
Pneumonia	2112	1992	120	Increase	0.056
Sepsis	807	783	24	Increase	0.544
Falls	504	339	165	<b>Increase</b>	<0.001*

## All Non-AIN wards

NSO	Observed	Expected	Difference	Increase or decrease (of observed NSOs to expected NSOs)	p
Failure to rescue	461	406	55	Increase	0.052
Mortality	1244	1238	6	Increase	0.903
Urinary tract infection	3426	3467	-41	Decrease	0.614
Pressure injury	599	603	-4	Decrease	0.908
Pneumonia	1972	2186	-214	<b>Decrease</b>	0.001*
Sepsis	962	945	17	Increase	0.695
Falls	376	265	111	<b>Increase</b>	<0.001*

# Patient Outcomes: AIN wards, Post-only

Patient Outcome	Frequency (%)	c-statistic	% Correctly Classified	Variable	Odds Ratio	95% CI	p
Failure to Rescue	1196 (12.59%)	72%	87.4	AIN time	1.00	(0.98, 1.02)	0.975
				low skill mix	0.99	(0.96, 1.01)	0.211
Mortality	2891 (2.22%)	84%	97.8	AIN time	0.99	(0.98, 1.00)	0.276
				low skill mix	0.99	(0.98, 1.01)	0.247
UTI	8496 (6.49%)	78%	93.4	AIN time	<b>1.01</b>	<b>(1.00, 1.01)</b>	<b>0.035*</b>
				low skill mix	<b>1.03</b>	<b>(1.02, 1.04)</b>	<b>&lt;0.001*</b>
Pressure injury	1451 (1.11%)	84%	98.9	AIN time	1.00	(0.99, 1.02)	0.761
				low skill mix	<b>1.06</b>	<b>(1.04, 1.07)</b>	<b>&lt;0.001*</b>
Pneumonia	5001 (3.83%)	78%	96.1	AIN time	<b>1.02</b>	<b>(1.02, 1.03)</b>	<b>&lt;0.001*</b>
				low skill mix	0.99	(0.98, 1.00)	0.168
Sepsis	2207 (1.69%)	81%	98.3	AIN time	1.01	(1.00, 1.02)	0.143
				low skill mix	<b>0.98</b>	<b>(0.96, 0.99)</b>	<b>0.006*</b>
Falls with injury	976 (0.75%)	81%	99.3	AIN time	1.01	(1.00, 1.03)	0.116
				low skill mix	<b>1.05</b>	<b>(1.03, 1.07)</b>	<b>&lt;0.001*</b>

\* indicates significant p-value; Odds ratio is for each 10% increase in time spent on AIN wards or low skill mix wards; n=130,540 for all outcomes except failure to rescue where n=9,499

# Patient Outcomes: PEECH

- 22 items
- Four subscales:
  - Level of Security
  - Level of Knowing
  - Level of Personal Value
  - Level of Connection
- *Higher scores indicate a greater level of emotional comfort*

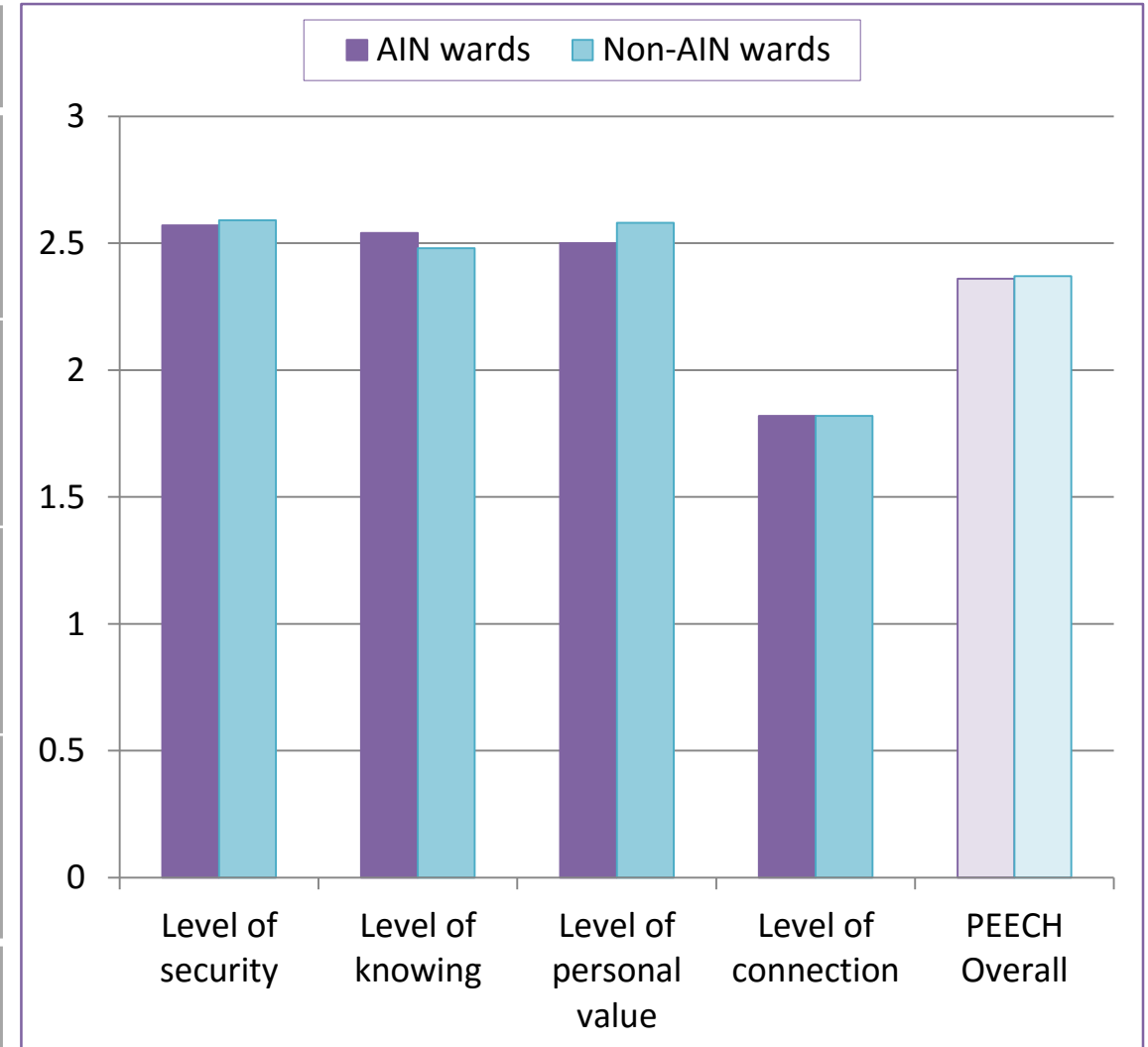


# Patient Outcomes: Profile (PEECH)

- Random sample of 141 patients
  - 71 from AIN wards
  - 70 from non-AIN Wards
- Mean age 63.1 years (SD=15.8)
  - No significant difference between AIN & non-AIN wards
- 57.4% male
  - 47.9% on AIN wards
  - 61.7% on non-AIN wards
- Admitted for:
  - Nervous system disorders (14.2%, n=20)
  - Circulatory system disorders (13.5%, n=19)
  - Musculoskeletal system disorders (27%, n=38)
  - Neoplastic disorders (20.6%, n=29)
- 57.4% (n= 81) had comorbidities
- Most had been in the hospital for > 3 days (87.2%, n= 123)

# Patient Outcomes: Emotional Care

Mean (SD)	AIN wards	Non-AIN wards	p
Level of security	2.57 (48%)	2.59 (48%)	0.915
Level of knowing	2.54 (59%)	2.48 (63%)	0.873
Level of personal value	2.5 (50%)	2.58 (52%)	0.105
Level of connection	1.82 (72%)	1.82 (87%)	0.781
Overall	2.36 (47%)	2.37 (52%)	0.677



# Summary & Questions

# Summary

- Patient outcomes: negative outcomes associate with *AINs* & *skillmix*
- Work activities: more direct care / less indirect care on *AIN* wards
- Perceived quality of care: *higher* on *non-AIN* wards
- Turnover: intent to leave *higher* on *AIN* wards
- Practice environments: staffing & leadership *lower* on *AIN* wards
- Violence experienced by nurses: *higher* on *AIN* wards
- Delayed tasks: *higher* on *AIN* wards
- Absenteeism: *higher* on *AIN* wards
- AINs reported performing tasks that appear out of scope

# Questions

- Model of care & utilisation
  - Team versus patient allocation
    - What type of patients were allocated to AINs?
    - 'Specialling' (one-to-one)
  - Rounding – no evidence that AINs were used in this way
- Effective delegation & integration into the team
  - AINs may not have been routinely added to every shift every day
    - How would this impact effective delegation and model of care?
- Qualifications
  - Undergraduate BN students or Cert III qualification
- Scope of practice
  - Are findings linked to the use of Undergraduate BN students?
- If staffed to full complement, does adding more staff make a difference?
- Variation
  - Substantial variation within wards, what unit-level factors are important?

# Current Controversy

## Hornsby Ku-ring-gai Hospital nurses wage war on decision to introduce AiN's into acute units

May 24, 2016 1:29pm  
Jake McCallum



NSW\_HORNSBY\_STRIKE@HORNSBY\_WK48(2)

NURSES are rallying against NSW Health to protect the safety of their most vulnerable patients, after "minimally qualified workers" were proposed to work in an intensive care unit.



# Acknowledgements

- This project was funded by the Australian Research Council, WA Department of Health, and Sir Charles Gairdner Hospital
- Adjunct Associate Professor Catherine Stoddart is thanked for her support in the initial stages of this project
- Statistical support: Ms Helen Myers
- Research support: Ms Cathy Pienaar (ECU), Ms Sofia Dimitrelis (UTS), Ms Jan Forbes-Madden (UTS)
- Data collection: Ms Emily Allen, Ms Kayla Armistead, Ms Monique du Plessis, Mr David Jennings, Ms Anne Lin, Ms Shelley McCrae, Ms Ellie Rice, & Mr Thomas Sharpe



Government of **Western Australia**  
Department of **Health**  
Nursing and Midwifery Office

