

## Nurse-Related Clinical Non-Licensed Personnel in U.S. Hospitals and their Relationship with Nurse Staffing Levels

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### I. Introduction

In 2014, there were 725,560 clinical non-licensed personnel (CNLP) working in U.S. hospitals, accounting for nearly 13% of total U.S. hospital-based employment.<sup>1</sup> These support staff have a close relationship with nurses, which may direct or indirectly affect nurse workloads and thus to patient outcomes via their relationship with nurses.<sup>2</sup> This study examines the nurse-related clinical non-licensed personnel (CNLP) staffing in U.S. hospitals between 2010 and 2014, in terms of their job categories, staffing trends, and relationship with registered nurse (RN) and licensed practical nurse (LPN) staffing.

### II. Methods

We used five years of data (2010-2014) from an operational database maintained by Premier, Inc. that tracks labor hours, hospital units, and facility characteristics. The study sample included 523 U.S. hospitals over five years.<sup>1</sup> We conducted multivariate linear regression analyses to examine the relationships between CNLP and nurses.

### III. Findings

In 2014, on average, our sample hospitals used a total of 149,851 nurse-related CNLP work hours. The overall nurse-related CNLP hours per patient day was 1.22 in 2014, a 21% decrease from 1.55 in 2010. RN and LPN hours per patient day also decreased (15% and 28%, respectively) from 2010 to 2014. The declining trend of LPN staffing was consistent with previous findings.<sup>3</sup> We found that nurse – related CNLP staffing was positively associated with RN staffing but to a lesser degree with LPN staffing in hospitals over the study period, suggesting complementary but no substitution effect.

### IV. Conclusion

Hospitals reduced the use of nurse-related CNLP, RN, and LPN staffing between 2010 and 2014. Nurse-related CNLP hold strong complementarity relationships with RNs but a less strong relationship with LPNs.

### V. Policy Implications

For too long, health workforce projections have focused on a single licensed profession, without regard to the relationship of professions

### Key Findings

1. Nurse-related CNLP, RN, and LPN staffing, as measured by hours per patient day, declined between 2010 and 2014.
2. Nurse-related CNLP staffing were positively associated with RN staffing but to a lesser degree with LPN staffing in hospitals over the study period, suggesting complementarity but no substitution effect.
3. Within the CNLP group, jobs most closely tied to nurses, namely, nursing assistants and patient care technicians, experienced the greatest decreases in work hours per patient day (20% and 25%, respectively).

to each other or to healthcare support staff. This work is important both for hospital managers that are interested in better methods for determining optimal staffing as well as for workforce analyses at the state and national level. Understanding the effects of the nurse staffing laws, not just on nurses, but also on nurse support staff, is a critical step in assessing the overall impact of these policies. Future research on how CNLP interact with nurse staffing in the context of state nurse staffing regulations could help to understand the effects of these policies. Other important implications include further understanding the effects of hospitals' financial distress on the substitution of CNLP for RNs and the effects of nurse shortages on substitution. Given the importance of CNLP staffing on nurse staffing in hospitals, initiating training program to these minimum trained support workers is necessary for hospitals to arrange optimal nurse staffing and deal with CNLP's impacts on patient outcomes via their relationships with nurses.

**Table 1. Nurse-Related CNLP, RN, and LPN Hours and Hours Per Patient Day and The Relationship Between CNLP and Nurses in U.S. Hospitals, 2010-2014**

Occupations	Average work hours, 2014	Hour distribution, 2014	Average work hours per patient day, 2014	% Change in work hours per patient day, 2010-14	Relationship with nurses, 2010-14 Year: Regression coefficient (SE)
<b>All nurse-related CNLP</b>	149,851	100%	1.22	-21.0%	2010: 0.226 (0.042)*** 2014: 0.219 (0.041)***
<b>UAP</b>	113,597	75.8%	0.91	-22.8%	2010: 0.722 (0.392)* 2014: 0.666 (0.666)*
Nursing assistant	63,669	42.5%	0.01	-19.6%	-
Transporter	10,071	6.7%	0.28	-20.0%	-
Graduate nurse	920	0.6%	0.08	-39.3%	-
Patient care technician	35,383	23.6%	0.51	-24.8%	-
Surgical aide	3,553	2.4%	0.03	-9.1%	-
<b>Other nurse-related CNLP</b>	36,254	24.2%	0.27	-14.1%	-
Surgery technician	19,889	13.3%	0.00	-19.4%	-
Bed controller	105	0.1%	0.16	-63.1%	-
Endoscopy technician	1,533	1.0%	0.05	9.3%	-
Medical assistant	8,681	5.8%	0.01	46.9%	-
Monitor technician	6,046	4.0%	0.07	-13.1%	-
<b>RN</b>	443,861	-	3.57	-15.2%	-
<b>LPN</b>	22,756	-	0.18	-28.3%	-

Notes: UAP jobs are consistent with the National Database of Nursing Quality Indicators® (NDNQI®) definition (NDNQI 2010), and includes non-licensed Graduate Nurses based on Premier's skill-mix category, although we recognize that in a few states Graduate Nurses may already have licenses while they are in a period of orientation. Regression coefficients are from multivariate linear regression analyses. SE=Standard Error; UAP=Unlicensed Assistive Personnel; CNLP = Clinical non-licensed personnel. \* $p < .5$  \*\* $p < .05$  \*\*\* $p < .01$

*End notes:*

- i. The proportion of teaching hospitals and average occupancy rate in our dataset is comparable to the national average, while our sample consists of a larger portion of not-for-profit, urban, and system-affiliated hospitals and hospitals with more staffed beds and admissions as compared to the national sample from the American Hospital Association Annual Survey and Healthcare Cost and Utilization Project data.

*References:*

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