Impact of Healthy Work Environments and Multistage Nurse Residency Programs on Retention of Newly Licensed RNs

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The objective of the study was to examine effects of nurse-confirmed healthy unit work environments and multistage nurse residency programs (NRPs) on retention rates of newly licensed RNs (NLRNs). Establishing a culture of retention and healthy clinical nurse practice environments are two major challenges confronting nurse leaders today. Nurse residency programs are a major component of NLRN work environments and have been shown to be effective in abating nurse turnover. Sample for this study consisted of 5,316 new graduates in initial RN roles in 28 Magnet® hospitals. There were no differences in retention rates by education or patient population on clinical unit. NLRN retention rate was higher in community than in academic hospitals. More than half of NLRNs were placed on units with very healthy work environments. Newly licensed RNs on units with work environments needing improvement resigned at a significantly higher rate than did other NLRNs. The quality of clinical unit work environments is the most important factor in NLRN retention.

Two major challenges confront nurse leaders today—creating cultures of retention and fostering healthy work environments (HWEs).¹⁻³ Job turnover and abandonment of the profession by newly licensed RNs (NLRNs) are a major source of cyclical, sustained nurse shortages.⁴ The 2004 Institute of Medicine¹ (IOM) report, Keeping Patients Safe: Transforming the Work Environment of Nurses, identified solutions to environmental problems threatening patient safety. This report and other experts strongly recommend improvements in clinical nurses’ work environments as the best strategy for promotion of patient safety and increased nurse retention.³⁻⁵,⁶ NLRN–specific professional socialization-transition programs, collectively labeled nurse residency programs (NRPs) in this study, are structural components of work environments whose effectiveness in NLRN retention has been demonstrated.⁷⁻¹¹ The purpose of this research was to examine main and interaction effects of healthy unit professional practice environments and NRPs on NLRN retention.

Background

HWEs Defined

Nightingale¹²,¹³ defined nursing as the planned, scientific alteration of patients’ internal and external environments placing patients in the best possible situation for the laws of nature to act, thereby facilitating the healing process. Accordingly, a work environment is an “alterable medium” that can be used to improve the structures/conditions and processes
of practice and subsequently patient outcomes.\textsuperscript{12} Healthy work environments enable and facilitate essential nursing processes, the force of natural laws, and ultimately result in improvement in patient outcomes.\textsuperscript{1,3,14}

In 2001, the Essentials of Magnetism\textsuperscript{\textcopyright} tool, EOM\textsuperscript{\textregistered}, was developed to measure the work processes and relationships that constitute healthy, productive clinical unit work environments.\textsuperscript{15} Such environments enable nurses to engage in the steps/components of 8 work processes identified by clinical nurses in 14 Magnet\textsuperscript{\textregistered} hospitals as essential to delivery of quality patient care. The 8 processes—
independent/interdependent clinical decision making, collaborative RN-MD relationships, perceived adequacy of staffing, working with clinically competent peers, supportive nurse manager relationships, control over the context of nursing practice, support for education, and working in a patient-centered culture—are interrelated and codependent. Together, they define a productive, healthy work/professional practice environment. In 2004, the IOM\textsuperscript{1} defined nurses’ work environments as any physical, personal, or system component that promotes or enables nurses to enact the work processes and establish the interpersonals relationships essential to safe, quality patient care. Healthy work environments contained the basic production processes and 5 bundles of safeguards needed for safe patient care. Six of the 8 EOM are included in the IOM production processes or bundles of safeguards.\textsuperscript{1(p315)}

There is a great deal of inconsistency as to whether HWEs are defined and measured at the hospital level or at the unit level. Healthy work environments have been defined broadly as “a practice setting that maximizes the health and well-being of nurses, quality patient/client outcomes, organization performance, and societal outcomes.”\textsuperscript{16(p11)} Other studies\textsuperscript{17,18} that utilize the Practice Environment Scale of the Nursing Work Index (PES/NWI) measure work environments at the hospital level and almost as synonymous with the presence of the forces of Magnetism\textsuperscript{\textregistered}. Items for the PES/NWI are derived from the same source, the 1983 original Magnet hospital report,\textsuperscript{19} as the forces or structures of Magnetism that must be evidenced for Magnet designation.\textsuperscript{20} Comprehensiveness and accuracy of each NWI item were verified by 3 of the 4 original Magnet hospital researchers.\textsuperscript{21}

Another common way of defining and measuring healthy, productive work environments is by equating them with nurse job satisfaction.\textsuperscript{4,6,22,23} Four general categories of job satisfiers have been identified: (1) organizational components (work schedule, staffing ratio, workload, resources); (2) structural conditions (facility and physical layout); (3) interpersonal relationships with peers, clients, administrators, healthcare providers; and (4) professional factors such as autonomy, interdisciplinary collaboration, career development, and advancement.\textsuperscript{24} Clinical nurses differentiate job satisfaction/satisfiers (categories 1 and 2) from professional practice satisfaction/satisfiers (categories 3 and 4 above). Job satisfiers attract, whereas professional practice satisfiers retain, nurses in their positions.\textsuperscript{25}

### Nurse Residency Programs

Since the empirical testing of the initial federally funded anticipatory socialization program and reflective new graduate seminars in 8 major medical centers from 1966 to 1974,\textsuperscript{26,27} NLRN professional socialization programs have developed and flourished nationwide. These programs vary with respect to length, number of stages, theory-based and -driven goals, components, expected role performance, and titles—internships, residencies, mentorships, fellowships, and new-graduate orientations. Most contain a short, standard hospital orientation, followed by a cognitive apprenticeship period and then a guided, independent practice stage. With increasing recognition of nursing as a profession and the increasing demands for professional performance and accountability, nursing has moved from the training-orientation model of the 20th century\textsuperscript{28,29} to the professional socialization model utilized in most professions and in all other healthcare professions.\textsuperscript{30-32}

The professional socialization model consists of 3 stages, each with its own theme, goal, and expected role performance. “Knowing” is the academic preparation stage, characterized by knowledge and role/skill acquisition. “Becoming” is the transition stage and, in nursing, tends to be 2 to 3 months in length and has 3 goals: (1) stress management, (2) skill competence, and (3) dependent practice or a cognitive apprenticeship in “real life” situations with a preceptor. “Integrating/affirming” is the theme of the third stage, which usually extends from 9 to 12 months. The goal of this stage is independent performance of the dominant professional role as well as integration into professional communities and peripheral roles associated with the profession—teaching, research, risk manager, political and societal participation, and representation on committees and councils. In nursing, the dominant professional role in hospitals is provision of care and management of clinical situations for multiple patients, simultaneously.\textsuperscript{30-32} Key components of the integration stage are evidence-based management practice, recognition of complex systems assisted by clinical coaches and career planning,
development, and meeting of professional and societal responsibilities assisted by mentors. 30-33

**Conceptual Model and Framework for NLRN Program of Research**

This 7 study NLRN research program utilized the Systems Research Organizational Model (SROM) 34 to assess the differential impact of client, contextual, and action focus variables on 7 outcomes—NLRNs’ expectations of the professional practice environment, environmental reality shock, shock-related issues and concerns, professional work satisfaction, nurse-assessed quality of patient care, retention, and degree of professional role integration/affirmation. 30-32, 35, 36 Based on the American Academy of Nursing quality health outcomes model and Donabedian’s 14 structure, process, outcome (S-P-O) paradigm, the SROM provides an avenue for systematizing and organizing multiple variables, thereby facilitating theory development, hypothesis generation, and ultimately the formulation of strategies to improve the dynamic, interactive environment in which nurses practice.

Donabedian’s 14 S-P-O paradigm was used to examine interrelationships among variables in all studies in this research program. Major premises of this framework are that assessment of outcomes such as quality patient care, patient falls, professional practice satisfaction, and nurse retention requires examination of relationships among all 3 linearly related variables in the paradigm: “Process is a more direct measure of quality than is either structure or outcome.” 14(p81)

Outcomes can be predicted directly through identification of processes or indirectly by assessment of processes associated with specific structures. 37 Omission or improper sequencing of any of the components, such as in structure-outcome studies, can lead to faulty outcomes or conclusions. 38

Structures include components such as physical layout, staffing ratio, personnel policies, committee structure/composition, leadership practices, equipment, and technology. Respondents’ perceptions of the absence or degree of presence are appropriate evidence of structures, but they are not an adequate measure of work/practice processes. 14 The latter requires measurement of the steps and components that constitute the process or make up the relationship. As in any process, some steps are more essential than others; these must be weighted in item responses. 37

The field of measurement must be appropriate to the component being measured. Presence of excellent magnetic structures can be validly measured at the hospital level, as well as at the unit level such as in the nationwide ICU study. 38 Accurate measure-

ment of work processes and relationships must be done in the environment that is central to the action focus which, in hospitals, is the clinical unit, clinic, or professional practice group. Outcomes can be measured in either the hospital or clinical unit field, depending on their focus. 14

**Research Questions**

1. To what extent is the aggregate of excellent, magnetic organizational structures as evidenced by Magnet hospital designation positively related to healthy, productive, clinical unit work environments as evidenced by the 8 work processes and relationships essential for quality patient care? (S-P)

2. Do NLRNs working on clinical units with confirmed very healthy work environments (VHWE) have higher 3-year retention rates than do NLRNs working on units with less HWEs? (P-O)

3. Do NLRNs who have multistaged NRPs report smoother transition and higher retention rates than do NLRNs who experience transition stage—only NRPs (S-P-O)? Is there an interactive (HWE × multistage NRP) effect between NRPs and NLRN retention?

**Methods**

**Design, Setting, and Samples**

**Hospital Sample**

In this longitudinal quantitative study, a descriptive design was used to examine the impact of excellent, magnetic organizational structures and multistage NRPs on professional nurse practice and transition processes, and on the outcome, NLRN 3-year retention rate. Forty Magnet hospitals were selected on the basis of (1) “excellence” designations (Balridge, 100 Top Hospitals, Best Places to Work) in addition to Magnet; (2) type of hospital (community teaching, academic, community); geographical location (census track regions), and size of community in which the hospital was located (<100,000; 100,000 to 500,000; 500,000 to 1 million; and >1 million); and (3) length, components, goals, and parameters of NRPs. To participate, hospitals had to have a NRP operative for at least 3 years. Hospitals were selected for representation from national, multihospital NRPs–University Hospital Consortium, Versant, Milwaukee, dedicated transition units, TRAC (transitioning across the continuum), PACE (practical application clinical experience)– and from hospital-developed programs, particularly those with published, empirically tested outcomes. The sample selection goal was to select
the “best of the best” hospitals with consideration of national representation of geographic contextual variables. Each hospital appointed on-site investigators who obtained all necessary institutional review board approvals.

Clinical Unit Sample and HWE Designation
To test the impact of HWE status on NLRN retention, the EOMII was administered to experienced (not new graduates) nurses on clinical units in the 40 selected Magnet hospitals. Hospitals had a choice of administering the EOMII to nurses on all units or only on those usually onboarding NLRNs. The EOMII is described in the HWE background section. Development, content/criterion validity, item weighting, reliability, and factor analysis are detailed in the studies of Kramer and Schmalenberg. 39,40 Cronbach α’s for total EOMII and 8 subscales range from .83 to .97. For valid and reliable data aggregation from individuals to the group (unit) level, a 40% EOMII unit response rate is needed. 41

To obtain a national picture of the extent to which clinical nurses perceive they practice in clinical environments that enable provision of safe, quality patient care, a national Magnet hospital profile (NMHP) utilizing samples from EOM administration to clinical nurses in more than 1,000 hospitals (n = 253 Magnet hospitals) was established. Analysis of variance (ANOVA) with post hoc multiple comparisons using Tukey statistical procedures on unit-aggregated data identified the statistically significant (P ≥ .05) homogeneous subsets. 40 The highest subset was labeled the NMHP, the middle subset was identified as the Magnet-aspiring profile, and the lowest subset was named the non-Magnet profile. National Magnet hospital profiles are updated periodically; data from 124 Magnet and Magnet-aspiring hospitals were used to construct the latest profiles. 40

The EOMII was administered to 12,233 experienced nurses (new graduate nurses excluded) working on 717 units in 40 selected hospitals. 36 Results are based on responses from 10,752 nurses practicing on 540 units in 34 hospitals meeting the 40% unit response rate requirement for valid data aggregation. The designation of VHWE was given to units with EOMII scores greater than 1 SD above the NMHP mean, whereas HWE-designated units are those with EOMII scores between 1 SD above and 1 SD below the NMHP mean. Clinical units with EOMII scores of greater than 1 SD below the NMHP mean were designated as work environments needing improvement (WENIs). 40

NRP Sample
The multitaged sample of NRPs was obtained by analyzing extensive residency program questionnaires completed by facilitators in each hospital. 32 Based on theories, components, content analysis, and synthesis of professional socialization literature, these surveys were used to assess the extent to which NRPs reflect the professional socialization process utilized in other professions. The NRP sample consisted of 3 groups: (1) 4 hospitals that had NRPs consisting of a clearly defined, 2-stage transition (first 3 months) plus integration (7-12 months) program ranging in length from 10 months to 1½ years, (M = 1 year); (2) 14 hospitals with NRPs ranging in length from 8 months to 1 year, (M = 1 year), with a definite transition-stage program, and some evidence of integration stage components; and (3) 10 hospitals with transition stage–only NRPs ranging in length from 2 to 5 months (M = 3 months).

Data Collection Tool
Three years (2006, 2007, and 2008) of NLRN retention data were collected for this study, utilizing a retention history form developed with the assistance of human resource specialists from 2 Magnet hospitals not participating in the study. They advised on clarity, availability of requested information, and ease of completion. The form was then critiqued and evaluated for clarity and readiness availability of data by nurse residency coordinators and human resource specialists in 3 additional Magnet hospitals. Data requested included nursing education, hire date, unit assignment, resignation date, reason for resignation, transfer date, and unit transferred to, if applicable.

Data Analysis
NLRN retention rates at 6 months and 1, 2, and 3 years post hire, based on the number of employed months, were used for correlational analyses. The number of months employed was the interval level data used to test direct and interactive (univariate and multivariate) relationships (contrasts) between and among multiple independent and dependent variables. 42

Results
Description of Hospital Sample
Twenty-eight of the 34 hospitals submitted 3-year retention data for 5,316 NLRNs employed from 2006 through 2008. Contextual variables, which included type of hospital, regional location, and population of community in which the hospital was located, were used to check whether the national representativeness of the 28 hospitals was close.
to that of the original sample. Results indicated significantly fewer Midwest and fewer academic hospitals ($\chi^2 = 30.914; P > .000$) in the 28-hospital retention study sample than in the 34-HWE confirmation study sample.

**Educational Preparation of the NLRN Sample**

Data were provided for 85.6% of the NLRN sample ($n = 4,555$) employed during 2006, 2007, and 2008. Seventy percent of the sample ($n = 3,188$) was prepared at the bachelor's (BSN) level; 28% ($n = 1,253$) had associate degrees (ADN); 2% ($n = 73$) had diplomas, and 0.09% ($n = 41$) had earned MSN or PhD degrees as their initial preparation.

**Patient Population on NLRN-Assigned Clinical Units**

More than 40% of the NLRNs ($n = 2,262$; 42.9%) began their initial professional practice experience on surgical specialty (12.7%), general medical-surgical (10.6%), telemetry (10.2%), and medical specialty (9.4%) units. Almost 30% ($n = 1,420$; 27%) began practice in ICUs. The remaining 30% were divided among oncology (6.5%), emergency department (5.7%), orthopedic (4.8%), obstetric (4.7%), operating room (OR)/postanesthesia care (PACU) (4.7%), and pediatric (3.8%) units. Thirty-eight NLRNs (0.7%) were assigned to psychiatric units (Table 1).

**HWE Designation of Clinical Units to Which NLRNs Were Assigned**

There were significant differences in the number of NLRN assignments by HWE unit designation. Half of the 5,316 NLRNs ($n = 2,659$; 50.1%) were assigned to VHWE units. The other half were split between HWE ($n = 1,444$; 27.2%) and WENI units ($n = 1,213$; 22.7%) (Table 1). Multivariate analysis indicated a significant interactive effect—NLRN clinical unit placement by HWE unit designation ($F$ ratio = 42.077; $p < .000$). Significantly fewer NLRNs were placed on medical-surgical, medical specialties, and telemetry HWE units than on similar VHWE and WENI units. Fewer NLRNs were placed on WENI orthopedic units than on HWE orthopedic units. Fewer NLRNs were placed on VHWE OR/PACU units than on HWE- and WENI-confirmed OR/PACU units.

**Outcomes: Research Question 1: Are Magnet Organizational Structures Positively Related to HWEs? (S-P)**

In the confirmation study, experienced nurses confirmed VHWE on 54% ($n = 291$) of the 540 clinical units in the 34 Magnet hospitals that submitted sufficient data (40% unit response rate) for valid, reliable data aggregation; 28% of the units ($n = 150$) were confirmed as HWE units; 18% ($n = 99$) were confirmed as WENI. In 1 hospital, all 28 clinical units were confirmed to have VHWEs. In

**Table 1. Significance of Differences in Placement of NLRNs ($n = 5,316$) by Unit Patient Population and HWE Designation**

<table>
<thead>
<tr>
<th>Patient Population of Clinical Unit</th>
<th>VHWE No.</th>
<th>VHWE %</th>
<th>HWE No.</th>
<th>HWE %</th>
<th>WENI No.</th>
<th>WENI %</th>
<th>Total No.</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical specialties</td>
<td>289</td>
<td>10.9</td>
<td>225</td>
<td>15.6</td>
<td>156</td>
<td>12.9</td>
<td>670</td>
<td>12.6</td>
</tr>
<tr>
<td>General medical-surgical and resource pool</td>
<td>356</td>
<td>13.3</td>
<td>84</td>
<td>5.8</td>
<td>135</td>
<td>11.1</td>
<td>569</td>
<td>10.7</td>
</tr>
<tr>
<td>Medical specialties including dialysis, rehabilitation, outpatient care clinics</td>
<td>275</td>
<td>10.3</td>
<td>111</td>
<td>7.7</td>
<td>159</td>
<td>13.1</td>
<td>551</td>
<td>10.4</td>
</tr>
<tr>
<td>Telemetry</td>
<td>319</td>
<td>12.0</td>
<td>56</td>
<td>3.9</td>
<td>162</td>
<td>13.4</td>
<td>537</td>
<td>10.1</td>
</tr>
<tr>
<td>Neonatal-pediatric ICU</td>
<td>258</td>
<td>9.7</td>
<td>133</td>
<td>9.2</td>
<td>100</td>
<td>8.2</td>
<td>491</td>
<td>9.2</td>
</tr>
<tr>
<td>Surgical-trauma ICU</td>
<td>194</td>
<td>7.3</td>
<td>77</td>
<td>5.3</td>
<td>77</td>
<td>6.3</td>
<td>348</td>
<td>6.5</td>
</tr>
<tr>
<td>Oncology</td>
<td>154</td>
<td>5.8</td>
<td>124</td>
<td>8.6</td>
<td>66</td>
<td>5.5</td>
<td>344</td>
<td>6.4</td>
</tr>
<tr>
<td>Medical-neurological ICU</td>
<td>166</td>
<td>6.3</td>
<td>66</td>
<td>4.5</td>
<td>83</td>
<td>6.8</td>
<td>315</td>
<td>5.9</td>
</tr>
<tr>
<td>Emergency department</td>
<td>161</td>
<td>6.1</td>
<td>85</td>
<td>5.9</td>
<td>55</td>
<td>4.5</td>
<td>301</td>
<td>5.7</td>
</tr>
<tr>
<td>Medical-surgical ICU</td>
<td>173</td>
<td>6.5</td>
<td>61</td>
<td>4.2</td>
<td>32</td>
<td>2.6</td>
<td>266</td>
<td>5.0</td>
</tr>
<tr>
<td>Obstetric</td>
<td>105</td>
<td>4.0</td>
<td>118</td>
<td>8.2</td>
<td>30</td>
<td>2.5</td>
<td>253</td>
<td>4.8</td>
</tr>
<tr>
<td>OR/PACU, same-day surgery</td>
<td>94</td>
<td>3.5</td>
<td>88</td>
<td>6.1</td>
<td>65</td>
<td>5.4</td>
<td>247</td>
<td>4.7</td>
</tr>
<tr>
<td>Pediatric (in general hospitals)</td>
<td>25</td>
<td>0.9</td>
<td>136</td>
<td>9.4</td>
<td>86</td>
<td>7.1</td>
<td>247</td>
<td>4.7</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>79</td>
<td>3.0</td>
<td>60</td>
<td>4.2</td>
<td>0</td>
<td>0.0</td>
<td>139</td>
<td>2.6</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>0.4</td>
<td>20</td>
<td>1.4</td>
<td>7</td>
<td>0.6</td>
<td>38</td>
<td>0.7</td>
</tr>
</tbody>
</table>

*Pearson $\chi^2 = 584.807; P > .000$. Sources of significant differences are in bold font.

*Four children's hospitals participated in this study. The clinical units in these hospitals were classified by medical diagnoses/treatment, not by patient population.
7 additional hospitals, all clinical units surveyed were confirmed to have either VHWE or HWEs.

Outcomes: Research Question 2: Do NLRNs Working on Clinical Units With Confirmed VHWE Have Higher 3-Year Retention Rates Than Do NLRNs Working on HWE or on WENI Units? (P-O)

Retention Rates by HWE Unit Designation and Months/Years After Hire

Retention rates are significantly lower on WENI units than on HWE and VHWE units at all 4 periods (Table 2). Differences are greatest at 6 months and 1 year after hire. Drop in retention rates between years 2 and 3 was less on WENI and HWE units than on VHWE units. There was a significant drop (14%) in overall retention rates from 6 months to 2 years and from 6 months to 3 years after hire (17%). Drops in retention rates from 6 months to 1 year (6%), from 1 to 2 years (8%), and from 2 to 3 years after hire (3%) were not significant. Differences in interval-level retention data are significant in the predicted direction for all possible comparisons. NLRNs practicing on WENI units resign with significantly greater frequency than do their counterparts on HWE and WENI units (Table 3).

Resignations

Almost a quarter of the 5,316 NLRNs (n = 1,264; 23.777%) resigned during their first 3 years of professional practice. Significantly more (χ² = 86.499; P < .000) NLRNs on WENI units (n = 209; 55%) resigned during their first 6 months after hire than did NLRNs on HWE (n = 111; 33%) or VHWE (n = 77; 14%) units. Resignation rates during the second 6 months post hire were similar by HWE unit designations (22% on WENI units, 23% on HWE, and 25% on VHWE units. (Data not shown).

Reasons for Resignations

Significantly more NLRNs on VHWE units (n = 514; 45%) resigned voluntarily than did NLRNs on HWE (n = 309; 27%) and WENI units (n = 319; 28%). Significantly more NLRNs on WENI units (n = 64; 52%) resigned involuntarily than NLRNs on HWE (n = 28; 23%) and VHWE (n = 31; 25%) units. The total number of involuntary resignations was 123 (9.7%) (Table 4).

Table 2. Significance of Difference in NLRN Retention Rates at 6 Months, 1 Year, 2 Years, and 3 Years After Hire by HWE Unit Designations

<table>
<thead>
<tr>
<th>Periods</th>
<th>VHWE Units</th>
<th>HWE Units</th>
<th>WENI Units</th>
<th>RR—All Units</th>
<th>χ²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>RR</td>
<td>No.</td>
<td>RR</td>
<td>No.</td>
<td>RR</td>
</tr>
<tr>
<td>6 mo</td>
<td>2,582</td>
<td>97</td>
<td>1,333</td>
<td>92</td>
<td>1,004</td>
<td>83</td>
</tr>
<tr>
<td>1 y</td>
<td>2,443</td>
<td>92</td>
<td>1,257</td>
<td>87</td>
<td>921</td>
<td>76</td>
</tr>
<tr>
<td>2 y</td>
<td>2,209</td>
<td>91</td>
<td>1,147</td>
<td>79</td>
<td>836</td>
<td>71</td>
</tr>
<tr>
<td>3 y</td>
<td>2,114</td>
<td>90</td>
<td>1,108</td>
<td>77</td>
<td>830</td>
<td>68</td>
</tr>
</tbody>
</table>

Abbreviation: RR, retention rate.

*Retention rates are based on voluntary and involuntary resignations; 9.7% of the resignations were involuntary. Excluding these had little effect on overall retention rates. At year 3, excluding involuntary resignations raises the retention rate for NLRNs on VHWE units from 80% to 81%, on HWE units from 77% to 79%, and for NLRNs on WENI units from 68% to 69%.

Table 3. Significance of Differences in NLRN 3-Year Retention Rate (Length of Employment) by Paired HWE Unit Designations

<table>
<thead>
<tr>
<th>Paired HWE Unit Designations</th>
<th>Mean Difference</th>
<th>Standard Error</th>
<th>P</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very healthy–healthy</td>
<td>0.2948&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0490</td>
<td>.000</td>
<td>77.092</td>
<td>.000</td>
</tr>
<tr>
<td>Needs improvement</td>
<td>0.5825&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0471</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy–very healthy</td>
<td>−0.2948&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0490</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needs improvement</td>
<td>0.2878&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0528</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needs improvement–very healthy</td>
<td>−0.5823&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0471</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy</td>
<td>−0.2878&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.0528</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>ANOVA with post hoc multiple comparisons.

<sup>b</sup>Mean square between groups = 38.527. Mean difference between paired HWE unit designation is significant at the .05 level.
Effect of Contextual Variables on NLRN 3-Year Retention Rates

Retention Rate by NLRN Cohort Year
There were significant differences ($\chi^2 = 224.797; P < .000$) in the 3-year retention rate among the 2006, 2007, and 2008 cohorts. Newly licensed RNs in the 2008 cohort had significantly higher retention rates (87.2%) than did those in the 2007 (74.5%) or the 2006 cohorts (65.5%). On-site investigators volunteered the information that the higher 2007 and 2008 retention rates may have been due to the economy—specifically, that NLRNs remained in their positions because their spouses lost their jobs or because of other variables requiring financial stability.

Retention Rate by Type of Hospital
Three-year NLRN retention rates in the 12 community hospitals were significantly higher ($\chi^2 = 596.731; P < .000$) than retention rates in the 16 academic medical centers. Community hospital rates ranged from 76% to 93% (M = 85%). Academic medical center retention rates ranged from 55% to 89% (M = 75%; median = 78%).

Retention Rates by NLRN Educational Preparation and HWE Unit Designation
Retention rates by educational preparation were not significant either alone or interactively with HWE unit designation. The only significant relationship was retention rate by HWE unit designation (Tables 2 and 5).

Retention Rates by Patient Population and Healthy Environment Unit Designation
There were no significant differences in NLRN retention rates by clinical units ($F = 1.486; P = .115$), nor was there an interactive effect between patient

### Table 5. Significance of Difference in 3-Year Retention Rate (of NLRNs) by Educational Preparation of Nurse and HWE Designation of Unit

<table>
<thead>
<tr>
<th>Education</th>
<th>VHWE RR</th>
<th>HWE RR</th>
<th>WENI RR</th>
<th>F for HWE Group</th>
<th>F for Education Group</th>
<th>F for HWE Group × Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>84</td>
<td>87</td>
<td>70</td>
<td>1,253</td>
<td>81</td>
<td>80.070</td>
</tr>
<tr>
<td>Diploma</td>
<td>82</td>
<td>68</td>
<td>75</td>
<td>73</td>
<td>74</td>
<td>2.323</td>
</tr>
<tr>
<td>BSN</td>
<td>81</td>
<td>78</td>
<td>70</td>
<td>3,188</td>
<td>77</td>
<td>0.074</td>
</tr>
<tr>
<td>MSN/PhD</td>
<td>70</td>
<td>54</td>
<td>80</td>
<td>40</td>
<td>66</td>
<td>0.516</td>
</tr>
<tr>
<td>RR × HWE</td>
<td>82</td>
<td>79</td>
<td>70</td>
<td>4,553</td>
<td>78</td>
<td>0.797</td>
</tr>
</tbody>
</table>

Abbreviation: RR, retention rate.

*Educational program data were not provided for 761 of the 5,316 NLRNs. Total sample size = 4,555.
population and HWE unit designation \((F = 1.454; P = .069)\). The only significant difference in this ANOVA was that NLRN retention rates were higher on VHWE units than on HWE and WENI units \((F = 42.077; P > .000)\). Three-year retention rates ranged from 72% to 74% on medical-surgical, OR/PACU, obstetrics, pediatrics, and neonatal ICU/ pediatric ICU units to 78% to 80% on telemetry, medical-surgical ICU, emergency department, medical ICU, oncology, and orthopedic units. Retention rates on medical and surgical specialty units and in the surgical ICU were 75%. Overall retention rate on VHWE units was 80%; on HWE units, 76%; and on WENI units, 68% \((F = 77.092; P > .000)\).

**Retention Rates by Unit Transfers**

Almost 10% \((n = 490; 9.2\%)\) of the 5,316 NLRNs transferred to another unit at some time during their first 3 years of practice. Of these, 401 \((82\%)\) were successful, that is, the nurse remained employed after the transfer. Although not significant \((\chi^2 = 5.080; P = .079)\), 48% of these successful transfers \((n = 191)\) were by NLRNs who transferred to VHWE units; 28% \((n = 112)\) were by NLRNs who transferred to HWE units, and 24% of the NLRNs transferred to WENI units.

There were highly significant \((\chi^2 = 168.51; P > .000)\) differences in transfer pattern by hospital. Four hospitals had no transfers. However, in one of these, the NRP was centered in a 9-unit medical-surgical resource pool\(^{30-32}\) that functioned as a dedicated transition unit.\(^{43}\) At the end of the 10-month NRP, NLRNs had the option of choosing to remain in the resource pool or become a member of the staff on 1 of the 9 units to which they had rotated during the NRP. This reassignment was not considered a transfer. In 3 other hospitals, two-thirds of the 91 transfers \((n = 62; 68\%)\) resigned. In the remaining 21 hospitals, there were a higher percentage of successful transfers, that is, NLRNs who remained employed for at least 1 year after transfer. In 15 of these 21 hospitals, all NLRNs who transferred remained employed. In 7 of the 15 hospitals, resignation rates of NLRNs who transferred to another unit ranged from 5% to 22%. In 1 of these 7 hospitals, all 53 NLRNs who transferred remained employed at the 3-year period. Many of the retention history forms containing the transfer data contained notations such as “transfers are used as a strategy for finding the best fit between the new graduate, the community of nurses on the unit, and the patients on the unit.” Some hospitals indicated that they always start NLRNs out on units known to be excellent units—well-organized, very competent nurses who are kind to new graduates.

**Outcomes: Research Question 3:** Do NLRNs Who Experience Multistaged, that is, Transition + Integration Stage NRPs Have Higher Retention Rates than do NLRNs Practicing in Hospitals With Transition Stage: Only NRPs? Is there an Interaction Effect (HWE by Multistage NRP by NLRN Retention)?

None of the relationships between retention rates at stated periods and number of stages of NRPs were significant (Table 6). The relationship closest to what was expected was the 7-point difference \((83\%-90\%)\) in retention rates between NLRNs in transition stage–only programs and those in transition + integration stage, and transition and integration stages possible at 6 months after hire. Retention rates at 1 year after hire ranged from 86% to 89% with a mean of 87%; at 2 years, they ranged from 78% to 82% with a mean of 83%; at 3 years, they ranged

<table>
<thead>
<tr>
<th>Periods</th>
<th>Transition + Integration(^a)</th>
<th>Transition; Integration Stage Possible(^b)</th>
<th>Transition Stage Only(^c)</th>
<th>Total(^d) by Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>RR</td>
<td>No.</td>
<td>RR</td>
<td>No.</td>
</tr>
<tr>
<td>6 mo</td>
<td>413</td>
<td>90.4</td>
<td>3,230</td>
<td>90.0</td>
</tr>
<tr>
<td>1 y</td>
<td>391</td>
<td>86.0</td>
<td>3,110</td>
<td>86.3</td>
</tr>
<tr>
<td>2 y</td>
<td>364</td>
<td>79.6</td>
<td>2,809</td>
<td>78.0</td>
</tr>
<tr>
<td>3 y</td>
<td>350</td>
<td>76.6</td>
<td>2,683</td>
<td>74.5</td>
</tr>
</tbody>
</table>

\(^a\)Unless otherwise specified, retention rates are based on voluntary and involuntary resignations. Pearson \(\chi^2\) could report as MANOVA.

\(^b\)Four NRPs, ranging in length from 10 months to 15 years, mean of 1 year.

\(^c\)Fourteen NRPs ranging in length from 8 months to 1 year with a mean of 1 year.

\(^d\)Ten NRPs ranging in length from 2 to 5 months with a mean of 3 months.

\(^e\)Number of NLRNs who remained employed at the time period.

**Table 6. Significance of Difference in NLRN Retention Rates\(^a\) at 6 Months, 1 Year, 2 Years, and 3 Years After Hire by Number of Stages of NRP**

\(\chi^2 = 11.313; P > .079\)
from 75% to 81% with a mean of 77%. Newly licensed RNs in transition + integration stage NRPs or in NRPs of sufficient length to have both stages were closer together in retention rates than were NLRNs in transition stage-only NRPs.

Analysis of variance on retention rates by number of NRP stages and by healthy unit designation indicated no significant differences among NRP groups ($F = .749; P = .473$), nor was there a significant interaction effect between the number of NRP stages by healthy unit designation ($F = 1.755; P = .136$). The only significant effect in retention rate was by healthy unit designation ($F = 40.606; P > .000$). NLRNs on VHWE units had higher retention rates than did NLRNs on HWE and WENI units (data on this variable are not shown.)

**Limitations**

This study may not have adequately tested the impact of multistage NRPs on NLRN retention. Residency program questionnaires were used to group NRPs on the basis of length, precepted experience, 2-stage goal differentiation, expected role performance, and inclusion of major components in each stage. Differences between dependent-transition and independent-integration stages are clearer when these stages are cast into separate programs, such as medical clerkships (transition) and first-year residencies (integration/affirmation). In nursing, the 2 stages are almost always combined into a single residency program, or a transition-only stage NRP is offered.

In the conduct of the organizational transformation power of NRP study, many of the 927 NLRN (6 months to 1 year after hire), clinical nurse, and nurse manager interviewees discussed the significance of “rites of passage,” particularly graduation exercises and placement of nurses’ names on the staffing roster after completion of the precepted transition stage (3 months after hire). These rites signified to nurses, physicians and others that the new graduate had completed the NRP, was now considered competent to fly solo, and also was a counted member of the unit professional staff. When interviewees in hospitals with transition stage-only programs identified socialization components or activities such as peer/clinical coaching and mentoring, usually found in the integration stage as helpful and if graduation had already occurred, these hospitals may have been misclassified. They were classified as transition stage-only programs, when in fact, NLRNs were receiving some integration-stage help.

In addition to this misclassification of NRPs, premature rites of passage signifying to NLRNs that they were ready to handle the dominant nurse role—care and management of clinical situations for multiple patients, simultaneously—when they judged themselves as inadequate resulted in a marked loss of self-confidence or evaluation of the NRP as inadequate. In either case, increased turnover was likely to result.

Another limitation in the effective assessment of the impact of multistage NRPs on NLRN retention is that 5 of the 6 hospitals that did not provide 3-year retention data were academic medical centers; in 4 of these 6 hospitals, NRPs were classified as transition stage-only programs based on residency program questionnaires. Findings indicate that retention rates are significantly higher in community than in academic hospitals. Based on professional socialization theory, it was expected that NLRNs in transition stage-only NRPs would have lower retention rates than would NLRNs in multistage NRPs. The loss of 5 academic centers may well have contributed to an inadequate test of the impact of multistage NRPs on NLRN retention.

**Discussion**

Conclusions from this NLRN retention study will be organized around 4 major problematic issues related to clinical nurses’ work and work environments that were identified by nurse leaders in a national research forum: (1) the need for a consensus definition of what constitutes HWEs; (2) increasing awareness of and need to study processes inherent in the professional practice of nursing. Process measurement, although more complex than structure or outcome measurement, is necessary because “you cannot improve what you cannot measure”; (3) need for “staff nurses to tell us about their work environments,” about what it is really like to be a clinical nurse; and (4) where/how do we study nurses’ work environment and the issues related to data aggregation to unit/group level?

**Conclusions**

**Healthy Professional Practice Environments**

The most consistent, significant finding in this study is that healthy unit work environments make a difference. Not all, but 82% of the units in these Magnet hospitals were confirmed to have VHWEs or HWEs. Newly licensed RNs practicing on VHWE units report higher professional work satisfaction, less environmental reality shock, expectations more in line with role conceptions and have higher retention rates than do NLRNs working on HWE and WENI units. Validity and reliability of these findings are enhanced by the fact that HWE designations were made from data provided, not by nurse
executives, managers, or NLRNs but by a valid and reliable (≥40%) sample of clinical nurses practicing on the clinical unit for at least 1 year (median, 12 years).

Whether viewed from a structure or a process perspective, there is a strong need for consensus on what constitutes HWEs. Structural components—physical layout, work characteristics, attributes of leaders, policies, and best leadership practices—needed for HWEs have been identified by many professional and regulatory agencies, the Joint Commission, and numerous nursing organizations including the National Council of State Boards of Nursing, American Nurses’ Credentialing Center, American Association of Critical Care Nurses, and the Robert Wood Johnson/IOM report on the future of nursing.³ Nine structures/best leadership practices needed for execution of the 8 processes essential for quality care were identified through interviews with almost 1,500 staff nurses, nurse managers, physicians, and therapists in 21 Magnet hospitals.⁴⁷ Now may well be the time for nurse leaders to advance strategic improvements in nurse work environments, through agreement on a definition, by consolidation of the most effective structures needed for excellent practice environments from the various lists mentioned above, and by assessment of the quality of work environments at the unit level.

Selection of Magnet hospitals for a study automatically identifies the structures of interest since Magnet designation is based on evidentiary achievement of the Forces of Magnetism and the Magnet Model components derived from these Forces and from the original Magnet hospital report.¹⁹ Structure-outcome studies that omit the process component of Donabedian’s paradigm run the risk of faulty conclusions and/or lack of direction for strategic improvements.³⁸,⁴⁸-⁵⁰ In this NLRN research program, a representative sample of nurses on 99 clinical units in 34 Magnet hospitals indicated that their unit work environments needed improvement; they could not engage in the professional work processes or establish the relationships essential for quality patient care.⁵⁶ Since this determination was made through a process instrument (EOMII), gap analysis based on the survey items (steps and components of each process) points the direction for strategic improvements.⁵¹

The jury is still out on the differential effectiveness of multistage NRPs in NLRN retention, although the overall value of these programs has been strongly and consistently proclaimed in terms of other outcomes. Although NLRN retention rates were higher in hospitals with more complete, multistaged, theoretically derived NRPs than in hospitals with short, transition stage-only programs, the differences were not significant. Longer programs with well-developed integration stages address the unique aspects of the dominant nurse role in the hospitals—the conversion of what is perceived as chaos into mastery of the simultaneity complexity that characterizes this role.⁴⁷ The finding that NLRN retention rates are lower in academic than in community hospitals may be related to the greater complexity of care delivery and clinical situation management systems in academic hospitals. Nurse residency programs can equip NLRNs with skills needed for improvements in professional practice and patient/nurse outcomes by incorporating evidence-based management projects as advocated by the IOM.¹⁹(p314) and as identified by NLRNs and experienced nurses in the 20-hospital interview study.³⁶,³¹

**Retention**

To develop cultures of retention, organizations must provide nurses with HWEs that enable them to engage in professional practice, provide quality patient care and feel fulfilled with the quality of care they provide. Such environments also promote nurses’ allegiance and loyalty to the hospital organization and its professional communities and thus promote retention. Nurse residency programs, regardless of length or number of stages, are effective in NLRN retention based on comparisons of residents with nonresidents.⁹-¹¹ The financial investment that hospitals make with NRPs is clearly understood and appreciated by NLRNs and others; it contributes markedly to development of cultures of retention, loyalty, and allegiance.

How organizations handle placement of NLRNs affects turnover and transition. Half of the NLRNs in this study were initially assigned to VHWE units. Anecdotal comments from hundreds of interviewees indicate that nurses, as well as physicians, are well aware of the quality of the practice environment on clinical units.³⁰,³¹ which units are “good,” which support NLRNs, and which are struggling to create healthy environments. Initial placement of NLRNs on VHWE units provides excellent transition. When placed on WENI units at the beginning of the NRP, NLRNs have higher, involuntary turnover, most notably in the first 6 months. Whether NLRNs are initially placed on WENI units or are transferred to these units because staffing support is needed because of high turnover, NLRN turnover is likely to increase.

As NRPs become multi-staged, more structured, embody professional socialization principles, processes, theories, and components and more standardized in length, retention data will be needed to assess the effectiveness of these programs. One-year turnover data more likely measures NLRNs’ satisfaction with
NRPs and associated role performance, rather than being an indication of satisfaction with their performance of the dominant professional practice role of the nurse. The narrow drop in retention rates between the second and third years post hire suggests that the first year after completion of a 12-month NRP (second year after hire) is when turnover data should be collected for accurate measurement of the effect of structured, complete NRP on NLRN retention.

**Process Measurement**

Process measurement has 3 major benefits over structure measurement: it is more accurate; it requires input of clinical nurses in defining the steps/components of work processes; and process measurement enables more accurate selection of needed strategic improvements. Accuracy is advanced when nurses are consulted in tool development. Items in a process tool must be weighted on the extent to which the item contributes to achievement of the process. Clinical nurses are in the best position to identify steps/components of work processes and inform as to the differential weight of each step. In structure scales, respondents indicate extent of agreement that an item is present or characteristic of their work setting. For example, the item “nurses function autonomously on this clinical unit” will yield inaccurate results when there are multiple definitions of a construct such as autonomy. Agreement among clinical nurses, administrators, and professional organizations on definition and components of HWEs is a much-needed first step to empirically studying and improving work environments so as to enable practice resulting in improved patient/nurse outcomes. Subsequent steps are an accurate measurement of process components, obtaining response rates adequate for valid, reliable data aggregation to the group level, and involvement of clinical nurses in gap analyses. Participatory gap analysis leads to identification of “what needs to be fixed” and facilitates implementation of strategic improvements. Study findings suggest that development and empirical testing of a tool to measure NLRN integration into the dominant professional practice role could produce data to inform the continued evolution of quality NRPs that are critical to NLRN socialization, professional work satisfaction, organizational loyalty, cost effectiveness and retention.

**Acknowledgments**

Participation in this 5-year, 7-study research program required considerable time, interest, and investment on the part of the participating hospitals. On behalf of new graduates yet to come, the authors thank the participating facilities, chief nurse executives, on-site investigators, and residency program facilitators.

**References**


