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The effectiveness of strategies and interventions that aim to assist the transition from student to newly qualified nurse.

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Executive Summary

Background

The period of transition from student to newly qualified nurse can be stressful. Nearly 40 years ago, the response of those in this situation was described as a “Reality Shock”¹ and appears to be an enduring experience for many newly qualified nurses who feel inadequately prepared. This transition period is a time when nurses need to consolidate their developing knowledge and skills and adjust to their new role. A variety of strategies to improve the transition process has been reported in the international literature. These strategies aim to increase the confidence, competence, sense of belonging of new graduates and reduce turnover. However, there is little agreement in terms of what constitutes best practice and limited available evidence on the effectiveness of such approaches in achieving these aims and outcomes.

Objectives

The objective of this systematic review was to critically appraise, synthesise and present the best available evidence on the effectiveness of support strategies and interventions for newly qualified nurses.

Inclusion Criteria

The review considered all studies that included recently graduated nurses. The interventions selected were those aimed at easing the newly graduated nurse through the transition period of the first year of employment in the clinical area. The outcome measures included firstly those related to the employer in terms of recruitment and retention levels, turnover rates, measures of clinical competency and costs, and those related to the new diplomate or graduate to include anxiety, stress reduction, job satisfaction, knowledge/skills acquisition and confidence.

Data Sources

A comprehensive search was undertaken on major electronic databases to identify both published and unpublished studies from 2000 to the present date. The search was restricted to English language papers

Review Methods

The selection criteria for studies was limited to quantitative studies and included randomised controlled trials; non-randomised controlled trials and before and after studies, to identify current best evidence regarding effectiveness of support strategies and interventions for newly qualified graduate nurses.

Results

Thirty three studies were included in the review. One out of the 33 were RCTs and were 2 quasi-experimental.

- Nurse internship/residency (14)
- Graduate nurse orientation programmes (7)
- Preceptorship (4)
- Simulation (3)
- Mentoring (2)
- Final Year Students Transition Programmes (2)
- Nurse extern programmes (1)
- Lecturer practitioner support (0)
- Clinical practice facilitators (0)
- Peer support (0)

Outcomes considered as being of relevance to the employer included recruitment and retention, turnover rates, competence, confidence, and costs.

Outcomes considered as being of relevance to the new graduate were:

- Stress and anxiety reduction
- Job satisfaction
- Knowledge/skills acquisition
- Critical thinking and interpersonal skills
- Confidence
- Professional nursing behaviours
 - Leadership
 - Critical care (Reported as competence/confidence)
 - Teaching / collaboration (Reported as competence/confidence)
 - Planning / evaluation (Reported as competence/confidence)
 - Interpersonal relations / communication
 - Professional development
 - Professional support
 - Professional transition/autonomy

Conclusions

A range of outcomes were considered across the included studies relating to the effectiveness of transition programmes. This made it difficult to report firm conclusions. A significant increase in level of confidence was found in relation to internship / residency programmes and one mentorship study. Orientation and preceptorship programmes reported a general increase in levels of confidence and competency, although this was not strong evidence. Stress and anxiety generally reduced through participation in internship/residency and mentorship programmes. Where knowledge was measured (3 studies), an increase was noted, although this was only significant in relation to simulation. Internship / residency programmes demonstrated increased levels of job satisfaction. Internship / residency programmes and preceptorship reported only some success in increasing critical thinking; however, one final year transition and orientation program reported statistically improved critical thinking. Of particular note in a number of studies was a V shaped pattern for autonomy, job satisfaction, and professional transition with a decrease often occurring at the 6 and/or 12 month stage before reverting to baseline levels. The research relating to improvements in retention and reduction in turnover is poor for the majority of studies with internship / residency programs providing the strongest evidence.

Implications for Practice

The overall impact of intervention programmes appears positive no matter what the intervention; this may suggest that it is the organisation's focus on new graduate nurses that is important, rather than simply leaving them to acclimatise to their new role themselves. A combination of approaches including didactic and clinical elements appears to be helpful in facilitating the journey from graduate student to competent qualified nurse. A number of studies mentioned the importance of support from colleagues, as well as the organisation, and mentors/preceptors need to be adequately prepared for the role.

Implications for Future Research

More well conducted studies using objective measures need to be undertaken. The lack of experimental studies means there is commonly little control over other variables that might influence outcome. Future research on transitions should build on the strengths and limitations of the current studies. There is clearly a need for studies with larger sample sizes and a greater emphasis on objective and reliable measures of the outcomes included.

Keywords: transition, new graduate nurses, mentorship, preceptorship, internship, residency, orientation, simulation, externship.

Background

The period of transition from student to newly qualified nurse can be stressful²⁻⁹; Nearly 40 years ago, the response of those in this situation was described as a “Reality Shock”¹ and appears to be an enduring experience for many newly qualified nurses who feel inadequately prepared¹⁰⁻¹³. This transition period is a time when nurses need to consolidate their developing knowledge and skills, and adjust to their new role. In the absence of adequate support, nurses have been found to change clinical area or leave the profession altogether¹⁴⁻¹⁸. Some authors have suggested that up to 50% of newly qualified nurses may leave their first position within the first year¹⁹. This results in lost investments in new appointees, and additional recruitment costs for employing bodies. It can also lead to challenges to the safety of staff and to the quality of patient care provided by inexperienced and stressed staff. Therefore, the potential benefits of easing this transition could be a reduction in stress and anxiety, enhanced job satisfaction for the newly appointed nurse, improved retention rates and reduced costs for hospital organisations.

A variety of strategies and interventions to improve the transition process has been reported in the international literature. These range from formal approaches such as graduate programmes²⁰, extern programmes²¹⁻²³, residency programmes²⁴⁻²⁶, orientation programmes²⁷⁻³¹ and nurse internships^{32,33}. The more informal approaches reported include mentoring³⁴, lecturer practitioner support³⁵, preceptorship³⁶⁻³⁸, clinical practice facilitators³⁹ and peer support⁴⁰. All of these approaches aim to increase the confidence, competence and sense of belonging of new graduates. However, there is little agreement in terms of what constitutes best practice and limited available evidence on the effectiveness of such approaches in achieving these aims and outcomes.

Five reviews have summarised the relevant evidence. In the first of these, FitzGerald et al,⁶ examined transition support for new graduates excluding newly qualified diplomates. Their review considered the effects of transition support on a wide variety of employer outcomes (retention rates, levels of competency, costs, satisfaction) and new graduate outcomes (anxiety reduction, job satisfaction, role recognition, satisfaction with programme / intervention, knowledge acquisition, role consolidation and level of expectations met). The review comprised thirteen studies covering a variety of research designs, with only a few comparative studies and a greater number of descriptive and developmental studies. The conclusion was that programmes using multiple interventions and strategies over an extended period are useful. Nevertheless, there is a lack of evidence to indicate the optimal structure, length and content of the strategies and interventions. Where specific interventions for transition were considered, the role of clinical support personnel such as preceptors was highlighted as a positive factor. However, preceptors should be experienced, selected on specific criteria, and provided with training and support, if they were to be fully successful. As far as peer-support groups were concerned, informal, unsupervised support was more effective than facilitator-led support groups. However, this evidence was based on a small number of studies with low scientific quality ratings.

A further narrative review suggests that formal programmes (interventions) can have a positive impact on graduates' transition to practice, whereas mentorship and preceptorship have the potential to reduce "reality shock". The findings of this review were constrained by the inclusion of only Australian literature, and a limited examination of research outcomes⁴¹.

In addition, three reviews considered single interventions^{18, 19, 42}. For example, an integrative review of the literature by Park and Jones,¹⁸ looked specifically at orientation programs for newly graduated nurses and their effects on confidence, competency, and retention. This was based on 17 published reports. Their conclusion was such programs have strong merits and facilitate the retention of newly graduated nurses, although recommending more research on the length of such programmes. Secondly, the review by Winfield et al¹⁹ examined nurse internship programmes. Although this intervention was supported in the literature, this review did not provide information on its selection criteria or how the quality of the studies was assessed. As such, this remains a weak review of this intervention.

Finally, a review of only three studies examined the use of simulation in graduate nurse orientation⁴². Although this has the potential for new graduates to develop clinical and decision making skills, there was no clear evidence of their effectiveness that went further than self-reported measures. The review concluded that there were limited numbers of experimental studies, heavy reliance on self-reported measures, and a failure to establish the validity and reliability of the instruments.

An initial search of the literature has identified that programmes for new graduate employment are continuing to develop. A systematic review of all the literature since the work of FitzGerald et al,⁶ is clearly required to demonstrate the efficacy of both formal transition programmes and alternative informal approaches.

The aim of this systematic review is to update and evaluate any further progress on efficacious interventions from 2000 onwards to achieve a smooth transition from student to qualified nurse in the first year of qualification. The original review included recently graduated health care professionals; the present review however, will focus only on recently graduated nursing staff.

Objective

The objective of this review is to critically appraise, synthesise and present the best available evidence on the effectiveness of support strategies and interventions for newly qualified nurses.

Review question

What is the effectiveness of the main interventions used to support newly qualified nurses in transition into the clinical workplace and, where identified, the impact of these on retention rates.

Criteria for considering studies for this review

Types of participants

Newly qualified nurses during their first year of practice in the clinical area. This included diplomates (those qualifying on a Diploma level course) and graduates depending on the scheme of education. Student nurses who had completed the substantive components of their course and were involved in externship programmes or other such programmes prior to commencing formal employment. Studies including a combination of newly qualified nurses and registered nurses, where separate results for the newly qualified nurse were not reported separately, were excluded.

Type of intervention

The interventions of interest were any support strategies and interventions that assist newly qualified nurses in their transition from student to practitioner and included the following:

- Graduate nurse programmes
- Nurse extern programmes
- Nurse residency programme
- Registered nurse internship
- Mentoring
- Lecturer practitioner support
- Preceptorship
- Clinical practice facilitators
- Peer support

Types of outcome measure

The outcome measures for this review will include the following:

i) For the employer

- Recruitment and retention
- Turnover rates
- Clinical competency
- Costs

ii) For the new diplomate / graduate

- Anxiety
- Stress reduction
- Job satisfaction
- Knowledge/skills acquisition
- Confidence
- Professional nursing behaviours
 - Leadership
 - Critical care
 - Teaching / collaboration
 - Planning / evaluation
 - Interpersonal relations / communication
 - Professional development

Types of studies

The selection criteria for studies were limited to quantitative studies and included randomised controlled trials and non-randomised controlled trials. Before and after studies were considered for inclusion in a narrative summary to enable the identification of current best evidence regarding the effectiveness of support strategies and interventions for newly qualified graduate nurses.

Search Strategy

The search included published and unpublished studies from the year 2000 to the present date. Search strategy and search histories from some of the major databases are included in appendix 1. Only English language papers were included within this review due to the limited resources available. The search strategy consisted of high precision MeSH terminology and keywords, to ensure that all relevant material was captured. A three-stage search strategy was followed.

Stage 1: Initial search of MEDLINE and CINAHL using preliminary keywords drawn from the natural language terms of the topic.

The preliminary keywords searched were:

1. Transition
2. Nurse or nursing
3. Graduate
4. Clinical and/or support
5. Internship
6. Preceptorship
7. Graduate and nurse and programme

Stage 2: The text words contained in the title and abstract of relevant articles along with the controlled language index terms used to describe the papers were analysed to develop keywords for stage two. A second extensive search was then undertaken of all keywords and index terms identified as relevant to the review. Individual search strategies were developed for each database using the different terminology of index thesauri.

Stage 3: References from retrieved articles were then searched for additional studies for the final stage of the process. The Journal of Nursing Staff Development and The Journal of Continuing Education in Nursing were hand-searched to ensure that any relevant papers that may not be indexed in the major databases were located.

Databases

The databases that were searched for published material were:

- CINAHL
- MEDLINE
- British Nursing Index
- Cochrane Library
- EMBASE
- PsychLit

- PsychINFO
- PsychARTICLES
- Web Of Science
- EBM Reviews
- BioMed
- TRIP
- ERIC
- SCOPUS

The sources searched for relevant unpublished material were:

- SIGLE (System for Information on Grey Literature in Europe)
- WHOLIS
- Index of Theses
- Proquest Digital Dissertations
- Grey Literature Report
- Conference proceedings
- Research and clinical trials registers
- Internet sites of relevant associations

Electronic searching resulted in lists of articles with details of the title, author, source, and an abstract. All identified articles were assessed on the basis of the abstract (or title if the abstract not available). Full text of the article was retrieved when there was more information needed to decide on the relevance of the article. A full report was retrieved for all studies that met the inclusion criteria of the review.

Methods of the review

Assessment of methodological quality

Studies meeting the inclusion criteria were assessed for methodological quality using checklists developed by Fitzgerald et al,⁶ for the previous JBI review in this area (see appendix 2.1 for experimental studies and appendix 2.2 for observational and descriptive studies). Assessments were undertaken by two reviewers independently with any disagreements resolved by discussion with a third reviewer.

Data Extraction

Data were extracted from papers included in the review using the data extraction tool which was developed by Fitzgerald et al,⁶ for the previous JBI review in this area (see Appendix 3). Two reviewers independently extracted data. Any disagreements were resolved by discussion with a third reviewer.

Data Synthesis

The review did not identify any comparable RCTS, and as such the data were unable to be statistically combined. The data extracted from the included studies were synthesized into a narrative summary.

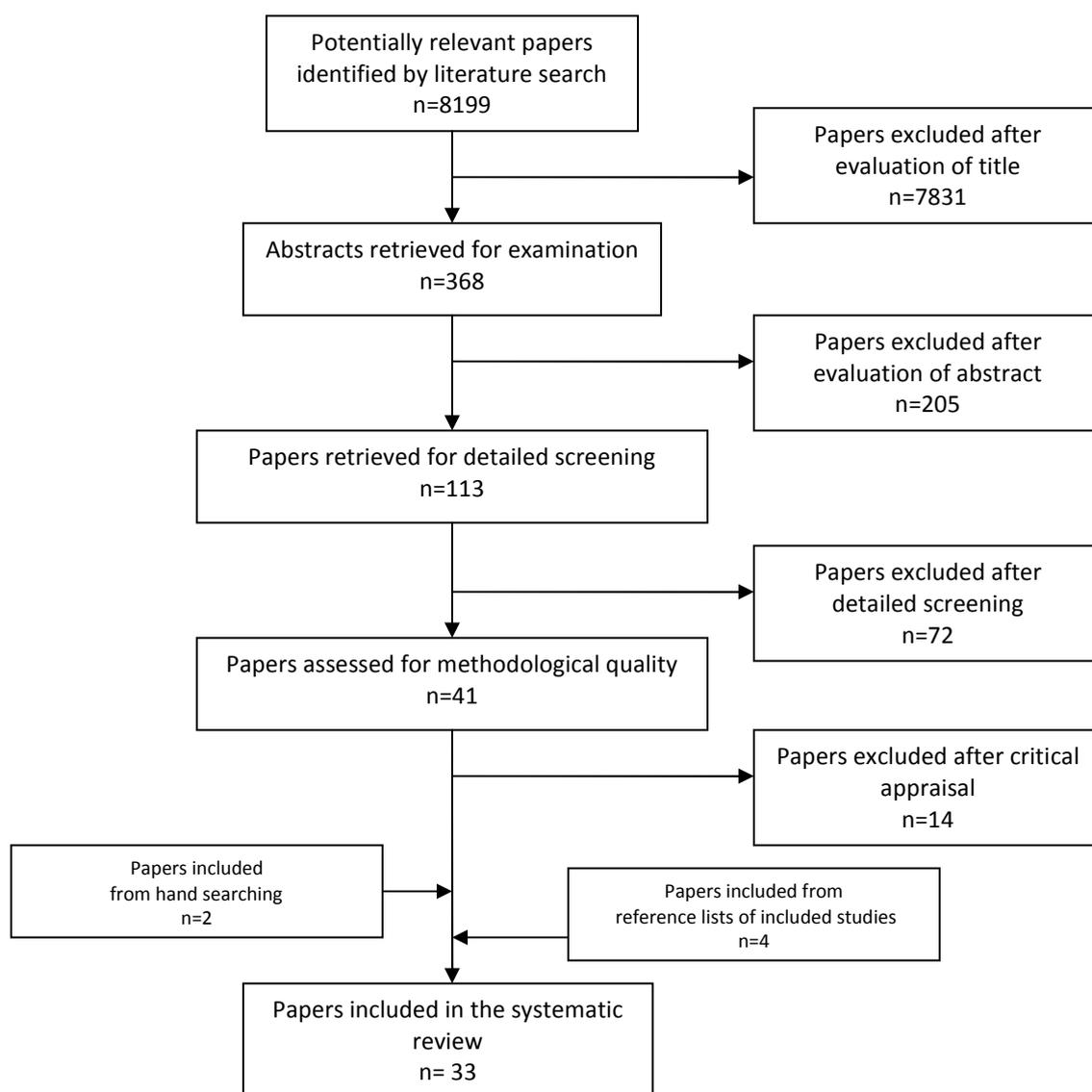
Results

Description of studies

A total of 8199 potential papers were identified in database searches and the titles were examined for potential relevance; 489 were considered potentially relevant to the review. Following inspection, 121 duplicate papers were removed. Abstracts and full text articles, where abstracts were not available or not enough information was presented in the article to make a decision on relevance, were examined for 368 papers. One hundred and thirteen full text papers were retrieved for comprehensive examination. Forty one papers were excluded after full text examination (see Appendix 4). Thirty nine papers were selected for critical appraisal and 14 papers were excluded after critical appraisal (See Appendix 5).

A flow chart has been included to reflect the study selection process (Figure 1). On final assessment, 25 studies were identified as fulfilling all of the criteria for inclusion. A secondary search was also carried out by examining the references list of each article that remained and by hand searching (*Journal of Continuing Education in Nursing* and *Journal for Nurses in Staff Development*). Thirty three papers comprised the final set included in this review. Seven papers were unavailable to be retrieved for the review.

Figure 1: Search results and study selection



The type of intervention was categorised under the following headings:

- Nurse internship/residency (14)
- Graduate nurse orientation programmes (7)
- Preceptorship (4)
- Simulation (3)*
- Mentoring (2)
- Final Year Students Transition Programmes (2)
- Nurse extern programmes (1)
- Lecturer practitioner support (0)
- Clinical practice facilitators (0)
- Peer support (0)

*Other support strategies and interventions that were not identified in the original protocol

Excluded Studies

Once identified many studies were excluded for a variety of reasons. There were a number of studies examining particular interventions for all new employees. These included both new graduates and experienced practitioners. In cases where objective results could not be determined for new graduates alone, the studies were excluded. There were many descriptive studies that reported on programs conducted in a single institution. These studies were only included if a formal evaluation was conducted using objective measures. In many cases the only evaluation was informal feedback and these studies were excluded.

Nurse internship / residency programmes

The programmes included in this section of the review (Appendix 6) are described variably as internship, residency and graduate nurse programmes. The purpose of these programmes is to bridge the gap between academic preparation and the demands of clinical practice. All include common elements of taught days with additional clinical support for all participants (new graduate nurses / final year students) in the form of mentorship and/or preceptorship. The aim is to prepare new graduate nurses to be confident, to provide competent and safe patient care, to support them to integrate within the health care team, to develop the clinical skills needed for practice, improve job satisfaction and reduce turnover. The studies included evaluation programmes undertaken across a range of sites.

Five studies are included relating to outcomes arising from the implementation of the University Hospital Consortium/American Association of Colleges of Nursing (UHC/AACN) National Post-Baccalaureate Nurse Residency program. This program is currently operational in 61 hospitals across the United States⁴³ and is based on Dreyfus' model of Skill Acquisition and Benner's model *From Novice to Expert: in Clinical Practice*. Additionally, three studies are included in this section (in addition to one study in the mentorship section) that evaluate the outcomes of a Registered Nurse Residency program that began in 1999 as a 1 year pilot and has since been implemented in a number of children's hospitals and general acute care hospitals across the USA.

The length, structure and content of the majority of the programmes vary from 6 months to 1 year with two studies of shorter 6 to 8 weeks duration. All the programmes reviewed in this section originated from the USA except one from New Zealand. Some studies employed a mixed method approach collecting both qualitative and quantitative data, where this is the case only the quantitative data have been extracted, the qualitative data are not reported in this review. The studies utilised a variety of tools to measure outcomes and as a result could not be statistically combined, therefore, a narrative summary of findings is presented.

Experimental/Quasi-experimental Studies

Paper 1: Newhouse RP, Hoffman JJ, Suflita J, Hairston DP. Evaluating an Innovative Program to Improve New Nurse Graduate Socialization Into the Acute Healthcare Setting. 2007

Newhouse,⁴⁴ conducted a quasi experimental, post-test only, control group design study to determine if there was a difference in organisational commitment, sense of belonging, and anticipated turnover for new nurse graduates who had completed the SPRING internship program (n=321). The comparison group comprised new nurse graduates hired before the implementation of SPRING (n=159). A further question was does participation in the SPRING result in higher retention of new nurse graduates than those who did not attend the SPRING?

Programme designation:	Internship programme, Social and Professional Reality Integration for Nurse Graduates (SPRING)
Setting:	Johns Hopkins Hospital, Baltimore, USA
Duration:	1 year
Clinical orientation/induction:	Standard unit orientation
Clinical support:	Mentoring by preceptors. Dedicated nurse educator who made clinical rounds to meet with new nurse interns, preceptors and nurse manager to assess role development, transition and orientation and to intervene if issues arose.
Clinical placement:	7 participating departments at a large academic hospital.
Didactic elements:	10 taught days including education group exercises and individualised personal development plans.
Comparison:	<p><i>Intervention group:</i> Recently hired new graduate nurses who participated in the SPRING internship (n=321). Response rate at 6 months was 74% (237/321) and at 12 months 70% (212/304).</p> <p><i>Comparison group 1:</i> New nurse graduates hired before the implementation of SPRING (n=159). Response rate 46% (73/159). Responses from the baseline nurses (non SPRING) were used as comparison to the intervention group (SPRING) at 6 and 12 months to establish if there was a difference in organisational commitment, sense of belonging and anticipated turnover.</p> <p><i>Comparison group 2:</i> New nurse graduates hired in one department that did not participate in the SPRING internship.</p>

The Organizational Commitment Questionnaire - OCQ (Appendix 6) was used to measure how strong an individual identifies with or is involved in an organisation. It is a 15 item 7 point Likert scale that ranges from strongly agree to strongly disagree.

There were no significant differences found in organisational commitment between those who did or did not participate in the internship program.

Valued involvement and fit, and sense of belonging were measured using The Modified Sense of Belonging Instrument – SoBI (Appendix 6). There were no significant differences in sense of belonging psychologically. There were significant differences in 6 month SPRING respondents and baseline comparison group nurses (p=0.031) and 12 month SPRING respondents (p=0.040) with 6 month SPRING nurses having a lower antecedent sense of belonging overall.

New graduates’ perceptions of the possibility of voluntarily terminating their position were measured using the Anticipated Turnover Scale- ATS. There were significant differences found in anticipated turnover between baseline, and SPRING 6 month and 12 month scores (p=0.022). Further analysis revealed that there was a difference between baseline and SPRING 6 month measures (p=0.009).

Retention data were collected for the number of non SPRING and SPRING new nurse graduates who remained in the organisation for 12 months, 18 months, and 24 months from May 2002 to December 2005. At 12 months, retention rates were significantly different between SPRING group and comparison group (p=0.014).

	SPRING program	Comparison department	
12 month retention	335/377 (88.9%)	92/115 (80%)	$\chi^2 = 6.032, p=0.014$
18 month retention	256/292 (87.7%)	70/76 (92.1%)	ns
24 month retention	228/253 (90.1%)	52/60 (86.7%)	ns

SPRING interns at 6 months were less likely to consider leaving their position than baseline nurses. They also had an antecedent sense of belonging. New graduates who attended the SPRING program had higher retention rates at 12 months than non SPRING nurses.

Comparative descriptive studies

Paper 2: Halfer D, Graf E, Sullivan C. The Organisational Impact of a New Graduate Pediatric Nurse Mentoring Program. 2008

In 2003 a Pediatric RN Internship Program based on research by Halfer and Graf,⁴⁵ The design and outcomes of the program are published in Halfer,⁴⁶ was implemented to mentor and retain new graduate nurses in the first year of practice. Further work conducted at the same institution Halfer et al⁴⁷ using a longitudinal descriptive study, sought to compare the job satisfaction and retention rates of two cohorts of new graduate nurses: one before (n=84) and one after (n=212) implementation of the Pediatric RN internship Program. An overall re-employment rate of 79% (n=234) across the two groups was reported

Programme designation:	Pediatric RN Internship Program
Setting:	Midwestern, urban, Magnet designated pediatric medical centre, Chicago, USA
Duration:	1 year
Clinical orientation/induction:	Not stated
Clinical support:	<p>Clinical mentorship (with an experienced mentor selected by the new graduate nurse).</p> <p>Clinical learning exchanges, co-ordinated by area based clinical educators, providing novice nurses with an opportunity to rotate through multiple patient care areas specific to their patient population.</p> <p>Unit based nursing preceptors trained for the role</p>
Clinical placement:	Various units: medical and surgical services, neonatal and pediatric intensive care unit.
Didactic elements:	<p>A core curriculum of approximately 80 hours of variable content was delivered through the use of both classroom learning and skills labs. In addition to the core curriculum, speciality curriculum's for the inpatient units and critical care areas provided 32-72 hours of population specific education.</p> <p>Interns attend Pediatric Advance Life Support classes, plus additional classes dependent on area of employment.</p> <p>90 minute professional transitioning sessions led by facilitators were scheduled 6 times a year linked to the classroom days to allow the interns to share experiences in a safe, confidential environment.</p> <p>A code briefing programme for nurses who had been involved in resuscitation events was organised and led by the resuscitation nursing education coordinator.</p>
Comparison:	Novice and experienced nurses hired prior to the programme's implementation and who had attended a standard nursing orientation programme.

Job satisfaction was evaluated by the Job Satisfaction Survey – JSS developed by the investigators. The survey was mailed at 3, 6, 12 and 18 months corresponding with the nurse's time of employment. When the individual item question for job satisfaction (q21) was analysed between the two groups agreement with job satisfaction was reported as significantly higher for the post internship nurse group as compared to the pre internship nurses. When this item was investigated longitudinally nurses in the post internship group indicated that they were more satisfied than dissatisfied. This finding did not reach significance until the 18 months time point ($p=0.046$). Significance was not obtained for the post internship group on any other of the 20 survey questions. Agreement with 'being comfortable' neared

significance for post internship group ($p=0.07$), nurses in pre-internship group had borderline higher responses for 'managing demands of the job' ($p=0.055$).

Turnover at 1 year of employment was monitored after the implementation of the Pediatric RN Internship Program. Voluntary turnover was calculated for each internship class and averaged 12% compared to the pre internship group where turnover was 20%⁴⁵.

Paper 3: Beecroft PC, Kunzman L, Krozek C. RN Internship: Outcomes of a One-Year Pilot Program. 2001

Beecroft et al.³² conducted an evaluation of a one year pilot internship program for new graduates. A convenience sample of new graduate nurses who had completed the residency (Group 1: intern group ($n=50$)) were compared with new graduate nurses (Group 2: control group ($n= 28/45$) hired 24 months before the internship program was conceived.

Programme designation:	Internship/Residency
Setting:	Acute care paediatric setting, Childrens Hospital Los Angeles, USA
Duration:	6 months
Clinical orientation/induction:	Not stated
Clinical support:	Mentor to sponsor new graduate into the profession and one to one preceptorship during clinical experience.
Clinical Placement:	716 hours of guided clinical experience with a one to one preceptor. The exact nature of clinical experience was not specified. In addition, looping occurred where clinical experience was gained in other areas of the hospital along the continuum of care pertinent to the patient population.
Didactic elements:	On average 224.5 hours of classroom time with hands-on skills training laboratories.
Other:	Debriefing and self-care sessions to discuss difficulties in relationship to the internship and develop strategies to address these.
Comparison:	45 new graduates were within the 24 months before the internship program was conceived and 28 returned the evaluation. The nurses in the control group had between 0.8 and 2 years of RN experience with 79% of the group having 1.5 years or more RN experience.

The study used a number of objective instruments to evaluate the program. These were completed at baseline (before the program), at 6 months (end of program) and 12 months after the program for those in the program and just at the baseline for those in the control group.

Professional values, attitudes and goals fundamental to the nursing profession and occupational identity were measured using the professional subscale from Corwin's Nursing Role Conception Scale – CNRCS (Appendix 6). There was no difference in the controls' and interns' perceptions of 'what has been observed in practice' at all time points. The control group had significantly more disagreement with the ideal situations than the interns at all time points.

Organisational commitment was measured using OCQ (Appendix 6) Interns had comparable organisational commitment scores to the control group at 6 and 12 months.

Professional autonomy was measured using the 30 item Professional Nursing Autonomy – PNA scale which describes clinical situations in which a nurse must act autonomously. No statistical difference was found in professional nursing autonomy between the control group and interns.

The interns self rated their confidence in providing safe and competent patient care using the Skills Competency Self-Confidence Survey – SCSCS (Appendix 6). A steady increase in confidence was found from the beginning of the program to beyond the end of the program (12 months). Intern's scores at 12 months were the same as the control group.

The intern's preceptors rated interns' competency at 4 time points at month 3, 4, 5 and 6 using the Slater Nursing Competencies Rating Scale – SNCRS (Appendix 6). Interns self-evaluated using the same scale during the second month of the program and at 6 months (end of the program) and 12 months (after the program). Compliance was poor by the preceptors (40-50%) and therefore evaluation using The Slater Nursing Competencies Rating Scale was abandoned.

Anticipated turnover was measured using the ATS (Appendix 6) which provides an index of an employee's perception or opinion of the possibility of voluntarily terminating his or her job. At 6 months there was a significant difference in anticipated turnover with the control group suggesting a greater intention to voluntary terminate but no significant difference was found at 12 months suggesting that they were comparable to a staff nurse of up to 2 years employment.

Descriptive studies: Longitudinal studies

Paper 4: Beecroft PC, Dorey F, Wenten M. Turnover intention in new graduate nurses: a multivariate analysis. 2008

Beecroft et al.⁴⁸ conducted a 7 year prospective, longitudinal survey (1996 to 2006) to determine the relationship of new paediatric nurse graduates who had completed the same residency (n=889) turnover intention with a variety of individual demographic characteristics; work environment variables and organisational factors. A multivariate analysis was carried out to establish which variables were related to the likelihood of turnover intent.

Programme designation:	Internship/Residency
Setting:	Six pediatric hospitals, USA
Duration:	22 weeks
Clinical orientation/induction:	Not stated
Clinical support:	Mentor to sponsor new graduate into the profession and one-to-one preceptorship during clinical experience.
Clinical placement:	716 hours of guided clinical experience with a one-to-one preceptor. The exact nature of clinical experience is not specified. In addition, looping occurred where clinical experience was gained in other areas of the hospital along the continuum of care pertinent to the patient population.
Didactic elements:	On average 224.5 hours of classroom time with hands-on skills training laboratories
Other:	Debriefing and self-care sessions to discuss difficulties in relationship to the internship and develop strategies to address these.
Participants:	Paediatric hospitals that submitted data on 50 or more respondents with a least 1 year of follow up were included.

The study used a number of objective instruments to evaluate the program, CNRCS, SCSCS, SNCRS (reduced from 84 to 76 items), PNAS, Ways of Coping – WOC - Revised, Conditions for Work Effectiveness Questionnaire – CWEQ, Clinical Decision Making Scale - CDMS. Job satisfaction was measured using the Work Satisfaction Scale – WSS and the Nurse Job Satisfaction Scale – NJSS (. Three subscales on the NS and four subscales on the WS scale were revised). Organisational factors were measured using the Leader Empowerment Behaviours Scale – LEBS revised, the Group Cohesion Scale - GCS and Organisational Commitment Questionnaire – OCQ, revised. For a full description of these measures see Appendix 6. These were completed at baseline (before the program), at 6 months (end of program) and 12 months after the program for those in the program.

Turnover Intention was measured globally using a single item scale to establish an individual's intention to leave the hospital 'Do you plan to leave this facility within the next year?' Scores ranged from 1- not at all to 7 – 'I surely do'. Actual turnover was defined as voluntary termination of employment at the hospital.

Sixty six percent of nurses indicated no turnover intention. Univariate logistic regression analysis was performed on each instrument to determine which variables influenced 'no turnover' intention. Nurses who were younger ($p=0.001$), higher level

of education ($p=0.026$), did not receive first choice of nursing ward/unit ($p=0.012$), were older and did not get their first choice of unit ward ($p=0.015$), rated themselves lower on skills self-confidence ($p=0.021$) and Slater nursing competencies ($p=0.014$), used positive reappraisal ($p=0.029$), planful problem solving ($p\leq 0.001$), coping strategies less frequently and escape avoidance ($P\leq 0.001$), lower scores on all other scales and subscales except the CWE subscales of job flexibility, “information like”, “work effectiveness like”.

Further analysis of all the significant variables was then performed using a stepwise logistic regression model. In this model, older respondents were 4.5 times more likely to have turnover intent if they did not get their ward choice. In addition, higher scores on work environment and organizational characteristics contributed to likelihood that the new nurse would not be in the turnover group. Increased seeking of social support was related to turnover intent. All the variables identified can distinguish a new nurse with turnover intent from one without 79% of the time.

Estimated 24 month employment ranged from 83% to 98%. The Kaplan-Meier estimates or percentage employment at 24 months was 89% for no turnover intention measured at 6 months and 72% for turnover intention at 6 months ($p=0.001$).

Paper 5: Ulrich B, Krozek C, Early S, Hipps Ashlock C, Marquez Africa L, Carman ML. Improving Retention, Confidence and Competence of New Graduate Nurses: results from a 10-year Longitudinal Database. 2010

In 1999, a 1 year RN residency was a piloted and was reported by Beecroft,³². Following the pilot, three additional children’s hospitals participated and 118 new graduates completed the residency. In order to deploy the residency on a national basis, in 2004 the Children’s Hospital, Los Angeles (CHLA) created a business model, Versant, and launched a web-based management system that included access to the RN residency curriculum, measurement instruments and individual resident information on competency achievement. The RN residency was then offered to both children’s hospitals and general hospitals across the United States. Ulrich et al,³³ collected 10 years of longitudinal data from over 6000 new graduates who had completed the Verdant RN Residency. Measurement instruments are used to obtain information concerning RN resident progress, to allow the organisation to compare cohorts of residents, and to improve the RN residency. The study included a qualitative element which is not included in this review.

Programme designation:	Versant RN Residency Program
Setting:	A range of settings from small rural hospitals to large health care systems
Duration:	Not stated, refers to Beecroft et al ³² which was 6 months
Clinical orientation/induction:	12 week start up including an all-day kick-off event

Clinical support	<p>One-to-one dedicated preceptorship using a team preceptor approach, beginning with a novice preceptor, as the new GN gains knowledge and experience a more experienced preceptor takes over.</p> <p>A new mentoring model, mentor circles based on evaluation of the mentor component of the original residency⁴⁸. (Two or three mentors assume responsibility for a group of mentors.</p> <p>Competency validation</p>
Clinical placement:	<p>Students own clinical areas.</p> <p>In addition, looping occurred where each resident rotates or 'loops' to areas outside of the resident's home unit during guided clinical experiences to understand what patients experience in other areas of the hospital.</p>
Didactic elements:	<p>Classes with case studies, including a core evidence-based curriculum, and speciality curricula, dependent on area. Structured mentoring providing specific content as well as discussions geared to individual needs, using a mentoring model, mentor circles where two or three mentors assume responsibility for a group of residents.</p>
Other:	<p>Debriefing and self-care sessions to discuss difficulties in relationship to the internship and develop strategies to address these.</p>
Comparison:	<p>New graduates employed by the organisation 2 years prior to implementation of RN residency.</p>

The concepts measured included the NCRS, NJSC, WSS, –SSCS, LEBS. GCS, OCQ, CWEQ, –GCS, –OCQ, PNAS, SCSC, SNCRS. For a description of these measures see Appendix 6.

Competency was self-assessed and rated by trained observers, at week 2 and at the end of the programme. Residents rated their competency higher than the observers. Observers found significant progress from the beginning to the end of the residency. At the end of the residency programme, average observed rating was equal to or higher to the observed rating of the comparison group, but the comparison group had an average experience of 17.1 months.

For the satisfaction measures it was found that the on the Job Satisfaction Scale that the enjoyment subscale was rated highest followed by quality and then time to work with the latter two increasing in stepwise fashion from end of residency programme to month 24. In the Work Satisfaction Scale, satisfaction with pay was rated the lowest and declined progressively from end of residency to month 60.

Self-rated confidence grew across time from week 2 and continued to grow beyond the programme to month 60. For the empowerment measures, meaningfulness of

work was rated lowest from the end of programme to 24 months, and expressing confidence was rated the highest. There was little difference between the residents' and the comparison groups ratings on the majority of the sub scales.

The Conditions for Work Effectiveness Questionnaire - CEWQ measured the nurses' perceptions of workplace effectiveness. At month 24, residents felt they had less opportunity and would like more, than at the end of the RN residency programme. At 24 months they felt they had more access to information and support than at the end of the RN residency programme, and their need was less. Information was provided related to the comparison group, but this was variable and recorded at one point in time making any comparisons difficult.

The mean scores for the Group Cohesion Scale at the end of the residency were 5.77, 5.68 at 12 months and 5.74 at 24 months. The comparison group mean was 5.55. Organisational Commitment score increased from 16 weeks to end of residency programme, then fell from the end of the programme to 24 months. This score was higher for the comparison group.

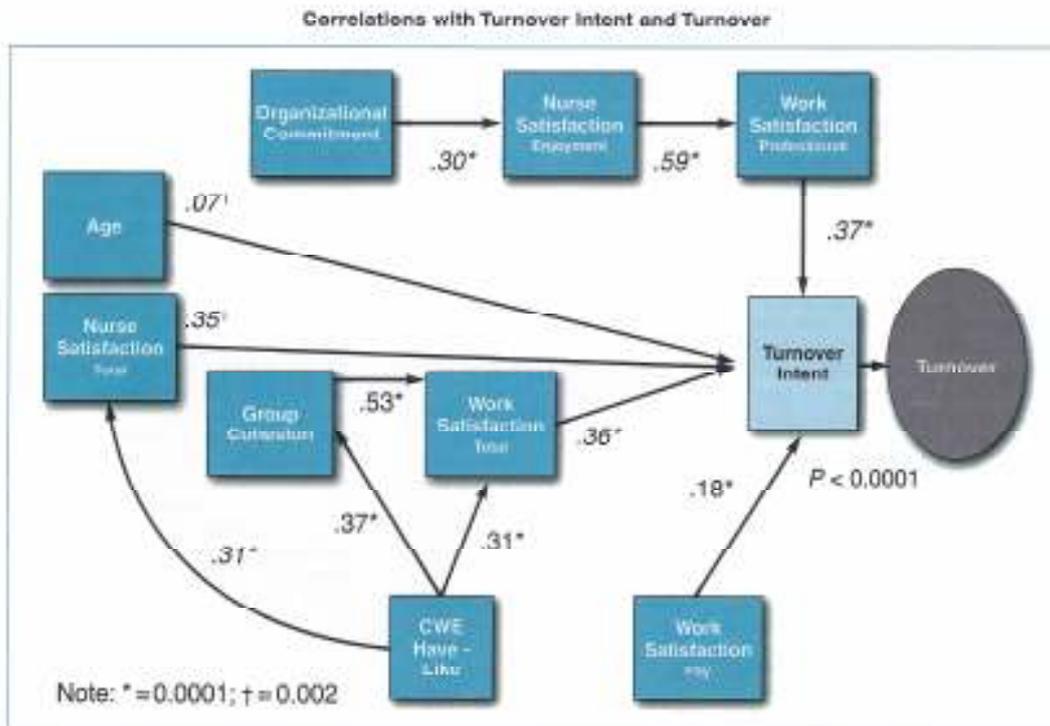
Turnover was measured monthly from months 12 to 60. The cumulative turnover rate for the Versant RN Residency was 7.1% at 12 months, 19.6% at 24 months, 28.6% at 36 months, 34.2% at 48 months and 39.8% at 60 months. With turnover rates decreasing across the 10 year period, this was helped by the fact that the graduate nurses were required to pass the NCLEX prior to starting the RN residency. A lower turnover rate was associated with having an organisation having completed a greater number of RN cohorts and by having a bachelor's degree at entry as opposed to an associate degree.

Average pre-Versant turnover for hospitals that reported 12 and 24 month turnover was 27% overall at 12 months, with some organisations reporting 12 month turnover of up to 75% and another 30% in months 13-24 with an average cumulative turnover of 49% at 24 months.

When comparing with actual turnover only the data from hospitals that reported both 12 and 24 months pre-Versant graduate turnover were compared to the actual turnover data. The average cumulative pre-Versant new graduate turnover rate was 27% at 12 months and 49% at 24 months.

Turnover intent was measured by a single item which asks "Do you plan to leave this facility in the next year?" and offers a six-point continuum of responses from "Not at all" to "I surely do". Turnover intent was a meaningful predictor of employment status at the end of the residency, at month 12, and at month 24 ($p < 0.0001$).

Logistic analysis was performed with employment status (employed / not employed) as the outcome variable and the measurement instrument data as predictor variables. A correlation analysis was then performed to obtain the five most significant correlations between the range of input variables of interest and the outcome variable Turnover Intent. These correlations are shown below.



Paper 6: Roud D, Giddings LS, Koziol-McLain J. A Longitudinal Survey of Nurses' Self reported Performance during an Entry to Practice Programme. 2005

Roud et al.⁴⁹ conducted a longitudinal cohort study to examine self reported changes in nursing performance for newly graduated nurses (n=54) during their first year of practice who were undertaking a one year entry to practice programme. The aim of the study was to quantify self-reported changes in frequency (how often) and quality (how well) of nursing behaviours using an internationally validated instrument; Schwirian's (1978) Six-Dimension Scale of Nursing Performance - 6-DSNP. The language of the scale was adapted to reflect the unique social, cultural and nursing contexts of the Aotearoa/New Zealand context. This study was the first in Aotearoa/New Zealand to investigate new graduate nurse's self reported performance using this scale.

Programme designation:	Entry to Practice programme
Setting:	Large metropolitan hospital in New Zealand
Duration:	1 year
Clinical orientation/induction:	Not stated
Clinical support:	Preceptor support
Clinical placement:	6 month placements in both surgical and medical areas.
Didactic elements:	12 study days with portfolio development
Participants:	72% (39) at first time period at seven weeks after commencement of programme.

61% (33) at final sample seven months later.

The modified 6-DSNP self assessment scale was used to measure six domains of practice: leadership; critical care; teaching/collaboration; planning/evaluation; interpersonal relations/communications and professional development seven weeks after commencement of the programme (avoiding the 'honeymoon' phase) and again seven months later.

Self reported frequency (how often) of nursing behaviours increased significantly over time in the domains of leadership ($p=0.002$), critical care ($p<0.001$), teaching/collaboration ($p=0.006$) and planning/evaluation ($p=0.039$). No change occurred in self reported frequency of nursing behaviours in the domains of interpersonal relations/communication ($p=0.178$) and professional development ($p=0.693$).

Perceived quality (how well) of nursing behaviours performed increased significantly over time in domains of critical care (<0.001), planning/evaluation (<0.001) and interpersonal relations/communication ($p=0.042$). No change occurred in the quality of performing behaviours in the domains of leadership ($p=0.063$) and teaching/collaboration ($p=0.386$). Nurse characteristics did not significantly explain the variation in frequency or quality of nurse behaviour performance over time.

The study documented change over time that was observed in a single cohort of new graduate nurses. It was not designed to measure the effectiveness of entry into practice programmes and the authors noted that it might not be generalisable to the wider New Zealand contexts.

Descriptive Case-studies

Paper 7: Kowalski S. Cross C. Preliminary Outcomes of a Local Residency Programme for New Graduate Registered Nurses. 2010.

Kowalski and Cross,⁵⁰ conducted a descriptive case study to explore the preliminary outcomes of a one year residency programme for new graduates. New graduates ($n= 55$) from the first and second cohort of the programme participated in the study. The response rate in the study varied between measures and time period.

Programme designation:	Residency programme
Setting:	2 hospitals in Las Vegas, Nevada, USA
Duration:	1 year
Clinical orientation/induction:	2 week orientation period with hospital and unit.
Clinical support:	Preceptor over the whole year after first 3 months preceptor called a 'sponsor' but in this period does not necessarily work the same shifts
Clinical placement:	12 weeks working side-by-side with a preceptor on an assigned unit

Didactic elements:

2 week orientation period at beginning. After first three months, monthly Resident Development Days (RDD). Each RDD is 8 hours in length and allows for a peer support session, an educational module, a selected skill presentation with practice opportunity and a critical thinking application session using case studies. The educational modules are divided into three areas: professional development, multicultural competency and end-of-life care. Every third month residents also participate in a patient simulation experience within the nursing skills lab of the university.

Participants :

New graduate nurses were either a BSN (Bachelor of Science in Nursing) or an ADN (Associate Degree in Nursing)

The study used three objective instruments to evaluate the program at month three and twelve months, Pagana's Clinical Stress Questionnaire - CSQ, the Spielberger's State-Trait Anxiety Inventory – STAI and the Casey Fink Graduate Nurse Experience Survey - CFGNES. For a full description of the measures see Appendix 6. The scales were all administered at the 3rd (time 1) and 12th (time 2) month of the programme. Pre and post scores were compared using non parametric statistics which took account of the small number of participants that completed follow up.

Indication of the resident stress level was measured by the threat and challenge subscales of the PCSG. Residents feeling of being threatened or challenged from time 1(n=45) to time 2 (n=13) decreased. 'The Threat' score significantly decreased ($p<0.004$) however, the not 'challenge' score did not show a significant change ($p<0.195$).

The number of participants who completed the STAI at time 1 and time 2 were 34 and 14 respectively. Although overall anxiety decreased neither state anxiety nor trait anxiety showed a significant statistical decrease.

The new nurse experience was measured using the CFGNES which has five categories; support, patient safety, stress, communication/leadership, and professional satisfaction. The number of participants who completed the measure at time 1 and time 2 were 37 and 14 respectively. Three areas of professional transition; support (time 1: mean = 27.01, time 2: mean = 28.36), patient safety (time 1: mean = 12.68, time 2: mean = 14.00) and communication / leadership (time 1: mean = 16.64, time 2: mean = 18.57) indicated an increase in the mean score, whereas professional satisfaction remained the same (time 1: mean = 9.43, time 2: mean = 9.43). These findings were significant for communication / leadership ($p=0.022$), but not for support ($p=0.115$), patient safety ($p=0.193$), or professional satisfaction ($p=0.445$).

The Preceptor Evaluation of Resident Form – PERF (Appendix 6) was used by the preceptor/sponsor to measure the progress of each throughout the programme. Clinical competency levels consistently increased over 6 measurement periods 3, 6, 8 weeks and 3, 6, 8 months. Results indicated a significant positive trend across time ($p < 0.001$). Only 4 of 9 items on the critical analysis sub-scale showed statistically significant improvement.

The study looked at retention within the programme. A total of 36 new graduates signed up to participate in the residency programme in the first year, 8 left during first year (22%) indicating a retention rate of 78%. Reasons for leaving employment included: other employment in the city for specialised positions (3), returned to home state for personal reasons ($n=2$), joined the military (1), prohibited immigration status (1), and fired for tardiness and absence (1).

Paper 8: Messmer PR, Gracia Jones S, Taylor BA. The “Shadow-A-Nurse” ICU Program. 2004

Messmer et al.⁵¹ carried out a descriptive, pilot case study to examine the impact of a Shadow-a-Nurse ICU Internship program on new graduates critical care knowledge, critical thinking skills and self confidence. . A total 24 of students were selected from the first ($n=12$) and second ($n=12$) years of programme. Demographic data indicated that they were a multi-ethnic group with 25% over the age of 30 years. No response rate was stated so it was assumed that data was collected from all participants. The study included a qualitative element which is not included in this review.

Programme designation:	The “Shadow-A-Nurse” ICU Internship Program
Setting:	Mount Sinai Medical Centre USA
Duration:	6 weeks
Clinical orientation/induction:	1 week nursing orientation with other employees
Clinical support:	One to one preceptorship with experienced ICU nurses
Clinical placement:	Intensive Care Unit (ICU) or Neonatal Intensive Care Unit (NICU)
Didactic elements:	Intensive classroom six week programme focusing on client assessment and included leadership skills, stress management, assertiveness and communication. Second full week in class followed by one day a week.
Participants:	Newly qualified nurses who had demonstrated academic and clinical excellence (Shadows).

Nurses assigned to ICU completed the Watson-Glaser Critical Thinking Appraisal – WGCTA which was developed to operationalise concepts involved in critical thinking used in nursing programmes. Those assigned to NICU completed the WCTA and the NICU Nursing Assessment Competency Exam - NICU – NACE which is part of the orientation evaluation process for all newly employed NICU nurses at the start and

end of the program. Critical thinking decreased slightly for new graduates from both year 1 and year 2 groups but significance was not reached. The year 1 mean pre programme score was 62.75 (out of 80) and the post programme score was 60.08. The year 2 mean pre programme score was 55.67 (out of 80) and the post programme score 51.83. The preceptors were used as a control group for the WGCTA, there was no statistically significant change in their mean scores pre and post programme, however the mean scores of these experienced ICU preceptors were lower than those of the preceptees (shadowers).

Knowledge was assessed using Toth's Basic Knowledge Assessment Tool - BKAT, a 100 item paper and pencil test that tests key components of adult critical care nursing at the start and end of the programme. Knowledge scores significantly increased for both year 1 and year 2 groups. The year 1 mean pre programme score was 64.5 and the post programme score was 81.0. The year 2 mean pre programme score was 67.83 and the post programme score 76.42.

Paper 9: Owens DL. et al. New Graduate RN Internship Program: A Collaborative Approach For System-Wide Integration. 2001

Owens et al.⁵² conducted a mixed methods descriptive case study to evaluate graduate nurses' reaction to the internship programme and change in professional behaviour/performance as a result of assimilating learning from the programme. The study included a qualitative element which is not included in this review. A total of 75 new graduates, 49 from the July 1998 programme and 26 from the September 1998 programme were eligible for inclusion in the study. A low response rate of 25% was achieved (19 graduate RN's, 23 preceptors and 15 patient care directors)

Programme designation:	Internship
Setting:	Five acute care hospitals within the Inova Health System (IHS), Virginia, USA
Duration:	8 weeks
Clinical orientation/induction:	Precepted clinical experience blended throughout the 8 weeks
Clinical support:	Preceptorship
Clinical placement:	Various units across the five hospitals
Didactic elements:	Transitional issues; priority setting; delegation; clinical thinking; organ donation; infection control; nutrition; communicating with families; age specific issues; skin care; medical-surgical emergencies and code management; blood transfusions; pharmacology; stress management; outcome driven care and skills day with orientation to equipment. Brief reviews of pathophysiology, application of that knowledge in clinical scenarios

Behavioural Performance Evaluation Tools – BPET were developed to measure whether the new graduate RN assimilated learning within the practice setting after a

3 month interval in nine key areas (i.e. patient assessment using critical thinking and decision making skills, documenting care, performing nursing procedures and skills, time management skills, effective communication). No indication was given in the data regarding the level of behavioural performance. The data provided reviewed the differences between new graduates perception of their performance, preceptor perception and patient care director's (PCD) perception. A one way ANOVA for groupwise differences between new graduate RN's, preceptors and PCD's' was performed on the data. The groups were not significantly different statistically apart from one question "orientee is able to ask questions of healthcare team to increase practice knowledge", PCD's scored significantly lower than preceptors and new graduate RN's. New graduates orientees were able to accurately assess their performance.

One year retention rate was reported. At one year 74% of July 1998 cohort were still employed by the original hiring unit, 14% transferred place of employment within IHS, 12% left the system. At one year 73% of September 1998 cohort were still employed by original hiring unit, 15% transferred place of employment within IHS, 12% left the system. Overall results indicated 88% retention of new graduates within IHS.

University Hospital Consortium/American Association of Colleges of Nursing (UHC/AACN) National Post baccalaureate Nurse Residency program

Five studies reported on this nationally developed program. The curriculum was developed by clinical and academic nursing partners from the UHC network as a research initiative. The curriculum supports the essential elements designed for practice within the Magnet recognition program.

Paper 10: Altier ME, Kresk CA. Effects of a 1 year Residency Program on Job Satisfaction and Retention of New Graduate Nurses. 2006.

Altier and Kresk,⁵³ carried out a prospective, longitudinal study to evaluate the effect of a one year post baccalaureate nurse residency program, using a standardised curriculum, upon job satisfaction and retention of (n=316) baccalaureate-prepared graduates in their first year of employment. Although not specifically stated this study pilot tested the residency programme reported by^{26, 54-56}. There was an overall response rate of 35%, with 111 out of 316 having complete data at both baseline and follow up which was included in the analysis.

Programme designation:	Post-baccalaureate Residency Program
Setting:	6 University hospitals/academic medical centres, USA
Duration:	1 year
Clinical orientation/induction:	The same general orientation all new nurses receive. It is not stated what this entails or the duration of this
Clinical support:	Preceptor guided clinical experience. Resident facilitator to discuss issues and provide guidance.

- Clinical placement:** Work experiences centred on 5 themes in the core curriculum Duration and type of work /clinical experience unknown.
- Didactic elements:** A two phase core curriculum based on themes throughout the one year program. Total length of taught component not specified.
Specific clinical coursework unique to the nurses' practice site and speciality

A job satisfaction questionnaire was completed on two occasions, initially at hiring and upon completion of the 1 year program. This was measured using the McCloskey-Mueller Satisfaction Survey – MMSS (Appendix 6).

There was a statistical significantly decrease in scores for two domains; satisfaction with praise (mean paired difference 1.12, $p=0.001$) and professional opportunities (mean paired difference 0.68, $p=0.007$). There was minimal change in total satisfaction and in the other 6 domains of job satisfaction.

The overall scores for the MMSS demonstrate that levels of satisfaction remained consistent throughout the first year. This may be because on entry to the study the score was already high at 113.5 and at the end of the program the score was 110.5 which was not significant ($p=0.055$)

The study reported a percentage retention rate at the end of the one year programme. There were 87% of residents retained at the end of the 1 year program. Approximately 10% (31 of 316) of the residents terminated the program. Reasons for termination were illness ($n=5$), relocation ($n=10$), dissatisfaction ($n=11$), and no reason ($n=5$).

Paper 11: Krugman M, Bretschneider J, Horn PB, Krsek CA, Moutafis RA, Smith MO. The National Post-Baccalaureate Graduate Nurse Residency Program. 2006.

Krugman et al,⁵⁴ carried out a comparative, descriptive study to evaluate a one year National post-baccalaureate Nurse Residency Program using a convenience sample of all nurse residents hired across six participating sites. The total number of participants included in the study and response rate is not specified.

- Programme designation:** Graduate Nurse Residency Programme
- Setting:** 34 academic hospitals participated in the programme.
This study relates to the 6 pilot sites- University Medical Centre Tucson, University of Colorado Hospital, University of Kentucky, New York University Medical Centre, Hospital of the University of Pennsylvania, University of Utah Hospital and Clinics

Duration:	1 year in total consisting of 2 phases of 6 months duration
Clinical orientation/induction:	Institution's hospital orientation
Clinical support:	1:1 baccalaureate prepared clinical preceptor who has attended training based on national residency curriculum.
Clinical placement:	Various throughout participating hospitals
Didactic elements:	Evidence based practice reinforced by projects and analysis of clinical narratives Leadership Evidence –based patient outcomes Professional role Phase 1-required speciality training targeted to clinical service e.g. critical care course & monthly resident seminars. Curriculum content presented and case studies used as vehicle for group discussion. Cohort groups and clinical narratives are core components Phase 2-monthly seminars with a resident facilitator who guides residents in their critical thinking

A number of objective instruments were selected to compare outcomes of residents at program entry, at the 6 month midpoint of the residency year, and at 12 months on program conclusion. Autonomy was measured using the Gerber Control Over Practice Scale – GCONPS (Appendix 6). Scores were found to vary significantly across sites with an overall trend that residents measured fairly high in the beginning, dipped at 6 months, but continued to report satisfaction by the end of the program.

The MMSS was used to measure job satisfaction (Appendix 6). The domain of interest to this sample was professional opportunities because the outcome desired is that residents have a positive perception of future opportunities professionally at their hospital. This was indicated for all but one site.

The Casey-Fink Graduate Nurse Experience Survey - CFGNES was used to measure skill development and support. The subscale of stress was reported to be high at baseline and decreasing over time. The subscale organising and prioritizing was reported to have improved over time.

A Residency Evaluation Form – REF was developed by the researchers to evaluate the programme. The programme generally evaluated positively but there was variance across sites with a significance level of $p=0.03$. The key variable determined to be different was the lack of monthly support sessions and lack of a cohort group at that participating site.

A turnover rate of 8% was reported, full details reported in Beecroft et al⁴⁸.

Paper 12: Williams C, Goode C, Krsek C, Bednash G, Lynn M. Post baccalaureate Nurse Residency 1-Year Outcomes. 2007.

Williams et al.²⁶ conducted a longitudinal, descriptive study to evaluate one year outcomes of a Post-Baccalaureate Nurse residency. A total of 679 nurse residents from 2 cohorts: alpha (n=486) and beta (n=193) who completed the programme were included in the study. The response rate is not stated. The rationale for the development, program objectives conceptual framework, curriculum and processes used in implementing the program are described by Goode and Williams²⁴.

Programme designation: Post baccalaureate Nurse Residency
Setting: 12 sites across the USA
Duration: 1 year
Clinical orientation/induction: Usual hospital orientation
Clinical support: Nurse preceptor
Clinical placement: Across sites
Didactic elements: Core curriculum content not stated. Referred to in Goode and Williams²⁴. A resident facilitator provides professional role development and guidance

The study used well validated and reliable scales that had previously been used with (UHC/AACN) National Post baccalaureate Nurse Residency program – the CFGNES, GCONPS, MMSS (Appendix 6) at 3 time points: at entry (T1), 6 months in (T2), and completion at 12 months (T3). To determine if residents perceptions changed over time, repeated measures analysis (ANOVA) compared measures at the various time points. Results for the two cohorts (Alpha and Beta) were not amalgamated but presented separately, with mean scores reported for each of the measures. The findings for the repeated measures ANOVA of CFGNES are summarised in the table below.

Total mean	Significant increases in both cohorts T1<T2<T3
Stress	Significant reduction in both cohorts T1> T2>T3
Organise-Prioritise	Significant increases in both cohorts T1<T2<T3
Communication-Leadership	Significant increases both cohorts T1<T2<T3
Professional Satisfaction	Significant reduction in both cohorts from T1 > T2 Scores higher at T3 than T2 and T3 and T2 but not significantly different
Support	Non significant for Alpha cohorts Significant increases for Beta cohorts T1<T2<T3

When < / > are used significance reported at p=0.05 level, comma indicates no significant difference

The findings of the repeated measures ANOVA of GCOPS are summarised in the table below.

Total mean	V shaped pattern T1 and T3 higher than at T2 for both cohorts. T1>T2<T3
Clinical Leader	Non significant for both cohorts between T1, T2 Significant increase in both cohorts T3 significantly higher than T2. T1 T2<T3
Evaluation	Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1>T2, T3
Skilful team member	Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1>T2, T3

When < / > are used significance reported at p=0.05 level, comma indicates no significant difference

The findings of the repeated measures ANOVA of MMSS are summarised in the table below.

Total score	V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1>T2<T3
Total score mean	V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1>T2<T3
Interaction	Statistically significant increase for both cohorts T2 to T3. T1 T2<T3
Schedule	Statistically significant decrease for both cohorts from T1 to T2 with T3 trending up but not statistically significant. T1>T2 T3
Professional opportunities	V shaped pattern, statistically significant reduction both cohorts T1 to T2; T3 significantly higher than T2. T1>T2<T3
Praise-recognition	Statically significant reduction for both cohorts from T1 to T2 with T3 trending up but not statistically significant. T1>T2 T3
Control-responsibility	V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1>T2<T3

When < / > are used significance reported at p=0.05 level, comma indicates no significant difference

Of the 1,701 residents who were hired before September 2004, and could have completed the program, 280 left giving a 1 year turnover rate of 16.5%. When those who failed NCLEX, and those who became seriously ill or died removed turnover rate dropped to 12%.

Paper 13: Goode CJ, Lynn MR, Krsek C, Bednash GD . Nurse Residency Programs: An Essential Requirement for Nursing. 2009

Goode et al.²⁴ conducted a descriptive study to measure outcomes from a Post-Baccalaureate Nurse Residency program. The study invited 1,484 nurse residents who had completed the program across twenty six sites achieving a response rate of 46% (655/1484).

Programme designation:	Post-Baccalaureate Nurse Residency Program (see Krugman et al ⁵⁴)
Setting:	26 academic medical centre hospitals
Duration:	1 year in total consisting of 2 phases of 6 months each
Clinical orientation/induction:	Institution's hospital orientation
Clinical support:	1:1 baccalaureate prepared clinical preceptor who has attended training based on national residency curriculum
Clinical placement:	Various throughout participating hospitals
Didactic elements:	Program (see Krugman et al ⁵⁴)

The measures used in this study were the GCOPS, MMSS, CFGNES and REF (see Appendix 6). Turnover rate was reported to be 9%. For the GCOPS there was a significant increase in autonomy at the end of programme $p=0.02$. A decline in all job satisfaction dimensions was found at 6 months in both the MMSS and in the CFGNES professional satisfaction factors. There was a statistically significant increases in graduate nurse experience over 3 time periods (Start, 6 months, 12 months) in overall confidence in their skills $p=0.02$, ability to organise and prioritise work $p=0.00$, comfortable communicating with teams and families and in providing clinical leadership on their units $p=0.00$. Stress scores declined significantly from T1-T3 $p=0.00$. Evaluation and skilful team member factors declined at 6 months. No results were presented from programme evaluation using the Residency Evaluation Form.

Paper 14: Setter R, Walker M, Connelly L.M, Peterman T. Nurse Residency Graduates' Commitment to Their First Positions. 2011

Setter et al.⁵⁶ conducted a cross-sectional, descriptive study to explore the relationship between job satisfaction, reasons for staying and satisfaction with the Nurse Residency program to job commitment and retention of nurses who completed the program. A total of $n=202$ graduate nurses who had completed the NRP between its inception in 2003 and who were still employed in 2007 were invited to participate in the study, achieving a response rate of 49.5% (100/202). The study included a qualitative element which is not included in this review.

Programme designation:	National Nurse Residency Program (see Krugman et al ⁵⁴)
Setting:	University of Kansas Hospital, USA
Duration:	1 year
Clinical orientation/induction:	Institution's hospital orientation
Clinical support:	1:1 baccalaureate prepared clinical preceptor who has attended training based on national residency curriculum
Clinical placement:	Various throughout hospital
Didactic elements:	see Krugman et al ⁵⁴

The commitment to current position and intent to remain in position was measured using The Commitment Scale - CS. The results from this scale are not specifically

mentioned. The importance of factors related to remaining in current position was measured using The Reasons for Staying Scale – TRFSS which was developed by the investigators. This consisted of 18 items that were rated on a 6 point Likert scale with 5 being highly important and 0 being possible reason for leaving. The five top reasons for staying were: teamwork on my unit (mean 3.87, SD 0.597); ability to give quality care (mean 3.71, SD 0.700); liking or enjoying my job (mean 3.56, SD 0.956) and relationships with co-workers and benefit (mean 3.56, SD 0.624). The most frequently mentioned reason for leaving was ‘relationship with nurse manager’.

The MMSS (see Appendix x) was employed to measure job satisfaction. The total average score was 112.4 which were similar to the scores found by Altier and Krsek,⁵³ scores on first six NRP sites.

A Nurse Residency Satisfaction Scale - NRSS was developed from specific items on the Nurse Residency Programme evaluations. Regression analysis was used to determine which factors could explain changes in scores on the NRSS. These results are difficult to interpret as they have not been presented in a standard manner. The authors report that although the NRSS was not significantly related to job satisfaction as predicted, it was significantly related to reasons for staying. In addition, years since completion of the NRSS was not negatively related to commitment as had been predicted but was negatively related to reasons for staying. However, both these variables only explained a small part of the variance. The retention rate was reported at 1 year to be 94% and overall at 76% for all 4 years.

Summary of Findings for Nurse Internship / residency programmes

Using JBI levels of evidence relating to evidence of effectiveness, the strongest evidence in relation to the evaluation of residency programmes was a Level 2 quasi-experimental, post test only, control group design study, however no demographic data was collected on the control group to establish whether their level of experience in months was comparable, in addition the response rate was poor in the comparison group. The other studies were Level 3; three studies used a comparative design with the control/comparison groups being historical controls. The other 11 studies were classified by the authors as either longitudinal, cross sectional or case studies. Two of these had small sample sizes^{32, 51}. Sample sizes overall varied from 24⁽⁵¹⁾ to 6000⁽³³⁾, Krugman⁵⁴ however, failed to report sample size, Becroft⁴⁸ only included hospitals where data was submitted on more than 50 participants at one year follow up. Fourteen studies were included, participants in all 14 were new graduates.

The majority of studies used well-known and validated outcome measures such as the Casey Fink Graduate Nurse Experience Survey, Schwirian’s Six Dimensional Scale of Nursing Performance, Gerber Control Over Practice Scale and the Mc-Closkey Mueller Satisfaction Scale. Where competency was self evaluated results should be viewed with caution as experienced observers scores differed from self evaluation³³. With the exception of one study⁵⁷ more than one outcome was used to measure efficacy. A variety of variables (listed below) were measured to establish the efficacy

of the interventions and there is commonality in the measures used across studies, some instruments measure multiple variables:

- Competence/Confidence
- Knowledge
- Job satisfaction
- Critical thinking / Decision making
- Anxiety / Stress
- Professional Transition / Autonomy
- Retention / Turnover
- Empowerment
- Organisational Commitment and Group Cohesion

Competence and confidence

Levels of confidence and competency were found to have generally increased. Kowlaski and Cross,⁵⁰ reported that clinical competency significantly increased over a 6 measurement periods throughout the one year programme. Observers found significant progress in competency from the beginning to the end of the RN residency, the average observed rating was equal to or higher than observed ratings of comparisons groups who had, on average, more experience than the intervention group³³.

Beecroft³² noted an increase in self rated confidence and in providing competent and safe patient care from the beginning to end of the programme, it was not reported whether this was statistically significant. A similar trend with significant increases in confidence in skills throughout the programme was reported⁵⁵. In relation to the domains of critical care, planning / evaluation and interpersonal relations / communication participants in the New Zealand nurse entry to practice programme, self-perceived quality (how well they felt they performed) of nursing behaviours increased significantly⁴⁹, indicating a self perceived increased confidence in their performance.

Knowledge

Knowledge scores were reported in one study only⁵¹, and these were found to increase for the two cohorts studies. The pre and post programme knowledge scores were not compared to a control group.

Job satisfaction

A number of studies^{26, 54-57} used the MMSS scale to measure job satisfaction, only 3 of the studies^{26, 56, 57} reported mean levels for the measure, these were similar at study end, with all measures higher than the average mean for the scale, indicating high job satisfaction. When the MMSS was also done at a 6 month time point the results fluctuated, with 2 studies^{26, 55} reporting a significant V shaped decrease in satisfaction at the 6 month stage of the programme. At 12 months job satisfaction was significantly higher than at 6 months, this was slightly lower than at the beginning of the programme but this was not statistically significant. Altier and Kresk,⁵⁷ found a decrease in 2 out of 8 domains relating to job satisfaction of the MMSS at the end of the 12 month programme. These results should be treated with

caution however, as the response rate was only 35%. Krugman⁵⁴ reported that all but one (of 6) sites in their evaluation had a positive perception of future opportunities at their hospital using one domain of the MMSS scale, professional opportunities. Setter⁵⁶ reported that the residency programme was not significantly reported to job satisfaction but was related to reasons for staying.

A further two studies reported on job satisfaction. One study compared levels of job satisfaction for 2 separate cohorts of nurses pre and post internship. Agreement with job satisfaction was reported as significantly higher for the post internship nurse group as compared to the pre internship nurses. At the 18 month time point the post internship nurses indicated that they were significantly more satisfied than dissatisfied.

Ulrich³³ reported that of the 3 subscales of for the JSS that the 'enjoyment subscale' was rated highest, followed by quality and then time to work, with the latter two increasing in stepwise fashion from the end of residency programme to month 24. In the WSS, satisfaction with pay was rated the lowest, and declined progressively from end of residency to month 60.

Critical thinking/decision making

Critical thinking was reported for two studies^{50, 51} and conflicting results were reported. A significant improvement was demonstrated in only 4 out of 9 items in the critical analysis section the preceptor evaluation form⁵⁰. Messmer⁵¹ reported that critical thinking decreased for both intervention groups but this did not reach statistical significance, possibly due to the small sample size (n=24). The difference in the findings may be accounted by the different measurement tools and different participants (ICU⁵¹ or generic⁵⁰ new graduate nurses).

Stress and anxiety

Levels of stress and anxiety generally reduced through participation in the internship/residency programmes. One study⁵⁴ reported a reduction in levels of stress from the beginning of the programme. However, no statistical analysis was conducted to enable any significance to be drawn. Two later studies however, were able to report statistically significant reductions in levels of stress between the beginning and end of the programme^{26, 55}. Kowlaski and Cross⁵⁰ reported that overall anxiety decreased but not significantly. A further study reported that levels of anxiety decreased from the beginning and to the end of the programme but this was not significant.

Professional transition/autonomy

Beecroft³² found no significant difference in professional autonomy between intervention and control groups. Three studies used the GCONPS^{26, 54, 55}. Significant increases in autonomy at the end of 1 year programme^{26, 55} were demonstrated. Krugman measured autonomy in new residents from across 6 different hospital sites, scores were found to vary significantly with an overall trend that residents measured fairly high in the beginning, dipped at 6 months, but continued to report satisfaction

by the end of the program⁵⁴. This overall V shaped pattern was also reported in the study by Williams et al²⁶.

Kowlaski and Cross⁵⁰ found an increase in the mean scores for three aspects of professional transition which were support, patient safety and communication/ leadership but significance was only reached for communication / leadership. A similar V shaped pattern was noted in relation to professional satisfaction^{24, 26, 54}.

Empowerment

Resident ratings were very similar to those of the control group for the Leader Empowering Behaviour Scale³³, measuring the perceptions of the residents in relation to the leader enhancing the meaningfulness of work, fostering participation in decision making and expressing confidence in high performance. Frequency (how often) of self reported behaviour in the domain of leadership increased significantly throughout the nurse entry to practice programme⁴⁹ but no change occurred in perceived quality (how well) of this domain.

Organisational Commitment and Group Cohesion

The overall Group Cohesion score showed a V shape dipping at 12 months and returned to baseline at 24 months, this was higher than the comparison mean³² Organisational commitment increased at the end of the programme and then decreased between 12-24 months, comparison group was higher than overall³² Interns had comparable organisational commitment scores to the control group at 6 and 12 months³³. Higher scores on organisational characteristics such as organisational commitment and group cohesion reduces likelihood of turnover intention⁴⁸.

Retention/turnover

High retention rates of between 73 – 94% were reported at one year,^{50, 56-58}. One study reported a drop in the retention rate by 18%, 4 years later and noted that the retention rate decreased after 1st year, particularly after 3rd year⁵⁶. Significant differences were noted in retention between intervention and comparison groups⁴⁴ at the 12 month time point but at 18 and 24 months this difference was no longer significant. The authors suggest that program extension through the second year may be helpful in nurse retention.

Turnover rate was reported in 5 studies,^{26, 33, 47, 54, 55} and ranges from 8%-16.5%. One study,³³ retrospectively examined rates over a ten year period demonstrating that these decreased over that time period. However, as this group were different from other studies in that they passed their NCLEX prior to commencing the residency; the sample may have differed from the other groups. Two studies^{32, 44} demonstrated that anticipated turnover/turnover intent was significantly lower in intervention than comparison groups at 6 months. By 12 months however, these differences had diminished³².

Ulrich's,³³ work concludes that lower turnover rate was associated with an organisation having more experience of running programmes and including students

with Bachelor's degrees rather than associate degree. Beecroft³² reported that older respondents were 4.5 times more likely to have turnover intent if they did not get their ward choice. When new graduates were satisfied with their jobs and pay, and felt committed to the organisation, the odds of turnover intent were low.

Two studies^{26, 57} reported the voluntary / uncontrolled reasons for terminating the residency / internship programme early. The reasons given were serious illness, relocation, dissatisfaction, failing the NCLEX.

Comments

Findings indicated a V shaped pattern for a number of variables across several studies^{26, 33, 54, 55} suggesting that reality shock as defined by Kramer¹ or effects of transition often occurred at 6 months. A lack of control/comparison groups is noted^{51, 57}. Where comparison groups are used they are convenience samples and are not well matched³² or the time of measurements is not clear³³. Orientation periods are variable and where programmes are rolled out across sites there is acknowledgment that consistency cannot be guaranteed, thus limiting generalisability. One study was conducted in New Zealand, all the remaining internship/residency programmes included are from the USA with the RN Residency Programme³² in an acute paediatric setting prior to being rolled out.

Graduate Nurse Orientation Programmes

Orientation is a term used for being introduced to, or adjusting to a new environment. Structured orientation programmes, similarly to residency/internship programmes have been developed to reduce turnover, negate job dissatisfaction and also to encourage nurses into areas where recruitment has declined. Although similar to nurse residency/internship programmes in the way they are structured including both didactic elements and clinical support through preceptorship they are generally shorter. The programmes included in this section of the review (Appendix 7) specifically identified themselves as orientation programmes and are therefore presented here separately from the residency/internship programmes. Results will be combined with the residency/internship programmes in the final summation highlighting differences between short term <6 months and longer term >6 month programmes utilising a similar format.

Paper 15: Marcum E, West R. Structured Orientation for New Graduates. 2004

Marcum and West²⁹ sought to increase retention of nurses in acute care medicine through a structured 13 week orientation programme, the '2000 New Graduate Orientation Programme'. This study is unusual in that a previously closed hospital unit was specifically reopened for the purpose of housing the New Graduate Unit. Preceptors selected from the three hospitals who participated in the programme became the unit staff. Participants were 20 new graduates (11 with an associate degree, 9 with a bachelor's degree). Two groups completed the programme (Group 1 = 13, Group 2 = 7).

Programme designation	2000 New Graduate Orientation Programme
Type of study:	Descriptive case study
Setting:	18 bed hospital unit, USA
Duration	13 weeks
Clinical orientation/induction:	2.5 weeks of general hospital orientation
Clinical support:	1 preceptor to 2 new orientees
Clinical placement:	13 weeks in a previously closed hospital unit reopened to house the new scheme with work experience scheduled in different specialities as required
Didactic elements:	Weekly classroom instruction targeted towards achieving specific competencies outlined in the competency tool

Outcomes were measured through a variety of tools. At 1 year post completion of the program the Professional Judgment Rating Form was used to evaluate critical thinking and professional judgement skills. This evaluation was completed by participants, preceptor and at least 1 additional RN staff from the unit where the graduate nurse was assigned to work. Data reflected that 83.3% of the graduates demonstrated very strong critical thinking ability. The remaining 16.6% scored positive, the second highest category of critical thinking in the survey.

The Performance Based Development System - PBDS assessment tools for critical thinking and interpersonal skills were used in the initial assessment of new graduates and eight weeks later and results showed a significant improvement ($p < 0.02$).

The American Society for Training and Development Evaluation Tool - ASTD (Appendix 7) was used to provide a self evaluation of the overall effectiveness of the programme as well as programme goals and objectives using a 5 point Likert scale for 1 - strongly disagree to 5 - strongly agree. The mean scores for all aspects of the scale were above 4 indicating that the programme participants agreed that the programme was effective. At the end of the 13 weeks the RN Competency Assessment - RNCA was used to determine readiness for the RN role. All core competencies were met prior to the move to the home units.

At 18 months post completion of the programme, 89% of orientees remained employed compared to 29% in 1999 and 41% in 2000 prior to the programme. Uncontrollable turnover rate (personal reasons) was 11% ($n=2$).

Other evaluation measures used (results not reported) included a Weekly Preceptor Evaluation Form on the use of the nursing process, a Unit Orientation Plan to guide the orientee and preceptor through the transition process transition to RN role, an RN core competency assessment form to be completed by end of orientation (all had to be completed before the orientee could complete the program) and a Leadership and Participation Summation Form to provide feedback on programme strengths and areas for improvement.

Following completion of the 2 cohorts recommendations were made that the program would in future be conducted in the unit on which the orientee would be employed. Programme evaluation using validated tools, statistically significant improvement in critical thinking and interpersonal skills. This was a very specific orientation programme, a previously closed 18 bed hospital unit was reopened for the purpose of housing the new graduate unit. It was very resource intensive and they decide in the future that the orientation would be conducted on the unit on which the orientee will be employed. The unit was only staffed by the preceptors and the new graduate nurse therefore didn't necessarily reflect a normal ward environment. If the orientee needed specialist experience they obtained this through work experience with different specialities during the orientation. In the last 3 weeks of the first groups orientation unit capacity had been reached and the new graduates were moved earlier to the home units.

Paper 16: Young M, Stuenkel D. Bawel-Brinkley K. Strategies for Easing the Role Transformation of Graduate Nurses. 2008.

Young et al.²⁷ carried out a descriptive evaluation to determine whether a 6 week orientation programme impacted on the role conception and role discrepancy of newly graduate nurses (n=25). The sample comprised twenty three nurses who completed both the pre tests and post tests

Program designation:	Structured orientation program
Type of study:	Descriptive evaluation
Setting:	Large teaching hospital in Northern California
Duration:	6 weeks
Clinical orientation/induction:	N/A
Clinical support:	Preceptors and clinical support from programme co-ordinators.
Clinical placement:	Nurse's own assigned unit, 100 hours of working shifts with a preceptor.
Didactic elements:	1 or 2 eight hour classroom days per week, at least 60 hours of classroom instruction including lectures, demonstration and return demonstration of nursing skills and role playing.

The variables of interest were role conception and role discrepancy divided into three components: bureaucratic, professional, and service. Bureaucratic, professional and service role conceptions represent loyalty to the hospital, loyalty to the profession of nursing and service to humanity. These were measured using the Nursing Role Conceptions Instrument – NRCI.

Pre test and Post test Role Conception and Role Discrepancy Scores

	Mean	SD	Significance (2-tailed)	
Role Conception				
Bureaucratic	44.09	5.05	0.44	Non-significant
	43.35	5.76		
Professional	42.30	3.92	1.00	Non-significant
	42.30	4.83		
Service	52.35	4.4	0.92	Non-significant
	52.26	4.88		
Role discrepancy				
Bureaucratic	2.61	4.31	0.92	Non-significant
	2.70	5.13		
Professional	10.09	4.66	0.11	Non-significant
	8.48	5.64		
Service	11.35	6.51	0.01	Significant
	7.78	6.00		

Professional role conception scores were the lowest of the 3 sub scales, and were identical pre and post test. Bureaucratic role conception scores were slightly higher overall, pre and post test were similar. Service role conception was associated with service to humanity. Service values were defined as a personal interest in patients, compassion, dedication and understanding. When the ideal role value held by a newly qualified nurse do not concur with what are actually expected and taught in the hospital, the nurse may experience role discrepancy. Service role discrepancy scores were highest before the programme and statistically significantly lower after. This was noted as important as it allows the newly graduated nurses to practice and develop the role they most identify with, while minimising the frustration and reality shock they sometimes experience in their careers. Role discrepancy scores were lowest in the bureaucratic subscale and did not change pre and post. Professional role discrepancy scores were higher before the programme, and lowered post programme, this was not statistically significant.

Paper 17: Friedman MI, Cooper AH, Click. E, Fitzpatrick JJ. Specialized New Graduate RN Critical Care Orientation: Retention and Financial Impact. 2011

The purpose of the study by Friedman et al.⁵⁹ was to determine the effect of a specialised orientation program on the retention of new graduate RNs and the net cost of this orientation program on recruitment and retention finances. A retrospective descriptive comparison between RNs recruited onto a specialised graduate program in critical care in 2007 (n=60) and RNs at a different site (n=30) who had not undertaken such a program recruited in 2004 was conducted.

Programme designation:	Specialised orientation program (Critical Care Nurse Fellowship Program - CCNFP)
Type of study:	Retrospective comparative descriptive
Setting:	2 tertiary hospitals in a multi-hospital health care system, Long Island, New York, USA
Duration:	1 Year Semester 2 = 12-16 weeks Semester 3 = rest of the first year
Clinical orientation/induction:	As per CCNFP
Clinical support:	Semester 2 = 12-16 weeks. Involves one to one preceptorship with a clinically experienced critical care RN
Clinical placement:	Critical care
Didactic elements:	Semester 1 = 9 weeks and includes AACN's web based critical care curriculum, professional seminars, clinical simulation. Master's fellows (masters prepared educators) provide and monitor clinical experience. Essentials of Critical Care Orientation module
Comparison:	Thirty new RN graduates who received standard orientation [SO] of 15 weeks.

The research question was *"What is the difference in retention for new graduate RNs pre and post initiation of the CCNFP orientation program"* The retention of both groups was measured using de-identified data retrieved from the local HR department. The results of four Chi-square tests to test retention (yes vs no) by orientation programme (SO versus CCNFP) indicated statistically significant differences in retention at 3 ($p=0.009$), 9 ($p=0.005$) and 12 months ($p=0.015$). There was no significant difference at the 6 month point 6 ($p=0.144$), in the retention cycle. Length of employment was found to be significantly higher ($p=0.03$) for the intervention group (mean 321.67, SD 92.74) than the comparison group (Mean 262.90, SD 126.38)

Annual retention for SO (2004) was 53.4% and for CCFNP (2007) retention was 78.8%. Length of employment was found to be significantly higher ($p=0.03$) for the CCNFP group (mean 321.67, SD 92.74) than the SO group (Mean 262.90, SD 126.38). A second research question asked *"What is the net cost savings retaining critical care nurses post initiation of the CCNFP?"* This was measured by comparing advertising costs, traveller and agency nurse costs turnover and retention for new graduate RNs hired in 2004 and new graduate RNs hired in 2007. Annual percent of turnover was calculated for 2004 (SO) and 2007 (CCNFP). Critical care turnover was 12% in 2004 and 6.2% post fellowship in 2007. Turnover between the SO and the CCNFP was not statistically significant; however decreasing turnover yields significant cost savings. The 5.8% change in turnover resulted in the retention of 9.8 nurses which could result in a potential saving of \$1,367,100 annually.

Paper 18: Crimlisk JT, McNutty MJ, Francione DA. New Graduate RNs in a Float Pool. An Inner-city Hospital Experience. 2002.

Crimlisk et al.³¹ conducted a cross sectional survey of 32 new graduates who had completed a 4-5 month orientation float pool programme in a 500 bed inner-city hospital in USA . All respondents in the study (n=23/32 72%) felt able to provide safe, competent care in the following areas; assessment skills, technology, communication skills, medication administration and critical thinking skills. They also all reported that the program helped them become more skilled and safe practitioners in their practice.

Of the 39 RNs admitted to the programme over 19 months since November 1999, 82% remained at the facility at the time of publication in 2002. Sixty nine percent remained in the float pool.

Paper 19: Allanson AM, Fulbrook P. Preparation of Nurses for Novice Entry to Perioperative Practice: evaluation of a Short Education Program. 2010.

Allanson and Fulbrook,⁶⁰ evaluated a Perioperative Introductory Programme (PIP) which was conducted over 5 days in a number of facilities across Queensland, Australia using a pre post test design. The participants were all those who had participated from September 2008 and March 2009 (n= 49). Of these only 11 were new graduates.

Competency was self-assessed on a 10 point scale (1 = non existent to 10 = excellent). Firstly, participants were encouraged to assess their level of competency and following the PIP, they were asked to return to their pre-PIP stage and re-evaluate in hindsight what they now realised had been their level of competency. This procedure was repeated for knowledge and confidence. Knowledge was also measured objectively using a locally developed multiple choice questionnaire (MCQ).

	Pre PIP	Post PIP
Competency	2.94	2.45
Knowledge	4.97	3.86
Knowledge – MCQ	7.96	8.46
Confidence	2.19	2.45

Paper 20: O’Malley Floyd B. Kretschmann S. Young H. Facilitating Role Transition for New Graduate RNs in a Semi-Rural Healthcare Setting.

O’Malley Floyd et al.²⁸ sent out a questionnaire to 37 RNs, who had participated in a 4 month orientation programme within 2 acute hospitals in a semi-rural healthcare setting in Southern Oregon, USA. The response rate was 84% (31/37). Evaluations focussed on knowledge and confidence, work-life balance, time with preceptor and the need for ongoing support using structured questions with yes/no answers. The number of responses to the yes/no questions was summated. The RNs envisaged becoming more knowledgeable and confident over the next year (n=24); they identified challenges including lack of confidence, knowledge and experience (n=21)

and found the work/life balance challenging (n=5). At one year the retention rate was 94.5% (35/37).

Paper 21: Squires A. New Graduate Orientation in the Rural Community Hospital. 2002.

Squires,³⁰ conducted a descriptive longitudinal case study of new nurse graduates (n=9) on an 8 week orientation program in a rural community hospital mid-Atlantic region USA. This study used the Clinical Practice Readiness Self assessment questionnaire, which uses a 5-point Likert type scale to measure confidence with 1 = very confident to 5 = scared. Assessments were made at an initial orientation meeting, then every two weeks until completion. New graduates rated their readiness for practice as “not confident” during the initial assessment, with confidence dropping at either the second or third evaluation. By the end of the orientation period, 7/9 rated themselves as ‘confident’.

Within 1 year of employment, 7 of the 9 new graduates who participated in the program remained at the institution giving a retention rate of 78%. The 2 that left wanted jobs close to home

Summary of findings for Graduate Nurse Orientation Programmes

Using JBI levels of evidence relating to evidence of effectiveness three of the included orientation studies used validated objective measurement tools^{27, 29, 59} these are rated as Level 3. Only one of these studies⁵⁹ used a comparative group and outcomes were limited to retention and estimated cost effectiveness. There was no commonality amongst the studies regarding outcome measurement tools. The other four included in this section^{30, 31, 60, 61} incorporated satisfaction/ opinion surveys and/or self assessment questionnaires, with the data subjected in most cases to only very rudimentary analysis. As a result findings should be treated with a great deal of caution and realistically are rated Level 4 evidence.

Confidence / Competence / Knowledge

Crimlisk,³¹ indicated that 23/32 respondents felt more able to provide competent care, no objective measure was used. O'Malley Floyd et al.⁶¹ 24/31 responders envisaged themselves becoming more knowledgeable and confident using a yes/no reply. Overall perception of ‘increased confidence’ in the study by Squires,³⁰ which was not statistically significant due to very small sample size. In the study by Allanson and Fulbrook,⁶⁰ at the end of the programme participants were asked to reassess their levels of competency, confidence and knowledge using a 10 point scale. From the mean scores it could be demonstrated they had initially over-estimated their levels of competency and knowledge but were more confident than they thought. Actual knowledge as measured by a multiple choice question had increased. No further statistical analysis was conducted due to the small sample size making it difficult to assess any objective outcomes. At the end of the 13 week program Marcum and West²⁹ stated that all core competencies were met.

Critical thinking/Interpersonal skills

This concept was considered by one study²⁹. A scale that measured both critical thinking and interpersonal skills was administered prior to the 13 week program and then again at 8 weeks and significant improvements were shown. Critical thinking was then assessed at 1 year post completion of the program and the data reflected that 83.3% of the graduates demonstrated very strong critical thinking ability.

Role discrepancy

A single study²⁷ examined the concepts of role conception and role discrepancy (see summary of paper for definition). Service role discrepancy scores were highest before the programme and statistically significantly lower after indicating that the program eased transition for the new graduate nurses.

Retention

Significant differences were noted in retention between intervention and comparison groups in the study conducted by Friedman. Statistically significant differences in retention at three, nine and 12 months and 12 months but there was no significant difference at the 6 month point in the retention cycle.

Three further studies^{28, 30, 31} reported 1 year retention as a percentage rate only, rates ranging from 77% to 94.5%. Marcum,²⁹ reported that at 18 months post completion of the programme that 89% of orientees remained employed compared to 29% in 1999 and 41% in 2000 prior to the programme. The reasons for leaving being classed as personal.

Cost effectiveness

One study considered cost effectiveness⁵⁹, concluding that reduced turnover resulted in the retention of 9.8 nurses yielding a potential saving of \$1,367,100 annually.

Comments

Despite the weaknesses of the studies overall, the general agreement was that attendance at an orientation programme minimises frustration and reality shock often experienced by new graduate nurses²⁷. The 6 month point in the retention cycle was highlighted as requiring further research with careful selection and preparation of preceptors additionally highlighted as important⁵⁹. Regarding new graduate nurse retention it is acknowledged that there may have been other influencing variables. The settings overall may not be representative of other hospitals.

Mentoring

Mentorship is often considered to refer to a personal developmental relationship in which a more experienced or more knowledgeable person helps a less experienced or less knowledgeable person. In much of the nursing literature preceptorship and mentorship are often referred to interchangeably, although generally mentorship is used to refer to a more experienced member of staff outside of the nurse's unit used as a reference or knowledge source, whereas preceptors often work side by side

with the newly qualified or student nurse, assisting them with their orientation, setting performance goals and/or assessing competence. The studies included in this section (see Appendix 8) specifically relate to mentoring, with no other didactic or clinical programme elements either included or considered. As previously, results from these will also be considered in the overall summation. Mentoring is referred to within other sections of this review, where it is part of a wider programme.

Paper 22: Komaratat S, Oumtanee A. Using a mentorship model to prepare newly graduated nurses for competency. 2009

Komaratat and Oumtanee,⁶² investigated the level of nursing competency of newly graduated nurses (n=19) after using a mentorship model. The research was conducted within one hospital in Thailand using a quasi experimental one group time series approach. Mentors were selected with having 3 years working experience, interest in the mentorship program, good decision making competency according to the situation, clinical skills, and communication skills. The nurse mentor was trained through lectures and participation in a workshop. The mentors were evaluated for their knowledge before and after the workshop.

The Nursing Competence Scale- NCS which looked at nursing, human relationships and communication, decision making and problem solving, quality development and assurance was used to measure competency. This scale consisted of 20 questions using a five point rating scale. Because of the small sample they used the Wilcoxon signed ranks test (repeated measures on a single sample).

Head nurses measured the competency of new graduate nurses at three points. Before the experiment, newly graduated nurses were evaluated regarding their nursing competency by head nurses on two occasions, with a 1 month interval between evaluations (time 1 and time 2). These both took place prior to the implementation of the mentorship model. Statistical analysis showed that there was a difference in competency between the baseline scores at time 1 and time 2. After working together for 1 month the newly graduated nurses were evaluated again (time 3). The nursing competency of the newly graduated nurses post mentorship was significantly higher than pre mentorship time 1 and at pre mentorship time 2.

It was concluded that the level of nursing competency of newly graduated nurses was higher using the mentor model and that the levels went from medium to high.

COMPARISON OF THE MEDIAN SCORE OF NURSING COMPETENCY BETWEEN PRE-EXPERIMENT AT TIME 1 AND PRE-EXPERIMENT AT TIME 2					
Score of Nursing Competency	Pre-experiment Time 1		Pre-experiment Time 2		Z
	Median	Quartile Deviation	Median	Quartile Deviation	
Nursing care	3.00	0.10	3.00	0.10	-0.447
Human relationship and communication	3.00	0.13	3.00	0.13	-0.447
Decision-making and problem-solving	3.00	0.00	3.00	0.00	-1.000
Quality development and assurance	3.00	0.25	3.00	0.09	-0.412
Total	3.00	0.08	3.00	0.10	-1.155

COMPARISON OF THE MEDIAN SCORE OF NURSING COMPETENCY BETWEEN PRE-EXPERIMENT AT TIME 1 AND POSTEXPERIMENT					
Score of Nursing Competency	Pre-experiment Time 1		Postexperiment		Z
	Median	Quartile Deviation	Median	Quartile Deviation	
Nursing care	3.00	0.10	4.00	0.20	-4.061*
Human relationship and communication	3.00	0.13	4.25	0.15	-3.885*
Decision-making and problem-solving	3.00	0.00	4.00	0.00	-3.947*
Quality development and assurance	3.00	0.25	4.16	0.16	-3.893*
Total	3.00	0.08	4.10	0.12	-3.831*

*p < .05.

Paper 23: Beecroft PC, Santner S, Lacy ML, Kunzman L, Dorey F. New Graduate Nurses; Perceptions of Mentoring: Six Year Programme Evaluation. 2006.

This evaluation was conducted as part of a larger evaluation of the RN residency programme at one healthcare facility in the USA. Overall programme results are discussed in the internship/residency section of this review under Beecroft et al.³² The larger evaluation included a 35-item survey of which two items were about mentoring, after the initial pilot study another six items were added. The paper reported by Beecroft et al.⁶³ presents the findings from the final eight item survey. The study included a qualitative element which is not included in this review.

The results from the 318 new graduate nurses who completed the residency programme from July 1999 to February 2005 with the exception of February 2004 Cohort because of technical difficulties were included. Survey responses were cross tabulated with demographic variables to determine the impact on the mentoring experience. Logistic regression analysis was performed on demographics to see if these variables predicted successful programme outcomes.

Half of the new graduate nurses (50%) indicated that mentors moderated stress. Just over half (54%) were able to meet their mentor regularly although 76% of the February 2002 cohort did not meet regularly with their mentors. A statistical difference was found on all items between the mentees who did and did not meet their mentor regularly.

The results of the logistic regression analysis revealed that regular meetings were significantly positively influenced the likelihood of the mentor being a stress reducer ($p < 0.001$), clicking with mentor ($p < 0.001$), and mentor providing support ($p < 0.001$). Being older was another factor influencing likelihood of the mentor being a stress reducer ($p = 0.005$). The odds increased by 1.69 for each increase in age category for stress reduction. If mentees were the same age and met regularly with mentor but did not get their first choice of nursing unit, they were 5.8 times more likely to feel a reduction in stress than mentees who did get their first choice.

Mentoring was successful when mentors and mentees met on a regular basis and provided guidance and support and facilitated stress reduction. Mentorship requires time and role training to be successful.

Summary of findings of Mentorship

Two studies were included in this section that considered mentorship only, one from Thailand and one from the USA. Although they consider similar interventions they reviewed different outcomes and the sample size varied considerably, 19⁽⁶²⁾ and 318⁽⁶³⁾, it is therefore difficult to make any firm comparisons or conclusions. Using JBI levels of evidence relating to evidence of effectiveness both studies are rated level 3, Komaratat and Oumtanee,⁶² refer to their study as quasi-experimental but it is actually a pre and post test comparative design. No comparison group is used in Beecroft⁶³. Objective measures were used for each study.

Competency

Komaratat and Oumtanee,⁶² reported that levels of competency had significantly increased by the end of the mentorship period.

Stress

Beecroft,⁶³ reported that 50% of nurse residents surveyed felt that that mentors moderated stress. With mentorship being the most effective when regular meetings were held and when the mentees “clicked” with the mentor and when the mentor offered support

Comments

Beecroft,⁶³ is part of a larger evaluation and therefore the evaluation of mentorship is valuable in adding another dimension to this. The questions in the survey are vague and therefore may have been open to interpretation. The perspective of mentees only was reported, not the mentor, not all mentees completed all items. The results of Komaratat and Oumtanee,⁶² should be interpreted with caution, due to the small sample size and the lack of a control group for results comparison as competency may have improved over time anyway. Beecroft,⁶³ acknowledges that there was a great variation in the results from the February 2002 and August 2003 cohorts. Management changes and reduced administration support for this resource intensive programme may have contributed to the less than optimal results for these groups.

Preceptorship

Preceptorship should be viewed as a structured transition phase that allows newly registered nurses to develop their confidence and apply their knowledge from academic studies and placements. Four papers (Appendix 9) were included in this section that reviewed the impact of preceptorship on newly qualified or new graduate nurses. One of these specifically explored the impact of preceptorship preparation through an educational programme on the critical skills of graduate nurses, focusing on the preparation of the preceptors as opposed to the general impact of preceptorship on the preceptees.

Paper 24: Vasseur MM. Effects of a Nurse Transition Program on Retention of Graduate Nurse. 2009.

Vasseur,⁶⁴ conducted a non-experimental, descriptive correlation study as part of a Masters qualification to determine the effect of a short preceptorship on new graduate nurses. A convenience sample of all graduate nurses that entered the program in the summer that agree to participate (n=75). The response rates at follow up were for the three month (80%, n=60/75) surveys and for the six month (39%, n=29/75) surveys. The study included a qualitative element which is not included in this review.

Programme designation:	Nurse Transition Programme
Setting:	650 bed Midwestern teaching Medical Centre
Duration:	Varied from 9-12 weeks
Clinical orientation/induction:	Not stated
Clinical support:	Preceptorship (also varied, 50% indicated they had less than 3 preceptors)
Clinical placement:	Range of clinical areas
Didactic elements:	Not stated
Comparison:	Retention rates before the transition programme was established

The first part of the study consisted of a comparison of retention rates with the current nurse transition program and retention rates before the study was established.

There were no significant differences found between retention in the control group and the group who attended the transition programme at 3 months ($p=0.694$) and 6 months ($p=0.148$).

Group	Control Group	Transition
Retention Rates 3 months	93.8%	89.1%
Retention Rates 6 months	93.8%	82.6%

The second part of the survey was the administration of the CFGNES (see Appendix 6) at hire, 3 months and six months, to determine what perceptions graduate nurses in the nurse transition program had concerning the program.

The CFGNES administered at hire, three months and six months, Section 3 of the measure was used to explore comfort and confidence of the new graduate. Percentages of new graduates indicating agree or strongly agree and disagree or strongly disagree were reported for all 25 items. These were compared in a narrative summary between the time points with no further statistical analysis conducted to verify any differences. Although the authors reported that no significant change was found in the level of graduate nurses for the sub scales that measured opportunities to complete skills, communication with patients and families, job expectations, role models and preceptors. There were no areas in which GN's experienced a decrease in comfort and confidence

complete skills

89% baseline, 87% at three months, 89% at six months

communication with patients and families

95% baseline, 95% at three months, 93% at six months

job expectations

87% baseline, 83% at three months, 87% at six months

role models and preceptors

97% baseline, 98% at three months, 100% at six months

The programme had a significant positive impact on the perceived experiences of the GN in areas of confidence, work relationships, work environment and ability to perform skills/procedures at baseline, 3 months and 6 months.

Paper 25: Leigh JA, Douglas CH, Lee K, Douglas MR. A case study of a preceptorship programme in an acute NHS trust-using the European Foundation for Quality Management tool to support clinical practice development. 2005.

Leigh et al.³⁷ conducted a descriptive survey of confidence, competence and retention of preceptees (79%, n=27/34) and their ward managers (58%, n=7/12) who had undergone the first intake of preceptorship program in 2002 at an acute NHS Trust. The study sought to apply the European Foundation for Quality Management - EFQM. model as a tool for monitoring and assessing the performance of the programme.

Programme designation:	Preceptorship programme
Type of study:	Descriptive case study
Setting:	Salford Royal Hospital, UK.
Duration:	6 months
Clinical orientation/induction:	3 week orientation programme-clinical governance, clinical skills, mandatory training, risk management, specialist clinical knowledge, acute pain management
Clinical support:	On the job supervision by an experienced preceptor/mentor.
Clinical placement:	Speciality specific training.
Other elements:	Competency based knowledge and skills framework.

Specialty-specific training.
On the job training.
Critical thinking.
Continuing professional development and portfolio building.

The nine generic criteria of the European Foundation for Quality Management – EFQM generic model developed for business and industry, was adapted to the requirements of the preceptorship programme. The focus of the results for this study was upon the three result criteria of people, customers and society and key performance results. People described as preceptees and the preceptors/mentors who supported them. Customers described as the patient, relative or carer and the trust itself. Society described as the reduction in costs as a result of increased retention rates, resulting in reduced numbers of staff leaving their posts within first 12-18 months of employment.

All preceptees who participated in the March 2002 programme were invited to complete a pre and post programme questionnaire. Post programme questionnaires were also distributed to all respective ward managers. Results were interpreted in terms of self reported confidence, competence and retention. For confidence and competence 5 items were scored on 1 10 item Likert scale from 1= low or not at all to 10 high or very much. Preceptees reported a general self reported increase in confidence levels across all 5 items with no statistical analysis reported. Managers reported that the majority of nurses achieved an acceptable level of competence for this stage in post, although acknowledged this was a first step in a process of continuous development.

There was a reduction in the numbers of newly qualified nurses leaving the organisation during the first 12 months of employment since the programme inception which reduced each year from 24% in 2002 to 1% in 2004, although no figures are given for retention rate prior to the programme or for those not attending a programme.

Paper 26: Sorensen H, Yankech LR. Precepting in the Fast Lane: Improving Critical Thinking in New Graduate Nurses. 2008.

Sorenson and Yankech,⁶⁵ conducted a quasi-experimental mixed-methods design study to examine whether a research based theory driven preceptor educational programme could improve the critical thinking of a convenience sample of new graduate nurses (n=15) who began employment on or after 1/1 /2005 to evaluate their learning outcomes as compared to a 16 new graduate nurses who began employment on or after 1/7/2004 (prior to preceptors taking part in the programme). The study included a qualitative element which is not included in this review.

Programme designation:	Preceptor facilitated orientation 'Precepting in the Fast Lane'
Setting:	Midwestern, USA not for profit hospital system

Duration:	Variable from 3-14 weeks (experimental group); Variable from 3-18 weeks (control group)
Clinical orientation/induction:	Preceptor facilitated
Clinical support:	Preceptorship
Clinical placement:	15-18 weeks in a preceptor-facilitated orientation unit
Didactic elements:	Not applicable (to the new GN's) Preceptors for the experimental group took part in an approved continuing education programme.

The study measured critical thinking using California Critical Thinking Skills Test - CCST. This is a standardised 34 item multiple choice test designed to measure analysis. A total score is obtained and scores for a number of subscales. The subscales are designed to measure a number of core critical thinking skills – analysis, inference, evaluation (which is further divided into induction and deduction). All participants from both group completed the measure at the end of their preceptor-facilitated orientation.

The control and experiment group were compared on a number of demographic variables which included age, length of preceptorship in weeks, years of non nursing education after high school, total years of health care role experience before completing the nursing degree. No statistical differences between the groups were found. An analysis of covariance was performed using the same demographic variables as controlling factors between preceptees control and experimental groups using the CCST. A significant difference was found for the evaluation subscale ($p=0.039$) indicating that preceptors' participation in the educational sessions contributed to the evaluation subscale of critical thinking skills of the experimental group on the CCTST.

Paper 27: Edmond. A Competency-Based Preceptor Programme for Nursing Practice: Accessing Contextual Embedded Knowledge and Skill. 2004

Edmond,⁶⁶ conducted a comparative intervention study in part fulfilment of a PhD using action research methods to investigate knowledge and skills of preceptees (intervention ward $n=10$, non intervention ward $n=10$) who took part in a 4 month competency based preceptor programme.

Programme designation:	Competency Based Preceptor Programme
Setting:	An Acute NHS Trust, UK.
Participants:	Convenience samples of preceptees along with their preceptors were selected for the intervention group from wards which had prepared a Competency-Based Preceptor Programme in anticipation of vacancies occurring to employ newly qualified staff nurses.
Comparison:	Non-Intervention participants were selected from wards that had employed newly qualified

nurses at the same time and had consented to act in that capacity and undertook their usual orientation processes. Different wards and participants were recruited in for the pilot and main study.

The Staff Nurse Role Grid - SNRG was used to give an overall measure of preceptee competence in performance of the staff nurse role. It included the components involved in work management and three major context-specific clinical skills. The level of knowledge, psychomotor skills, psychosocial skills and experience for each component was measured on a scale of 0-4 with the score of 0 being the lowest acceptable level of competence expected of the preceptee by the end of the orientation period. A self-assessment was completed by the preceptee, and the preceptor completed a separate, independent assessment of their preceptee. The final raw score for each preceptee was determined by the mean of the two scores. The small sample size however restricted analysis to non parametric inferential statistics and the Mann Whitney U test was used to test for difference between the groups. There was a significant difference between the groups for the Staff Nurse Role Grid (Mann-Whitney U test = 0.007 (< 0.05). Intervention Group: 179.25 / Non Intervention Group = 149.9).

A Visual Analogue Support Scale was used as a self assessment measure of the perceived overall professional support experienced by the preceptee throughout the orientation period and was measured along a scale of 0-10. Although the mean of raw scores would indicate that the Intervention sample raw scores (08.24) were higher than those of the Non-Intervention sample (06.84), the Mann-Whitney U test ($t=0.059$ $p> 0.05$) indicated that there was no significant difference between the two sample means.

Data analysis indicated that the Intervention sample scored higher on the Staff Nurse Role Grid than the Non-Intervention sample but that there was no significant difference between the samples on the Visual Analogue Support Scale. Comparative analysis of the quantitative data from the Staff Nurse Role Grid supported the qualitative evidence of positive benefits resulting from implementation of the Competency-Based preceptor Programme. The Visual Analogue Support Scale did not show a significant difference in perceived supportiveness of the clinical environment which also raised interesting questions.

Summary of Findings for Preceptorship

Using JBI levels of evidence relating to evidence of effectiveness the strongest evidence in relation to the evaluation of preceptorship programmes was a Level 2 quasi-experimental, post test only, control group design study, however the sample size in this study was small ($n=31$) and the control group spent more time on average in the preceptor-facilitated orientation unit than the experimental group⁶⁵. The other three studies^{37, 64, 66} were Level 3 taking a descriptive approach, all three had equally small sample sizes. All samples were convenience samples, two studies^{64, 66} used comparison groups although in Vasseur,⁶⁴ this was confined to retention only

and no other variables were taken into consideration. Two studies were conducted in the UK and two in the USA, the preceptorship programmes are varied or the content not stated⁶⁴ with length of programme varying from 3 weeks- 6 months with limited information on preceptor preparation with the exception of Leigh³⁷.

Comfort and Confidence

Two studies reported comfort and confidence^{37, 64}. In one,³⁷ the preceptees (response rate 79%, n=27/34) reported a general self reported increase in confidence levels whereas managers (response rate 58%, n=7/12) reported that the majority of nurses achieved an acceptable level of competence for this stage in post, no statistical analysis was performed. The results from Vasseur,⁶⁴ were difficult to interpret due to the way the results were presented but overall although numbers were stated as too small for statistical analysis it is suggested that the programme had a positive impact on the perceived experiences of the GN in areas of confidence, work relationships, work environment and ability to perform skills/procedures at baseline, 3 months and 6 months. These results should be interpreted with caution.

Competence

One study considered competence,⁶⁶ results indicated that preceptees perceived competence in performance of their staff nurse role was higher in the intervention group. Non parametric inferential statistics determined significance.

Critical thinking

This was limited to one study,⁶⁵ *Sorenson* who concluded that within the confines of the small sample size preceptors' participation in a research based theory driven education programme contributed to the significance in the evaluation sub scale of the critical thinking testing scores of the experimental group, significance was not achieved in any other sub scale.

Professional support

One study considered professional support⁶⁶, the mean scores indicated that the intervention group perceived professional support higher than the intervention group although using the Mann-Whitney U test for non parametric statistics this was not statistically significant.

Retention

Two studies considered retention^{37, 64}. No significant difference was found between retention in the control group and the group who attended the transition programme⁶⁴. A reduction in the numbers of newly qualified nurses leaving the organisation during the first 12 months of employment since the programme inception which reduced each year from 24% in 2002 to 1% in 2004,³⁷ however no other variables were considered.

Comments

Preceptorship programmes varied considerably in quality, length and content of intervention and outcome measures. Results from this section should be interpreted

with caution and generalisability is limited due to the small numbers of studies and the variance.

Simulation based programs/interventions

Simulation is increasingly being used in nurse education to prepare nurses for the reality of clinical practice. Simulation based graduate nurse programs and Nurse Residency programs have emerged to ease the transition from student nurse to independent practitioner. Through simulation, new graduates are provided with exposure to patient scenarios they are likely to encounter and have the opportunity to develop knowledge and skills in a safe environment. This section includes three studies (Appendix 10) which explore the outcomes of simulation based graduate programmes.

Paper 28: Beyea SC, Reyn LJ, Slattery MJ. A nurse residency program for competency development using human patient simulation. 2007.

Beyea,⁶⁷ conducted a descriptive, mixed method pilot study to examine whether the use of high fidelity human patient simulation in a nurse residency program improved graduate nurses' competence, confidence and readiness for practice. A convenience sample of n= 42 recent graduate nurses were included in the study.

Programme designation:	Residency program
Setting:	Rural academic medical centre, USA
Duration:	12 week residency program Scenario- based simulation using high- fidelity simulators used in three program tracks (medical/surgical, Paediatrics/paediatric critical care & adult critical care) which varied in length but followed a similar framework in terms of process and content. The 12 week Medical-surgical residency program is given as an example in terms of duration and content as below.
Clinical orientation/induction:	Not stated
Clinical support:	Qualified mentor.
Clinical placement:	Clinical time on unit.
Didactic elements:	Weekly didactic and simulation sessions.

The study measured confidence, competence, and readiness for practice using a visual analogue scale for each concept. The Nursing Residents' Readiness for Entry-Into-Practice Competency Questionnaire - NRRFEP a 53 item instrument with 3 domains i) nurse patient relationship (5) ii) illness-injury prevention (5) iii)curative-supportive care (43) rated on a Likert scale 0 (not confident) to 10 (very confident) was also completed. There was improvement in the mean visual analogue scale scores of confidence, competence and readiness for practice between weeks 2 and 10. The development of skills related to physiological integrity, using technology,

synthesizing clinical data and clinical decision making was enhanced through simulation.

Nurse residents completed the measures in week 2 and then again at 10 weeks. Qualitative feedback was sought from nurse residents, unit based clinical and administrative leaders but will not be reported in this review.

Paper 29: Beyea S, Slattery M, Reyn L. Outcomes of a simulation-Based Nurse Residency Program. 2010.

Beyea,⁶⁸ conducted a descriptive longitudinal study to examine the outcomes of a simulation- based residency program. A total of 260 recent graduate nurses from 17 cohorts who were admitted to the nurse residency program between 2005 and 2007 were included in the study. The response rate in the study is unreported.

Programme designation:	Residency program
Setting:	Rural academic medical centre, USA
Duration:	Four program tracks (medical/surgical, Paediatrics/paediatric critical care, adult critical care and neonatal intensive care) which varied in length but followed a similar framework in terms of process and content. The 12 week Medical-surgical residency program is given as an example in terms of duration and content as below.
Clinical orientation/induction:	Not stated
Clinical support:	Preceptor
Clinical placement:	358 hours of clinical experience
Didactic elements:	82 hours of lectures, hands-on skills stations and self-directed learning 40 hours hands-on experience with simulator based scenario
Other:	2 tracks offered in conjunction with each other i.e. Adult critical care and medical surgical nurse residency program

The study measured confidence, competence, self efficacy and readiness for practice using three different measures. Nurse residents completed these in the first week of the residency and then again at 10 weeks. Nurse residents were also asked to weekly rated their confidence, competence and readiness for practice to independently provide care to patients related to what they had studied that week.

A 3 item Global Confidence, Competence and Readiness for Independent Practice Measurement Instrument was used with a 10cm visual analogue scale (0-10). A statistically significant improvement in confidence, competence and readiness for practice was found from baseline to the end of the program ($p < 0.001$). This was

consistent with nurse residents' weekly ratings of their confidence, competence and readiness to practice.

The NRRFEIP see Beyea 2007,⁶⁷ was used. This was completed at baseline as well as the other time points. There was statistically significant improvement from baseline to end of the program, both in the total score and the three subscales but the greatest improvement was seen in the curative-supportive subscale. These were all significant at the $p < 0.001$ level.

A Structured Simulation Clinical Scenario Evaluation - SSCSE was developed by the researchers. This instrument addressed; i) patterns of proficiency ii) the ability to think on the fly iii) use of resources to problem solve complex clinical situations iv) ability to use reflection as a learning tool v) communication techniques and team performance. Nurse educators used the instrument to provide real time weekly feedback to nurse residents. A parallel instrument was used by preceptors and unit based educators to provide weekly evaluations. The structured simulation clinical scenario evaluation' was modified as the programme progressed and as a result was unable to be reported upon during the study.

Percentage turnover was also reported. At one year turnover was 9.2 % compared to 17% prior to implementing the programme. The 2 year turnover rate post residency was 33.7% compared to pre residency figures of 43%.

Paper 30: Shepherd IA, Kelly CM, Skene FM, White KT. Enhancing Graduate Nurses' Health Assessment Knowledge and Skills Using Low-Fidelity Adult Human Simulation. 2007.

Shepherd,⁶⁹ utilised a randomised controlled trial to investigate the impact of three different patient assessment learning strategies upon graduate nurses' knowledge and skills. New graduate nurses (n=80) were randomly assigned to i) Self directed learning package (SDLP) (n=27) ii), SDLP and two PowerPoint sessions (n=27) and iii) SDLP and two low fidelity simulation sessions (n=28). There were six nurses who did not complete the final test. The response rate for each group was SDLP 25/27, SDLP and simulation 23/28, SDLP and power point 26/27.

Programme designation:	Simulation in a Graduate Nurse Program
Setting:	Southern Health Hospitals, Melbourne, Australia
Duration:	12 months
Clinical orientation/induction:	Not stated
Clinical support:	Preceptors
Clinical placement:	Variety of acute clinical settings
Didactic elements:	Five formal study days which do not include any education concerning patient respiratory assessment. Self directed learning package on adult clinical assessment.

Comparison:

SDLP only (n=27)

SDLP with two 30 minute low fidelity respiratory simulation scenario sessions (n=28)

SDLP and 2 PowerPoint respiratory scenario sessions (n=27)

Before the SDLP was commenced, all new graduate nurses were instructed to complete a paper based knowledge test developed by the authors. Pre-test scores indicated no significant difference between groups ($p < 0.001$). The Clinical Response Verification Tool a checklist that was developed for the for the respiratory test scenario by the researchers with a weighting system for scoring actions that the graduate nurse would be expected to perform at 6 weeks was administered after the last education session. The mean score of the new graduate nurses in the simulation group was significantly higher than both the SDLP alone and SDLP and power point intervention groups ($p < 0.001$). There were no significant difference found between the SDLP only group and the SDLP and PowerPoint group. This suggests that low fidelity simulation is more effective than both self learning and didactic education in developing knowledge and skills.

Summary of Findings for Simulation Based Programs/Interventions

Using JBI levels of evidence of effectiveness, the strongest evidence in relation to the outcomes of simulation based graduate nurse/nurse residency programmes was a Level 1 experimental, randomised controlled trial conducted in Australia⁶⁹. The other two studies were level 3, one being a mixed method pilot study⁶⁷ Beyea (2007) and a longitudinal study⁶⁸ Beyea (2010) from the USA. A previous review,⁴² in this area published in 2010 reported finding three studies in this area and determined that there was no clear evidence of their effectiveness that went further than self-reported measures. One study,⁷⁰ was not relevant to the current review as the sample included experienced nurses entering a specific clinical area for the first time and once further piece of work was identified⁶⁸.

The small number of studies of simulation based graduate/residency programs and lack of measurement consistency, control and objectivity limits the evidence in this area. Further research is required into simulation based graduate/residency programs to establish their efficacy.

Competence and Confidence/ Readiness for Practice

The pilot study⁶⁷ noted improvement in the mean visual analogue scale scores of confidence, competence and readiness for practice between weeks 2 and 10. Beyea⁶⁸ in a later study found a statistically significant improvement in confidence, competence and readiness for practice was found from baseline to the end of the program.

Knowledge/Skills

Low fidelity simulation was found to be significantly more effective than both self learning and didactic education in developing knowledge and skills⁶⁹.

Turnover

Turnover was reported to be reduced at 1 year and 2 years compared to pre residency levels⁶⁸.

Comments

A self-developed instrument with unknown validity and reliability was used to measure knowledge and skills,⁶⁹ and the performance of nurse residents by educators and preceptors,⁶⁸ which weaken the findings of these studies. It is recognised by Beyea 2010,⁶⁸ that the self-developed instrument 'The structured simulation clinical scenario evaluation' was modified and unreported upon during the study due to difficulties. This resulted in the study heavily relying on nurse residents' self-evaluation of their confidence, competence and readiness for practice. Although it is stated that the nurse residents' evaluation matched that of the facilitators' evaluation, this cannot be established. The study like the pilot study,⁶⁷ therefore only provides the nurse residents' perception of their confidence, competence and readiness for practice and does not achieve objective outcome measurement of these variables. Other limitations reported in Shepherd's study,⁶⁹ recognised by the authors are that the nurse educators may not have been 'blind' to the intervention group and the graduate nurses in the intervention group more familiar with manikin. Whilst there were no significant differences in the knowledge pre-test scores across the intervention groups, suggesting knowledge levels were similar, it cannot be ruled out that the simulation group may have performed better in a practical skills, pre-test.

The simulation within the graduate nurse programme and nurse residency programme were different in approach with Beyea 2007, 2010^{67, 68} using high fidelity simulators and Shepherd,⁶⁹ using low fidelity simulators. The duration of simulation was different, with weekly simulation reported in the pilot study,⁶⁷ and 40 hours of simulator based scenarios reported in the later study⁶⁸ compared to two 30 minute simulation sessions by Shepherd,⁶⁹ making it difficult to compare the studies by Beyea and Shepherd. The conclusion reached by Beyea (2010)⁶⁸ was that the nurse residency program involving simulation offers a consistent, replicable orientation process that enables competency development to be evaluated and provides standardised experiences and evaluation is unsupported by the study. Whilst each program track has been stated to be standardised for each speciality, the median time for orientation across the different tracks is variable ranging from 15 to 34 weeks. There is insufficient detail of the other program tracks to establish how they differed, other than in duration. Some nurse residents were able to do two track programs, adult critical care and medical surgical nurse residency program and therefore are more likely to have increased competence, confidence and readiness for practice with greater educational and clinical experience which were not been controlled for. No data is presented upon which track or tracks were undertaken by the nurse residents within the study. Furthermore, no statistical analysis was undertaken on the variables across program tracks to determine if there were any differences in nurse resident's competence, confidence and readiness for practice. The evaluation therefore might not evaluate a single track residency programme

with standardised simulation but a multiple track programme with greater simulation.

Final year students Transition Programmes

This section includes two studies (Appendix 11), one comparative descriptive and one longitudinal descriptive mixed methods study, relating to supporting nursing year students in the transition period before becoming a graduate nurse, one from Australia and one from the USA. As for orientation programmes, although these studies are presented separately the results will be considered within the overall summation of findings.

Paper 31: Nash R, Lemecke P, Sacre S. Enhancing transition: An enhanced model of clinical placement for final year nursing students. 2008

Nash et al.⁷¹ describe a descriptive comparative study of an enhanced model of final year nursing placements (n=29) which was trialled in 2006 in Queensland Australia. This was a mixed study, only quantitative results have been extracted and discussed within this review. No response rate was stated so it was assumed that data was collected from all participants.

Programme designation:	An enhanced model of clinical placement for final year nursing students
Type of study:	Descriptive mixed study-qualitative and survey
Setting:	2 Brisbane Hospitals, Australia
Duration:	2 semesters
Clinical orientation/induction:	N/A
Clinical support:	1-1 preceptorship or preceptorship using ward based clinical mentors
Clinical placement:	General and/or speciality clinical areas
Didactic elements:	Facility wide and ward based events such as staff development activities, digital stories. Resources developed to support preceptors included a set of four self directed modules 'Supporting Transitions to Professional Practice STePP Preceptorship Programme'
Comparison:	63 non trial participants

A survey tool, the Preparedness for Graduate Nursing Practice Questionnaire – PFGNPQ which includes 23 items with 6 point Likert scale response choices 1 =very unable to 6 very able was administered to students in both the transition and standard placement groups prior to, and following their final eight week placement, the questionnaire was adapted from the Preparation for Hospital Practice Questionnaire.

No significant differences were found between the four groups (northern hospital transition (n=17), southern hospital transition (n=9), not stated (n=3) and standard placement (n=63) regarding total preparedness scores at baseline and follow up,

total baseline preparedness $p=0.396$, follow up preparedness $p=0.750$ and preparedness, change across the semester $p=0.351$. However despite the non significant findings there was a trend for STePP transitions students to feel more prepared for clinical practice at both time points.

The authors noted that consistent with previous findings results indicated the importance of a positive and supportive clinical learning environment. Students who elected for the transition model tended to be more confident at baseline. No significant differences were noted overall regarding preparedness for graduate nursing at the start and end of the semester, but made positive comments about the experience overall regarding preparation for future practice.

Paper 32: Olson RK et al. A Model for a Seamless Transition from Nursing Student to RN. 2001

Olson et al⁷² conducted a longitudinal, mixed methods study to evaluate a pilot residency program similar to the Veterans Affairs Learning Opportunities Residency (VALOR) program. One of the two quantitative aims of the study was to evaluate the changes in student's professional performance dimensions, knowledge and critical thinking skills as a result of the residency program. The other quantitative aim of the study being to calculate the cost difference between the program and routine new graduate orientation. The sample was final year students ($n=14$) enrolled in the baccalaureate programmes of the participating schools of nursing and within one year of graduation (First year of VALOR program $n=10$; Second year of VALOR program $n=4$). No response rate was stated so it was assumed that data was collected from all participants. The study included a qualitative element which is not included in this review.

Programme designation:	Residency programme/preceptorship
Setting:	3 large Mid Western Hospitals USA (Three participated in year 1, two in year 2)
Duration:	900 hours of preceptored experiences, 400 hours during the summer and 250 hours in spring and fall semesters
Clinical orientation/induction:	N/A
Clinical support:	900 hours of practice with an assigned preceptor.
Clinical placement:	Across units.
Didactic elements:	Attended normal full time school work at their academic institutes.
Participants:	Grade point average of 3.0 or above. Letter of recommendation from program dean or director.

Changes in the students' professional performance dimensions, medication administration and intravenous therapy knowledge and critical thinking skills from the beginning to the conclusion of programme were measured.

The Schwirian's Six-Dimensional Scale of Nursing Performance – 6-DSNP (See Appendix 6), The scores ranged from 2.1 -4.0 with 4.0 being the highest. Leadership qualities showed the largest gain. Critical care, teaching/collaboration and planning showed a decrease in frequency and quality of experiences. Other categories were non-significant; and these were interpersonal relationships/communication and professional development all of which showed negligible gains.

The National League for Nursing Medication Administration Test - NLMAT measures knowledge of dosage calculations; principles of drug administration and effects of commonly used drugs was used. The test was administered at three distinct time points; at the beginning of the residency programme during the students' senior year (time 1), at the end of the residency programme and senior year (time 2) and one year post graduation whilst working as an RN (time 3). Although the mean scores for this measure increased progressively from time 1 through to time 3 no statistical difference was found. These scores however approached the national standardised mean of 48.30 for RN's with less than 3 years of experience.

The National League for Nursing Intravenous Therapy Test - NLNITT measures knowledge and skills needed for nurses who administer intravenous therapy. The test was administered at the same time as the NLMAT test. The average score at time 3 (one year post graduation) was 38.93 and the means progressively improved, but did not reach significance or the standardised mean of 42.71.

Critical thinking was measured using The California Critical Thinking Disposition Inventory - CCTDI. Critical thinking scores measured demonstrated a minimal change of -0.07. Overall, the students started and ended with an excellent level of critical thinking.

The cost difference between the new programme and the routine new graduate orientation was calculated. The major cost difference was the hourly amount paid to students for preceptored time this varied between hospitals. The costs of the program were more expensive on a per graduate basis, but the program participants needed less orientation time than non preceptored new graduates did. Figures did not take into account savings in orientation costs and possible decreased turnover from participants.

Employment and retention was not included in the outcome measures, however authors noted that all 14 new graduates were employed. 50% were still employed at 2 years but no comparison figures were supplied.

Summary of Findings for Final year students Transition Programmes

Using JBI levels of evidence relating to evidence of effectiveness the two studies^{71, 72} located relating to final year student programmes were Level 3, only one⁷² used a comparative group. Both studies had small sample sizes, n=14⁽⁷²⁾, n=29⁽⁷¹⁾. Validated tools were used to measure outcomes.

Confidence and Competence

A decrease in self perceived frequency and quality of experience in the domains of critical care, teaching/collaboration and planning was noted,⁷² indicating that perhaps students felt less confidence in these areas as they approached graduation.

Critical thinking

Critical thinking was reported as excellent at all 3 time points, the beginning of the residency programme, during the students' senior year, at the end of the residency programme and senior year and one year post graduation whilst working as an RN, however minimal change was noted,⁷².

Knowledge and Skills

Scores in relation to Intravenous Therapy and Medication Administration improved, but not significantly, from the beginning to the completion of the programme,⁷². Scores for the NLMAT increased progressively from the beginning of the program to one year post residency, this was not significant, and however the scores approached the national standardised mean for RN's with less than 3 years of experience⁷².

Leadership

Within the 6-DNSP scale perceived quality of leadership showed the largest gain⁷².

Preparedness for graduate nursing

No significant differences were noted overall regarding preparedness for graduate nursing at the start and end of the semester, but positive comments about the experience overall were made regarding preparation for future practice⁷¹.

Comments

The main conclusions for the study by Olson et al⁷², appear to relate to unsubstantiated comments and a control group would have added value to the findings. In the study by Nash⁷¹, a control group was used but separate results were reported for cohorts attending different hospital sites resulting in statistical analysis being conducted on smaller numbers. If the results from the 3 transition areas had been combined different results may have produced.

Nurse extern programmes

Nurse extern programmes are described as preceptored and employment experiences of the student nurse the year before graduation from a basic RN educational programme. These programs are designed to offer students completing their last programme year an externship that provides training and employment to develop clinical competencies. The student nurses are usually offered employment after graduation.

Paper 33: Cantrell MA, Browne AM. The Impact of a Nurse externship Program on the Transition Process From Graduate to Registered Nurse: Part III Recruitment and Retention Effects. 2006

Programme designation:	Externship
Type of study:	Descriptive study/Review of employment history records of who participated in the externship (n=193) in the summers of 1998 to 2003
Programme designation:	Externship
Setting:	Acute care paediatric hospital, USA
Duration:	10 weeks
Clinical orientation/induction:	Formal orientation program completed of unknown duration and content
Clinical support:	Working on to one with an identified preceptor
Clinical placement:	No information provided
Didactic elements:	Scheduled group seminars to increase knowledge of caring for children and to share experiences among the group

Employment records were reviewed to determine which former nurse externs were currently employed in the summer of 2004 at the institution. Seventy nine percent (153/193) had accepted a graduate nurse position for the 6 years reviewed.

When examining the employment records to establish the termination date of nurse externs no longer employed the turnover rate of nurse externs was found to vary from year to year.

The employment status of nurse externs hired in the summer of 1998 to 2003 was reviewed. The status of those externs who were no longer employed at the institution was also examined. After 12 months 77% of nurse externs remained in their role at 12 months and employed for 24 months 61%.

Summary of findings for Extern Programs

Only a single American study has been included under this heading. This took the form of a descriptive study based on a review of employment history records of those who participated in a 10 week summer externship program (n=193) between the years 1998 to 2003. Using the JBI levels of evidence relating to evidence of effectiveness, this study is rated level 3. The retention rate of the extern group who took up employment in the study organisation (n=153) are compared to the retention figures for the organisation overall, and national figures for professional nurses.

Retention Rate

The retention rate for the extern students varied over the study years from 66-95%. Some years this was above the figures for the employing institution and National figures, and other years it was below.

Comments

The retention figures are compared across 6 separate years, however, as annual total numbers for externs throughout the years vary from n=18 to n=49, the percentage rates based on these figures mean they should be treated with caution. There appears to be no check on the accuracy of any figures in the employment records and there are no statistical processes involved in the study apart from the calculation of percentages. This makes the usefulness of this study limited in assessing the success of extern programs. No meaningful conclusions can be drawn.

Discussion

Summary of Methodological Quality

The studies in this review set out to answer a number of different questions regarding transition support for graduates, so it is not surprising that a range of methodological approaches were applied. These ranged from descriptive surveys, longitudinal studies, quasi experimental studies and one randomised control trial. The methodological quality of these studies varied considerably, influenced by the size of the study and nature of the data collection tools employed. A number of objective measures used well validated tools to measure such outcomes measures as job satisfaction, clinical decision making and confidence. Many of the measures consisted of self-report measures. Other measures such as retention rates were less sophisticated but more objective measures and appropriate for the question posed.

The quality of the studies was also influenced by such factors as the use of a comparison group, sample size and response rate. Again the nature of the situation influenced these were comparisons may not be available, numbers involved in interventions small. This also influenced the sophistication of the data analysis.

The conclusion of the review is that the quality of the evidence is variable and is frequently limited by the nature of the outcome measures and sample sizes.

There is clearly a need for more well designed studies that achieve higher levels in the JBI levels of evidence of effectiveness.

Overall summary of all transition programmes

Their review considered the effects of transition support on a wide variety of employer outcomes (retention rates, levels of competency and confidence, costs) and new graduate outcomes (Stress and anxiety reduction / Job satisfaction / Knowledge/skills acquisition / Critical thinking and interpersonal skills / Confidence / Professional nursing behaviours).

For the employer

Recruitment and retention

High retention rates of between were reported at one year across all strategies and interventions but in the majority of cases there were no baseline measurements to compare this to. Retention was reported in relation to a number of strategies.

Significant differences were noted in retention between intervention and comparison groups for residency / internship and graduate orientation programmes at 12 months differences with the differences being sustained up until at least 24 months. There was no significant difference at the 6 month point in the retention cycle. No significant difference was found between retention in between intervention and comparison groups for proctorship based initiatives. All studies agree however, that many factors affect retention that could not be controlled, such as family relocation, changes in health status, family responsibilities, or other personal or family issues

Turnover rates

Turnover was reported as actual turnover and turnover intent/anticipated turnover. Turnover rates were only reported for the internship / residency programs. One study, retrospectively examined rates over a ten year period demonstrating that these decreased over that time period. Internship / residency programs had an impact on turnover rates when the new graduates were satisfied with their jobs and pay, felt committed to the organisation, had previously passed the NCLEX, and the establishment had greater experience of running internship / residency programs.

Analysis of the majority studies that investigated retention and turnover revealed a weakness in the study designs. A further section of such papers is provided in Appendix 13. Most of the studies were one time experimental case study designs conducted by researchers within the organisation/facility when a new program/retention strategy was being implemented. This type of study does not provide sufficient evidence to determine what factors influenced the success or failure of a program, as there is limited/no control for potential confounders. Some of these studies use previous retention rates or literature to compare their success and failure, each failed to show the cause and effect of the implemented programme and retention rates. As a result no strong clear recommendations and conclusions that can be drawn from the data. This concurs with the review by Salt⁷³, who recommended that at a minimum non randomised control group pre post test designs should be used to assess the effectiveness of retention strategies with 2 similar groups .

Competence and confidence

Significant increase in level of confidence was found in relation to internship / residency programmes. Orientation programmes reported a general increase in levels of confidence and competency, although this was related to self evaluation scales. One mentorship study reported a statistical increase in competence. Self reported increase in confidence and competence was noted in relation to preceptorship programmes, although this was not strong evidence. Simulation provided clearer evidence of an increase in confidence levels along with competence and readiness with a statistically significant improvement in confidence, competence and readiness for practice from baseline to the end of one simulation program. In contrast, final year student transition programs found a decrease in self perceived frequency (how often performed) and quality (how well performed) of experience in

the domains of critical care, teaching/collaboration and planning. In Final Year Transition programs, self-reported data on confidence showed a decrease.

Costs

Only one orientation study considered cost effectiveness⁵⁹ concluding that reduced turnover resulted in the retention of 9.8 nurses yielding a potential saving of \$1,367,100 annually.

For the new diplomate / graduate

Stress and anxiety reduction

Stress and anxiety generally reduced through participation in internship/residency programmes. Mentorship was also demonstrated to moderate stress through the mentor's contact with new graduates.

Job satisfaction

Internship / residency programmes demonstrated increased levels of job satisfaction, although some studies were based on low numbers. The level of this varied, but overall job satisfaction appeared to increase, despite fluctuation at points.

Knowledge/skills acquisition

Only one study under internship / residency programmes reported an increase in knowledge scores. Similarly one final year student transition programme reported improved knowledge, this was not significant. Low fidelity simulation was found to be significantly more effective than both self learning and didactic education in developing knowledge and skills.

Critical thinking and interpersonal skills

Internship / residency programmes reported only some success in increasing critical thinking. Orientation was found in one study to statistically improve critical thinking and interpersonal skills. Similarly, there was limited support for preceptorship as a way of increasing critical thinking skills. Final Year Transition Programs were few in number and varied with one study reporting excellent results and another minimum changes.

Confidence (see for the employer above)

Professional nursing behaviours

- Leadership
Internship/residency programmes were shown to increase mean scores in frequency (how often performed) but not quality (how well performed) for leadership. Perceived quality of leadership showed the largest gain within the 6_DNSP scale in one final year student transition programme.
- Critical care
Reported as competence/confidence above

- Teaching / collaboration
Reported as competence/confidence above
- Planning / evaluation
Reported as competence/confidence above
- Interpersonal relations / communication
Internship/residency programmes were shown to increase mean scores for communication.
- Professional development
Students made positive comments regarding preparedness for graduate nursing in regard to one final year transition programme study, there was no significant differences between the intervention and control groups.
- Professional support
One preceptorship study indicated that the intervention group perceived a higher level of professional support, this was not significant.
- Professional transition/autonomy
Internship/residency programmes showed a significant increase in autonomy, an overall V shaped pattern was described with residents measuring high in the beginning, dipping at 6 months and returning to base level at the programme end. One residency study reported an increase in three aspects of professional transition: support, patient safety and communication/leadership, with significance reached for communication/leadership and a V shaped pattern noted for professional satisfaction. Organisational commitment and cohesion showed a similar V shaped pattern dipping at 12 months and returning to baseline at 24 months. One orientation programme reported significantly reduced service role discrepancy scores indicating the programme eased transition.

Limitations of the review

The search was restricted to English language. However there may have been studies in other languages relevant to the review.

The validity of the results of this review is limited by the methods of included primary studies.

Conclusion

A range of outcomes were considered across the included studies relating to the effectiveness of transition programmes which made it difficult to report firm conclusions. A significant increase in level of confidence was found in relation to internship / residency programmes and one mentorship study. Orientation and preceptorship programmes reported a general increase in levels of confidence and competency, although this was not strong evidence. Stress and anxiety generally reduced through participation in internship/residency and mentorship programmes. Where knowledge was measured (3 studies) an increase was noted, although this was only significant in relation to simulation. Internship / residency programmes

demonstrated increased levels of job satisfaction. Internship / residency programmes and preceptorship reported only some success in increasing critical thinking; however one final year transition and orientation program reported statistically improved critical thinking. Of particular note in a number of studies was a V shaped pattern for autonomy and professional transition with a decrease often occurring at the 6 and/or 12 month stage before reverting to baseline. The research relating to improvements in retention and reduction in turnover is poor for the majority of studies with internship / residency programs providing the strongest evidence.

Implications for Practice

Although findings vary depending on the type of transition programme reported, transition programmes for new graduate nurses are generally effective in reducing retention and improving overall experience.

From the evidence reported it appears that new graduate nurses will be more successful if specialised schemes to improve transition are introduced. Overall impact of these programmes appears positive, no matter what the intervention; this may suggest that it is the organisation's focus on new graduate nurses that is important, rather than simply leaving them to acclimatise to their new role themselves. A number of studies mentioned the importance of support from colleagues, as well as the organisation, and mentors/preceptors need to be adequately prepared for the role. A combination of approaches including didactic and clinical elements appears to be helpful in facilitating the journey from graduate student to competent qualified nurse. Organisations may also want to consider any specific individual need with regard to the location of the facility (e.g. urban, rural) the service delivered (e.g. general, critical care) and the characteristics of the nurses required within the service.

Implications for Research

Following the previous systematic review,⁶ it is clear that a number of the recommendation regarding improvements to the methodological quality of studies has been accepted. In this collection of literature there were a number of studies that reached a competent level of research through the use of controls and objective methods.

Future research on transitions should build on the strengths and limitations of the current studies. There is clearly a need for studies with larger sample sizes and a greater emphasis on objective and reliable measures of the outcomes included.

It is important in order to make more definitive statements on the success of programmes to include a comparison group. Where possible, there is a need for more studies taking a quasi-experimental and randomised control trial structure to be undertaken.

Much of the current literature is American and work from other countries such as the UK and Europe would help to make findings more generalisable providing that the methodological strength was achieved.

Conflict of Interest

None

Acknowledgements

I would like to thank Professor Paul Bennett, Professor of Clinical and Health Psychology, Department of Psychology, University of Swansea and former Director of the Wales Centre for Evidence Based Care, for his valuable input during the development of the review protocol and during the screening process.

Appendix 1: Search strategy and search histories

Medline Search Strategy

[mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]

1	exp Education, Nursing, Graduate/	35	33 or 34
2	("new" adj3 "graduate\$").mp.		
3	("new\$" adj2 "nurs\$").mp.	36	"residency".mp.
4	("nurs\$" adj2 "grad\$").mp.	37	"NRP".mp.
5	("novic\$" adj2 "nurs\$").mp.	38	("residency" adj2 "program\$").mp.
6	("neophyte" adj2 "nurs\$").mp.	39	36 or 37 or 38
7	1 or 2 or 3 or 4 or 5 or 6		
		40	("preceptor" adj2 "program\$").mp.
8	"outcomes of education".mp.	41	exp Preceptorship/
9	"outcome assessment".mp.	42	"preceptor\$".mp.
10	*"Outcome Assessment (Health Care)"/	43	40 or 41 or 42
11	8 or 9 or 10		
		43	exp clinical competence/
12	("eval\$" adj2 "research").mp.	44	exp professional competence/
		45	43 or 44
13	"simulator program\$".mp.		
		46	exp orientation/
14	"program\$ implementation".mp.	47	("orientation" adj2 "program\$").mp.
		48	"orientation".mp.
15	"peer support".mp.	49	("employee" adj2 "orientation").mp.
16	"support group\$".mp.	50	46 or 47 or 48 or 49
17	exp Peer Group/		
18	exp Self-Help Groups/	51	7 and 11
19	15 or 16 or 17 or 18	52	7 and 12
		53	7 and 13
20	"hospital program\$".mp.	54	7 and 14
21	"hospital training program\$".mp.	55	7 and 19
22	("hospital" adj2 "program\$").mp.	56	7 and 20
23	20 or 21 or 22	57	7 and 23
		58	7 and 26
24	exp Inservice Training/	59	7 and 27
25	"in*service training".mp.	60	7 and 30
26	24 or 25	61	7 and 31
		62	7 and 32
27	"capstone courses".mp.	63	7 and 35
		64	7 and 39
28	exp "Internship and Residency"/	65	7 and 43
29	"intern\$".mp.	66	7 and 45
30	28 or 29	67	7 and 50
		68	51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67
31	"transition\$".mp.	69	limit 68 to (english language and yr="2000 - 2011") (3328)
32	"group de*briefing".mp.		
33	exp Program Evaluation/		
34	"program\$ evaluation".mp.		

Cinahl Search Strategy

Limiters - Exclude MEDLINE records

#	Query
S65	S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59 or S60 or S61 or S62 or S63 (614)
S64	S49 or S50 or S51 or S52 or S53 or S54 or S55 or S56 or S57 or S58 or S59 or S60 or S61 or S62 or S63
S63	S7 and S47
S62	S7 and S42
S61	S7 and S41
S60	S7 and S37
S59	S7 and S34
S58	S7 and S33
S57	S7 and S32
S56	S7 and S28
S55	S7 and S26
S54	S7 and S24
S53	S7 and S14
S52	S7 and S18
S51	S7 and S13
S50	S7 and S12
S49	S7 and S11
S47	S43 or S44 or S45 or S46
S46	employee N2 orientation
S45	orientation N2 program*
S44	orientation
S43	(MH "Orientation") or (MH "Employee Orientation")
S42	(MH "Clinical Competence+") or (MH "Professional Competence+")
S41	S39 or S39 or S40
S40	(MH "Preceptorship")
S39	preceptor* N2 program*
S38	preceptor*
S37	S35 or S36
S36	Program* N1 Evaluation
S35	(MH "Program Evaluation")
S34	group N1 de?briefing
S33	transition*
S32	S29 or S30 or S31
S31	residency N2 program*
S30	NRP

S29	residency
S28	S26 or S27
S27	intern*
S26	(MH "Internship and Residency") or (MH "Interns and Residents")
S25	capstone N1 cours*
S24	S19 or S20 or S21 or S22 or S23
S23	in?service N1 training
S22	hospital N2 program*
S21	(MH "Staff Development+")
S20	hospital training N1 program*
S19	hospital N1 program*
S18	S15 or S16 or S17
S17	(MH "Peer Group") or (MH "Support Groups+")
S16	support N1 group*
S15	peer N1 support
S14	program* N1 implementation
S13	simulator N1 program*
S12	eval* N2 research
S11	S8 or S9 or S10
S10	(MH "Outcome Assessment")
S9	outcom* N1 assesment
S8	outcomes N1 education
S7	S1 or S2 or S3 or S4 or S5 or S6
S6	(MH "New Graduate Nurses") or (MH "Education, Nursing, Graduate+") or (MH "Students, Nursing, Graduate+") or (MH "New Graduates+")
S5	neophyt* N2 nurs*
S4	novic* N2 nurs*
S3	nurs* N2 graduat*
S2	new* N2 nurs*
S1	new* N3 graduat*

PsycINFO Search Strategy:

[mp=title, abstract, heading word, table of contents, key concepts]

- | | | |
|----|------------------------------------|--|
| 1 | ("new" adj3 "graduate\$").mp. | |
| 2 | ("new\$" adj2 "nurs\$").mp. | 28 ("hospital" adj2 "program\$").mp. |
| 3 | ("nurs\$" adj2 "grad\$").mp. | |
| 4 | ("novic\$" adj2 "nurs\$").mp. | 29 exp Peer Counselling/ |
| 5 | ("neophyte" adj2 "nurs\$").mp. | 30 exp Support Groups/ |
| 6 | "outcomes of education".mp. | |
| 7 | "outcome assessment".mp. | 31 exp Internship Programs/ or |
| 8 | ("eval\$" adj2 "research").mp. | 32 exp Educational Program Evaluation/ |
| 9 | "simulator program\$".mp. | 33 exp Professional Competence/ |
| 10 | "program\$ implementation".mp. | 34 ('orientation' adj2 'program\$').mp. |
| 11 | "peer support".mp. | 35 ('employee' adj2 'orientation').mp. |
| 12 | "support group\$".mp. | 36 1 or 2 or 3 or 4 or 5 |
| 13 | "hospital program\$".mp. | 37 11 or 12 or 29 or 30 |
| 14 | "hospital training program\$".mp. | 38 13 or 14 or 15 or 16 or 28 |
| 15 | exp Inservice Training/ | 39 18 or 23 or 24 or 25 or 31 |
| 16 | "in*service training".mp. | 40 6 or 7 or 8 or 21 or 32 or 33 |
| 17 | "capstone courses".mp. | 41 26 or 27 |
| | | 42 34 or 35 |
| 18 | "intern\$".mp. | 43 36 and 9 |
| | | 44 36 and 10 |
| 19 | "transition\$".mp. | 45 36 and 17 |
| | | 46 36 and 19 |
| 20 | "group de*briefing".mp. | 47 36 and 20 |
| | | 48 36 and 37 |
| 21 | exp Program Evaluation/ | 49 36 and 38 |
| 22 | "program\$ evaluation".mp. | 50 36 and 39 |
| | | 51 36 and 40 |
| 23 | "residency".mp. | 52 36 and 41 |
| 24 | "NRP".mp. | 53 36 and 42 |
| 25 | ("residency" adj2 "program\$").mp. | |
| | | 54 43 or 44 or 45 or 46 or 47 or 48 or 49 or |
| 26 | ("preceptor" adj2 "program\$").mp. | 50 or 51 or 52 or 53 |
| 27 | "preceptor\$".mp. | 55 limit 54 to yr="2000 - 2011" (252) |

All EBM Reviews - Cochrane DSR, ACP Journal Club, DARE, CCTR, CMR, HTA, and NHSEED Search Strategy

Searches Results

- 1 ("new" adj3 "graduate\$").mp. [mp=ti, ab, tx, kw, ct, ot, sh, hw]
- 2 ("new\$" adj2 "nurs\$").mp. [mp=ti, ab, tx, kw, ct, ot, sh, hw]
- 3 ("nurs\$" adj2 "grad\$").mp. [mp=ti, ab, tx, kw, ct, ot, sh, hw]
- 4 ("novic\$" adj2 "nurs\$").mp. [mp=ti, ab, tx, kw, ct, ot, sh, hw]
- 5 ("neophyte" adj2 "nurs\$").mp. [mp=ti, ab, tx, kw, ct, ot, sh, hw]
- 6 ('support' adj1 'group').ab,ti,kw,hw,kf.
- 7 peer.ab. or peer.hw. or peer.kf. or peer.kw. or peer.ot. or peer.ti.
- 8 counseling.ti. or counseling.hw. or counseling.ot. or counseling.ab. or counseling.kw.
- 9 8 and 7
- 10 programme.ti. or programme.hw. or programme.ot. or programme.ab. or programme.kw.
- 11 program.ti. or program.hw. or program.ot. or program.ab. or program.kw.
- 12 10 or 11
- 13 6 and 7
- 14 inservice.hw. or inservice.ti. or inservice.ab. or inservice.kw.
- 15 training.ot. or training.hw. or training.kw. or training.ab. or training.kf. or training.ti.
- 16 15 and 14
- 17 capstone.ab.
- 18 intern.ot. or intern.ab. or intern.ti.
- 19 transition.hw. or transition.ti. or transition.ab. or transition.kw.
- 20 residency.hw. or residency.ti. or residency.ab. or residency.kw.
- 21 preceptorship.kw. or preceptorship.ab. or preceptor.ti. or preceptors.ti. or preceptor.ab. or preceptorship.ti. or preceptors.ab. or preceptorship.hw.
- 22 internships.ab. or internship.hw. or internship.ti. or internship.ab. or internship.kw.
- 23 competence.ti. or competence.hw. or competence.ot. or competence.ab. or competence.kw.
- 24 orientation.ti. or orientation.hw. or orientation.ot. or orientation.ab. or orientation.kw.
- 25 4 or 1 or 3 or 2 or 5
- 26 25 and 6
- 27 25 and 9
- 28 25 and 13
- 29 25 and 12
- 30 25 and 16
- 31 25 and 17
- 32 25 and 18
- 33 25 and 19
- 34 25 and 20
- 35 25 and 21
- 36 25 and 22
- 37 25 and 23
- 38 25 and 24
- 39 35 or 27 or 33 or 32 or 28 or 36 or 26 or 38 or 34 or 37 or 30 or 29 or 31
- 40 limit 39 to yr="2000 - 2009" [Limit not valid in DARE; records were retained] (89)

Appendix 2.1: Checklist – Experimental Studies

Author: _____
Year: _____
Record Number _____
Reviewer _____

Questions 1 to 4 must be answered “yes” for study to be included in a meta-analysis.

- 1) Were the participants randomised to study groups.
yes no not clear
- 2) Other than the research intervention, were participants in each groups treated the same.
yes no not clear
- 3) Were the outcomes measured in the same manner for all participants.
yes no not clear
- 4) Were groups comparable at entry
yes no not clear

Studies that answer no to questions 5, 6 or 7 will only be included in the systematic review if no other higher quality studies are identified available, however this must be noted in the report.

- 5) Was there adequate follow-up of participants.
yes no not clear N/A
(more than 80% followed up) (less than 80% followed up)
- 6) Was allocation to treatment groups concealed from the allocator.
yes no not clear N/A
- 7) Were those assessing outcome blinded to treatment allocation (if outcome not objective such as survival or length of hospitalisation).
yes no not clear N/A

Critical Appraisal

Include Exclude Seek Further Info

Comments

Appendix 2.2: Checklist – Observational & Descriptive Studies

Author: _____
Year: _____
Record Number _____
Reviewer _____

- 1) Is the study based on a random or pseudo-random sample?
yes no not clear N/A
- 2) Are the criteria for inclusion in the sample population clearly defined?
yes no not clear N/A
- 3) Were outcomes assessed using objective criteria?
yes no not clear N/A
- 4) If comparisons are being made, was there sufficient description of the groups?
yes no not clear N/A
- 5) Was an appropriate statistical analysis used?
yes no not clear N/A

Critical Appraisal

Include Exclude Seek Further Info

Comments

Appendix 3: Data Extraction Form

Author: _____
Year: _____
Record Number _____
Reviewer _____

Method _____

Types of Intervention

- | | | | | | |
|------------------------|--------------------------|--------------------------------|--------------------------|-------|--------------------------|
| Graduate programmes | <input type="checkbox"/> | Preceptorship | <input type="checkbox"/> | Other | <input type="checkbox"/> |
| Externship | <input type="checkbox"/> | Peer support | <input type="checkbox"/> | _____ | |
| Internship (residency) | <input type="checkbox"/> | Lecturer practitioner support | <input type="checkbox"/> | _____ | |
| Mentoring | <input type="checkbox"/> | Clinical practice facilitators | <input type="checkbox"/> | | |

Types of outcome measures

Retention: _____	Other
Turnover: _____	_____
Attrition rates: _____	_____
Competency: _____	_____
Cost Effectiveness: _____	_____
Job Satisfaction: _____	_____
Stress: _____	_____
Knowledge: _____	
Skill: _____	
Confidence: _____	

Program Description

- Type of Programme _____
- Setting _____
- Duration _____
- Clinical Orientation / Induction _____

- Clinical Support _____
- Clinical Placement _____
- Didactic elements _____
- Registration Requirements _____
- Other information _____

Experimental Studies

Number of participants

Group A: _____ Group B: _____ Group C: _____

Description of Interventions

Intervention A _____

Intervention B _____

Intervention C _____

Results

Dichotomous Data

Outcome	Treatment Group number/total number	Control Group Number/total number

Continuous Data

Outcome	Treatment Group mean & SD (number)	Control Group mean & SD (number)

Findings

Authors Conclusions

Reviewers Conclusions

Other studies

Number of participants

Findings

Authors Conclusions

Reviewers Conclusions

Appendix 4: Articles excluded after detailed examination

Citation	Method	Program/ Intervention	Outcomes of interest	Reasons for exclusion
Ackermann et al 2007. ⁷⁴ Vassar Brothers Medical Centre, Poughkeepsie, New York, USA	Descriptive case study with satisfaction survey	Bridge to Practice Program Preceptor Based Orientation Simulator Program	None	No outcomes of interest Evaluated program content not effectiveness
Altimier 2009. ⁷⁵ Mercy Anderson Hospital Neonatal Department Cincinnati, OH, USA	Descriptive case study	Flexible Neonatal Online Nursing Orientation Program	Cost benefit	No evaluation conducted Explores the cost of providing computer based program over a taught program.
Andrew et al 2008. ⁷⁶ Three Metropolitan Public Hospitals, New South Wales, Australia	Descriptive case study with survey design	Transition to Graduate Nursing Program	Clinical competency	Development of competency scale No evaluation conducted
Baggot et al 2005. ⁷⁷ University of Michigan Healthcare System, Ann Arbor, Mich, USA	Descriptive case study with Cost Benefit Analysis	Preceptor Action Days	Cost Benefit Analysis Retention	No evaluation conducted, Reported general satisfaction reported. RN Vacancy rate – no results for the new hires
Bartlett et al 2000. ⁷⁸ Oxford Brookes University, Oxford, London, UK	Longitudinal descriptive study	None	Clinical competency (at graduation, 6 months and 12 months post graduation)	No program / interventions
Blanzola et al 2004. ⁷⁹ US Navy Hospital San Diego, California, USA	Quasi Experimental design with qualitative element	Nursing Internship Program Competency Based Orientation Program	Competency Knowledge / Skills Professional nursing behaviours	Not neophytes including those with 12-18 months experience (25% in pilot group / 20% control group) Analysis -no separate results presented

Boswell and Wilhoit 2003. ⁸⁰ 13 hospital departments, USA	Descriptive case study with survey design	None	Nurses perceptions of working environment and interpersonal relationship	No program / interventions
Bowers et al 2009. ⁸¹ University of Arkansas for Medical Sciences Little Rock, Arkansas, USA	Descriptive case study	Professional Entry into Practice Program	Turnover rates Clinical competency	Not neophytes New hires - transition of the professional into a specific speciality
Bowles and Candela 2005. ⁸² Level 1 trauma centre, Recruited across 13 hospital departments, USA	Descriptive cross sectional survey	None	Nurses' perceptions of first job experience	No program / interventions
Carignan et al 2007. ⁸³ Home healthcare nurses USA	Descriptive case study	Internship Preceptorship	Job satisfaction Knowledge / Skill	No evaluation to be conducted at a later date Author search did not reveal any further published work
Celia and Gordon 2001. ⁸⁴ Hahnemann University Hospital Philadelphia, Pennsylvania, USA	Descriptive case study with satisfaction survey	Problem Based learning within an orientation programme	Problem solving Critical thinking	No evaluation conducted Investigated the use of problem based learning as opposed to a lecture format
Chang and Hancock 2003. ⁸⁵ Tertiary graduates from 13 institutions New South Wales, Australia	Descriptive cross sectional survey	None	Role stress and changes in role stress 2-3 months after employment	No program / interventions
Chesnutt and Everhart 2007. ⁸⁶ Surgical Intensive Care Unit University of Colorado Hospital Colorado, Denver, USA	Descriptive case study	Staged orientation program in Surgical Intensive Care	None	No evaluation conducted

Clare and van Loon 2003. ⁸⁷ Rural and remote areas of Western Australia – Northern Territory and Tasmania	Descriptive cross sectional survey	None	Experiences of new graduate transition to practice	No program / interventions
Cleary and Happell 2005. ⁸⁸ Central Sydney Area mental Health Services Sydney, Australia	Descriptive case study with satisfaction survey	Transition Programme into Mental Health Nursing	Helpfulness of orientation. Satisfaction with the programme and clinical support provided	No outcomes of interest
Cleary et al 2009. ⁸⁹ Hospital not identified Queensland, Australia	Descriptive Case study with pre post test survey design	Transition Program into Mental Health Nursing	Knowledge / Skill Confidence	Non neophytes included in the analysis. No separate results presented
Duvall 2009. ⁹⁰ 12 Bed-Medical / Surgical Unit, ICU Central Florida, USA	Descriptive case study	Internship Programme	Clinical competency Knowledge / Skill	No evaluation of programme Re development of the internship programme
Elliott 2010. ⁹¹ Georgetown University Hospital Post Anaesthesia Care Unit Washington, DC, USA	Descriptive case study	Perianesthesia Orientation Program	None	No evaluation conducted No outcomes of interest Although report that evaluation is conducted and the orientee must complete a checklist and pass each examination with an 80% or greater before completing the orientation
Faron and Poelter 2007. ⁹² Sharp Mary Birch Hospital for Women, San Diego, USA	Descriptive case study	Mentoring	Turnover rates	Not neophytes Included graduates new to a speciality unit Analysis – no separate result presented

Farrell and Chakrabarti 2001. ⁹³ Hospital not specified, USA	Descriptive case study with survey and in-depth interviews and focus groups	Preceptorship	Effectiveness of the preceptorship arrangements	No outcomes of interest
Gavlak 2007. ⁹⁴ Large Metropolitan Hospital – 900 bed St Joseph’s Hospital Tampa, Florida, USA	Descriptive case study	Centralised Graduate Nurse Orientation	None	No outcomes of interest Evaluation not conducted
Grochow 2008. ⁹⁵ Location not stated	Descriptive case study	Preceptorship	None	No outcomes of interest Evaluation not conducted Development of evaluation tool
Guhde 2005. ⁹⁶ 59 bed medical/surgical unit in a community Hospital USA	Descriptive case study	Next Shift Mentoring Program Formal 6 week orientation followed by a “buddy” program	None	No outcomes of interest No evaluation conducted Informal survey
Gurney 2002. ⁹⁷ Cap Cod Hospital Centre 240 Bed Community Hospital Hyannis, Mass, USA	Descriptive case study	Transition to emergency nursing program 16 weeks	Clinical competency	Not neophytes Graduates had at least 6 months medical surgical experience and had attained a telemetry course
Hall and Marshall 2006. ⁹⁸ Lancaster Regional Health Systems Nursing Education Dept, Community Hospital of Manchester, ICU Lancaster, Pennsylvania, USA	Descriptive case study	Critical Care Internship 16 weeks	Staff development programme evaluation Cost effectiveness Knowledge / Skill	Not neophytes RNs without critical care experience
Hancharik 2008. ⁹⁹ Magnet and Non Magnet Hospitals USA	Applied dissertation study	None	Use of instructional technology within orientation programs	No program / intervention

Hancock 2002. ¹⁰⁰ Great Ormond Street NHS Trust Neonatal Intensive Care Unit London, UK	Descriptive case study with satisfaction survey	Neonatal Intensive Care Unit Structured Support Programme Preceptorship 6 months	Attitudes, opinions and perceptions	No outcomes of interest Evaluated satisfaction with program and not effectiveness
Hardyman and Hickey. ³⁶ Adult branch nursing students nationwide, UK	Descriptive longitudinal survey	Pilot Study to identify nurses expectations of Preceptorship	Expectations of preceptorship	No outcomes of interest Evaluated expectations of preceptorship program and not effectiveness
Hengstberger-Sims et al 2008. ¹⁰¹ Metropolitan Public Hospitals Sydney, New South Wales, Australia	Cross sectional non experimental survey	Graduate Nurse Program	Competency	No evaluation conducted Focuses on competence and self assessed frequency of use of competence
Horwarth 2010. ¹⁰² North-western Ohio community based hospital, USA	Descriptive case study	Nursing Orientation Program	None	No outcomes of interest Evaluation conducted using a self designed tool. N = 5 “it’s reasonable to conclude that the new pilot program was well received and effective
Hillman and Foster 2011. ¹⁰³ Children’s hospital of Michigan, Detroit, MI, USA	Descriptive case study	Residency Programme Preceptorship	Turnover rates Cost effectiveness Knowledge / Skill Job satisfaction	No evaluation of programme Results to be reported / data presented at a later date
Jarman and Newcombe 2010. ¹⁰⁴ St George’s Hospital Emergency Department London, UK	Descriptive case study	Practice Based Education Programme – The Foundations of Emergency Practice	None	No outcomes of interest No evaluation conducted

Jones and West 2010. ¹⁰⁵ Samuel Merritt University and Kaiser Permanente Collaborative University of San Francisco Collaborative California State University East Bay Collaborative, South Bay RN Transition Program Collaborative, USA	Descriptive case study	Community Based Transition Program found those who have not found employment.	None	No outcomes of interest No evaluation conducted
Klein 2009. ¹⁰⁶ Children's Healthcare of Atlanta, USA	Descriptive case study	Floating Preceptor Length not specified	Retention	Not neophytes New hires upon completion of orientation
Kuroda et al 2009. ¹⁰⁷ 15 adult general hospitals 150-200 beds Chiba prefecture, Japan	Descriptive case study with survey	Investigated the relationship between the anxiety of novice nurses and preceptorship	Anxiety / Stress	No specific intervention
Lee et al 2009. ¹⁰⁸ 1800 bed teaching medical centre, Taiwan	Quasi-experimental	Preceptorship	Turnover	Not neophytes with less than 1 year of experience Average years of experience was 2.4 (SD 1.6) years
Lindsey and Kleiner 2005. ¹⁰⁹ St Jude Medical Centre In collaboration with two community colleges	Descriptive case study	Residency	Clinical competency Confidence Retention rates	No evaluation conducted. Programme development
Lott 2006. ¹¹⁰ Community Hospital South Carolina, USA	Descriptive case study with satisfaction survey	Orientation Program	Satisfaction	No outcome of interest Evaluated satisfaction with orientation experience not effectiveness of program

Maxwell 2011. ⁴³ 410-bed tertiary acute care facility St Joseph's Hospital of Atlanta, Georgia, Atlanta, USA	Descriptive case study	Part of the UHC/AACN residency program	None	Evaluation reported in Krugman ⁵⁴
McDonald et al 2009. ¹¹¹ District Health Board. New Zealand	Cross sectional survey design	Nurse Entry into Practice Program	27 item questionnaire In what way has your practice changed as a result of postgraduate education?	Response to open ended question subjected to content analysis.
Molinari et al 2008. ¹¹² Large North Western University Any rural hospital Hospitals in towns with fewer than 50,000 residents. USA	Descriptive case study	Rural Nurse Internship Distance Learning	None	No outcome of interest No evaluation conducted "Nurses reported gaining confidence". But no evidence of an evaluative tool
Nedd et al 2006. ¹¹³ Long Term Care Setting USA	Quasi- experimental	Guided growth intervention- Pilot study of a mentoring programme	Mentorship experience	No outcome of interest Evaluated mentorship experience not effectiveness. Not neophytes
Oermann and Garvin 2002. ⁷ Three hospitals in the Midwest Region, USA	Descriptive cross sectional survey	Investigated stresses and challenges of clinical practice, emotions experiences, implications for mentorship	Stress	No specific interventions
Patterson et al 2010. ¹¹⁴ Crozer Keystone Health System (CKHS) Employees., CKHS Emergency Department Upland, PA, USA	Descriptive case study with survey and semi structured interviews	ED Fellowship Program 6 months Preceptorship	Survey of nurses' perceptions of First Job Experience	No outcome of interest No evaluation

Persaud 2008. ¹¹⁵ St Anthony Medical Centre, OR. Rockford, Illinois, USA	Descriptive case study	Mentorship Program Peri operative Nurse	General evaluation	Evaluated general experience and not effectiveness
Poynton et al 2007. ¹¹⁶ University of Utah College of Nursing and University Health Care, Utah, USA	Descriptive case study	University of Utah nurse Residency program	None	No outcome of Interest No evaluation conducted Design of Program
Price et al 2000. ¹¹⁷ Dilirio et al 2001. ¹¹⁸ National Institutes of Health Bethesda, USA	Descriptive case study	Neuroscience Nurse Internship Program	Knowledge / Skill Confidence	Not neophytes New registered nurses and registered moving over to neuroscience nursing
Proulx and Bourcier 2008. ¹¹⁹ Catholic Medical Centre, ICU Manchester, New Hampshire, USA	Descriptive case study	Orientation Program	None	Resigning of orientation programme No outcomes of interest No evaluation conducted informal feedback only
Puntil 2005. ¹²⁰ University of California Los Angeles Neuropsychiatric Hospital 136 bed psychiatric hospital Los Angeles, USA	Descriptive case study	New Graduate Residency Program Preceptor assigned for first 6 months and mentor assigned for year following	None	No outcome of Interest No evaluation conducted
Sandau et al 2011. ¹²¹ Large Midwest hospital all hospital inpatient departments 926 Beds, USA	Cross sectional study with a quasi- experimental design	Preceptor workshop	Proportion of new nurses retained 1 year post intervention on the same unit as which they were oriented	Non neophytes included in the analysis and no separate results presented

Sandhusen 2005. ¹²² Five Hospitals within the Inova Health System. Northern Virginia, USA	Survey with both qualitative and quantitative elements. Quasi-experimental Design	Inova Health System Internship Program. Varied length of internship across different specialities.	Clinical competency	No specific interventions evaluated Non neophytes – qualified nurses who worked for less than 1 year but who had moved into a different speciality area also included
Scells and Gill 2007. ¹²³ Royal Brisbane Women’s Hospital 60-bed orthopaedic clinical nit- trauma and elective mix, Brisbane, Australia	Grounded theory Descriptive survey	Coordinated Team Preceptorship Model	Confidence	Not restricted to neophytes
Scott and Smith 2008. ¹²⁴ Lenoir Memorial Hospital 261-beds, Kinston, North Carolina, USA	Descriptive case study with job satisfaction survey and focus groups	STAR Program Mentoring Program	Satisfaction	No objective evaluation Evaluated satisfaction with orientation experience not effectiveness of program.
Scott et al 2008. ¹²⁵ Scott et al 2005. ¹²⁶ North Carolina Centre for Nursing	Descriptive cross sectional survey	None	Secondary analysis of data of 12 variables within a pre existing survey focusing on Job satisfaction and career satisfaction	No specific interventions evaluated
Shermont and Krepcio 2006. ¹²⁷ Children’s Hospital Boston, Boston, Mass, USA	Descriptive case study	Partnership Unit Preceptorship	Turnover rates	Not neophytes Newly hired nurses
Smith 2006. ¹²⁸ Three Acute Care Facilities, Tennessee, USA	Descriptive correlation study	Mentorship	Investigated the relationship between mentoring and goal	No specific intervention evaluated Participants may have had more than 12 months experience

Specht and Mobily 2005. ¹²⁹ John A Hartford Centre for Geriatric Nursing Excellence.University of Iowa, Iowa, USA	Descriptive case study	Young Gerontological Nurse Clinical Program Mentored program	None	No evaluation conducted
Speers et al 2004. ¹³⁰ William Beaumont Hospital 997 bed major teaching and referral hospital – Level 1 trauma Oakland County, Detroit, USA	Descriptive case study	Preceptorship	None	No outcome measures No evaluation of program. Preceptor Preparation
Stinson and Wilkinson 2004. ¹³¹ Paediatric Hospital , USA	Descriptive case study Pilot study	Clinical Extern Program	None	N=3 No evaluation of program Development of the programme using a logic model
Sweeney 2010. ¹³² Bayfront Medicals Centre, Emergency Department, St Petersburg, FL, USA	Descriptive case study	Novice Nurse Internship Program Home study course with web based home learning modules	None	No evaluation conducted
Truman 2004. ¹³³ Poudre Valley Hospital Fort Collins, Colo, USA	Descriptive case study	Preceptorship	None	No formal evaluation Programme Development
Varden 2006. ¹³⁴ Salford General Hospital NHS Trust Surgical Division, UK	Descriptive case study	Rotational Program Preceptorship	General	Evaluated views about rotation programme and not effectiveness
Ward 2009. ¹³⁵ Lynchburg General Hospital Lynchburg, Virginia, USA	Descriptive case study with satisfaction survey and pre –post knowledge test.	Orientation Programme	Retention rates on unit Retention rates in organisation Knowledge / Skill	Non neophytes included in the Analysis no separate results presented

Wong 2006. ¹³⁶ Footshill Medical Centre Department of Clinical Neurosciences, Calgary, Canada	Descriptive case study	Regional Orientation Programme	None	Evaluation not conducted Peer review
Young et al 2010. ¹³⁷ Yakima Valley memorial Hospital, In collaboration with Washington State University, Yakima, WA, USA	Non experimental retrospective program evaluation	Advanced Clinical Education and Simulation Course	General evaluation	Not neophytes All newly hired registered nurses and pharmacists. Three RNs not newly qualified. Separate results not reported
Cantrell et al 2005. ²³ Acute care paediatric hospital ,USA	Descriptive comparative study	Externship	Job satisfaction Role socialisation Professionalism Sense of belonging	Not neophytes Former nurse externs who were registered nurses and had participated in the nurse extern program in the summers of 1997 to 2001 matched with those who had not been through externship. . Average time in practice 6 months to 3 years.
Dempsey and McKissick 2006. ¹³⁸ Medical/Surgical Units and CCU, USA	Descriptive case study	Externship Student Nurse Aide Program Preceptor	Destination of externs in the last 2 yrs	No outcome of interest
Rebeschi and Aronson, 2009. ¹³⁹ Public University Northeast USA.	Descriptive Cohort Study	Senior Capstone Course	Employment destination post course NCLEX pass rates	No outcome of interest
Stefanski and Rossler 2009. ⁷⁰ University of Louisiana at Lafayette Department of Nursing, USA	Descriptive case study	Preparing the critical care nurse Didactic lecture presentations with corresponding simulation activities	Satisfaction Self Confidence	Not neophytes Course content created to accommodate learning needs of new graduate nurses and the experienced nurse entering ICU

Grindel and Hagerstrom 2009. ¹⁴⁰ Member Hospitals of the Academy of medical Surgical Nurses, USA	Descriptive case study	Mentorship	Job Satisfaction Confidence Intention to Stay	Not neophytes “the majority f the mentees were new graduates”
Keahey 2008. ¹⁴¹ USA	Descriptive case study	Residency Program	None	No evaluation of program
Coyle 2011. ¹⁴² The Christina Care Visiting Nurse Association, USA	Descriptive case study	Internship Preceptorship	None	No evaluation of programme just lessons learned

Appendix 5: Articles excluded after critical appraisal

			Outcome Measures	Reasons for exclusions
Anderson et al 2009. ¹⁴³ Healthcare system in the Midwest, USA	Descriptive Case Study	Nurse Residency Program 1 Year	Job satisfaction Work Environment satisfaction	No statistical data presented although significant findings stated. Correspondence with author but no reply
Courtney 2005. ¹⁴⁴ St Mary Corwin Medical Centre OR, Pueblo Colo, Colorado, USA	Descriptive case study	Peri Operative Nurse Extern-intern program Minimum of 148 class room hours	Confidence	Outcome measures not reported “They report a greater confidence and decreased levels of uncertainty when providing care to surgical patients because of the foundation of knowledge and skill provided by the program”
Cubit and Ryan 2011. ¹⁴⁵ Calvary Health Care ACT 334 –bed Australian Capital Territory Australia	Descriptive Case Study with longitudinal survey	Graduate Nurse Program Four clinical rotations Six study days of 12 months 3 day hospital orientation programme	Job Satisfaction Stress	N=16 with two questions within on line survey reported in a table and not discussed. Satisfied / experiencing high levels of stress w your job – Agree/ Neutral / Disagree Disagree reported for the 4 different rotations: no statistical analysis conducted.
Driscoll et al 2009. ¹⁴⁶ 20 bed General medical – surgical unit – Orthopaedic Community Hospital in the Northeast England, UK	Descriptive case study with 6 month follow up survey Pilot	Orthopaedic orientation 12 weeks	Confidence Knowledge	Data collected on 2005 =7, 2006 = 8. Reported an increase in knowledge and ability provide safe ensuring care for orthopaedic patients. No results or statistical analysis reported.
Fey and Miltner 2000. ¹⁴⁷ Medical / Obstetric / Ambulatory Nursing Division Washington Hospital Centre, Washington DC, USA	Descriptive Case Study	New Graduate Fellowship Program Preceptorship 12 weeks	Competency	Outcome measures reported but no results or statistical analysis conducted.

<p>Herdich and Lindsay 2006. ¹⁴⁸ Medical – Surgical Cardiac – Critical Care USA</p>	<p>Descriptive case study</p>	<p>Medical Surgical Residency Programme 1 Year Cardiac/Critical Care Residency Program 6 months</p>	<p>Retention Knowledge Professional development Stress Critical thinking Clinical judgment Problem solving</p>	<p>Pre and post test measures reported but no statistical analysis conducted due to small sample (n=5) – medical surgical and (n=9) critical care Two different residency programmes evaluated no separate results reported</p>
<p>Kilpatrick and Frunchak 2006. ¹⁴⁹ L’Order des Infirmieres et Infiriers du Quebec Quebec, Canada</p>	<p>Descriptive Case Study</p>	<p>Nursing Extern Program 2 day general orientation 15 days specific orientation</p>	<p>Knowledge Confidence</p>	<p>Feedback on issues related to the effectiveness of the program in improving integration to the hospital, improving communication skills, meeting education needs and concerns, strengthening knowledge and confidence in nursing skills, and retention of candidates into the hospital. “88.5% indicated that it strengthened their knowledge and confidence in nursing skills” “62% of the participants were retained as nursing graduates”</p>
<p>Loiseau 2003. ¹⁵⁰ Royal Victoria Hospital Site of the McGill University Health Centre, ED Montreal, Canada</p>	<p>Descriptive Case study with survey</p>	<p>4 months program with a preceptor in 4th months. Additional training after 6 months of employment</p>	<p>Confidence</p>	<p>Gallup Organization Employee Attitude Survey completed but the results were comparable with those attained by students not attending the programme. Evaluated using student self efficacy questionnaire. Total Average score was 3.07 or “confident”. There was no indication of how many participants completed the questionnaire. Further results and statistical analysis not reported</p>
<p>Mills and Mullins 2008. ¹⁵¹ California Nurses Foundation Catholic Healthcare West</p>	<p>Descriptive case study with job satisfaction survey and focus groups</p>	<p>Mentorship Length not specified</p>	<p>Job satisfaction, Professional confidence Attrition rates</p>	<p>Evaluation conducted but no statistical results reported</p>

USA				
Nied 2009. ¹⁵² 770 beds – not for profit hospital, South Eastern USA	Descriptive case study Pre Post Test Survey Cohort Survey Design	Residency Program 16 week programme	Clinical Competency Knowledge / Skill	Statistical analysis conducted on small sample
Orsini 2005. ¹⁵³ 42 bed inpatient acute orthopaedic specialty unit Large magnet Community Hospital South Eastern USA	Descriptive Case Study with satisfaction survey	Orthopaedic Nurse Transition Program Preceptorship 12 week program	Employee Satisfaction Job Satisfaction Turnover* Quality of Nursing Care	No objective criteria to assess outcome measures Results reported as “Quality of nursing care improved with increased job satisfaction over year as seen in patient satisfaction measures in quality measurement studies” Reported patient fall rate Medication error reporting
Square 2010. ¹⁵⁴ Newborn and Infant Care Unit 82 bed, regional level III unit, Woman’s Hospital, Baton Rouge, Louisiana, USA	Descriptive case study	Newborn and Infant Care Unit Orientation Program Preceptorship 16 week	Interpersonal relationships Patient Care Critical Thinking Professional Role (including self confidence)	Outcome measures utilised self reported scale where each item was rated on a 4 point scale needs improvement, 2-making progress, 3-meets expectation, 4 – exceeds expectations. No statistical results reported
Winslow et al 2009. ¹⁵⁵ Martha Jefferson Hospital 20 bed 5 fast track, Community Hospital ED Charlottesville, VA, USA	Descriptive Case Study with longitudinal satisfaction survey Qualitative interviews to assess competency	ED New Graduate Nurse Internship Program 6 months	Retention Rates Knowledge / Skill	Sample size too small for meaningful conclusions to be drawn (n=3)
Haggerty et al 2009. ¹⁵⁶ 21 Centres New Zealand	Nurse Entry Practice Programmes	Mixed methods with pre and post survey, case studies	Competence	No objective criteria to assess outcome measures Only one question in a larger survey. How would you rate your level of competence in nursing practice?

Appendix 6: Articles included in the review under Internship / Residency Programs

Authors	Intervention	Method	Sample size	Outcome Measure	Findings
Paper 1 Newhouse et al 2007. ⁴⁴ Johns Hopkins Hospital, Baltimore, USA	SPRING internship 1 Year	Quasi-experimental Post –test only control design	I=321 C = 159	OCQ SoBI ATS	Six month SPRING nurses have lower antecedent sense of belonging than baseline or 12 month SPRING nurses. Anticipated turnover was higher for baseline nurses than 6 month SPRING nurses. One year retention is higher for SPRING graduates than for non SPRING graduates.
Paper 2 Halfer et al 2008. ⁴⁷ Mid western urban, Magnet designated pediatric medical centre, USA	Pediatric RN Internship Program 1 Year	Descriptive comparative survey	I = 212 C = 84	JSS Turnover	Nurses in the post internship group indicated that they were more satisfied than dissatisfied. This finding did not reach significance until the 18 months time point (p=0.046). Voluntary turnover averaged 12% compared to 20% for the pre internship group.
Paper 3 Beecroft et al 2001. ³² Acute care paediatric setting, Los Angeles, USA	RN Residency Program 6 months	Descriptive comparative survey 1 year pilot	I = 50 C = 28	CNRCS OCQ PNAS SCSCS NCRS ATS	The 1 year pilot demonstrated that that the interns who had an average of 8 months of RN experience were comparable or better on all measures than were the control group participants who obtained up to 2 years of RN experience.
Paper 4 Beecroft et al 2008. ⁴⁸ Six pediatric hospitals, USA	RN Residency Program 22 weeks	7 year prospective longitudinal study	889	CNRCS OCQ PNAS SCSCS SNCRS WOCR CWEQ NJSS CDMS	Results of logistic regression found that older respondents were 4.5 times more likely to have turnover intent if they did not get their ward choice. When new graduates were satisfied with their jobs and pay and feel committed to the organisation the odds of turnover intent were low. All the variables identified can distinguish a new nurse with turnover intent from one without 79% of the time. Estimated 24 month employment ranged from 83% to 98%. The Kaplan-Meier estimates or percentage employment at 24 months was 89% for no turnover intention measured at 6 months and 72% for turnover intention at 6 months (p=0.001).

				WSS LEBS GCS TI	
Paper 5 Ulrich et al 2010. ³³ Various organisations across the USA	Versant RN Residency Program Not stated, refers to Beecroft et al ³² which was 6 months	10 year Longitudinal study	6000	NSCR OCQ SPNAS SCSCS SNCRS CWEQ NJSC WSS LEBS GCS TI Turnover	The results indicated an accelerated increase in competence and self confidence and a significant decrease in turnover intent and actual turnover.
Paper 6 Roud et al 2005. ⁴⁹ Large metropolitan hospital in New Zealand	Entry to Practice Program 1 year	Longitudinal cohort study	54	6-DSNP	Over the study period participants reported significant increases in frequency of performance for the domains of leadership, critical care, teaching/collaboration, and planning/evaluation. Significant increases in the quality of nurse behaviours in the domains of critical care, planning/evaluation and interpersonal relations/communication were also reported.
Paper 7 Kowalski and 2010. ⁵⁰ 2 hospitals Las Vegas, USA	Residency program 1 year	Descriptive case study	55	PERF FGNES CQS STAI	The findings indicated improved clinical competency throughout the programme, a decreased sense of threat, and improved communication and leadership skills. The first year cohort's employment retention rate was 78%.
Paper 8 Messmer et al 2004. ⁵¹ Mount Sinai Medical Centre USA	The "Shadow-A-Nurse" ICU Internship Program 6 weeks	Descriptive case study	24	WGCTA BKAT NICU- NACE	Critical thinking decreased slightly and knowledge- significantly increased for all participants.

Paper 9 Owens et al 2001. 5 acute hospitals in Inova Health System, USA	Internship 8 weeks	Descriptive case study	75	BPET Retention	New graduates orientees were able to accurately assess their performance. One year retention rate was reported. At one year 74% of July 1998 cohort were still employed by the original hiring unit
Paper 10 Altier and Kresk 2006. 6 university hospitals USA	UHC/AACN National Post baccalaureate Nurse residency program 1 year	Prospective longitudinal study	316	MMSS Retention	The overall scores for the MMSS demonstrate that levels of satisfaction remained consistent throughout the first year. There were 87% of residents retained at the end of the 1 year program.
Paper 11 Krugman et al 2007. ⁵⁴ 6 pilot sites USA	UHC/AACN National Post baccalaureate Nurse residency program 1 year programme	Comparative, descriptive study	unknown	CFGNES REF GCONPS MMSS	Scores for autonomy varied significantly between sites. All but one site had a positive perception of future opportunities at their hospital. Stress was reported to be high at baseline and decreasing over time. Organising and prioritizing was reported to have improved over time. Evaluations of residency were positive but varied across sites.
Paper 12 Williams et al 2007. ²⁶ 12 sites across the USA.	UHC/AACN National Post baccalaureate Nurse residency program 1 year programme	Longitudinal, descriptive study	679	CFGNES MMSS GCONPS	An interesting finding was that a V shaped pattern of high scores at entry to the program, a decline at 6 months, and return to higher scores at the conclusion of the programme. This was evident for the GCONPS and the MMSS with most differences being statistically significant. Job turnover was low at 12%
Paper 13 Goode et al 2009. ⁵⁵ 26 academic medical centre hospitals, USA	UHC/AACN National Post baccalaureate Nurse residency program 1 year programme	Descriptive case study	1,484	CFGNES MMSS GCOPS Turnover REF	The residents demonstrated improvement in their skills and abilities, their ability to organise and prioritize their work, being comfortable communicating with the care team, patients, and families, and in providing clinical leadership on the unit where they work. Stress scores decreased and turnover decreased.
Paper 14 Setter et al 2010.	UHC/AACN National Post baccalaureate Nurse residency program	Cross-sectional descriptive study	202	CS MMSS RFSTS	The scores on the NRSS were not significantly related to job satisfaction but were significantly related to reasons for staying.

University of Kansas Hospital, USA	1 year programme			NRSS Retention	The retention rate was 94% at one year, retention rates decreased after 1 st year, particularly after 3 rd year. Five top reasons for staying were: teamwork on my unit, ability to give quality care, liking or enjoying my job, relationships with co-workers and benefits.
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I = intervention

C – control/comparison group

ATS - Anticipated Turnover Scale

12 item self report

7 point Likert scale: (agree strongly to disagree strongly)

CDMS - Clinical Decision Making Scale

33 statements about decision making in a clinical setting.

CFGNES - Casey-Fink Graduate Nurse Experience Survey

5 sections. The first 2 sections and the fourth are either demographic in nature or are open ended.

Section 3: 24 items : 4 point Likert scale: (strongly disagree to strongly agree)

5 factors – support, organising and prioritising, stress, communication-leadership and professional satisfaction

Additional 8 part question where the respondent answers yes or no to a series of stressors. 1-Role expectations. 2-lack of confidence, 3-workload, 4-fears, 5-orientation issues

CNRCS - Corwin's Nursing Role Conception Scale

Professional subscale

5 point Likert scale to indicate the degree to which a situation should be ideal or real (has been observed in practice).

CS- Commitment Scale

9 items

4 point Likert scale

CSQ - Clinical Stress Questionnaire (Pagana)

20 items; 2 subscales threat and challenge

4 item Likert scale: 0 (not at all) to 4 (a great deal).

Indication of the resident stress level was measured by the threat and challenge subscales of the is a 20 item measure. It is a 20 item Likert scale ranging from 0 (not at all) to 4 (a great deal).

CWEQ - Conditions for Work Effectiveness Questionnaire

Four subscales; opportunity, job activities, coaching and support and information.

GCOPS - Gerber Control Over Practice Scale)

21 items

7 point Likert: 1 (agree) to 7 (disagree)

GCS - Group Cohesion Scale

The GC gains respondent's opinions about the colleague group with whom they work in terms of productivity, efficiency, morale, personal feelings, belongingness and working together.

JSS - Job Satisfaction Survey

21 statements

4 point Likert type scale: (strongly agree to strongly disagree)

LEBS - Leader Empowerment Behaviours Scale

revised to 16 items (Cronbach alpha 0.95 unchanged)

MMSS - McCloskey-Mueller Satisfaction Survey

31 items

8 domains of satisfaction. Intrinsic rewards, scheduling, balance, co-workers, interaction opportunities, professional opportunities, praise, control.

5 point Likert Scale from 1 (very dissatisfied) to 5 (very satisfied)

NCRS - Nursing Competencies Rating Scale

84 items scale

Rates clinical performance from 5 (excellent) to 1 (poor) during nursing care provision

NJSS – Nurse Job Satisfaction Survey

No details

OCQ - Organizational Commitment Questionnaire 15 items

7 point Likert scale (strongly agree to strongly disagree)

OCQ - Organisational Commitment Questionnaire – OCQ,

revised to 11 items (Cronbach alpha changed from 0.87 to 0.88).

The OCQ revised measures the strength of an individual's identification with and involvement in an organisation.

PERF - Preceptor Evaluation of Resident Form

31 items

6 categories (critical thinking, general clinical abilities, competency outcomes, employee role, interpersonal relations and unit-specific skills)

PNAS - Professional Nursing Autonomy Scale

30 items

SoBI - Sense of Belonging Instrument

32 item survey

2 domains: Psychological Experience (18 items) and Antecedents (14 items).

4 point Likert scale (strongly agree to strongly disagree)

SCSCS - Skills Competency Self-Confidence Survey

A self-rating survey which includes 36 generic skills rated on a scale of 0 to 3 indicating how much confidence the interns felt about their ability to complete each item (none, medium, high).

STAI - State-Trait Anxiety Inventory (Spielberger)

40 item Likert scale.

4 point Likert scale: 1 (almost never) to 4 (almost always).

TI - Turnover Intention

WOC - Ways of Coping – Revised (Beecroft)

^y

WSS – Work Satisfaction Survey

No details

^y

6 DSNP - The Schwirian's Six-Dimensional Scale of Nursing Performance

52 items multi-dimensional, self assessment scale

6 domains of practice: leadership; critical care; teaching/collaboration; planning/evaluation; interpersonal relations/communications and professional development

Appendix 7: Articles included in the review under: Graduate Nurse Programs / Orientation Programs

Authors	Intervention	Method	Sample size	Outcome Measure	Findings
Paper 15 Marcum and West 2004. ²⁹ 3 participating hospitals in the USA	New Graduate orientation program 13 weeks. Weekly classroom instruction	Descriptive Case Study	20	PBDS ASTD RNCA	Statistically significant improvement in critical thinking and interpersonal skills. Retention 89% at 18 months post completion
Paper 16 Young et al 2008. ²⁷ Large teaching hospital in Northern California	Orientation program 6 weeks	Descriptive longitudinal study with pre post test design	25	NRCI	Service role discrepancy scores were significantly lower after orientation , which allows the nurse to practice and develop the role they most identify while minimising frustration and reality shock
Paper 17 Friedman et al. 2011. ⁵⁹ 2 tertiary hospitals in a multi-hospital health care system, Long Island, New York, USA	Critical Care Nurse Fellowship Program (CCNFP) 1 year	Retrospective comparative descriptive study	I – 60 C - 30	Retention data Cost data	Turnover between the Standard Orientation and the CCNFP was not statistically significant; however decreasing turnover yields significant cost savings. The 5.8% change in turnover resulted in the retention of 9.8 nurses which yielded a potential saving of \$1,367,100 annually.
Paper 18 Crimlisk et al 2002. ³¹ 500 bed inner-city hospital, USA	Orientation float pool program 4-5 months	Cross-sectional survey	232	Competency Retention	All participants felt able to provide safe, competent care in assessment skills, technology, communication skills, medication administration and critical thinking skills. Reported the program helped them become more skilled & safe practitioners in their practice. Retention - 96% in the 19 months since entering the

					program
Paper 19 Allanson and Fulbrook 2010, ⁶⁰ Facilities across Queensland, Australia	Perioperative Introductory Programme (PIP) 5 days in a number of facilities across Queensland, Australia using a	Descriptive Case Study with pre post test design.	11	Competency Confidence Knowledge	At the end of the programme participants were asked to reassess their levels of competency, confidence and knowledge. They had initially over-estimated their levels of competency and knowledge but were more confident than they thought. Actual knowledge had increased.
Paper 20 O'Malley Floyd et al 2005. ²⁸ 2 acute hospitals in a Semi-rural healthcare setting, Southern Oregon, USA	Graduate RN orientation t 4 months 1 week of classes. RNs worked with one or more preceptors for times between <7 to >12 weeks	Descriptive Case Study	31	Knowledge Confidence Retention	The RNs envisaged becoming more knowledgeable and confident over the next year; they identified challenges including lack of confidence, knowledge and experience and found the work/life balance challenging . 1 year retention rate was 94.5%
Paper 21 Squires 2002. ³⁰ Rural community hospital mid-Atlantic region USA	Orientation 8 weeks	Descriptive longitudinal case study	9	Clinical Practice Readiness Self assessment questionnaire	Overall perception of 'increased confidence'. was not statistically significant due to small numbers. Numbers 1 year retention rate was 77%

I – Intervention

C – Control

ATSD - American Society for Training and Development Evaluation Tool

NCRI - Nursing Role Conceptions Instrument

PBDS - Performance Based Development System

RCNA - RN Competency Assessment

Appendix 8: Articles included in the review under: Mentorship

Authors	Intervention	Method	Sample size	Outcome Measure	Findings
Komararat and Oumtanee 2009. ⁶² One hospital in Thailand	Mentorship model 1 month	Quasi experimental one group time series approach	19	NCS	It was concluded that the level of nursing competency of newly graduated nurses was higher using the mentor model and that the levels went from medium to high.
Beecroft et al 2006. ⁶³ Acute paediatric setting USA to take out-with mentorship	Mentorship with a RN Residency Program 6 months	Six year evaluation study	318	Self- developed mentorship experience survey	Mentoring was successful when mentors and mentees met on a regular basis and provided guidance and support and facilitated stress reduction. Mentorship requires time and role training to be successful.

NCS - Nursing Competence Scale

Appendix 9: Articles included in the review under: Preceptorship

Authors	Intervention	Method	Sample size	Outcome Measure	Findings
Paper 24 Vasseur 2009. ⁶⁴ 650 bed Midwestern teaching Medical Centre	Nurse transition programme Varied duration (9-12weeks)	Non- experimental, descriptive correlation study	75	CFGNES	The programme had a positive impact on the perceived experiences of the GN in areas of confidence, work relationships, work environment and ability to perform skills/procedures at baseline, 3 months and 6 months.
Paper 25 Leigh et al 2005. ³⁷ Salford Royal Hospital UK	Preceptorship programme 3 week orientation programme & 6 month support in practice by preceptor/mentor	Descriptive Case Study	34	EFQM	Preceptees reported a general self reported increase in confidence levels. Managers reported that the majority of nurses achieved an acceptable level of competence for this stage in post, although acknowledged this was a first step in a process of continuous development A reduction in the numbers of newly qualified nurses leaving the organisation during first 12 months of employment since the programme inception was reported.
Paper 26 Sorenson and Yankech 2008. ⁶⁵ Midwestern, USA not for profit hospital system	Preceptor facilitated orientation. 'Precepting in the Fast Lane' Variable from 3-14 weeks - I Variable from 3-18 weeks - C(control group)	Quasi-experimental mixed-methods design study	I = 15 C = 16	CCST	Preceptors' participation in the educational sessions contributed to the evaluation subscale of critical thinking skills of the experimental group on the CCTST
Paper 27 Edmond 2004. ⁶⁶	Competency Based Preceptor Programme	Comparative intervention (part of	I - 10 C - 10	SNRG VASS	Positive benefits of the programme were reported.

An Acute NHS Trust, UK.		an action research study)			
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I – Intervention; C – Control; CCST - California Critical Thinking Skills Test; CFGNES - Casey-Fink Graduate Nurse Experience Survey ; EFQM - European Foundation for Quality ; Management; SNRG - The Staff Nurse Role Grid – SNRG; VASS -Visual Analogue Support Scale

Appendix 10: Articles included in the review under: Simulation based programs/interventions

Author	Intervention	Method	Sample	Outcome Measure	Findings
<p>Paper 28 Beyea et al 2007.⁶⁷</p> <p>Rural academic medical centre, USA</p>	<p>12 wk Simulator based Residency program</p> <p>Three program tracks which include high fidelity simulation (Medical-surgical, pediatric/pediatric critical care and Adult Critical care</p> <p>Weekly simulation & clinical time on unit with preceptor</p>	Mixed method, pilot study	42	NNRREP	<p>Improvement in mean VAS scores for confidence, competence and readiness for practice from between week 2 and 10.</p> <p>The development of skills related to physiological integrity, using technology, synthesizing clinical data and clinical decision making was enhanced through simulation.</p>
<p>Paper 29 Beyea et al 2010.⁶⁸</p> <p>Rural academic medical centre, USA</p>	<p>High fidelity Simulator based Residency program</p> <p>Four program tracks of various duration, with combined Medical-surgical and Adult Critical care tracks offered</p> <p>Medical-surgical track 12 wks- 40 hrs of simulator based clinical experience</p> <p>Adult critical care additional 8 hours of high fidelity simulation</p>	Longitudinal study	260	NNRREP SSCSE Turnover	<p>There was statistically significant improvement in confidence, competence and readiness for practice from baseline to the end of the program. This was consistent with nurse residents' weekly ratings of their confidence, competence and readiness to practice.</p> <p>One year turnover was 9.2 % compared to 17% prior to implementing the programme. 2 year turnover of 43% was reported pre-residency program compared to a 33.7 % post residency programme</p>
<p>Paper 30 Shepherd et al 2007.</p> <p>Southern Health Hospitals, Melbourne, Australia</p>	<p>1 year Graduate Nurse Programme with test scenario</p> <p>Random assignment to 1 of 3 groups; 1) self directed learning package (SDLP) 2) SDLP & 30 minute PowerPoint scenarios or 3) SDLP & 30 minute low fidelity simulation</p>	Randomised controlled trial	80	CRVT	<p>Pre test scores indicated no significant difference between groups. Mean score of graduate nurses in simulation group was significantly higher than both the SDLP alone and power point intervention groups $p < 0.001$</p> <p>No significant difference between the SDLP only group and the PowerPoint group</p>

CRVT- Clinical Response Verification Tool; NNRREP - Nursing Residents' Readiness for Entry into Practice; SSCSE- Structured Simulation Clinical Scenario Evaluation

Appendix 11: Articles included in the review under: Final year students Transition Programmes

Author	Intervention	Method	Sample	Outcome Measure	Findings
Paper 31 Nash et al 2008. ⁷¹ Two Brisbane Hospitals, Australia	An enhanced model of clinical placement for final year nursing students 2 semesters	Descriptive mixed study-qualitative and survey	29	PFGNPQ	Students who elected for the transition model tended to be more confident at baseline. No significant differences were noted overall regarding preparedness for graduate nursing at the start and end of the semester, but made positive comments about the experience overall regarding preparation for future practice.
Paper 32 Olson et al 2001. ¹⁵⁷ 3 large Mid- Western hospitals, USA	Residency program/preceptorship 900hrs preceptored experience in practice across units Normal academic study	Longitudinal mixed methods study	14	6- DSNP NLMAT NLNITT CCTDI	Knowledge improved over time but did not reach significance. Overall, the students started and ended with an excellent level of critical thinking.

CCTDI - The California Critical Thinking Disposition Inventory; NLMAT - National League for Nursing Medication Administration Test; NLNITT - National League for Nursing Intravenous Therapy Test; PFGNPQ - Graduate Nursing Practice Questionnaire; 6-DSNP - Six-Dimensional Scale of Nursing Performance

Appendix 11: Articles included in the review under: Externship Program

Author	Intervention	Method	Sample	Outcome Measure	Findings
<p>Paper 33 Cantrell et al 2006. ²¹</p> <p>Two Brisbane Hospitals, Australia</p>	<p>Externship 10 weeks</p>	<p>Retrospective Cohort Study</p>	<p>193</p>	<p>Retention Rate 1 year 2 years Employment Status Turnover</p>	<p>The retention rate for the extern students varied over the study years from 66-95%. Some years this was above the figures for the employing institution and National figures, and other years it was below.</p>

Appendix 13: Summary Studies that investigated retention

Citation	Program Description	Year Program Initiated	Numbers Participants	Measure	Baseline Year : n (%)	Follow Up Year : n (%)	Notes
<i>Descriptive Case Studies Level 3 with no control group</i>							
Collins and Thomas 2005. ¹⁵⁸ Christina Care Healthcare System, Critical Care Step Down Unit, Newark, Delaware, USA	Internship Step down Nurse Internship Program 30 hr general orientation classes 19 weeks Didactic Curriculum and Clinical Experiences Three times 6 week rotations	2001	N= 13	RR at 2 yrs	ns	2003 : 11 (85%) 2003 : 1 (8%)	working within unit working within the local health care system
Halfer 2007. ⁴⁶ Children's Memorial Hospital Chicago, IL USA	Internship 18 months	2003 2004 2005	N=84 N= 117 N= 95	TR at 1 yr	2002 - 29.5%	12.3%	Average per class Voluntary and involuntary
Almada et al 2004. ¹⁵⁹ 150 bed community hospital USA	Internship 8 weeks Vermont Nurse Intern Project. Those hired into float pool additional uninterrupted month of orientation with Preceptorship	ns	N=46	RR at 1 yr	April 2000 to Aug 2001: 25%	June 2000 to July 2001 93%	3 nurses left due to uncontrollable situations
Smith 2008. ¹⁶⁰ Ottawa Hospital, Canada	Internship 12 weeks with Preceptorship	ns	N=96	TR at 1 yr TR at 2 yrs	ns : 23%	ns : 6% ns : 10%	

Kooker and Kamikawa 2010 ¹⁶¹ Queens Medical Centre 505 bed level II Trauma Tertiary Care Medical Centre, Honolulu, Hawaii, USA	Graduate Nurse Program New Nurse Fellowship and Clinical Coach Programme 24 weeks	2005	N= ns RNs employed for 6 months	RR at 1 yr	2005 : 55.97%	2006 : 51.19% 2007 : 62.5% 2008 : 63.81% 2009 : 68.2%	
Cheeks and Dunn 2010 ¹⁶² Martha Jefferson Hospital, Magnet Community Hospital, Charlottesville, Virginia, USA	Graduate retreats alongside usual orientation. 2 * 2 day	ns	N = ns	RR at 1 yr	2003 : 75% 2004 : 65%	2005/6 : 87% 2006/7 : 81% 2007/8 : 97%	Post graduation Post graduation Post graduation
Fox 2010. ¹⁶³ St Francis Hospital and Health Centres Indiana, USA	Mentorship 1 year	2006	N= 12 N =- ns	TR within first yr RR at 3 yrs	Pre 2006 : 32%	2006 -: 16.6% 2007 : 13.8% 2009 : 11% 89%	for those participating in the program since its inception over 3 year period.
Strauss 2009. ¹⁶⁴ Winchester Hospital 229-bed independent community hospital Winchester, Massachusetts USA	Graduate Nurse Program Medical-Surgical New Graduate Nursing Program 12 weeks	2002	Ns	Retention rate post programme	ns	1 year -97% 2 year – 95%	
Kropkowski and Most 2008. ¹⁶⁵ Union Memorial Hospital Baltimore, USA	Externship ns	2004	N=49 externs	Destination of Externs since programme started	ns	1 year average retention rate – 86% 88% - hired to work in	

						hospital 75% of the first group of nurse extern graduates remain employed 2 years later.	
Nelson et al 2004. ¹⁶⁶ Tampa General Hospital Tampa, Fl USA	Mentorship 1 year	2000	N=27 NS Two semesters from graduation	Turnover rates	ns	2000 – 2001 13 – hired to work in hospital At 1 year 10 still employed 3 – left for personal reasons	Turnover rate - 23% over 2 years Compared with 47% turnover rate or years with the 62 new graduates hired during that period who did not participate in the program
Hayes and Scott 2007. ¹⁶⁷ Hospital within Northeast Georgia Health Systems	Mentorship 5 weeks		ns	Retention rates 2 years		100% at 1 year 100% at 2 years	
Pickens and Fargostein 2006. ¹⁶⁸ Community based psychiatric mental health agency, USA	Preceptor program 8 Weeks	2004	N=5	Retention Rates 2 years	ns	100%	
Zucker et al 2006. ¹⁶⁹ Northern Healthcare	Preceptor program 18 months	2003	Ns	Retention rates 1 year Turnover Rates	6 months prior to programme Turnover	10.6%	

Louisville, Kentucky USA				(preventable and non preventable)	= 23% Retention 77%		
Beauregard et al 2007. ¹⁷⁰ Tampa General Hospital, Tampa, Fla, USA	Preceptor program 12 months	2002 2003 2004 2005	N=12 N=62 N=64 N=41 NGN	Retention rates 1 year	ns	2002 – 100% 2003 – 90% 2004 – 93% 2005 – 95%	Most participants who left relocated Or assumed positions as travel nurses
Orsini 2005. ¹⁵³ 42 bed inpatient acute orthopaedic specialty unit Large magnet Community Hospital South Eastern USA	Graduate Nurse Program Orthopaedic Preceptorship 12 weeks	2001	N=3 NGN	RN Turnover rate 1 year	2001 – 22.6%	2001 – 7.7%	Reports overall RN turnover rate and states that the retention for the group of 3 who completed the pilot program at 1 year was 100%.
Hurst and Koplin-Baucum 2003. ¹⁷¹ Banner Good Samaritan, Phoenix, Arizona USA	Mentorship 18 months	ns	ns	Turnover rates 1 year	ns	ns	3.1% decrease in nursing turnover after 1 year of the programme
Pine and Tart 2007. ¹⁷² The Methodist Hospital of Houston, Texas University of Texas, Houston,	Residency Program (UNC/AACN) 1 year	2005	ns	Turnover rate 1 year	2004 – 50%	2005 – 13%	
<i>Descriptive Case Studies with control group</i>							
Wolf et al 2009 ¹⁷³	Internship Program 1 Year	2004	N= 17 - I	RR over 3 yrs	ns	2005 :17 (94%) - I 2005 :12 (75%) - C	Non random allocation top control group

Mount Carmel West Hospital Medical / Surgical Critical Care Columbus, Ohio, USA			N=16 - C			2006 :16 (89%) - I 2006: 9 (56%) - C 2007 :18 (72%) - I 2007 :16 (31%) - C	No statistical comparison undertaken
Wolf et al 2009 ¹⁷³ Mount Carmel West Hospital Medical / Surgical Critical Care Columbus, Ohio, USA	Internship Program and New Graduate Support Group 1 Year	2005	N=37	RR at 1 yr	ns	2006: 36 (96%)	still employed in the system
	Internship Program and New Graduate Support Group (slight format change) ns	2006	N=66	RR at 1 yr	ns	2007: 65 (98%)	still employed in the system
<i>Retrospective Cohort Studies: Level 3</i>							
Bratt 2009. ¹⁷⁴ 51 public and private hospitals in Wisconsin and eastern Minnesota, USA	Residency 15 months	2004 - 2009	>1,100	Retention Rates 1 year 2 years	Under 50%		One year following completion of the programme 90% of the nurse residents were still employed at their hospitals or organizations of hire. The rate was 83% at 2 years One year after nurse residents retention rates was 79-97% mean average rate across all sites of 84%. Previous turnover rates had exceeded 50%
Eigsti 2009. ¹⁷⁵ Elkart General Hospital,	Internship ns	1998 - 2005	N=26	Retention Rates of nurse interns			20 (76.9%) continue to work in critical care

Critical Care Centre 330-bed community hospital Elkart, Indiana USA				continuing to work in critical care environment Retention Rates of nurse interns continuing to work as a nurse environment			26 (100%) still working as a nurse 19 (73.1%) still working within the hospital
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RR = Retention rate; TR = Turnover rate ; NGN – New Graduate Nurse; I = Intervention Group; C = Control Group

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