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

Deborah Edwards, BSc (Hons), MPhil
Clare Hawker, RAN (BA Hons), MSc, PGCE
Judith Carrier, RN, MSc, PGCE, Dip PP
Colin Rees, BSc, MSc, PGCE (FE)

The Wales Centre for Evidence-Based Care, a Collaborating Centre of the Joanna Briggs Institute, Cardiff School of Nursing and Midwifery Studies, Eastgate House, 40-43 Newport Road, Cardiff University, CARDIFF, CF24 0AB

Corresponding author: Deborah Edwards, Cardiff School of Nursing and Midwifery Studies, Eastgate House, 40-43 Newport Road, Cardiff University, CARDIFF, CF24 0AB
Email: edwardsdj@cardiff.ac.uk

Executive Summary

Background: The transition period from student to newly qualified nurse where nurses are adjusting to their new role and consolidating their knowledge and skills can be stressful. It is a time when many newly qualified nurses are left feeling inadequately prepared. A variety of strategies to ease the transition process have been reported, which aim to increase confidence, competence, sense of belonging of new graduates, improve recruitment and retention and reduce turnover costs.

Objectives: To synthesise the best available evidence on the effectiveness of support strategies and interventions aimed for newly qualified nurses.

Methods: A comprehensive search was undertaken on major electronic databases to identify both published and unpublished studies from 2000 to the present date. Reference lists of retrieved papers were searched and authors contacted. Only quantitative studies published in English language were considered.

Methodological quality and data extraction: Two reviewers independently assessed methodological quality and extracted data from the included studies. A third reviewer resolved any disagreements through discussion.

Data synthesis: The review did not identify comparable Randomised Controlled Trials (RCTs), and as such meta-analysis of the data was not appropriate. The data extracted from the included studies were synthesized into a narrative summary.

Results: Thirty three studies were included in the review: RCT (1), Quasi-experimental (3) and observational/descriptive studies (29). Countries of origin were: USA (25), Australia (4), England (2), New Zealand (1) and Thailand (1). Studies were categorised according to the type of programme or support strategy provided: nurse internship/residency programmes (14) and graduate nurse orientation programmes (7), preceptorship (4), simulation (3) and mentoring (2), final year nursing students transition programs (2) and externship (1).

Outcomes were categorised as being important to the employer (recruitment, retention, turnover rates, competence, confidence and costs), or to the new graduate (stress and anxiety reduction, job satisfaction, knowledge/skills acquisition, critical thinking and interpersonal skills, confidence and professional nursing behaviours).

Conclusions
The range of outcomes reported across the studies made it difficult to report firm conclusions. A general increase in level of confidence was noted, along with reduction in stress and anxiety. Some success in relation to increases in knowledge, critical thinking and levels of job satisfaction were reported. A number of studies reported a V shaped pattern (initial high levels, dipping at 6 months and then reverting to baseline levels) for autonomy, job satisfaction, and professional transition. Research relating to improvements in retention and reduction in turnover was generally poor.

**Implications for Practice**

The overall impact of intervention programmes appears positive, irrespective of the intervention. This may suggest that it is the organisation’s focus on new graduate nurses with support from colleagues that is important. Mentors/preceptors need to be adequately prepared for the role.

**Implications for Future Research**

Future research should build on the strengths and limitations of the current studies. A lack of experimental studies means there is commonly little control over other variables that might influence the outcome. There is a need for larger studies using more objective and reliable measures.

**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 stressful. Nearly 40 years ago, the response of those in this situation was described as a “Reality Shock” 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. In the absence of adequate support, nurses have been found to change clinical area or leave the profession altogether. Some authors have suggested that up to 50% of newly qualified nurses may leave their first position within the year. 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, and 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 programs, residency programs, orientation programs, and nurse internships. The more informal approaches reported include mentoring, lecturer practitioner support, preceptorship, clinical practice facilitators, and peer support. 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. examined transition support for new graduates excluding newly qualified diplomates. The 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 program / intervention, knowledge acquisition, role consolidation and level of expectations met). The review comprised of thirteen studies covering a variety of research designs, with only a few comparative studies and a number of descriptive and developmental studies. The conclusion was that programs 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 positive factors. 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 programs (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 outcomes.

In addition, three reviews considered single interventions. For example, an integrative review of the literature by Park and Jones, looked specifically at orientation programs for newly graduated nurses and their effects on confidence, competency, and retention. This was based on 17 published reports. The conclusion was that such programs have strong merits and facilitate the retention of newly graduated nurses, although recommending more research on the length of such programs. Secondly, the review by Winfield et al examined nurse internship programs. 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 orientation. 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 number of experimental studies, a heavy reliance in self-reported measures with a failure to establish the validity and reliability of the instruments.

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

The purpose of this systematic review was 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 only focus on recently graduated nurses.

Objective
The objective of this review was 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 what is the impact of these on retention rates?

Inclusion Criteria
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 programs or other such programs 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.

Types of interventions
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 programs
- Nurse extern programs
- Nurse residency program
- Registered nurse internship
- Mentoring
- Lecturer practitioner support
- Preceptorship
- Clinical practice facilitators
- Peer support

**Types of outcome measure**
The outcome measures for this review were:

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, quasi-experimental studies such as before and after studies, observational studies and surveys and descriptive studies were considered for inclusion to enable the identification of current best evidence regarding effectiveness of support strategies and interventions for newly qualified graduate nurses.

**Search Strategy**
A three stage strategy was undertaken. Search strategy and search histories from some of the major databases are included (Appendix I). The search included published and unpublished studies from 2000 to the present date. 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: Consisted of an 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 program

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 index 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 was 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, for the previous JBI review in this area (see Appendix II). 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., for the previous JBI review in this area (see Appendix III). 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.

Review 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. Seventy two papers were excluded after full text examination (see Appendix IV). Fourty one papers were selected for critical appraisal and 14 papers were excluded after critical appraisal (See Appendix V). 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 done by examining the reference lists 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 (see Appendix VI-XII). Seven papers were unavailable to be retrieved for the review.
The type of intervention was categorised under several headings and included the following:

- Nurse internship/residency (14)
- Graduate nurse orientation programs (7)
- Preceptorship (4)
- Simulation (3)*
- Mentoring (2)
- Final year students transition programs (2)
- Nurse extern programs (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
Once identified, many studies were excluded for a variety of reasons. There were a number of studies examining particular interventions for new employees but these included both new graduates and experienced practitioners. In cases where results could not be determined for new graduates alone the studies were excluded. There were many descriptive studies identified that reported on programs conducted in a single institution. The studies were only included if a formal evaluation was conducted using objective measures, where evaluation was informal feedback these studies were excluded.

Thirty three papers comprised the final set included in this review (see Appendix VI-XII). This included one randomised controlled trial, three quasi-experimental, twenty nine descriptive studies.

**Methodological quality**
The methodological quality of the studies varied. Using JBI levels of evidence relating to evidence of effectiveness studies were rated as follows: one level 1, two level 2, twenty six level 3 and four level four. Further discussion is provided in the appropriate sections.

**Results**

**Nurse internship / residency programs**

The programs included in this section of the review (see Appendix VI) are described variably as internship, residency and graduate nurse programs. The purpose of these programs being 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 healthcare team, to develop the clinical skills needed for practice, improve job satisfaction and reduce turnover. The studies included evaluation programs 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 States 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 programs vary from 6 months to 1 year with two studies of shorter duration (6 to 8 weeks). All the programs 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 not being 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.

Newhouse, 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 of 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?

**Program designation:** Internship program, 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:

Intervention group: 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).

Comparison group 1: 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.

Comparison group 2: New nurse graduates hired in one department that did not participate in the SPRING internship.

The Organizational Commitment Questionnaire - OCQ (Appendix VI) 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 VI). There were no significant differences in sense of belonging psychologically. There were significant differences in 6 month SPRING interns and non-SPRING nurses (p=0.031) and 12 month SPRING interns (p=0.040) with 6 month SPRING interns 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 non-SPRING and SPRING 6 month and 12 month scores (p=0.022). Further analysis revealed that there was a difference between non-SPRING and SPRING 6 month measures (p=0.009).

Retention data were collected for the number of non-SPRING and SPRING interns 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 interns and non-SPRING (p=0.014).

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<tr>
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<th>SPRING</th>
<th>Non SPRING</th>
<th>( \chi^2 = 6.032, p=0.014 )</th>
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<tr>
<td>12 month retention</td>
<td>335/377 (88.9%)</td>
<td>92/115 (80%)</td>
<td>p&gt;0.05</td>
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<tr>
<td>18 month retention</td>
<td>256/292 (87.7%)</td>
<td>70/76 (92.1%)</td>
<td>p&gt;0.05</td>
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<tr>
<td>24 month retention</td>
<td>228/253 (90.1%)</td>
<td>52/60 (86.7%)</td>
<td>p&gt;0.05</td>
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SPRING interns at 6 months were less likely to consider leaving their position than non SPRING 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.

In 2003 a Paediatric Registered Nurse (RN) Internship Program based on research by Halfer and Graf\(^45\) was implemented to mentor and retain new graduate nurses in the first year of practice. The design and outcomes of the program are published in Halfer\(^46\). Further work conducted at the same institution by Halfer et al\(^47\) 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 Paediatric RN internship Program. An overall response rate of 79% (n=234) across the two groups was reported.

**Program designation:** Paediatric RN Internship Program

**Setting:** Midwestern, urban, Magnet designated paediatric medical centre, Chicago, USA

**Duration:** 1 year

**Clinical orientation/induction:** Not stated

**Clinical support:** Clinical mentorship (with an experienced mentor selected by the new graduate nurse).

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.

Unit based nursing preceptors trained for the role

**Clinical placement:** Various units: medical and surgical services, neonatal and paediatric intensive care unit.

**Didactic elements:** A core curriculum of approximately 80 hours of variable content was delivered through the use of both classroom learning and skills laboratories. 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.

Interns attend Paediatric Advance Life Support classes, plus additional classes dependent on area of employment.

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.

A code briefing program for nurses who had been involved in resuscitation events was organised and led by the resuscitation nursing education coordinator.

**Comparison:** Novice and experienced nurses hired prior to the program’s implementation and who had attended a standard nursing orientation program.
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 month 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 Paediatric RN Internship Program. Voluntary turnover was calculated for each internship class and averaged 12% compared to the pre-internship group where turnover was 20%.

Beecroft et al. 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.

**Program 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 to develop strategies to address these.

**Comparison:** 45 new graduates employed up to 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) and just at 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 sub-scale from Corwin’s Nursing Role Conception Scale – CNRCS (Appendix VI). 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 VI) 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 VI). 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 3, 4, 5 and 6 months using the Slater Nursing Competencies Rating Scale – SNCRS (Appendix VI). Interns self-evaluated using the same scale during the second month of the program, 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 VI) 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. However, no significant difference was found at 12 months suggesting that they were comparable to a staff nurse of up to 2 years employment.

Beecroft et al. 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.

Program designation: Internship/Residency
Setting: 6 paediatric 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 to 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 sub-scales on the NS and four sub-scales 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 VI). These were completed at baseline (before the program), at 6 months (end of program) and 12 months after 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), with a higher level of education (p=0.026), who did not receive first choice of nursing ward/unit (p=0.012), who 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<=0.001), coping strategies less frequently and escape avoidance (P<=0.001). There also reported lower scores on all other scales and sub-scales except the CWE sub-scales 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 the 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 employment at 24 months ranged from 83% to 98%. The Kaplan-Meier estimates of 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).

In 1999, a 1 year RN residency was a piloted and was reported by Beecroft. 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. A web-based management system was launched 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. 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.
Program designation: Versant RN Residency Program

Setting: A range of settings from small rural hospitals to large healthcare systems

Duration: Not stated, refers to Beecroft et al. which was 6 months

Clinical orientation/induction: 12 week start up including an all-day kick-off event

Clinical support: One-to-one dedicated preceptorship using a team preceptor approach, beginning with a novice preceptor. As the new graduate nurse gains knowledge and experience, a more experienced preceptor takes over.

A new mentoring model, “mentor circles” based on evaluation of the mentor component of the original residency. Two or three mentors assume responsibility for a group of mentors.

Clinical placement: Students’ own clinical areas.

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.

Didactic elements: Classes with case studies, including a core evidence-based curriculum, and specialty 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.

Other: Debriefing and self-care sessions to discuss difficulties in relationship to the internship and to develop strategies to address these.

Comparison: New graduates employed by the organisation 2 years prior to implementation of RN residency.

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

Competency was self-assessed and rated by trained observers, at week 2 and at the end of the program. 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 program, 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 sub-scale was rated highest, followed by quality and then time to work, with the latter two increasing in stepwise fashion from end of residency program 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 with time from week 2 and continued to grow beyond the program to month 60. For the empowerment measures, meaningfulness of work was rated lowest from the end of
program 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 program. At 24 months they felt they had more access to information and support than at the end of the RN residency program, and their need was less. Information was provided related to the comparison group, but this was variable and recorded at one time point 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 the end of residency program, then fell from the end of the program to 24 months. This score was higher for the comparison group. No further statistical tests however, were undertaken between the interns and the comparison groups for both these scales.

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. Turnover rates decreased 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 an organisation having completed a greater number of RN cohorts and 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.

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 in Figure 2.

Figure 2: Correlations with Turnover Intent and Turnover
Roud et al. 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 program. 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.

**Program designation:** Entry to Practice program  
**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 program.  

61% (33) at final sample 7 months later.

The modified 6-DSNP self assessment scale was used to measured six domains of practice: leadership; critical care; teaching/collaboration; planning/evaluation; interpersonal relations/communications and professional development seven weeks after commencement of the program (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 programs and the authors noted that it might not be generalisable to the wider New Zealand context.

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

**Program designation:** Residency program  
**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 for the whole year but after the first 3 months the preceptor is called a ‘sponsor’ and 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 the beginning. After first 3 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 laboratory of the university.

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

The study used three objective instruments to evaluate the program at month 3 and 12 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 VI. The scales were all administered at the time 1 – 3 months) and time 2 – 12 months of the program. 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 residents’ stress levels were measured by the threat and challenge sub-scales 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 VI) was used by the preceptor/sponsor to measure the progress of each resident throughout the program. Clinical competency levels consistently increased over 6 measurement periods 3, 6, 8 weeks and 3, 6, 8

Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011  Page 2231
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 program. A total of 36 new graduates signed up to participate in the residency program in the first year, 8 left during the 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 (2), joined the military (1), prohibited immigration status (1), and fired for tardiness and absence (1).

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 of 24 students were selected from the first (n=12) and second (n=12) years of the program. 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.

**Program 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 program focusing on client assessment and included leadership skills, stress management, assertiveness and communication. One week nursing orientation followed by second full week in class and then 1 day a week for the remaining weeks.

**Participants:** Newly qualified nurses who had demonstrated academic and clinical excellence (Shadowers).

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 programs. Those assigned to NICU completed the WCTA and the NICU Nursing Assessment Competency Exam 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-program score was 62.75 (out of 80) and the post-program score was 60.08. The year 2 mean pre-program score was 55.67 (out of 80) and the post-program 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-program, 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 program. Knowledge scores significantly increased for both year 1 and year 2 groups. The year 1 mean pre-program score was 64.5 and the post-program score was 81.0. The year 2 mean pre-program score was 67.83 and the post-program score 76.42.

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

Program 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, preceptors’ perception and patient care directors’ (PCD) perception. A one way ANOVA for groupwise differences between new graduate RNs, preceptors and PCDs 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” PCDs scored significantly lower than preceptors and new graduate RNs. 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.

Altier and Kresk.53 carried out a prospective, longitudinal study to evaluate the effect of a one year post-baccalaureate nurse residency program (n=316) using a standardised curriculum. Although not specifically stated this study pilot tested the residency program reported by 20,54-56. There was an
overall response rate of 35%, with 111 of 316 having complete data at both baseline and follow-up which was included in the analysis.

Program 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/c 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 specialty

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 VI).

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 program. 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 (5), relocation (10), dissatisfaction (11), and no reason (5).

Krugman et al. 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.

Program designation: Graduate Nurse Residency Program
Setting: 34 academic hospitals participated in the program.

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 specialty 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 VI). 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 VI). The domain of interest in the MMSS was professional opportunities with the desired outcome being 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 sub-scale of stress was reported to be high at baseline and decreasing over time. The sub-scale organising and prioritizing was reported to have improved over time.

A Residency Evaluation Form – REF was developed by the researchers to evaluate the program. Of the six sites in the program one was found to have significantly less positive views of the program (p=0.03) which can be explained by the lack of monthly support sessions and lack of a cohort group.

A turnover rate of 8% was reported, full details reported in Beecroft et al.48

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 program 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 Williams35.
Clinical support: Nurse preceptor

Clinical placement: Across sites

Didactic elements: Core curriculum content not stated. Referred to in Goode and Williams. 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 (Time 1 (T1)), 6 months in (Time 2 (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.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Alpha Cohort</th>
<th>Beta Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mean</td>
<td>T1&lt;T2&lt;T3</td>
<td>T1&lt;T2&lt;T3</td>
</tr>
<tr>
<td>Stress</td>
<td>T1&gt;T2&gt;T3</td>
<td></td>
</tr>
<tr>
<td>Organise-Prioritise</td>
<td>T1&lt;T2&lt;T3</td>
<td></td>
</tr>
<tr>
<td>Communication-Leadership</td>
<td>T1&lt;T2&lt;T3</td>
<td></td>
</tr>
<tr>
<td>Professional Satisfaction</td>
<td>T1&gt;T2&lt;T3</td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>Non-significant</td>
<td>Significant increases for Beta cohorts T1&lt;T2&lt;T3</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Alpha Cohort</th>
<th>Beta Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mean</td>
<td>V shaped pattern T1 and T3 higher than at T2 for both cohorts. T1&gt;T2&lt;T3</td>
<td>V shaped pattern T1 and T3 higher than at T2 for both cohorts. T1&gt;T2&lt;T3</td>
</tr>
<tr>
<td>Clinical Leader</td>
<td>Non-significant for both cohorts between T1, T2</td>
<td>Non-significant for both cohorts between T1, T2</td>
</tr>
<tr>
<td></td>
<td>Significant increase in both cohorts T3 significantly higher than T2,. T1,T2&lt;T3</td>
<td>Significant increase in both cohorts T3 significantly higher than T2,. T1,T2&lt;T3</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1&gt;T2, T3</td>
<td>Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1&gt;T2, T3</td>
</tr>
<tr>
<td>Skilful team member</td>
<td>Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1&gt;T2, T3</td>
<td>Statistically significant reduction for both cohorts between T1 and T2. T3 higher than T2 but not statistically significant. T1&gt;T2, T3</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Alpha Cohort</th>
<th>Beta Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score</td>
<td>V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1&gt;T2&lt;T3</td>
<td>V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1&gt;T2&lt;T3</td>
</tr>
<tr>
<td>Total score mean</td>
<td>V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1&gt;T2&lt;T3</td>
<td>V shaped pattern, statistically significant reduction for both cohorts T1 to T2; T3 significantly higher than T2. T1&gt;T2&lt;T3</td>
</tr>
<tr>
<td>Interaction</td>
<td>Statistically significant increase for both cohorts T2 to T3. T1? T2&lt;T3</td>
<td>Statistically significant increase for both cohorts T2 to T3. T1? T2&lt;T3</td>
</tr>
</tbody>
</table>
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 | Statistically 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 were removed, turnover rate dropped to 12%.

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 to participate achieving a response rate of 46% (655/1484).

**Program designation:** Post-Baccalaureate Nurse Residency Program (see Krugman et al.²⁴)

**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:** One-to-one 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.²⁴)

The measures used in this study were the GCOPS, MMSS, CFGNES and REF (see Appendix VI). Turnover rate was reported to be 9%. For the GCOPS there was a significant increase in autonomy at the end of program (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 increase in graduate nurse experience over 3 time periods (at the start, 6 months and at , 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 Time 1-Time 3 (p=0.00). Evaluation and skilful team member factors declined at 6 months. No results were presented from program evaluation using the Residency Evaluation Form.

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 (NRP) 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.
Program designation: National Nurse Residency Program (see Krugman et al\textsuperscript{54})

Setting: University of Kansas Hospital, USA

Duration: 1 year

Clinical orientation/induction: Institution's hospital orientation

Clinical support: One-to-one baccalaureate prepared clinical preceptor who has attended training based on national residency curriculum

Clinical placement: Various throughout hospital

Didactic elements: see Krugman et al\textsuperscript{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 coworkers and benefit (mean 3.56. SD 0.624). The most frequently mentioned reason for leaving was 'relationship with nurse manager'.

The MMSS (see Appendix VI) was employed to measure job satisfaction. The total average score was 112.4 which is similar to the scores found by Altier and Krsek\textsuperscript{53} on the first six NRP sites.

A Nurse Residency Satisfaction Scale - NRSS was developed from specific items on the Nurse Residency Program 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 (p=0.003) needed. 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 76% for all 4 years.

Summary of Findings for Nurse Internship / residency programs

Using JBI levels of evidence relating to evidence of effectiveness, the strongest evidence in relation to the evaluation of residency programs was a Level 2 quasi-experimental, post-test only, control group design study\textsuperscript{44}. However, no demographic data was collected on the control group to establish whether their level of experience in months was comparable and 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 ten studies were classified by the authors as either longitudinal, cross-sectional or case studies. Two of these had small sample sizes\textsuperscript{32}. Sample sizes overall varied from 24\textsuperscript{33} to 6000\textsuperscript{33}. Krugman\textsuperscript{54} however, failed to report sample size, Beecroft\textsuperscript{48} only included hospitals where data was submitted on more than 50 participants at one year follow-up. Fourteen studies were included, with all participants being 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-evaluation\textsuperscript{33}. With the exception of one study\textsuperscript{57} more than one outcome was
used to measure efficacy. There was commonality in the measures used across studies, however some instruments measured multiple variables: The variables measured to establish the efficacy of the interventions were:

- 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, reported that clinical competency significantly increased over 6 measurement periods throughout the one year program. 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 group. Beecroft noted an increase in self-rated confidence and in providing competent and safe patient care from the beginning to end of the program but it was not reported whether this was statistically significant. A similar trend with significant increases in confidence in skills throughout the program was reported. In relation to the domains of critical care, planning / evaluation and interpersonal relations / communication participants in the New Zealand nurse entry to practice program, self-perceived quality of nursing behaviours increased significantly, indicating a self-perceived increase in confidence in their performance.

**Knowledge**

Knowledge scores were reported in one study only, and showed an increase by the end of the program. This study however, did not use a control group.

**Job satisfaction**

A number of studies used the MMSS scale to measure job satisfaction, only three of the studies 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 two studies reporting a significant V shaped decrease in satisfaction at the 6 month stage of the program. At 12 months job satisfaction was significantly higher than at 6 months, this was slightly lower than at the beginning of the program but this was not statistically significant. Altier and Kresk, found a decrease in two out of eight domains relating to job satisfaction of the MMSS at the end of the 12 month program. These results should be treated with caution however, as the response rate was only 35%. Krugman reported that all but one of six sites in their evaluation had a positive perception of future opportunities at their hospital using one domain of the MMSS scale (professional opportunities). Setter reported that the residency program was not significantly related to job satisfaction but was related to reasons for staying.

A further two studies explored job satisfaction. One study compared levels of job satisfaction for two 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.

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

**Critical thinking/decision making**

Critical thinking was reported for two studies\(^{50,51}\) with conflicting results. A significant improvement was demonstrated in only four out of nine items in the critical analysis section of the preceptor evaluation form\(^{50}\). Messmer\(^{51}\) 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 for by the different measurement tools used and different participants in the sample (ICU\(^{51}\) or generic\(^{50}\) new graduate nurses).

**Stress and anxiety**

Levels of stress and anxiety generally reduced through participation in the internship/residency programs. One study\(^{54}\) reported a reduction in levels of stress from the beginning of the program. 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 from the beginning to the end of the program\(^{26,55}\). Kowlaski and Cross\(^{50}\) reported that overall anxiety decreased but not significantly. A further study reported that levels of anxiety decreased from the beginning to the end of the program but this was not significant.

**Professional transition/autonomy**

Beecroft\(^{32}\) 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 the 1 year program\(^{26,55}\) were demonstrated. Krugman measured autonomy in new residents from across six different hospital sites. Autonomy 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 program\(^{54}\). This overall V shaped pattern was also reported in the study by Williams et al\(^{26}\).

Kowlaski and Cross\(^{50}\) found an increase in the mean scores for three aspects of professional transition (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 Scale\(^{33}\), 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 program\(^{49}\) 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 returning to baseline levels by 24 months. Although the mean scores were higher than those reported for the comparison group, no statistical tests were undertaken to confirm this\(^{33}\).

An initial pilot study showed that interns had comparable levels of organisational commitment to those in a control at 6 and 12 months into the program\(^{32}\). However, the control group was skewed by one participant having had a tenure to the organisation for 18 years prior to working as an RN. The wider study then showed organisational commitment to have increased by the end of the program and was higher for those in the comparison group but no statistical tests were undertaken to confirm these findings\(^{33}\). Higher scores on organisational characteristics such as organisational commitment and group cohesion have been shown to reduce the likelihood of turnover intention\(^{49}\).
Retention/turnover
High retention rates of between 73 – 94% were reported at one year,\textsuperscript{50, 56-58}. One study reported a drop in the retention rate by 18% four years later. It was noted that the retention rate decreased after the first year but notably more after 3\textsuperscript{rd} year\textsuperscript{56}. Significant differences were noted in retention between intervention and comparison groups\textsuperscript{44} 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\textsuperscript{26, 33, 47, 54, 55}, and ranged from 8%-16.5%. One study\textsuperscript{33}, retrospectively examined rates over a ten year period demonstrating that these decreased over that time period. However, this group of participants was different from other studies in that they passed their NCLEX prior to commencing the residency. Two studies\textsuperscript{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 diminished\textsuperscript{32}.

Ulrich’s\textsuperscript{33}, work concludes that lower turnover rate was associated with an organisation having more experience of running programs. Beecroft\textsuperscript{32} 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 they felt committed to the organisation, the odds of turnover intent were low.

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

Findings indicated a V shaped pattern for a number of variables across several studies\textsuperscript{26, 33, 54, 55} suggesting that reality shock as defined by Kramer\textsuperscript{1} or effects of transition often occurred at 6 months. A lack of control/comparison groups is noted\textsuperscript{51, 57}. Where comparison groups are used they are convenience samples and are not well matched\textsuperscript{26} or the time of measurements is not clear\textsuperscript{33}. Orientation periods are variable and where programs 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 programs included are from the USA with the RN Residency Program\textsuperscript{32} in an acute paediatric setting prior to being rolled out.

Graduate Nurse Orientation Programs
Orientation is a term used for being introduced to, or adjusting to a new environment. Structured orientation programs, similarly to residency/internship programs 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 programs in the way they are structured including both didactic elements and clinical support through preceptorship they are generally shorter. The programs included in this section of the review (Appendix VII) specifically identified themselves as orientation programs and are therefore presented here separately from the residency/internship programs. Results will be combined with the residency/internship programs in the final summation highlighting differences between short term <6 months and longer term >6 month programs utilising a similar format.

Marcum and West\textsuperscript{29} sought to increase retention of nurses in acute care medicine through a structured thirteen week orientation program, the ‘2000 New Graduate Orientation Program’. 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 program became the unit staff. Participants were 20 new graduates (11 with an associate degree, 9 with a bachelors degree). Two groups completed the program (Group 1 = 13, Group 2 = 7).

<table>
<thead>
<tr>
<th>Program designation</th>
<th>2000 New Graduate Orientation Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of study:</td>
<td>Descriptive case study</td>
</tr>
</tbody>
</table>
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 using a variety of instruments. At one 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, preceptors and at least one 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 VII) was used to provide a self-evaluation of the overall effectiveness of the program as well as program 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 program participants agreed that the program was effective. At the end of the 13 weeks program 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 program, 89% of orientees remained employed compared to 29% in 1999 and 41% in 2000 prior to the program. Uncontrollable turnover rate (personal reasons) was 11% (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. A Leadership and Participation Summation Form was used to provide feedback on program strengths and areas for improvement.

Following completion of the two groups through the program, recommendations were made that the program would in future be conducted in the unit on which the orientee would be employed. Program evaluation using validated tools showed a, statistically significant improvement in critical thinking and interpersonal skills. This was a very specific orientation program which had used a previously closed 18 bed hospital unit which was reopened for the purpose of housing the new graduate unit. It was very resource intensive and it was decided 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 nurses and therefore did not 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 three weeks of the first groups orientation, unit capacity had been reached and the new graduates were moved early to the home units.
Young et al. carried out a descriptive evaluation to determine whether a 6 week orientation program impacted on the role conception and role discrepancy of newly graduate nurses (n=25). The sample comprised of 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 program 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.

**Table 1: Pre-test and Post-test Role Conception and Role Discrepancy Scores**

<table>
<thead>
<tr>
<th>Role Conception</th>
<th>Mean</th>
<th>SD</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic</td>
<td>44.09</td>
<td>5.05</td>
<td>0.44 Non-significant</td>
</tr>
<tr>
<td></td>
<td>43.35</td>
<td>5.76</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>42.30</td>
<td>3.92</td>
<td>1.00 Non-significant</td>
</tr>
<tr>
<td></td>
<td>42.30</td>
<td>4.83</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>52.35</td>
<td>4.4</td>
<td>0.92 Non-significant</td>
</tr>
<tr>
<td></td>
<td>52.26</td>
<td>4.88</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role discrepancy</th>
<th>Mean</th>
<th>SD</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucratic</td>
<td>2.61</td>
<td>4.31</td>
<td>0.92 Non-significant</td>
</tr>
<tr>
<td></td>
<td>2.70</td>
<td>5.13</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>10.09</td>
<td>4.66</td>
<td>0.11 Non-significant</td>
</tr>
<tr>
<td></td>
<td>8.48</td>
<td>5.64</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>11.35</td>
<td>6.51</td>
<td>0.01 Significant</td>
</tr>
<tr>
<td></td>
<td>7.78</td>
<td>6.00</td>
<td></td>
</tr>
</tbody>
</table>

Professional role conception scores were the lowest of the three 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 does not concur with what is actually expected and taught in the hospital, the nurse may experience role discrepancy. Service role discrepancy scores were highest before the program and statistically significantly lower after (see Table 1). 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 sub-scale and did not change pre and post. Professional role discrepancy scores were higher before the program, and lowered post-program, although this was not statistically significant.

The purpose of the study by Friedman et al.\textsuperscript{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.

**Program designation:** Specialised orientation program (Critical Care Nurse Fellowship Program - CCNFP)

**Type of study:** Retrospective comparative descriptive

**Setting:** 2 tertiary hospitals in a multi-hospital healthcare 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 and clinical simulation. Masters fellows (masters prepared educators) provide and monitor clinical experience.  
Essentials of Critical Care Orientation module

**Comparison:** 32 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 program (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 (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.

Crimlisk et al.\textsuperscript{31} conducted a cross-sectional survey of 32 new graduates who had completed a 4-5 month orientation float pool program 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 program 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.

Allanson and Fulbrook\textsuperscript{60}, evaluated a Perioperative Introductory Program (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 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).

<table>
<thead>
<tr>
<th></th>
<th>Pre PIP</th>
<th>Post PIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competency</td>
<td>2.94</td>
<td>2.45</td>
</tr>
<tr>
<td>Knowledge</td>
<td>4.97</td>
<td>3.86</td>
</tr>
<tr>
<td>Knowledge – MCQ</td>
<td>7.96</td>
<td>8.46</td>
</tr>
<tr>
<td>Confidence</td>
<td>2.19</td>
<td>2.45</td>
</tr>
</tbody>
</table>

O’Malley Floyd et al.\textsuperscript{28} sent out a questionnaire to 37 RNs, who had participated in a 4 month orientation program 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).

Squires\textsuperscript{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 Programs

Using JBI levels of evidence relating to evidence of effectiveness three of the included orientation studies used validated objective measurement tools. These are rated as Level 3. Only one of these studies 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 studies included in this section incorporated satisfaction/opinion surveys and/or self-assessment questionnaires, with the data subjected in most cases to only very rudimentary analysis and as such can be rated as level 4. As a result, findings should be treated with a great deal of caution.

Confidence / Competence / Knowledge

Crimlisk indicated that 23 out of 32 respondents felt more able to provide competent care, no objective measure was used. In the study by O’Malley Floyd et al., 24 out of 31 responders envisaged themselves becoming more knowledgeable and confident using a yes/no reply. Overall perception of confidence was found to have increased in the study by Squires, however, this was not statistically significant due to a very small sample size. In the study by Allanson and Fulbrook, at the end of the program 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 that they had initially over-estimated their levels of competency and knowledge but were more confident then 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 West stated that all core competencies were met.

Critical thinking/Interpersonal skills

This concept was considered by one study. 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 study examined the concepts of role conception and role discrepancy (see summary of paper for definition). Service role discrepancy scores were highest before the program 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. There were statistically significant differences in retention at 3, 9 and 12 months but not at the 6 month point in the retention cycle.

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

Cost effectiveness

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

Despite the weaknesses of the studies overall, the general agreement was that attendance at an orientation program minimises frustration and reality shock often experienced by new graduate nurses. The 6 month point in the retention cycle was highlighted as requiring further research with careful selection and preparation of preceptors additionally highlighted as important. 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 VIII) specifically relate to mentoring, with no other didactic or clinical program elements either included or considered. As previously, results from these studies 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 program.

Komaratat and Oumtanee\textsuperscript{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 three 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 time 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.
Another evaluation was conducted as part of a larger evaluation of the RN residency program at one healthcare facility in the USA. Overall program results are discussed in the internship/residency section of this review under Beecroft et al. 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. 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 program 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 program 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 significantly positively influenced the likelihood of the mentor being a stress reducer ($p<0.001$), clicking with mentor ($p<0.001$), and the mentor providing support ($p<0.001$). Being older was another factor influencing the 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 their 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.

<table>
<thead>
<tr>
<th>Score of Nursing Competency</th>
<th>Pre-experiment Time 1</th>
<th>Pre-experiment Time 2</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing care</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Human relationship and communication</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Decision-making and problem-solving</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Quality development and assurance</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3.00</td>
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<table>
<thead>
<tr>
<th>Score of Nursing Competency</th>
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<th>Postexperiment</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing care</td>
<td>3.00</td>
<td>4.00</td>
<td>-4.061*</td>
</tr>
<tr>
<td>Human relationship and communication</td>
<td>3.00</td>
<td>4.25</td>
<td>-3.885*</td>
</tr>
<tr>
<td>Decision-making and problem-solving</td>
<td>3.00</td>
<td>4.00</td>
<td>-3.947*</td>
</tr>
<tr>
<td>Quality development and assurance</td>
<td>3.00</td>
<td>4.16</td>
<td>-3.893*</td>
</tr>
<tr>
<td>Total</td>
<td>3.00</td>
<td>4.10</td>
<td>-3.831*</td>
</tr>
</tbody>
</table>

*p < .05.
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 participants\(^62\) and 318 participants\(^63\), 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 Beecroft\(^63\). 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 their mentor and when the mentor offered support.

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 and 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 program 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 IX) 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 program 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.

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 agreed to participate (n=75). The response rates at follow-up for the three month surveys was 80%, (n=60/75) and for the six month surveys was 39%, (n=29/75). The study included a qualitative element which is not included in this review.

Program designation: Nurse Transition Program
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 program 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 program at 3 months (p=0.694) and 6 months (p=0.148).

Table 4

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Transition Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention Rates 3 months</td>
<td>93.8%</td>
<td>89.1%</td>
</tr>
<tr>
<td>Retention Rates 6 months</td>
<td>93.8%</td>
<td>82.6%</td>
</tr>
</tbody>
</table>

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

The CFGNES was administered at hire, 3 months and 6 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. 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. However, no statistical analysis was conducted to substantiate this claim. A narrative summary was presented for the findings. There were no areas in which GNS experienced a decrease in comfort and confidence: complete skills 89% baseline, 87% at 3 months, 89% at 6 months; communication with patients and families 95% baseline, 95% at 3 months, 93% at 6 months; job expectations, 87% baseline, 83% at 3 months, 87% at 6 months and role models and preceptors 97% baseline, 98% at 3 months, 100% at 6 months.

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

Leigh et al. conducted a descriptive survey of the 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 program.

Program designation: Preceptorship program

Type of study: Descriptive case study

Setting: Salford Royal Hospital, UK.

Duration: 6 months

Clinical orientation/induction: 3 week orientation program-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.


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 program. 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 program were invited to complete a pre and post-program questionnaire. Post-program questionnaires were also distributed to all respective ward managers. Results were interpreted in terms of self-reported confidence, competence and retention. For confidence and confidence 5 items were scored on 10-item Likert scale from 1 (low or not) to 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 program inception which reduced each year from 24% in 2002 to 1% in 2004, although no figures are given for retention rate prior to the program or for those not attending a program.

Sorenson and Yankech 65, conducted a quasi-experimental, mixed-methods study to examine whether a research based theory driven preceptor educational program 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 16 new graduate nurses who began employment on or after 1/7/2004 (prior to preceptors taking part in the program). The study included a qualitative element which is not included in this review.

Program designation: Preceptor facilitated orientation
For confidence 5 items were scored on 10-item Likert scale from 1 (low or not) to 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.

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Program 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 program.
The study measured critical thinking using California Critical Thinking Skills Test - CCST. This is a standardised 34 item multiple choice test. A total score is obtained and scores for a number of subscales. The sub-scales 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 groups 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 healthcare 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 sub-scale (p=0.039) indicating that preceptors’ participation in the educational sessions contributed to the evaluation sub-scale of critical thinking skills of the experimental group on the CCTST.

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 program.

Program designation: Competency Based Preceptor Program
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 Program 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 - VASS was used as a self-assessment measure of the perceived overall professional support experienced by the preceptee throughout the orientation period and was measured upon 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 SNRG than the non-intervention sample but that there was no significant difference between the samples on the VASS...
Comparative analysis of the quantitative data from the SNRG supported the qualitative evidence of positive benefits resulting from implementation of the Competency-Based Receptor Program. The VASS 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 programs 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 group [65]. 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 programs are varied or the content not stated [64] with length of program varying from 3 weeks to 6 months with limited information on preceptor preparation with the exception of Leigh [37].

**Comfort and Confidence**

Two studies reported comfort and confidence [37, 64]. In one study [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 but 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 program 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 [66] considered competence, 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] who concluded that within the confines of the small sample size preceptors’ participation in a research based theory driven education program 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 support [66], 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 program [64]. A reduction in the numbers of newly qualified nurses leaving the organisation during the first 12 months of employment since the program inception was found which reduced each year from 24% in 2002 to 1% in 2004, however no other variables were considered [37].

Preceptorship programs 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 X) which explore the outcomes of simulation based graduate programs.

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.

**Program 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 three domains: nurse patient relationship (5), illness-injury prevention (5),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.

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.
Program 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 tool (see Beyea 2007) 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 sub-scales but the greatest improvement was seen in the curative-supportive sub-scale. 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 program 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 program. The 2 year turnover rate post-residency was 33.7% compared to pre-residency figures of 43%.

Shepherd, 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.

**Program 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 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 differences 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 programs was a Level 1 experimental, randomised controlled trial conducted in Australia⁶⁹. The other two studies were level 3, one being a mixed method pilot study⁷⁰ Beyea (2007) and a longitudinal study⁷¹ Beyea (2010) from the USA. A previous review²⁵ in this area published in 2010 reported finding three studies and determined that there was no clear evidence of their effectiveness that went further than self-reported measures. One study⁷⁰, was not relevant to the current review as the sample included experienced nurses entering a specific clinical area for the first time, one study did not investigate the outcomes of interest to this review⁷¹ and one further piece of work was identified⁷².

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 study\(^{67}\) noted improvement in the mean visual analogue scale scores of confidence, competence and readiness for practice between weeks 2 and 10. Beyea\(^{68}\) 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 skills\(^{69}\).

Turnover
Turnover was reported to be reduced at 1 and 2 years compared to pre-residency levels\(^{68}\).

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 program and nurse residency program 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 study\(^{68}\) 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 specialty, 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) 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 program with standardised simulation but a multiple track program with greater simulation.

Final year students Transition Programs
This section includes two studies (Appendix XI), 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 programs, although these studies are presented separately the results will be considered within the overall summation of findings.
Nash et al.\textsuperscript{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.

**Program 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:** One-to-one 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 Program’

**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 positive comments about the experience overall regarding preparation for future practice were made.

Olson et al.\textsuperscript{72} 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 programs 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.

**Program designation:** Residency program/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 program were measured.

The Schwirian’s Six-Dimensional Scale of Nursing Performance – 6-DSNP (See Appendix VI) was used. The scores ranged from 2.1 to 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 program during the students’ senior year (time 1), at the end of the residency program 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 NKMAT 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 program 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.

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*Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011  Page 2259*
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 Programs**

Using JBI levels of evidence relating to evidence of effectiveness the two studies$^{71, 72}$ located relating to final year student programs were Level 3, only one$^{72}$ used a comparative group. Both studies had small sample sizes, n=14 participants$^{72}$, n=29 participants$^{71}$. 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 three time points, the beginning of the residency program, during the students' senior year, at the end of the residency program 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 program,$^{72}$.

Scores for the NLMAT increased progressively from the beginning of the program to one year post-residency but were not significant. However, the scores approached the national standardised mean for RNs with less than three years of experience$^{72}$.

**Leadership**

Within the 6-DNSP scale perceived quality of leadership showed the largest gain$^{72}$.

**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 practice$^{71}$.

The main conclusions for the study by Olson et al.$^{72}$ appear to relate to unsubstantiated comments and the inclusion of a control group would have added value to the findings. In the study by Nash$^{71}$, 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 three transition areas had been combined different results may have been produced.

**Nurse Extern Programs**

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

One study by Cantrell et al.$^{23}$ examined the Impact of a Nurse externship Program on the Transition Process From Graduate to Registered Nurse.

**Program 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

**Program 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 61% were employed for 24 months.

**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.

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**

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 studies used well validated tools to measure outcomes such as job satisfaction, clinical decision making and confidence. There was however, a reliance on self-report measures. Retention and turnover rates were reported simply using percentages.

The quality of the studies was influenced by a number of factors such as whether or not a comparison group was used, the size of the sample and the response rate. These factors may be responsible for simplicity of statistical analysis that was undertaken across the studies. 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.

This 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).

High retention rates of between 66 and 95% 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 programs 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 preceptorship 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 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 XIII. 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 program and retention rates. As a result no strong clear recommendations and conclusions can be drawn from the data. This concurs with the review by Salt, 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.

Significant increase in level of confidence was found in relation to internship / residency programs. Orientation programs 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 programs, 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.

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

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

Internship / residency programs 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.

Only one study under internship / residency programs reported an increase in knowledge scores. Similarly one final year student transition program 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.

Internship / residency programs 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.

Leadership Internship/residency programs 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 6DNSP scale in one final year student transition program.

Students made positive comments regarding preparedness for graduate nursing in regard to one final year transition program study, there was no significant differences between the intervention and control groups.

One preceptorship study indicated that the intervention group perceived a higher level of professional support, this was not significant.

Internship/residency programs 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 program 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 program reported significantly reduced service role discrepancy scores indicating the program 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 programs which made it difficult to report firm conclusions. A significant increase in level of confidence was found in relation to internship / residency programs and one mentorship study.
Orientation and preceptorship programs 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 programs. Where knowledge was measured (3 studies) an increase was noted, although this was only significant in relation to simulation. Internship / residency programs demonstrated increased levels of job satisfaction. Internship / residency programs 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 program reported, transition programs 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 programs 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, 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 programs 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

We 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 I: 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/
2  ("new" adj3 "graduate$").mp.
3  ("new$" adj2 "nurs$").mp.
4  ("nurs$" adj2 "grad$").mp.
5  ("novic$" adj2 "nurs$").mp.
6  ("neophyte" adj2 "nurs$").mp.
7  1 or 2 or 3 or 4 or 5 or 6
8  "outcomes of education".mp.
9  "outcome assessment".mp.
10  **"Outcome Assessment (Healthcare)*"/
11  8 or 9 or 10
12  ("eval$" adj2 "research").mp.
13  "simulator program$".mp.
14  "program$ implementation".mp.
15  "peer support".mp.
16  "support group$".mp.
17  exp Peer Group/
18  exp Self-Help Groups/
19  15 or 16 or 17 or 18
20  "hospital program$".mp.
21  "hospital training program$".mp.
22  ("hospital" adj2 "program$").mp.
23  20 or 21 or 22
24  exp Inservice Training/
25  "in*service training".mp.
26  24 or 25
27  "capstone courses".mp.
28  exp "Internship and Residency"/
29  "intern$".mp.
30  28 or 29
31  "transition$".mp.
32  "group de*briefing".mp.
33  exp Program Evaluation/

34  "program$ evaluation".mp.
35  33 or 34
36  "residency".mp.
37  "NRP".mp.
38  ("residency" adj2 "program$").mp.
39  36 or 37 or 38
40  ("preceptor" adj2 "program$").mp.
41  exp Preceptorship/
42  "preceptor$".mp.
43  40 or 41 or 42
44  exp clinical competence/
45  exp professional competence/
46  exp orientation/
47  ("orientation" adj2 "program$").mp.
48  "orientation".mp.
49  ("employee" adj2 "orientation").mp.
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55  7 and 19
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57  7 and 23
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66  7 and 45
67  7 and 50
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[mp=title, abstract, heading word, table of contents, key concepts]

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

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12. 10 or 11  
13. 6 and 7  
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16 15 and 14
17 capstone.ab.
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25 4 or 1 or 3 or 2 or 5
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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 28 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 II: Critical appraisal instruments
Checklist – Experimental Studies

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Were the participants randomised to study groups.</td>
<td>yes</td>
</tr>
<tr>
<td>2) Other than the research intervention, were participants in each groups treated the same.</td>
<td>yes</td>
</tr>
<tr>
<td>3) Were the outcomes measured in the same manner for all participants.</td>
<td>yes</td>
</tr>
<tr>
<td>4) Were groups comparable at entry</td>
<td>yes</td>
</tr>
<tr>
<td>5) Was there adequate follow-up of participants.</td>
<td>yes</td>
</tr>
<tr>
<td>(more than 80% followed up)</td>
<td>(less than 80% followed up)</td>
</tr>
<tr>
<td>6) Was allocation to treatment groups concealed from the allocator.</td>
<td>yes</td>
</tr>
<tr>
<td>7) Were those assessing outcome blinded to treatment allocation (if outcome not objective such as survival or length of hospitalisation).</td>
<td>yes</td>
</tr>
</tbody>
</table>

Critical Appraisal
Include □ Exclude □ Seek Further Info □

Comments
________________________________________________________________________________
________________________________________________________________________________
### 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**

- 

- 

- 

- 

---

*Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011 Page 2270*
Appendix III: Data Extraction Form

Author: ____________________________________________________
Year: _____________________________________________________
Record Number ___________________________________________
Reviewer _________________________________________________

Method _____________________________________________________

Types of Intervention
Graduate programs □ Preceptorship □ Other □
Externship □ Peer support □ —__________________________
Internship (residency) □ Lecturer practitioner support □ —__________________________
Mentoring □ Clinical practice facilitators □ —

Types of outcome measures
Retention: __________________________________________________
Confidence: _______________________________________________

Turnover: __________________________________________________
Attrition rates: ____________________________________________
Competency: ______________________________________________
Cost Effectiveness: _________________________________________
Job Satisfaction: __________________________________________
Stress: ___________________________________________________
Knowledge: _______________________________________________
Skill: _____________________________________________________

Program Description
- Type of Program __________________________________________
- 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

<table>
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<tr>
<th>Outcome</th>
<th>Treatment Group number/total number</th>
<th>Control Group number/total number</th>
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<tbody>
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</table>

Continuous Data

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Treatment Group mean &amp; SD (number)</th>
<th>Control Group mean &amp; SD (number)</th>
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<tbody>
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</tbody>
</table>
Findings
________________________________________________________
________________________________________________________
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Authors Conclusions
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________________________________________________________
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Reviewers Conclusions
________________________________________________________
________________________________________________________
________________________________________________________
### Observational Studies

<table>
<thead>
<tr>
<th>Number of participants</th>
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<table>
<thead>
<tr>
<th>Authors Conclusions</th>
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<tbody>
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<table>
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<th>Reviewers Conclusions</th>
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### Other studies

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</table>

### Authors Conclusions

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### Reviewers Conclusions

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</tbody>
</table>

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**Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011 Page 2276**
## Appendix IV: Articles excluded after detailed examination

<table>
<thead>
<tr>
<th>Citation</th>
<th>Method</th>
<th>Program/ Intervention</th>
<th>Outcomes of interest</th>
<th>Reasons for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ackermann et al 2007.</td>
<td>Descriptive case study with satisfaction survey</td>
<td>Bridge to Practice Program Preceptor Based Orientation Simulator Program</td>
<td>None</td>
<td>No outcomes of interest Evaluated program content not effectiveness</td>
</tr>
<tr>
<td>Altimier 2009.</td>
<td>Descriptive case study</td>
<td>Flexible Neonatal Online Nursing Orientation Program</td>
<td>Cost benefit</td>
<td>No evaluation conducted Explores the cost of providing computer based program over a taught program</td>
</tr>
<tr>
<td>Andrew et al 2008.</td>
<td>Descriptive case study with survey design</td>
<td>Transition to Graduate Nursing Program</td>
<td>Clinical competency</td>
<td>Development of competency scale No evaluation conducted</td>
</tr>
<tr>
<td>Baggot et al 2005.</td>
<td>Descriptive case study with cost benefit analysis</td>
<td>Preceptor Action Days</td>
<td>Cost Benefit Analysis Retention</td>
<td>No evaluation conducted, Reported general satisfaction reported. RN Vacancy rate – no results for the new hires</td>
</tr>
<tr>
<td>Bartlett et al 2000.</td>
<td>Longitudinal descriptive study</td>
<td>None</td>
<td>Clinical competency (at graduation, 6 months and 12 months post graduation)</td>
<td>No program / interventions</td>
</tr>
<tr>
<td>Blanzola et al 2004.</td>
<td>Quasi-experimental design with qualitative element</td>
<td>Nursing Internship Program Competency Based Orientation Program</td>
<td>Competency Knowledge / Skills Professional nursing behaviours</td>
<td>Not neophytes including those with 12-18 months experience (25% in pilot group / 20% control group) Analysis -no separate results presented</td>
</tr>
<tr>
<td>Boswell and Wilhoit 2003.</td>
<td>Descriptive case study with survey design</td>
<td>None</td>
<td>Nurses perceptions of working environment and interpersonal relationship</td>
<td>No program / interventions</td>
</tr>
<tr>
<td>Study</td>
<td>Design Methodology</td>
<td>Intervention</td>
<td>Outcomes</td>
<td>Notes</td>
</tr>
<tr>
<td>-------</td>
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<td>-------</td>
</tr>
<tr>
<td>Bowers et al 2009. 81 University of Arkansas for Medical Sciences Little Rock, Arkansas, USA</td>
<td>Descriptive case study</td>
<td>Professional Entry into Practice Program</td>
<td>Turnover rates Clinical competency</td>
<td>Not neophytes New hires - transition of the professional into a specific specialty</td>
</tr>
<tr>
<td>Bowles and Candela 2005. 82 Level 1 trauma centre, Recruited across 13 hospital departments, USA</td>
<td>Descriptive cross-sectional survey</td>
<td>None</td>
<td>Nurses' perceptions of first job experience</td>
<td>No program / interventions</td>
</tr>
<tr>
<td>Carignan et al 2007. 83 Home healthcare nurses USA</td>
<td>Descriptive case study</td>
<td>Internship Preceptorship</td>
<td>Job satisfaction Knowledge / Skill</td>
<td>No evaluation to be conducted at a later date. Author search did not reveal any further published work</td>
</tr>
<tr>
<td>Celia and Gordon 2001. 84 Hahnemann University Hospital Philadelphia, Pennsylvania, USA</td>
<td>Descriptive case study with satisfaction survey</td>
<td>Problem Based learning within an orientation program</td>
<td>Problem solving Critical thinking</td>
<td>No evaluation conducted Investigated the use of problem-based learning as opposed to a lecture format</td>
</tr>
<tr>
<td>Chang and Hancock 2003. 85 Tertiary graduates from 13 institutions New South Wales, Australia</td>
<td>Descriptive cross-sectional survey</td>
<td>None</td>
<td>Role stress and changes in role stress 2-3 months after employment</td>
<td>No program / interventions</td>
</tr>
<tr>
<td>Chesnutt and Everhart 2007. 86 Surgical Intensive Care Unit University of Colorado Hospital Colorado, Denver, USA</td>
<td>Descriptive case study</td>
<td>Staged orientation program in surgical intensive care</td>
<td>None</td>
<td>No evaluation conducted</td>
</tr>
<tr>
<td>Clare and van Loon 2003. 87 Rural and remote areas of Western Australia – Northern Territory and Tasmania</td>
<td>Descriptive cross-sectional survey</td>
<td>None</td>
<td>Experiences of new graduate transition to practice</td>
<td>No program / interventions</td>
</tr>
<tr>
<td>Study Title</td>
<td>Study Design</td>
<td>Program</td>
<td>Outcomes of Interest</td>
<td>Notes</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cleary and Happell 2005.</td>
<td>Descriptive case study with satisfaction survey</td>
<td>Transition Program into Mental Health Nursing</td>
<td>Helpfulness of orientation. Satisfaction with the program and clinical support provided</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Central Sydney Area mental Health Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sydney, Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleary et al 2009.</td>
<td>Descriptive case study with pre post-test survey design</td>
<td>Transition Program into Mental Health Nursing</td>
<td>Knowledge / Skill</td>
<td>Non neophytes included in the analysis. No separate results presented</td>
</tr>
<tr>
<td>Hospital not identified</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Queensland, Australia</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Duvall 2009.</td>
<td>Descriptive case study</td>
<td>Internship Program</td>
<td>Clinical competency Knowledge / Skill</td>
<td>No evaluation of program. Re development of the internship program</td>
</tr>
<tr>
<td>12 Bed-Medical / Surgical Unit, ICU</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Central Florida, USA</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Elliotte 2010.</td>
<td>Descriptive case study</td>
<td>Perianesthesia Orientation Program</td>
<td>None</td>
<td>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</td>
</tr>
<tr>
<td>Georgetown University Hospital Post Anaesthesia Care Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington, DC, USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faron and Poelter 2007.</td>
<td>Descriptive case study</td>
<td>Mentoring</td>
<td>Turnover rates</td>
<td>Not neophytes included. Included graduates new to a speciality unit. Analysis – no separate result presented</td>
</tr>
<tr>
<td>Sharp Mary Birch Hospital for Women, San Diego, USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farrell and Chakrabarti 2001.</td>
<td>Descriptive case study with survey and in-depth interviews and focus groups</td>
<td>Preceptorship</td>
<td>Effectiveness of the preceptorship arrangements</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Hospital not specified, USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gavlak 2007.</td>
<td>Descriptive case study</td>
<td>Centralised Graduate Nurse Orientation</td>
<td>None</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Large Metropolitan Hospital – 900 bed St Joseph's Hospital Tampa, Florida, USA</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Intervention</td>
<td>Outcome</td>
<td>Methodology</td>
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<tr>
<td>-------</td>
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<td>---------</td>
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<tr>
<td>Grochow 2008. 95</td>
<td>Descriptive case study</td>
<td>Preceptorship</td>
<td>None</td>
<td>Location not stated</td>
</tr>
<tr>
<td>Guhde 2005. 96</td>
<td>Descriptive case study</td>
<td>Next Shift Mentoring Program</td>
<td>None</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Gurney 2002. 97</td>
<td>Descriptive case study</td>
<td>Transition to emergency nursing program</td>
<td>Clinical competency</td>
<td>Not neophytes</td>
</tr>
<tr>
<td>Hall and Marshall 2006. 98</td>
<td>Descriptive case study</td>
<td>Critical Care Internship</td>
<td>Staff development program evaluation</td>
<td>Not neophytes</td>
</tr>
<tr>
<td>Hancharik 2008. 99</td>
<td>Applied dissertation study</td>
<td>None</td>
<td>Use of instructional technology within orientation programs</td>
<td>No program / intervention</td>
</tr>
<tr>
<td>Hancock 2002. 100</td>
<td>Descriptive case study with satisfaction survey</td>
<td>Neonatal Intensive Care Unit Structured Support Program Preceptorship</td>
<td>Attitudes, opinions and perceptions</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Hardyman and Hickey. 101</td>
<td>Descriptive longitudinal survey</td>
<td>Pilot Study to identify nurses expectations of Preceptorship</td>
<td>Expectations of preceptorship</td>
<td>No outcomes of interest</td>
</tr>
<tr>
<td>Hengstberger-Sims et al 2008. 102</td>
<td>Cross sectional non experimental survey</td>
<td>Graduate Nurse Program</td>
<td>Competency</td>
<td>No evaluation conducted</td>
</tr>
</tbody>
</table>

Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011  Page 2280
<table>
<thead>
<tr>
<th>Study</th>
<th>Institution</th>
<th>Study Type</th>
<th>Program</th>
<th>Evaluation</th>
<th>Outcomes of Interest</th>
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<tbody>
<tr>
<td>Horwarth 2010</td>
<td>North-western Ohio community based hospital, USA</td>
<td>Descriptive case study</td>
<td>Nursing Orientation Program</td>
<td>None</td>
<td>No outcomes of interest Evaluation conducted using a self designed tool. Small sample N = 5 &quot;it's reasonable to conclude that the new pilot program was well received and effective</td>
</tr>
<tr>
<td>Hillman and Foster 2011</td>
<td>Children’s hospital of Michigan, Detroit, MI, USA</td>
<td>Descriptive case study</td>
<td>Residency Program Preceptorship</td>
<td>Turnover rates Cost effectiveness Knowledge / Skill Job satisfaction</td>
<td>No evaluation of program Results to be reported / data presented at a later date</td>
</tr>
<tr>
<td>Jarman and Newcombe 2010</td>
<td>St George’s Hospital Emergency Department London, UK</td>
<td>Descriptive case study</td>
<td>Practice Based Education Program – The Foundations of Emergency Practice</td>
<td>None</td>
<td>No outcomes of interest No evaluation conducted</td>
</tr>
<tr>
<td>Jones and West 2010</td>
<td>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</td>
<td>Descriptive case study</td>
<td>Community Based Transition Program found those who have not found employment.</td>
<td>None</td>
<td>No outcomes of interest No evaluation conducted</td>
</tr>
<tr>
<td>Klein 2009</td>
<td>Children’s Healthcare of Atlanta, USA</td>
<td>Descriptive case study</td>
<td>Floating Preceptor Length not specified</td>
<td>Retention</td>
<td>Not neophytes New hires upon completion of orientation</td>
</tr>
<tr>
<td>Kuroda et al 2009</td>
<td>15 adult general hospitals 150-200 beds Chiba prefecture, Japan</td>
<td>Descriptive case study with survey</td>
<td>Investigated the relationship between the anxiety of novice nurses and preceptorship</td>
<td>Anxiety / Stress</td>
<td>No specific intervention</td>
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</tbody>
</table>

*Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011 Page 2281*
<table>
<thead>
<tr>
<th>Author et al.</th>
<th>Study Design</th>
<th>Intervention</th>
<th>Outcome</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Lee et al 2009.</td>
<td>Quasi experimental</td>
<td>Preceptorship</td>
<td>Turnover</td>
<td>Not neophytes with less than 1 year of experience. Average years of experience was 2.4 (SD 1.6) years.</td>
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<tr>
<td>Lott 2005.</td>
<td>Descriptive case study with satisfaction survey</td>
<td>Orientation Program</td>
<td>Satisfaction</td>
<td>No outcome of interest. Evaluated satisfaction with orientation experience not effectiveness of program.</td>
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<tr>
<td>Maxwell 2011.</td>
<td>Descriptive case study</td>
<td>Part of the UHC/AACN residency program</td>
<td>None</td>
<td>Evaluation reported in Krugman, 2011.</td>
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<tr>
<td>McDonald et al 2009.</td>
<td>Cross-sectional Survey Design</td>
<td>Nurse Entry into Practice Program</td>
<td>27 item questionnaire</td>
<td>In what way has your practice changed as a result of postgraduate education? Response to open ended question subjected to content analysis.</td>
</tr>
<tr>
<td>Molinari et al 2008.</td>
<td>Descriptive case study</td>
<td>Rural Nurse Internship Distance Learning</td>
<td>None</td>
<td>No outcome of interest. No evaluation conducted. “Nurses reported gaining confidence”, no evidence of an evaluative tool.</td>
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<td>Design Type</td>
<td>Intervention Details</td>
<td>Outcomes</td>
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<tr>
<td>Oermann and Garvin 2002</td>
<td>Descriptive cross-sectional survey</td>
<td>Investigated stresses and challenges of clinical practice, emotions experiences, implications for mentorship</td>
<td>Stress</td>
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</tr>
<tr>
<td>Three hospitals in the Midwest Region, USA</td>
<td></td>
<td>No specific interventions</td>
<td></td>
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</tr>
<tr>
<td>Patterson et al 2010</td>
<td>Descriptive case study with survey and semi structured interviews</td>
<td>ED Fellowship Program 6 months Preceptorship</td>
<td>Survey of nurses’ perceptions of first job experience</td>
<td></td>
</tr>
<tr>
<td>Crozer Keystone Health System (CKHS) Employees, CKHS Emergency Department Upland, PA, USA</td>
<td></td>
<td>No outcome of interest No evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persaud 2008</td>
<td>Descriptive case study</td>
<td>Mentorship Program Peri operative Nurse</td>
<td>General evaluation</td>
<td></td>
</tr>
<tr>
<td>St Anthony Medical Centre, OR. Rockford, Illinois, USA</td>
<td></td>
<td>Evaluated general experience and not effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poynton et al 2007</td>
<td>Descriptive case study</td>
<td>University of Utah nurse Residency program</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>University of Utah College of Nursing and University Healthcare, Utah, USA</td>
<td></td>
<td>No outcome of Interest No evaluation conducted Design of program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price et al 2000</td>
<td>Descriptive case study</td>
<td>Neuroscience Nurse Internship Program</td>
<td>Knowledge / Skill Confidence</td>
<td></td>
</tr>
<tr>
<td>Dilirio et al 2001</td>
<td>Descriptive case study</td>
<td>New Gradu ate Residency Program</td>
<td>Not neophytes New registered nurses and registered moving over to neuroscience nursing.</td>
<td></td>
</tr>
<tr>
<td>National Institutes of Health Bethesda, USA</td>
<td></td>
<td>No outcome of interest No evaluation conducted informal feedback only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proulx and Bourcier 2008</td>
<td>Descriptive case study</td>
<td>Orientation Program</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Catholic Medical Centre, ICU Manchester, New Hampshire, USA</td>
<td></td>
<td>Resigning of orientation program No outcomes of interest No evaluation conducted informal feedback only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puntill 2005</td>
<td>Descriptive case study</td>
<td>New Graduate Residency Program</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>University of California Los Angeles Neuropsychiatric Hospital 136 bed psychiatric hospital Los Angeles, USA</td>
<td></td>
<td>No outcome of Interest No evaluation conducted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Setting</td>
<td>Design</td>
<td>Data Collection</td>
<td>Intervention</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>Sandau et al 2011</td>
<td>Large Midwest hospital all hospital inpatient departments 926 Beds, USA</td>
<td>Cross sectional study with a quasi experimental design</td>
<td>Preceptor workshop</td>
<td>Proportion of new nurses retained 1 year post intervention on the same unit as which they were oriented</td>
</tr>
<tr>
<td>Sandhusen 2005</td>
<td>Five Hospitals within the Inova Health System. Northern Virginia, USA</td>
<td>Survey with both qualitative and quantitative elements. Quasi experimental design</td>
<td>Inova Health System Internship Program. Varied length of internship across different specialties.</td>
<td>Clinical competency</td>
</tr>
<tr>
<td>Scells and Gill 2007</td>
<td>Royal Brisbane Women’s Hospital 60-bed orthopaedic clinical nit- trauma and elective mix, Brisbane, Australia</td>
<td>Grounded theory Descriptive survey</td>
<td>Coordinated Team Preceptorship Model</td>
<td>Confidence</td>
</tr>
<tr>
<td>Scott and Smith 2008</td>
<td>Lenoir Memorial Hospital 261-beds, Kinston, North Carolina, USA</td>
<td>Descriptive case study with job satisfaction survey and focus groups</td>
<td>STAR Program Mentoring Program</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>Scott et al 2008</td>
<td>None</td>
<td></td>
<td>Secondary analysis of data of 12 variables within a pre existing survey focusing on Job satisfaction and career satisfaction</td>
<td>No specific interventions evaluated</td>
</tr>
<tr>
<td>Shermont and Krepcio 2006</td>
<td>Children’s Hospital Boston, Boston, Mass, USA</td>
<td>Descriptive case study</td>
<td>Partnership Unit Preceptorship</td>
<td>Turnover rates</td>
</tr>
<tr>
<td>Study</td>
<td>Institution Type and Location</td>
<td>Intervention Type</td>
<td>Study Design</td>
<td>Brief Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td>-------------------</td>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Smith 2006. 126</td>
<td>Three Acute Care Facilities, Tennessee, USA</td>
<td>Descriptive</td>
<td>Mentorship</td>
<td>Investigated the relationship between mentoring and goal</td>
</tr>
<tr>
<td>Specht and Mobily 2005. 129</td>
<td>John A Hartford Centre for Geriatric Nursing Excellence, University of Iowa, Iowa, USA</td>
<td>Descriptive case</td>
<td>Young Gerontological Nurse Clinical Program Mentored program</td>
<td>None</td>
</tr>
<tr>
<td>Speers et al 2004. 130</td>
<td>William Beaumont Hospital, 997 bed major teaching and referral hospital, Level 1 trauma, Oakland County, Detroit, USA</td>
<td>Descriptive case</td>
<td>Preceptorship</td>
<td>None</td>
</tr>
<tr>
<td>Stinson and Wilkinson 2004. 131</td>
<td>Paediatric Hospital, USA</td>
<td>Descriptive case</td>
<td>Clinical Extern Program</td>
<td>None</td>
</tr>
<tr>
<td>Sweeney 2010. 132</td>
<td>Bayfront Medicals Centre, Emergency Department, St Petersburg, FL, USA</td>
<td>Descriptive case</td>
<td>Novice Nurse Internship Program Home study course with web based home learning modules</td>
<td>None</td>
</tr>
<tr>
<td>Truman 2004. 133</td>
<td>Poudre Valley Hospital, Fort Collins, Colo, USA</td>
<td>Descriptive case</td>
<td>Preceptorship</td>
<td>None</td>
</tr>
<tr>
<td>Varden 2006. 134</td>
<td>Salford General Hospital NHS Trust Surgical Division, UK</td>
<td>Descriptive case</td>
<td>Rotational Program Preceptorship</td>
<td>General</td>
</tr>
<tr>
<td>Ward 2009. 135</td>
<td>Lynchburg General Hospital, Lynchburg, Virginia, USA</td>
<td>Descriptive case</td>
<td>Orientation Program</td>
<td>Retention rates on unit Retention rates in organisation Knowledge / Skill</td>
</tr>
</tbody>
</table>

Edwards et al Effectiveness of strategies that aim to assist the transition from student to newly qualified nurse © the authors 2011  Page 2285
<table>
<thead>
<tr>
<th>Reference</th>
<th>Setting</th>
<th>Study Design</th>
<th>Program</th>
<th>Evaluation</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wong 2006. [136]</td>
<td>Footshill Medical Centre Department of Clinical Neurosciences, Calgary, Canada</td>
<td>Descriptive case study</td>
<td>Regional Orientation Program</td>
<td>None</td>
<td>Evaluation not conducted Peer review</td>
</tr>
<tr>
<td>Young et al 2010. [137]</td>
<td>Yakima Valley memorial Hospital, In collaboration with Washington State University, Yakima, WA, USA</td>
<td>Non experimental retrospective program evaluation</td>
<td>Advanced Clinical Education and Simulation Course</td>
<td>General evaluation</td>
<td>Not neophytes All newly hired registered nurses and pharmacists. Three RNs not newly qualified. Separate results not reported</td>
</tr>
<tr>
<td>Cantrell et al 2005. [138]</td>
<td>Acute care paediatric hospital, USA</td>
<td>Descriptive comparative study</td>
<td>Externship</td>
<td>Job satisfaction Role socialisation Professionalism Sense of belonging</td>
<td>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.</td>
</tr>
<tr>
<td>Dempsey and McKissick 2006. [139]</td>
<td>Medical/Surgical Units and CCU, USA</td>
<td>Descriptive case study</td>
<td>Externship Student Nurse Aide Program Preceptor</td>
<td>Destination of externs in the last 2 yrs</td>
<td>No outcome of interest</td>
</tr>
<tr>
<td>Rebeschi and Aronson, 2009. [139]</td>
<td>Public University Northeast USA.</td>
<td>Descriptive cohort study</td>
<td>Senior Capstone Course</td>
<td>Employment destination post course NCLEX pass rates</td>
<td>No outcome of interest</td>
</tr>
<tr>
<td>Stefanski and Rossler 2009. [140]</td>
<td>University of Louisiana at Lafayette Department of Nursing, USA</td>
<td>Descriptive case study</td>
<td>Preparing the critical care nurse Didactic lecture presentations with corresponding simulation activities</td>
<td>Satisfaction Self confidence</td>
<td>Not neophytes Course content created to accommodate learning needs of new graduate nurses and the experienced nurse entering ICU</td>
</tr>
<tr>
<td>Grindel and Hagerstrom 2009. [141]</td>
<td>Member Hospitals of the Academy of Medical Surgical Nurses, USA</td>
<td>Descriptive case study</td>
<td>Mentorship</td>
<td>Job satisfaction Confidence Intention to Stay</td>
<td>Not neophytes “the majority f the mentees were new graduates”</td>
</tr>
<tr>
<td>Keahey 2008. [141]</td>
<td></td>
<td>Descriptive case study</td>
<td>Residency Program</td>
<td>None</td>
<td>No evaluation of program</td>
</tr>
<tr>
<td>Country</td>
<td>Study Type</td>
<td>Year</td>
<td>Method</td>
<td>Preceptorship</td>
<td>Evaluation</td>
</tr>
<tr>
<td>---------</td>
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<td>------------</td>
</tr>
<tr>
<td>USA</td>
<td>Descriptive case study</td>
<td>Coyle 2011.142</td>
<td>The Christina Care Visiting Nurse Association, USA</td>
<td>Internship Preceptorship</td>
<td>None</td>
</tr>
</tbody>
</table>
### Appendix V: Articles excluded after critical appraisal

<table>
<thead>
<tr>
<th>Study</th>
<th>Outcome Measures</th>
<th>Reasons for exclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson et al 2009.</td>
<td>Nurse Residency Program</td>
<td>No statistical data presented although significant findings stated. Correspondence with author but no reply</td>
</tr>
<tr>
<td>Healthcare system in the Midwest, USA</td>
<td>Job satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work environment satisfaction</td>
<td></td>
</tr>
<tr>
<td>Courtney 2005.</td>
<td>Peri Operative Nurse Extern-intern program</td>
<td>Outcome measures not reported &quot;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&quot;</td>
</tr>
<tr>
<td>St Mary Corwin Medical Centre OR, Pueblo Colo, Colorado, USA</td>
<td>Minimum of 148 class room hours</td>
<td></td>
</tr>
<tr>
<td>Cubit and Ryan 2011.</td>
<td>Graduate Nurse Program</td>
<td>N=16 with two questions within on line survey reported in a table and not discussed. Satisfied / experiencing high levels of stress with your job – Agree/ Neutral / Disagree Disagree reported for the 4 different rotations but no statistical analysis conducted.</td>
</tr>
<tr>
<td>Calvary Healthcare ACT 334 –bed Australian Capital Territory Australia</td>
<td>Job satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td></td>
</tr>
<tr>
<td>Driscoll et al 2009.</td>
<td>Orthopaedic orientation 12 weeks</td>
<td>Data collected on 2005 =7, 2006 = 8. Reported an increase in knowledge and ability to provide safe ensuring care for orthopaedic patients. No results or statistical analysis reported.</td>
</tr>
<tr>
<td>20 bed General medical – surgical unit – Orthopaedic Community Hospital in the Northeast England, UK</td>
<td>Confidence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knowledge</td>
<td></td>
</tr>
<tr>
<td>Fey and Miltner 2000.</td>
<td>New Graduate Fellowship Program Preceptorship</td>
<td>Outcome measures reported but no results or statistical analysis conducted.</td>
</tr>
<tr>
<td>Medical / Obstetric / Ambulatory Nursing Division Washington Hospital Centre, Washington DC, USA</td>
<td>Competency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 weeks</td>
<td></td>
</tr>
<tr>
<td>Study Authors and Location</td>
<td>Study Type</td>
<td>Program Details</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Herdich and Lindsay 2006.</td>
<td>Descriptive case study</td>
<td>Medical Surgical Residency Program 1 Year Cardiac/Critical Care Residency Program 6 months</td>
</tr>
<tr>
<td>Kilpatrick and Frunchak 2006.</td>
<td>Descriptive case study</td>
<td>Nursing Extern Program 2 day general orientation 15 days specific orientation</td>
</tr>
<tr>
<td>Loiseau 2003.</td>
<td>Descriptive case study with survey</td>
<td>4 months program with a preceptor in 4th months. Additional training after 6 months of employment</td>
</tr>
<tr>
<td>Mills and Mullins 2008.</td>
<td>Descriptive case study with job satisfaction survey and focus groups</td>
<td>Mentorship Length not specified</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Program Duration</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Nied 2009. 152</td>
<td>Descriptive case study Pre post test survey</td>
<td>Residency Program 16 week program</td>
</tr>
<tr>
<td></td>
<td>Cohort Survey Design</td>
<td></td>
</tr>
<tr>
<td>Orsini 2005. 153</td>
<td>Descriptive case study with satisfaction</td>
<td>Orthopaedic Nurse Transition Program Preceptorship 12 week program</td>
</tr>
<tr>
<td></td>
<td>survey</td>
<td></td>
</tr>
<tr>
<td>Square 2010. 154</td>
<td>Descriptive case study</td>
<td>Newborn and Infant Care Unit Orientation Program Preceptorship 16 week</td>
</tr>
<tr>
<td>Winslow et al 2009. 155</td>
<td>Descriptive case study with longitudinal</td>
<td>ED New Graduate Nurse Internship Program 6 months</td>
</tr>
<tr>
<td></td>
<td>satisfaction survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Qualitative interviews to assess competency</td>
<td></td>
</tr>
</tbody>
</table>
| Haggerty et al 2009. 156| Mixed methods with pre and post survey, case studies | Nurse Entry Practice Program | 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 VI: Articles included in the review under Internship / Residency Programs

<table>
<thead>
<tr>
<th>Authors</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample size</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
</table>
| 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. |
| Halfer et al 2008. 47 Mid western urban, Magnet designated paediatric medical centre, USA | **Paediatric 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 month time point (p=0.046).  
Voluntary turnover averaged 12% compared to 20% for the pre-internship group. |
| 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. |
| Beecroft et al 2008. 48 Six paediatric hospitals, USA | **RN Residency Program** 22 weeks | 7 year prospective longitudinal study | 889 | CNRCS  
OCQ  
PNAS  
SCSCS  
SNCRS  
WOCR  
CWEQ | 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. |
<table>
<thead>
<tr>
<th>Ulrich et al 2010.</th>
<th>Versant RN Residency Program</th>
<th>10 year Longitudinal study</th>
<th>6000</th>
<th>NJSS CDMS WSS LEBS GCS TI</th>
<th>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 measured at 6 months (p=0.001).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various organisations across the USA</td>
<td>1 year Longitudinal cohort study</td>
<td>54</td>
<td>6-DSNP</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Roud et al 2005.</td>
<td>Entry to Practice Program</td>
<td>1 year</td>
<td>54</td>
<td>PERF FG NES CQS STAI</td>
<td>The findings indicated improved clinical competency throughout the program, a decreased sense of threat, and improved communication and leadership skills. The first year cohort’s employment retention rate was 78%.</td>
</tr>
<tr>
<td>Large metropolitan hospital in New Zealand</td>
<td>Residency program</td>
<td>1 year</td>
<td>55</td>
<td>PERF FG NES CQS STAI</td>
<td>Critical thinking decreased slightly and knowledge—significantly increased for all participants.</td>
</tr>
<tr>
<td>Kowalski and 2010.</td>
<td>The “Shadow-A-Nurse” ICU Internship Program</td>
<td>6 weeks</td>
<td>24</td>
<td>WGCTA BKAT NICU-</td>
<td></td>
</tr>
<tr>
<td>2 hospitals Las Vegas, USA</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Centre USA</td>
<td>wires</td>
<td>NACE</td>
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</tr>
<tr>
<td>Owens et al 2001. 52 5 acute hospitals in Inova Health System, USA</td>
<td>Internship 8 weeks</td>
<td>Descriptive case study</td>
<td>75 BPET Retention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altier and Kresk 2006. 53 6 university hospitals USA</td>
<td>UHC/AACN National Post-baccalaureate Nurse residency program 1 year</td>
<td>Prospective longitudinal study</td>
<td>316 MMSS Retention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Krugman et al 2007. 54 6 pilot sites USA</td>
<td>UHC/AACN National Post-baccalaureate Nurse residency program 1 year program</td>
<td>Comparative, descriptive study</td>
<td>unknown CFGNES REF GCONPS MMSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Williams et al 2007. 26 12 sites across the USA.</td>
<td>UHC/AACN National Post-baccalaureate Nurse residency program 1 year program</td>
<td>Longitudinal, descriptive study</td>
<td>679 CFGNES MMSS GCONPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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 program. This was evident for the GCONPS and the MMSS with most differences being statistically significant. Job turnover was low at 12%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goode et al 2009. 55 26 academic medical centre hospitals, USA</td>
<td>UHC/AACN National Post-baccalaureate Nurse residency program 1 year program</td>
<td>Descriptive case study</td>
<td>1,484 CFGNES MMSS GCOPS Turnover REF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Setter et al 2010. 56 University of Kansas Hospital, USA</td>
<td>UHC/AACN National Post-baccalaureate Nurse residency program 1 year program</td>
<td>Cross-sectional descriptive study</td>
<td>202 CS MMSS RFSTS NRSS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| The scores on the NRSS were not significantly related to job satisfaction but were significantly related to reasons for staying. The retention rate was 94% at one year, retention rates decreased after...
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.

| 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 sub-scale
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 sub-scales 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 sub-scales 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 sub-scales; 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)

WSS – Work Satisfaction Survey
No details

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

<table>
<thead>
<tr>
<th>Authors</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample size</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marcum and West 2004.</td>
<td><strong>New Graduate orientation program</strong> 13 weeks.</td>
<td>Descriptive case study</td>
<td>20</td>
<td>PBDS</td>
<td>Statistically significant improvement in critical thinking and interpersonal skills. Retention 89% at 18 months post completion</td>
</tr>
<tr>
<td>3 participating hospitals in the USA</td>
<td>Weekly classroom instruction</td>
<td></td>
<td></td>
<td>ASTD</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>RNCA</td>
<td></td>
</tr>
<tr>
<td>Young et al 2008.</td>
<td><strong>Orientation program</strong> 6 weeks</td>
<td>Descriptive longitudinal study with pre post-test design</td>
<td>25</td>
<td>NRCI</td>
<td>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</td>
</tr>
<tr>
<td>Large teaching hospital in Northern California, USA</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friedman et al. 2011.</td>
<td><strong>Critical Care Nurse Fellowship Program (CCNFP)</strong> 1 year</td>
<td>Retrospective comparative descriptive study</td>
<td>I – 60</td>
<td>Retention data</td>
<td>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.</td>
</tr>
<tr>
<td>2 tertiary hospitals in a multi-hospital healthcare system, Long Island, New York, USA</td>
<td></td>
<td></td>
<td>C - 30</td>
<td>Cost data</td>
<td></td>
</tr>
<tr>
<td>Crimlisk et al 2002.</td>
<td><strong>Orientation float pool program</strong> 4-5 months</td>
<td>Cross-sectional survey</td>
<td>232</td>
<td>Competency Retention</td>
<td>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 &amp; safe practitioners in their practice. Retention - 96% in the 19 months since entering the program</td>
</tr>
<tr>
<td>Allanson and Fulbrook 2010, 60</td>
<td>Perioperative Introductory Program (PIP) Facilities across Queensland, Australia</td>
<td>Descriptive case study with pre post-test design.</td>
<td>11</td>
<td>Competency Confidence Knowledge</td>
<td>At the end of the program 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 then they thought. Actual knowledge had increased.</td>
</tr>
<tr>
<td>O’Malley Floyd et al 2005. 28</td>
<td>Graduate RN orientation t 4 months 1 week of classes. RNs worked with one or more preceptors for times between&lt;7 to &gt;12 weeks</td>
<td>Descriptive Case Study</td>
<td>31</td>
<td>Knowledge Confidence Retention</td>
<td>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%</td>
</tr>
<tr>
<td>Squires 2002. 30</td>
<td>Orientation 8 weeks</td>
<td>Descriptive longitudinal case study</td>
<td>9</td>
<td>Clinical Practice Readiness Self assessment questionnaire</td>
<td>Overall perception of ‘increased confidence’. was not statistically significant due to small numbers. Numbers 1 year retention rate was 77%</td>
</tr>
</tbody>
</table>

| 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 VIII: Articles included in the review under: Mentorship

<table>
<thead>
<tr>
<th>Authors</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample size</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Komaratat and Oumtanee 2009.</td>
<td>Mentorship model</td>
<td>Quasi experimental one group time series approach</td>
<td>19</td>
<td>NCS</td>
<td>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.</td>
</tr>
<tr>
<td>Komaratat and Oumtanee 2009.</td>
<td>One hospital in Thailand</td>
<td></td>
<td></td>
<td></td>
<td>Rp</td>
</tr>
<tr>
<td>Beecroft et al 2006.</td>
<td>Mentorship with a RN Residency Program</td>
<td>Six year evaluation study</td>
<td>318</td>
<td>Self-developed mentorship experience survey</td>
<td>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.</td>
</tr>
<tr>
<td>Beecroft et al 2006.</td>
<td>Acute paediatric setting USA to take out-</td>
<td></td>
<td></td>
<td></td>
<td>Rp</td>
</tr>
<tr>
<td>with mentorship</td>
<td>with mentorship</td>
<td></td>
<td></td>
<td></td>
<td>Rp</td>
</tr>
</tbody>
</table>

NCS - Nursing Competence Scale
### Appendix IX: Articles included in the review under: Preceptorship

<table>
<thead>
<tr>
<th>Authors</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample size</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Vasseur 2009.  
650 bed Midwestern teaching Medical Centre | Nurse transition program  
Varied duration (9-12weeks) | Non-experimental, descriptive correlation study | 75 | CFGNES | The program 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. |
Salford Royal Hospital  
UK | Preceptorship program  
3 week orientation program & 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 program inception was reported. |
| Sorenson and Yankech 2008.  
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 sub-scale of critical thinking skills of the experimental group on the CCTST |
An Acute NHS Trust, UK. | Competency Based Preceptor Program | Comparative intervention (part of an action research study) | I = 10  
C = 10 | SNRG  
VASS | Positive benefits of the program were reported. |

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

<table>
<thead>
<tr>
<th>Author</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beyea et al 2007. 67</td>
<td>12 wk Simulator based Residency program</td>
<td>Mixed method, pilot study</td>
<td>42</td>
<td>NNRREP</td>
<td>Improvement in mean VAS scores for confidence, competence and readiness for practice from between week 2 and 10. The development of skills related to physiological integrity, using technology, synthesizing clinical data and clinical decision making was enhanced through simulation.</td>
</tr>
<tr>
<td>Rural academic medical centre, USA</td>
<td>Three program tracks which include high fidelity simulation (Medical-surgical, paediatric/paediatric critical care and Adult Critical care Weekly simulation &amp; clinical time on unit with preceptor</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Beyea et al 2010. 68</td>
<td>High fidelity Simulator based Residency program</td>
<td>Longitudinal study</td>
<td>260</td>
<td>NNRREP SSCSE Turnover</td>
<td>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. One year turnover was 9.2 % compared to 17% prior to implementing the program. 2 year turnover of 43% was reported pre-residency program compared to a 33.7 % post residency program</td>
</tr>
<tr>
<td>Rural academic medical centre, USA</td>
<td>Four program tracks of various duration, with combined Medical-surgical and Adult Critical care tracks offered Medical-surgical track 12 wks- 40 hrs of simulator based clinical experience Adult critical care additional 8 hours of high fidelity simulation</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Shepherd et al 2007. 69</td>
<td>1 year Graduate Nurse Program with test scenario</td>
<td>Randomised controlled trial</td>
<td>80</td>
<td>CRVT</td>
<td>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=&lt;0.001 No significant difference between the SDLP only group and the PowerPoint group</td>
</tr>
<tr>
<td>Southern Health Hospitals, Melbourne, Australia</td>
<td>Random assignment to 1 of 3 groups; 1) self directed learning package (SDLP) 2) SDLP &amp; 30 minute PowerPoint scenarios or 3) SDLP &amp; 30 minute low fidelity simulation</td>
<td></td>
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</tbody>
</table>

**CRVT**- Clinical Response Verification Tool  
**NNRREP** - Nursing Residents’ Readiness for Entry into Practice  
**SSCSE**- Structured Simulation Clinical Scenario Evaluation
## Appendix XI: Articles included in the review under: Final year students Transition Programs

<table>
<thead>
<tr>
<th>Author</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nash et al 2008. 71</td>
<td>An enhanced model of clinical placement for final year nursing students</td>
<td>Descriptive mixed study-qualitative and survey</td>
<td>29</td>
<td>PFGNPQ</td>
<td>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.</td>
</tr>
<tr>
<td>Two Brisbane Hospitals, Australia</td>
<td>2 semesters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olson et al 2001. 157</td>
<td>Residency program/preceptorship 900hrs preceptored experience in practice across units Normal academic study</td>
<td>Longitudinal mixed methods study</td>
<td>14</td>
<td>6-DSNP NLMAT NLNITT CCTDI</td>
<td>Knowledge improved over time but did not reach significance. Overall, the students started and ended with an excellent level of critical thinking.</td>
</tr>
</tbody>
</table>

**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 XII: Articles included in the review under: Externship Program

<table>
<thead>
<tr>
<th>Author</th>
<th>Intervention</th>
<th>Method</th>
<th>Sample</th>
<th>Outcome Measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cantrell et al 2006.</td>
<td>Externship</td>
<td>Retrospective Cohort Study</td>
<td>193</td>
<td>Retention Rate 1 year 2 years Employment Status Turnover</td>
<td>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.</td>
</tr>
<tr>
<td>Two Brisbane Hospitals, Australia</td>
<td>10 weeks</td>
<td></td>
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</tbody>
</table>
### Appendix XIII: Summary Studies that investigated retention

<table>
<thead>
<tr>
<th>Citation</th>
<th>Program Description</th>
<th>Year Program Initiated</th>
<th>Numbers Participant(s)</th>
<th>Measure</th>
<th>Baseline Year: n (%)</th>
<th>Follow-up Year: n (%)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Case Studies Level 3 with no control group</strong></td>
<td></td>
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<tr>
<td>Collins and Thomas 2005.</td>
<td>Internship Step down Nurse Internship Program 30 hr general orientation classes 19 weeks Didactic Curriculum and Clinical Experiences Three times 6 week rotations</td>
<td>2001</td>
<td>N= 13</td>
<td>RR at 2 yrs</td>
<td>ns</td>
<td>2003 : 11 (85%) 2003 : 1 (8%)</td>
<td>working within unit working within the local healthcare system</td>
</tr>
<tr>
<td>Halfer 2007.</td>
<td>Internship 18 months</td>
<td>2003</td>
<td>N=84</td>
<td>TR at 1 yr</td>
<td>2002 - 29.5%</td>
<td>12.3%</td>
<td>Average per class Voluntary and involuntary</td>
</tr>
<tr>
<td>Almada et al 2004.</td>
<td>Internship 8 weeks Vermont Nurse Intern Project. Those hired into float pool additional uninterrupted month of orientation with Preceptorship</td>
<td>ns</td>
<td>N=46</td>
<td>RR at 1 yr</td>
<td>April 2000 to Aug 2001: 25% June 2000 to July 2001 93%</td>
<td>3 nurses left due to uncontrollable situations</td>
<td></td>
</tr>
<tr>
<td>Smith 2008.</td>
<td>Internship 12 weeks with Preceptorship</td>
<td>ns</td>
<td>N=96</td>
<td>TR at 1 yr TR at 2 yrs</td>
<td>ns : 23% ns : 6% ns : 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Reference</td>
<td>Institution/Program Details</td>
<td>Approach</td>
<td>Year</td>
<td>Sample Size</td>
<td>Duration</td>
<td>Evaluation</td>
<td>Retention Rate at 1 yr</td>
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<tr>
<td>Kooker and Kamikawa 2010</td>
<td>Queens Medical Centre 505 bed level II Trauma Tertiary Care Medical Centre, Honolulu, Hawaii, USA</td>
<td>Graduate Nurse Program New Nurse Fellowship and Clinical Coach Program 24 weeks</td>
<td>2005</td>
<td>N = ns RNs employed for 6 months</td>
<td>RR at 1 yr</td>
<td>2005 : 55.97%</td>
<td>2006 : 51.19%</td>
</tr>
<tr>
<td>Cheeks and Dunn 2010</td>
<td>Martha Jefferson Hospital, Magnet Community Hospital, Charlottesville, Virginia, USA</td>
<td>Graduate retreats alongside usual orientation. 2 * 2 day</td>
<td>Ns</td>
<td>N = ns</td>
<td>RR at 1 yr</td>
<td>2003 : 75%</td>
<td>2004 : 65%</td>
</tr>
<tr>
<td>Fox 2010</td>
<td>St Francis Hospital and Health Centres Indiana, USA</td>
<td>Mentorship 1 year</td>
<td>2006</td>
<td>N = 12</td>
<td>TR within first yr</td>
<td>Pre 2006 : 32%</td>
<td>2006 : 16.6%</td>
</tr>
<tr>
<td>Strauss 2009</td>
<td>Winchester Hospital 229-bed independent community hospital Winchester, Massachusetts USA</td>
<td>Graduate Nurse Program Medical-Surgical New Graduate Nursing Program 12 weeks</td>
<td>2002</td>
<td>Ns</td>
<td>Retention rate post program</td>
<td>ns</td>
<td>1 year - 97%</td>
</tr>
<tr>
<td>Kropkowski and Most 2008</td>
<td>Union Memorial Hospital Baltimore, USA</td>
<td>Externship</td>
<td>2004</td>
<td>N=49 externs</td>
<td>Destination of Externs since program started</td>
<td>ns</td>
<td>1 year average retention rate – 86%</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>Year</td>
<td>N</td>
<td>Turnover rates</td>
<td>Notes</td>
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<tr>
<td>Tampa General Hospital</td>
<td>Two semesters from graduation</td>
<td></td>
<td></td>
<td></td>
<td>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</td>
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<tr>
<td>Tampa, Fl USA</td>
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<tr>
<td>Hayes and Scott 2007. 167</td>
<td>Mentorship 5 weeks</td>
<td></td>
<td></td>
<td>ns</td>
<td>100% at 1 year 100% at 2 years</td>
<td></td>
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<tr>
<td>Hospital within Northeast</td>
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<tr>
<td>Georgia Health Systems</td>
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</tr>
<tr>
<td>Nelson et al 2005. 168</td>
<td>Preceptor program 8 Weeks</td>
<td>2004</td>
<td>N=5</td>
<td>ns</td>
<td>100%</td>
<td></td>
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<tr>
<td>Community based psychiatric</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>mental health agency, USA</td>
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</tr>
<tr>
<td>Pickens and Fargostein 2006.</td>
<td>Preceptor program 18 months</td>
<td>2003</td>
<td>Ns</td>
<td>Retention rates 1 year Turnover Rates (preventable and non preventable)</td>
<td>6 months prior to program Turnover = 23% Retention 77% 10.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community based psychiatric</td>
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<td></td>
</tr>
<tr>
<td>mental health agency, USA</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Zucker et al 2006. 169</td>
<td>Preceptor program 12 months</td>
<td>2002</td>
<td>N=12</td>
<td>ns</td>
<td>2002 – 100% 2003 – 90% Most participants who left relocated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Healthcare Louisville</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Kentucky USA</td>
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</tr>
<tr>
<td>Beaugregard et al 2007. 170</td>
<td>Preceptor program 12 months</td>
<td>2003</td>
<td>N=62</td>
<td>Retention rates 1 year Turnover Rates (preventable and non preventable)</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Program Description</td>
<td>Year</td>
<td>N</td>
<td>NGN</td>
<td>RN Turnover Rate 1 Year</td>
<td>Turnover Rate 1 Year</td>
<td>Notes</td>
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<td>--------------------------------</td>
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</tr>
<tr>
<td>Tampa General Hospital, Tampa, Fla, USA</td>
<td>Graduate Nurse Program Orthopaedic Preceptorship 12 weeks</td>
<td>2004</td>
<td>64</td>
<td>41 N=41 NGN</td>
<td>2004 – 93% 2005 – 95%</td>
<td>Or assumed positions as travel nurses</td>
<td></td>
</tr>
<tr>
<td>Orsini 2005. 153</td>
<td>42 bed inpatient acute orthopaedic specialty unit Large magnet Community Hospital South Eastern USA</td>
<td>2001</td>
<td>3</td>
<td>N=3 NGN</td>
<td>2001 – 22.6% 2001 – 7.7%</td>
<td>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%.</td>
<td></td>
</tr>
<tr>
<td>Hurst and Koplin-Baucum 2003. 171</td>
<td>Mentorship 18 months</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>Turnover rates 1 year ns ns</td>
<td>3.1% decrease in nursing turnover after 1 year of the program</td>
<td></td>
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<tr>
<td>Pine and Tart 2007. 172</td>
<td>Residency Program (UNC/AACN) 1 year</td>
<td>2005</td>
<td>ns</td>
<td>ns</td>
<td>Turnover rate 1 year 2004 – 50% 2005 – 13%</td>
<td></td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Setting</td>
<td>Intervention</td>
<td>Year</td>
<td>N</td>
<td>RR at 1 yr</td>
<td>RR over 3 yrs</td>
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<tr>
<td>Wolf et al 2009</td>
<td>Descriptive Case Studies with control group</td>
<td>Mount Carmel West Hospital Medical / Surgical Critical Care Columbus, Ohio, USA</td>
<td>Internship Program 1 Year</td>
<td>2004</td>
<td>17 - I N=17</td>
<td>RR over 3 yrs ns</td>
<td>2005 :17 (94%) - I 2006 :16 (89%) - I 2007 :18 (72%) - I</td>
</tr>
<tr>
<td>Wolf et al 2009</td>
<td>Descriptive Case Studies with control group</td>
<td>Mount Carmel West Hospital Medical / Surgical Critical Care Columbus, Ohio, USA</td>
<td>Internship Program and New Graduate Support Group 1 Year</td>
<td>2005</td>
<td>37</td>
<td>RR at 1 yr ns</td>
<td>2006: 36 (96%)</td>
</tr>
<tr>
<td>Wolf et al 2009</td>
<td>Descriptive Case Studies with control group</td>
<td>Mount Carmel West Hospital Medical / Surgical Critical Care Columbus, Ohio, USA</td>
<td>Internship Program and New Graduate Support Group (slight format change)</td>
<td>2006</td>
<td>66</td>
<td>RR at 1 yr ns</td>
<td>2007: 65 (98%)</td>
</tr>
</tbody>
</table>
| Retrospective Cohort Studies: Level 3 | Bratt 2009 | 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 program 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%.
Eigsti 2009.
Elkart General Hospital, Critical Care Centre
330-bed community hospital
Elkart, Indiana
USA

| Internship ns | 1998 - 2005 | N=26 | Retention Rates of nurse interns continuing to work in critical care environment
Retention Rates of nurse interns continuing to work as a nurse in the environment |
|----------------|------------|------|---------------------------------------------------------------------|
|                |            |      | 20 (76.9%) continue to work in critical care
26 (100%) still working as a nurse
19 (73.1%) still working within the hospital |

RR = Retention rate
TR = Turnover rate
NGN – New Graduate Nurse
I = Intervention Group
C = Control Group
References


9 O'Shea M, Kelly B. The lived experiences of newly qualified nurses on clinical placement during the first six months following registration in the Republic of Ireland. The Journal of Clinical Nursing. 2007;16(8):1534-42.


22 Cantrell M, Browne A. The impact of a nurse externship program on the transition process from graduate to registered nurse: Part II. Qualitative findings. The Journal for Nurses in Staff Development 2005;21(6):249-58.


64 Vasseur M. Effects of a nurse transition program on retention of graduate nurses. Kentucky: Northern Kentucky University; 2009.


92 Faron S, Poelter D. growing our own. Inspiring growth and increasing retention through mentoring. Nursing for Womens Health. 2007;April/May:139-43.


96 Guhde J. When orientation ends ... supporting the new nurse who is struggling to succeed. The Journal for Nurses in Staff Development 2005;21(4):145-9.


Scott E. The transition of new graduate nurses into the workplace [Ph.D.]. Greenville, NC: East Carolina University; 2005.


152 Nied A. New nurse residency-an evidence based approach Jacksonville: University of North Florida; 2009.


