

Building evidence: an integrative review of chemotherapy education and safety standards

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Cancer Nurses
Society of Australia 



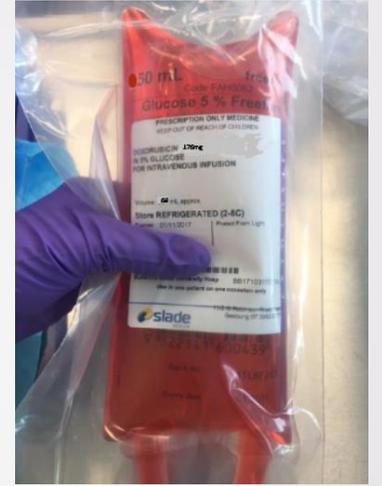
ICCN 2018
International Conference
on Cancer Nursing

SKYCITY AUCKLAND CONVENTION CENTRE
23 – 26 SEPTEMBER 2018
Auckland, New Zealand
www.iccn2018.nz

International
Society of Nurses
in Cancer Care

Background

- Evidence-based guidelines can inform clinical decision-making for health professionals to achieve optimal patient outcomes
- Provide guidance for safe standards and minimal education for health professionals
- The current minimum education and safety requirements for nursing administration of chemotherapy are endorsed by the CNSA
- In 2017, these standards needed updating: CNSA Education committee was awarded a development grant to complete a literature review and update the 2010 position statement.



Process

Protocol developed

- Team decisions on terms
- Published in AJCN

Research question

- What are the minimum education and safety requirements for nurses to administer chemotherapy?

Review of current guidelines

- Current international guidelines reviewed for supporting evidence

Systematic search across databases

- CINAHL, PubMed, the Cochrane Library and Embase

Thematic analysis and scoring



Research question

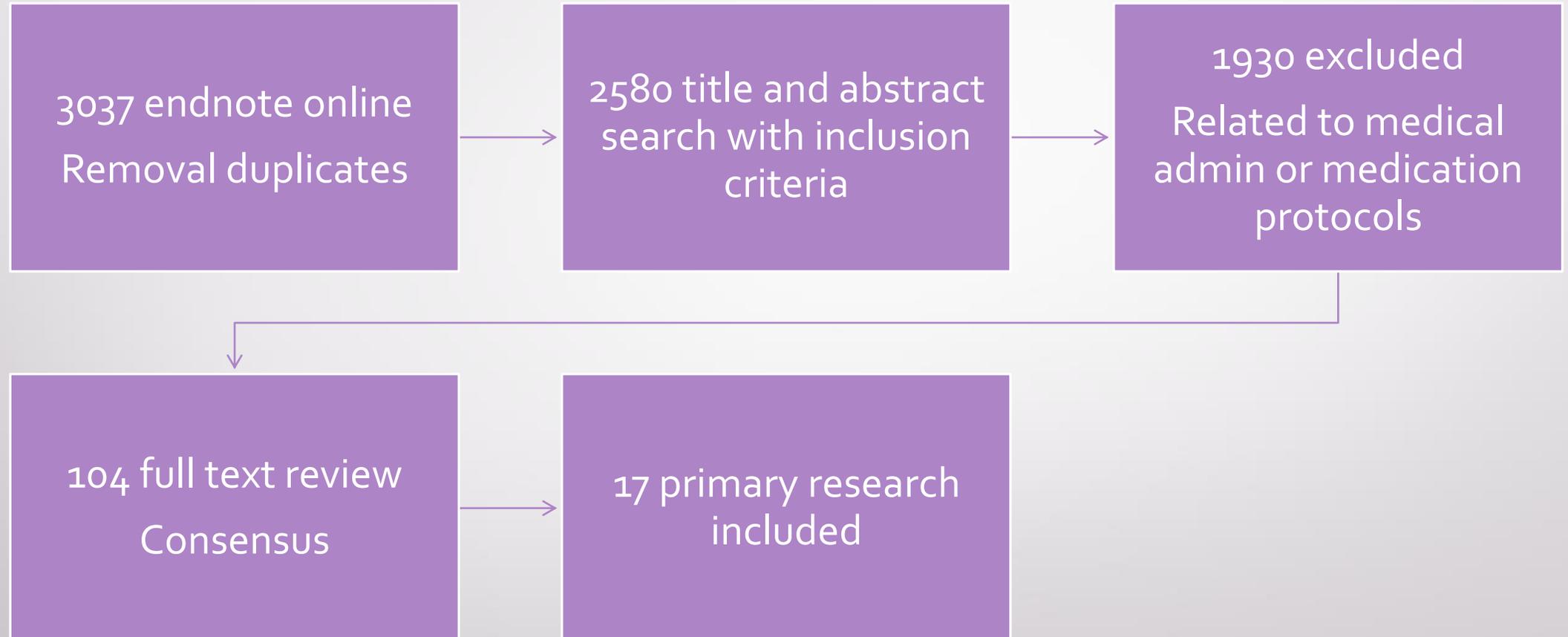
- What are the current practices and minimal standards of education and safety requirements for nurse administration of chemotherapy?

Guidelines reviewed



Component	Key Term	Search Synonyms		Final Search
Population	Nurses registered with AHPRA	<u>Nurses</u> Nurs* "registered nurse" "enrolled nurse" "Oncology nursing" "Cancer nurs*"		<u>Nurses</u> "Nurs*"
Interest	Safety and education	<u>Safety</u> "safe practice" "cytotoxic safety" "safe handling" "cytotoxic waste" "occupational health and safety" "cytotoxic exposure" "occupational exposure"	<u>Education</u> "training" "educat*" "competen*" "skill*" "standards of practice" "guidance" "preparation" "recommendations"	<u>Safety</u> "safe practice" "safe handling" <u>Education</u> "educat*" training "skill*" preparation recommendations
Outcome measures	Nursing administration of cytotoxic drugs	<u>Administration</u> "chemotherapy administration" "cytotoxic drug administration" "anti-neoplastic drug administration" "anti-cancer drug administration"	<u>Cytotoxic drugs</u> Chemotherapy "Anti-cancer drug*" "anti-neoplastic drug*" "cancer medication" "cancer treatment" Mutagenic Carcinogenic Teratogenic	<u>Administration</u> Administration "chemotherapy administration" <u>Cytotoxic drugs</u> Chemotherapy "cancer treatment"

Literature search process



Results

- Most research from USA (12 studies); Australia (one study) Turner & Stephenson, 2015 [Canberra]
- **12 Qualitative studies [all single centre]**
 - Six case studies of practice- units who presented practice change strategies
- **Quality audits**
 - Ashley, et al., 2011 UK failure to communicate errors manager walk around to improve **communication**
 - Coyle, Griffie, Czaplewski, 2014 USA 90% reduction in errors since **assessment tool education**
 - Looper, et al., 2016 USA **standardised practices** reduced errors priming lines SBAR
- **Chart audit**
 - Markert, et al., 2009 Germany medication errors lead to **computerised orders**
 - Sheridan-Leos, 2006 USA chart audit lead to promotion of **culture of safety**
 - Turner & Stephenson, 2015 Australia Baseline audit highed need for change **education and documentation** 7



Three quantitative studies

- **Boiano, Steege & Sweeney, 2014** (USA) – 2069 health professionals, 98% nurses
 - 62% primed line with saline
 - PPE use
 - 85%, wore 1 glove, 58% chemo gown, 12 % eye protection
 - **71% spills attaching line**, 8:10 spill<5ml, 19% medical surveillance
- **Huertas-Fernandez, et al., 2017** (Spain) – 500 patients, one hospital
 - Evaluation of patient safety in regards to chemotherapy administration- medication errors reduced with **barcode system**
 - 43% errors before implementing safe guards 27% after practice change
- **Villarini et al., 2011** (Italy) 52 exposed 52 controls
 - Measurement of surface equipment and clothing contamination. Staff urine and blood examined for DNA damage.
 - **Day oncology nurses showed highest extent of DNA damage.**
 - Wearing personal protective equipment has been associated with a statistically significant decrease in the extent of primary DNA damage.



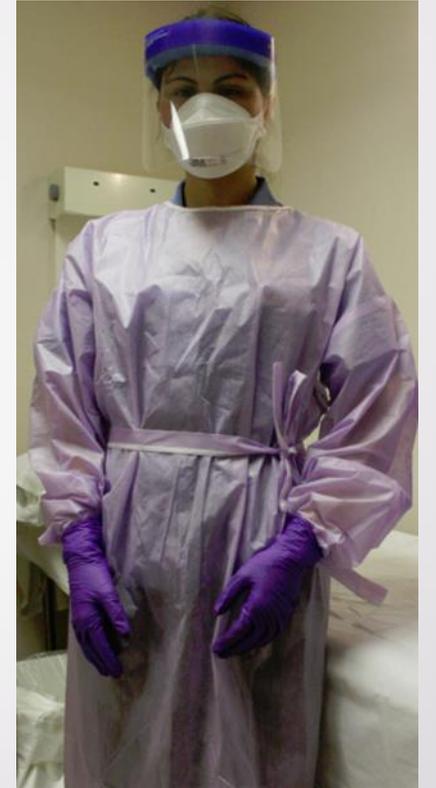
Two mixed method studies

- **Sheriden-Leos, 2007 (USA)** 1 unit, 24 staff
 - Survey and interview of experienced and non experienced nursing staff re risk evaluation
 - Developed **model for novice nurses** to reduce errors
 - Standardised orders, education and competency evaluation
- **Prakash, et al. 2014 (Canada)** 1 unit 37 nurses
 - Survey and interview interruptions during medication administration
 - **Interruptions during medication administration increased errors**
 - Visual timers, speak outloud checks, reminder signage
 - Significant reduction in errors post intervention



Focus on patient safety

- **All studies had a focus on patient and nurse safety**
- Strong focus on **organisational requirements** to facilitate nurses ability to provide safe administration
- **Several process safeguards reduced administration errors:**
 - Standardised computer-generated chemotherapy orders, protocols and documentation
 - Use of bar codes and electronic labels for chemotherapies
 - Use of closed system transfer devices
 - Use of time-out procedure, speak out-loud practices, quick reference checklists and quiet zones for medication administration
- **Provide patient-mediated chemotherapy education**
 - Healthcare rights and the benefits, risks and potential side effects of cytotoxic drug treatments prior to chemotherapy administration



Themes

- Governance safety and quality practices
 - Risk assessments: completed yearly audits by managers
 - Closed systems: this was an important aspect for the nurse and patient safety
 - Standardised protocols to reduce errors
- Process safeguards
 - Computer-generated standard orders, guidelines and audits
 - Quiet zone, speak out loud practices
 - Patient and family education and inclusion in process to enable consumer checking
- Communication
 - Identification of high risk periods: Nurses able to challenge high risk periods
 - Engaging in speak out-loud chemotherapy checks at the bedside



Themes

- Interdisciplinary collaboration
 - Clarity of roles, accountability and ability to escalate concerns
 - Who was responsible for what? How to challenge the order
 - Maintaining a team approach to promote patient safety
 - Team meeting with consumer included
- Education
 - Simulation and blended learning to maintain competency across areas
 - Annual simulation competency, standards maintained with SIM in non oncology areas
 - National approach to education standards for administration



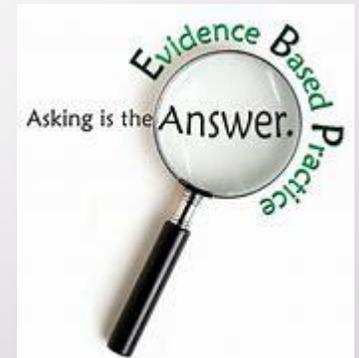
Implications for practice & research

- **Focus on patient safety** leads to:
 - Better patient and family outcomes
 - Safer health professional environment
- Strategies for improving patient and nurse safety
 - Standard computer-generated protocols, bar codes [medication and patient]
 - Nurse and consumer education
- **Simulation as an educational strategy**
 - Increases health professionals knowledge and engagement in safe practice
- Nurses need to voice their concerns, be clear communicators with colleagues and consumers
- Need for further research exploring current practice and minimum education and safety requirements in relation to nurse administration of chemotherapy



Conclusion

- **Lack of high level evidence**
- **Key activities identified** that are associated with **safe nurse administration** of chemotherapy support positive patient outcomes
- Need for **evidenced-based standards** across chemotherapy administration
- **Focus on patient safety** ensure patient, family and nurse safety, meets current Australian standards for health and safety
- **Development of protocol** for future literature reviews and updating of CNSA position statement regarding chemotherapy administration
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Thank you and questions

- Acknowledgements to special project team
 - Leisa Brown-West, Kylie Ash, Sarah Northfield, Catherine Barratt, Corrie Miles, Karen Munton
- CNSA research grant
- Research assistant, Meghan Konda who conducted all the literature searches

