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Oncology Nurse Hazardous Drug Safe Handling Competencies

Jacob N. Woller
University of Vermont

Oncology Nurse Hazardous Drug Safe Handling Competencies: A Quality Improvement Project

Jake Woller DNPc, RN BS
Advisor: Stuart Whitney, EdD RN CNL
Site Mentor: Elsa Fennelly, RN BSN

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Background

- Healthcare workers are potentially exposed to hazardous drugs (HDs) in the workplace, particularly in settings such as oncology units which use antineoplastic treatments.
- Occupational exposure to HDs increases the risk of adverse health effects such as liver and kidney damage, cancer, and infertility (Elshaer, 2017; Friese et al., 2019; OSHA, 2017)
- Training on proper personal protective equipment use (PPE) is one control to prevent exposure of healthcare workers to hazardous drugs.

Local Problem

- Academic medical center
  - Inpatient oncology unit
- Uncertain PPE use with HCWs handling HDs
- Uncertain level of HD exposure
- Need for updated policies on HD administration and competency

Purpose

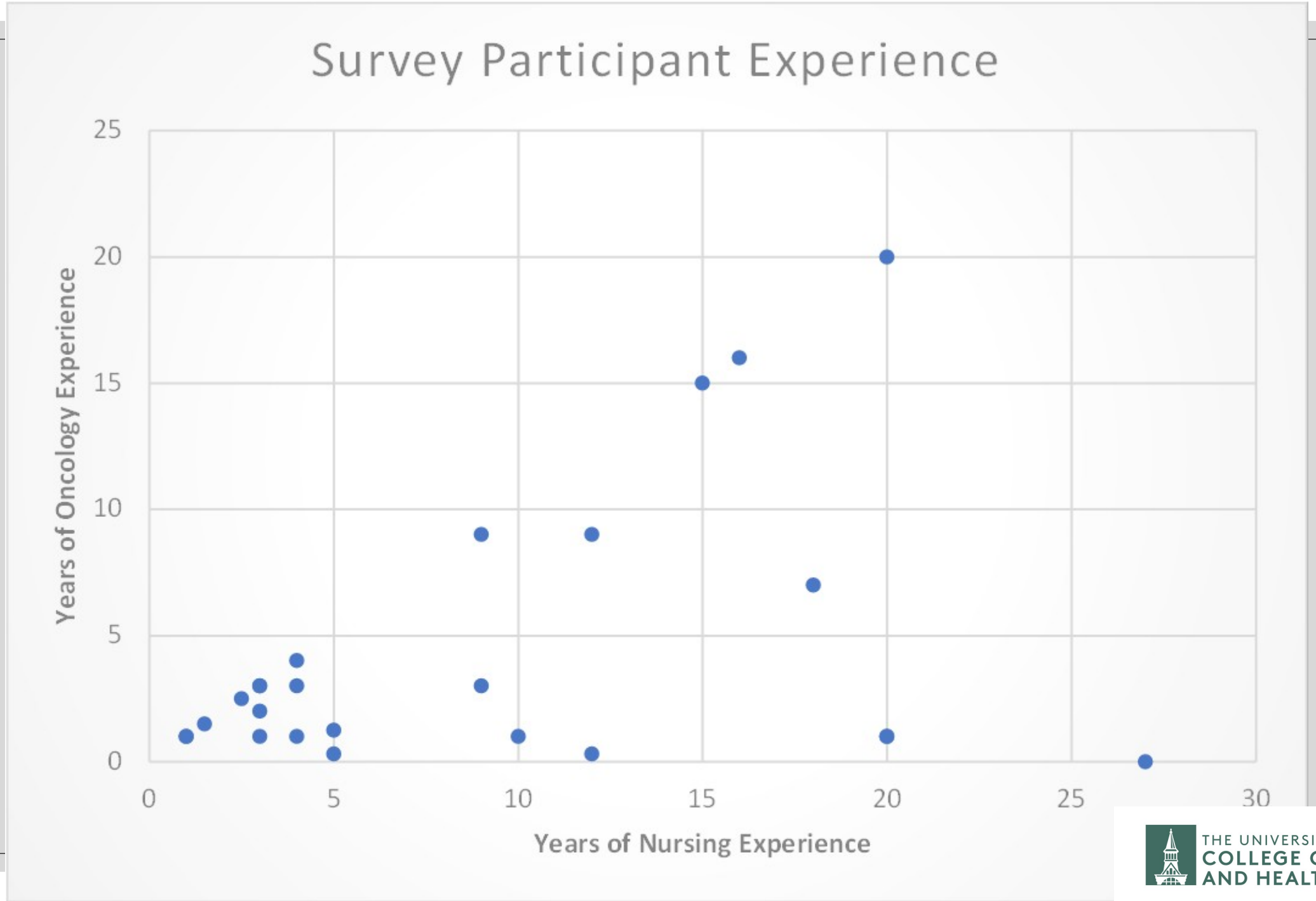
- Decrease the risk of occupational exposure to HDs in the oncology care
- To develop and evaluate the effectiveness of a hands-on hazardous drug competency
- Evaluate the PPE practices of healthcare workers who are frequently involved with carcinogenic hazardous drugs.
- Cross examine competencies, established policies, and nursing self report and identify areas of improvement in regulations

Methods

- Development of a hands-on HD annual competency for nursing staff on an inpatient hematology oncology unit
- 2 months after the competency, a voluntary follow-up survey was distributed to evaluate PPE practices with hazardous drugs and hazardous drug contaminated excreta based on self-report.
- Comparison between PPE use in the competency and survey was performed with an unpaired t-test in Excel
- A Spearman's rank correlation coefficient was used to determine any correlation between survey demographics and survey responses in Excel

Results: Demographics

- Competency Sample:
  - All staff (N=71) completed the hands-on annual competency
  - 40 nurses completed the HD administration competency
  - 31 nurses and LNAs completed the HD contaminated excreta competency
- Survey Sample:
  - 21 staff members fully completed the quantitative survey
    - 14 completed administration questions
    - 20 completed the HD contaminated excreta questions
  - Only 6 completed the qualitative section
  - Experience of Respondents:
    - 1-27 years of general nursing experience (mean 9.1 years)
    - 0-20 years of oncology experience (mean 4.3).
  - 50% of surveyed staff worked with 3-4 patients on HD precautions in a typical shift,
  - 41% of staff working with 1-2 patients on HD precautions per shift.



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Results

- When compared to 100% PPE compliance demonstrated in the hands-on competency, survey respondents reported significant differences in administration:
  - Using gloves while touching the IV pump ($p<.001$),
  - less use of the appropriate HD signs and labels ($p<.01$)
  - less use of a disposable pad beneath the administration space ($p<.01$).
- When compared to 100% PPE compliance demonstrated in the hands-on competency, survey respondents reported significant differences in handling HD excreta:
  - hazardous drug glove use ($p<.001$)
  - double glove use ($p<.0001$)
  - chemotherapy gown use ($p<.00001$)
  - doffing PPE into a chemotherapy bucket ($p<.0001$)

Table 1: Differences between Administration Competency and Survey PPE Compliance

Category	Percent used in Competency Mean (N=40)	Percent used in survey Mean (N=13)	t-stat	P value
Closed System Transfer Device (CSTD)	100	94.2	1.39	0.095
Chemotherapy Gloves	100	94.2	1.39	0.095
Double Gloves	100	92.3	1.30	0.109
Chemo Gown	100	91.7	1.30	0.109
Using gloves while touching pump	100	78.8	3.81	0.001*
Labelling pump with chemotherapy stickers	100	86.5	2.50	0.013*
Disposable chuck under administration site	100	86.5	2.50	0.013*

Table 2: Differences between Excreta Competency and Survey PPE Compliance

Category	Percent used in Competency Mean (N=31)	Percent used in survey Mean (N=20)	t-stat	P value
Chemotherapy Gloves	100	65.0	3.98	0.0003*
Double Gloves	100	57.5	4.77	0.00006*
Chemo Gown	100	42.5	1.30	0.00002*
Doffing into Chemo Bucket	100	56.2	1.30	0.0001*

Qualitative responses

- “There have been mixed messages about when exactly PPE is required for disposal of excreta and just what PPE would be appropriate”
- “The answers to my questions were for hazardous drugs given IV.... Some questions would have been answered differently for the many PO medications that are now labelled hazardous.”
- “I think the new protocol is extraordinarily disjointed from actual practice. The list of drugs that classify as hazardous is extensive …As the policy is currently written, we’ve been set up to fail as I see it”

Limitations

- Single unit at an academic medical center
- Self reported PPE use
- Low response rate of qualitative survey

Conclusions

- The hands-on skills competency demonstrated staff have the knowledge and proficiency to handle hazardous drugs safely
- Self reported behaviors showed a lower level of PPE compliance in comparison to hospital policies and procedures
- Several factors may contribute to lower PPE use, such as access to PPE, perceived barriers, or lack of perceived risk with handling excreta.

Implications

- Staff demonstrated excellence in the hands-on competency. This policy can be translated to other units and skillsets
- More research is needed to explore barriers to compliance with PPE use in handling hazardous drugs, particularly with contaminated excreta.
- If nurses in a specialty highly involved with HDs endorse a mismatch between policy and practice at this facility…
- How safe are nurses on other units less familiar with HDs?

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