

# Frequently Identified Infection Control Gaps in Outpatient Hemodialysis Facilities

Kate Tyner, BSN, RN, CIC<sup>1</sup>, Regina Nailon, RN, PhD<sup>1</sup>, Teresa Fitzgerald, RN, BSN, CIC<sup>1,2</sup>, Margaret Drake, MT, ASCP, CIC<sup>1,2</sup>, Sue Beach, BA<sup>1</sup>, Elizabeth Lyden, MS<sup>3</sup>, Terry Micheels MSN, RN, CIC<sup>1</sup>, Mark E. Rupp, MD<sup>1,4</sup>, Michelle Schwedhelm, MSN, RN<sup>1</sup>, Maureen Tierney, MD, MSc<sup>2</sup>, Muhammad Salman Ashraf, MBBS<sup>1,4</sup>

(1) Nebraska Infection Control Assessment and Promotion Program, Nebraska Medicine, Omaha, NE, (2) Division of Epidemiology, Nebraska Department of Public Health, Lincoln, NE; (3) College of Public Health, University of Nebraska Medical Center; (4) Division of Infectious Diseases, University of Nebraska Medical Center, Omaha, NE

## BACKGROUND

- Nebraska (NE) Infection Control Assessment and Promotion Program (ICAP) is supported by the Nebraska DHHS Healthcare Associated Infections (HAI) program via a CDC grant and works to assess and improve infection prevention and control programs in all types of healthcare facilities.
- Little is known about infection prevention and control programs in outpatient hemodialysis centers (OHDC). This project examined the frequency of infection control (IC) gaps and the factors associated with them in OHDC.

## METHODS

- NE ICAP conducted on-site assessments and observations of infection prevention and control programs (IPCP) in 15 OHDC from June 2016 to March 2018.
- The CDC Infection Prevention and Control Assessment Tool for OHDC was used for on-site assessments for hand hygiene, dialysis station cleaning, cannulization-decannulization, catheter connect-disconnect, and dialysis injectable medications.
- A total of 124 questions, 76 of which represented best practice recommendations (BPR) were analyzed in 10 IC domains.
- Gap frequencies were calculated for each BPR. Fisher's exact test was used to study the association of the identified gaps with typical patient census in the facilities (all dialysis patients cared for by facility at time of assessment) and corporate affiliation (CA).

## RESULTS

- Facility characteristics are displayed in Table 1.
- A median of 64 (range 57-70) of 76 BPR were practiced by OHDC or were non-applicable to them (data not shown). The IC Program and Infrastructure domain had the highest frequency of IC gaps (Figure 1).
- 19 of the 76 best practices were lacking in at least 20% of the dialysis centers (Table 2).
- Several factors were significantly associated with presence/absence of specific BPR:
  - None of the OHDC with no corporate affiliation had shared computer charting terminals as compared to 64% of OHDC with CA (p=0.08).
  - A higher proportion of smaller OHDC (sOHDC) had work exclusion policies that encourage reporting of illness without any penalty as compared to larger OHDC (75% vs.0, p=0.007).
  - A higher proportion of sOHDC provided space and encouraged persons with symptoms of respiratory infection to sit as far away from others as possible in non-clinical areas (63% vs. 0, p=0.03).
  - A majority of OHDC with no corporate affiliation provided space and encouraged persons to maintain distance with others when having symptoms of respiratory infection as opposed to a minority of OHDC with CA (75% vs. 18%, p=0.08).
- The most frequent recommendations for practice changes needed to improve IC gaps across the 15 OHDC are displayed in Table 3.

Table 1. Characteristics of Outpatient Hemodialysis Centers

Facility Characteristics (N = 15)	All Outpatient Hemodialysis Centers	Chain (n = 11)	No Chain (n = 4)
Hospital affiliation - n (%)	3 (20)	0	3 (20)
Typical patient census < 50 - n (%)	8 (53)	4 (27)	4 (27)
Typical patient census > 50 - n (%)	7 (47)	7 (47)	0
Presence of trained infection preventionist - n (%)	12 (80)	11 (73)	1 (7)

Table 2. Frequencies of Implementation of Best Practices that were Identified as Lacking in at least 20% of Outpatient Hemodialysis Centers

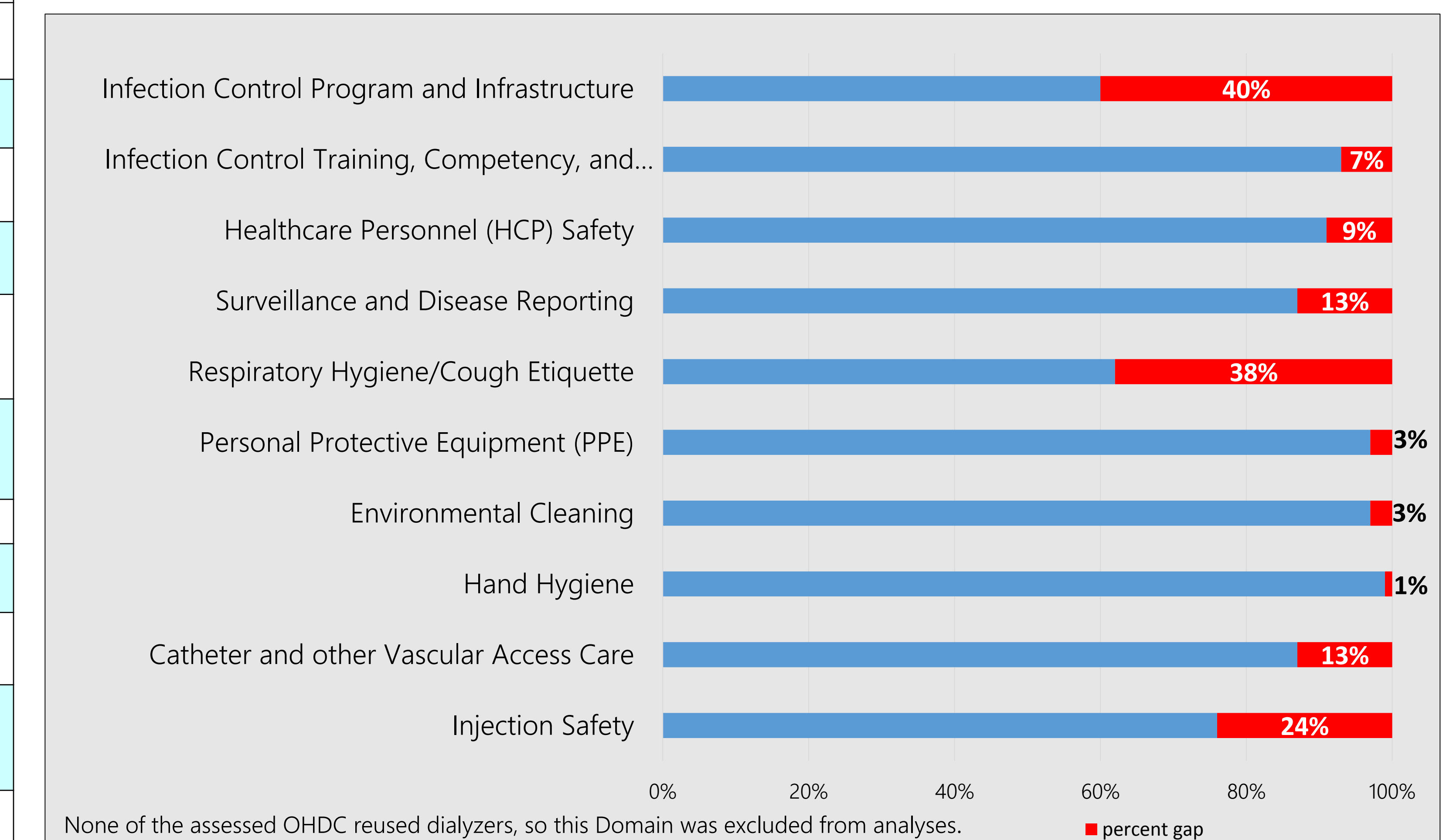
		% All OHDC with practice in place	% Small OHDC with practice in place	% Large OHDC with practice in place	% OHDC with Corporate affiliation with practice in place	% OHDC with no corporate affiliation with practice in place
Infection Control Policies and Infrastructure	The person in charge of infection control at the facility is certified in infection control.	0%	0%	0%	0%	0%
	The facility is participating in their ESRD network healthcare-associated infection quality improvement activity.	53%	37%	71%	45%	75%
	The facility has participated in the CDC Dialysis BSI Prevention Collaborative.	33%	50%	14%	27%	50%
	In the past 2 years, the facility has participated in other intensive program focused on HAI prevention.	20%	25%	14%	27%	0%
	The facility has a system for early detection and management of potentially infectious persons at initial points of patient encounter.	67%	75%	57%	73%	50%
	There are signs posted in patient areas within the facility that encourage patients to take an active role in and express their concerns about facility infection control practices.	7%	12%	0%	0%	25%
	Facility has shared computer charting terminals.	53%	62%	43%	36% *	100% *
	The distance separating adjacent dialysis treatment stations is > 6 feet.	0%	0%	0%	0%	0%
	The facility has an isolation room that is available for isolation of conditions other than hepatitis B.	64%	37%	71%	64%	25%
Healthcare Personnel Safety	The facility has work-exclusion policies that encourage reporting of illnesses and do not penalize with loss of wages, benefits, or job status.	40%	75% **	0% **	27%	75%
	The facility has a system in place to communicate infection or colonization with a MDRO to other healthcare facilities upon transfer.	67%	75%	57%	64%	100%
Surveillance and Disease Reporting	The facility knows how to report clusters of infections, adverse events, or a new hepatitis B/C case to public health.	73%	62%	86%	82%	50%
	In non-clinical areas: the facility has signs posted at entrances with instructions to patients with symptoms of respiratory infection to: Cover their mouth/nose when coughing or sneezing. Use and dispose of tissues. Perform hand hygiene after contact with respiratory secretions.	47%	37%	57%	36%	75%
Respiratory Hygiene/Cough Etiquette	In non-clinical areas: the facility provides space and encourages persons with symptoms of respiratory infection to sit as far away from others as possible.	33%	63% **	0% **	18% *	75% *
	The facility offers facemasks upon facility entry to patients with symptoms of respiratory infection.	80%	87%	71%	64%	75%
	In clinical areas: the facility has the ability to separate symptomatic patients (by at least 6 feet) from other patients and their stations during dialysis treatment.	33%	37%	29%	36%	25%
Catheter / Vascular Access Care	The facility routinely applies an antibiotic ointment or povidone-iodine ointment to catheter exit sites during dressing changes.	13%	25%	0%	0%	50%
	The facility uses a clean room that is physically separate from the treatment area for storage and preparation of injectable medications.	20%	12%	29%	18%	25%
Injection Safety	The facility has a policy/procedure for routinely cleaning surface(s) where injectable medications are prepared.	53%	75%	29%	45%	75%

Red font indicates practice was not in place in at least 50% of OHDC  
\* indicates statistically significant association between corporate and no corporate affiliation  
\*\* indicates statistically significant association between small (<50 typical patient census) and large OHDC (> 50 typical patient census)

Table 3. Most Frequent Recommendations Provided to Hemodialysis Centers for Gap Mitigation

Specific Recommendation for Practice Change to Mitigate Infection Control Gaps	Number of sites where this was recommended (%)
Audit hand hygiene with additional training based on HH gaps observed	12 (80)
Apply antibiotic ointment with dressing changes as a CDC Core Intervention	11 (73)
Audit dialysis station cleaning and provide training and tools specific to gaps observed	11 (73)
Implement work exclusion policies	11 (73)
Implement a cleaning protocol for the medication preparation area	9 (60)
Post patient engagement posters relating to infection control	9 (60)
Design and implement policies for early detection of potentially infectious patients	9 (60)

Figure 1. Frequency of Infection Control Gaps within Individual Infection Control Domains



## DISCUSSION

- Important IC gaps exist in OHDC and require mitigation.
- Although 80% OHDC reported their infection preventionist received IC training, none of the 15 OHDC IPs were certified in infection prevention and control (i.e., CIC).
- Informing OHDC of existing IC gaps may help in BPR implementation.
- Facility characteristics may inform the type of mitigation that is necessary and the strategies used for implementation.
- Larger scale studies should focus on identifying factors that promote success and pose barriers to certain BPR implementation in OHDC.
- NE ICAP is helping OHDC with gap mitigation by development of practice tools and resource sharing through their website and also on one-to-one basis.
- NE ICAP is also partnering with the Nebraska Infection Control Network and the NE DHHS HAI Program to develop and offer a training course on primary infection prevention to all infection preventionists and/or designated infection control personnel that will include guidance on promoting best practices in OHDC.

## DISCLOSURE

- The authors of this study have no relevant conflicts of interest to disclose related to the content of this poster.

## REFERENCES

- Centers for Disease Control and Prevention Infection Control Assessment Tool Hemodialysis Facilities <https://www.cdc.gov/infectioncontrol/pdf/icar/dialysis.pdf>
- Centers for Disease Control and Prevention Audit Tools and Checklists <https://www.cdc.gov/dialysis/prevention-tools/audit-tools.html>