Hazardous Drug and Antibiotic Residue Surface Contamination

Is there a need to reduce exposure?

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Surface Contamination with Hazardous Drugs

Background

- Exposure to Hazardous Drugs (HD) occurs during compounding and administration activities and is an established risk.
- Guidance involving enhanced cleaning procedures have been established.
- Despite guidance, HD surface contamination continues to be detected during routine and exploratory evaluations.
- Closed System Transfer Devices (CSTDs) have been demonstrated to reduce or eliminate the potential for HD surface contamination.
- HD surface contamination monitoring by surface wipe sampling is an accepted process for evaluating presence of HD surface contamination.

Objective

- The objective of this study was to measure the presence of HD surface contamination on multiple surfaces in three departments in order to determine the effectiveness of current cleaning procedures and enhanced controls (CSTDs).
- Multiple surfaces were sampled and analyzed for paclitaxel (PAC), cyclophosphamide (CP), gemcitabine (GEM), doxorubicin (Dox), methotrexate (MTX), and 5-fluorouracil (5FU).
- Surfaces were sampled at multiple timepoints (Trial 1 and 2: April 22nd, Trial 3: July 2nd, Trial 4: December 29th, 2021).
- Following Trial 1 and 2, additional cleaning measures were added to clean the “scanner” surface.
- A CSTD (ChemoClave, ICU Medical) was used in the preparation of HDs.

Methods

- HD surface contamination was low or not detected in 282/288 samples tested during the evaluation (indicated in green).
- Previous and current cleaning procedures, along with the use of a CSTD (ChemoClave, ICU Medical), were effective in maintaining a low level of HD surface contamination.
- Guidance, involving the use of a CSTD and effective cleaning, has proven to be effective measures to minimize or prevent the unintentional exposure of healthcare workers to HD surface residues.

Discussion and Conclusion

- High levels of AB surface contamination were detected consistently in all wards.
- Contamination was generally in line with the utilization of the respective AB.
- It should be noticed that the amount of ABs handled (dosages and numbers) are higher than for HDs.
- The results illustrate that current institutional cleaning may not be sufficient and controls or guidance require to be updated to reduce healthcare workers and patients to potentially harmful AB surface residues.

Surface Contamination with Antibiotics

Background

- Antibiotics (ABs) usage and preparation occurs in many departments, including hospital pharmacies and the areas of administration.
- Guidance involving the enhanced cleaning procedures, or use of secondary controls by CSTDs have not been established.
- Published data relating to the prevalence of AB surface contamination in hospital systems is limited.
- AB surface contamination may lead to the proliferation of potentially drug resistant organisms in the pharmacy and administration areas.

Objective

- The objective of this study was to measure the presence of AB surface contamination on multiple surfaces in six wards in order to determine if there was a need to incorporate enhanced cleaning procedures and potentially the implementation of a CSTD.

Methods

- Multiple surfaces were sampled and analyzed for vancomycin (VAN), cefotaxime (CEF), ceftriaxone (Cef), benzylpenicillin (BEN), amoxicillin (AMO), meropenem (MERO), piperacillin (PP), and fluoroquinolone (FLU).
- Surfaces were sampled at multiple timepoints (Trial 1 and 2: April 22nd, Trial 3: July 2nd, Trial 4: December 29th, 2021).
- Following Trial 1 and 2, enhanced cleaning measures were introduced to address the widespread AB surface contamination throughout.
- A CSTD was not used in the preparation or administration of ABs.
- For comparison, AB surface contamination is presented with the same color indication as for HD surface contamination. However, Alert and Action levels for ABs are not set yet and could differ from the HDs.

Discussion and Conclusion

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- Contamination was generally in line with the utilization of the respective AB.
- It should be noticed that the amount of ABs handled (dosages and numbers) are higher than for HDs.
- The results illustrate that current institutional cleaning may not be sufficient and controls or guidance require to be updated to reduce healthcare workers and patients to potentially harmful AB surface residues.

Results

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<tr>
<th>Department</th>
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<th>Trial 2</th>
<th>Trial 3</th>
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<td>1.52</td>
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References

- “Alert and action levels for surface contamination with HDs in The Netherlands” (https://www.dokterhoeve.nl/fileadmin/user_upload/documents/Statistieken/AlertenStrategie-HD.pdf)
- This study was financially supported by ICU Medical USA.