APPLICATION OF HAZARD VULNERABILITY ANALYSIS TO EVALUATE POTENTIAL RISKS OF PHARMACY COMPOUNDING

R. GIAMMONA 1, P. POLIDORI 2
1 SSFO UNIVERSITY OF MESSINA, 2 IRCCS ISMETT, Clinical Pharmacy - Palermo, Italy

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Background
Hazard Vulnerability Analysis (HVA) is a method that provides a systematic approach to identify the hazard and the direct and indirect effects that they have on the hospital pharmacy.

Purpose
The objective of this study was to identify the phases at greatest risks, to find solutions to reduce the risk level and to enhance patient safety.

Material and Methods
We have adapted this method to all the stages of drug compounding. We have analyzed 45 different events concerning the preparations of drugs. For each process, a score of 0 to 3, was assigned for the following items:
- Probability of the event happening;
- Magnitude of impact divided into: Human impact (probability of death or injury); Property impact (physical losses and damages) and Business impact (interruption of services);
- Mitigation factors divided into: Preplanning, internal response and external response.

The severity of the event determined using the difference between the magnitude of impact and the degree of mitigation. The risk was obtained by multiplying the probability by the severity.

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PROBABILITY</th>
<th>SEVERITY = (MAGNITUDE – MITIGATION)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HUMAN IMPACT</td>
<td>PROPERTY IMPACT</td>
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<td></td>
<td>Possibility of death or injury</td>
<td>Physical losses and damages</td>
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<tr>
<td>SCORE</td>
<td>0 = N/A</td>
<td>1 = Low</td>
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</tbody>
</table>

The risk due incorrect labeling was 56%.
The risk related to the preparation of the drug that caused interactions with other drugs administered to the patient was 52%.
The risk related to the lack of prescription and, consequently, preparation made after a doctor’s call, was 52%.
The risk related to the error in the choice of the solvent to be used was 52%.
The risk related to the preparation of the drug that caused allergy to the patient noted in the electronic medical record was 56%.
The risk due to the lack of prescription and, consequently, preparation made after a doctor’s call, was 52%.
The risk related to the preparation of the drug that caused allergy to the patient noted in the electronic medical record was 56%.

Results
Only 6/45 (13.3%) of all phases showed a risk of more than 50%.

Conclusions
Based on these results, we have identified some solutions to reduce the risk: the double check carried out by two different people could solve the risk due incorrect labeling; the software used by pharmacist can be improved to reduce the risk related to the patients’ allergy or cross-reaction. Finally, errors can be reduced through clearer and specific sessions of training for the compounders.