SAFER HANDLING OF ORAL HAZARDOUS DRUGS IN HOSPITAL UNITS


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BACKGROUND

After the National Institute for Occupational Safety and Health (NIOSH) classified Hazardous Drugs (HD), it was deemed necessary to make healthcare workers aware of the risks associated with handling HD in their daily work to mitigate them.

PURPOSE

Analyzing oral HD handling activities to make handling recommendations based on the lowest dust-inhalation risk and to ensure the safety of healthcare workers in hospital units.

MATERIAL AND METHODS

1. Oral HD were classified in two categories: group 1&2 and group 3 according to NIOSH grouping system.
2. Oral HD handling activities in hospital units based on their dust-inhalation risk to the workers were ranked and decisions were taken accordingly:

   - Marketed liquid formulations is strongly preferred
   - Crushing tablets using closed systems is preferred over compounding medication due to shorter administering periods in hospital units
   - Opening capsules and sachets must be avoided

   If no marketed liquid alternatives were found, research on crushing and dissolving tablets techniques was conducted.

   Lacking crushing techniques, academic research on compounding oral HD was carried out.

   For the remaining oral HD, information was requested to manufacturers.

   MARKETED LIQUID FORMULATIONS

RESULTS

59 Active Pharmaceutical Ingredients (API) from group 1&2 were analyzed

<table>
<thead>
<tr>
<th>Marketed liquid formulation</th>
<th>Techniques on crushing and dissolving tablets</th>
<th>Compounding oral information</th>
<th>No information</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 API</td>
<td>21 API</td>
<td>13 API</td>
<td>12 API</td>
</tr>
<tr>
<td>abacavir, cyclosporine, crizotinib, phenytoin, megestrol, mycophenolate mofetil, mycophenolic acid, nevirapine, oxcarbazepine, trametinib, tofacitinib, valganciclovir, and zidovudine</td>
<td>abiraterone, axitinib, busulfan, dasatinib, entecavir, enzalutamide, everolimus, exemestane, flutamide, imatinib, letrozole, medroxyprogesterone, melphalan, mercaptopurine, methimazole, methotrexate, mitotane, ponatinib, rasagiline, sorafenib and tamoxife</td>
<td>azathioprine, capecitabine, carbamazepine, cyclophosphamide, chlorambucil, etoposide, hydroxyurea, procarbazine, spironolactone, sunitinib, tacrolimus, thalidomide and topotecan</td>
<td>bexarotene, bosutinib, cabozantinib, fingolimod, fludarabine, ixazomib, lenalidomide, nilotinib, pazopanib, pomalidomide, regorafenib y vinorelbine</td>
</tr>
</tbody>
</table>

No information was obtained for 20,3% API for which avoiding their handling and seeking other therapeutic alternative is advised. For the remaining 79.7% API, recommendation priority is given to the lowest dust-inhalation risk handling alternative.

CONCLUSION

Save handling alternatives were found for most of the analyzed oral Hazardous Drugs in the sample with potential to minimize workers handling risk and ensures safety measures in hospital units.

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