Pharmaceutical waste disposal in Portuguese households

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Funded by:
Management of Medicine Waste and their packaging
Why an autonomous system for the collection and treatment of waste medicines?

UNUSED AND EXPIRED MEDICINES REQUIRE A SAFE COLLECTION PROCESS, AVOIDING:

- Contamination when the waste medicines area released into the environment
  - together with household waste
  - WC and sanitation to the wastewaters.
  - Wastewater treatment plants are not efficient enough to destroy medicine waste
- Unused medicines should not be "accessible" to children as any other household waste
**VALORMED** IS RESPONSIBLE FOR THE MANAGEMENT OF PACKAGING WASTE AND DISCARDED MEDICINES In Portugal since 1999

In Europe a few companies are acting as VALORMED in these field, e.g.:

- **SIGRE (SPAIN)** - SYSTEM implemented since 2001
- **Cyclamed (FRANCE)** - system with more than 20 years of implementation
Medicines Waste Collection in Europe

Source: K. Kummerer, M. Hempel (eds.) Green and Sustainable Pharmacy, Sprenger Verlag, Berlin, 2010
The problem…

- Amount of medicine waste and packaging collected is low compared to the amount of waste medicines expected to arise, considering the amounts sold.

- It is important to find out what is currently happening to this waste, namely:
  - If it is being stocked by the families
  - How much is taken back to the pharmacy and how much is disposed differently
Find out how medicines and their waste are managed at household level in Portugal

- **What** is the perception of families on the hazardousness of these materials
- **How** are medicine’s waste disposed/discarded
- **How much** of such waste is arising at household level
Material and methods

- Selection of families participating in the study
- Training session for developing of the interviewers’ skills (last week of Aug 2014)
- Individual visit to each family (Sept - Nov 2014)
  - face-to-face interview on the practices followed by the family
  - Measuring and weighting the medicines kept at home by the families
Material and methods: family structure

To build the groups variable such as *age* and the presence of *children* in the family structure were considered, as these potentially affect household practices.

- Couple (or single) >65: 16%
- Couple (or single) < 35 without children: 20%
- Couple (or single) with children under than 12: 15%
- Couple (or single) with children over 12: 32%
- Couple (or single) 35<> 65 without children: 17%
In addition to the family structure, the variability of the monthly income of the family indicates that the families taking part of this study come from relevant different socio-economic settings.

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 3 000 €</td>
<td>6.0%</td>
</tr>
<tr>
<td>2 001 &lt;&gt; 3 000 €</td>
<td>6.9%</td>
</tr>
<tr>
<td>1 501 &lt;&gt; 2 000 €</td>
<td>8.2%</td>
</tr>
<tr>
<td>1 001 &lt;&gt; 1 500 €</td>
<td>21.6%</td>
</tr>
<tr>
<td>751 &lt;&gt; 1 000 €</td>
<td>15.1%</td>
</tr>
<tr>
<td>485 &lt;&gt; 750 €</td>
<td>15.9%</td>
</tr>
<tr>
<td>Less than 485 €</td>
<td>9.9%</td>
</tr>
<tr>
<td>No answer</td>
<td>16.6%</td>
</tr>
</tbody>
</table>
Results...
Presence of medicines and related waste

- 84% of families has medicines currently being used
- 88% of families keeps medicine not being used
- 1/3 of families keep waste medicines in storage, waiting to be discarded

Strong and generalised presence of medicines in the domestic framework of Portuguese families

- 84% of families has medicines currently being used
- 88% of families keeps medicine not being used
- 1/3 of families keep waste medicines in storage, waiting to be discarded
On average 1018 g of medicines are kept at home by each family.

Detailed analysis considering family type (full article)
Why medicines **not in use** are kept at home

- The main reason is the forseen use in the near future
- The second main reason is the expiry date not been reached. So medicines are kept, even if no future use is foreseen.
- 16% of the interviewed refer that the doses sold are too large for their needs, so the remaining medicines are not used.
Risk perception

scale 1 (not dangerous at all) to 10 (extremely dangerous)
## Waste medicine and their package where to?

<table>
<thead>
<tr>
<th>Action</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes back to the pharmacy</td>
<td>65%</td>
</tr>
<tr>
<td>Household waste bin</td>
<td>26%</td>
</tr>
<tr>
<td>Others</td>
<td>4%</td>
</tr>
<tr>
<td>Sink/sewage</td>
<td>3%</td>
</tr>
<tr>
<td>Recycling</td>
<td>2%</td>
</tr>
</tbody>
</table>

- 65% declares taking medicine waste back to the pharmacy
  
  There is probably a “right answer” effect: People are aware that taking medicines back to the pharmacy is the “right thing to do”, even if in practice they behave differently.

- ¼ declares throwing medicine waste into the household bin

- Only very few answers state to discard medicines down the drain/toilet

- The recycling relates mostly to the separate collection of packaging waste
Reasons for selecting other disposal pathways

75 families do not take medicine waste back to the pharmacy

- 10 families do it because they think it is “the right way”.
- The remaining 65 families do it even though they perceive it as not being adequate.
- The main reasons are “less work” and “habit”.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More practical / less work</td>
<td>43 %</td>
</tr>
<tr>
<td>Habit</td>
<td>26 %</td>
</tr>
<tr>
<td></td>
<td>18 %</td>
</tr>
<tr>
<td></td>
<td>13 %</td>
</tr>
</tbody>
</table>
What would it take for you to start taking medicine waste back to the pharmacy?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More collection points</td>
<td>14%</td>
</tr>
<tr>
<td>Nearer collection point</td>
<td>14%</td>
</tr>
<tr>
<td>Better logistics at home</td>
<td>14%</td>
</tr>
<tr>
<td>Know that the waste will be properly treated</td>
<td>12%</td>
</tr>
<tr>
<td>To know more about the benefits of taking back to...</td>
<td>22%</td>
</tr>
<tr>
<td>Financial incentive</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>17%</td>
</tr>
</tbody>
</table>
Summary

- Amount of medicine waste and packaging collected is low compared to the amount of medicines expected.
- Families are stocking unused medicines at home (800g out of 1kg)
- At least 35% of the families do not take medicine waste back to the pharmacy, mostly due to habit or practicality, even though they perceive the behavior as not adequate
- 26% still place medicine waste together with the household waste, and so medicine will appear downstream in the waste treatment facilities and in the waste derived products (e.g. compost)
Acknowledgments

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Thank you!

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