National Return and Disposal of Unwanted Medicines Project Audit 2016

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What we did in 2016...

• Surveyed 4302 people from all over Australia with an online questionnaire about ...
  - their awareness of the RUM scheme
  - how unwanted medicines should be disposed of and what method they had chosen in the last 12 months and
  - what concerned them most about storing and disposing of unwanted medicines

• Talked to 166 of the survey respondents who took five or more medicines on the telephone about ...
  - the volume of unwanted medicines they had at home and
  - how they would dispose of them

• Inspected and counted the contents of 423 yellow RUM bins at the incineration sites in Brisbane, Perth and Melbourne
Population survey & interview results
Key findings …

The Australian population generally did not know how to dispose of unwanted medicines safely and appropriately and were largely unaware of the RUM scheme

- only 18% of survey respondents had heard of RUM…
- BUT 92% said they would use it now they knew about it
- around 60% of people said they had unwanted medicines stored at home
  – primarily *in case they needed them again*
- disposal of medicines in the household rubbish was the most common method

➢ People said a TV campaign and reminder stickers on their prescription medicine packs would be effective ways to promote safe disposal
Key findings …

Less than half of healthcare workers asked patients if they had unwanted medicines at home and if they did, most commonly they recommended disposing of these with the rubbish.

➢ All members of the healthcare team need to be aware of the free national disposal scheme.

People reported large proportions of medicines in their homes that were unwanted, expired or used infrequently, potentially exposing vulnerable household members to risk of harm.

- 166 interview participants had 1424 unwanted/expired/infrequently used medicines stored at home.

- BUT often they were unaware of the volume they had, or that their medicines had expired, or they were unaware that medicines expire.

- used multiple storage locations to support adherence.
Key findings …

- half of these medicines had expired/were expiring in next 6 months
- some people were confident about keeping & using medicines well beyond expiry

“Well I suppose I’d weigh up how out of date it was. If it was just a couple of years I might decide it’s going to be okay particularly with the creams and so on. And even tablets,… I think I’m taking my own risk with those, if it’s not terribly out of date I wouldn’t worry too much. I just use them”

“Chloromycetin is an antibacterial eye cream that I’ve used and I’ve still got that in case I get a similar infection in my eye that I can use it still, so I haven't thrown that out”

➢ Strategies needed to encourage people to clean out their medicine cupboards & return unwanted & expired medicines to the pharmacy
Key findings …

Variable perceptions of risk related to storage, therapeutic use, expiry and appropriate disposal of medicines has implications for quality use of medicines

- safety risks of storing medicines at home were generally recognised

- lower risks were associated with non-prescription medicines with greater confidence in using these beyond expiry & more frequent use of inappropriate disposal practices

“Prescription ones we take down to the chemist,. The other ones we obviously hoist into the rubbish bin”

“If its liquid, I throw it down the toilet. If they are other pills, I wrap them up in a plastic bag and throw them in the garbage”

“The medicines that if somebody could go in my bin and get hold of and make themselves sick or kill themselves on, I’ll take to the chemist….but if its something like cream...nobody’s going to eat a tube of cream, yeah, I’d just throw it out”
Key findings …

- there were some misconceptions, assumptions about returning medicines to pharmacies, recycling medicines for future use and inappropriate disposal practices in pharmacies

“I would assume that anything in date, the pharmacy would donate to people and the out of date, they’d dispose of how they saw fit”

“The pharmacy probably flush it down the toilet or give it back to the manufacturer. They might be able to make a claim on it”

➢ Clear messages needed about the national RUM scheme and what happens to medicines once they have been returned to pharmacies
➢ Health promotion needed to increase awareness of risks related to medicines storage, use of expired medicines, and disposal practices
Bin audit results
Key findings …

Medicines returned to community pharmacies were disposed in RUM bins appropriately and safely

- overall, there was little evidence of inappropriate items (such as general rubbish, sharps, controlled medicines like morphine) in bins
- PBS listed medicines made up large proportion of bin contents
  - about a third of medicines were expired

Ten of the 20 most commonly discarded PBS items were also on the list of the 20 most commonly dispensed PBS medicines for 2015-2016

- suggests that the content of the RUM bins broadly reflects the most commonly dispensed medicines funded on the PBS in Australia
<table>
<thead>
<tr>
<th>Rank*</th>
<th>2016 NatRUM audit</th>
<th>2015 top 20 medicines by PBS/RPBS prescription counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paracetamol</td>
<td>Atorvastatin</td>
</tr>
<tr>
<td>2</td>
<td>Salbutamol</td>
<td>Rosuvastatin</td>
</tr>
<tr>
<td>3</td>
<td>Glyceryl trinitrate</td>
<td>Esomeprazole</td>
</tr>
<tr>
<td>4</td>
<td>Cephalexin</td>
<td>Paracetamol</td>
</tr>
<tr>
<td>5</td>
<td>Metoclopramide</td>
<td>Pantoprazole</td>
</tr>
<tr>
<td>6</td>
<td>Doxycycline</td>
<td>Perindopril</td>
</tr>
<tr>
<td>7</td>
<td>Frusemide</td>
<td>Amoxycillin</td>
</tr>
<tr>
<td>8</td>
<td>Simvastatin</td>
<td>Cephalexin</td>
</tr>
<tr>
<td>9</td>
<td>Atorvastatin</td>
<td>Metformin</td>
</tr>
<tr>
<td>10</td>
<td>Aspirin</td>
<td>Amoxycillin + clavulanic acid</td>
</tr>
<tr>
<td>11</td>
<td>Warfarin</td>
<td>Irbesartan</td>
</tr>
<tr>
<td>12</td>
<td>Tramadol</td>
<td>Paracetamol + codeine</td>
</tr>
<tr>
<td>13</td>
<td>Oxycodone</td>
<td>Salbutamol</td>
</tr>
<tr>
<td>14</td>
<td>Pregabalin</td>
<td>Atenolol</td>
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<tr>
<td>15</td>
<td>Pantoprazole</td>
<td>Sertraline</td>
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<tr>
<td>16</td>
<td>Amoxycillin</td>
<td>Oxycodone</td>
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<tr>
<td>17</td>
<td>Metformin</td>
<td>Simvastatin</td>
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<tr>
<td>18</td>
<td>Prednisolone</td>
<td>Escitalopram</td>
</tr>
<tr>
<td>19</td>
<td>Valproate</td>
<td>Ramipril</td>
</tr>
<tr>
<td>20</td>
<td>Amoxycillin + clavulanic acid</td>
<td>Telmisartan</td>
</tr>
</tbody>
</table>
Key findings …

Majority of medicines in bins were not high cost items. The estimation of PBS waste (all dispensed & unopened medicines, irrespective of expiry date) collected for one year was $11,629,231

➢ Valuable service provided by community pharmacists through appropriate and safe disposal of medicines in RUM bins
➢ Opportunity to raise awareness so that majority of population use the national scheme
Further work…..

We are extending our analysis with a focus on antibiotics

➢ Aim to undertake a cost-consequence analysis of the cost of removal of additional antibiotics from wastewater treatment plants due to inappropriate disposal of unwanted antibiotics and comparing this to the additional cost of increasing use of the federally funded RUM service

➢ We have identified the 10 most frequently reported antibiotics returned in RUM bins from our sample

cephalexin       trimethoprim
amoxycillin     nystatin
doxycycline     metronidazole
chloramphenicol roxithromycin
flucloxacillin  ciprofloxacin
Further work…..continued

➢ Using estimates of total population use for these antibiotics (PBS data) and estimates of what we think has been dispensed, but not consumed or returned via RUM bins, we can estimate the excess burden of antibiotics entering waterways and landfill.

➢ We will estimate the cost of increasing awareness and use of the RUM scheme to appropriately dispose of these unwanted medicines and compare this to the cost of removal of the excess burden at a large-scale waste water treatment plant.

- BUT this analysis will not consider the additional environmental burden of unwanted antibiotics through landfill.

- this research will highlight the economic consequences of the relatively low uptake of the RUM scheme.
Thank you for your participation

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