“Knowledge of the Technical and Social Conditions”
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Pharmaceutical residuals in water: social challenges and opportunities for upstream mitigation measures in home setting
Anne-Claire Maurice, Cyrille Harpet, Elodie Brelot
Summary

1. Context & question
2. Theoretical framework & Methods
3. Results & Discussion
4. Conclusions
1. Context & question

- **Human pharmaceuticals in water:**
  - Excretion -> sewage -> environment\(^1\)
  - Role of domestic source\(^2\) / moderate contribution of hospitals\(^3\) to the overall load

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\(^2\) Ternes, 1998 cited by Li, 2014
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• **Human pharmaceuticals in water:**
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• **Transfer of care** from hospital to **home**

• **Environmentalist proposal:** collecting excreta of patients at home

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⇒ **Health professional’s attitudes? Social barriers/possible solutions?**

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1. Context & question

A pilot Site: 
Bellecombe territory 
France
I. Home care qualitative study
Borrowing to ethnography & sociology of technics

- **Case study in a pilot territory**: Bellecombe site
  - Participant observation in Hospital at home (HAH)
  - Semi-structured interviews (n=35): HAH & independent nurses

- **Interviews of key health professionals** (n=16)
II. Health professional managers knowledge, perceptions and attitudes (quantitative study)
Borrowing to social psychology

- Population: students of French School of Public Health
- Data collection: questionnaire before information intervention (n=428)
  - Predictors of attitude regarding collecting excreta of patients
3. Results & Discussion

I. Home care waste management study

• Pharmaceutical residue representations
  • Unfamiliar to care professionals
  • Related preoccupation: limiting drug consumption
  • Tension economical motivations <-> “material rationalization” (Carricaburu, 2005)
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I. Home care waste management study

• Pharmaceutical residue representations
  • Unfamiliar to care professionals
  • Related preoccupation: limiting drug consumption
    • Tension economical motivations <-> “material rationalization” (Carricaburu, 2005)
  • A certain visibility for certain drug residues (cytotoxic, radio-pharmaceutics)
    • Recommendations seldom applied
    • Water as a means to evacuate the risk
    • Focus on risk for proximal environment

⇒ opportunity to draw attention towards risks to the environment
3. Results & Discussion

I. Home care waste management study

- Current difficulties: articulation of professional & private spheres
  - Temporality of care
  - Unstandardized contexts
3. Results & Discussion

1. Home care waste management study

• **Current difficulties:** articulation of professional & private spheres

  • **Temporality** of care
  • **Unstandardized** contexts

  • Role of **object and procedures** from **domestic sphere**
    • Pricing system of independent nurses
    • Vehicles
    • Domestic waste rules

⇒ Professional objects/procedures collide with domestic ones
3. Results & Discussion

I. Home care waste management study

• **Current body waste management**
  • Task shifting medical doctors to nurses: ☑ hygiene care; ☐ ‘technical’ work
  • Collecting procedures: self centered goal, no biospheric goal
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- **Heterogeneous attitudes regarding separating patient’s excreta** for certain pharmaceutical treatments
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  • Openness (seldom)
  • Skepticism and reluctance (frequent)
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• Current body waste management
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• Heterogeneous attitudes regarding separating patient’s excreta for certain pharmaceutical treatments
  • Openness (seldom)
  • Skepticism and reluctance (frequent), with focus on:
    • economical, material limits
    • or humanistic implications
    • Double « impurity¹ »
    • Individual vs. collective burden

¹ Douglas, 1998
3. Results & Discussion

II. Large-scale surveys of health professional managers

• Non optimal knowledge
  • 13% knew wastewater treatment plant in France not equipped to treat pharmaceuticals
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  • Medication drugs thrown in sink/toilet: on avg. considered the most important contribution (68%: ‘High’ or ‘major’)

Fig.: Perception of the contribution of five sources of pharmaceutical residues in water (n=428).
Dashed line represents 50 %.
3. Results & Discussion

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Fig.: Perception of the contribution of five sources of pharmaceutical residues in water (n=428).

Dashed line represents 50 %.
3. Results & Discussion

II. Large-scale surveys of health professional managers

- **Attitudes** regarding expert’s options for **limiting pharmaceuticals in water**

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<thead>
<tr>
<th>Option</th>
<th>Frequency</th>
<th>Agreement Level</th>
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<tbody>
<tr>
<td>Improving packaging to limit unused medicines</td>
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<td>Improving collection systems for unused pharmaceuticals</td>
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<td>Promoting collection systems for unused pharmaceuticals in health institutions</td>
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<td>Improving regulation for unused pharmaceutical disposal</td>
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<td>Promoting pharmacist training</td>
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<td>Promoting non pharmaceutical treatment and prevention</td>
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<td>Promoting change of some prescription habits</td>
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<td>Promoting environmentally friendly pharmaceuticals through buying groups</td>
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<td>Promoting environmental classification of pharmaceuticals</td>
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<td>Promoting collection protocol of patient’s excreta</td>
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Fig. Perception of the relevance of 13 solutions for limiting pharmaceutical residues in water (n=428).
Dashed line represents 50%.
3. Results & Discussion

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• **Attitudes** regarding expert’s options for limiting pharmaceuticals in water

![Graph showing perception of the relevance of 13 solutions for limiting pharmaceutical residues in water (n=428). Dashed line represents 50%.]

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3. Results & Discussion

II. Large-scale surveys of health professional managers

Attitude regarding patient excreta collection ← (in)direct perceived control
+ knowledge of sources
+ presence perceived
+ health risk perceived
+ age
+ sex
+ promotion

• Positive attitude regarding patient excreta collection ← perception of (in)direct control (0.467, p<0.001); (F(13,258)=7.798, p<0.001, adjusted R²=0.25); (n=314)
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• **Positive attitude** regarding **patient excreta collection** <-> **perception of** (in)direct control (0.467, p<0.001); (F(13,258)=7.798, p<0.001, adjusted R²=0.25); (n=314)

• **Perception of control regarding excreta collection procedure**: higher among directors (in health institution: 37%; at home: 15%) than engineers (20%; 11%)
Conclusions

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  - lack of integration of environmental objectives in health care objects and contexts
  - lack of knowledge but also difficulties for health professionals to introduce environmental perspectives in patients and caregivers relationships.
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• Health professionals reluctance to the option proposed by environmental scientists and stakeholders of collecting patients’ excreta.
Conclusions

- **Pharmaceuticals in water: in many ways invisible**, in relation to:
  - lack of **integration of environmental objectives** in health care objects and contexts
  - lack of **knowledge but also difficulties** for health professionals to introduce environmental perspectives in patients and caregivers relationships.

- Health professionals **reluctance** to the option proposed by environmental scientists and stakeholders of **collecting patients’ excreta**.

- Public health & environmental concerns regarding pharmaceutical residuals should be reconsidered together
We thank all the respondents for their time, Pascal Di Majo, the HAH team and other contacts of the Sipibel pilote site and EHESP for their organizational help, Jean-Yves Toussaint and Sophie Vareilles for their advice.
Thank you for your attention!

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