



Perspectives for Changing Prescription Practices and Waste Disposal Routines

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1st International Conference on “Sustainable Pharmacy: Strategies and Perspectives in Development, Use and Emission Management of Pharmaceuticals”, April 24–25, 2008, Zentrum für Umweltkommunikation, Osnabrück Germany



start Research Approach



Innovations in water infrastructure

Conventional procedures for sewage treatment and drinking water processing are largely replaced by only scarcely applied or innovative procedures.

Innovations by behaviour modification

Change of current prescription practices, use and disposal patterns of pharmaceuticals towards a higher environmental sensibility.

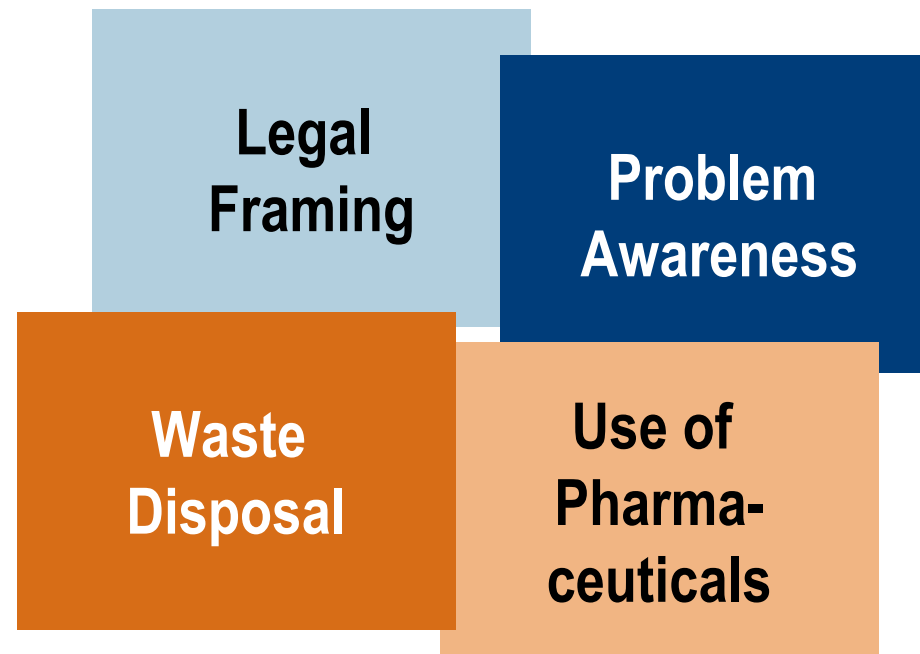
Innovations in drug development

Design of sustainable pharmaceuticals which are optimised for both efficacy in humans and degradability in the environment.

Precautionary, integrated risk management strategy

Innovations by Behaviour Modification

- Aim of strategy: Transformation of health care system by changing patterns of prescription, sale, handling and waste disposal of pharmaceuticals among users and practitioners
- Four fields of action:



Design of Sub-Project

Developed results base on

- state-of-the-art review on knowledge and awareness, risk perception, acceptance of measures
- qualitative inquiry: in-depth interviews with physicians and focus groups with pharmacists
- representative survey: citizens' waste disposal habits of medicine-rests
- qualitative inquiry: in-depth interviews on citizens' patterns of risk perception for risk communication



Legal Framing

- **Political aim: Protection of ground and surface water against drug residues becomes a prior environmental aim**
- **Development of an environmental classification system for pharmaceuticals (e.g. like in Sweden)**
- **Measures**
 - development of a ready-to-use-list of classified pharmaceuticals for physicians
 - integration in medical praxis software and tools
- **Indirect efficiency, but fundamental for other fields of action**



Problem Awareness of Physicians and Pharmacists

- **Situation: lack of knowledge about facts, missing of problem awareness and rejection of uncertainty**

- **Physicians**



- need facts
- need independent formation of opinion as scientists
- want no further formal regulations

- **Pharmacists**



- self perception as “experts around pharmaceuticals” including correct disposal
- high willingness to support proper waste disposal of drugs

Problem Awareness

- **Measures – initiating a discourse via:**
 - target group oriented communication (patterns of risk perception)
 - launching of articles in professionally focused print and online media
 - seminars and training embedded in continuing professional training and academic education
- **Cost investment: for concepts and realization of trainings**
- **Indirect efficiency – but basis of awareness building and acceptance of further measures**

■ Situation: The current interactions in the German health care system encourages ...

- consumers to accumulate medicine at home (double prescriptions, non adequate package sizes, stockpiling of medicine by elderly people)
- drug non-compliance
- the patients to demand prescriptions (instead of a good doctor-patient interaction)

■ Consequences

- higher risk of incorrect waste disposal of drugs via sewage (besides cost factor of unused drugs)
- non-drug therapies are not supported



■ Measures

- regulation of demand by cost and amount transparency (synergy effect by reforms of health care system like the “Gesundheitskarte”)
- regulation of demand by (increasing) co-payments
- promotion of drug-free therapies (“Prescription to get exercise”)

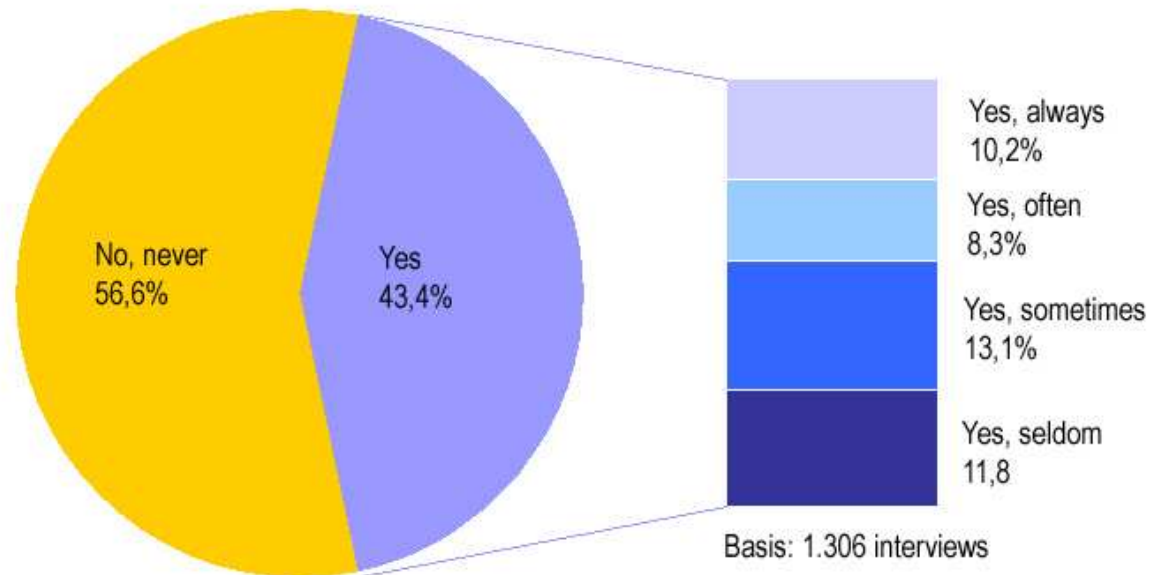
■ Measures achieve synergies with more efficient health care system

■ Efficiency

- rough estimation: 15 % of currently prescribed DDD (daily defined doses)^a
 - ➔ 3,9 billion DDD can be avoided

^a Schwabe, Pfaffrath 2006; GEK Arzneimittelreport 2006; Figures estimated on the basis of a variety of data/information

Waste Disposal - Situation



Disposal of liquid medicine via domestic sewage in Germany:

1/5 of the population disposes unused liquid medicine „always“ or „often“ via domestic sewage (representative study in Germany accomplished in 2006; Götz K, Keil F 2007)

- **No clear communication about proper drug disposal**
- **Objective of consumers is on waste separation**
- **No reliable data about amount of DDD disposed in waste**
 - estimated amount of unused drugs: 3,9 DDD/a (5.700t/a)
 - possibly exposed in sewage: max. 15% (0,54 DDD; 770t/a)^a
- **Measures**
 - clear regulations: obligation to return unused drugs to pharmacies
 - broad communication campaign and advice on drug packages
- **Cost investment: for campaigning and expanded reverse logistics**

^a Figures estimated on the basis of a variety of data/information; references provided by the author upon request ; refers to amounts in Germany

Conclusions

- **Behaviour modification is important part of strategy**
- **Pre-requisites:**
 - Legal frame
 - clear communication
- **Concentration on changes in**
 - use of pharmaceuticals
 - difficult doctor-patient interaction
 - waste disposal routines
- **Important: include main actors of health care system:
physicians, pharmacists, patient/consumer**



„No drugs into the water“

Thank you!