Pharmaceutical usage in the context of demographic change

The significance of growing medication consumption in Germany for raw water resources

A study by civity Management Consultants commissioned by BDEW

Executive Summary

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Water resources have been ever more severely affected by the contamination of numerous human-caused trace elements. One of the areas of concern is medication residues. Owing to demographic change and a growing per capita consumption, we can expect a rapid rise in the usage of medicines in Germany. Without preventive measures, the consequential discharge of drug residues into the water circulation will increase significantly.

The purpose of this study is to predict the ranges of possible medicinal drug usage in Germany up to 2045, to highlight challenges for the aquatic environment, and to demonstrate preventive measures from the perspective of consumers, as well as the water and pharmaceutical industries.

Our prognostic model of medicinal drug usage is based on a population projection which has been differentiated by age and gender, as well as age and gender-specific consumption values or prognoses.

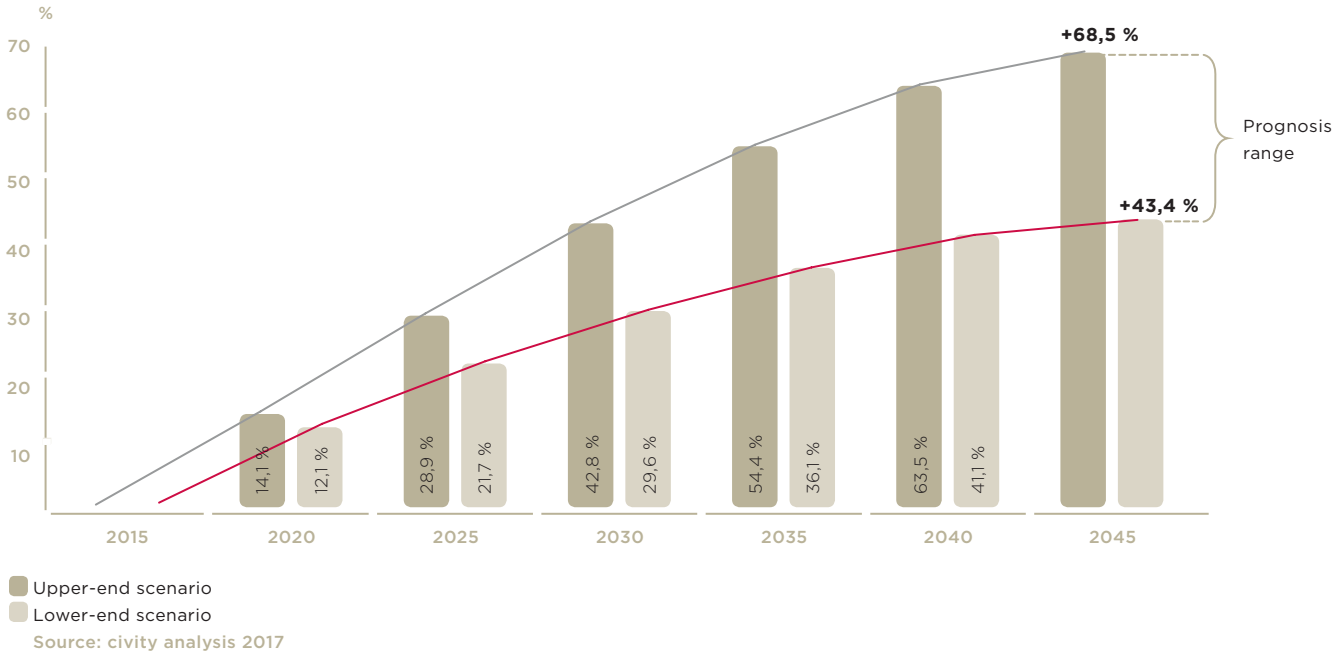
The German medicine market has grown continually in recent years. According to our prognoses, the upper-end scenario is that the usage of medicines intended for humans in Germany will increase by up to 70 per cent by 2045, and will thus present the environment and the water industry with huge challenges. Even in our lower-end scenario we predict an increase of 40 per cent compared to today.

Medicinal usage is dominated by older population groups

The number of medications consumed by older age groups is above average: while 20 to 25-year-olds take 80 daily doses a year, 80 to 84-year-olds consume 1,669 daily doses per capita, approximately 20 times as many. The current proportion of people over 60 years old in the whole population will increase from today's level of 27 per cent to 36 per cent by 2045. Demographic development and age-related increased consumption are the principal causes of the enormous growth in medicinal drug consumption. However, a rapid per capita increase in consumption can also be expected in younger age groups.

Figure 1

GROWTH PROGNOSIS FOR THE CONSUMPTION OF PRESCRIPTION DRUGS FOR HUMAN USE



Source: civity analysis 2017

The general use of drugs for human use will rise by about 70 per cent by 2045

Our prognoses show that in a dynamic, non-linear projection of today's age-specific per-capita usage, the total quantity of medicinal drugs for human use will rise by 68.5 per cent by 2045.

Although the general population will shrink from 2021, we can assume an age-related continual growth in drugs. If over 60-year-olds today account for 64 per cent of consumption, in 2045 they will consume 71 per cent of the total quantity of medicines used. Even taking a conservative growth prognosis, the growth in medicinal drugs will pass the 40 per cent mark by 2045.

Effects on the aquatic environment

Medicinal drugs find their way into the aquatic environment in many ways. Whereas veterinary medicines are discharged into waters in a predominantly diffuse manner, human medicines directly reach communal wastewaters through human excretion or improper disposal via the toilet or the drain. There is currently a broad need for research into the environmental risks of medicinal drug residues. Individual studies, however, confirm the damaging consequences of higher concentrations of the active ingredients of particular drugs on the health of individual animal species. Although there is currently no danger to human drinking water, the rising quantities of medicinal drugs in circulation should prompt us to protect the aquatic living environment and raw water resources as a whole. In view of the rapid growth which is predicted for the future, this problem is only just beginning.

A plea for a holistic medicinal drug strategy – a broad package of measures is necessary from all stakeholders

The use of medicinal drugs is essential to human life. However, environmental protection requires us to reduce avoidable discharges of medicinal drugs into the aquatic living environment in an efficient and cost-effective way.

The water industry alone has only limited ways of responding to this problem. Not all trace elements can be reduced effectively through investments in communal wastewater plants. Solely implementing 'end-of-pipe measures' in the water industry is not enough.

A holistic engagement of all stakeholders along the chain of medicinal consumption will be necessary to avoid discharges of medicinal drugs. In the first place, producers of trace elements and products which contain them are responsible for the avoidance/reduction of discharge into water and the costs associated with it.

However, it is also important for medical practices and pharmacies, even right up to the end consumer, to take up avoidance strategies and measures for the reduction of drug discharges.

An integrated approach combining politicians, industry, the health service and consumers has much potential to combat efficiently the effects of the steep increase in medicinal drug use, in order to protect the valuable resource of water from further contamination and to minimise risks for humans, animals and the environment.

This aim is also pursued by the trace element strategy of the Federal Government with the "Policy Paper – Recommendations of the Federal Stakeholder Dialogue on Trace Element Strategy to Politicians on the Reductions of Trace Element Discharges into the Water".

Figure 2

PACKAGE OF MEASURES ACROSS THE STAKEHOLDER CHAIN

Human medicine

Drug producers

- Better targeted drugs and drugs with improved biodegradability
- Replacement of environmentally damaging active ingredients
- Transparency regarding environmental sustainabilit

Approval and supervision

- Environmental sustainability as a criterion for the approval of medicines
- Unified registration and information system regarding environmental relevance
- A system to monitor the amounts of drugs that are consumed
- Restrictive availability of prescriptions

Health Service

- Sustainable prescription practice, i.e. amounts suitable for therapy and appropriate packet sizes
- Replacement of environmentally damaging active ingredients
- Re-introduction of a comprehensive return system in pharmacies

Consumers

- Appropriate disposal via household rubbish or recycling or return at pharmacies
- Responsible level of self-medication

Animal medicine

- See above

- See above

- Economical use of veterinary medicine
- Improved conditions for animals as preventive measure

- Sensitisation for more ecological products from the livestock industry

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