

CASE STUDY 7D

HOW TO REACH VULNERABLE POPULATIONS? EVALUATION OF UV INDEX, HEAT WARNING SYSTEM, AIRBORNE POLLEN AND OZONE FORECASTS IN GERMANY

Authors: M. Capellaro, P. Sadre Dadras, P. Kahn (Konzeption & Evaluation kommunikativer Maßnahmen, Hamburg, Germany); D. Sturm (HBF – Unabhängiges Institut für hausärztliche Bildung und Forschung Dr Sturm GmbH, Hohenstein-Ernstthal, Germany); U. Reis, C. Cholmakov-Bodechtel, M. Schmid (Kantar Health GmbH, München, Germany).

Research

Evaluation

CONTEXT

In Germany, there are national systems that provide information and early warnings for climate change and related environmental health risks, such as ultraviolet (UV) index, heat health warning systems, pollen and ozone forecasts. The German Weather Service (Deutscher Wetterdienst/DWD) offers newsletters with UV index warnings, heat health warnings and pollen forecasts, and the Federal Environment Agency (Umweltbundesamt/UBA) offers a newsletter with ozone forecasts. This information supports adaptation by the public, such as personal or family related behaviour change that can prevent negative health consequences.

NEW APPROACHES

These systems were evaluated in relation to how well known they are, their use by the public and environment and health care institutions, and the adaptation measures that they promote. In performing this evaluation, a distinction was made between institutionalized communication, such as from the health ministries of federal states (Länder) to health care institutions (especially for inpatient care); and non-institutionalized communication such as subscription to newsletters by citizens or information disseminated by the media. The evaluation results informed a communication strategy so that these services can better reach vulnerable populations and trigger protective behaviours.

Figure 7.6 Ragweed concentration forecast for 9 September 2017.



The following methods were used for the evaluation:

- A comprehensive search of the German environmental webportal (www.portalU.de) identified target groups and adaptive measures.
- The scientific literature was reviewed and sorted.
- DWD and UBA were asked for circulation data of their newsletters.
- State health ministries were asked by questionnaire what newsletters were received and the specific health institutions that were directed to receive them.
- Several health department offices (Gesundheitsämter) were surveyed using a questionnaire.
- Mass media were monitored during summer 2013 to determine the extent to which they reported the early warnings and forecasts.
- Physician and nursing services/facilities were requested to complete an online questionnaire.
- An extensive, representative poll of the population was carried out in the summer of 2013. Four thousand people answered questions about their health, their behaviour with regard to information, their perception of risk and their awareness of warning systems. Additional, special questionnaires about the four information and early warning systems and appropriate protective actions were answered by groups of up to 400 people who met the criteria for vulnerability (Figure 7.7).

Figure 7.7 Assignment of poll participants to the special questionnaires.

CRITERIA	QUESTIONNAIRE
Age over 60	Heat
Allergic asthma by pollen	Pollen
Hay fever	Pollen
More than 15 hours per week outdoors	UV
More than two hours per week strenuous exercise outdoors	Ozone

CASE STUDY 7D

BENEFITS AND LESSONS

The use of institutionalized information^k about health risks is extremely inconsistent. Of the multiple climate services for health evaluated, only heat health warnings are received by almost all federal states, but the forwarding of the information is not uniform. In some states, the public health agencies distribute the information to elderly care homes and nursing facilities, while in other states such facilities are required to use the heat health warnings of the weather service directly. In yet other states, there is no directive and health care facilities obtain information about extreme weather events at their own discretion. Interviews with health department personnel at various levels did not disclose a uniform mode of communication. However, the study documented institutional dissemination of at least heat health warnings, which cascade from the DWD, via state health ministries to the subordinate health department offices, and from there to the nursing facilities. Whether or not the arrival of heat health warnings in elderly care homes and nursing facilities leads to practical consequences could not be determined.

Critically, it was found that physicians, who have an important role because of possible interactions between certain medications and hot weather, are neither integrated in the institutionalized information channels nor do they broadly subscribe to heat health warnings. Information and early warnings about the other environmental factors (such as UV radiation, ozone and pollen) are subscribed to or forwarded by way of institutionalized communication in only a few states.

Public awareness of information and warning systems is strongly dependent on the information system involved. Warnings and forecasts reach the population primarily by way of non-institutionalized communication. Pollen forecasts were heard of or read by 86.8% of those polled, but the UV index reached only 29.5%. Lying in between were heat health warnings (71.0% reach) and ozone forecasts/warnings (54.2% reach). Awareness of warnings and forecasts most often come through television, radio, newspapers or magazines, or the Internet.^l Mass media primarily informed about heat, but neither uniformly nor reliably. The number of subscribers to the newsletters of the information systems was negligible compared to the size of the population.

In order to determine to what extent warnings and forecasts trigger protective behaviours, a logical framework was developed including various factors favourable to taking protective measures. Findings showed, that if a measure is considered personally suitable, the probability that it will be implemented increases. Measures considered 'very effective' are implemented more often. Since the perceived suitability of a measure depends on personal attitudes and on personal situations, individual communication must be considered. Conversation (for example with a physician) was often named as a desirable source for warnings.

^k The Umweltbundesamt (UBA) and the Deutscher Wetterdienst (DWD) are the origins of the institutionalised information channels. Heat warnings are sent (independent of a subscription to the newsletter) to the agencies of the states. For example, heat warnings in Thuringia are sent to county administrations and non-county cities, which in turn forward them to nursing homes and hospitals (Sperk & Mücke, 2009). Health facilities in some states subscribe to the heat newsletter. These communication channels are regulated by administrative arrangements and are referred to in the following as "institutionalised communication channels". The noninstitutionalized information channels are other possible ways in which a warning or a forecast can reach health facilities or the population.

^l The websites of the DWD and UBA were excluded from this question.

ACKNOWLEDGEMENTS

This investigation was carried out as part of the project 'Adaptation to Climate Change: Evaluation of Existing National Information Systems (UV-Index, Heat Health Warning System, Airborne Pollen and Ozone Forecasts) From a Public Health Perspective – How to Reach Vulnerable Populations?' of the environmental research plan of the Federal Ministry for Environment, Protection of Nature and Building and Reactor Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit) under the research ID 371262207.

The final report of the project can be found here <http://www.umweltbundesamt.de/publikationen/evaluation-of-information-systems-relevant-to>



The perception of risk ("How high do you think your risk from [heat, UV radiation, pollen, ozone] is?") has significant and moderate influence on taking protective measures. Awareness of risk depends on a variety of factors including the presence of risk in daily life^m and the degree of personal involvementⁿ had the greatest influence on the perceived degree of risk.

Awareness of risk is greatest for heat. 51% of the vulnerable people and 39% of all participants thought of heat as a health risk at least once during the two weeks before the poll. UV radiation takes second place for immediacy with 37% of participants overall (36% of the vulnerable). Far fewer people view pollen (22% overall, vulnerable: 17%)^o and ozone (21%, vulnerable: 23%) as health risks.

The evaluation concluded that there is a necessity for continuous monitoring of how risk information is accessed and acted upon by the public. The concept of health-relevant behaviour should be augmented to include some measure of health literacy. In addition to ordinary knowledge and abilities, for example, knowledge of risks and protective measures – including the ability to find and use health-relevant information – are important components of health literacy. The goal of improved health literacy can be achieved only by continuous education.

Currently in Germany, awareness of protective measures and of the information services for health has no statistically confirmed influence on health protective behaviours. People who are aware of the information systems under consideration do not take any more protective measures than those who are ignorant of them. This result can be partly explained by an analysis of the content of the newsletters: three newsletters make no specific behaviour recommendations; the exception being the newsletter for the UV index. The evaluation noted information and warning systems mainly provide information mostly about dangers, without including behavioural recommendations, which should be as specific as possible to enable the public to carry out protective measures.

A further concern is that communicating the presence of risks and possible undesirable effects can cause apprehension in the population. Apprehension can positively trigger preventive measures, but it is itself an impairment of well-being, and thus of health. This dilemma can be solved by taking a health promotion approach: that does not seek to avoid illness but promotes and preserves health. This emphasizes aspects of well-being that can be gained through preventive measures, rather than dangers to health due to the environmental influences.

Protective measures against heat and pollen were found to be implemented most, since these risks acutely afflict vulnerable people and some protective measures provide immediate improvement.

^m The presence of risk in daily life is documented by the response to the following: "Please tell me how often you have thought of risk during the last two weeks. Answer with: not at all, once or twice, 3 to 5 times, or more often!"

ⁿ Personal affliction was documented inconsistently. (For heat: "Do you personally tolerate heat very well, well, less well, or not at all?"; for UV radiation: "Has skin cancer or cataract been diagnosed among your friends and relatives (yes, skin cancer/yes, cataract/both/no, neither one nor the other)?"; For pollen: "How high do you estimate the risk for your own health if you had contact with allergenic pollen (high/fairly high/fairly low/very low)?" Personal affliction was not documented for ozone.

^o The scant perception of risk in relation to pollen may be due to the time of the interrogation (August 26, 2013 to October 8, 2013), which lies outside of the main season for airborne pollen.