ANTIBIOTICS AND ANTIMICROBIAL RESISTANCE: PUBLIC PERCEPTION AND MEDIA ATTENTION

Dr. Astrid Epp

Unit Risk Research, Perception, Early Detection and Impact Assessment

Department Risk Communication
Antibiotics and Antimicrobial Resistance in Public Perception

- **Antimicrobial resistance** increasingly poses a **challenge** to **public health** worldwide.

- **Resistance to antibiotics** affects both **human** and **veterinary medicine** and is also a concern in **agriculture**.

- If **consumers** apply **hygienic measures** during transport, storage and preparation of food **they can protect themselves** against pathogens that are resistant to antimicrobials **in their own households**.

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Research Issues: Public Perception and Media Attention

- What does the German population know about antibiotics and antimicrobial resistances and where do they get their information?
- Does the population perceive antibiotics more in terms of risk or benefit aspects?
- How are antibiotics and antimicrobial resistances presented in the German Media?

A target-group-specific risk communication requires profound knowledge about awareness, attitude, practices and information behavior of the mentioned groups.
Research Design: Grasping the Public‘s and the Media‘s Perception of Antibiotics and Antimicrobial Resistances

- **Conduction of a systematic international literature review** about the public perception of antibiotics and antimicrobial resistances in Germany and abroad

- **Representative survey** of the german-speaking population concerning their perception of antibiotics and antimicrobial resistances

- **Analysis of German Print Media** on the presentation of antibiotics and antimicrobial resistances between 2008–2015
## Study Design: Representative Survey

<table>
<thead>
<tr>
<th>Survey period:</th>
<th>May 26 to June 20, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey method:</td>
<td>Computer assisted telephone interviews (CATI)</td>
</tr>
<tr>
<td>Target group:</td>
<td>German population (aged 16 and above)</td>
</tr>
<tr>
<td>Sample size:</td>
<td>1,003 persons</td>
</tr>
<tr>
<td>Quotas:</td>
<td>Quotation/weighting by age, gender, education, city-/region segmentation according to EU definition</td>
</tr>
<tr>
<td>Statistical fault tolerance:</td>
<td>up to ± 3 percentage points (maximum fault tolerance at a determined value of 50% in the sample related to the total values)</td>
</tr>
</tbody>
</table>
Awareness of Antibiotic Resistance and Its Causes

Did you know that there are some bacteria, which are resistant to antibiotics? Or haven’t you heard about that?

- yes, I already heard about that: 83%
- no, I never heard about that: 15%
- no answer: 2%

All respondents; n=1003; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Subjective Evaluation: Knowledge/Awareness

All in all: How well informed do you feel about antibiotics?

<table>
<thead>
<tr>
<th></th>
<th>very well</th>
<th>partly</th>
<th>poorly</th>
<th>very poorly</th>
<th>no answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents; n=1003</td>
<td>16</td>
<td>37</td>
<td>16</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Respondents, who have already heard about antibiotic resistance; n=870; figures in percent and arithmetic means</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trustworthiness of Different Actors

Which of the following actors would you consider trustworthy when it comes to information about antibiotic-resistant germs?

- Respondents, who have already heard about antibiotic resistance; n=870; figures in percent

- doctor: 77%
- consumer association: 74%
- consumer magazines (e.g. Stiftung Warentest): 70%
- pharmacists: 65%
- science: 62%
- family and friends: 54%
- health insurances: 49%
- television: 47%
Subjective risk perception

To what extent do you feel threatened by antibiotic resistant germs?

Respondents, who have already heard about antibiotic resistance; n=870; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Awareness of Antibiotics under Risk-Benefit Aspects

How would you estimate the risk-benefit ratio of antibiotics?

All respondents; n=1003; figures in percent and arithmetic means

---

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Knowledge About the Origin of Antibiotic Resistance

Which of the following do you think is the most likely cause for antibiotic resistance?

- Use of antibiotics in animal husbandry: 59%
- Human usage of antibiotics: 24%
- In a natural way: 7%
- Other causes: 2%
- Don’t know/no answer: 8%

Respondents, who have already heard about antibiotic resistance; n=870; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Knowledge About the Origin of Antibiotic Resistance (Cause Seen in Human Usage of Antibiotics)

What exactly do you think is the most likely cause for antibiotic resistance?

- misuse by patients: 45%
- faulty prescription by doctor: 34%
- natural emergence inside the human body: 13%
- other causes: 5%
- no answer: 3%

Respondents, who have already heard about antibiotic resistance and who see human usage as the cause for antibiotic resistance; n=205; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Options for Individual Action

How could each individual contribute to keep antibiotics effective?

By…

- not using antibiotics for every cold: 89%
- using antibiotics according to the instructions: 79%
- taking a smaller dose of antibiotics than the prescribed one: 13%
- Other: 3%

Respondents, who have already heard about antibiotic resistance and believe that each individual influences the effectiveness; n=694; figures in percent
Compliance with Basic Kitchen Hygiene Rules

Which of the following statements about working in the kitchen apply to you?

- I always make sure that fish and poultry is thoroughly cooked. 86% yes, 3% no, 10% does not apply, 2% no answer.
- I instantly clean up all knives and worktops after I finished slicing meat. 80% yes, 11% no, 7% does not apply, 2% no answer.
- I clean up my refrigerator at least once in a month. 55% yes, 37% no, 6% does not apply, 3% no answer.
- I change my kitchen sponges and wipes very often (at least every 2 days). 45% yes, 49% no, 5% does not apply, 2% no answer.

All respondents; n=1003; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
## Attitude Towards Use of Antibiotics in Animal Husbandry

Do you rather agree or disagree with the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>The consumption rate of antibiotics in animal husbandry is too high.</td>
<td>82</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Antibiotics are essential to protect animal health.</td>
<td>37</td>
<td>52</td>
<td>11</td>
</tr>
<tr>
<td>Antibiotics are totally out of place in animal husbandry, even if animals are sick.</td>
<td>34</td>
<td>56</td>
<td>9</td>
</tr>
<tr>
<td>The state adequately observes antibiotic use in animal husbandry.</td>
<td>14</td>
<td>67</td>
<td>19</td>
</tr>
</tbody>
</table>

All respondents; n=1003; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Attitude to Antibiotics

How much do you agree with the following statements?

- Usually I know when I need antibiotics before visiting a doctor.
  - 20 strongly agree
  - 9 rather agree
  - 11 partly agree
  - 12 disagree
  - 44 strongly disagree
  - 5 no answer

- I refuse antibiotics in general.
  - 13 strongly agree
  - 10 rather agree
  - 23 partly agree
  - 12 disagree
  - 41 strongly disagree
  - 1 no answer

- Antibiotics should be available without prescription.
  - 5 strongly agree
  - 2 rather agree
  - 3 partly agree
  - 23 disagree
  - 85 strongly disagree
  - 2 no answer

All respondents; n=1003; figures in percent
### Awareness of Topics in Media

Which topics directly or indirectly related to antibiotics have you heard of in the past 3 years?

<table>
<thead>
<tr>
<th>Topic</th>
<th>Awareness in Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic use in factory farming</td>
<td>91</td>
</tr>
<tr>
<td>Germs in chicken/turkey meat</td>
<td>88</td>
</tr>
<tr>
<td>Disease outbreaks in hospitals caused by resistant germs</td>
<td>85</td>
</tr>
<tr>
<td>Antibiotic residues in food</td>
<td>83</td>
</tr>
<tr>
<td>Warnings about unnecessary intake of antibiotics</td>
<td>76</td>
</tr>
<tr>
<td>Resistant germs around animal stables</td>
<td>55</td>
</tr>
<tr>
<td>Antibiotic residues in drinking water</td>
<td>39</td>
</tr>
</tbody>
</table>

All respondents; n=1003; figures in percent

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Public Perception: Results

- The **majority** of people **has heard** about antibiotic resistance (83%).

- The **majority of respondents** (62%) has a **positive perception** of the risk-benefit-ratio: 30% believe that the risks of antibiotics are higher than its benefits or even say “the risks outweigh the benefits by far”.

- Only 23% feel **latently threatened** by antibiotic-resistant germs.

- 39% of the respondents feel **well or very well informed** about the issue, while 65% have never actively informed themselves.

- The **majority** thinks the **use of antibiotics in animal husbandry** is the **most likely cause** for antibiotic resistance.
Media Attention: Analysis of the Media Coverage Between January 2008 and February 2015 (full survey)

Media Pool: German Quality Newspaper and Magazines

*Daily newspapers:*
DIE WELT
Frankfurter Rundschau
Frankfurter Allgemeine Zeitung (F.A.Z.)
Süddeutsche Zeitung
taz.die tageszeitung (taz)

*Weeklies:*
DIE ZEIT
DER SPIEGEL
Frankfurter Allgemeine Sonntagszeitung (F.A.S.)
WELT am SONNTAG

*Search Term: antibio OR antimikrobi OR MRSA*

*Databasis: 6.104 Articles*
Antibiotics: Media Coverage Over Time

The amount of coverage on antibiotics and/or antibiotic-resistant pathogens steadily increased from 2008 to 2014. A further increase in coverage can be expected for the year 2015.

Basis: Total Coverage According to Access Criteria (n = 4514)
Media Coverage of Antibiotics and/or Antibiotic-Resistant Pathogens by Year and Share of Information

The number of articles with explicit references to associated hazards rose from 91 to 272 articles. The number of articles with implicit references to associated hazards rose from 89 to 162 articles.
Contextual Environment of Risk-Related Articles

Context-specific topics and in particular aspects from the context of humans dominated the risk-related coverage.

Basis: Articles Containing Explicit Risk References (n = 1261)
Placement of Articles Containing Risk References by Section

- **Science/Knowledge**: 437 articles
- **Economy**: 210 articles
- **Health/Medicine**: 176 articles
- **International Politics**: 101 articles
- **Opinion**: 70 articles
- **Centrefold**: 58 articles
- **Environment/Nature/Ecology**: 51 articles
- **Local Section**: 34 articles
- **Cover Page**: 33 articles
- **Society**: 25 articles
- **Current Events**: 13 articles
- **Arts Pages**: 9 articles
- **National Politics**: 9 articles
- **Media**: 7 articles
- **Feature Pages/Magazine**: 6 articles
- **Sports**: 4 articles
- **Service**: 4 articles
- **Culture**: 3 articles
- **Travelling**: 3 articles
- **Other Sections**: 8 articles

Basis: Articles Containing Explicit Risk References (n = 1261)

Dr. Astrid Epp, 28th November 2016, Joint Workshop „Antimicrobial Resistance“, Madrid
Risk Assessments in Media Coverage: Examples

**Dramatic Situation**

> „It is disgusting and dangerous what is there in the supermarket shelves: Chicken, highly contaminated with germs“  
> Süddeutsche Zeitung, 10.01.2012

> „If all the antibiotics fail, the only thing left to do is to watch the patient die.“  
> FAZ.NET, 11.09.2012

> "Infections caused by methicillin-resistant Staphylococcus aureus strains (MRSA) are dramatic in a very high percentage."  
> taz Online, 28.05.2012

**Increased Risks**

> „The uncritical application of such drugs is a major cause of the fact that a number of bacterial strains are now resistant to the available antibiotics.“  
> FAZ, 11.09.2013

> „Via agricultural products, the resistant bacteria could become a threat to public health.“  
> Welt am Sonntag, 09.05.2010

---

Basis: Articles containing explicit risk references)
Conclusion

- The majority of the German population is familiar with the topic antibiotics and antimicrobial resistances.

- The great popularity of the topic antibiotics and antimicrobial resistances among the population corresponds to a constant increase in media coverage since 2008.

- Correlating to media coverage, the majority of Germans believe that problems with antibiotic resistance have intensified over the last years.

- The main cause for antibiotic resistances is primarily seen in the use of antibiotics in animal husbandry.

- Antibiotics are generally regarded as effective and in the populations’ perception, the benefits outweigh the risks.
Recommendations for Risk Communication

- The **high degree of awareness** of the topic of antibiotics and antibiotic resistance among the German population is a **good precondition for successful risk communication**

- Even if the topic of antibiotic resistance is **known to the majority** of the population, **just a quarter** of Germany’s population **feels well-informed about antibiotic resistance** – potential for an information campaign is generally given

- **Self-responsibility of consumers** should be addressed in risk communication

- As **doctors, pharmacists** and **consumer associations** are most trusted in this field, risk communication should be **primarily** made by these groups
Thanks!

Gaby-Fleur Böl
Suzan Fiack
Severine Koch
Mark Lohmann
Linda Randt

Department Risk Communication

Bernd-Alois Tenhagen
Bernd Appel

Department Biological Safety

Federal Institute for Risk Assessment
Berlin

BfR

Bundesinstitut für Risikobewertung
Thank you for your attention
Dr. Astrid Epp

Federal Institute for Risk Assessment
Max-Dohrn-Str. 8-10 ● 10589 Berlin
Phone +49 30 - 184 12 - 3351 ● Fax +49 30 - 184 12 – 6 3351
Astrid.Epp@bfr.bund.de ● www.bfr.bund.de