



# Antimicrobial resistance

The contribution of CAM/ IM to reduce antibiotic use

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**Is there a  
contribution of CAM  
to  
reduce antibiotic use  
?**

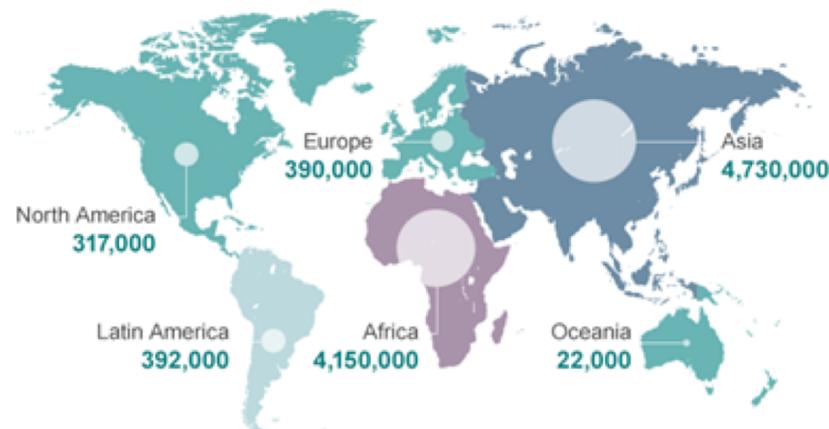
**If so,  
how can we make it  
acceptable  
and  
accessible  
for stakeholders?**

# The burden

- “Drug-resistant infections already kill hundreds of thousands a year globally, and by 2050 that figure could be more than 10 million. The economic cost will also be significant, with the world economy being hit by up to \$100 trillion by 2050 if we do not take action.”

*Jim O’Neill, Vorsitzender von ‘Review on AMR’, United Kingdom*

Deaths attributable to antimicrobial resistance every year by 2050



Source: Review on Antimicrobial Resistance 2014

# Current policies

- Main global, regional and national strategies:
  - Infection prevention and control of resistant bacteria
  - Monitoring of both infection prevention and control of resistant bacteria
  - Research on antibiotic resistance and antibiotic use
  - Appropriate use of antibiotics (e.g. not for viral infections)
  - Less antibiotic use (e.g. delayed prescription and alternatives)
  - Development of new antibiotics

# JPIAMR grant

- Network grant (ZonMW/ JPIAMR)
- Network:
  - EU universities and research institutions
  - Non-science stakeholders
- Studies:
  - CAM contribution to reduce ABs (4x)
  - AB prescription rates in the UK
  - Patient' views on use of CAM for RTIs
  - Development of a fever management app

# JPIAMR grant

- Deliverables:
  - To provide an **overview of expert and scientific knowledge** on CAM/ IM treatment of Upper Respiratory Tract Infections (URTIs)
  - To develop a first concept expertise- and evidence-based **decision-making tool** (DMT) for (conventional) doctors at a European level
  - To provide a **communication platform** on the CAM/ IM contribution

# Global challenge of fighting antibiotic resistance



## Six main global strategies:

- Infection prevention and control of resistant bacteria
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- **Less AB prescription**
- **Appropriate use of ABs**
- Development of new ABs

CAM contribution

**Narrative review:**  
mapping the contribution of CAM in reducing AB prescription and appropriate use of ABs

**Systematic review of systematic reviews**  
CAM treatment of RTIs

**Survey** on expert knowledge on CAM treatment of URTIs

**Monitoring** of CAM treatment of RTIs in daily practice

'I want to prescribe evidence-based, safe and effective treatment'



'I need treatment'

URTIs guideline (no AB)

Decision Making Tool

Patient Decision Aid



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# Background: RTIs in primary care

- Although antibiotics have small or negligible symptomatic benefits for patients with uncomplicated acute otitis media (AOM), pharyngitis, bronchitis, laryngitis and common cold, **antibiotics are still commonly used** for these and other viral respiratory infections.
- Decisions on prescribing antibiotics depend to a large extent on the **attitudes of both doctors and patients**.
- **Delayed prescription strategies** in combination with **effective and safe non-antibiotic RTI treatment during the delayed prescription period** might therefore offer a contribution to reduce antibiotic prescription and use, meeting both doctors' and patients' demands for treating RTIs.

# Narrative review: Is there a contribution of CAM/ IM to reduce antibiotic use?

- Aim:
  - To map the domains of the CAM contribution
- Search with three databases:
  - Pubmed, Embase, Cochrane Database of Systematic Reviews
  - From onset to June 2017
  - Specific limited set of search terms
- Additional input from CAM experts
- Results:
  - 645 selected > 212 included publications
  - Domains: CAM concepts, AB prescription rates, CAM prevention and treatment strategies, and supporting evidence

# Narrative review: Is there a contribution of CAM/ IM to reduce antibiotic use?

- Main results:
  - There are specific health promotion oriented CAM prevention & treatment strategies (including use of natural medicinal products and fever management).
  - There is some evidence that prevention and some treatment strategies may be effective and safe.
  - Many CAM treatment strategies (e.g., for respiratory and urinary tract infections) are promising, but overall lack high quality evidence.
  - More rigorous research is necessary to provide high quality evidence of (cost-)effectiveness.

# Systematic review of systematic reviews

- Aim:
  - To identify CAM strategies that reduce the use of antibiotics or control symptoms of RTIs, and that are safe
- Results:
  - 1929 hits > 26 included SRs
  - 24 on herbal medicine (including 11 on TCM), 3 on homeopathy
  - No SRs on anthroposophic medicine and ayurveda
  - Quality of the SRs:
    - 7 low overall confidence in the results of the review\*\*
    - 19 critically low overall confidence in the results of the review \*\*

# Systematic review of systematic reviews

- SRs conclude that there are **positive effects** of CAM treatment for the following indications:
  - Overall symptoms of acute RTIs
  - Acute rhinosinusitis Acute trachea-bronchitis
  - Bronchiolitis
  - Cough
  - Influenza A
  - Otitis media
  - Sore throat
- The results also provide evidence on **safety** of CAM treatments

# Systematic review of systematic reviews

- The **quality** of studies and SRs is often low or not clear > We **cannot draw final conclusions** on effectiveness and safety of these CAM treatments for RTIs.
- **More methodological rigorous studies (RCTs and SRs)** are indicated to study effectiveness of promising CAM treatments.
- **Promising CAM non-antibiotic treatments with positive effects and evidence of safety demonstrated in SRs** may be used by doctors and patients, for example as **part of a delayed prescription strategy** to control symptoms of uncomplicated acute RTIs.
- If so, **safety** must be clear and **uncertainty of effectiveness** must be transparently communicated.

# Survey

- Aims:
  - To explore and systematize **CAM expertise with URTI treatment** as an additional knowledge source, because most CAM treatments have not been studied in clinical trials.
- Experts in five countries: FR, GE, NL, SWI, UK
- Top 3 'best treatments for the indication':
  - Dry and wet cough
  - Sore throat with and without fever
- Response:
  - AM: 99
  - Homeopathy: 95
  - .....
- Results:
  - CAM specific lists of most important, expertise-based CAM treatments

# Survey – Example dry cough

## **Anthroposophic medicine**

- Medicinal products:
  - Bronchi plantago
  - Cuprum aceticum (Pertudoron 2)
  - Tartarus stibiatus
  - Bryonia Spongia
- External application on the chest:
  - Plantago bronchial balsam
  - Lavender
- Cough syrup:
  - Flechtenhonig/ Plantago cough/ Monapax cough or Weleda Cough juice or syrup

# Additional study on: Most prescribed medicinal products in daily practice

- Aim:
  - To identify most prescribed CAM medicinal products in daily practice as an additional knowledge source, because most CAM treatments have not been studied in clinical trials.

# Additional study on: Most prescribed medicinal products in daily practice

**Table 3: The most frequently prescribed medications**

<b>Children</b>		<b>Adults</b>	
<b>Homeopathic treatment n = 407</b>	<b>%</b>	<b>Homeopathic treatment n = 445</b>	<b>%</b>
1. Belladonna	13.3	1. Hepar sulphuris	9.7
2. Pulsatilla	10.6	2. Belladonna	8.3
3. Hepar sulphuris	6.6	3. Bryonia alba	7.2
4. Mercurius solubilis	6.4	4. Lycopodium clavatum	7.2
5. Phosphorus	4.9	5. Kalium bichromicum	5.8
6. Bryonia alba	3.7	6. Mercurius solubilis	4.9
7. Calcarea carbonica	3.7	7. Allium cepa	4.5
8. Lycopodium clavatum	3.7	8. Phosphorus	3.4
9. Sulphur	3.7	9. Causticum	3.1
10. Phytolacca decandra	3.4	10. Gelsemium sempervirens	2.7
<b>Conventional treatment n = 252</b>	<b>%</b>	<b>Conventional treatment n = 462</b>	<b>%</b>
1. Antibacterials	28.2	1. Antibacterials	39.4
2. Nasal preparations	22.6	2. Nasal preparations	15.2
3. Analgesics	12.7	3. Analgesics	9.5
4. Stomatological preparations	8.7	4. Cough/cold preparations	8.7
5. Anti-asthmatics	5.6	5. Stomatological preparations	5.2

Haidvogel, M., Riley, D. S., Heger, M., Brien, S., Jong, M., Fischer, M., ... & Thurneysen, A. E. (2007). Homeopathic and conventional treatment for acute respiratory and ear complaints: a comparative study on outcome in the primary care setting. *BMC Complementary and Alternative Medicine*, 7(1), 7.

# Promising CAM treatments

- **'Promising treatments' for RTI indications** based on three categories/types of knowledge:
  - Systematic reviews
  - Expertise of CAM experts (survey)
  - Most prescribed in daily clinical practice

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**Accessible**

# Implementation

- **Can we make these promising CAM treatment strategies accessible for conventional doctors and patients?**
- **Criteria:**
  - The need to fit with the conventional guidelines
  - Evidence- (and/ or experience-)based
  - Meeting both doctors' and patients' demands for treating RTIs and symptom relief
  - Meeting specific national contexts (regulation, accessibility, ..) and at the same time building a European knowledge base/ toolbox
- **Design:**
  - Delayed prescription strategies in combination with effective and safe non-antibiotic RTI treatment during the delayed prescription period
  - Decision making tools (DMTs), patient (decision) aids (PtDAs), Doctors and Patients Information Leaflets (DILs and PILs)

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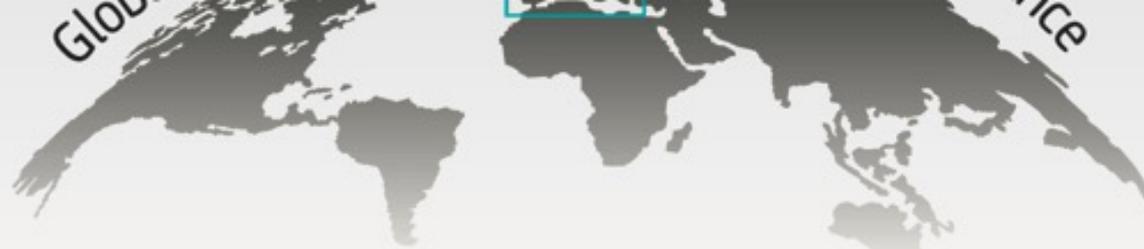
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URT1 guideline (no AB)	Decision Making Tool	Patient Decision Aid
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**Accessible**

**Thank you very much for  
your attention!**

# Major challenges

- To increase the **quality of the evidence base** of CAM treatment for infections & CAM information tools for doctors, patients and pharmacists (*increase of acceptability*).
- To further develop and test **information tools on safe and effective CAM treatment options** for infections within the national contexts (*increase of accessibility*).
- To **organize** the scientific and supporting work in this field for infections **on a regular basis in Europe** (*increase of sustainability*).

# Short-term challenges

- Finalization of the national stakeholder involvement in the five European countries.
- Submission of publications in peer-reviewed scientific journals.
- Execution of next steps in the development and validation of the current doctor and patient information tools in national context.
- Further specification of the developed instruments according and/ or adjusted to national contexts as a proposal for further European and national communication.
- Organizational development of a reliable and legitimate European/ international institutional model and organization of further activities in this field including funding, on a regular basis.

# Long-term challenges

- The high quality testing on safety and effectiveness of 'promising CAM treatments' for URTIs in clinical trials in primary care.
- The development and testing of new information tools both in primary care and hospital care.
- The testing of usability, effectiveness and safety of a fever management app (FeverApp) for parents.
- The integration of content of the doctor and patient information tools and documents regarding CAM treatment options and the FeverApp, and the evaluation of their effectiveness in reducing antipyretic and AB use.

# Long-term challenges

- The development of algorithms that enable (more) individualized advice on CAM treatments.
- Socio-economic research and activities supporting the doctor and patient information tools development and implementation and clinical research (e.g., prescription rate studies).
- Developing a European knowledge base for CAM treatments for infections step by step.
- The development and communication of an overall CAM research portfolio and strategy for this field.
- The acquisition of funding for these projects.

**Thank you very much for  
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