

BU RDEN OF
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D ISEASE IN
E UROPEAN
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Introduction

Very few studies have provided information on the **costs of care for nosocomial infections** caused by antimicrobial-resistant (AMR) pathogens

Because of the wide variability of health systems, it is difficult to compare information from individual studies carried out in different European countries

It is essential to develop a valid and coherent measurement tool to assess the clinical and economic impact of AMR infections in European Member States



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General objective

= Providing realistic estimates on the burden of disease and the costs attributable to infections caused by antimicrobial resistant (AMR) pathogens in Member States and Accession Countries of the European Union

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General '*strategic*' objective

- To provide valid data for politicians, policy makers and public health experts that allow informed estimates of the burden and the costs of AMR
- To allow a comparison of costs between European countries
- To inform public health systems in the EU in order to prioritise and plan future public health goals

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Specific objectives (1 - 3)

1. To identify the information needs of different stakeholders (public health experts, policy makers, politicians, health care system managers) in order to assess the burden of disease caused by AMR pathogens
2. To identify factors driving and impeding the development of AMR and the costs associated with these factors
3. To generate country-specific cost models for quantifying the economic burden due to AMR



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Specific objectives (4 - 7)

4. To determine the excess mortality, morbidity and length of stay, and costs attributable to AMR in hospitals and ICUs in 15-20 European countries
5. To provide direct feedback on the individual performance of the participating hospitals
6. To forecast trends of AMR by extrapolating data available over the last six years for countries participating in EARSS
7. To illustrate the human and societal dimensions of AMR (lost quality of life) and the repercussions for the health care systems by case studies

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WP 1: Coordination of the project

WP 2: Dissemination of the project

WP 3: Evaluation of the project

(Universitätsklinikum Freiburg, Germany)

WP 4: Identification of needs

WP 5: Case studies of the burden of AMR

(University of Dundee, Div. of Commun. Health Sciences, UK)

**WP 6: Impact of AMR and appropriate
treatment in ICU-acquired infections**

(Institute of Public Health, Brussels, B)

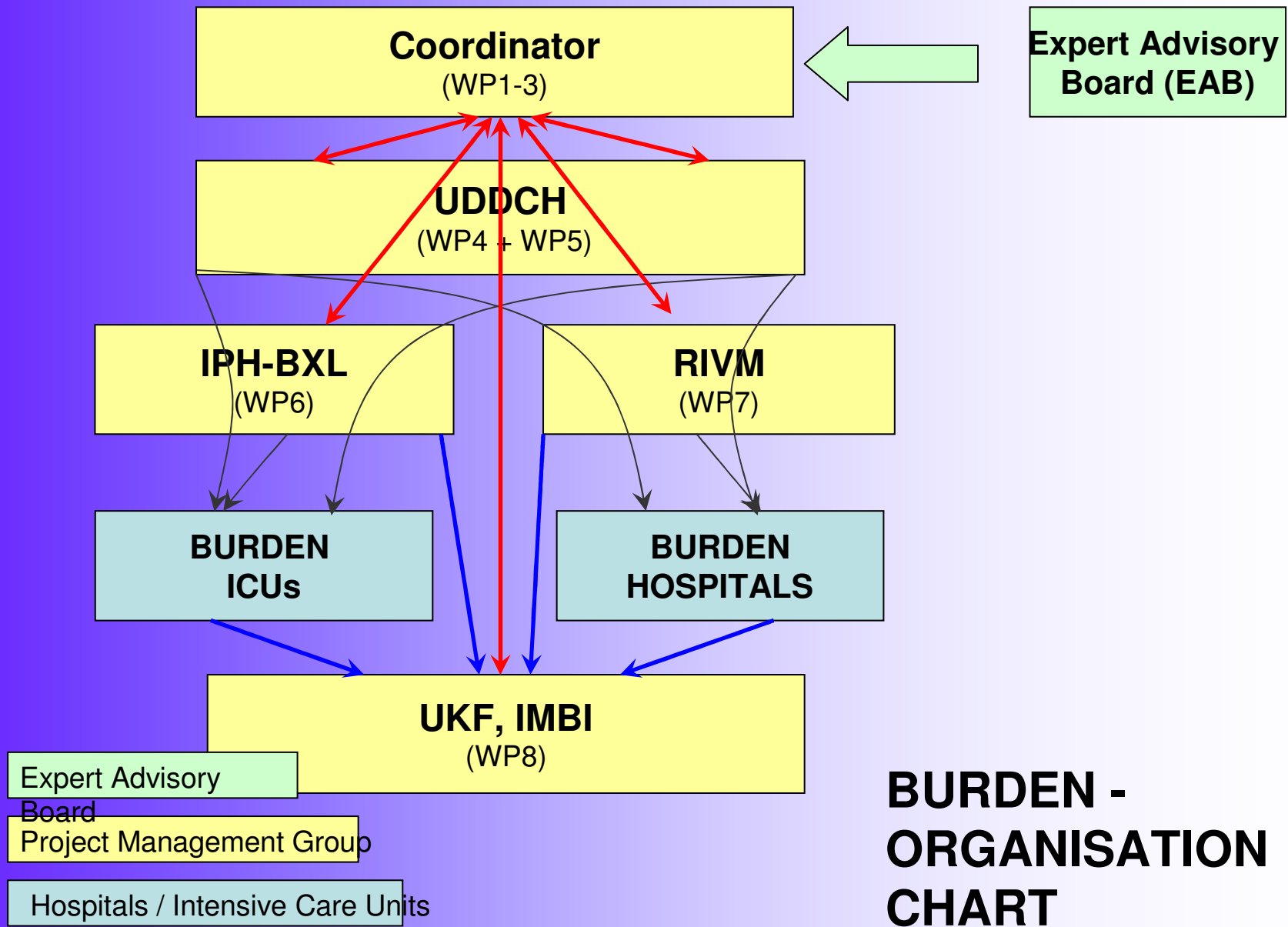
WP 7: Analytical Study: Burden of AMR

(National Institute of Public Health, Bilthoven, NL)

WP 8: Mathematical Model

(Universitätsklinikum Freiburg, Institute of Medical Biometry and
Medical Statistics, Freiburg, D)





BURDEN - ORGANISATION CHART

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WP 1: Coordination of the project

(Universitätsklinikum Freiburg, Germany)

Description of work (Month 1-36)

Coordination of the project will include:

- Monitor the work towards internal and external deliverables (7 Meetings)
- Seek consistency in the progress of the project
- Ensure adherence of events to the work plan
- Adapt planning to unforeseen events in the work plan
- Continuously review and assess project achievements
- Deal with contractual matters
- Ensure the overall quality of the outputs of activities
- Control the project development with respect to the schedule of deliverables
- Promote complementary medical, scientific and technological activities

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WP 2: Dissemination of the project

(Universitätsklinikum Freiburg, Germany)

Description of work (Month 1-36)

- A project logo will be designed and used together with the EU logo in all documents and publications relating to BURDEN.
- A fully functional and user-friendly website will be designed and serve as a major dissemination tool.
- 3-monthly feedback to participants; joint annual BURDEN-EARSS reports will be provided
- Scientific papers will be presented at conferences and in journals
- A press conference will be held at the end of the project to present all the results
- A final conference will be held in the EU parliament to inform politicians about resistance as a public health threat

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WP 3: Evaluation of the project

(Universitätsklinikum Freiburg, Germany)

Description of work (Month 13-36)

Evaluation of the project work by:

- Development of success indicators and their measures
- Collection of the evaluation data by written questionnaire, telephone survey or reaction sheet from different stakeholders i.e. participating hospitals, DG-Sanco and EU politicians (*Mo 18*)
- Interpretation of the data
- Use of the results for future planning



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WP 4: Identification of needs

(University of Dundee, Div. of Commun. Health Sciences, GB)

Specific objectives:

- to identify country-specific needs about AMR by different stakeholders
- to develop country-specific algorithms of costs for AMR infections

Description of work (Month 1-24)

- Creation of a working group in collaboration with ESCMID, EARRS and IPSE.
- Preparation of an assessment tool for identification of needs of stakeholders with respect to AMR and reimbursement policies
- Collection of basic AMR indicators on a national level
- Identification of factors driving and impeding the development of AMR and associated costs
- Generation of country specific algorithms for determination of costs incurred by AMR infections
- Feedback to national health care systems and providers
- Final report and recommendations

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WP 5: Case studies of the burden of AMR

Specific objectives:

- To illustrate the financial impact of AMR on care in European hospitals; besides this, to estimate the human and societal dimensions of infections caused by resistant pathogens (quality of life lost) and the repercussions for the health care systems (loss of confidence in hospitals).
- Case studies will be representative for AMR infections in each of the participating hospitals

Description of work (Month 1-24)

- Agreement on a standardized questionnaire (e.g. Illness Intrusiveness Ratings Scale or Rosenberg Self Esteem Scale)
- Distribution to participating ICUs (WP6)
- Analysis of data



WP 6: Impact of AMR and appropriate treatment in ICU-acquired infections

(Institute of Public Health, Brussels, B)

Specific objectives:

- To assess attributable mortality, excess length of stay and costs related to AMR in ICU-acquired BSI and pneumonia
- To assess the impact of (the delay in) appropriate antibiotic treatment on the outcome of infected ICU patients (approx. 200 ICUs across Europe within the HELICS-ICU network in collaboration with ESICM).

Description of work (Month 3-33)

- Convene workgroup, agree on additional variables and definitions
- Adaptation of existing tools (protocol and software)
- Training of national coordinators and ICUs, site visits
- Data collection in the ICUs in 2007
- Data entering in ICUs, transmission to national centre, data quality analysis, constitution of a EU database
- Data analysis
- Reporting and feedback to ICUs

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WP 7: Analytical Study: Burden of AMR Infection

(National Institute of Public Health, Bilthoven, NL)

Specific objectives:

- to determine morbidity, mortality and costs attributable to infections caused by AMR and compare it to susceptible pathogens in a set of collaborating hospitals in 15 European countries with moderate to high resistance rates
- to feed back individual results of collaborating hospitals
- to estimate the overall (national) cost of AMR.

Description of work (Month 3-27)

- Preparation of the data entry forms and software tools
- Preparation of a manual for standardized data collection
- Organization of two workshops on standardized data collection
- Data collection at collaborating hospitals (1 yr)
- Data analysis using matched cohort analysis for competing risks
- Report of results and generation of estimates of the global national costs of AMR



WP 8: Mathematical Model

(Universitätsklinikum Freiburg, Institute of Medical Biometry and Medical Statistics, Freiburg, D)

Specific objectives:

- Application of a mathematical model on AMR to estimate how AMR is developing in the participating countries and to predict future trends
- This model will take the temporal dynamics of the data into account in order to estimate morbidity, mortality and costs attributable to AMR infections

Description of work (Month 13-30)

- Application and fine tuning of a mathematical model for the estimation of epidemic infections due to AMR bacteria
- Import of resistance data from the EARSS and HELICS database and calculation of the modelled number of AMR infections
- Feedback to NHS (all countries participating in EARSS)
- Contribution to the multivariate statistical analysis of the cohort data collected in WP5 by the application of multi-state statistical methodology

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Conclusion

This project will provide valuable information on the costs of care for nosocomial infections caused by antimicrobial-resistant pathogens.

A valid and coherent measurement tool will be developed in a systematic manner which will assess the clinical and economic impact of AMR infections in European Member States.

The project will provide a sound basis for future planning and decision-taking.



Milestones and Deliverables

	13	14	15	16	17	18	19	20	21	22	23	24
WP 1				M4						M5		
WP 2												M3 D2.3
WP 3						M1 D3.1						
WP 4												M3
WP 5				D5.2	M6	M7 D5.3		M8				M9 D5.4/5
WP 6											M2	
WP 7						D7.2		M2				
WP 8			M1			D8.1						M2

Milestones and Deliverables

	25	26	27	28	29	30	31	32	33	34	35	36
WP 1				M6						M7		M8
WP 2												M4/5 D2.4/5
WP 3						M2		M3		D3.2		
WP 4												
WP 5												
WP 6				M3			M4 D6.2		M5 D6.3			
WP 7			M3 D7.3									
WP 8			D8.2	M3		D8.3						



Thank you!