

# How to do an antimicrobial resistance survey?

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Antimicrobial Stewardship  
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# Setting up an antimicrobial resistance survey

- **Why?**
  - Collect data
  - Analyse collected data
  - Improve the situation
- **Where?**
  - Hospital
  - Network of hospitals
- **How?**
  - Questionnaire

# Innovative Medicines Initiative (IMI): Innovative approach to combat AMR

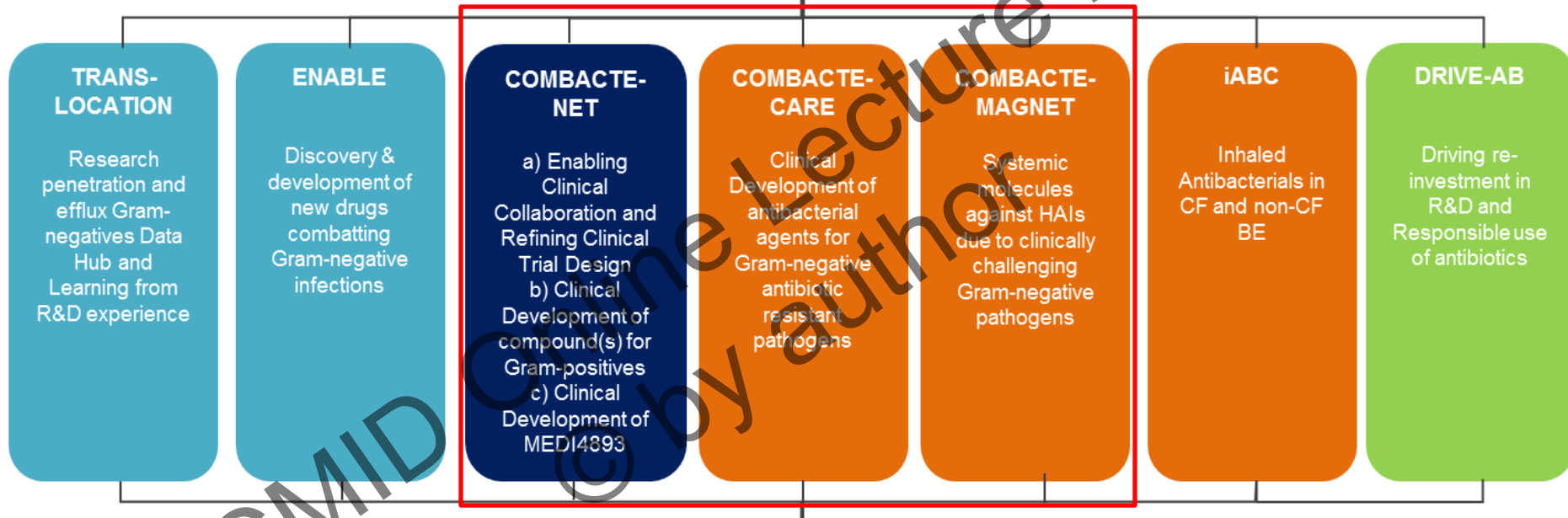
- The largest public-private partnership in life science R&D
- IMI1 Started in 2008, ended in 2014
  - 11 Calls launched
- **ND4BB** is part of the *Action plan against the increased threats from AMR* launched by the European Commission in November 2011



EFPIA = European Federation  
of Pharmaceutical Industries  
and Associations

# Overall Architecture of the ND4BB Programme

## ND4BB cross topic collaboration and dissemination



## ND4BB Information Center

All data generated is submitted and is accessible to all consortium partners

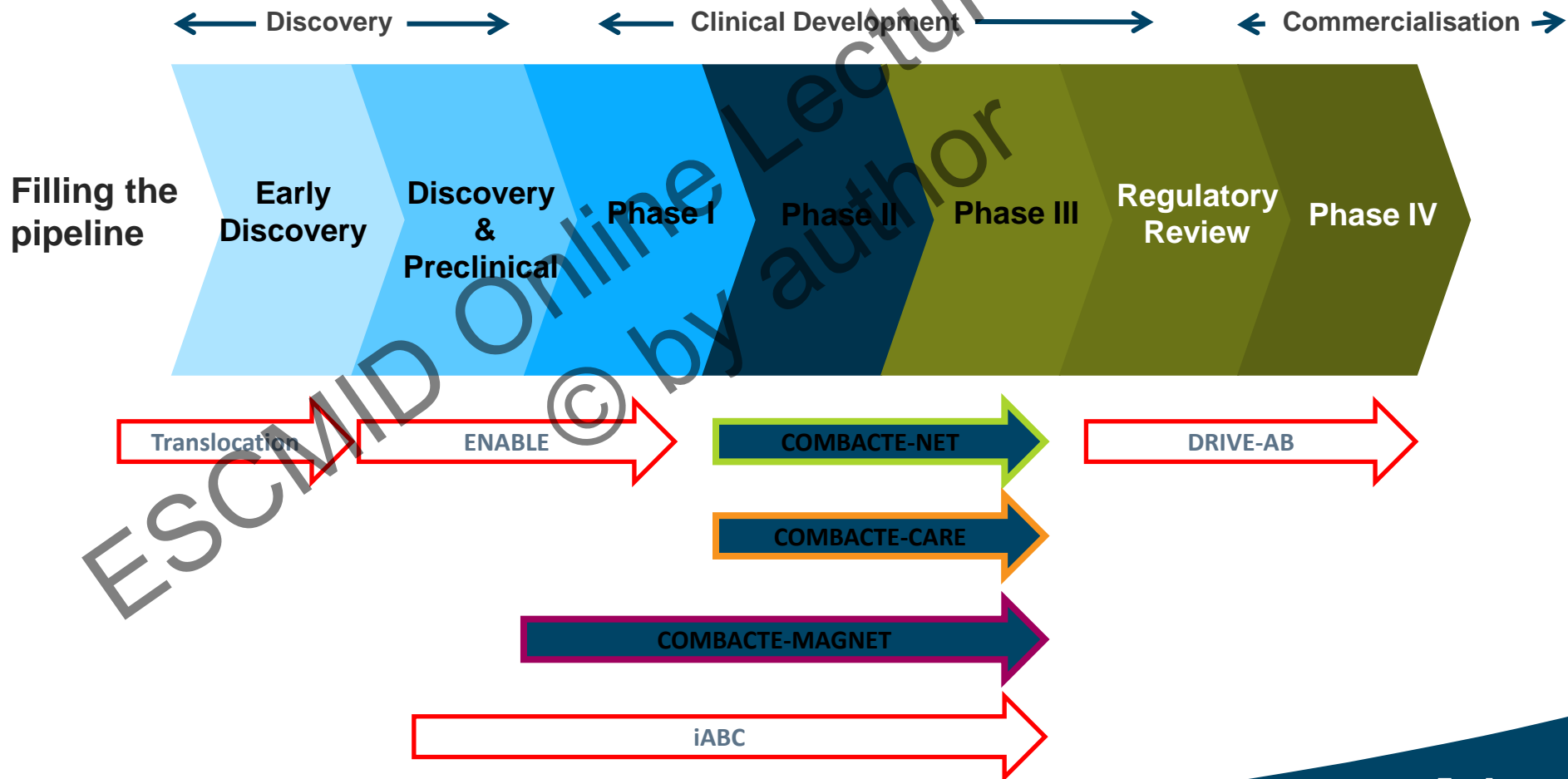
Drug discovery

Drug development Gram-positives

Drug development Gram-negatives

Economics and stewardship

# ND4BB Vision: Delivering a pipeline of new antibacterial agents to patients



# Objectives of the COMBACTE projects

- Create a self-sustaining antibacterial development network:
  - ✓ Expanding research and laboratory networks
  - ✓ Optimal alignment of clinical trials with investigator sites
  - ✓ Obtain clinical and epidemiological data
- Increase efficiency of antimicrobial drug development:
  - ✓ Align clinical trials with cutting edge molecular methodologies and trial design
  - ✓ Deliver clinical trials with various candidate compounds from EFPIA

# The 4 pillars of the COMBACTE projects

## **CLIN-Net**

High-quality clinical research network in all European countries with certification criteria and GCP Training program (Lead: UMC Utrecht, M. Bonten)

## **LAB-Net**

High-quality laboratory network in all European countries with assessment of existing laboratory methods, quality assessment system, specimens and strains repository (Lead: U of Antwerp, H. Goossens)

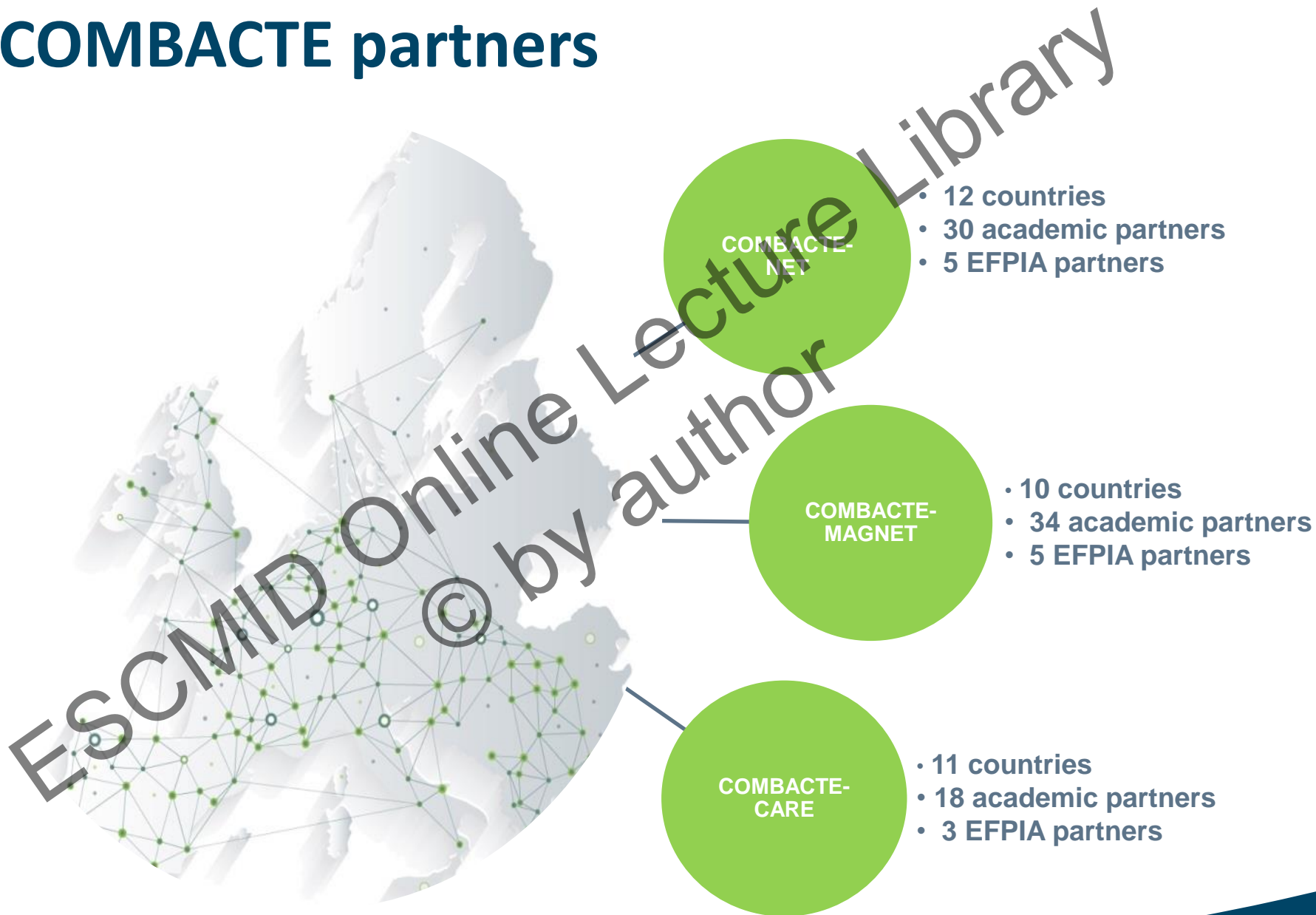
## **STAT-Net**

Network to improve clinical trials delivery, perform advanced biostatistical and PK/PD modelling studies, evaluate novel clinical design strategies using modern biostatistical concepts (Lead: U of Geneva, S. Harbarth)

## **EPI-Net**

Network to identify and map existing surveillance systems, to establish frameworks for data collection to support antibacterial drug development (Lead: U of Tuebingen, E. Tacconelli)

# COMBACTE partners





# COMBACTE network in numbers March 2016

**40** countries

**477** cities

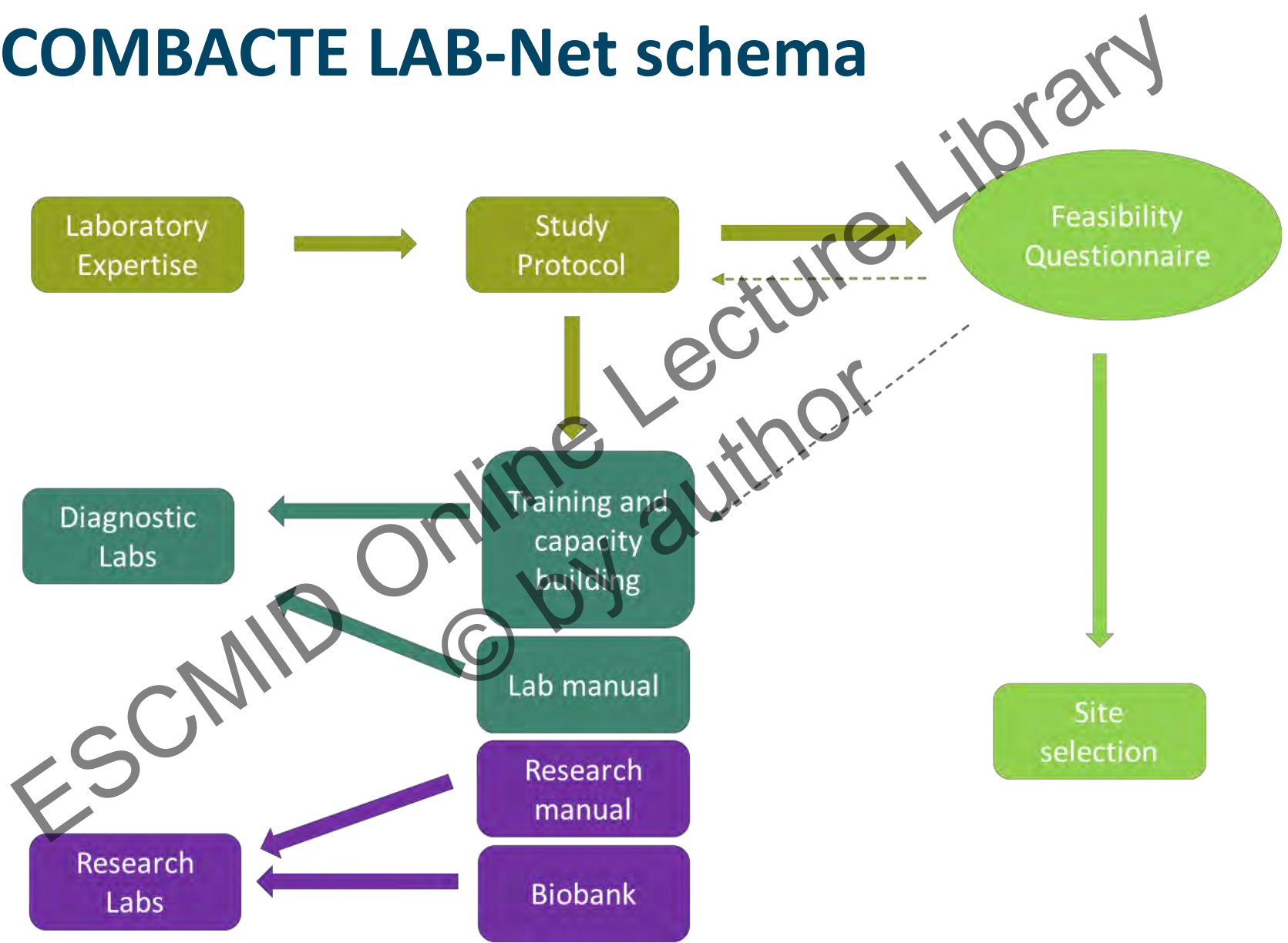
**719** hospitals

**1371** hospital contacts

**480** laboratories

**606** lab contacts

# COMBACTE LAB-Net schema



# Site selection process



# LAB-Net Feasibility questionnaires

## Baseline questionnaire

- To assess the capability of a laboratory to participate in a clinical trial
- To assess the need for capacity building and training

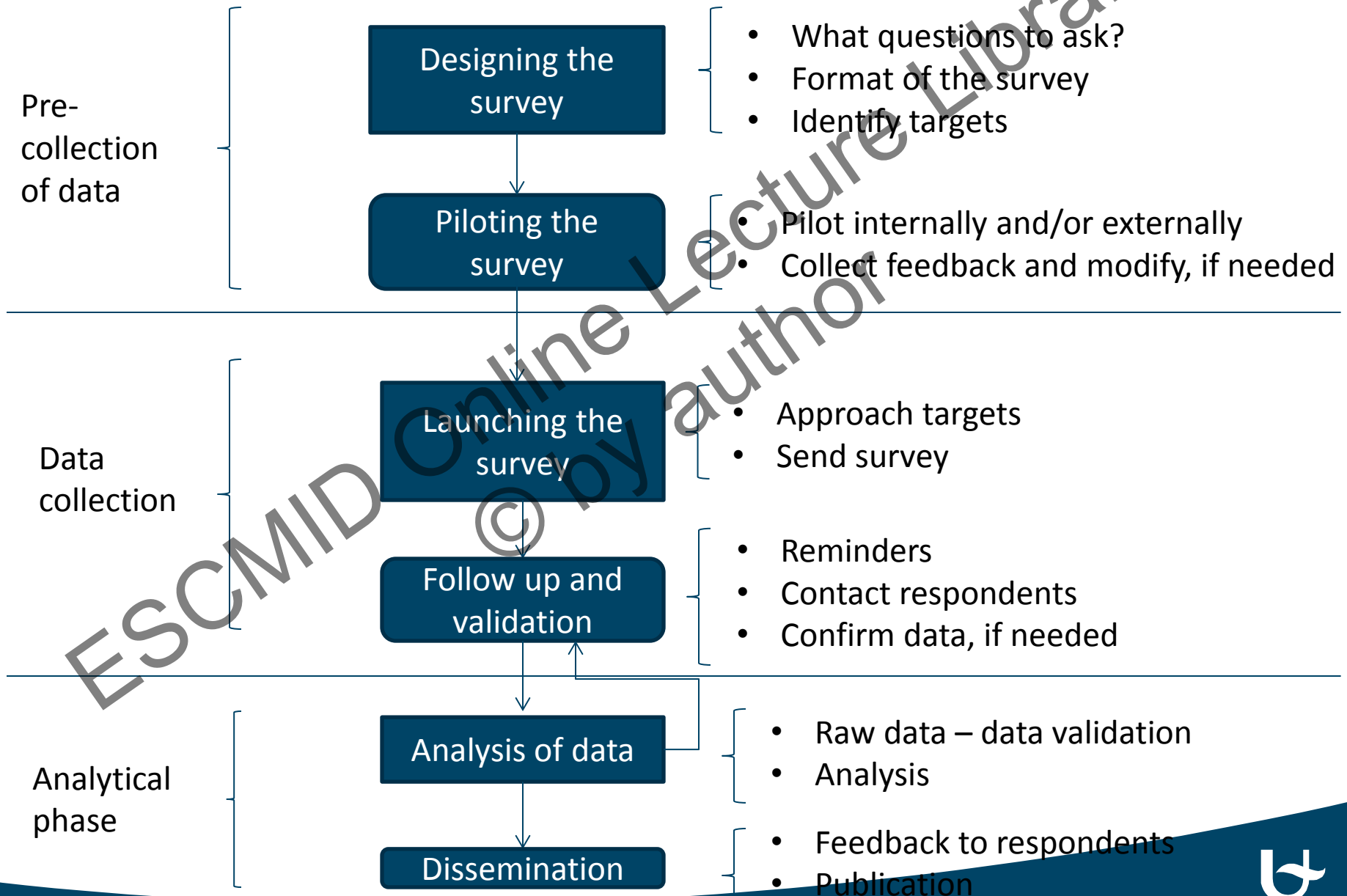
General baseline questions covering: communication, laboratory operational information, accreditation, quality assurance, SOPs, microbiological analysis methods, antimicrobial susceptibility testing methods, data recording, transportation and storage of clinical and microbiological samples

## Clinical trial questionnaires

- Tailor-made to collect detailed data specific to a clinical trial

Examples include: microbiological data, methods for the detection and identification of micro-organisms, antimicrobial susceptibility testing, quality control, and laboratory infrastructure.

# Steps of the survey



# Pre-collection of data

Designing the survey

- What questions to ask?
- Format of the survey
- Identify targets

Piloting the survey

- Pilot internally and/or externally
- Collect feedback and modify, if needed

- **LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives**
  - Prevalence of CR GNB
  - Surveillance programmes
  - Methods for detection of CR GNB
  - Confirmation of CR GNB
  - Screening
  - Accreditation
  - Availability during the weekends
  - Turnaround time for samples transfer to the lab
  - Reporting of results
  - Storage of strains
  - ❖ **Piloted in 6 sites**

# LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives

**8.1 What is the prevalence of carbapenem-resistant Gram-negatives detected in your laboratory from routine samples (excluding screening samples) in 2014 and only including one isolate per patient?**

Species	Total N° of isolates in 2014	N° of isolates resistant to carbapenems in 2014
E. coli		
K. pneumoniae		
P. aeruginosa		
Acinetobacter spp.		

**8.2 What are the numbers of carbapenem-resistant Gram-negative isolates coming from the following patients in 2014, excluding cystic fibrosis patients?**

Species	Respiratory tract samples	Urine samples	Blood cultures	Other samples
E. coli				
K. pneumoniae				
P. aeruginosa				
Acinetobacter spp.				

**8.3 Have you had any outbreaks of carbapenem-resistant Gram-negatives in 2014 and/or 2015? Outbreak is defined as a sudden increase in the number of carbapenem-resistant Gram-negatives from clinical samples in your hospital.**

	Yes	No
Enterobacteriaceae	<input type="radio"/>	<input type="radio"/>
P. aeruginosa	<input type="radio"/>	<input type="radio"/>
Acinetobacter spp.	<input type="radio"/>	<input type="radio"/>

# LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives

- Detection of CR Gram-negatives:
  - Culture vs. molecular methods

2.1 Do you use culture method or molecular diagnostics to detect carbapenem-resistant Gram-negatives directly from the following samples?

Type of samples	Culture		Molecular diagnostics	
	Yes	No	Yes	No
Sputum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Endotracheal aspirates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bronchoalveolar lavage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Urine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blood cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rectal swab	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives

- Confirmation of carbapenem resistance

2.6 How do you confirm the carbapenem resistance?

	Enterobacteriaceae	
	Yes	No
Antimicrobial susceptibility testing	<input type="radio"/>	<input type="radio"/>
Molecular tests	<input type="radio"/>	<input type="radio"/>
MALDI-TOF	<input type="radio"/>	<input type="radio"/>
(Modified) Hodge test	<input type="radio"/>	<input type="radio"/>
In-house Carba NP test	<input type="radio"/>	<input type="radio"/>
Rapidec Carba NP (Blomérieux)	<input type="radio"/>	<input type="radio"/>
BDG30 Neo-Rapid CARBA Screen	<input type="radio"/>	<input type="radio"/>
Blue-Carba test	<input type="radio"/>	<input type="radio"/>
CXA-48 IC-Set	<input type="radio"/>	<input type="radio"/>
BYG test	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>

# LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives

- Screening:

**3.1 Do you perform screening for carbapenem-resistant Gram-negatives?**

- Yes
- No

**3.1a If carbapenem-resistant Gram-negatives have been isolated from a clinical sample, do you perform screening from other sites than the infection site?**

- Yes
- No

**3.2 What patient population gets screening for carbapenem-resistant Gram-negatives?**

- ICU patients (not ventilated)
- ICU patients on mechanical ventilation
- Other

Please specify:

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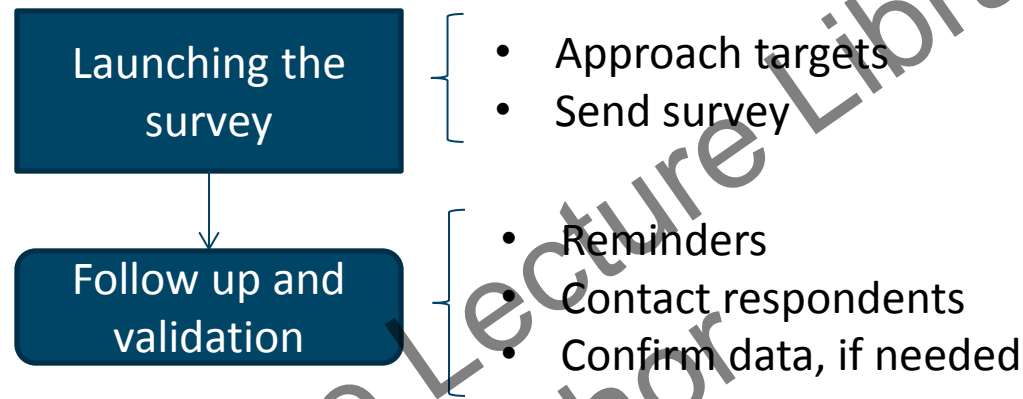
**3.3 Which methods do you use for screening of carbapenem-resistant Gram-negatives?**

- Culture
- Rapid diagnostic tests
- Cepheid Xpert Carba R
- Other

Please specify:

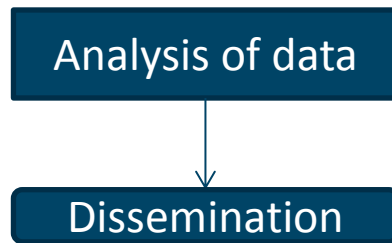
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# Data collection



- **LAB-Net questionnaire on detection of carbapenem-resistant Gram-negatives**
  - 170 laboratories in 18 countries between June and December 2015
  - 125 completed surveys
  - ❖ 3 weeks deadline
  - ❖ 2 reminders
  - ❖ Phone calls to confirm data

# Data analysis



- Raw data – data validation
- Analysis
- Feedback to respondents
- Publication

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# Some tips and tricks

- Plan your survey well
- Ask appropriate questions
- Give enough options to answer but not too many
- Leave the difficult questions for the end of the survey
- Put your questions in a logical order
- Keep it simple
- Keep it short
- Be creative...

Take Home Messages



**Thank you for your attention!**

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