BoD with RWD
Vaccines and Infectious Diseases in the Ageing Population

To address the current challenges of (P)VPD in ageing adults

To provide evidence-based knowledge on possible specific vaccination strategies to enhance healthy ageing.
WP1. Burden of infectious diseases in aging adults (50+)
VACCINES ARE NOT JUST FOR CHILDREN
ADULTS 65+ CAN BE PROTECTED
FROM DEADLY DISEASES

- Hepatitis A
- Hepatitis B
- COVID-19
- Pneumococcal Disease
- Whooping Cough
- Mumps
- Tetanus
- Shingles
- Measles
- Meningococcal Disease

Hepatitis A
Hepatitis B
COVID-19
Pneumococcal Disease
Whooping Cough
Mumps
Tetanus
Shingles
Measles
Meningococcal Disease

- Diphtheria
- HPV
- Rubella
- Chickenpox
- Influenza (Flu)

** KNOW THE RISKS FOR ADULTS AGE 65+ **

- Higher risk of complications from many vaccine-preventable diseases
- 6X higher risk of dying from flu and related complications
- The risk of hospitalization from pneumococcal pneumonia is more than 6X greater for adults 65+
- ~1 in 3 US adults will develop shingles during their lifetime, and older adults are at greater risk of hospitalization and other severe complications
1. We identified (P)VPD based on WHO summary information and input from project members.
2. Selection: relevance & Phase II

- Influenza
- Varicella/herpes zoster
- Herpes simplex virus
- Norovirus
- Respiratory syncytial virus (RSV),
- Staphylococcus aureus (S. aureus)
- Extra-intestinal pathogenic Escherichia coli (ExPEC)
- Pneumococcal pneumonia (PnPn)
3. Identifying data gaps

Experts + Literature review

DALYs
QALYs
Morbidity
Mortality
AMR
Pneumococcal pneumonia

ExPEC
European data sources for computing burden of (potential) vaccine-preventable diseases in ageing adults

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Objective

Estimate the burden of PP/IED using a composite BoD measure (DALYs)

The following components are required:

- Incident and recurrent disease
- Disability duration
- Mortality
- Sequelae
Pilot regions
Danish Microbiology database (MiBa)  
Danish National Patient Register (DNPR)  
- Admission to hospitals and diagnoses  
Danish Vaccination Register (DVR)  
Individuals identified with the infection under question  
Danish Civil registration system (CRS)  
- Unique identifier  
- Vital status  
The databases are linked through the unique identifier  

Population Information System  
SIP  
Mortality  

Personal ID number  
Hospital  
Ambulatory/pharmacy  
Associated resources  
MBDS  
AED  
SIA  
GAIA  
RedHiva  
VIS  

AIV
VID “Valencia Integrated Databases”
Retrospective cohort

50+

2010-2018
Epidemiological challenges
Case definition
Case definition

A49.9A
A41.9B
A41.9C
Clinical practice
Preliminary Results
Demographics

Spain: 2.3M  
DK: 2.8M
Testing

Positives for **growth** by year & site

![Bar chart showing positives for growth by year and site]
Testing

Positives for Ag by year & site

- Positive antigen Spain
- Positive antigen Denmark
Testing

Average ratio growth/Ag by site

28

1
Antibiotics use

Figure 2. Community consumption of antibiotics for systemic use (ATC group J01) at ATC group level 3, by country, EU/EEA, 2020 (expressed as DDD per 1,000 inhabitants per day)

Figure 1. Community consumption of antibiotics for systemic use (ATC group J01), by country, EU/EEA countries, 2020 (expressed as DDD per 1,000 inhabitants per day)
Antibiotics use

20/14

40%

DDD/1.000
Antibiotics use
Results

IR IPP by year & site

IR (overall)

10 \(10^5\)
19 \(10^5\)
Results

IR NIPP by year & site

IR (overall)
48 \(10^5\)
17 \(10^5\)
Ongoing: DALYS

Pneumococcal pneumonia (PP)

Invasive PP
- Complicated (inpatients) → 1. Death
- Non-complicated (inpatients) → 2. Sequela: bacteraemia & sepsis
- Non-complicated (outpatients) → 3. Sequela: cardiovascular events

Non-invasive PP
- Complicated (inpatients) → 4. Sequela: acute kidney injury
- Non-complicated (inpatients) → 5. Sequela: respiratory failure / ARDS
- Non-complicated (outpatients) → 6. Recurrence

Orange health states are directly informed by incidence data

R = recovered

# reference number of health state
Thanx!

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