

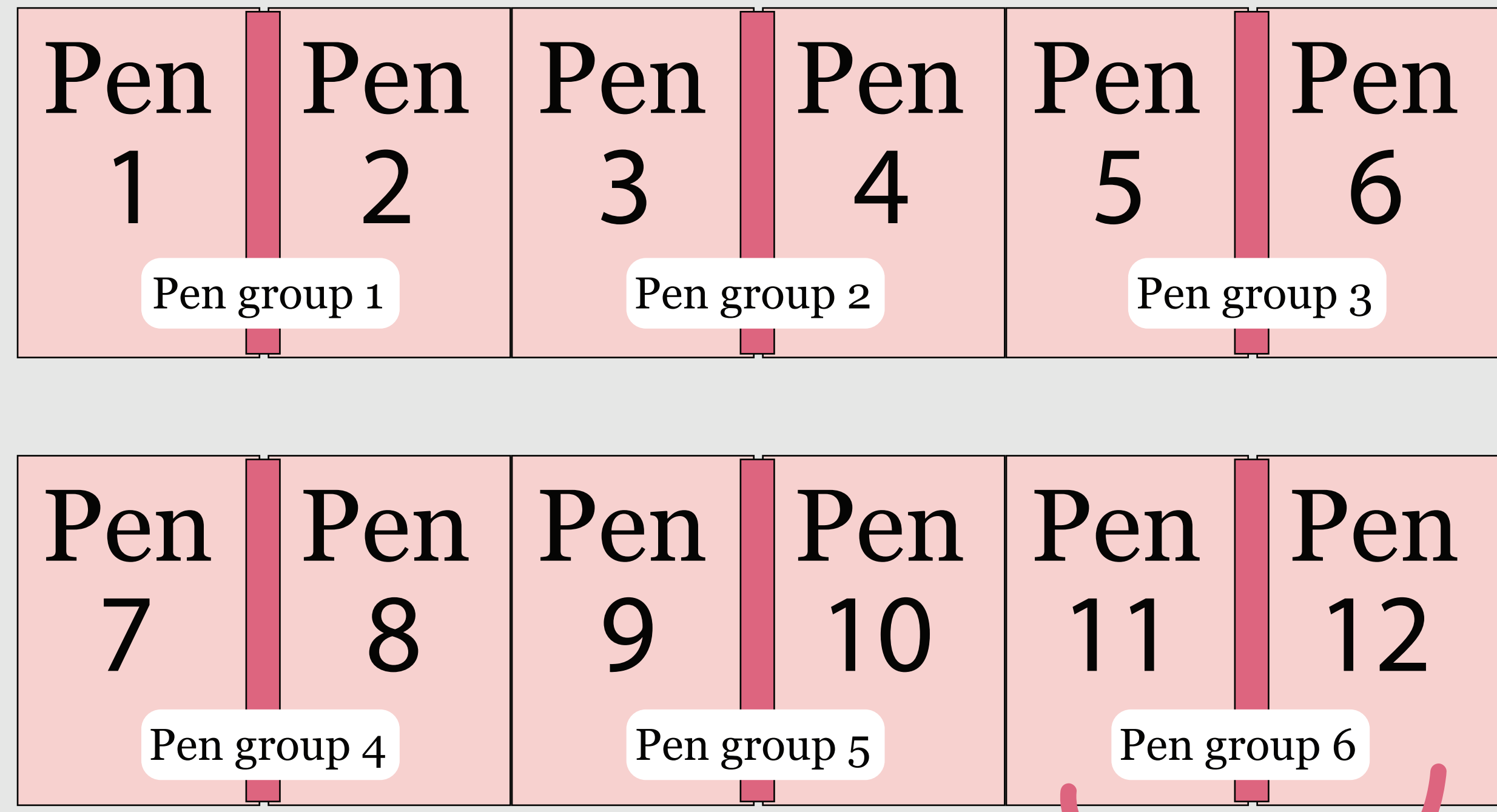
SIMULATING A Burden beyond bills

The multifaceted burden of *Mycoplasma hyopneumoniae* infections
in fattening pigs

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1 Compartment, 12 pigs per pen

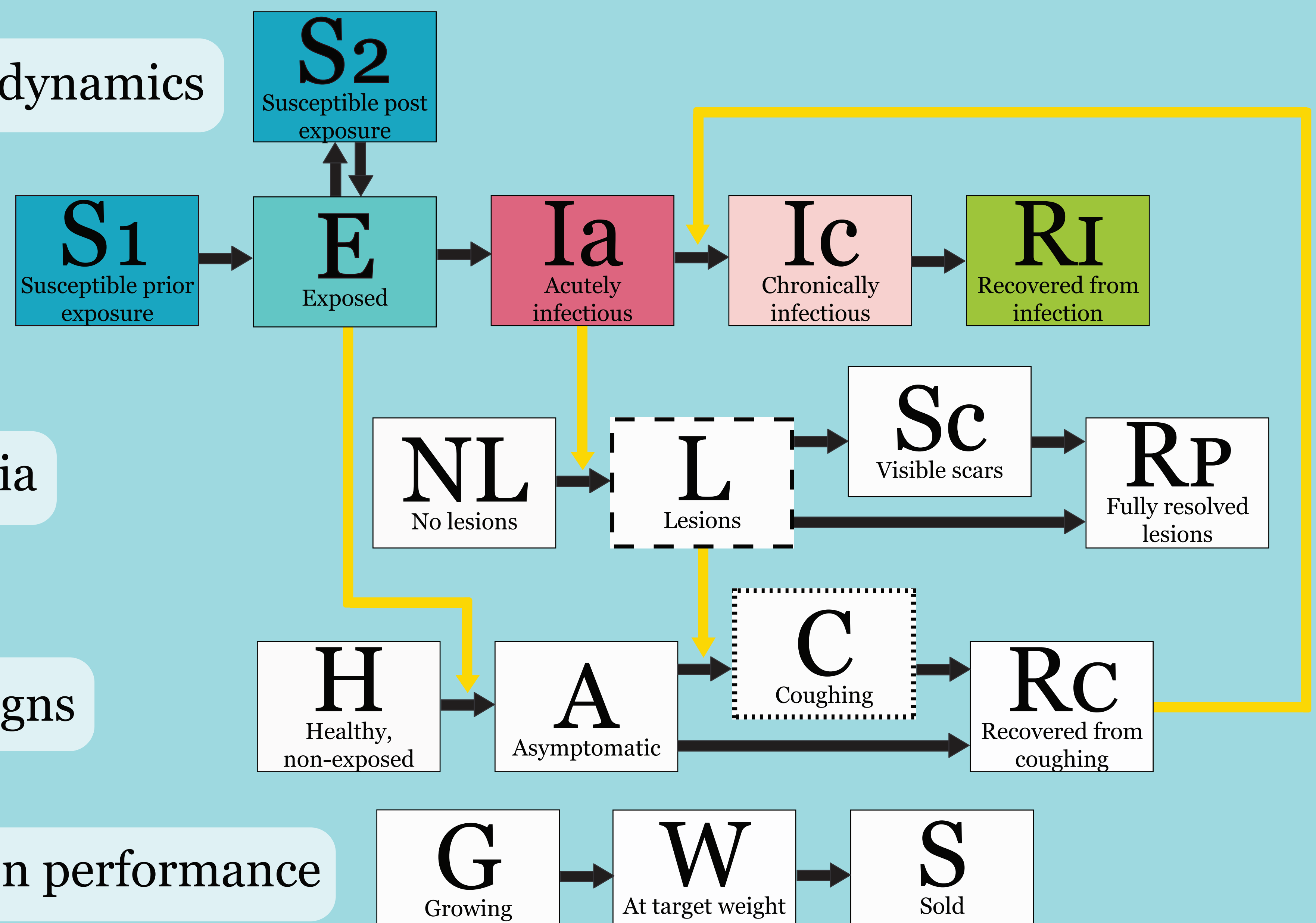


Aim: to develop a model that evaluates multiple burdens of *Mycoplasma (M.) hyopneumoniae* infection: financial losses, health impacts and antimicrobial use

Dutch fattening farm: all-in/all-out system
Antibiotic treatment on compartment level, triggered by detection of coughing pigs

Individual-based model developed within EMULSION¹
Transmission dynamics modeled at different levels: within-pen, between pens that share a feeding trough (pen groups), and indirect transmission

Infection dynamics



Pneumonia

Clinical signs

Production performance

Yellow arrows indicate interdependencies, meaning a pig can only make the transition if it is also currently in the state from which the yellow arrow originates.

MODEL RESULTS

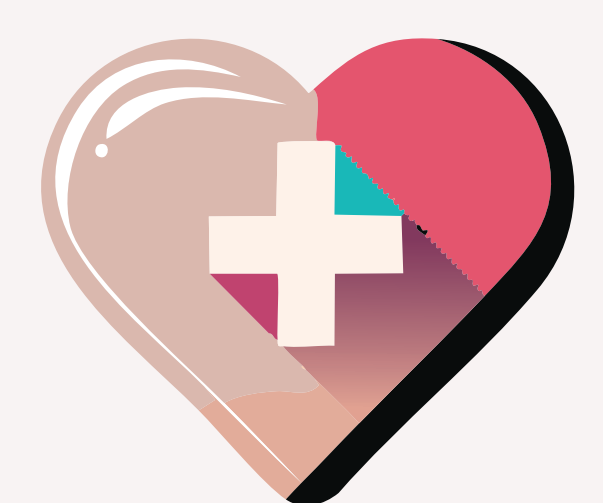
Average outcomes for a batch experiencing a *M. hyopneumoniae* outbreak (example scenario with a starting prevalence of 10%):



€370 decrease in revenues*

€19 increase in feed and treatment costs*

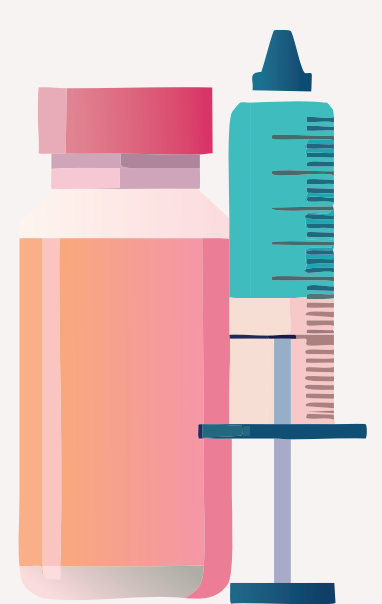
* Compared with a disease-free batch



All pigs became infected

64% showed clinical signs

13% had lung lesions at slaughter



559 g of antibiotics were administered

21% was used for metaphylaxis



Scan to see a
simulated
outbreak!

This novel approach...

Considers several burdens simultaneously throughout the cycle

Provides insight into spread of the infection within a compartment and metaphylactic treatments

Forms a basis for modelling individual-/pen-level interventions

¹ <https://sourcesup.renater.fr/www/emulsion-public/>



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