

# Behavioral change models for infectious disease transmission: a systematic review (2010-2015)



## Introduction

- Infectious disease transmission and policy interventions are subject to **hosts' behavior**.
- Incorporate **behavior change** into models for infectious disease transmission.

## Objectives

- Systematically review behavioral change models (BCM)
- Investigate how BCM literature has coped with technological advancements, lack of observational data and addressing irrational behavior.

## Methods

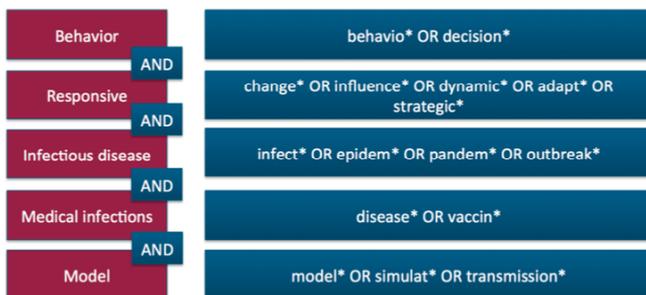


Figure 1: Description of search query used to retrieve records from PubMed and Web of Science.

## Results

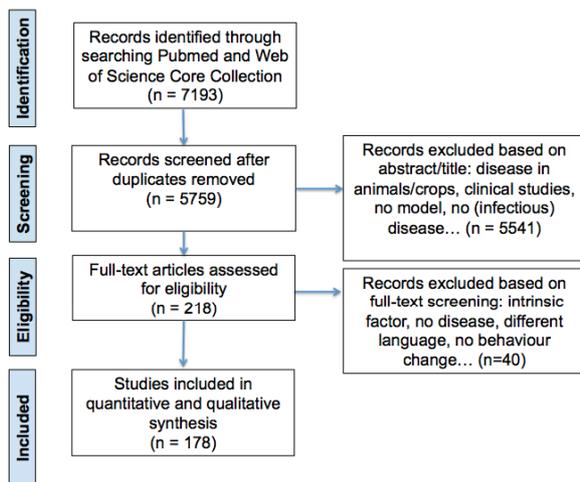


Figure 2: PRISMA flow diagram

- Increasing trend in published BCMS, frequently coupled to (re)emergence events: from 18 articles in 2010 to 38 articles in 2015.
- Models applied to **influenza or ILI** stand out, together with 'general' models.
- Only a minority of studies uses **empirical data** for parameterization or validation of their model.
- **Quantified** BCMS mostly apply observations from the 2009 influenza pandemic.

## How is information transferred to behavior?

### 1. Exogenous behavior formation (16/178)



### 2. Information threshold (29/178)



### 3. Information as dynamic parameter (76/178)



### 4. Economic objective function (37/178)



### 5. Economic objective function with social learning/imitation (26/178)



## Conclusion

- Classification of BCMS based on the information transfer in the decision-making process.
- Despite advancements, most models **lack representative data and a validation process**.
- Additional data sources are needed to specify relevant BCMS.

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## References

[1] Verelst F, Willem L, Beutels P. Behavioural change models for infectious disease transmission: a systematic review (2010-2015). Journal of The Royal Society Interface. 2016 Dec 1;13(125):20160820.