

Amandine PEPIOT

PhD candidate

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RESEARCH

Research engineer, IPLESP, Paris, France

2019

Analysis of the feasibility of using statistical models to obtain estimates of epidemiological indicators of HIV infection in West Africa (Togo, Burkina Faso, Mali)

Skills: R, SAS

Research engineer, IPLESP, Paris, France

2018 - 2019

Estimation of incidence, hidden epidemic and time between infection and diagnosis of HIV based on departmental data on new diagnoses.

Skills: back-calculation model, R, C++, Matlab

Intern, IPLESP, Paris, France

2018

Subject: « Evaluating the impact of hometests on the HIV epidemic of men who have sex with men in France » [\[report\]](#)

Supervisors: Virginie Supervie (Inserm) and Romulus Breban (Institut Pasteur)

Skills: epidemic models, numerical analysis, Matlab

Intern, Terres Inovia, Grignon, France

2017

Sujet : « Analysis and implementation of linear models to predict the average yield of rapeseed in France »

Supervisor: Sébastien Gervois (Terres Inovia)

Skills: times series, R, Shiny (RStudio)

TEACHING

Teaching assistant at INSA Toulouse, France

2022-now

Theoretical and applied mathematics for 1st, 2nd and 3rd years of engineering study. *Full time.*

Lab: GMM INSA Toulouse - IMT (UMR 5219)

Teaching mission as a PhD student, Sorbonne Université, Paris, France

2019-2021

Tutorials of biostatistics for first- and second-year medical students (2×64 hrs).

EDUCATION

PhD

2019-now

Under the supervision of Romulus Breban (Institut Pasteur) and Virginie Supervie (Inserm)

Lab: IPLESP, UMR-S 1136 Inserm-Sorbonne Université, France

Subject: *Infectious disease elimination using self-testing? Game-theoretical approach and application to the HIV epidemic.*

Skills: epidemic models, numerical analysis, Matlab, utility theory

Funding: Sidaction

Doctoral school: Pierre Louis de santé publique (ED 393)

Academic exchange

2017-2018

Technische Universität Dresden, Germany

*Theory and applications of partial differential equations, finite elements, mathematical applications in biology and risk modeling***Engineering school - applied mathematics**

2015-2018

National Institutes of Science and Technology (INSA), Rennes, France

*Theoretical and applied mathematics***Classe préparatoire aux grandes écoles MPSI-MP**

2013-2015

Lycée Victor Hugo, Besançon, France

*Mathematics, physics and industrial sciences***PUBLICATIONS**

Article, Pepiot A., Supervie V. and Breban R. *Impact of voluntary testing on infectious disease epidemiology: A game theoretic approach*. PLOS ONE, 18(11): e0293968, November 2023 [[paper](#)]**TALKS**

Poster, Pepiot A., Supervie V. and Breban R. *Can self-testing end infectious disease epidemics? A tentative answer through game theory*, ECMTB, Heidelberg, September 2022 [[poster](#)]**Presentation**, Pepiot A., Supervie V. and Breban R. *Impact of voluntary testing on infectious disease epidemiology: a game theoretic approach*, Journée des Jeunes Chercheurs Sidaction, Paris, November 2020**Poster**, Pepiot A., Supervie V. and Breban R. *Vers une élimination des maladies infectieuses avec l'auto-dépistage ? Approche par la théorie des jeux et application à l'épidémie du VIH*. Université des Jeunes Chercheurs Sidaction, Carry-le-Rouet, November 2019 [[poster](#)]**SKILLS**

LANGUAGES**French** - native**English** - proficient**German** - basic/intermediate**PROGRAMMING**

R, Matlab, Python

OTHERSL^AT_EX, Microsoft Office, Git

PhD subject - Infectious disease elimination using self-testing? Game-theoretical approach and application to the HIV epidemic.

Over the past two decades, remarkable progress has been made in the fight against HIV. The life expectancy of people living with HIV has dramatically increased since effective combination antiretroviral treatment (cART) has been made broadly available and continues to be improved. Additionally, effective cART prevents onward HIV transmission, by reducing the HIV viral load in body fluids to undetectable levels. Today, it is believed that early HIV diagnosis and treatment has the potential to end the HIV epidemic. However, this will require reducing the time interval between HIV infection and HIV diagnosis, which remains very long. For instance, in France, 50infection. This may largely be due to the fact that the HIV infection can remain asymptomatic for years and the infected individual does not find much motivation to get tested for HIV. There is an urgent need to improve HIV-testing practices. Two recent tools for HIV self-testing could offer new opportunities to increase testing frequency: 1) the HIV home self-test and 2) the selfsampling kit for screening for multiple sexually transmitted infections. The HIV home self-test entered the French market in 2015, while the self-sampling kit is still under investigation in a large study in France. Using data from research surveys on these self-testing tools, innovative mathematical models, accounting for decision-making about testing and perception of the HIV epidemic, we propose to determine whether and under what conditions self-testing could avert the HIV epidemic. The key determinants to be considered for self-testing are: the course of the HIV epidemic, the convenience, price and reliability of self-tests, and how well individuals apply self-tests (for example, the HIV home self-test). The results that we will obtain can be translated into new public health policies to improve HIV testing recommendations, better meet the testing needs of individuals, and increase the acceptability of HIV testing tools. The ultimate goal is to decisively contribute to sooner diagnosis of HIV, which is essential to reduce HIV-related mortality and curb down the epidemic.