

## Curriculum Vitae

**DAVID N. FISMAN M.D., M.P.H., F.R.C.P.(C)**

### Associate Professor

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### A. DATE CURRICULUM VITAE PREPARED:

April 17, 2013

### B. BIOGRAPHICAL INFORMATION

#### 1. Academic Background

##### Education:

2000 MPH, Harvard School of Public Health (Clinical Effectiveness), Boston, MA. USA

1994 MD, University of Western Ontario, London, Ontario, Canada

##### Postdoctoral Training:

###### *Internships and Residencies*

1996 - 1997 Senior Assistant Resident, Rhode Island Hospital, Providence

1995 - 1996 Junior Assistant Resident, Royal Victoria Hospital, Montreal

1994 - 1995 Intern in Medicine, Royal Victoria Hospital, Montreal

###### *Clinical and Research Fellowships*

1998 Fellow in Clinical Effectiveness, Harvard School of Public Health, Boston, MA

1999 – 2001 Agency for Healthcare Policy and Research Postdoctoral Fellow, Center for Risk Analysis, Harvard School of Public Health, Boston, MA

1997 - 1999 Clinical Fellow in Medicine, Infectious Diseases, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

**Licensure and Certification:**

2000	Subspecialty Certification in Infectious Diseases, American Board of Internal Medicine
1998	Fellow of the Royal College of Physicians of Canada #514086 (active)
1997	Specialty Certification in Internal Medicine, American Board of Internal Medicine
1995	Licentiate of the Medical Council of Canada #79306

**2. Academic Employment*****Current principal appointment***

2009- present	Associate Professor, Tenured (July 1, 2012), Dalla Lana School of Public Health, Faculty of Medicine, University of Toronto
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***Current academic appointments***

2010-present	Full member of School of Graduate Studies, University of Toronto
2009-present	Associate Professor, Department of Health Policy, Management and Evaluation, University of Toronto
2009-present	Adjunct Associate Professor of Medicine, Department of Medicine, University of Toronto
2007-present	Associate Member, School of Graduate Studies, University of Toronto

***Current hospital/public health agency appointments***

2012-present	Attending Physician, Toronto Western Hospital, Toronto, Ontario, Canada
2010-present	Attending Physician, Department of Medicine, North York General Hospital, Toronto, Ontario, Canada
2010-present	Assistant Physician, Department of Medicine, University Health Network, Toronto, Ontario, Canada

***Previous academic appointments***

2007-2009	Assistant Professor, Health Policy, Management and Evaluation, University of Toronto
2008-2009	Assistant Professor, Dalla Lana School of Public Health, Faculty of Medicine, University of Toronto
2005-2006	Visiting Research Scholar and Visiting Assistant Professor of Public Affairs, Center for Health and Wellbeing, Woodrow Wilson School, Princeton University
2004-2006	Assistant Professor, Department of Medicine, Division of Infectious Diseases, Drexel University College of Medicine

- 2004-2006 Associate Scholar, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania
- 2003 - 2006 Assistant Professor, Department of Epidemiology and Biostatistics, Drexel University School of Public Health
- 2002 - 2003 Associate Member, Clinical Health Sciences (Health Research Methodology) Graduate Programme, McMaster University, Hamilton, Ontario
- 2001 – 2004 Assistant Professor (Part Time), Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ontario

***Previous hospital/public health agency appointments***

- 2009-2010 Adjunct Scientist, Ontario Agency for Health Protection and Promotion, Toronto, Ontario, Canada
- 2008-2009 Medical Epidemiologist, Ontario Agency for Health Protection and Promotion, Toronto, Ontario, Canada
- 2006-2009 Scientist, Child Health Evaluative Sciences, Research Institute of the Hospital for Sick Children, Toronto, Ontario, Canada
- 2006-2008 Medical Epidemiologist, Ontario Central Public Health Laboratory, Toronto, Ontario, Canada
- 2004-2006 Attending Physician, Department of Medicine, Hahnemann Hospital, Philadelphia, PA
- 2002 - 2003 Attending Physician, St. Joseph’s Healthcare, TB Clinic, Hamilton, Ontario, Canada
- 2002 - 2003 Medical Advisor, Phoenix Association (Herpes Support Group), Toronto, Ontario, Canada
- 2001 - 2003 Associate Medical Officer of Health, City of Hamilton Department of Social and Public Health Services, Hamilton, Ontario, Canada
- 2001 - 2003 Medical Director for Sexually Transmitted Diseases and Information and Sexual Health Services, City of Hamilton Department of Social and Public Health Services, Hamilton, Ontario, Canada
- 2001 - 2003 Associate Staff Physician and Director, Hamilton General Hospital Sexually Transmitted Diseases Clinic, Hamilton Health Sciences, Hamilton, Ontario, Canada
- 2000 - 2001 Staff Physician, Department of Medicine, Division of Infectious Diseases, Beth Israel Deaconess Medical Center, Boston, MA
- 1998 - 2000 Assistant in Medicine, McLean Hospital, Belmont, MA
- 1997 - 2000 Fellow, Division of Infectious Diseases, Beth Israel Deaconess Medical Center, Boston, MA

**3. Awards and honours**

- 2009 Schwartz-Reisman Hospital for Sick Children Canada-Israel Scholars Program (\$8000) [declined].

2005	Drexel University School of Public Health Class of 2005 “Golden Apple” Award for Excellence in Teaching Who’s Who in American Teaching, 2005 Edition.
2003	International Herpes Management Forum Elion Young Investigator Award
2003	Outstanding Teacher, McMaster University International Medical Graduate Program
2001	Distinguished Reviewer, Journal of General Internal Medicine
1997	Winner, Associates Vignette Poster Competition, American College of Physicians 78th Annual Session, Philadelphia
1996	Merck-Frosst Resident Research Award, Royal Victoria Hospital
1994	Medical Honor Society, University of Western Ontario
1993	First Prize, Alpha Omega Alpha Medical Student Essay Competition
1992	Alexander Hotson Memorial Scholarship, University of Western Ontario
1988	CFPL-TV Scholarship, University of Western Ontario

#### **4. Professional Affiliations and Activities**

##### ***Professional Associations***

2008-present	International Society for Infectious Diseases
2006-2009	American Society for Microbiology
2005-present	Fellow of the College of Physicians of Philadelphia
2005-present	Society for Epidemiologic Research
2002-2011	Society for Hospital Epidemiology of America
2004-2006	Pennsylvania Public Health Association
2002- present	Canadian Infectious Disease Society—Association of Medical Microbiology and Infectious Disease (AMMI) Canada
2001 -present	Society for Medical Decision Making
2001 - 2003	Association of Local Public Health Agencies (alPHa)
1998 -2003	Massachusetts Medical Society
1997 -present	Infectious Disease Society of America
1997 - 1998	Society of General Internal Medicine
1994 - 1997	Associate, American College of Physicians
1994 - 1996	Member, Canadian Medical Association

##### ***Journal Peer Review***

2011	PLoS ONE, Public Library of Science
2010	American Society for Microbiology mBIO

2009- American Journal of Epidemiology, (Oxford University Press)

2009- Section Co-editor (with Dr. Kevin Laupland), Adult Infectious Disease Notes, Canadian Journal of Medical Microbiology and Infectious Diseases.

2008- PLoS Medicine, Public Library of Science

2008- Canadian Journal of Infectious Diseases and Medical Microbiology, Association of Medical Microbiology and Infectious Diseases Canada

2008- Epidemiology and Infection, Cambridge University Press

2008- JAMA, American Medical Association

2007- Journal of Infection, Elsevier

2007- Archives of Internal Medicine, American Medical Association

2007- International Journal of Public Health, Birkhäuser Basel

2006- Canadian Medical Association Journal, Canadian Medical Association

2006 Environment and Development Economics, Beijer Institute of Ecological Economics, Royal Swedish Academy of Sciences/Cambridge University Press.

2006- BMC Infectious Diseases. BioMed Central.

2006- The Lancet, Elsevier Ltd.

2005- Infection Control and Hospital Epidemiology, Society for Hospital Epidemiology of America.

2005 Occupational and Environmental Medicine, Faculty of Occupational Medicine of the Royal College of Physicians of London (BMJ).

2005 Lancet Infectious Diseases, Elsevier, Inc.

2005- British Medical Journal (BMJ), British Medical Association

2005- Archives of Pediatrics and Adolescent Medicine, American Medical Association

2005- Tropical Medicine and International Health, Belgian Society of Tropical Medicine

2004- Sexually Transmitted Diseases, American Sexually Transmitted Diseases Association.

2004- Pharmacoepidemiology and Drug Safety, Wiley Interscience

2004- Sexually Transmitted Infections, British Association of Sexual Health and HIV

2003- Annals of Internal Medicine, American College of Physicians

2003- Vaccine, Elsevier Science

2002 - American Journal of Epidemiology, Society for Epidemiologic Research

2002 - American Journal of Infection Control, Association for Professionals in Infection Control and Epidemiology, Inc.

2002 - Society for Medical Decision Making Journal for the Society of Medical Decision Making

2001 - Clinical Infectious Diseases, Infectious Diseases Society of America

2001 - Emerging Infectious Diseases, U.S. Centers for Disease Control and Prevention

2001 - Medical Care, American Public Health Association  
 2001 Haematologica, Ferrata Storti Foundation, Pisa, Italy  
 2000 Journal of General Internal Medicine, Society of General Internal Medicine

***External Peer Review***

2011- Member, Institute of Population and Public Health Study Section (PH1), Canadian Institutes of Health Research  
 2011 External Reviewer, Fonds de Recherches en Sante de Quebec (FRSQ) Program on Cancer and the Environment (GRPeC)  
 2011 External Reviewer, Canada Research Chairs Program  
 2011 Scientific Review Committee, Association for Medical Microbiology and Infectious Disease—Canada (AMMI-Canada) Annual Meeting  
 2011 Scientific Review Committee, International Society for Sexually Transmitted Disease Research Biannual Meeting  
 2010- External Reviewer, Public Health Agency of Canada Field Epidemiology Training Program  
 2010 Reviewer, Cancer Care Ontario Position Paper on Epidemiology of Cancer and Infectious Diseases  
 2009 National Science and Engineering Research Council of Canada, Discovery Grants Program. Reviewer  
 2008 Physician’s Services Incorporated Foundation Grant Program  
 2007-2008 Review Committee for Operating Grant: Pandemic Influenza Diagnostics, Canadian Institutes for Health Research  
 2007 2008 U.S. National STD Prevention Meeting (Centers for Disease Control and Prevention)  
 2007 External Reviewer, Washington University (St. Louis) Diabetes Research Training Center Pilot and Feasibility grants program  
 2007- Canadian Institutes for Health Research  
 2006- Bulletin of Mathematical Biology, Society for Mathematical Biology  
 2004 2004 Canadian National Sexually Transmitted Disease Guidelines, Health Canada  
 2004- Proceedings of the National Academy of Sciences, National Academy of Sciences  
 2003 MITACS (Canadian Applied Mathematics Consortium)  
 2002 & 2006 Scientific Review Committee, Annual Meetings of the Society for Medical Decision Making.  
 2001 - Value in Health, International Society for Pharmacoeconomics and Outcomes Research  
 2001 Mayo Clinic Proceedings for Mayo Clinic Rochester, Rochester, MI

## ***Professional Service***

- 2011- Editorial Board, Nature Scientific Reports
- 2011 Organizer and Chair, Plenary Session on Climate Change and Infectious Diseases, International Meeting on Emerging Diseases, Vienna, Austria, February 4-7, 2011.
- 2011 International Society for Pharmacoeconomics and Outcomes Research—Society for Medical Decision Making. Expert Panel on Health Economic Evaluation of Communicable Disease Control Programs. Chair: Richard Pitman, Oxford Outcomes.
- 2010- Honorary Advisory Board, One Health Initiative (<http://www.onehealthinitiative.com>)
- 2010 Organizing Committee (Chair Susan Lett), Canadian Pandemic Influenza Planning Meeting: Assumptions. Public Health Agency of Canada, Winnipeg, Manitoba, February 2-3, 2011.
- 2010 Organizing Committee (with Drs. Jan Sargeant, Zvonimir Poljak, Amy Greer, Javier Sanchez, and Bruce McNab), “One Health One Model: Modeling at the Animal-Human Interface”. 4 day meeting on applying mathematical modeling to the “One Health” paradigm. University of Guelph, November 1-4, 2010.
- 2010 Organizing Committee, International Society for Infectious Diseases International Meeting on Emerging Diseases (IMED, Vienna, Austria, February 2011)
- 2010 Co-organizer (with Profs. Jianhong Wu and Troy Day), Fields Institute Thematic Program in the Mathematics of Antimicrobial Resistance, Toronto, Ontario, Canada, July-August 2011
- 2010 Co-organizer (with Profs. David Earn and Jonathan Dushoff), Banff International Research Station Meeting on Persistent Infectious Diseases (Banff, AB, February 2011)
- 2009 Co-organizer (with Dr. Emery Leger, Canadian Food Inspection Agency; Dr. Javier Sanchez, University of Prince Edward Island; and Dr. Babak Pourbohloul, British Columbia Centre for Disease Control), Canadian Food Inspection Agency Meeting on Animal-Human Modeling of Influenza. Montreal, Quebec, Canada, November 18-19, 2009.
- 2009-2011 Member, Society for Hospital Epidemiology of America External Affairs Committee (Ms. Barbara Soule, Chair).
- 2009 Organizer, Signal Detection 2009: An International Conference on Modeling and Surveillance. Ontario Agency for Health Protection and Promotion, Toronto, Ontario, Canada. October 8-9, 2009.
- 2009 Organizing Committee, Mitigating the spread of influenza A (H1N1) (Part II): An International Mathematical Modelling Meeting. British Columbia Centre for Disease Control (BCCDC), Vancouver, BC, Canada, September 14 – 16, 2009.
- 2009 Ontario Agency for Health Protection and Promotion Medical Officers of Health “Scientific Webinar” on Mathematical Modeling and Influenza, May 6, 2009.
- 2009 Organizer and Co-host (with Ontario Emergency Management Unit): Mathematical Modeling and Pandemic Influenza Control. Sutton Place Hotel, January 30-31, 2009.

- 2008 Organizer and Host, Ontario Agency for Health Protection and Promotion --- University of Guelph Center for Public Health and Zoonosis meeting on collaborative efforts in human-veterinary health research, Ontario Central Public Health Laboratory, November 26, 2008.
- 2007-2009 Ontario Vaccine Evaluation Center Planning Committee (Dr. Craig Laferriere, Chair)
- 2007 Co-organizer, Public Health Agency of Canada—MITACS Joint Symposium on Modeling Sexually Transmitted and Blood-Borne Infections (with Dr. Jianhong Wu, York University and Dr. Tom Wong, PHAC). Banff International Research Station for Mathematical Innovation and Discovery, Banff, Alberta, Canada, August 10-12, 2007.
- 2007 Introduction to Decision Analysis, Cost-Effectiveness Analysis, and Dynamic Transmission Modeling. Merck Frosst Health Sciences Associates Mentorship Program. Montreal, PQ, September 26, 2007.
- 2007-2008 Program Committee, U.S. Centers for Disease Control National STD Prevention Meeting (Chicago, IL, May 10-13 2008).
- 2006-2007 CDC Expert Panel on Chlamydia Screening in Males (Chair, Dr. Tom Gift, CDC).
- 2006 Ontario Ministry of Health and Long-term Care Research Paper Editorial Board (Healthy and Responsible Consumers). (document available via the Internet at [http://www.ourplanforhealth.ca/moh/research/Healthy\\_and\\_Responsible\\_Consumers.pdf](http://www.ourplanforhealth.ca/moh/research/Healthy_and_Responsible_Consumers.pdf)).
- 2006-2009 Ontario Public Health Laboratory Research Ethics Board Member (Dr. Steve Drews, Chair)
- 2006-2008 Clinician-Scientist Training Program Committee, Hospital for Sick Children Research Institute (Dr. Neil Sweezy, Chair)
- 2005 New Jersey State Department of Public Health Task Force on Antimicrobial Resistance (New Jersey CAUSE) (Dr. Corey Robertson, Chair)
- 2005 Society for Hospital Epidemiology of America (SHEA), Working Group on Management of Invasive Group A Streptococcal Infections in Long-Term Care (Chair, Dr. Andrew Simor, University of Toronto).
- 2003-2004 Adjunct Member, Hahnemann Hospital SARS Planning Committee
- 2004 Society for Hospital Epidemiology of America, Working Group on Economic Evaluation in Infection Control (Chair, Dr. Eli Perencevich, University of Maryland).
- 2003 Ontario SARS Science Committee, March 30-April 16, 2003.
- 2002-2004 Canadian Infectious Disease Society, STD/HIV Committee
- 2002 McMaster University Community Medicine Residency Training Committee
- 2002 - 2003 Hamilton Regional Microbiology Committee
- 2002 - 2003 Emergency Preparedness Group, City of Hamilton, Hamilton, Ontario
- 2002 Ontario Ministry of Health, Health Canada Advisory Group on Smallpox Vaccine, Toronto, October 11, 2002.
- 2001 - 2003 Hamilton Regional Infection Control Committee, Hamilton, Ontario (Dr. Maureen Cividino, Chair)



2001 - 2003	Hamilton City Nuclear/Biological/Chemical Planning Committee, Hamilton, Ontario
2001 - 2003	Hamilton Health Sciences Center Nuclear/Biological/Chemical Planning Committee, Hamilton, Ontario
2001 - 2003	Consultant, Ontario Public Health Research, Education, Development (PHRED) Program, City of Hamilton Department of Social and Public Health Services, Hamilton, Ontario
1994 - 1996	Residency Training Committee, Royal Victoria Hospital, Montreal, Quebec (Dr. Sam Benaroya, Chair)

## C. ACADEMIC HISTORY

### *Research Endeavours*

I have broad training and experience as an infectious disease specialist physician, mathematical modeller, and epidemiologist, and have practical experience that extends from patient care settings (hospital inpatient and outpatient settings), public health practice, and medical epidemiology, to policy spheres, as well as extensive expertise and experience as a teacher and researcher in the field of infectious disease epidemiology. This unusual breadth of expertise has provided me with a unique niche within the Canadian communicable disease control community as a translator of epidemiological and mathematical methods into tools for the study of communicable diseases at both the clinical and population levels. I have developed a particular specialized expertise in the study of environmental impacts on infectious disease occurrence, and in the economic evaluation of the indirect benefits of communicable disease control programs. These endeavours, which are ongoing and supported by a variety of grants and contracts described elsewhere in this document, are ongoing.

### **1. Translational Research in Infectious Disease Epidemiology and Control**

I am a recognized national and international expert on the translation of cutting-edge epidemiological and modeling efforts for the quantification and control of infectious diseases from the research sphere into public health practice. Over the past decade I have used this skill set to help provide understanding and guide policy related to persistent and emerging infectious diseases in Ontario and in Pennsylvania.

#### *1.1. The Microbiology Laboratory as an Epidemiological Resource*

The epidemiology of infectious diseases is distinctive in that infectious disease epidemiology concerns itself with at least two interdependent populations: human (or animal) hosts who experience disease, and the pathogens themselves, which constitute distinct, ecologically dynamic populations in their own right. From 2006 to 2008, I served as consultant Medical Epidemiologist to the Ontario Public Health Laboratory (now the Public Health Laboratory—Toronto (PHLT) of Public Health Ontario), and have continued to work with laboratory-derived epidemiological data since that time. I have learned that large service-oriented microbiology laboratories constitute a unique and underutilized epidemiological resource, in that such laboratories serve as repositories for data on cases, data on infecting microbes, the microbes themselves, and data on such health services indicators as specimen volumes received. Using data derived from PHL-T, I have helped document changes in the epidemiology of such diseases as pertussis (whooping cough) and legionellosis in the province of Ontario, and also to evaluate the impact of changing test technologies on apparent rates of disease.

For four diseases of public health importance, I (and my collaborators) have used econometric time series (e.g., Granger methods) to evaluate the bidirectional interactions between laboratory-reported rates of pertussis, legionellosis, syphilis and chlamydia. For each of these infections, we identify evidence of

positive feedback loops, such that surges in positivity predict subsequent surges in test submission by clinicians (independent of the level of disease activity). An example of this type of analysis is presented in our recently published manuscript entitled *Pertussis resurgence in Toronto, Canada: A population-based study including test-incidence feedback modeling* (Fisman DN et al., BMC Public Health 2011). This finding has important implications for the design and interpretation of public health surveillance systems and data. Another unique facet of laboratory-based epidemiology is the ability to control for both volume and type of testing; the explosion in nucleic acid amplification testing technology has created a “tarnished gold standard” problem for diagnostic microbiology, in that traditional gold standard tests (e.g., culture testing) are now less sensitive than emerging culture-free technologies. Using such analytical methods as latent class analysis, I have collaborated with microbiologists to develop efficient and effective testing strategies for such common outbreak-associated pathogens as norovirus (a major cause of diarrhoea outbreaks in institutional settings). An example of such work is presented in a manuscript entitled *Of gastro and the gold standard: evaluation and policy implications of norovirus test performance for outbreak detection* (Fisman DN et al., Journal of Translational Medicine 2009), described in further detail below.

### 1.2. The Use of Mathematical Epidemiology for Control Policy during Public Health Crises

Because communicable diseases represent “non-independent” events (i.e., one case causes another), dynamic systems models and simulations are commonly used in infectious disease epidemiology research. However, these tools have historically not been widely applied in public health practice, particularly in Canada. My trans-disciplinary skills in infectious disease epidemiology, mathematical modeling and infectious disease epidemiology have allowed me to contribute valuable modeling work during three major public health crises (SARS, the 2009 influenza pandemic, and the recent cholera epidemic in Haiti) and in support of responses to Ontario’s current large outbreaks of both chlamydia and syphilis.

My translational research activities in mathematical modeling of infectious diseases have received recognition from my mathematician colleagues. Although not a mathematician, I was asked to deliver the 10<sup>th</sup> Anniversary Public Lecture for the Canadian National Centre of Excellence for applied mathematics (MITACS) in 2009; I have co-organized an international thematic program on mathematics of antimicrobial resistance at the Fields Institute, and an international workshop on disease persistence at the Banff International Research Station, and I continue to coordinate a monthly seminar series (the “IDEA Seminars” at the Fields Institute); this series receives support from Fields.

#### 1.2.a. SARS and Pandemic Influenza A (H1N1)—2009

In 2003, I was employed as a Medical Officer of Health at the City of Hamilton, and was seconded to Ontario’s SARS Science Committee to assist in the public health response to the SARS crisis. In April 2003, the question of whether SARS could be controlled was unanswered. I advocated the use of mathematical modeling to explore this question, but the use of modeling was (at that time) not acceptable to Ontario public health officials. I consequently linked with a mentor (Prof. Marc Lipsitch) at Harvard School of Public Health, and we initiated a process that culminated in a mathematical model of SARS in Singapore, which was published in *Science* in June 2003. The “Lipsitch model” provided projections that suggested that SARS was indeed controllable using aggressive quarantine and isolation, projections borne out by subsequent events. In 2009, when influenza A (H1N1)-2009 emerged in Ontario, I held an appointment at Public Health Ontario (PHO), a new agency created as a result of the Naylor Report on SARS, which was, unlike its predecessor, notably friendly to the use of modeling and mathematical epidemiology, and collaborations between PHO and the Ontario Ministry of Health and Long-term Care allowed the evaluation of key epidemiological properties of influenza A (H1N1)-2009. These properties are described in the paper, on which I was senior responsible author (the first author, Ashleigh R. Tuite, being a Dalla Lana School of Public Health practicum student with me at the time) (Tuite AR et al.,

*Estimated epidemiological parameters and morbidity associated with pandemic H1N1 influenza*, CMAJ 2010). A companion brief report on age effects in the 2009 pandemic (Fisman DN et al., *Older age and reduced likelihood of 2009 H1N1 virus infection*, New England Journal of Medicine 2009) was published in the New England Journal of Medicine. Taken together, these two papers provided the parameter values necessary to create valid models of H1N1 dynamics in Ontario and Canada, which were used to provide policy guidance to provincial and national public health leaders in the following months, including to build a mathematical model of vaccine policy that helped develop the national strategy around prioritization of risk groups for immunization (Tuite AR et al., *Optimal pandemic influenza vaccine allocation strategies for the Canadian population*, PLoS ONE 2010).

#### 1.2.b. Cholera in Haiti, 2010-11

I have subsequently collaborated in a similar manner with the United States Centres for Disease Control in creating a model that correctly projected the path of cholera epidemics in Haiti in 2009 and 2010 (see Tuite A.R., *Cholera epidemic in Haiti, 2010: using a transmission model to explain spatial spread of disease and identify optimal control interventions*. Annals of Internal Medicine 2011). In October 2010, cholera emerged in Haiti, a country which had never previously experienced epidemic cholera and which had been cholera-free for at least 50 years. At that time, Dr. Nathaniel Hupert (Director of Disaster Modeling for the United States CDC), contacted me regarding the possibility of model-based guidance on the likely future contours and timing of the Haitian cholera epidemic.

Future program of research: In addition to our model (published as mentioned above), this effort included provision of guidance and education via teleconferences and webinars to CDC personnel. Our cholera collaborative group includes Dr. Joe Tien, at Ohio State University; while our work for CDC was *pro bono*, follow-on activities have been the subject of a successful grant submission by Dr. Tien, myself, and Dr. Marissa Eisenberg, which will allow us to continue our work on the impact of water quality on cholera risk in Haiti. This effort will also include Master's of Public Health students from the Dalla Lana School of Public Health.

#### 1.2.c. Sexually Transmitted Infections in Philadelphia and Ontario

Sexually transmitted infections are the most common notifiable infectious diseases in Canada and the United States. Surging rates of chlamydia and syphilis, and the emergence of multi-drug resistant gonorrhoea, represent a major crisis in the control of these infections.

Future program of research: I am currently engaged in work, supported by the Canadian Institutes for Health Research, the Public Health Agency of Canada, the Ontario AIDS Bureau, and the National Collaborative Centre for Infectious Diseases, that uses such techniques to develop strategies for management of chlamydia and syphilis outbreaks currently active in Ontario. These models will help public health agencies to devise smarter and more efficient strategies for the control of sexually transmitted infections.

### **2. Dynamic Modeling of Infectious Diseases for Health Policy and Economic Evaluation**

Much of my current work focuses on optimal means of evaluating the benefits and cost-effectiveness of communicable disease control interventions. As I learned as a post-doctoral research fellow at the Harvard Centre for Risk Analysis, methodologies developed for assessment of cost-effectiveness of health technologies and interventions often assume that the risk of disease in a population is stable over time; this is not the case with communicable diseases. This has important health economic implications: prevention of a case of communicable disease may also prevent the entire future stream of additional cases that would have resulted from transmission by that one individual. Furthermore, preventive interventions, such as vaccination, depend on broad community uptake in order for individuals to benefit from their application. I use my skills in cost-effectiveness analysis and epidemic modeling to simulate infectious disease processes and their costs and consequences. The effects of interventions can then be evaluated by comparing models with interventions to models without interventions; in other words,

models present an efficient and compact platform for the exploration of the *epidemiological counterfactual*. I have authored or coauthored several publications that have applied this framework to infectious diseases including SARS, vancomycin-resistant Enterococcus, and herpes simplex viruses. I developed a method for utility-based assessment of health related quality of life in genital herpes (Fisman DN, *Sexually Transmitted Infections* 2005) which can be used to compare the health-economic attractiveness of herpes-control interventions to other commonly accepted health interventions.

My team contributed some of the first health economic evaluations of pandemic influenza immunization, and I collaborated with other investigators from University of Toronto, University of Guelph, Georgia Technological Institute, and Emory University in performing parallel investigations for Canadian and U.S. populations. More recent health economic work has focussed on cost-effective approaches to the control of sexually transmitted diseases and whooping cough (pertussis). Importantly, these evaluations have shown that policy optima often change when the transmissible nature of communicable diseases is taken into account. For example, in work performed in collaboration with the Philadelphia Department of Public Health's STD screening program, we showed that for a given prevalence of chlamydia in females, cost-effectiveness of screening in males is *inversely* related to prevalence, as infected individuals in low-prevalence male populations present "high-value targets" for screening programs (Fisman DN, *Sexually Transmitted Diseases* 2008). This finding helped overturn existing dogma on screening of males for chlamydia. More recent work on pertussis transmission in the neonatal intensive care unit, performed in collaboration with Dr. Amy Greer, shows that low levels of pertussis boosting in healthcare workers are likely to be adequate for the prevention of outbreaks when patient care networks are considered; high levels of coverage become cost-effective only in the face of community-based outbreaks. This finding provides an intuitive and manageable strategy for healthcare institutions seeking to protect vulnerable patients in the face of limited resources (Greer AL and Fisman DN, *Pediatrics* 2011).

My expertise in the economic evaluation of communicable disease control methodologies is recognized by my international peers. I have taught numerous workshops on dynamic modeling methods for health economic evaluation at the Annual Meeting of the Society for Medical Decision Making (SMDM) and at the International Society for Pharmacoepidemiology and Outcomes Research (ISPOR). In 2010, I was asked to join the joint international expert working group of ISPOR and SMDM on best practices for mathematical modeling of communicable diseases for economic evaluation. These guidelines are forthcoming in the journals *Medical Decision Making* and *Value in Health*. I was also a member of the international expert working group on economic evaluation of the Society for Healthcare Epidemiology of America (2007).

### **3. Pathogen-Environment Interactions, Seasonality, and Climate Change: Impacts on Infectious Diseases**

Seasonality is a well-described attribute of communicable diseases but remains poorly understood. Seasonal environmental influences might enhance infectious disease risk in two general ways: first, average background seasonal climatic effects may provide the necessary environmental "backdrop" for increased disease incidence due to enhanced pathogen survival, transmission or invasion or host susceptibility. Second, acute, intermittent, seasonally specific weather events (e.g., cold snaps or heavy rains) could acutely increase disease risk due to enhanced pathogen transmissibility or virulence, or host susceptibility. I have created a body of work that has contributed in important ways to the understanding of seasonality of infectious diseases in ongoing work on the application of both case-crossover methods and time series methods to a variety of bacterial and protozoan infectious diseases, including legionellosis, pneumococcal disease, invasive meningococcal disease, campylobacteriosis, and giardiasis.

While my interest in this area emerged when I was a Medical Officer of Health in Hamilton in 2001-2003, my first important publication on seasonality related to an exploration of environmental drivers of

legionellosis (a.k.a., Legionnaire's disease) in Philadelphia, Pennsylvania in 2005-06. Philadelphia had a remarkable surge in legionellosis burden during a year with unusually large amounts of rainfall. I was approached by the Philadelphia Department of Public Health regarding an evaluation of this phenomenon. I used case-crossover methodology to explore acute environmental impacts on case occurrence; this methodology implicitly controls for between individual variability in risk (due to self-matching) and also controls for the underlying seasonal periodicity of infectious diseases like legionellosis. We found temperature surges and humidity to independently explain the surge in legionellosis risk, a finding that has subsequently been validated in the United States, Spain and the Netherlands. The approach taken in this study formed the basis for a subsequent grant submission, which was funded by the National Institute of Allergy and Infectious Diseases, and which permitted similar analyses of the epidemiology of other seasonal pathogens (campylobacteriosis, pneumococcal disease, invasive meningococcal disease, and giardiasis) in Philadelphia. I was also invited to write a review of the topic of disease seasonality for the Annual Review of Public Health (*Fisman DN 2007*), which has itself been widely cited (38 citations, per Science Citations Index). My work on seasonality of infectious diseases has had tremendous relevance to the growing concern around climate change and infectious disease patterns. In 2008 I was senior responsible author on a scoping review of climate change and infectious diseases, published in the Canadian Medical Association Journal, which drew attention to this issue. My expertise in this regard has resulted in my being an invited speaker on this issue in Canada, the United States, and the United Kingdom, and in 2010 I was asked to serve as an expert on climate change and disease transmission for a taskforce of the Institute of Medicine, which recently (June 2011) published producing a report entitled *Climate Change, the Indoor Environment, and Health*. My work on legionellosis (noted above) is cited in this report. I have also worked hard to engage the public on this issue, for example by taking part in a Café Scientifique in Toronto on climate change and infectious diseases in 2009.

Upon my relocation to Toronto in 2006, I continued this work on legionellosis, norovirus, and invasive pneumococcal and meningococcal disease in the Greater Toronto Area. The work on legionellosis and norovirus re-emphasized the importance of the physical environment (and local watersheds in particular) in the occurrence of these diseases. Further work evaluated the disparate contributions of the physical environment and influenza to invasive pneumococcal disease and invasive meningococcal disease incidence in central Ontario (see Tuite AR et al., *PLoS ONE*, 2010; and Kuster SP et al., *PLoS Medicine*, 2011). This work validated earlier observations from Philadelphia on the importance of ambient ultraviolet radiation as a driver of the seasonality of invasive pneumococcal disease, but also demonstrated the key role influenza plays in driving the wintertime burden of invasive bacterial diseases in Ontario.

Future program of research: This finding has important implications for influenza control policy in Ontario and Canada. This work formed the basis for a grant, awarded by the Canadian Institutes for Health Research (Institute of Population and Public Health) on coseasonality of influenza and invasive bacterial disease across diverse geographical regions (including 4 Canadian provinces, 3 U.S. states, 4 regions of France, and 6 Australian cities). We are currently collaborating with international colleagues to complete these analyses.

#### **4. Clinical Epidemiology of Infectious Diseases in the Healthcare Setting**

In addition to my experiences and contributions to public health practice in Canada and the United States, I am trained as a specialist physician in clinical infectious diseases, and have a body of work that focuses on the use of epidemiology as a tool to improve the clinical practice of infectious diseases. Key areas of research related to clinical infectious disease practice have included a large case-crossover study of needlestick injuries in healthcare workers, extensive work on infection-related outcomes using a clinical

quality improvement database, and application of decision analysis and cost-effectiveness analysis to clinical infectious disease issues.

#### *4.1. Needlesticks and other Sharps-Related Injuries*

Needlesticks and other sharps-related injuries constitute a major source of costs and healthcare worker concern for healthcare institutions; it has been estimated that such injuries are a source of \$1 billion in excess costs in the United States each year. The diversity of healthcare worker job types, expertise, and experience in performing procedures makes case-control studies of these injuries challenging. I collaborated with Dr. Murray Mittleman of Harvard University and Dr. Anthony Harris of University of Maryland on an innovative case-crossover study of needlesticks from 2001-2006. The study, which was funded by the National Institute of Occupational Safety and Health, included 683 subjects from six hospitals, recruited after injury. Using a usual-frequency case-crossover approach, we were able to document the association between needlesticks and common workplace exposures. Of particular importance, we were able to demonstrate the impact of fatigue on injury risk in interns and residents, a finding that following publication (Fisman DN et al., *Infection Control and Hospital Epidemiology*, 2007) was incorporated into the Institute of Medicine's report on resident duty hours and fatigue (Resident Duty Hours: Enhancing Sleep, Supervision, and Safety), which was in turn a key document used for the restructuring of resident duty hours by the Accreditation Council on Graduate Medical Education in the United States.

#### *4.2. Evaluation of Infectious Outcomes using a Clinical Quality Database*

From 2003 to 2006, I was on faculty at the Drexel University School of Public Health. Links between Drexel-affiliated teaching hospitals and the Tenet Healthcare System created opportunities to contribute to Tenet's clinical quality improvement efforts using a multi-hospital database (with information on infectious disease outcomes in > 100 hospitals throughout the United States). This collaboration resulted in publications on health benefits associated with vaccination against influenza and pneumococcus in older adults, and also produced a robust clinical prediction rule that can be used to accurately forecast which patients will develop pneumonia after coronary bypass surgery (Kinlin L, et al., *Clinical Infectious Diseases* 2010). I also used this dataset to perform (with Caitlin McCabe, a summer student) an analysis documented the survival benefit conferred upon patients when their physicians follow clinical practice guidelines for community-acquired pneumonia (McCabe CJ et al., *Archives of Internal Medicine*, 2009). Taken together these efforts enhance the credibility of clinical practice guidelines for individuals with infectious diseases, and should help reduce the risk of infectious outcomes in hospitalized patients.

#### *4.3. Application of Decision Science to Clinical Infectious Diseases*

My skill set in clinical decision analysis, meta-analysis and health economic analysis has allowed me to contribute to the literature guiding patient care for individuals with infectious diseases. Important papers have been published in the area of orthopaedic infection; antibiotic choice for individuals with pneumonia; optimal use of serological testing for the prevention of herpes virus infections in newborns; best practices for the management of HIV infection in pregnancy; and optimal management of empyema in children. My work in this area facilitates the evidence-based, cost-efficient practice of medicine by infectious disease clinicians.

### **5. Evolution of Research Interests and Future Research Directions (5-Year Time Horizon)**

The challenge of infectious diseases rests in their diversity and changeability. What I bring to their study is command of a broad array of methodological tools, as well as a substantial body of real-world experience in the clinical and public health realms. However, this diversity and changeability makes me reluctant to tie myself firmly to any single pathogen or clinical entity: as SARS, pandemic influenza, and cholera show, some of my best work has been performed in the face of *unexpected crises in public health*. As such, the evolution of my work requires that I maintain and build ties with local, national and international public health partners, which I continue to do. As evinced by records of recent contract

work, my skills are currently in heavy demand by Public Health Agency of Canada as it strives to meet emerging public health challenges. However, maintenance of such ties, and relevance in times of crisis, requires ongoing educational efforts (for students and trainees, such that they have relevant skill sets when called upon) and knowledge translation activities for public health and clinician stakeholders, such that they are aware of the ways in which quantitative methods can benefit outbreak control efforts.

A second key challenge I have identified as my research has evolved involves translation of research results to policy. In particular, I have learned how difficult it is to integrate quantitative data on risk and uncertainty into the political decision-making process. I have recently been invited to become involved in a series of roundtables on emerging and persistent infectious diseases (surveillance, mitigation, and prevention) sponsored by the US-based Institute on Science for Global Policy (<http://www.scienceforglobalpolicy.org/>), which identifies leading scientists and political decision makers, and invites them to participate in debates regarding scientific policy. I hope to take the insights I have gained from ISGP workshops and apply them to help make my group's work increasingly policy-relevant.

Three specific areas where I see my research growing in the next five years are as follows:

*1. Disease dynamics and health economics:* As noted above, I am held in high regard by my international peers for my expertise in applying mathematical modeling and disease dynamics to health policy (as evinced by my invitation to help write the ISPOR-SMDM best-practices guidelines referred to elsewhere in this document). I see abundant opportunities to continue to expand our work that captures the economic benefits of immunization, while considering the positive and negative externalities (indirect effects) of immunization. In particular, current discussions with such industry partners as GlaxoSmithKline and Sanofi Pasteur focus on funding for work related to optimal strategies for pertussis immunization and on the economic attractiveness of vaccine stockpiling in Canada (such stockpiles are extant in the United States but not here). Other work in progress on disease dynamics includes a rapid "epidemic forecaster" that provides information on turning-points, outbreak durations, and rate of change in reproductive numbers; this work, which has been completed in collaboration with Dr. Amy Greer, Ashleigh Tuite, and a University of Toronto medical student (Tanya Hauck) will be presented in November 2011 at the Epidemics 3.0 conference in Boston.

*2. From local to global: vaccines and counterfactuals:* As noted above, my disease modeling activities to date have largely focussed on the present day North American context. However, recent discussions with colleagues both at Toronto Public Health (TPH) and in the vaccine industry have reinforced the degree to which modeling can be used as a tool to help decision-makers understand the silent "public good" that has been created by immunization. Recent vaccine-related health scares (e.g., the now discredited suggestion that MMR vaccine is linked to autism) have resulted in falling vaccine uptake in North America and Europe, with resultant resurgence in disease. However, in areas where outbreaks have not occurred, the impetus for keeping vaccine coverage high may be absent. Models can be used to demonstrate explicitly the good that is created via maintenance of high levels of immunization coverage.

In addition to demonstrating the value of immunization programs at current levels (or enhanced levels of coverage) in wealthy countries, we can also use the existing models our group has created (on influenza, pertussis, and norovirus dynamics) in the context of developing countries, in order to demonstrate the health economic benefits that would accrue if these countries were to invest heavily in improving immunization coverage. An emerging partnership with Dr. Prabhat Jha and the Centre for Global Health Research promises to provide abundant opportunities to evaluate novel and efficient approaches to improved immunization coverage in India.

*2. The physical environment, infectious diseases, and public health:*

As noted above, my interests in disease seasonality have resulted in my having significant input into current debates on climate change and infectious diseases in the North American context. They have also

resulted in my playing roles in both the Canadian Community of Practice on EcoHealth (COPEH-Canada) and the One Health Initiative. Moving forward, I anticipate that our work on seasonality and environment will continue to inform these debates in important ways, particularly via work on waterborne disease and respiratory infection. Our current CIHR-funded grant on disease seasonality has created a wide web of collaborators, and this network can be leveraged for future within- and across-region analyses that evaluate the degree to which infectious disease risk is being enhanced or mitigated by environmental change.

#### **D. RESEARCH GRANTS AND CONTRACTS**

*(Principal investigator(s) underlined)*

##### ***Principal investigator***

- 2013            **Fisman DN (PI)**. FitzGerald Seminar Series in Communicable Disease Epidemiology (unrestricted educational grant). Novartis Pharma Canada Inc., Merck Canada Inc. and GlaxoSmith Kline Inc. (\$40,000).
- 2012            **Fisman DN (PI)**. FitzGerald Seminar Series in Communicable Disease Epidemiology (unrestricted educational grant). Novartis Pharma Canada Inc. (\$31,000).
- 2011            **Fisman DN (PI)**. FitzGerald Seminar Series in Communicable Disease Epidemiology (unrestricted educational grant). Novartis Pharma Canada Inc. (\$38,400).
- 2011-2014      **Fisman DN**, Allen VG, Gesink D, Garay JR, Greer A. *Untangling the web: understanding the abrupt increase in chlamydia risk in Ontario through applied epidemiology and mathematical modeling*. Canadian Institutes of Health Research Operating Grant. (\$247, 423).
- 2010-2012      **Fisman DN**, Kwong J, McGeer A, Drews S, Pourbohloul B, Buckridge D. *Wintertime Seasonality of Influenza and Invasive Bacterial Disease: Influence of Environment, Pathogen Interactions, Time Scales, and Geography*. Canadian Institutes for Health Research Institute of Infection and Immunity and Population and Public Health. (\$227,612).
- 2009            **Fisman DN**, Wu J, Crowcroft N, Moore K. *Signal Detection 2009* (conference at OAHPP on linkage between public health surveillance and mathematical modeling). Mathematics of Information Technology and Complex Systems (MITACS) grant. (\$7,500).
- 2007-2010      **Fisman DN**. *Keeping Vulnerable Children Safe from Pertussis: Cost-Effective Strategies for Ontario Hospitals as Whooping Cough Returns*. Ontario Ministry of Innovation Early Researcher Award. (\$150,000).



- 2006-2008 **Fisman DN**, Johnson C. *Seasonality, environment, and infectious disease occurrence*. National Institute of Allergy and Infectious Diseases (R21AI065826-01A1). (\$200,000).
- 2002-2003 **Fisman DN**, Cividino M, Harris AD, Mittleman MA. *Case-crossover study of sharps related injuries*. City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and Development Program, Hamilton, Ontario. (\$11,400).
- 2002 **Fisman DN**, Sheehan D. *Assessment of health-related quality of life in individuals with symptomatic and asymptomatic genital herpes infection*. City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and Development Program, Hamilton, Ontario. (\$6,000).
- 1999-2001 **Fisman DN**. Agency for Healthcare Research and Quality. National Research Service Award #5-T32-HS00020-15. (\$50,000).
- 1995 **Fisman DN**, Tamblyn R. *Survival after percutaneous endoscopic gastrostomy in the elderly*. Department of Medicine, Royal Victoria Hospital, Montreal, Quebec. (\$500).
- 1992 **Fisman DN**. *Medicine, Fraud, and Puritanism in 17th century England*. Osler Studentship in the History of Medicine. McGill University, Montreal, Quebec.(\$5,000).
- 1990 **Fisman DN**, LaChance M. *Taxonomic evaluation of yeasts through protein gel-electrophoresis*. Natural Science and Engineering Research Council Scholarship. Western University, London, Ontario. (\$5,000).

#### ***Co-investigator***

- 2011-2014 **Tien J, Fisman DN**, Eisenberg M. Modeling the effects of heterogeneity in water quality on cholera disease dynamics. National Science Foundation (US) (\$978,123).
- 2010-2013 **Wu J, Fisman DN**, Moghadas S, Sahai B, Dean C, Brauer F, Webb G, Zhu H, Belair J, Watmmough J, Heffernan J, Khan K, Arino J, Wang L, Rioux M, Gardam M, Li M, Madras N, Yan P, van den Driessche P, Ruan S, Day T, Jacobson Z. York-MITACS Centre for Disease Modeling. *Transmission Dynamics and Spatial Spread of Infectious Diseases: Modelling, Prediction and Control*. Mathematics, Information Technology and Complex Systems National Centre of Excellence. (\$198,000).
- 2010-2012 **Mishra S, Fisman DN**. *Assessing the Impact of Undiagnosed Syphilis on the Transmission of Syphilis and HIV in Ontario: Epidemiological evaluation of co-infection and development of a disease transmission model*. Canadian Institutes for Health Research Public Health Fellowship. (\$100,000), (deferred).

- 2009-2010 Pourbohloul B, Fisman DN, Buckeridge D, Arino J, Dushoff J, Earn DJD, Moghadas S, Wu J. *Pan-Canadian Decision-Making Support Network for Pandemic Preparedness ("CanPan")*. Emergency Supplementary Funding, Canadian Institutes for Health Research Catalyst Grant (Pandemic Preparedness). (\$700,000).
- 2009 Wu J, Fisman D, Moghadas S. MITACS *Accelerate Internship in Mathematical Modeling of Infectious Diseases* (\$45,000 with \$45,000 match from Ontario Agency for Health Protection and Promotion). (\$90,000).
- 2008-2009 Pourbohloul B, Bauch C, Beauchemin C, Brauer F, Buckeridge D, Dean CB, Dushoff J, Earn DJD, Fisman DN, Khan K, McGeer AJ, Tellier R, Moghadas S, Wu J. *Pan-Canadian Decision-Making Support Network for Pandemic Preparedness ("CanPan")*. Canadian Institutes for Health Research Catalyst Grant (Pandemic Preparedness). (\$100,000).
- 2008-2009 Moghadas S, Wu J, Pizzi N, Fisman DN, Yan P, Driedger M, Roos L, Alexander M. *Evaluation of Mitigation Strategies for Pandemic Preparedness in Canada*. Canadian Institutes for Health Research Catalyst Grant (Pandemic Preparedness). (\$94,750).
- 2007-2009 To T, Stanbrooke M, Crichton E, Guttman A, Fisman DN, Wang C. *Respiratory population-based outcomes network: Studies and evaluations (RESPONSE)*. Canadian Institutes of Health Research (CIHR) Partnerships for Health System Improvement (PHSI). (\$87,715).
- 2003-2004 Abrutyn E, Kirchner C, Fisman DN, Kim Y, Dhond AJ. *Center for study of hospital acquired infections*. Tenet Healthcare Foundation, Dallas TX (GFW 11595). (\$1,004,000 US).
- 2002-2006 Mittleman MA, Fisman DN, Harris AD, Sorock G. *A case-crossover study of sharps-related injuries*. Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health, Atlanta, GA. (\$1,076,531 US).
- 2002 Redwood-Campbell L, Kaczorowski J, Fisman DN. *Improving pap smear screening in immigrant women*. City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and Development Program. (\$14,000).
- 2002 Gardam M, Tsang L, Petrich A, Jamieson F, Fisman DN. *Molecular epidemiology of tuberculosis in the Greater Toronto Area 1999-2001*. National Sanatorium Foundation. 2002.

2000-2001 Mittleman MA, **Fisman DN**, Sorock G, Harris AD. *Case-crossover study of sharps-related injuries in healthcare workers*. Harvard-Liberty Department of Occupational and Environmental Health. Harvard School of Public Health. (\$100,000 US)

**Research Contracts**

2012-2013 **Fisman DN**, Tuite AR. Toronto Unvaccinated: Estimating the Impact of Vaccination on Toronto’s Health. Toronto Public Health, (\$25,000).

2011-2012 **Fisman DN**, Tuite AR. *Mathematical modeling of novel partner notification strategies for communicable disease control*. National Collaborating Centre for Communicable Diseases, (\$25,000).

2011-2012 **Fisman DN**, Mishra S, Tuite AR. *Mathematical modeling of syphilis/HIV testing strategies in Ontario*. Ontario AIDS Bureau/Public Health Agency of Canada/Hassle Free Clinic (Toronto), (\$25,000).

2011 **Fisman DN**, Tuite AR. *Estimation of the health and economic burden of Chlamydia trachomatis infection in Canada*. Public Health Agency of Canada, (\$10,000).

2011 **Fisman DN**. *Health economic evaluation of rotavirus vaccine in Canada*. Public Health Agency of Canada, (\$6,000).

2010-2011 **Fisman DN**, Tuite AR. *Mathematical modeling of the impact of an adjuvanted influenza vaccine*. Novartis Vaccines Canada. (\$35,000).

2010 **Fisman DN**, Tuite AR. *Mathematical modeling of pertussis under-reporting in Ontario*. GlaxoSmithKline Canada. (\$50,000).

2009-2010 **Fisman DN**, Greer A. *Mathematical modeling of optimal control strategies for Chlamydia trachomatis in Canada*. Public Health Agency of Canada. (\$25,000).

**Career summary of research funding**

**SUMMARY OF RESEARCH FUNDING (PEER-REVIEWED GRANTS AND CONTRACTS)**

	Past	Current	Career Total
Total Grants as Principal Investigator	\$732,412	\$287,423	\$1,019,835

Total Grants as Co-Investigator	\$3,366,996	\$1,281,123	\$4,648,119
Total Grants	\$3,840,796	\$1,787,158	\$5,667,954
Total Contracts	\$176,000	\$25,000	\$201,000
<b>Total Grants and Contracts</b>	<b>\$4,016,796</b>	<b>\$1,812,158</b>	<b>\$5,868,954</b>

#### ALL GRANTS – PRINCIPAL INVESTIGATOR

Funder	Years	Role	Team	Amount	Title
Novartis Pharma Canada Inc.	01.2013-12.2013	Nominated PI	Vasilevska, M	\$40,000	<i>FitzGerald Seminar Series in Communicable Disease Epidemiology (Knowledge Translation Activity)</i>
Novartis Pharma Canada Inc.	01.2012-12.2012	Nominated PI	Vasilevska, M	\$31,000	<i>FitzGerald Seminar Series in Communicable Disease Epidemiology (Knowledge Translation Activity)</i>
Novartis Pharma Canada Inc.	07. 2011-12. 2011	Nominated PI	Vasilevska, M	\$38,400	<i>FitzGerald Seminar Series in Communicable Disease Epidemiology (Knowledge Translation Activity)</i>
CIHR, Operating Grant	10.2011-09.2014	Nominated PI	Allen AG, Gesink D, Garay JR, Greer A.	\$247, 423	<i>Untangling the web: understanding the abrupt increase in chlamydia risk in Ontario through applied</i>

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
					<i>epidemiology and mathematical modeling.</i>
CIHR, Operating Grant	10.2010-09.2012	Nominated PI	Kwong J, McGeer A, Drews S, Pourbohloul B, Buckeridge D.	\$227,612	<i>Wintertime Seasonality of Influenza and Invasive Bacterial Disease: Influence of Environment, Pathogen Interactions, Time Scales, and Geography</i>
MITACS – Mathematics of Information Technology and Complex Systems	2009	Nominated PI	Wu J, Crowcroft N, Moore K.	\$7,500	<i>Signal Detection 2009 (conference at OAHPP on linkage between public health surveillance and mathematical modeling).</i>
Ontario Ministry of Innovation Early Researcher Award.	10.2008-09.2010	Nominated PI	N/A	\$150,000	<i>Keeping Vulnerable Children Safe from Pertussis: Cost-Effective Strategies for Ontario Hospitals as Whooping Cough Returns.</i>
National Institute for Allergy and Infectious Diseases (R21AI065826-01A1).	09.2006-08.2008	PI	Johnson C.	\$200,000	<i>Seasonality, environment, and infectious disease occurrence</i>
City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and Development Program, Hamilton, Ontario	2002-2003	Nominated PI	Cividino M, Harris AD, Mittleman MA.	\$11,400	<i>Case-crossover study of sharps related injuries</i>
City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and	2002	Nominated PI	Sheehan D.	\$6,000	<i>Assessment of health-related quality of life in individuals with symptomatic and asymptomatic</i>

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
Development Program, Hamilton, Ontario					<i>genital herpes infection</i>
Agency for Healthcare Research and Quality	1999- 2001	Nominated PI	N/A	\$50,000	National Research Service Award #5- T32-HS00020-15
Department of Medicine, Royal Victoria Hospital, Montreal, Quebec	1995	Nominated PI	Tamblyn R	\$500	<i>Survival after percutaneous endoscopic gastrostomy in the elderly</i>
Osler Studentship in the History of Medicine. McGill University, Montreal, Quebec	1992	Nominated PI	N/A	\$5,000	<i>Medicine, Fraud, and Puritanism in 17th century England</i>
Natural Science and Engineering Research Council Scholarship. Western University, London, Ontario	1990	Nominated PI	LaChance M.	\$5,000	<i>Taxonomic evaluation of yeasts through protein gel- electrophoresis</i>
				\$1,019,835 AWARDED	

#### ALL GRANTS – CO-INVESTIGATOR

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
National Science Foundation (US)	08.2011- 07-2014	CI	Tien J (PI), Fisman DN, Eisenberg M.	\$978,123	<i>Modeling the Effects of Heterogeneity in Water Quality on Cholera Disease Dynamics</i>
MITACS Centre for Disease Modeling	04.2010- 03.2013	CI	Wu J (PI), Moghadas S, Sahai B, Dean C, Brauer F, Webb G, Zhu H, Belair J, Watmmough J, Heffernan J, Khan K, Arino J, Wang L, Rioux M, Gardam M, Li M,	\$198,000	<i>Transmission Dynamics and Spatial Spread of Infectious Diseases: Modelling, Prediction and Control</i>

Funder	Years	Role	Team	Amount	Title
			Madras N, Yan P, van den Driessche P, Ruan S, Day T, Jacobson Z.		
CIHR Doctoral Award—Banting and Best	09.2010- 08-2013	Supervisor	Daneman, N Brown, K	\$105,000	<i>Epidemiology of Clostridium difficile in Canada</i>
CIHR Fellowship- Health Professionals	06.2010- 06.2012	Supervisor	Mishra S.	\$100,000	<i>Assessing the Impact of Undiagnosed Syphilis on the Transmission of Syphilis and HIV in Ontario: Epidemiological evaluation of co- infection and development of a disease transmission model.</i>
CIHR Catalyst Grant Emergency Supplementary Funding, Pandemic Preparedness	10.2009- 09.2010	CI	Pourbohloul B, (PI) Buckeridge D, Arino J, Dushoff J, Earn DJD, Moghadas S, Wu J.	\$700,000	<i>Pan-Canadian Decision-Making Support Network for Pandemic Preparedness. “CanPan”</i>
MITACS (\$45,000 with \$45,000 match from Ontario Agency for Health Protection and Promotion).	2009	CI	Wu J, Moghadas S.	\$90,000	<i>Accelerate Internship in Mathematical Modeling of Infectious Diseases</i>
CIHR Catalyst Grant Emergency	10.2008- 09.2009	CI	Pourbohloul B (PI), Bauch C,	\$100,000	<i>Pan-Canadian Decision-Making</i>

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
Supplementary Funding, Pandemic Preparedness			Beauchemin C, Brauer F, Buckeridge D, Dean CB, Dushoff J, Earn DJD, Khan K, McGeer AJ, Tellier R, Moghadas S, Wu J.		<i>Support Network for Pandemic Preparedness "CanPan"</i>
CIHR Catalyst Grant Pandemic Preparedness	10.2008-09.2009	CI	Moghadas S (PI), Wu J, Pizzi N, Yan P, Driedger M, Roos L, Alexander M.	\$94,750	<i>Evaluation of Mitigation Strategies for Pandemic Preparedness in Canada</i>
CIHR Partnerships for Health System Improvement (PHSI)	08.2007-07.2009	CI	To T (PI), Stanbrooke M, Crichton E, Guttman A, Wang C.	\$87,715	<i>Respiratory population-based outcomes network: Studies and evaluations (RESPONSE)</i>
Tenet Healthcare Foundation, Dallas TX (GFW 11595).	2003-2004	CI	Abrutyn E, Kirchner C, Kim Y, Dhond AJ.	\$1,004,000 (\$US)	<i>Center for study of hospital acquired infections.</i>
Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health, Atlanta, GA.	2002-2006	CI	Mittleman MA, Harris AD, Sorock G.	\$1,076,531 (\$US)	<i>A case-crossover study of sharps-related injuries.</i>
City of Hamilton, Social and Public Health Services Department, Public Health Research, Education and Development Program	2002	CI	Redwood-Campbell L, Kaczorowski J	\$14,000	<i>Improving pap smear screening in immigrant women</i>
National Sanatorium	2002	CI	Gardam M, Tsang L, Petrich A,	---	<i>Molecular epidemiology of</i>



<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
Foundation			Jamieson F		<i>tuberculosis in the Greater Toronto Area 1999-2001</i>
Harvard-Liberty Department of Occupational and Environmental Health. Harvard School of Public Health	2000-2001	CI	Mittleman MA, Sorock G, Harris AD	\$100,000 (\$US)	<i>Case-crossover study of sharps-related injuries in healthcare workers.</i>
				\$4,648,119 AWARDED	

#### ALL CONTRACTS

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
Toronto Public Health	2012-2013	Nominated PI (for Decision Centre for Infectious Disease Epidemiology (DeCIDE))	Tuite AR, McGirr A, Hum R	\$25,000	<i>Toronto Unvaccinated: Estimating the Impact of Vaccination on Toronto's Health</i>
National Collaborating Centre on Infectious Diseases (NCCID)	2011-12	Nominated PI	Tuite AR	\$25,000	<i>Mathematical modeling of novel partner notification strategies for communicable disease control.</i>
Ontario AIDS Bureau and Hassle-Free Clinic (Toronto)	2011-12	Nominated PI	Tuite AR, Mishra S	\$25,000	<i>Mathematical modeling of syphilis/HIV testing.</i>
Public Health Agency of Canada	2011	Nominated PI	---	\$6,000	<i>Health economic evaluation of rotavirus vaccine in Canada.</i>
Public Health Agency of Canada	2011	Nominated PI	Tuite AR	\$10,000	<i>Estimation of the health and economic burden of Chlamydia trachomatis infection in Canada.</i>

<b>Funder</b>	<b>Years</b>	<b>Role</b>	<b>Team</b>	<b>Amount</b>	<b>Title</b>
Novartis Vaccines Canada	2010- 2011	Nominated PI	Tuite AR	\$35,000	<i>Mathematical modeling of the impact of an adjuvanted influenza vaccine</i>
GlaxoSmithKline Canada	2010	Nominated PI	Tuite AR	\$50,000	<i>Mathematical modeling of pertussis under-reporting in Ontario</i>
Public Health Agency of Canada	2009- 2010	Nominated PI	Greer A	\$25,000	<i>Mathematical modeling of optimal control strategies for Chlamydia trachomatis in Canada</i>
				\$201,000 AWARDED	

**Legend**

CIHR: Canadian Institutes for Health Research

MITACS: Mathematics of Information Technology and Complex Systems

## E. PUBLICATIONS

### *Notes regarding authorship and contributions*

I believe strongly that the experience of preparing and submitting research for publication is an invaluable component of scientific training, and is a core component of my mentorship strategy. As such, I frequently encourage students, trainees, and junior research officers, where appropriate, to serve as lead authors on publications. As such, in many of the papers below, on which I am listed as senior responsible author, I have contributed in a manner that would also have made first authorship reasonable. This is commented upon in the brief comments that follow each citation.

Abbreviations: PA: Principal author, Co-PA: Co-principal author, CA: Co-author, SRA: Senior responsible author (i.e., trainee paper completed under supervision or mentorship).

### *Summary of peer-reviewed journal publications*

Peer Reviewed Journal Authorship				
Paper status	Principal author	SRA*	Co-author	Total
Published	26	31	35	92
In Press	0	0	0	0
Under Review	3	0	1	4
<b>Total</b>	<b>26</b>	<b>31</b>	<b>36</b>	<b>93</b>

\*Senior responsible author (supervising or mentoring trainee)

### *Most significant publications (current appointment, \* denotes student/trainee author):*

1. \*Tuite AR, Greer AL, Whelan M, Winter AL, Lee B, Yan P, Wu J, Moghadas S, Buckeridge D, Pourbohloul B, **Fisman DN**. Estimated epidemiological parameters and morbidity associated with pandemic H1N1 influenza. *Canadian Medical Association Journal*, 2010; 182(2): 131-6. Available via the Internet at <http://www.cmaj.ca/content/182/2/131.long>.

As noted above, in 2009 a novel influenza strain emerged in Mexico, and spread rapidly across the world, triggering the first influenza pandemic since 1968. By liaising with colleagues at Ontario's provincial Public Health Laboratory and Ministry of Health and Long-Term care, as well as leaders of the Canadian mathematical modeling community (coauthors Wu, Moghadas, Buckeridge, and Pourbohloul), I led an effort to characterize the key epidemiological properties of the 2009 pandemic influenza strain. Although the first author on this paper was a Dalla Lana School of Public Health practicum student, I conceived of this study, created the necessary connections and relationships required for the movement of data across agencies, contributed to the construction and analysis of mathematical models, wrote the initial draft of the manuscript and negotiated the expedited (electronic) release of the paper (in autumn 2009) with the journal, such that this critical information would be available to healthcare leaders and public health decision makers who were then developing policy to deal with the pandemic. The critical pieces of information contained in this paper includes estimates of the reproductive number of this influenza strain, its generation time (interval from case to case) and estimates of morbidity associated with infection, by age.

*Impact:* The information derived from this paper was used to parameterize mathematical models that projected (correctly) that the pandemic would peak in late October 2009, and that the greatest benefit would be associated with a vaccine strategy that targeted younger individuals (at greatest risk of infection) with underlying medical conditions (at greatest risk of hospitalization). I engaged in significant knowledge translation efforts related to this paper, including presentation of the paper on a national teleconference sponsored by Public Health Agency of Canada, and presentation of the model at a meeting of the National Advisory Committee on Immunization. These data, and the modeling projections derived from them, directly contributed to the Canadian immunization strategy for the 2009 influenza pandemic.

2. \*Kuster SP, Tuite AR, Kwong JC, McGeer A, Toronto Invasive Bacterial Diseases Network, **Fisman DN**. Evaluation of co-seasonality of influenza and invasive pneumococcal disease: results from prospective surveillance. *PLoS Medicine* 2011;8(6):e1001042. Available via the Internet at <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001042>.

As noted above, I have now assembled an extensive body of work on environmental and pathogen-pathogen interactions that drive infectious disease seasonality. This paper, which I conceived, designed, and extensively wrote in collaboration with Stefan Kuster, a Master's student and infectious disease trainee, draws together several of the techniques that I had applied to earlier seasonality work, in order to evaluate a long-standing question in infectious disease epidemiology: does influenza drive the wintertime seasonality of invasive bacterial disease caused by pneumococcus (*S. pneumoniae*)? In order to answer this question, I realized that we needed to evaluate links between disease incidence on several different time scales. If pneumococcal *transmission* is driven by influenza, we should see correlation in the amplitude and phase of seasonal influenza and seasonal pneumococcal "waves". However, if influenza doesn't drive influenza transmission, but rather drives the propensity of pneumococcus to cause severe disease, we should see cause-and-effect relationships on short time scales without correlation in waveforms. In order to evaluate these relationships, I collaborated with Dr. Allison McGeer, whose Toronto Invasive Bacterial Disease Network provides excellent population-based surveillance data on pneumococcal disease incidence in the greater Toronto area; and Dr. Jeff Kwong, who has extensive experience with Canadian influenza surveillance data. I provided Stefan Kuster with guidance regarding the use and interpretation of Fast Fourier Transforms (FFT) for waveform analysis, and also instructed him on the use of negative binomial regression, case-crossover analysis, and ARIMA models for evaluation of short term effects. We were able to demonstrate a complete lack of correlation in the amplitude and phase of influenza and pneumococcal waveforms, but strong, directional effects of influenza on subsequent occurrence of invasive pneumococcal disease. This suggests that influenza does not drive pneumococcal transmission, but rather facilitates severe infection in colonized individuals. An additional finding in this study was the validation of an earlier published observation that ambient ultraviolet radiation is protective against invasive pneumococcal disease.

*Impact:* The implications of this work, if validated, are profound. We present compelling epidemiological evidence that influenza is a key driver of invasive pneumococcal infection, which implies that influenza immunization programs may be an important means of preventing invasive pneumococcal disease. This work represents an initial output of the multinational collaboration on disease seasonality and influenza-invasive bacterial disease described elsewhere in this document. That collaboration, supported by funds from the Canadian Institutes for Health Research, seeks to replicate our findings from Toronto in other jurisdictions in Canada, the United States, Australia, France and South Africa.

3. **Fisman DN**, Tang P, \*Hauck T, Richardson S, Drews SJ, Low DE, Jamieson F. Pertussis resurgence in Toronto, Canada: a population-based study including test-incidence feedback modeling. *BMC Public Health*. *BMC Public Health* 2011, **11**:694doi:10.1186/1471-2458-11-694. Available via the Internet at <http://www.biomedcentral.com/1471-2458/11/694>.

This paper exemplifies the use of microbiological laboratory data as an epidemiological resource, and reflects the extremely productive and ongoing research relationship that I have had with colleagues at the Public Health Ontario laboratories since my return to Toronto in 2006. At that time, central Ontario was experiencing an apparent pertussis (whooping cough) epidemic. This increase occurred in parallel with the introduction of an extremely sensitive nucleic acid-based pertussis test at the Ontario Central Public Health Laboratory. By collaborating with PHO and Hospital for Sick Children microbiology colleagues, I was able to demonstrate that novel testing methods likely contributed in part to the surge in apparent pertussis incidence, but did not entirely explain the change in incidence. Using econometric methods, we showed a positive feedback loop in testing, such that surges in reported incidence of pertussis generated downstream increases in test submission by public health authorities and physicians, resulting in a self-perpetuating increase in reported incidence. This paper was also an important population-based description of laboratory-documented pertussis in central Ontario, as the two collaborating laboratories perform all testing for *B. pertussis* in the central part of the province.

*Impact:* This paper has had a significant impact on the design and interpretation of pertussis testing regimens in Ontario (where a less sensitive and more specific assay for pertussis is now in place), and also elsewhere in North America. Colleagues from the United States Centres for Disease Control have been in contact with myself and my colleague Dr. Fran Jamieson about this analysis, as similar issues of possible over-diagnosis of pertussis have emerged in the United States. This paper also represents one of several high-impact collaborations between myself and microbiologists at PHO, which have helped delineate the epidemiology of pertussis, legionellosis, meningococcal disease, syphilis, and more recently, chlamydia in the province. Furthermore, the complex feedbacks between observed incidence and downstream test submissions have been observed for most of these diseases, suggesting an important factor that needs to be considered for accurate interpretation of surveillance data on infectious diseases in Ontario and elsewhere. Collaborations on chlamydia, which seek in part to explore similar phenomena in the abrupt rise in apparent chlamydia rates in Ontario, are the subject of a current grant funded by the Canadian Institutes of Health Research. This study also provided key information on the epidemiology of pertussis in Ontario, which has been used to parameterize subsequent mathematical models that we are currently using to explore best strategies for pertussis immunization in Ontario (e.g., see below).

4. \*Greer AL, **Fisman DN**. Use of Models to Identify Cost-effective Interventions: Pertussis Vaccination for Pediatric Health Care Workers. *Pediatrics* 2011 (*doi: 10.1542/peds.2010-0796*). Early release August 15, 2011. Available via the Internet at <http://pediatrics.aappublications.org/content/early/2011/08/11/peds.2010-0796>

This paper exemplifies innovative work in application of empirical data (e.g., pertussis risk estimates derived from the paper described above) to a real-world health policy question. Dr. Amy Greer, a post-doctoral fellow, and I, used pertussis risk estimates to build and parameterize a model that guides best use of vaccination resources for healthcare workers, in order to protect infants in neonatal intensive care units (NICU) against hospital-acquired pertussis. We built and validated an earlier mathematical model (see Greer AL, Fisman DN, *Infection Control and Hospital Epidemiology*) that simulated patient-parent, patient-healthcare worker, and healthcare worker-parent interactions in a neonatal intensive care unit (NICU), and used this to generate plausible estimates of pertussis risk for newborn infants under varying assumptions regarding vaccine coverage and prevalence. The subsequent paper in *Pediatrics* incorporates health economic parameters and costs, such that it is possible to compare the cost-effectiveness of pertussis booster immunization of healthcare workers (and parents) to other commonly adopted healthcare intervention. Using a dynamic model, we find that booster immunization is indeed cost-effective in healthcare workers. However, the use of a dynamic transmission model allows us to demonstrate that there are threshold levels of coverage beyond which the health economic benefits of additional immunization coverage diminish. Higher levels of vaccine coverage do become economically attractive when pertussis outbreaks occur in the community however. This non-linear effect provides justification for infection control strategies that are in themselves fairly intuitive, but which could not be justified

using traditional “fixed-risk” health economic evaluation. This builds on work I have done in other areas, such as in chlamydia and influenza prevention, and again demonstrates that realistic depiction of infectious disease dynamics is important for correct economic evaluation of communicable disease control programs.

*Impact:* Although this paper has just been released, and consequently has not yet informed provincial or national policy on healthcare worker immunization, it is likely to inform this process. Although the National Advisory Committee on Immunization advocates a single lifetime adult booster dose of pertussis vaccine, there is no national framework to ensure the receipt of immunization by a critical mass of pediatric healthcare workers. Our analysis argues that in the NICU context, such a policy would make health economic sense. As noted above, this paper is also likely to be impactful by demonstrating the importance of realistic models for evaluation of healthcare worker immunization programs. Finally, this represents a first output in what is emerging as a wide-ranging program of economic evaluation of pertussis and other childhood vaccines. Recent and forthcoming contracts with GlaxoSmithKline will allow us to perform additional work on optimal strategies for pertussis immunization, and an emerging partnership with Dr. Prabhat Jha at the Centre for Global Health Research will also permit application of such methods to the economic evaluation of control of polio, measles, and other pathogens of global importance. I am also proud of this work because of the mentorship effort it represents: Dr. Greer evolved during the course of her post-doctoral fellowship with me from an ecologist with a focus on diseases of amphibians, to one of Canada’s leading human disease modelers, and is now a departmental colleague of mine at the University of Toronto. She (along with Ashleigh Tuite, another mentee) shared the 2011 Senior Lupina Prize for the best Canadian application of mathematical modeling to health policy.

5. Tuite AR, Tien J, Eisenberg M, Earn DJD, Ma J, **Fisman DN**. Cholera epidemic in Haiti, 2010: using a transmission model to explain spatial spread of disease and identify optimal control interventions. *Annals of Internal Medicine* 2011; 154(9): 593-601. Available via the Internet at <http://www.annals.org/content/154/9/593.long>.

This paper represents work of which I am extremely proud: Ms. Tuite (formerly a student, now a Research Officer employed by myself at the University of Toronto) and I, responded to an urgent request from the Division of Disaster Modeling at the United States Centres for Disease Control and Prevention (US-CDC) by creating this model in October/November 2010. At that time, a cholera epidemic had emerged in Haiti. The epidemic, which is unfortunately ongoing almost one year later, and has infected over 500,000 individuals, was at that time just beginning to emerge. The US-CDC and the Pan-American Health Organization were interested in model outputs that would allow them to prioritize and optimally allocate cholera control resources. We produced a “gravity model” that predicted the movement of cholera in Haiti, and which subsequent events have unfortunately validated. We subsequently collaborated with Profs. Earn and Tien (with whom I had previously collaborated in evaluating cholera dynamics in Victorian-era London) to transform our urgent work into a manuscript that more fully explored early dynamics of cholera in Haiti. The paper was published in an expedited manner, accompanied by an editorial by Prof. Paul Farmer and colleagues, in *Annals of Internal Medicine*.

*Impact:* This work represents another example of my expertise in the urgent application of quantitative methods to a public health emergency. I created the original model, assembled the collaborative team, supervised Ms. Tuite’s subsequent reparameterization of the model, and wrote and revised the manuscript, which included performance of numerous supplemental analyses requested by reviewers. The analysis was of direct assistance to CDC disaster planners, and inspired a subsequent grant submission by Dr. Tien, myself, and Dr. Eisenberg, to the U.S. National Science Foundation, for evaluation of cholera dynamics in Haiti. That grant was awarded in 2011 and initial activities are underway. I am particularly delighted that the grant provides funding for University of Toronto public health students to travel to Haiti in order to take part in this research. Our first such student will be Gregory Kujbida, MPC(c) 2012.

***Peer reviewed publications (\* student/trainee)***

Journal articles

99. Tuite AR, Greer AL, **Fisman DN**. Effect of latitude on the rate of change in incidence of Lyme disease in the United States. *Canadian Medical Association Open Access Journal*. 2013 April;1(1):E43-E47.
98. Brown KA, Khanafer N, Daneman N, Fisman DN. Meta-Analysis of Antibiotics and the Risk of Community-Associated Clostridium difficile Infection. *Antimicrob Agents Chemother*. 2013 May;57(5):2326-32. Epub 2013 Mar 11.
97. Tuite AR, **Fisman DN**. Number-needed-to-vaccinate calculations: Fallacies associated with exclusion of transmission. *Vaccine*. 2013 Jan 30;31(6):973-8. Epub 2012 Dec 13.
96. **Fisman DN**, Chan CH, Lowcock E, Naus M, Lee V. Effectiveness and cost-effectiveness of pediatric rotavirus vaccination in British Columbia: a model-based evaluation. *Vaccine*. 2012 Dec 14;30(52):7601-7. Epub 2012 Oct 26.
95. Hurford A\*, Morris AM, **Fisman DN**, Wu J. Linking antimicrobial prescribing to antimicrobial resistance in the ICU: Before and after an antimicrobial stewardship program. *Epidemics*. 2012 Dec;4(4):203-10. Epub 2012 Dec 17.
94. Duvvuri VR, Heffernan JM, Moghadas SM, Duvvuri B, Guo H, **Fisman DN**, Wu J, Wu GE. The role of cellular immunity in Influenza H1N1 population dynamics. *BMC Infect Dis*. 2012 Nov 28;12:329.
93. Campbell RM, Klei AG, Hodges BD, **Fisman D**, Kitto S. A Comparison of Health Access Between Permanent Residents, Undocumented Immigrants and Refugee Claimants in Toronto, Canada. *J Immigr Minor Health*. 2012 Nov 3. [Epub ahead of print]
92. Pitman R, **Fisman D**, Zaric GS, Postma M, Kretzschmar M, Edmunds J, Brisson M; ISPOR-SMDM Modeling Good Research Practices Task Force. Dynamic Transmission Modeling: A Report of the ISPOR-SMDM Modeling Good Research Practices Task Force-5. *Value Health*. 2012 Sep;15(6):828-34.
91. Mostaço-Guidolin LC, Bowman CS, Greer AL, **Fisman DN**, Moghadas SM. Transmissibility of the 2009 H1N1 pandemic in remote and isolated Canadian communities: a modelling study. *BMJ Open*. 2012 Sep 1;2(5). Print 2012.
90. Kwong JC, Ratnasingham S, Campitelli MA, Daneman N, Deeks SL, Manuel DG, Allen VG, Bayoumi AM, Fazil A, **Fisman DN**, Gershon AS, Gournis E, Heathcote EJ, Jamieson FB, Jha P, Khan KM, Majowicz SE, Mazzulli T, McGeer AJ, Muller MP, Raut A, Rea E, Remis RS, Shahin R, Wright AJ, Zagorski B, Crowcroft NS. The impact of infection on population health: results of the Ontario burden of infectious diseases study. *PLoS One*. 2012;7(9):e44103. Epub 2012 Sep 4.

89. Sung L, Alibhai SM, Ethier MC, Teuffel O, Cheng S, **Fisman D**, Regier DA. Discrete choice experiment produced estimates of acceptable risks of therapeutic options in cancer patients with febrile neutropenia. *J Clin Epidemiol*. 2012 Jun;65(6):627-34. Epub 2012 Mar 15.
88. Tuite AR, Jayaraman GC, Allen VG, **Fisman DN**. Estimation of the burden of disease and costs of genital Chlamydia trachomatis infection in Canada. *Sex Transm Dis*. 2012 Apr;39(4):260-7.
87. Vasilevska M, Gesink D, Ross SA, **Fisman DN**. Relative risk of cervical cancer in Indigenous women in Australia, Canada, New Zealand and the United States: a systematic review and meta-analysis. *Public Health Policy*. 2012 May;33(2):148-64.
86. **Fisman DN**. Getting schooled: school closure, age distribution, and pandemic mitigation. *Ann Intern Med*. 2012 Feb 7;156(3):238-40.
85. Conway JM, Tuite AR, **Fisman DN**, Hupert N, Meza R, Davoudi B, English K, van den Driessche P, Brauer F, Ma J, Meyers LA, Smieja M, Greer A, Skowronski DM, Buckeridge DL, Kwong JC, Wu J, Moghadas SM, Coombs D, Brunham RC, Pourbohloul B. Vaccination against 2009 pandemic H1N1 in a population dynamical model of Vancouver, Canada: timing is everything. *BMC Public Health*. 2011 Dec 14;11:932.
84. **Fisman DN**, Tuite AR. Estimation of the health impact and cost-effectiveness of influenza vaccination with enhanced effectiveness in Canada. *PLoS One*. 2011;6(11):e27420. Epub 2011 Nov 14.
83. Madoff LC, **Fisman DN**, Kass-Hout T. A new approach to monitoring dengue activity. *PLoS Negl Trop Dis*. 2011 May;5(5):e1215. Epub 2011 May 31.
82. Chan CH\*, McCabe CJ\*, **Fisman DN**. "Core Groups, Antimicrobial Resistance, and Rebound in Gonorrhoea in North America. *Sexually Transmitted Infections*. 2012 Apr;88(3):200-4. Epub 2011 Dec 14. *I conceived of this study, built and parameterized the original mathematical model, supervised Ms. McCabe and Ms. Chan in model elaboration of the model, co-wrote the initial draft of the manuscript with Ms. Chan, and revised the manuscript prior to publication.*
81. **Fisman DN**, Tang P, \*Hauck \*, Richardson S, Drews SE, Low DE, Jamieson FB. Pertussis Resurgence in Toronto, Canada: A Population-Based Study including Test-Incidence Feedback Modeling. *BMC Public Health* 2011, Sep 7;11:694. Available via the Internet at <http://www.biomedcentral.com/1471-2458/11/694>. *I conceived of this study, created the collaborative network necessary for population-based evaluation of pertussis in Central Ontario, performed epidemiological analyses, wrote the manuscript, and edited the paper for important intellectual content. I also supervised Ms. Hauck, a University of Toronto medical student, who contributed to the paper.*
80. \*Ota KV, Ng LK, Melano RG, Martin IE, Brown EM, Richardson SE, **Fisman DN**, Low DE, Jamieson FB. Identification of Sexual Networks Through Molecular Typing of Quinolone-Resistant Neisseria gonorrhoeae in Ontario, Canada. *Sexually Transmitted Diseases*. 2011 Sep;38(9):811-814. *I supervised epidemiological analyses and contributed to drafting and revision of the manuscript.*



79. \*Greer AL, Fisman DN. Use of Models to Identify Cost-effective Interventions: Pertussis Vaccination for Pediatric Health Care Workers. *Pediatrics*. 2011 Sep;128(3):e591-9. Epub 2011 Aug 15. I am senior responsible author. *I conceived of the study, obtained funding (via Early Researcher Award), contributed to model construction and analysis, drafting of the original manuscript, and revision of the manuscript, and provided mentorship and support to Dr. Greer, a post-doctoral fellow.*
78. Tuite AR, \*Chan CH, **Fisman DN**. Cholera, canals, and contagion: Rediscovering Dr Beck's report. *J Public Health Policy*. 2011;32(3):320-33. Available via the Internet at <http://www.palgrave-journals.com/jphp/journal/v32/n3/full/jphp201120a.html>. *I am senior responsible author. I identified the document on which the paper is based, and contributed to research, interpretation of historical documents, and revision of the manuscript.*
77. \*Kuster SP, Tuite AR, Kwong JC, McGeer A; Toronto Invasive Bacterial Diseases Network Investigators, **Fisman DN**. Evaluation of co-seasonality of influenza and invasive pneumococcal disease: results from prospective surveillance. *PLoS Medicine* 2011; 8(6): e1001042. Available via the Internet at <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001042>. *I am senior responsible author. I conceived of the study, performed initial analyses, supervised subsequent analyses by Dr. Kuster, co-wrote the initial draft of the manuscript and contributed to subsequent revisions.*
76. Tuite AR, Tien J, Eisenberg M, Earn DJ, Ma J, **Fisman DN**. Cholera epidemic in Haiti, 2010: using a transmission model to explain spatial spread of disease and identify optimal control interventions. *Annals of Internal Medicine*. 2011; 154(9): 593-601. Available via the Internet at <http://www.annals.org/content/154/9/593.long>. *I am senior responsible author. This paper was based on a model created by myself in response to a request from the United States Centres for Disease Control and Prevention for assistance on planning for the future dimensions and optimal control strategies for Haiti's cholera epidemic. I created the original model, and (with ART) performed analyses and drafted the original version of the manuscript, and subsequently contributed to revisions to the manuscript.*
75. Andradottir S, Chiu W, Goldsman D, Lee ML, Tsui KL, Sander B, **Fisman DN**, Nizam A. Reactive strategies for containing developing outbreaks of pandemic influenza. *BMC Public Health* 2011 Feb 25; 11 Suppl 1: S1. Available via the Internet at <http://www.biomedcentral.com/1471-2458/11/S1/S1>. *This was an international collaboration between researchers and modelers in the United States and Canada on optimal responses to influenza pandemics. I provided guidance on model choice and structure and contributed to drafting and revision of the manuscript.*
74. Tien JH, Poinar HN, **Fisman DN**, Earn DJ. Herald waves of cholera in nineteenth century London. *Journal of the Royal Society Interface*. 2010 Dec 1. [Epub ahead of print] PMID: 21123253. Available via the Internet at <http://rsif.royalsocietypublishing.org/content/early/2010/11/26/rsif.2010.0494.full>. *I provided medical and epidemiological guidance to coauthors and contributed to drafting and revision of the manuscript.*
73. \*Tuite AR, \*Kinlin LM, \*Kuster SP, Jamieson F, Kwong JC, McGeer A, **Fisman DN**. Respiratory virus infection and risk of invasive meningococcal disease in central Ontario,

- Canada. *PLoS One*. 2010 Nov 17;5(11):e15493.PMID: 21103353 (DNF senior responsible author). Available via the Internet at <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0015493>. *I am senior responsible author. I conceived of the study, performed initial analyses, supervised subsequent analyses by Ms. Tuite, co-wrote the initial draft of the manuscript and contributed to subsequent revisions.*
72. \*Tuite AR, \*McCabe CJ, \*Ku J, **Fisman DN**. Projected cost-savings with herpes simplex virus screening in pregnancy: towards a new screening paradigm. *Sexually Transmitted Infections*. 2011 Mar; 87(2):141-8. Epub 2010 Nov 20. PMID: 21097810 (DNF senior responsible author). Available via the Internet at <http://sti.bmj.com/content/early/2010/11/19/sti.2010.045559.long>. *I am senior responsible author. I conceived of the study, built the initial model, and supervised literature search and model parameterization. I co-wrote the initial draft of the manuscript and contributed to subsequent revisions.*
71. **Fisman DN**, Savage R, Gubbay J, Achonu C, Akwar H, Farrell D, Crowcroft NS, Jackson P. Older Age and Reduced Likelihood of Infection with Swine-Origin Influenza A H1N1. *New England Journal of Medicine*. 2009 Nov 12; 361(20):2000-1. *I conceived of the study, performed statistical analyses, drafted the original manuscript, and revised the manuscript.*
70. Hsieh YH, **Fisman DN**, Wu J. On epidemic modeling in real time: An application to the 2009 Novel A (H1N1) influenza outbreak in Canada. *BMC Research Notes*. 2010 Nov 5;3:283.PMID: 21050494. Available via the Internet at <http://www.biomedcentral.com/1756-0500/3/283>. *I provided medical and epidemiological guidance to coauthors and contributed to drafting and revision of the manuscript.*
69. To T, Guttman A, Loughheed MD, Gershon AS, Dell SD, Stanbrook MB, Wang C, McLimont S, Vasilevska-Ristovska J, Crighton EJ, **Fisman DN**. Evidence-based performance indicators of primary care for asthma: a modified RAND Appropriateness Method. *International Journal for Quality in Health Care*. 2010 Dec;22(6):476-85. Epub 2010 Oct 25.PMID: 20978002. Available via the Internet at <http://intqhc.oxfordjournals.org/content/22/6/476.long>. *I contributed to study planning and drafting and revision of the manuscript.*
68. Kleiner-Fisman G, Stern MB, **Fisman DN**. Health-related quality of life in Parkinson disease: correlation between Health Utilities Index III and Unified Parkinson's Disease Rating Scale (UPDRS) in U.S. male veterans. *Health and Quality of Life and Outcomes*. 2010 Aug 30;8:91.PMID: 20799993 Available via the Internet at <http://www.hqlo.com/content/8/1/91>. *I am senior responsible author. I planned the study with Dr. Galit Kleiner-Fisman, analyzed data, and contributed to writing and revision of the manuscript.*
67. \*Duvvuri VR, Moghadas SM, Guo H, Duvvuri B, Heffernan JM, **Fisman DN**, Wu GE, Wu J. Highly conserved cross-reactive CD4+ T-cell HA-epitopes of seasonal and the 2009 pandemic influenza viruses. *Influenza and Other Respiratory Viruses*. 2010 Sep;4(5):249-58. *I served as Dr. Duvvuri's mentor under the CanPan pandemic internship program. I helped guide analyses and contributed to the revision of this manuscript.*

66. \*Tuite AR, **Fisman DN**. Spectrum Bias and Loss of Statistical Power in Discordant Couple Studies of Sexually Transmitted Infections. *Sexually Transmitted Diseases* 2011 Jan;38(1):50-6. PMID: 20693935. *I am senior responsible author. I conceived of this study, created initial models, mentored and guided Ashleigh Tuite in this, her initial foray into mathematical modeling, co-wrote the manuscript, and helped revise it in response to reviewer comments.*
65. \*Mishra S, Boily MC, Ng V, Gold WL, Okura T, Shaw M, Mazzulli T, **Fisman DN**. The laboratory impact of changing syphilis screening from the rapid-plasma reagin to a treponemal enzyme immunoassay: A case-study from the Greater Toronto Area. *Sexually Transmitted Diseases*. 2011 Mar; 38(3):190-6. Epub ahead of print 2010 Aug 12. PMID: 20706176 *I am senior responsible author. I provided guidance and mentorship to Dr. Mishra in the performance of the epidemiological analyses, and contributed to the drafting and revision of the manuscript.*
64. \*Tuite AR, **Fisman DN**, Kwong J, Greer AL. Optimal pandemic influenza vaccine allocation strategies for the Canadian population. *PLoS One*. 2010 May 6;5(5):e10520. PMID 20463898. Available via the Internet at <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0010520>. *I provided guidance in the construction of the mathematical model, provided guidance on health economic evaluations, and contributed to the drafting and revision of the manuscripts.*
63. \*Kinlin LM, Mittleman MA, Harris AD, Rubin M, **Fisman DN**. Glove Use and Risk of Sharps-Related Injury in Healthcare Workers: Results from a Case-Crossover Study. *Infection Control and Hospital Epidemiology*. 2010; 31(9): 908-17. PMID 20658920. *I am senior responsible author. I mentored Laura Kinlin (University of Toronto MPH student) on performance of case-crossover analysis, designed and conceived of the study, contributed to analyses and drafting of manuscript, and revised the manuscript prior to publication. This paper was published as part of a longitudinal project on sharps-related injuries in healthcare workers; I helped obtain funding for that study, and helped design the study, including interview questionnaires and the data analytic approach used.*
62. \*McCabe CJ, Goldie SJ, **Fisman DN**. The cost-effectiveness of directly observed highly-active antiretroviral therapy in the third trimester in HIV-infected pregnant women. *PLoS One*. 2010 Apr 13;5(4):e10154. PMID: 20405011. Available via the Internet at: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0010154>. *I am senior responsible author. I mentored Caitlin McCabe (University of Toronto undergraduate student) on performance of multivariable regression analyses; I designed and conceived of the study, contributed to analyses and drafting of manuscript, and revised the manuscript prior to publication.*
61. \*Adam HJ, Richardson SE, Jamieson FB, Rawte P, Low DE, **Fisman DN**. Changing epidemiology of invasive Haemophilus influenzae in Ontario, Canada: Evidence for herd effects and strain replacement due to Hib vaccination. *Vaccine* 2010 May 28;28(24):4073-8. PMID 20398617. *I am senior responsible author. I provided mentorship to Dr. Heather Adam, performed all epidemiological analyses and constructed maps; wrote the sections of the manuscript related to epidemiological analyses, and contributed to subsequent revision of the manuscript.*
60. \*Greer AL, \*Tuite A, **Fisman DN**. Age, influenza pandemics and disease dynamics. *Epidemiology and Infection*. 2010 Nov;138(11):1542-9. Epub 2010 Mar 22. PMID: 20307340. Available via the Internet at <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=7884089>. *I am*

- senior responsible author. I conceived of this study, performed the analyses, drafted the manuscript and contributed to revisions prior to publication.*
59. Tijet N, Tang P, Romilowych M, Duncan C, Ng V, **Fisman DN**, Jamieson F, Low DE, Guyard C. New endemic *Legionella pneumophila* serogroup I clones, Ontario, Canada.. Emerg Infect Dis. 2010 Mar;16(3):447-54. PMID: 20202420. Available via the Internet at <http://www.cdc.gov/eid/content/16/3/447.htm>. *I contributed to the performance of epidemiological analyses and geo-mapping. I contributed to revision of the manuscript.*
  58. \*Brown EM, **Fisman DN**, Drews SJ, Dolman S, Rawte P, Brown S, Jamieson F. Epidemiology of Invasive Meningococcal Disease (IMD) with Decreased Susceptibility to Penicillin (DSP) in Ontario, Canada, 2000-2006. Antimicrobial Agents and Chemotherapy. 2010 Mar; 54(3): 1016-21. Epub 2010 Jan 19. PMID: 20086160. Available via the Internet at <http://aac.asm.org/cgi/reprint/54/3/1016>. *I performed all epidemiological analyses and constructed maps; wrote the sections of the manuscript related to epidemiological analyses, and contributed to subsequent revision of the manuscript.*
  57. \*Kinlin LM, Kirchner C, Zhang H, Daley J, **Fisman DN**. Derivation and validation of a clinical prediction rule for nosocomial pneumonia after coronary artery bypass graft surgery. Clinical Infectious Diseases. 2010 Feb 15;50(4):493-501. PMID 20085462. Available via the Internet at <http://www.journals.uchicago.edu/doi/pdf/10.1086/649925>. *I am senior responsible author. I mentored Laura Kinlin (University of Toronto MPH student) on construction of clinical prediction rules, designed and conceived of the study, contributed to analyses and drafting of manuscript, and revised the manuscript prior to publication.*
  56. \*Tuite A, **Fisman DN**, Kwong JC, Greer A. Seasonal Influenza Vaccine Allocation in the Canadian Population during a Pandemic. PLoS Currents Influenza. 2009 Dec 11:RRN1143. PMID: 20069033. *I provided mentorship to Dr. Greer and Ms. Tuite, provided guidance on model construction, and helped design and interpret health economic analyses. I contributed to the drafting and revision of the manuscript.*
  55. Sander B, Bauch C, **Fisman DN**, Fowler R, Kwong JC, Maetzel A, McGeer A, Raboud J, Scales DC, Zivkovic Gojovic M, Krahn M. Is a Mass Immunization Program for Pandemic (H1N1) 2009 Good Value for Money? Early Evidence from the Canadian Experience. Vaccine. 2010 Aug 31;28(38):6210-20. Epub 2010 Jul 17. PMID: 20643091. *I provided input on model construction, scenario development, and interpretation of analyses. I contributed to the drafting and revision of the manuscript.*
  54. \*White AN, \*Ng V, Spain CV, Johnson CC, \*Kinlin LM, **Fisman DN**. Let the sun shine in: effects of ultraviolet radiation on invasive pneumococcal disease risk in Philadelphia, Pennsylvania. BMC Infectious Diseases. 2009 Dec 4;9:196. PMID: 19961583 Available via the Internet at: <http://www.biomedcentral.com/1471-2334/9/196>. *I am senior responsible author. I provided guidance and mentorship to Mr. White and Dr. Ng on epidemiological analyses, performed a number of analyses myself, drafted (with Alex White) the initial draft of the manuscript and revised the manuscript in response to reviewer comments.*
  53. \*Tuite AR, \*Greer AL, Whelan M, Winter AL, Lee B, Yan P, Wu J, Moghadas S, Buckeridge D, Pourbohloul B, **Fisman DN**. Estimated epidemiologic parameters and morbidity associated with pandemic H1N1 influenza. CMAJ 2010 Feb 9;182(2):131-6. PMID: 19959592. Available via the Internet at: <http://www.cmaj.ca/cgi/rapidpdf/cmaj.091807v1>. *I am senior responsible author. I obtained data necessary for analysis, assembled the team of coauthors, performed initial epidemiological analyses, supervised model construction by Ashleigh R. Tuite, MPH 2009, wrote the initial draft of the manuscript and revised the manuscript prior to publication.*

52. Moghadas SM, Bowman CS, Röst G, **Fisman DN**, Wu J. Post-exposure prophylaxis during pandemic outbreaks. *BMC Medicine*. 2009 Dec 2;7:73. PMID: 19954514. Available via the Internet at: <http://www.biomedcentral.com/1741-7015/7/73>. *I provided guidance and input on epidemiological, public health and medical control measures for pandemic influenza, and extensively edited and rewrote the manuscript.*
51. \*White AN, \*Kinlin LM, Johnson C, Spain CV, \*Ng V, Fisman DN. Environmental Determinants of Campylobacteriosis Risk in Philadelphia from 1994 to 2007. *EcoHealth*. 2009 Jun; 6(2):200-8. Epub 2009 Dec 2. PMID: 19953295. Available via the Internet at: <http://www.springerlink.com/content/v547qk228742k774/>. *I am senior responsible author. I conceived of the analysis, provided guidance and mentorship to Mr. White and Dr. Ng on epidemiological analyses, performed a number of analyses myself, drafted (with Alex White) the initial draft of the manuscript and revised the manuscript in response to reviewer comments.*
50. \*Gojovic M, Sander B, **Fisman D**, Krahn MD, Bauch CT. Modelling mitigation strategies for pandemic (H1N1) 2009. *Canadian Medical Association Journal* 2009 Nov; 181(10):673-80. PMID: 19825923. Available via the Internet at: <http://www.cmaj.ca/cgi/content/full/181/10/673>. *I provided guidance and input on epidemiological, public health and medical control measures for pandemic influenza, and contributed to revision of the manuscript.*
49. \*Greer AL, Drews SJ, **Fisman DN**. Why “Winter” Vomiting Disease? Seasonality, Hydrology, and Norovirus Epidemiology in Toronto, Canada. *EcoHealth*, 2009 Jun;6(2):192-9. PMID: 20151172. Available via the Internet at <http://www.springerlink.com/content/965202pl4408815k>. *I am senior responsible author. I conceived of the analysis, provided guidance and mentorship to Dr. Greer on epidemiological analyses, performed a number of analyses myself, and drafted (with Dr. Greer) the initial draft of the manuscript.*
48. Pourbohloul B, Ahued A, Davoudi B, Meza R, Meyers LA, Skowronski DM, Villaseñor I, Galván F, Cravioto P, Earn DJ, Dushoff J, **Fisman D**, Edmunds WJ, Hupert N, Scarpino SV, Trujillo J, Lutzow M, Morales J, Contreras A, Chávez C, Patrick DM, Brunham RC. Initial human transmission dynamics of the pandemic (H1N1) 2009 virus in North America. *Influenza and Other Respiratory Viruses*. 2009 Sep;3(5):215-22. PMID: 19702583. *I contributed to study design and contributed to the writing and revision of the manuscript.*
47. \*McCabe C, Kirchner C, Zhang H, Daley J, **Fisman DN**. Guideline-concordant therapy and reduced mortality and length of stay in adults with community-acquired pneumonia: playing by the rules. *Archives of Internal Medicine*. 2009 Sep; 169(16):1525-31. PMID: 19752411. Available via the Internet at: <http://archinte.ama-assn.org/cgi/content/full/169/16/1525> . *I am senior responsible author. I conceived of the analysis, performed initial data cleaning and database construction, provided guidance and mentorship to Ms. McCabe (a University of Toronto undergraduate) on epidemiological analyses, performed a number of analyses myself, drafted the manuscript, and performed revisions necessary for publication myself.*
46. \*Greer AL, **Fisman DN**. Keeping Vulnerable Children Safe from Pertussis: Preventing Nosocomial Pertussis Transmission in the Neonatal Intensive Care Unit. *Infection Control and Hospital Epidemiology*. 2009 Nov;30(11):1084-9. PMID: 19785517. Available via the Internet at: [http://www.journals.uchicago.edu/doi/abs/10.1086/644755?url\\_ver=Z39.88-2003&rft\\_id=ori:rid:crossref.org&rft\\_dat=cr\\_pub%3dncbi.nlm.nih.gov](http://www.journals.uchicago.edu/doi/abs/10.1086/644755?url_ver=Z39.88-2003&rft_id=ori:rid:crossref.org&rft_dat=cr_pub%3dncbi.nlm.nih.gov). *I am senior responsible author. I conceived of the analysis, assisted in model parameterization, supervised model building and mentored Dr. Greer in the construction of agent-based models, and co-wrote and revised the manuscript with Dr. Greer.*

45. \*Soverow JE, Wellenius G, **Fisman D**, Mittleman MA. Infectious Disease in a Warming World: How Weather Influenced West Nile Virus in the United States (2001-2005). *Environmental Health Perspectives*, 2009 Jul;117(7):1049-52. PMID: 19654911. Available via the Internet at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=19654911>. *I conceived of the analysis, assisted in the acquisition of data, and provided guidance regarding clinical and epidemiological analyses.*
44. **Fisman DN**, \*Greer AL, Broukhanski G, Drews SJ. Of gastro and the gold standard: evaluation and policy implications of norovirus test performance for outbreak detection. *Journal of Translational Medicine* 2009, 7(1): 23. PMID: 19323808. Electronically published, available via the Internet at: <http://www.translational-medicine.com/content/7/1/23>. *I conceived of the analysis, assembled the data, performed statistical analyses, and wrote and revised the manuscript.*
43. \*Ng V, Tang P, Jamieson F, Guyard C, Low DE, **Fisman DN**. Laboratory-Based Evaluation of the Epidemiology of Legionellosis in Ontario, Canada, 1978 to 2006. *BMC Infectious Diseases* 2009; 21;9:68. PMID: 19460152. Available via the Internet at: <http://www.biomedcentral.com/content/pdf/1471-2334-9-68.pdf>. *I am senior responsible author. I conceived of the analysis, assembled and cleaned the database, provided guidance to Dr. Ng on epidemiological analyses, performed epidemiological analyses myself, and co-wrote the manuscript with Dr. Ng. I revised the manuscript prior to publication, which included performance of a substantial number of additional analyses.*
42. \*Kinlin L, Jamieson F, \*Brown E, Rawte P, Brown S, Dolman S, Drews SJ, **Fisman DN**. Rapid Identification of Herd Effects with the Introduction of Serogroup C Meningococcal Conjugate Vaccine in Ontario, Canada, 2000 to 2006. *Vaccine*, 2009; 27(11):1735-40. PMID: 19186206. *I am senior responsible author. I conceived of the analysis, provided guidance to Ms. Kinlin on the performance of Poisson regression analysis, performed epidemiological analyses myself, and contributed to the initial drafting of the manuscript. I revised the manuscript prior to publication, which included performance of a substantial number of additional analyses.*
41. \*Ota K, **Fisman DN**, Tamari IE, Smeija M, Ng LK, Jones KE, DiPrima A, Richardson SE . Incidence and treatment outcomes of pharyngeal Neisseria gonorrhoeae and Chlamydia trachomatis infections in men who have sex with men: a 13-year retrospective cohort study. *Clinical Infectious Diseases*. 2009 May; 48(9):1237-43. PMID: 19323630. Available via the Internet at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=19188626>. *I provided guidance and mentorship to Dr. Ota on study design and epidemiological analyses, and contributed to the writing and revision of the manuscript.*
40. \*Ota KV, Jamieson F, **Fisman DN**, Jones KE, Tamari IE, Ng LK, Towns L, Rawte P, DiPrima A, Wong T, Richardson SE. Rising prevalence and male predominance in quinolone-resistant Neisseria gonorrhoeae infections in Ontario. *Canadian Medical Association Journal*. 2009 Feb; 180(3):287-90. PMID: 19188626. Available via the Internet at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=19188626>. *I provided guidance and mentorship to Dr. Ota on study design and epidemiological analyses, and contributed to the writing and revision of the manuscript.*
39. \*Kinlin LM, Spain CV, \*Ng V, Johnson CC, \*White AN, **Fisman DN**. Environmental Exposures and Invasive Meningococcal Disease: An Evaluation of Effects on Varying Time-Scales. *American Journal of Epidemiology* 2009 Mar; 169: 588-95. PMID: 19164421. Available via the Internet at <http://aje.oxfordjournals.org/cgi/content/abstract/169/5/588?etoc>.

*I am senior responsible author. I conceived of the analysis, assembled and cleaned the database, provided guidance to Ms. Kinlin on epidemiological analyses, performed epidemiological analyses myself, and co-wrote the manuscript with Ms. Kinlin. I revised the manuscript prior to publication, which included performance of a substantial number of additional analyses.*

38. \*Ng V, Tang P, Jamieson F, Drews SJ, Brown S, Low DE, Johnson CC, **Fisman DN**. Going with the Flow: Legionellosis Risk in Toronto, Canada is Strongly Associated with Local Watershed Hydrology. *EcoHealth*. 2008 Dec; 5(4):482-90. PMID: 19370300. *I am senior responsible author. I conceived of the analysis, assembled and cleaned the database, provided guidance to Ms. Kinlin on epidemiological analyses, performed epidemiological analyses myself, and co-wrote the manuscript with Ms. Kinlin. I revised the manuscript prior to publication, which included performance of a substantial number of additional analyses.*
37. Perencevich EN, \*McGregor JC, Shardell M, \*Furuno JP, Harris AD, Morris Jr JG, **Fisman DN**, Johnson JA. Summer Peaks in the Incidences of Gram-Negative Bacterial Infection Among Hospitalized Patients. *Infection Control and Hospital Epidemiology*. 2008 Dec; 29(12):1124-31. PMID: 19031546. *I provided guidance to Dr. Perencevich on evaluation of seasonality in the genesis of infectious disease incidence, and contributed to manuscript revision.*
36. Drews SJ, Eshaghi A, Pyskir D, Chedore P, Lombos E, Broukhanski G, Higgins R, **Fisman DN**, Blair J, Jamieson F. The relative test performance characteristics of two commercial assays for the detection of Mycobacterium tuberculosis complex in paraffin-fixed human biopsy specimens. *Diagnostic Pathology* 2008; 3(1):37. PMID: 18778465. *I performed all statistical analyses.*
35. **Fisman DN**, Spain CV, Salmon ME, Goldberg M. The Philadelphia High-School STD Screening Program: Key Insights From Dynamic Transmission Modeling. *Sexually Transmitted Diseases*. 2008 Nov; 35 (11 Suppl): S61-5. PMID: 18607306. *I conceived of the model used, built the model, performed all analyses, and wrote and revised the manuscript.*
34. Daneman N, Low DE, McGeer A, Green KA, **Fisman DN**. At the Threshold: Defining Clinically Meaningful Resistance Thresholds for Antibiotic Choice in Community Acquired Pneumonia. *Clinical Infectious Diseases*. 2008 Apr 15;46(8):1131-8. PMID: 18444846. *I am senior responsible author. I conceived of the model used in cooperation with Dr. Daneman, performed the modeling and statistical analyses, and co-wrote and revised the manuscript with Dr. Daneman.*
33. \*Cohen E, Weinstein M, **Fisman DN**. Cost-Effectiveness of Competing Strategies for the Treatment of Pediatric Empyema. *Pediatrics*. 2008 May;121(5):e1250-7. PMID: 18450867. *I am senior responsible author. I provided guidance and mentorship to Dr. Cohen in the construction of the decision-analytic model, contributed to the performance and interpretation of sensitivity analyses, and contributed to the writing and revision of the manuscript.*
32. Dennison AC, \*Noorigian JV, Robinson KM, **Fisman DN**, Cianci HJ, Moberg P, Bunting-Perry L, Martine R, Duda J, Stern MB. Falling in Parkinson disease: identifying and prioritizing risk factors in recurrent fallers. *American Journal of Physical Medicine and Rehabilitation*. 2007 Aug; 86(8):621-32. PMID: 17667192. *I provided guidance on the epidemiological analyses. Mr. Noorigina was an MPH student assigned to me at the Drexel University School of Public Health.*
31. M'ikanatha NM, Imunya SG, **Fisman DN**, Julian KG. Sharp-device injuries and perceived risk of infection with bloodborne pathogens among healthcare workers in rural Kenya.

- Infection Control and Hospital Epidemiology. 2007 Jun;28(6):761-3. PMID: 17520560. *I provided guidance on statistical analyses.*
30. Kleiner-Fisman G, **Fisman DN**. Risk factors for the development of pedal edema in patients using pramipexole. Archives of Neurology. 2007 Jun; 64 (6): 820-4. PMID: 17420306. *I performed statistical analyses.*
  29. \*Spaude KA, Abrutyn E, Kirchner C, Daley J, Kim A, **Fisman DN**. Influenza vaccination and risk of mortality among adults hospitalized with community-acquired pneumonia. Archives of Internal Medicine. 2007 Jan 8; 167: 53-59. PMID: 17210878. *I am senior responsible author. I conceived of the analyses, performed initial statistical analyses, guided Ms. Spaude in the subsequent performance of epidemiological analyses, and wrote and revised the manuscript. Ms. Spaude was an MPH student assigned to me at the Drexel University School of Public Health.*
  28. Kleiner-Fisman G, Herzog J, **Fisman DN**, Tamma F, Lyons KE, Pahwa R, Lang AE, Deuschl G. Subthalamic nucleus deep brain stimulation: summary and meta-analysis of outcomes. Movement Disorders. 2006 Jun;21 Suppl 14:S290-304. PMID: 16892449. *I performed statistical analyses.*
  27. **Fisman DN**, Harris AD, Rubin M, Sorock GS, Mittleman MA. Fatigue increases sharps-injury risk in medical trainees: results from a case-crossover study. Infection Control and Hospital Epidemiology. 2007 Jan; 28(1):10-17. PMID: 17230382. *I performed subject interviews, performed data analysis, and wrote and revised the manuscript. This paper was published as part of a longitudinal project on sharps-related injuries in healthcare workers; I helped obtain funding for that study, and helped design the study, including interview questionnaires and the data analytic approach used. This study was cited by the U.S. Institute of Medicine in their report on the reform of medical trainee work-hours.*
  26. **Fisman DN**, Abrutyn E, \*Spaude KA, Kim A, Kirchner C, Daley J. Prior pneumococcal vaccination is associated with reduced death, complications, and length-of-stay in hospitalized adults with community-acquired pneumonia. Clinical Infectious Diseases, 2006 Apr 15; 42(8):1093-101. PMID: 16575726. *I conceived of the analyses, cleaned the database, performed statistical and epidemiological analyses, and wrote and revised the manuscript. Ms. Spaude was an MPH student assigned to me at the Drexel University School of Public Health.*
  25. \*Main C, Jayaratne P, Rutherford C, Smaill F, **Fisman DN**. Outbreaks of infection caused by community-acquired methicillin-resistant *Staphylococcus aureus* in a Canadian correctional facility. Canadian Journal of Infectious Diseases and Medical Microbiology, 2005 Nov. 16(6): 343-8. PMID: 18159517. *I am senior responsible author. I guided Dr. Main in the outbreak investigation, performed statistical analyses, and wrote and revised the manuscript. Dr. Main was a medical resident at the time this work was performed. This represents to my knowledge the first recognition of community MRSA (cMRSA) in Canada.*
  24. **Fisman DN**, Lim S, \*Wellenius GA, Johnson, C, Britz P, Gaskins M, Maher J, Mittleman MA, Spain CV, Haas CN, Newbern C. It's not the heat, it's the humidity: wet weather increases the occurrence of legionellosis in the Greater Philadelphia Metropolitan Area. Journal of Infectious Diseases. 2005 Dec; 192(12): 2066-73. PMID: 16288369. *I conceived of the project, created and cleaned the database, performed statistical analyses, and wrote and revised the manuscript.*
  23. Perencevich EN, Harris AD, Kaye KS, Bradham DD, **Fisman DN**, Liedtke LA, Strausbaugh LJ. Physicians' acceptable treatment failure rates in antibiotic therapy for coagulase-negative staphylococcal catheter-associated bacteremia: Implications for reducing treatment duration



- and antibiotic exposure. *Clinical Infectious Diseases*. 2005 Dec; 41(12): 1734-41. PMID: 16288397. *I provided guidance on the use of contingent valuation methods and assisted with statistical analyses and production of graphical displays of data.*
22. **Fisman DN**. Health-related quality of life in genital herpes: a pilot comparison of measures. *Sexually Transmitted Infections*. 2005 Jun; 81(3): 67-70. PMID: 15923300. *I conceived of the study, performed all subject interviews, collected and analyzed data, and wrote and revised the manuscript.*
  21. Kleiner-Fisman G, **Fisman DN**, Zamir O, Dostrovsky JO, Sime E, Saint-Cyr JA, Lozano AM, Lang AE. Subthalamic nucleus deep brain stimulation for parkinson's disease after successful pallidotomy: Clinical and electrophysiological observations. *Movement Disorders*. 2004 Oct;19(10):1209-14. PMID: 15390008. *I performed statistical analyses.*
  20. Perencevich EN, **Fisman DN**, Lipsitch M, Harris AD, Morris JG, Smith D. Projected Benefits of Active Surveillance for Vancomycin Resistant Enterococcus in ICU Settings. *Clinical Infectious Diseases*. 2004 Apr 15; 38(8): 1108-15. PMID: 15095215. *I conceived of the study, created the original mathematical model, and provided guidance to Dr. Perencevich on its subsequent elaboration. I contributed to the writing and revision of the manuscript.*
  19. Perencevich EN, Kaye KS, Strasbaugh LJ, **Fisman DN**, Harris AD. Acceptable rates of treatment failure in osteomyelitis involving the diabetic foot: a survey of infectious disease physicians. *Clinical Infectious Diseases*. 2004 Feb 15; 38(4): 476-82. PMID: 14765338. *I provided guidance on the use of contingent valuation methods and assisted with statistical analyses and production of graphical displays of data.*
  18. Kleiner-Fisman G, **Fisman DN**, Khan FI, Sime E, Lozano AM, Lang AE. Motor cortical stimulation for parkinsonism in multiple system atrophy. *Archives of Neurology*. 2003 Nov; 60(11):1554-8. PMID: 14623727. *I performed statistical analyses.*
  17. Smith A, Li A, Tolomeo O, Tyrrell GJ, Jamieson F, **Fisman D**. Mass antibiotic treatment for group A streptococcus outbreaks in two long-term care facilities. *Emerging Infectious Diseases*. 2003 Oct; 9(10): 1260-5. PMID: 14609461. *I am senior responsible author. I coordinated response to one of the two described outbreaks as Medical Officer of Health, collected epidemiological and microbiological data, performed the literature review, and wrote and revised the manuscript.*
  16. Lipsitch M, Cohen T, Cooper B, Robins JM, Ma S, James L, Gopalakrishna G, Chew SK, Tan CC, Samore MH, **Fisman D**, Murray M. Transmission dynamics and control of severe acute respiratory syndrome. *Science*. 2003 Jun; 300(5672):1966-70. Epub May 23, 2003. PMID: 12766207. *I conceived of this study as a Medical Officer of Health involved with Ontario's SARS response (<http://harvardmagazine.com/2007/03/the-sars-scare.html>), and contributed to creation of initial mathematical models, and to revision of the manuscript prior to publication. This study has been cited > 350 times since publication.*
  15. Kleiner-Fisman G, **Fisman DN**, Sime E, Saint-Cyr JA, Lozano AM, Lang AE. Long-term follow up of bilateral deep brain stimulation of the subthalamic nucleus in patients with advanced Parkinson disease. *Journal of Neurosurgery*. 2003 Sep; 99(3):489-95. PMID: 12959435. *I performed statistical analyses. This study has been cited > 150 times since publication.*
  14. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. Sharps-related injuries in healthcare workers: a case-crossover study. *American Journal of Medicine*. 2003 Jun; 114(8):688-94. PMID: 12798458. *I performed subject interviews, performed data analysis, and wrote and revised the manuscript. This paper was published as part of a longitudinal project on sharps-*

- related injuries in healthcare workers; I helped obtain funding for that study, and helped design the study, including interview questionnaires and the data analytic approach used.*
13. **Fisman DN**, Hook E, Goldie SJ. Estimating costs and benefits of screening monogamous, heterosexual couples for unrecognised infection with herpes simplex virus type 2. *Sexually Transmitted Infections*. 2003 Feb; 79(1):45-52. PMID: 12576614. *I conceived of the study, built and parameterized the mathematical model, performed analyses, wrote the paper, and revised the paper prior to publication.*
  12. **Fisman DN**, Lipsitch M, Hook EW III, Goldie SJ. Projection of the future dimensions and costs of the genital herpes simplex type 2 epidemic in the United States. *Sexually Transmitted Diseases*. 2002 Oct; 29(10):608-622. PMID: 12370529. *I conceived of the study, built and parameterized the mathematical model, performed analyses, wrote the paper, and revised the paper prior to publication.*
  11. **Fisman DN**, Agarwal D, Leder K. The effect of age on immunologic response to recombinant hepatitis B vaccine: a meta-analysis. *Clinical Infectious Diseases*. 2002 Dec; 35(11):1368-75. PMID: 12439800. *I devised the literature search strategy with Dr. Leder, contributed to the systematic review, performed the meta-analysis and meta-regression, wrote the initial draft of the manuscript and (with Dr. Leder) revised the manuscript prior to publication.*
  10. **Fisman DN**, Mittleman MA, Sorock GS, Harris AD. Willingness to pay to avoid sharps injuries: a study in injured healthcare workers. *American Journal of Infection Control*. 2002 Aug; 30(5):283-287. PMID: 12163862. *I performed subject interviews, performed data analysis, and wrote and revised the manuscript. This paper was published as part of a longitudinal project on sharps-related injuries in healthcare workers; I helped obtain funding for that study, and helped design the study, including interview questionnaires and the data analytic approach used.*
  9. **Fisman D**. Unusual skin findings in a patient with liver disease. *Canadian Medical Association Journal*. 2002 Jun; 166(12):1567. PMID: 12074126. *Case report written by myself based on a clinical encounter. The report addresses issues of trans-cultural sensitivity in healthcare.*
  8. Szucs TD, Berger K, **Fisman DN**, Harbarth S. The estimated economic burden of genital herpes in the United States. An analysis using two costing approaches. *BioMed Central Infectious Diseases*. 2001; 1:5. PMID: 11472635. Available via the Internet at: <http://www.biomedcentral.com/1471-2334/1/5>. *I assisted with statistical analyses and contributed to revision of manuscript.*
  7. Fisman M, Rabheru K, Hegele RA, Sharma V, **Fisman D**, Doering M, Appell J. Apolipoprotein E polymorphism and response to electroconvulsive therapy. *Journal of Electroconvulsive Therapy*. 2001 Mar; 17(1):4-11. PMID: 11281508. *I performed statistical analyses.*
  6. **Fisman DN**, Reilly DT, Karchmer AW, Goldie SJ. Clinical and cost-effectiveness of two management strategies for infected total hip arthroplasty in the elderly. *Clinical Infectious Diseases*. 2001 Feb; 32(3): 419-30. PMID: 11170950. *My first published paper in the field of decision science. The project conceived by myself under supervision of Sue Goldie and AW Karchmer. I built the mathematical model, performed analyses, wrote and revised paper.*
  5. **Fisman DN**, Levy AR, Gifford DG, Tamblyn R. Survival after percutaneous endoscopic gastrostomy among elderly residents of Quebec. *Journal of the American Geriatrics Society* 1999 Mar; 47(30): 349-53. PMID: 10078899. *My first published paper in the field of epidemiology. Project conceived by myself under the supervision of Professor Robyn*

*Tamblyn. I performed analyses with Adrian Levy, wrote the first draft of the paper, and revised the paper prior to publication.*

4. **Fisman DN**, Malcolm ID, Ward ME. Echocardiographic detection of pulmonary embolism in transit: implications for thrombolytic therapy. *Canadian Journal of Cardiology*. 1997 Jul;13(7):685-7. PMID: 9251581. *Case report written under supervision of Dr. Michael Ward, and based on a clinical case.*
3. **Fisman DN**, Smilovitch M. Intravenous immunoglobulin, blood viscosity and myocardial infarction. *Canadian Journal of Cardiology*. 1997 Aug; 13(8):775-7. PMID: 9284845. *Case report written under supervision of Dr. Mark Smilovitch and based on a clinical case.*
2. **Fisman DN**, Ward ME. Intrapleural placement of a nasogastric tube: an unusual complication of nasotracheal intubation. *Canadian Journal of Anesthesia*. 1996 Dec; 43(12):1252-6. PMID: 8955977. *Case report written under supervision of Dr. Michael Ward, and based on a clinical case.*
1. **Fisman D**. Pisse-prophets and puritans: Thomas Brian, uroscopy, and seventeenth-century English medicine. *Pharos of Alpha Omega Alpha*. 1993; 56(3):6-11. PMID:8415894. *A medical-historical paper written as a result of an Osler Studentship, Osler Library, Montreal, PQ. Won AOA Medical Student Essay Contest.*

#### Journal articles – Currently under review

1. Xiao Y, Patel Z, Fiddler A, **Fisman DN**. Impact of aggressive antiviral use on influenza outbreak dynamics in an isolated Canadian indigenous community. *Canadian Medical Association Journal*, submitted.
2. **Fisman DN**, Greer AL, Tuite AR. Lyme disease trends in the United States display a north-south gradient: contribution of climate change? *PLoS ONE*, under review.
3. Tuite AR, **Fisman DN**. Estimation of the degree of underreporting of pertussis: a model-based approach. *Vaccine*, under review.
4. Ng V, **Fisman DN**. Factors influencing the decision to accept vaccination: a conjoint analysis approach. *Vaccine*, under review.

#### **Book Chapters**

4. **Fisman DN**. Bugs and bucks: disease persistence is a matter of economics. *In* Atkinson G, ed. *Emerging and Persistent Infectious Diseases: Focus on Prevention*. Institute on Science for Global Policy, Washington, DC, 2011. Available via the Internet at: <http://www.scienceforglobalpolicy.org/>.
3. Ota K, Mishra S, Tan D, **Fisman DN**. Sexually transmitted infections. *In* Loeb M, Smeijja M, Smaill F. *Evidence-based Infectious Diseases*, 2<sup>nd</sup> ed. Oxford University Press, Oxford, UK 2009. *I am senior responsible author.*
2. **Fisman DN**. Sexually transmitted infections. *In* Loeb M, Smeijja M, Smaill F. *Evidence-based Infectious Diseases*. BMJ-Blackwell Publishing, London, UK, 2004. Chapter

1. **Fisman DN**, Kaye KK. Once-daily dosing of aminoglycosides. *Infectious Diseases Clinics of North America* 2000; 14: 275-89.

### *Reviews*

22. **Fisman D**. Seasonality of viral infections: mechanisms and unknowns. *Clin Microbiol Infect.* 2012 Oct;18(10):946-54. doi: 10.1111/j.1469-0691.2012.03968.x. Epub 2012 Jul 20
21. **Fisman DN**, Laupland KB. Sexually transmitted infections in Canada: a sticky situation. *Canadian Journal of Infectious Diseases and Medical Microbiology* 2011; 22(3): 80-82.
20. Laupland KB, **Fisman DN**. A new paradigm for clinical trials in antibiotherapy? *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2011; 22(2): 39-42. PMID: 22654923.
19. **Fisman DN**, Laupland KB. The time of cholera. *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2011; 22(1): 7-9. PMID:22379481.
18. Laupland KB, **Fisman DN**. New antibacterials? *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2010; 21(2): 71-3. PMID: 21629613.
17. Laupland KB, **Fisman DN**. The accidental medical tourist. *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2010; 21(4): 155-6. PMID: 22132001.
16. **Fisman DN**, Laupland KB. The 'One Health' paradigm: Time for infectious disease clinicians to take note? *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2010; 21(3): 111-114. PMID: 21886646.
15. **Fisman DN**, Laupland KB. Guess who's coming to dinner? Emerging foodborne zoonoses. *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2010; 21(1): 8-10. PMID: 21358882.
14. Moghadas SM, Pizzi NJ, Wu J, Tamblyn SE, **Fisman DN**. Canada in the face of the 2009 H1N1 pandemic. *Influenza and Other Respiratory Viruses.* 2011 Mar;5(2):83-8. doi: 10.1111/j.1750-2659.2010.00184.x. Epub 2010 Nov 3. PMID: 21306571.
13. Mishra S, **Fisman DN**, Boily MC. The ABC of terms used in mathematical models of infectious diseases. *Journal of Epidemiology and Community Health.* 2011 Jan;65(1):87-94. Epub 2010 Oct 21. PMID: 20966445. Available via the Internet at <http://jech.bmj.com/content/65/1/87.long>.
12. **Fisman DN**, Laupland KB. Influenza mixes its pitches: lessons learned to date from the influenza A (H1N1) pandemic. *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2009; 20(3): 89-91. PMID:20808467.
11. **Fisman DN**, Laupland KB. The sounds of silence: public goods, externalities, and the value of infectious disease control programs. *Canadian Journal of Infectious Diseases and Medical Microbiology.* 2009; 20(2): 39-41. PMID:20514157.
10. Laupland KB, **Fisman DN**. Selective digestive tract decontamination: A tough pill to swallow. *Canadian Journal of Medical Microbiology and Infectious Diseases.* 2009, 20(1): 9-11. PMID: 20190888.
9. Laupland KB, **Fisman DN**. Zoster vaccination: a new opportunity for adult immunization. *Canadian Journal of Infectious Diseases and Medical Microbiology* 2009; 20(4): 105-6. PMID: 21119800.

8. **Fisman D.** Pandemic Influenza Outbreak Research Modelling Team (Pan-InfORM), Modelling an influenza pandemic: A guide for the perplexed. *Canadian Medical Association Journal* 2009;181(3-4):171-3. PMID: 19620267. Available via the Internet at: <http://www.cmaj.ca/cgi/content/short/181/3-4/171?rss=1>.
7. Greer A, Ng-Brett V, **Fisman DN.** Climate change and infectious diseases in North America: the road ahead. *Canadian Medical Association Journal*. 2008 Mar 11;178(6):715-22. PMID: 18332386. *I am senior responsible author.*
6. **Fisman DN.** Seasonality of Infectious Diseases. *Annual Review of Public Health*. 2007; 28: 127-43. PMID: 17222079.
5. Weir E, **Fisman DN.** Respiratory syncytial virus: pervasive yet evasive. *Canadian Medical Association Journal*. 2004 Jan; 170(2): 191. PMID: 14734430.
4. Weir E, **Fisman DN.** Latent tuberculosis: revised treatment guidelines. *Canadian Medical Association Journal*. 2003 Oct;169(9):937-8. PMID: 14581314.
3. Weir E, **Fisman D.** Syphilis: have we dropped the ball? *Canadian Medical Association Journal* 2002; 79(1): 1267-8. PMID:12451084.
2. **Fisman DN.** Hemophagocytic syndromes and infection. *Emerging Infectious Diseases*. 2000; 6(6):601-8. PMID:11076718.
1. **Fisman DN.** Body piercing-associated infections. *Infectious Disease Practice for Clinicians*. 1998; 22: 69-72.

### ***Guidelines***

2. **Fisman DN,** Zaric G, Postma M, Kretzchmar M, Edmunds J, Brisson M, Pitman R. ISPOR-SMDM joint modeling good research practice task force: dynamic transmission modeling. *Value in Health, in press.*
1. Perencevich EN, Stone PW, Wright SB, Carmeli Y, **Fisman DN,** Cosgrove SE; Society for Healthcare Epidemiology of America. Raising standards while watching the bottom line: making a business case for infection control. *Infection Control and Hospital Epidemiology*. 2007 Oct;28(10):1121-33.

### ***Invited Commentaries***

5. **Fisman DN.** Antimicrobials in farming. *CMAJ*. 2013 Jan 8;185(1):62-3. PMID: 23297141
4. Madoff LC, **Fisman DN,** Kass-Hout T. A new approach to monitoring dengue activity. *PLoS Neglected Tropical Diseases* 2011; 5(5):e1215. Available via the Internet at <http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0001215>.
3. Greer A, **Fisman DN.** Punching above their weight: males, reinfection, and the limited success of *Chlamydia* screening programs. *Sexually Transmitted Diseases* 2009, 36(1): 9-10. *I am senior responsible author.*

2. Ng V, Tang P, **Fisman DN**. Learning to count: our evolving understanding of legionellosis epidemiology. *Clinical Infectious Diseases* 2008; 47(5): 600-2. *I am senior responsible author.*
1. **Fisman D**. Syphilis Resurgent in China. *Lancet* 2007 Jan 13;369(9556):84-5.

## F. PRESENTATIONS AT MEETINGS

### *Invited presentations*

#### International:

43. **Fisman DN**. Climate change and changing patterns of infectious diseases. Council of State and Territorial Epidemiologists Annual Meeting. Omaha, Nebraska, June 6, 2012.
42. **Fisman DN**. Is it cost-effective? Best practices on evaluating the bang-for-the-buck in communicable disease control. International Meeting on Emerging Diseases and Surveillance (IMED). Vienna, Austria, February 15-18, 2013.
41. **Fisman DN**. Economic issues in the control of herpesvirus infections. Fondation Merieux Conference on Herpes and Immunity. Annecy, France, June 18-20, 2012.
40. **Fisman DN**. Catch the wave: seasonality of infectious diseases and why clinicians should care. Brown University Medical Grand Rounds. Providence, RI November 29, 2011.
39. **Fisman DN**. Bugs and bucks: infectious disease persistence is a matter of economics. Institute on Science for Global Policy, Emerging and Persistent Infectious Diseases: Focus on Prevention. La Jolla, California, June 5-8, 2011.
38. **Fisman DN**. Odd Couples: The Complex Relationship Between Influenza and Invasive Bacterial Diseases. Institut National de Veille Sanitaire (National Institute for Public Health Surveillance). Paris (Sainte-Maurice), France, March 26, 2011.
37. **Fisman DN**. The need for improved influenza vaccines in older adults. Novartis Vaccines Scientific Roundtable Meeting. Frankfurt, Germany, March 24, 2011.
36. **Fisman DN**. Odd Couples: The Complex Relationship Between Influenza and Invasive Bacterial Diseases. Centre Hospitalier Universitaire Seminar in Infectious Diseases Epidemiology. Lyon, France, February 9, 2011.
35. **Fisman DN**. Odd Couples: The Complex Relationship Between Influenza and Invasive Bacterial Diseases. Harvard School of Public Health, Lunchtime Seminars in Infectious Disease Epidemiology. Boston, MA, January 22, 2010.
34. **Fisman DN**. Climate change and disease transmission. Institute of Medicine Workshop on Indoor Air Quality and Climate Change. Institute of Medicine, Washington, DC, June 19, 2009.
33. **Fisman DN**. Residency training and fatigue: are we killing our house staff? Society for Hospital Epidemiology of America Annual Meeting; Plenary on Occupational Health and Safety, San Diego, California, March 21, 2009.
32. **Fisman DN**. Climate Change and Infectious Diseases in North America: The Road Ahead. Imperial College London Division of Infectious Disease Epidemiology Seminar Series, February 17, 2009.

31. **Fisman DN.** “‘Sneezonality’: What we know (and don’t) about the seasonality of respiratory infections”. AstraZeneca Epidemiology Seminar, Wilmington, Delaware, May 17, 2006.
30. **Fisman DN.** “‘Sneezonality’: What we know (and don’t) about the seasonality of respiratory infections”. University of Pennsylvania Infectious Disease Grand Rounds, Philadelphia, PA. March 23, 2006.
29. **Fisman DN.** A vaccine that works even when it fails: effect of prior pneumococcal vaccination on survival and morbidity in community acquired pneumonia. Harvard School of Public Health, 5th Annual Jonathan Freeman Seminar in Infectious Diseases Epidemiology, Boston, MA, February 10, 2006.
28. **Fisman DN.** “Bugs and Bucks: The Economics of STD Control”. University of Pennsylvania, Center for Clinical Epidemiology and Biostatistics Seminar Series, Philadelphia, January 12, 2006.
27. **Fisman DN.** Economic costs of antibiotic resistance: identification, measurement, and valuation. New Jersey State Department of Health and Senior Services Antimicrobial Resistance Symposium. West Windsor, NJ, October 31, 2005.
26. **Fisman DN.** “Sharps related injuries and their prickly precipitants”. Association of Professionals in Infection Control Philadelphia Chapter Meeting, Philadelphia, December 10, 2004.
25. **Fisman DN.** “Seasonality, weather, and acute infectious disease occurrence” University of Pennsylvania, Center for Clinical Epidemiology and Biostatistics Seminar Series, Philadelphia, October 21, 2004.
24. **Fisman DN.** “Seasonality, weather, and acute infectious disease occurrence” Emory University, Rollins School of Public Health Epidemiology Seminar Series, Atlanta GA, October 14, 2004.
23. **Fisman DN.** “Genital Herpes: Epidemiology and Cost-Effectiveness of Emerging Vaccines”. Fox Chase Cancer Center Population Sciences Seminar. Philadelphia, PA, September 14, 2004.
22. **Fisman DN.** “The response to SARS”. SARS and Emerging Infectious Diseases: Lessons Learned. New Jersey Hospital Association. Princeton, NJ. June 15, 2004.
21. **Fisman DN.** “Syndromic surveillance: rationale and implementation”. Capitol Hill Steering Committee on Telehealth and Healthcare Informatics, “Advances in Biosurveillance, Early Warning, and Effective Response Toward Protecting Providers and the Public”. Washington, DC. June 9, 2004.
20. **Fisman DN.** "Genital herpes: what's new?". Infectious Disease Grand Rounds, University of Pennsylvania. April 8, 2004.
19. **Fisman DN.** "Seasonality and infection: meningococcus runs hot and cold." Harvard School of Public Health Freeman Seminar in Infectious Disease Epidemiology. Boston, April 29, 2004.
18. **Fisman DN.** “Modeling genital herpes: Biological and economic considerations” (Elion IHMF Junior Investigator Award Lecture). 11th Annual Meeting of the International Herpes Management Forum. Amsterdam, The Netherlands, February 26-29, 2004.
17. **Fisman DN.** “SARS in Toronto: Lessons Learned (and Already Forgotten?)”. Preparing Your Hospital for SARS. Florida Hospital Association, Orlando, FL, March 5 2004.

16. **Fisman DN.** How good is good enough? Modeling approaches to the effectiveness and cost-effectiveness of vaccines for herpes simplex virus type 2. Sexually Transmitted Diseases in Philadelphia: Linking Clinicians and Researchers. University of Pennsylvania and Centers for Disease Control and Prevention. Philadelphia, PA, January 28, 2004.
15. **Fisman DN.** Dynamic projection of cost-effectiveness of HSV-2 vaccines for young women. University of Tampere/Finnish National Public Health Institute International Symposium in Medicine. Lääkäripäivät 2004 (2004 Finnish Medical Association Annual Meeting). Helsinki, Finland, January 8, 2004.
14. **Fisman DN.** Prickly precipitants: epidemiology of needlesticks, and cost-effectiveness of prevention. Johns Hopkins Bloomberg School of Public Health, Center for Injury Research and Policy, Graduate Seminar in Injury Research and Policy. Baltimore, MD, December 1, 2003.
13. **Fisman DN.** SARS in Toronto: the good, the bad, and the ugly. Southeastern Pennsylvania Regional Bioterrorism Preparedness Working Group. Philadelphia PA, August 6, 2003.
12. **Fisman DN.** Cold and rainy, with scattered relative risks: seasonality, weather, and invasive group A streptococcal disease. 3rd Annual Jonathan Freeman Memorial Seminar in Infectious Diseases Epidemiology, Harvard School of Public Health, Boston, MA, May 15, 2003.
11. **Fisman DN.** Novel tools for prevention of HSV-2 transmission: implications for HSV-2 testing. International Herpes Management Forum “Strategies for Interrupting the Transmission of HSV” Workshop, Seattle, WA, May 5, 2003.
10. **Fisman DN.** Prickly precipitants: epidemiology of needlesticks, and cost-effectiveness of prevention. Drexel University School of Public Health. Philadelphia PA, January 11, 2003.
9. **Fisman DN.** Prickly precipitants: epidemiology of needlesticks, and cost-effectiveness of prevention. Division of General Internal Medicine Rounds, University of Pennsylvania. Philadelphia PA, January 10, 2003.
8. **Fisman DN.** Control of herpes simplex virus type 2: using modeling to inform policy. Special Rounds, Department of Epidemiology and Preventive Medicine, University of Maryland. Baltimore MD, January 8, 2003.
7. **Fisman DN.** Precipitants of needlestick injuries in health care workers: a case-crossover study. Infectious Disease Grand Rounds, Washington University, St. Louis, MO. June 25, 2002.
6. **Fisman DN, Mandl L.** Medical management of osteoarthritis of the knee: cost-effectiveness of American College of Rheumatology guidelines. Partners Healthcare Arthritis Research Centre, Brigham and Women’s Hospital. Boston, MA. May 1, 2002.
5. **Fisman DN.** Cost-effectiveness of directly observed therapy for the prevention of maternal-fetal HIV transmission. Lifespan/Tufts/Brown Center for AIDS Research Forum on Directly Observed Therapy for Treatment of HIV. Providence, Rhode Island. April 30, 2002.
4. **Fisman DN.** Virulent outbreak of severe group A streptococcal disease in a long-term care facility: control with mass antibiotic prophylaxis. 2nd Annual Jonathan Freeman Memorial Symposium in Infectious Disease Epidemiology. Harvard School of Public Health, Boston, MA. April 26, 2002.
3. **Fisman DN.** Control of herpes simplex virus type 2: using modeling to inform policy. Sexually Transmitted Diseases Seminar Series, Johns Hopkins School of Medicine, Baltimore, Maryland. June 2001.



2. **Fisman DN.** A case-crossover study of sharps-related injuries in healthcare workers. Institute for Healthcare Improvement, Boston, MA. June 2001.
1. **Fisman DN.** Modeling genital herpes. 1st Annual Jonathan Freeman Memorial Symposium in Infectious Disease Epidemiology. May 2001.

National:

26. **Fisman DN.** Economic evaluation of vaccines. Canadian Immunization Conference. Vancouver, British Columbia, December 3-5, 2012.
25. **Fisman DN.** One Health for Clinicians. Canadian Family Medicine Forum, Toronto, November 15, 2012.
24. **Fisman DN.** Influenza immunization in older adults: an epidemiological perspective. University of Ottawa “IDEology” Seminar, Ottawa, Ontario, Canada. October 12, 2011.
23. **Fisman DN.** Mathematical modeling: a useful tool for guidance of partner notification strategies. National Collaborating Centre on Infectious Diseases, national consultation on partner notification. Toronto, Ontario, Canada, October 4, 2011.
22. **Fisman DN** and Tuite AR. Estimation of the burden and economic costs of *Chlamydia trachomatis* infection in Canada. Public Health Agency of Canada, Ottawa, Ontario, Canada, June 30, 2011.
21. **Fisman DN** and Sargeant J. Prioritization of zoonotic diseases. Canadian Conference on Medical Education, plenary session on “One Health”. Toronto, Ontario, Canada, May 10, 2011.
20. **Fisman DN.** The economics of disease persistence. Banff International Research Station Workshop on Persistent Infectious Diseases. Banff, Alberta, Canada, March 2, 2011.
19. Tuite AR, **Fisman DN.** Modeling in the real world: contribution of modeling to management of influenza pandemics. Public Health Agency of Canada—Canadian Pandemic Influenza Planning Meeting, Winnipeg, MB, February 1-2 2011.
18. **Fisman DN**, Greer A. Modeling disease spread in populations—overview and pts. One Health—One Model Zoonotic Disease Modeling Meeting. University of Guelph, November 1-4, 2010.
17. **Fisman DN.** What a Difference a Year Makes: PanINFORM, the 2009 pH1N1 Pandemic, and Mathematical Modeling in Canada. PanINFORM National Influenza Modeling Meeting (The First Influenza Pandemic of the 21<sup>st</sup> Century: Canada’s Response, Lessons Learned, and Challenges Ahead). Winnipeg, MB. April 19-20, 2010.
16. **Fisman DN.** One Health: getting human health experts to think “trans-species”. (Plenary address). Canadian Association of Veterinary Epidemiology and Preventive Medicine, Guelph, Ontario, Canada, May 29-30, 2010.
15. **Fisman DN.** The Flu Formula: How Math is Helping Canada Respond to H1N1. University of Western Ontario Applied Mathematics Seminar Series. London, Ontario, Canada, December 9, 2009.
14. **Fisman DN.** The Flu Formula: How Math is Helping Canada Respond to H1N1. MITACS 10<sup>th</sup> Anniversary Public Lecture. Vancouver, BC, November 6, 2009.

13. **Fisman DN.** Plenary: The Great Divide: Can Models Inform Disease-Control Policy in Real Time? Mitigating the spread of influenza A (H1N1) (Part II): An International Mathematical Modelling Meeting. British Columbia Centre for Disease Control (BCCDC), Vancouver, BC, Canada, September 14 – 16, 2009.
12. **Fisman DN.** Age and Epidemiology of Novel Influenza A (H1N1) in Ontario. Mitigating the spread of influenza A (H1N1) (Part II): An International Mathematical Modelling Meeting. British Columbia Centre for Disease Control (BCCDC), Vancouver, BC, Canada, September 14 – 16, 2009.
11. **Fisman DN.** Invasive bacterial disease, seasonality, and climate change. 26<sup>th</sup> International Conference on Chemotherapy and Infection/2009 Annual Meeting of the Association of Medical Microbiology and Infection of Canada. Plenary session “the changing climate of infectious diseases”. Toronto, Ontario, June 18, 2009.
10. **Fisman DN, Deonandan R.** An Expert Panel Discussion on Health Effects of Climate Change. University of Ottawa Health Science Students Environmental & Public Health Advocacy Group and the Student Federation of the University of Ottawa; Ottawa, Ontario, December 5, 2008.
9. **Fisman DN.** But the bugs bounce back: simple transmission models and “failure” of bacterial STD control programs. Canadian Applied and Industrial Mathematics Mini-symposium on Communicable Diseases, 2<sup>nd</sup> Canada-France Congress on Mathematics. Universite de Quebec a Montreal, Montreal, PQ, June 1, 2008
8. **Fisman DN.** There’s a Bug in My Model: Using Mathematical Modeling to Inform Communicable Disease Control Policy and Practice. University of Calgary Division of Infectious Diseases Rounds, Calgary, Alberta, Canada, January 8, 2008.
7. **Fisman, DN.** Environment, Climate Change, and Infectious Diseases. Infectious Diseases Seminar, Queens University, Kingston, Ontario, Canada. November 27, 2007.
6. **Fisman DN.** High School-Based Chlamydia Screening: Projected Health and Economic Impact in Philadelphia. Public Health Agency of Canada—MITACS Joint Symposium on Modeling Sexually Transmitted and Blood-Borne Infections. Banff International Research Station for Mathematical Innovation and Discovery, Banff, Alberta, Canada, August 10-12, 2007.
5. **Fisman DN.** "Seasonality, Environment, and Infectious Disease Occurrence: A Novel Application for Case-Crossover Study Design". University of Alberta Public Health Sciences Grand Rounds. Edmonton, Alberta, Canada, October 5, 2005.
4. **Fisman DN.** “Environmental Factors and Acute Communicable Disease Occurrence: A Rediscovery”. University of Western Ontario Homecoming 2004 Seminar: Political and Ecological Influences on Health. London, Ontario, Canada, October 2, 2004.
3. **Fisman DN.** Control of herpes simplex virus type 2: using modeling to inform policy. British Columbia Center for Disease Control. November 8, 2003.
2. **Fisman DN.** Prophylaxis and immunization in the emergency room. Canadian Association of Emergency Physicians. Annual Scientific Assembly. Hamilton, Ontario. April 19, 2002.
1. **Fisman DN.** Sexually transmitted diseases: an overview for the mental health professional. Department of Psychiatry, University of Western Ontario, London, Ontario, Canada. April 2001.

Local:

34. **Fisman DN.** Is it cost-effective? Why communicable diseases are different (and why clinicians should care). University of Toronto City-Wide Infectious Diseases Conference. Sunnybrook Health Sciences Centre, Toronto, Canada. January 8, 2013.
33. Tuite AR, Mishra S, **Fisman DN.** Mathematical modeling and resurgence of sexually transmitted infections in Canada. Canadian National Infectious Disease Fellows' Retreat. University of Toronto, Canada. August 16, 2012.
32. **Fisman DN.** John Snow: Insights into Emerging Infections from the Pre-Microbiologic Era. John Snow 200<sup>th</sup> Birthday Bash. Dalla Lana School of Public Health, University of Toronto, March 15, 2013.
31. **Fisman DN.** It's Gettin' Hot in Here: Climate Change and Implications for Infectious Disease Control. University of Toronto School of the Environment Environmental Health Seminar Series. January 24, 2013
30. Tuite AR, **Fisman DN.** Understanding the Increase in Chlamydia Risk in Ontario through Applied Epidemiology and Mathematical Modeling. York Region Community and Health Services. September 26, 2012
29. Agard E, Ruttly C, **Fisman DN.** Vaccines: is controversy overshadowing science? Ontario Science Centre Café Scientifique. May 26, 2012.
28. **Fisman DN.** Using mathematical models to inform syphilis prevention strategies in Ontario. Ontario Syphilis Working Group. Toronto, April 30, 2012.
27. Bell J, **Fisman DN.** Can Viruses Cure Cancer? Ontario Institute for Cancer Research Café Scientifique. February 9, 2012.
26. **Fisman DN.** Influenza immunization in older adults: an epidemiological perspective. FitzGerald Seminar Series in Communicable Disease Epidemiology, Dalla Lana School of Public Health, University of Toronto. October 13, 2011.
25. **Fisman DN.** Climate change and infectious diseases. York Region Infection Prevention and Control Education Day. Kettleby, Ontario, October 5, 2011.
24. **Fisman DN** and Tuite AR. Mathematical epidemiology of pertussis in the Greater Toronto Area: Implications for vaccine policy. GlaxoSmithKline Canada, Mississauga, Ontario, March 16, 2011.
23. **Fisman DN.** Cholera Model in Haiti, 2010—Using a Gravity Model to Explain Initial Spatial Dynamics. Toronto Public Health Epi Lunch Bunch; Toronto, Ontario, Canada, March 11, 2011.
22. Tuite AR, **Fisman DN.** Plagues past: what history teaches us about epidemics. Woodsworth College Alumni Lecture Series, University of Toronto. January 18, 2011.
21. **Fisman DN**, Greer AL, Jones N, Derry B. It's Getting' Hot in Here: Climate Change and Infectious Diseases. Canadian Institutes for Health Research Café Scientifique presented by the Research Institute of the Hospital for Sick Children. Toronto, Ontario, Canada, October 5, 2009.
20. **Fisman DN.** Flu on the Fly: Emerging Diseases, Public Policy, and the Influenza Pandemic. Woodsworth College (University of Toronto) Alumni Café. October 13, 2009.

19. **Fisman DN.** The Ontario Mathematical Epidemiology Hub (“ONTology”). Public Health Agency of Canada National Mathematical Modeling Meeting, Toronto, Ontario, Canada, July 9, 2009.
18. **Fisman DN.** Bright Ideas? Ultraviolet Radiation, Weather, and the Seasonality of Invasive Bacterial Disease in North America. Toronto Invasive Bacterial Disease Network (TIBDN) Research Day, Mt. Sinai Hospital, Toronto. November 27, 2008.
17. **Fisman DN.** Overview of Modelling as it relates to Public Health and Emergency Preparedness. Ontario Agency for Health Protection and Promotion Session on Disaster Preparedness, Canadian Critical Care Conference. Toronto, Ontario, November 11, 2008.
16. **Fisman DN.** By the numbers: math, vaccines, and the secrets of disease control. St. Michael’s Hospital Center for Global Health Research, Toronto, Ontario, Canada, August 1, 2008
15. **Fisman DN.** Modeling Genital Herpes and Related Conditions: Exercises, Approaches, and Evaluation of Cost-Effectiveness. Public Health Agency of Canada-MITACS Conference on Mathematical Modeling of Herpes Simplex Viruses and Human Papillomavirus. York University, Toronto, Ontario, Canada, May 29-30, 2008.
14. **Fisman DN.** By the numbers: math, vaccines, and the secrets of disease control. University of Toronto Infectious Diseases/Microbiology Academic Day, Toronto, Ontario, Canada, May 27, 2008.
13. **Fisman DN.** “Making Best Bets: Mathematical Modeling as a Tool for Vaccine Policy”. St. Michael’s Hospital Clinical and Population Research Rounds, February 7, 2008.
12. **Fisman DN.** “Old Timey Diseases” in the Here and Now. Fields Institute Center for Mathematical Medicine Seminar Series, Toronto, Ontario, Canada. January 25, 2008.
11. **Fisman DN.** A high-school Chlamydia screening program. Toronto Public Health “Epi Lunch Bunch”. Toronto, Ontario, Canada, January 22, 2008.
10. **Fisman DN.** “Pertussis: the disease that won’t go away“. York Region Health Services Lunch and Learn. Newmarket, Ontario, June 25, 2007.
9. **Fisman DN.** “Seasonality, Environment, and Infectious Diseases”. Sunnybrook and Women’s Hospital Infectious Disease/Microbiology Rounds, June 19, 2007.
8. **Fisman DN.** “There’s a Bug in this Model: Transmission Modeling in Epidemiology and Health Policy”. York University MITACS Seminar, Toronto, Ontario, February 13, 2007.
7. **Fisman DN.** “Enhanced Screening for *Chlamydia* Control: Recent Experience and Projected Health and Economic Impact in Philadelphia”. Plenary Session on Sexually Transmitted Disease Control (Chairs Edward W. Hook III and Jonathan Zenilman). 44<sup>th</sup> Annual Meeting Infectious Disease Society of America, Toronto, Ontario, Canada, October 14, 2006.
6. **Fisman DN.** “Bugs and bucks: cost-effectiveness of Philadelphia’s high-school *Chlamydia* screening program.” Population Health Sciences Seminar, Hospital for Sick Children Research Institute, Toronto, Ontario, Canada. March 20, 2006.
5. **Fisman DN.** Invasive group A streptococcal disease in long-term care. Toronto Public Health Infection Control Education Day. Toronto, Ontario, November 5, 2002.
4. **Fisman DN.** Needlestick injuries: identifying precipitants and evaluating the cost-effectiveness of prevention. Institute for Clinical Evaluative Sciences, Sunnybrook Hospital, Toronto, Ontario. October 9, 2002.

3. **Fisman DN.** Update on genital herpes. Phoenix Association (Herpes Support Group). Toronto, Ontario. March 20, 2002.
2. **Fisman DN.** Report of an invasive group A streptococcal outbreak investigation in a nursing home. Toronto Invasive Bacterial Disease Network Research Day. Mt. Sinai Hospital, Toronto, February 7, 2002.
1. **Fisman DN.** Bioterrorism: Simulation, Preparation, Motivation. Ontario Hospital Association Roundtable on Bioterrorism. Toronto, Ontario. December 20, 2001.

#### **Contributed presentations, peer reviewed**

41. Tuite AR, **Fisman DN.** Estimation of the burden of disease and costs of genital *Chlamydia trachomatis* infection in Canada. International Society for Sexually Transmitted Diseases Research Biannual Meeting, Quebec City, Quebec. July 10-13, 2011.
40. Chan CH, McCabe CJ, **Fisman DN.** Core Groups, Antimicrobial Resistance and Rebound in Gonorrhoea. International Society for Sexually Transmitted Diseases Research Biannual Meeting, Quebec City, Quebec. July 10-13, 2011.
39. Tuite AR, **Fisman DN.** Pertussis in Ontario, Canada: a transmission dynamic model. North American Congress of Epidemiology, Montreal, Quebec. June 21-24, 2011.
38. Tuite AR, **Fisman DN.** Seasonality of influenza-attributable meningococcal disease in central Ontario, Canada: implications for targeting of influenza vaccination programs. AMMI Canada – CACMID Annual Conference 2011, Montreal, Quebec, April 7-9, 2011.
37. Brown K, **Fisman DN.** A mathematical model of nosocomial clostridium difficile infection (CDI) transmission in an acute care hospital system with seasonal variations in transmission rate. AMMI Canada – CACMID Annual Conference 2011, Montreal, Quebec, April 7-9, 2011.
36. Devault A, Poinar H, Tien J, Earn D, **Fisman DN,** Dhody A. Ancient DNA analysis of 19<sup>th</sup> century cholera. Society for American Archeology, Sacramento, CA, March 30-April 2, 2011.
35. Tuite AR, Tien J, Earn DJD, Eisenberg M, Ma J, **Fisman DN.** Use of a gravity model to reproduce spatial patterns of cholera spread in Haiti, 2010. International Meeting on Emerging Diseases, Vienna, Austria, February 4-7, 2011.
34. Tuite AR, **Fisman DN.** Cholera, commerce and contagion: rediscovering Dr. Beck's report. Pennsylvania Medical Humanities Consortium Annual Meeting. Philadelphia, PA May 19-20, 2010.
33. **Fisman DN.** Gonorrhoea Ain't Gone: Dissemination of Antibiotic Resistance via Core Groups. Canadian Mathematics Society Winter Meeting 2008. Ottawa, Ontario, December 6, 2008.
32. Soverow J, Wellenius G, **Fisman D,** Mittleman MS. Infectious Disease in a Warming World: How Weather Influenced West Nile Virus in the United States (2001-2005). 20th Annual Conference of the International Society for Environmental Epidemiology, October 12-16, 2008 Pasadena, CA.
31. **Fisman DN,** Greer A, Broukhanski G, Drews S. Of Gastro and the Gold Standard: Use of Latent Class Modeling to Estimate Test Performance for a Novel PCR and EIA for

- Norovirus G1 and G2. AMMI Canada—CACMID Annual Conference. Vancouver, British Columbia, February 27 - March 1, 2008.
30. Kinlin L, Spain CV, Ng V, White A, Johnson C, **Fisman DN**. Seasonal Variation and Environmental Effects in Invasive Meningococcal Disease in Philadelphia, Pennsylvania. AMMI Canada—CACMID Annual Conference. Vancouver, British Columbia, February 27 - March 1, 2008.
  29. **Fisman DN**, Tang P, Richardson S, Drews S, Jamieson F. Pertussis Resurgence in Toronto, 2007. The View from the Lab. Late Breaker Sessions II: 2007 Annual Meeting of the Pediatric Academic Societies. Toronto, Ontario, Canada, May 5-8, 2007.
  28. Cohen E, Weinstein M, **Fisman DN**. What Is the Most Cost Effective Treatment for Pediatric Empyema? 2007 Pediatric Academic Societies Annual Meeting, Toronto, Ontario, Canada. May 5-8, 2007.
  27. Drews S, **Fisman D**, Brouhanski G, Chedore P, Jamieson F. Association of histopathology and biopsy specimen type with direct detection of Mycobacterium tuberculosis by PCR. AMMI-Canada CACMID 2007 Annual Conference, Halifax, Nova Scotia, Canada, March 14-18 2007.
  26. Chedore P, **Fisman D**, Jamieson F. Current trends in extremely drug resistant (XDR) tuberculosis in Ontario. International Union against Tuberculosis and Lung Disease (IUATLD) 11<sup>th</sup> North American Regional Conference. Vancouver, British Columbia, Canada. February 22-24, 2007.
  25. **Fisman DN**, Spaude KA, Kirchner C, Kim A, Abrutyn EA, Daley J. Recent influenza vaccination reduces adverse health outcomes in adults with community-acquired pneumonia. 16<sup>th</sup> Annual Meeting of the Society for Hospital Epidemiology of America (SHEA), Chicago, IL, March 18-21, 2006.
  24. Johnson-Masotti, AP, **Fisman DN**, Lynd L, Sheehan D. Anonymous HIV testing in Canada: a cost-effective health intervention. Health Services Restructuring: New Evidence and New Directions. John Deutch Institute for the Study of Economic Policy. Queens University, Kingston, Ontario, Canada. November 17-18, 2005.
  23. **Fisman DN**, Spain V, Asbel L, Goldberg M, Lawrence D, Newbern EC. High-school-based screening for Chlamydia in Philadelphia: identification of cost-savings using a dynamic transmission model. 27<sup>th</sup> Annual Meeting of the Society for Medical Decision Making. San Francisco, CA, October 21-24, 2005.
  22. **Fisman DN**, Edmunds J. The importance of transmissibility in estimating cost-effectiveness of STI prevention: lessons from simulation studies. 16<sup>th</sup> Biennial Meeting of the International Society for Sexually Transmitted Disease Research. Amsterdam, The Netherlands. July 10-13, 2005.
  21. Sorock GS, Lombardi DA, **Fisman DN**, Harris AD, Courtney TK, Evanoff B, Smith GS, Mittleman MA. Future directions for case-crossover research in injury epidemiology. 132<sup>nd</sup> Annual Meeting of the American Public Health Association. Washington, DC. November 6-10, 2004.
  20. **Fisman DN**, Johnson-Masotti A, Lynd L, Sheehan D. Anonymous HIV Testing in Canada: A Cost-Effective Health Intervention. 132<sup>nd</sup> Annual Meeting of the American Public Health Association. Washington, DC. November 6-10, 2004.
  19. **Fisman DN**, Spaude K, Kirchner C, Kim A, Daley J, Alexander J, Zhang J, Abrutyn E. Prior Pneumococcal Vaccination Reduces Death and Respiratory Failure Among Adults Admitted

- to Hospital with Community-Acquired Pneumonia. 44<sup>th</sup> Interscience Congress on Antimicrobial Agents and Chemotherapy. Washington, DC. October 30-November 2, 2004.
18. **Fisman DN**, Goldie SJ, Hook EW, Lipsitch M. Dynamic projection of effectiveness and cost-effectiveness of HSV-2 vaccine for young women: how good is good enough? CDC STD Prevention Meeting, Philadelphia PA, March 8-11, 2004.
  17. **Fisman DN**, Goldie SJ, Hook EW, Lipsitch M. Dynamic projection of the effectiveness and cost-effectiveness of HSV-2 vaccine for young women: how good is good enough? 11<sup>th</sup> Annual Meeting of the International Herpes Management Forum, Amsterdam, The Netherlands, February 26-29, 2004.
  16. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. Cost-effectiveness of safer sharp medical devices for prevention of HIV and hepatitis C infection in healthcare workers. NIOSH/CDC National Occupational Injury Symposium, Pittsburgh PA, October 29 2003.
  15. **Fisman DN**. The season's the reason: invasive group A streptococcal disease and weather patterns in a Canadian city. Pennsylvania Public Health Association Conference, Harrisburg, PA, October 17, 2003.
  14. **Fisman DN**, Goldie SJ, Hook EW, Lipsitch M. Dynamic projection of the effectiveness and cost-effectiveness of HSV-2 vaccine for young women. Pennsylvania Public Health Association Conference, Harrisburg, PA, October 16, 2003.
  13. Weir E, Taha M, Knowles L, Hart R, Haley A, **Fisman DN**, Tsang L, Li A, Sheehan D. Devil take the hindmost: A large community verotoxigenic E. Coli outbreak associated with haggis consumption. Society for Hospital Epidemiology of America 13<sup>th</sup> Annual Meeting, Arlington, VA. April 5-8, 2003.
  12. **Fisman DN**. Cost-effectiveness of directly observed highly active antiretroviral therapy in pregnant HIV-infected women. Ontario HIV Treatment Network Research Day. Toronto, Ontario, November 28-29, 2002.
  11. Kleiner-Fisman G, **Fisman D**, Sime E, St. Cyr J, Lozano A, Lang A. Long-term outcome of subthalamic nucleus deep brain stimulation in patients with advanced Parkinson's disease. 7<sup>th</sup> Annual International Congress on Parkinson's Disease and Other Movement Disorders, Miami, FL, November 10-14, 2002.
  10. Kleiner-Fisman G, **Fisman D**, Khan F, Sime E, Lozano A, Land A. Motor cortical stimulation in patients with multi-system atrophy. 7<sup>th</sup> Annual International Congress on Parkinson's Disease and Other Movement Disorders, Miami, FL, November 10-14, 2002.
  9. Mandl LA, Liang M, **Fisman DN**. Cost-effectiveness of competing strategies for management of knee osteoarthritis. American College of Rheumatology 66<sup>th</sup> Annual Scientific Meeting, New Orleans, LA, October 25-29, 2002.
  8. **Fisman DN**. Cost-effectiveness of competing strategies for management of osteoarthritis of the knee. 24<sup>th</sup> Annual Meeting of the Society for Medical Decision Making Annual Meeting, Baltimore, MD, October 20–23, 2002
  7. **Fisman DN**. Cost-effectiveness of post-exposure antibiotic prophylaxis in household contacts of individuals with severe invasive group A streptococcal disease. 24<sup>th</sup> Annual Meeting of the Society for Medical Decision Making Annual Meeting, Baltimore, MD, October 20–23, 2002
  6. Perencevich EN, **Fisman DN**, Harris AD, Morris JG, Smith DL. Point prevalence and clinical culture positivity may be inadequate measures of an infection control intervention's

effectiveness. 24<sup>th</sup> Annual Meeting of the Society for Medical Decision Making Annual Meeting, Baltimore, MD. October 20–23, 2002

5. **Fisman DN**, Smith A. Virulent outbreak of severe group A streptococcal disease in a long-term care facility: control with mass antibiotic prophylaxis. 12<sup>th</sup> Annual Meeting, Society for Hospital Epidemiology of America, Salt Lake City, UT April 6-9, 2002.
4. **Fisman DN**, Harris AD, Lipsitch M, Perencevich EN, Smith DL. Benefits of active surveillance for vancomycin-resistant enterococcus on ICU Admission assessed with a stochastic model. 41<sup>st</sup> International Congress on Antimicrobial Agents and Chemotherapy, Chicago, IL, December 16-19, 2001.
3. **Fisman DN**, Perencevich EN, Cosgrove SE, Levy DB, Goldie SJ. Cost-effectiveness of directly observed highly active antiretroviral therapy in pregnant women with asymptomatic HIV infection. Infectious Disease Society of America 39<sup>th</sup> Annual Meeting, San Francisco, CA, 2001, and Society for Medical Decision Making Annual Meeting, San Diego, CA October 25 –28, 2001.
2. Perencevich EN, Lipsitch M, Harris AD, **Fisman DN**. Estimating the costs and benefits of active surveillance for vancomycin resistant enterococcus on ICU admission. Society for Healthcare Epidemiology of America Annual Meeting, Toronto, Ontario April 1 – 3, 2001.
1. **Fisman DN**, Goldie SJ. Estimating the costs and benefits of screening monogamous, heterosexual couples for asymptomatic infection with herpes simplex virus type 2. Society for Medical Decision Making 22<sup>nd</sup> Annual Meeting, Cincinnati, OH October 2000.



## Contributed poster presentations, peer reviewed

54. Brown KA, Daneman N, Moinedden R, Fisman DN. The duration of effects of antibiotic exposures on the risk of *Clostridium difficile* infection (CDI): a cohort study. International Meeting on Emerging Diseases and Surveillance (IMED). Vienna, Austria, February 15-18, 2013.
53. Tuite AR, **Fisman DN**, Alexander D, Guthrie J, Marchand-Austin A, Lam K, Ma J, Whelan M, Lee B, Jamieson F. Epidemiological evaluation of spatio-temporal and genotypic clustering of *Mycobacterium tuberculosis* in Ontario, Canada. International Meeting on Emerging Diseases and Surveillance (IMED). Vienna, Austria, February 15-18, 2013.
52. Vasilevska M, Major M, McGeer A, Brown V, Greer A, Tuite A, Ulanova M, Morris S, FitzGerald J, DeAngelis F, **Fisman DN**. The FitzGerald Seminar Series - Creation of an Open Access Infectious Disease Control and Prevention Seminar Series in Ontario. 10<sup>th</sup> Canadian Immunization Conference, Vancouver, Canada, December 3-5, 2012.
51. Tuite AR, **Fisman DN**. Estimation of the health impact and cost-effectiveness of an adjuvanted influenza vaccine with enhanced effectiveness and durability of effect. Poster presented at: 3<sup>rd</sup> North American Congress of Epidemiology, June 2011.
50. Devault, Alison, Hendrik N. Poinar, Joseph H. Tien, David J.D. Earn and **David N. Fisman**. *Ancient DNA analysis of 19th century North American cholera* Multiple pandemics. Society for American Archeology 76<sup>th</sup> Annual Meeting, Sacramento, California, March 30-April 3, 2011.
49. Tuite AR, **Fisman DN**. Cost-effectiveness of an adjuvanted vaccine for prevention of influenza in Ontario, Canada. International Meeting on Emerging Diseases, Vienna, Austria, February 4-7, 2011.
48. Xiao Y, **Fisman DN**. Impact of antiviral drug use on epidemic dynamics in an isolated First Nations reserve in Ontario, 2009. International Meeting on Emerging Diseases, Vienna, Austria, February 4-7, 2011.
47. Kuster S, Tuite AR, McGeer A, Kwong J, **Fisman DN**. Influenza drives risk of invasive pneumococcal disease but not pneumococcal transmission dynamics in Toronto, Canada. International Society for Prevention of Pneumococcal Disease, Tel Aviv, Israel, March 14-18, 2010.
46. Tuite AR, Kinlin LM, **Fisman DN**. Influenza A activity and increased risk of invasive meningococcal disease in central Ontario, Canada: a case-crossover analysis. European Society for Pediatric Infectious Diseases, Nice, France, May 4-8, 2010.
45. Kinlin L, Kirchner C, Zhang H, Daley J, **Fisman DN**. Derivation and validation of a clinical prediction rule for nosocomial pneumonia following coronary artery bypass grafting surgery. Annual Meeting of the Society for Hospital Epidemiology of America. San Diego, California, March 20-22, 2009.
44. Kinlin LM, Ng V, Crowcroft N, Granerod J, Fraser G, Spain CV, Johnson CC, Jamieson F, Brown EM, **Fisman DN**. Seasonal Patterns and Environmental Predictors of Invasive Meningococcal Disease in London, England; Philadelphia, United States; Sydney, Australia; and Toronto, Canada. International Society of Infectious Diseases—International Meeting on Emerging Diseases. Vienna, Austria, February 13-16, 2009.

43. **Fisman DN.** Rate of change of Lyme disease incidence in the United States exhibits a north-south gradient consistent with climate change effect. International Society for Infectious Diseases—International Meeting on Emerging Diseases. Vienna, Austria, February 13-16, 2009.
42. Greer A, **Fisman DN.** Keeping vulnerable children safe from pertussis: preventing nosocomial pertussis transmission in the neonatal intensive care unit (NICU). *Epidemics* First Annual Conference, Asilomar, California. December 1-3, 2008.
41. Greer A, **Fisman DN.** Keeping vulnerable children safe from pertussis: preventing nosocomial pertussis transmission in the neonatal intensive care unit (NICU). 120<sup>th</sup> Anniversary Conference of the Pasteur Institute, Paris, France. November 11-13, 2008.
40. Ng V, Tang P, Jamieson F, Guyard C, **Fisman DN.** Laboratory-Based Evaluation of the Epidemiology of Legionellosis in Ontario, Canada, 1978 to 2006. 46th Annual Conference of the Infectious Disease Society of America, Washington, DC, October 25-28, 2008.
39. Kinlin L, Jamieson F, Brown E, Rawte P, Brown S, Dolman S, **Fisman DN.** Impact of Conjugate Group C Meningococcal Vaccine on Invasive Meningococcal Disease in Vaccinated and Unvaccinated Groups in Ontario, Canada, 2000 to 2006. 46th Annual Conference of the Infectious Disease Society of America, Washington, DC, October 25-28, 2008.
38. Greer AL, Drews S, **Fisman DN.** Why Does the “Winter Vomiting Disease” Happen in Winter? Unravelling the Seasonality of Norovirus Outbreaks in Toronto, Canada. 46th Annual Conference of the Infectious Disease Society of America, Washington, DC, October 25-28, 2008.
37. White ANJ, Kinlin L, Johnson C, Ng V, **Fisman DN.** Let the Sun Shine In: Temperature and UV Radiation Affect the Incidence of Pneumococcal Infection in Philadelphia. 46th Annual Conference of the Infectious Disease Society of America, Washington, DC, October 25-28, 2008.
36. White ANJ, Johnson C, Ng V, **Fisman DN.** Environmental Effects on the Incidence of *Campylobacter* Infection in Philadelphia. 2008 Canadian *Campylobacter* Conference. Montreal, Quebec, September 25-26, 2008.
35. Ota K, **Fisman DN,** Jones K, Tamari I, Jamieson F, Wong T, DePrima A, Richardson, S. Prevalence and characteristics of *Neisseria gonorrhoeae* isolates in Ontario. AMMI Canada—CACMID Annual Conference. Vancouver, British Columbia, February 27 - March 1, 2008.
34. Brown E, **Fisman DN,** Brown S, Rawte P, Jamieson F. Epidemiology of invasive meningococcal disease with decreased penicillin susceptibility in Ontario, 2000 to 2006. AMMI Canada—CACMID Annual Conference. Vancouver, British Columbia, February 27 - March 1, 2008.
33. Ng-Brett V, **Fisman DN,** Moineddin R. Cute, Cuddly, Contagious: Kangaroo Density Drives Human Ross River Virus Infections. Late breaker, American Society of Tropical Medicine and Hygiene 56th Annual Meeting, Philadelphia PA, November 4-8, 2007.
32. Ng-Brett V, Tang P, Jamieson F, Drews S, Johnson C, **Fisman DN.** Hydrological factors associated with increase legionellosis risk in the Greater Toronto Area, Ontario, Canada. 47th Annual Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Chicago, Illinois, United States of America, September 17- 20, 2007.

31. **Fisman DN**, Tang P, Richardson S, Ng-Brett V, Drews S, Low DE, Jamieson F. Laboratory Factors in an Apparent Pertussis Resurgence, Toronto, Canada, 2005-2007. 47th Annual Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Chicago, Illinois, United States of America, September 17- 20, 2007.
30. **Fisman DN**, Spain V, Ng-Brett V, Johnson C. Weather, Water and Giardia in Philadelphia. 47th Annual Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Chicago, Illinois, United States of America, September 17- 20, 2007.
29. **Fisman DN**, Harris AD, Rubin M, Daley K, Mittleman, MA. Alcohol consumption and sharps-related injuries among healthcare workers: results from a case-crossover study. 16<sup>th</sup> Annual Meeting of the Society for Hospital Epidemiology of America (SHEA), Chicago, IL, March 18-21, 2006.
28. **Fisman DN**. Cost-effectiveness of the SutureTek 360° Fascia Closure Device for prevention of operative sharps-related injuries. 16<sup>th</sup> Annual Meeting of the Society for Hospital Epidemiology of America (SHEA), Chicago, IL, March 18-21, 2006.
27. **Fisman DN**, Harris AD, Sorock GS, Rubin M, Daley K, Mittleman MA. Gloves reduce the risk of sharps related injuries in healthcare workers. Results from a case-crossover study. Annual Meeting of the Society for Epidemiological Research. Toronto, Ontario, Canada. June 27-30, 2005.
26. **Fisman DN**, Harris AD, Sorock GS, Rubin M, Mittleman MA. Fatigue Increases Sharps-Injury Risk in Medical Trainees: Results from a Case-Crossover Study. 132<sup>nd</sup> Annual Meeting of the American Public Health Association. Washington, DC. November 6-10, 2004.
25. **Fisman DN**, Bamberg W, Kirchner C, Kim A, Daley J, Alexander J, Zhang J, Abrutyn E. Female Gender Increases Risk of Graft Harvest Site Infection, but not Sternal Wound Infection, After Cardiac Bypass Grafting. 44<sup>th</sup> Interscience Congress on Antimicrobial Agents and Chemotherapy. Washington, DC. October 30-November 2, 2004.
24. Perencevich EN, Kaye KS, Strasbaugh LJ, Bradham DD, **Fisman DN**, Harris AD. Acceptable failure rates for antibiotic therapy of central venous catheter associated bacteremia. 26<sup>th</sup> Annual Meeting of the Society for Medical Decision Making. Atlanta, GA, October 17-20, 2004.
23. **Fisman DN**, Kirchner C, Daley J, Ambrose JF, Kim A, Alexander J, Zhang H, Abrutyn E. Risk Factor Analysis for Deep Sternal Wound Infections after Coronary Artery Bypass Grafting in Community Hospitals. 42<sup>nd</sup> Annual Meeting of the Infectious Disease Society of America Meeting, Boston MA, Sept 30-Oct 3, 2004.
22. **Fisman DN**, Kirchner C, Daley J, Ambrose JF, Kim A, Alexander J, Zhang H, Abrutyn E. Risk Factors for Saphenous Vein Graft Harvest Site Infections after Cardiac Surgery and Impact of Infection on Outcome. 42<sup>nd</sup> Annual Meeting of the Infectious Disease Society of America Meeting, Boston MA, Sept 30-Oct 3, 2004.
21. **Fisman DN**, Lim S, Wellenius G, Britz P, Gaskins M, Newbern C. Rainfall Acutely Increases the Risk of Legionellosis in Philadelphia. 42<sup>nd</sup> Annual Meeting of the Infectious Disease Society of America Meeting, Boston MA, Sept 30-Oct 3, 2004.
20. **Fisman DN**, Kirchner C, Daley J, Kim A, Zhang H, Paris M, Alexander J, Abrutyn E. Deep sternal wound infection after coronary artery bypass grafting markedly increases hospital length of stay: Estimates from community hospitals. Association of Professionals in Infection Control 31<sup>st</sup> Annual Educational Conference and National Meeting. Phoenix, AZ, June 6-10, 2004.

19. Kirchner C, Abrutyn A, Jones I, **Fisman D**, Dhond A, Kim Y, Alexander J, Daley J, Zhang H, Kim A. Using a multi-center, computer-based surveillance system: Overcoming data collection challenges with the use of technology and creative teamwork. Association of Professionals in Infection Control 31<sup>st</sup> Annual Educational Conference and National Meeting. Phoenix, AZ, June 6-10, 2004.
18. **Fisman DN**, Wellenius G, Tsang L, Mittleman MA. Meteorological factors associated with occurrence of meningococcal disease: a novel use of case-crossover study design. Society for Healthcare Epidemiology of America Annual Meeting, Philadelphia, PA, April 17-20, 2004.
17. Bamberg W, **Fisman DN**, Kirchner C, Kim Y, Kim A, Daley J, Alexander J, Zhang H, Paris M, Abrutyn E. Risk factors for nosocomial pneumonia after coronary artery bypass grafting in community hospitals. Society for Healthcare Epidemiology of America Annual Meeting, Philadelphia, PA, April 17-20, 2004.
16. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. Characteristics of past unreported sharps-related injuries in healthcare workers. Society for Healthcare Epidemiology of America Annual Meeting, Philadelphia, PA, April 17-20, 2004.
15. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. Fatigue increases needlestick risk in medical trainees: results from a case-crossover study. Society for Healthcare Epidemiology of America Annual Meeting, Philadelphia, PA, April 17-20, 2004.
14. **Fisman DN**. Health-related quality of life and symptomatic genital herpes: Comparison of measures. CDC STD Prevention Meeting, Philadelphia PA, March 8-11, 2004.
13. Lynd L, Johnson-Masotti A, Sheehan D, **Fisman DN**. Anonymous HIV testing in Canada: A cost-effective health intervention. CDC STD Prevention Meeting, Philadelphia PA, March 8-11, 2004.
12. Lynd L, Johnson-Masotti A, Sheehan D, **Fisman DN**. Anonymous HIV testing in Canada: A cost-effective health intervention. CDC STD Prevention Meeting, Philadelphia PA, March 8-11, 2004.
11. **Fisman DN**, Goldie SJ, Hook EW, Lipsitch M. Dynamic projection of the effectiveness and cost-effectiveness of an HSV-2 vaccine for young women. International Society for STD Research 2003 Congress. Ottawa, Ontario, Canada. July 27-30, 2003.
10. Jang D, Chong S, Howard M, Smeija M, **Fisman D**, Chernesky M. Diagnosis of Chlamydia trachomatis (CT) infections in men and women by a new VIDAS Probe CT amplification assay performed on swabs and urines. International Society for STD Research 2003 Congress. Ottawa, Ontario, Canada. July 27-30, 2003.
9. **Fisman DN**, Lowry L. Cost-effectiveness of safer sharp medical devices for prevention of HIV infection in healthcare workers. 40<sup>th</sup> Annual Meeting of Infectious Diseases Society of America, Chicago, Ill October 24-27, 2002.
8. **Fisman DN**. Cost-effectiveness of post-exposure antibiotic prophylaxis in household contacts of individuals with severe invasive group A streptococcal disease. 40<sup>th</sup> Annual Meeting of Infectious Diseases Society of America, Chicago, Ill October 24-27, 2002.
7. **Fisman, DN**. Cost-effectiveness of safer sharp medical devices for prevention of bloodborne infection in healthcare workers. 24<sup>th</sup> Annual Meeting of the Society for Medical Decision Making Annual Meeting, Baltimore, MD, October 20–23, 2002

6. **Fisman DN**, Leder K. Age and efficacy of recombinant hepatitis B vaccination: a meta-analysis. 12<sup>th</sup> Annual Meeting, Society for Hospital Epidemiology of America, Salt Lake City, UT April 6-9, 2002.
5. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. Transient risk-factors for sharps-related injuries in healthcare workers. Society for Hospital Epidemiology of America Annual Meeting, Toronto, Ontario April 2001.
4. **Fisman DN**, Harris AD, Sorock GS, Mittleman MA. A pilot case-crossover study of sharps-related injuries in healthcare workers. National Occupational Injury Research Symposium, Pittsburgh, PA October 17 – 19, 2000.
3. **Fisman DN**, Freeman J, Lipsitch M, Goldie SJ. The future economic costs of the herpes simplex virus type 2 epidemic in the United States. Infectious Disease Society of America 38<sup>th</sup> Annual Meeting, New Orleans, LA September 7 – 10, 2000.
2. **Fisman DN**, Goldie SJ. Estimating the costs and benefits of screening monogamous, heterosexual couples for asymptomatic infection with herpes simplex virus type 2. Infectious Disease Society of America 38<sup>th</sup> Annual Meeting, New Orleans, LA September 7 – 10, 2000.
1. **Fisman DN**, Barlam TF, Dorman S, Holland S, O'Donnell MA. Risk factors for BCGosis in bladder cancer patients. Infectious Disease Society of America 37<sup>th</sup> Annual Meeting, Philadelphia, PA Fall, 1999.

## G. TEACHING AND STUDENT SUPERVISION

### *Full graduate courses developed or substantially revised*

#### University of Toronto

- 2011- **Epidemiology of Communicable Diseases (CHL5412H)**. This course represents an amalgam of two courses in communicable diseases previously taught at the Dalla Lana School of Public Health. Course co-director Dr. Amy Greer and I have totally reorganized and restructured the course, which now focuses on building quantitative and data management and analysis skills needed by frontline public health professionals and infectious disease epidemiologists. In the current year (2013) the course was co-taught with Effie Gournis of Toronto Public Health.
- 2010 - **Epidemiology I: Introduction to Epidemiology (CHL5401H)**. Although an introductory epidemiology course with this number had been in existence previously, when I inherited this course in 2010 I revised and reorganized the course in its entirety. The course now puts a major emphasis on the development of quantitative skills necessary for front-line public health practice. It is a core course for the MPH with Epidemiology concentration at Dalla Lana School of Public Health.
- 2010- **Mathematical Epidemiology of Infectious Diseases (CHL5425H)**. This is an intermediate level course on dynamic modeling of infectious diseases. I developed this new course in its entirety and am the sole instructor. This 36 hour course provides students with extensive instruction and hands-on experience with mathematical modeling as a tool for the study and control of communicable diseases.

2009 **Spatial Epidemiology and Infectious Disease Modeling (CHL 7001)**: Introduction to mathematical modeling and geospatial analysis in infectious diseases. This was a 10-week seminar course on the use of mathematical modeling, GIS, and spatial analysis for evaluation of disease epidemiology and disease control programs. This course was developed and taught by Dr. Gesink and myself.

### **Princeton University**

2006 **Epidemiology (Public Affairs 598)**. This was a 12 week introductory course on epidemiologic measures and principles for students in the Wilson School Master of Public Affairs program. While PA598 had been taught previously, I completely redeveloped the course at Princeton during my year as a Visiting Assistant Professor at Princeton University. The course was very successful and the course version developed by myself is still in use at Princeton.

### **Drexel University**

2004 **Infectious Diseases Epidemiology** (9 hour lecture/workshop block), Drexel University School of Public Health Epidemiology Concentration Seminar. I developed a series of lectures and exercises that introduced MPH students to core concepts in infectious disease epidemiology and public health communicable disease control.

2004 **Introduction to Epidemiology (Block III)**. This was an entirely new introductory epidemiology curriculum, developed by myself at Drexel University. The course included a series of lectures, graded and ungraded problem sets, computer exercises, and “journal clubs” for critical appraisal of the public health literature. The course also included an “evidence-based public health project” that introduced students to the concept of evidence-based clinical practice in public health.

### ***Graduate courses taught\****

*\*University of Toronto unless otherwise stated.*

2013 Lecturer and Course Co-director, Communicable Disease Epidemiology, Prevention and Control (CHL5412H). 36 lecture/lab hours.

2012 Lecturer, Introduction to Public Health (CHL5004). 3 lecture/lab hours. Introduction to infectious disease epidemiology and outbreak investigation.

Lecturer and Course Director, Introduction to Epidemiology and Public Health (CHL5401H). 36 lecture/lab hours.

Lecturer and Course Co-director, Communicable Disease Epidemiology, Prevention and Control (CHL5412H). 36 lecture/lab hours.

2011 Lecturer, Introduction to Public Health (CHL5004). 3 lecture/lab hours. Introduction to infectious disease epidemiology and outbreak investigation.

Lecturer and Course Co-director (with Dr. Amy Greer), Introduction to Communicable Disease Epidemiology (CHL5412H). 36 lecture/lab hours.

Lecturer and Course Director, Introduction to Epidemiology/Epidemiology I (CHL5401H). 39 lecture/lab hours.

Guest Lecturer, “Communicable disease surveillance and outbreak investigation”. Health Trends and Surveillance (CHL5405H) (Profs. Lilian Yuan and Eric Holowaty, 3 lecture hours).

2010 Lecturer and Course Director, Mathematical Epidemiology of Infectious Diseases (CHL5425H). 36 lecture/lab hours.

Lecturer and Course Director, Introduction to Epidemiology/Epidemiology I (CHL5401H). 36 lecture/lab hours.

Lecturer, CHL 5415F (Practice of Communicable Disease Epidemiology, Prevention and Control, Prof. Elizabeth Rea). Taught 3 two hour blocks (Vaccines I, Vaccines II, and Zoonotic Disease).

Lecturer, CHL5416H (Environmental Epidemiology, Prof. Don Cole). 1 hour lecture (Global Climate Change and Infectious Diseases). November 30, 2009.

Guest Lecturer, CHL5412H (Communicable Disease Epidemiology, Prevention and Control: Principles, Prof. Robert Remis). 3 hour lecture (Introduction to Mathematical Modeling). November 16, 2009.

Co-instructor (with Dr. Reshma Amin): “Introduction to decision analysis”, lecture/seminar (3 hours), HAD 5301H. Department of Health Policy, Evaluation and Management. August 6, 2010.

2009 Co-instructor (with Dr. Andreas Laupacis): “Introduction to decision analysis”, lecture/seminar (3 hours), HAD 5301H. Department of Health Policy, Evaluation and Management. August 5, 2009.

Co-instructor (with Dr. Matthew Stanbrook): “Introduction to test theory: diagnostic tests”, lecture/seminar (3 hours), HAD 5301H. Department of Health Policy, Evaluation and Management. July 23, 2009.

Lecturer, Public Health Sciences CHL 5415F (Practice of Communicable Disease Epidemiology, Prevention and Control). Taught 3 two hour blocks (Vaccines I, Vaccines II, and Zoonotic Disease).

Tutor, HAD 5304H (Clinical Decision-Making and Cost-Effectiveness), Prof. Ahmed Bayoumi. Students: Drs. Kaede Ota and Darrell Tan, Pre-exposure antiretroviral prophylaxis for individuals at high risk of HIV infection.

Co-instructor (with Dr. Lawrence Paszat): “Non-experimental methods in epidemiology”, lecture/seminar (3 hours), HAD 5301H. Department of Health Policy, Evaluation, and Management. July 28, 2008.

Co-instructor (with Dr. Gary Naglie): “Introduction to decision analysis”, lecture/seminar (3 hours), HAD 5301H. Department of Health Policy, Evaluation and Management. August 1, 2008.

Tutor, HAD 5304H (Clinical Decision-Making and Cost-Effectiveness), Prof. Ahmed Bayoumi. Student: Dr. Henry Ahn, Operative vs. conservative management of scoliosis in adolescent girls.

- Lecturer, Public Health Sciences CHL 5415F (Practice of Communicable Disease Epidemiology, Prevention and Control). Taught 3 two hour blocks (Vaccines I, Vaccines II, and Zoonotic Disease).
- 2007 Lecturer, Health Policy, Management and Evaluation HAD 5301 H (Introduction to Clinical Epidemiology and Health Care Research). Taught two 3-hour blocks (Bias and Confounding, and Disease Frequency).
- 2006 Tutor, HAD 5304H (Clinical Decision-Making and Cost-Effectiveness), Prof. Ahmed Bayoumi. Student: Dr. Eyal Cohen, Cost-effectiveness of Strategies for the Management of Pediatric Empyema.
- “Introduction to Test Theory and Screening”. MI580 Principles of Epidemiology. January 26, 2006. Thomas Jefferson University, Philadelphia.
- 2005 “Introduction to Test Theory and Screening”. MI580 Principles of Epidemiology. March 10 and May 25, 2005. Thomas Jefferson University, Philadelphia, PA.
- Needlestick injuries and case-crossover study design”. Infectious Disease Epidemiology Seminar (EP656), Center for Clinical Epidemiology and Biostatistics. March 15, 2005. University of Pennsylvania, Philadelphia, PA.
- “Case-crossover study design”. Advanced Epidemiology Methods Seminar (EP640), Center for Clinical Epidemiology and Biostatistics. March 2, 2005. University of Pennsylvania, Philadelphia, PA.
- “Seroepidemiology”. Infectious Disease Epidemiology Seminar (EP656), Center for Clinical Epidemiology and Biostatistics. March 2, 2005. University of Pennsylvania, Philadelphia, PA.
- “Tick-Borne Infectious Diseases: A Review”, Drexel University Infectious Disease Fellows Lecture. Hahnemann Hospital, Philadelphia, May 26, 2005.
- Panelist, “Typhoid Mary: Villain or Victim?” (with Drs. Janet Fleetwood, Ed Mormon, and Steven Peitzman). Drexel University College of Medicine Medical Humanities Grand Rounds, May 24, 2005.
- 2004 Introduction to Infectious Diseases Epidemiology (Block I). Drexel University School of Public Health MD/MPH Program.
- Facilitator, Lab Instructor and Lecturer, Epidemiology and Biostatistics I (6 week introductory epidemiology and biostatistics course: 8-10 teaching hours/week), Drexel University School of Public Health.
- Facilitator, Lab Instructor/Leader and Lecturer, Epidemiology and Biostatistics II (7 week introductory epidemiology and biostatistics course: 8-10 teaching hours/week), Drexel University School of Public Health.
- 2003 Guest Lecturer, Clinical Health Sciences-Health Research Methods 789 (Health Economics for Health Care Managers), March 26, 2003. McMaster University, Hamilton, Ontario, Canada.
- Unit 6 Undergraduate Medicine (Obstetrics & Gynecology Clinical Clerkship) “Introduction to Sexually Transmitted Diseases”, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada. Lecture given every 6 weeks.
- 2002 Department of Clinical Epidemiology and Biostatistics, Continuing Education Sessions. “The Burden of Genital Herpes in the United States: Estimation and Projection Using a



Difference-Equation Model.” McMaster University, Hamilton, Ontario, Canada. March 21, 2002.

Tutor: Clinical Health Sciences-Health Research Methods 721 Period: October – November. McMaster University, Hamilton, Ontario, Canada.

Preceptor: Unit 1 Undergraduate Medicine, Microbiology and Infectious Diseases. Period: September – October. McMaster University, Hamilton, Ontario, Canada.

Tutor: Clinical Health Sciences-Health Research Methods 721. Period: July – August. McMaster University, Hamilton, Ontario, Canada.

Unit 6 Undergraduate Medicine (Obstetrics & Gynecology Clinical Clerkship)”Introduction to Sexually Transmitted Diseases”, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada. Lecture given every 6 weeks.

2001 Unit 6 Undergraduate Medicine (Obstetrics & Gynecology Clinical Clerkship)”Introduction to Sexually Transmitted Diseases”, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada. Lecture given every 6 weeks.

2000 Teaching Assistant, “Mathematical Modeling of Infectious Diseases (EPI 260d)” Professor Marc Lipsitch, Harvard School of Public Health, Boston, MA.

Teaching Assistant, “Decision Analysis in Clinical Research”, Professor M.C. Weinstein, Summer Clinical Effectiveness Course, Harvard School of Public Health, Boston, MA.

1999 Teaching Assistant, “Decision Analysis for Health and Medical Practices” Professor S.J. Goldie, Harvard School of Public Health, Boston, MA.

Teaching Assistant, “Decision Analysis in Clinical Research”. Professor M.C. Weinstein, Summer Clinical Effectiveness Course. Harvard School of Public Health, Boston, MA

### ***Professional, continuing education and faculty development training and workshops***

[see also invited presentations]

2012 Infectious disease modeling course for public health epidemiologists. With Ashleigh Tuite. DLSPH, Toronto, Ontario, Canada, May 28 and June 4, 2012; Hamilton, Ontario, Canada, August 23, 2012; and Ottawa, Ontario, Canada, October 18, 2012; and Hamilton, Ontario, Canada,

2011 Invited participant and facilitator, Institute on Science for Global Policy, Emerging and Persistent Infectious Diseases: Focus on Mitigation. Edinburgh, Scotland, October 22-26, 2011.

Invited participant, Institute on Science for Global Policy, Emerging and Persistent Infectious Diseases: Focus on Prevention. La Jolla, California, June 5-8, 2011.

Infectious Disease Modeling: Beyond the Basics (Short Course). With Dr. Amy Greer and Ashleigh Tuite. North American Congress of Epidemiology, Montreal, Quebec. June 21-24, 2011.

2010 Introduction to Infectious Disease Modeling (with Dr. Amy Greer), DLSPH Summer Institute in Biostatistics, Toronto, Ontario, Canada June 9-11, 2010.

Health Policy, Management and Evaluation. 2010 Clinical Epidemiology Institute, planning committee member and faculty (5 x 1.5 hour critical appraisal sessions and 1 hour lecture on “Practical Prognostication: Introduction to Clinical Prediction Rules”.)

Introduction to Infectious Disease Modeling (Short Course). With Dr. Amy Greer, Vicky Ng, and Ashleigh Tuite. 31st Annual Meeting of the Society for Medical Decision Making, Toronto, Ontario, Canada, October 24, 2010.

2009

“Epidemiology on the Fly: Infectious Disease Epidemiology and the Public Health Response to Novel Influenza A (H1N1)”. Dalla Lana School of Public Health Research Seminar Series. July 3, 2009

“Climate Change and Infectious Diseases in North America: Bugs to Watch.” Public Health Research Seminar Series, March 5, 2009.

“A wake up call? Links between fatigue, healthcare worker injury, and medical errors.” Toronto General Hospital Clinical Epidemiology Rounds, March 30, 2009.

“Climate change and infectious diseases in North America: Bugs to watch.” Faculty of Medicine Public Health Interest Group, March 10, 2009.

University of Toronto Division of Infectious Diseases: “Demoting the ‘Captain of the Men of Death’: Recent work on optimizing outcomes in community-acquired pneumonia”. Departmental Rounds, March 3, 2009.

Health Policy, Management and Evaluation. 2009 Clinical Epidemiology Institute, planning committee member and faculty (5 x 1.5 hour critical appraisal sessions and 1 hour lecture on “Practical Prognostication: Introduction to Clinical Prediction Rules”.)

“Systematic Review and Meta-Analysis” (2 hour lecture), December 1, 2009.

Respiratory GREAT Network Training Program. This program, created by Dr. Teresa To, provides training in clinical epidemiology and biostatistics to international pediatric respiratory trainees.

Introduction to Conjoint Analysis in Health Care (Short Course). With Vicky Ng. 31st Annual Meeting of the Society for Medical Decision Making, Hollywood, CA. October 18, 2009.

Advanced Topics in Infectious Diseases Modeling (Short Course). With Amy L. Greer. 31st Annual Meeting of the Society for Medical Decision Making, Hollywood, CA. October 18, 2009.

Organizer and Co-instructor (with Ms. Victoria Ng and Ms. Melanie Zahab): “Putting Public Health on the Map”, an interactive workshop for public health epidemiologists. Canadian Society for Epidemiology and Biostatistics Annual Meeting, Ottawa, Ontario, Canada, May 25, 2009.

2008

“Climate Change and Infectious Diseases in Canada: A Challenge to Public Health and Healthcare” University of Toronto Environment and Health Seminar, November 20, 2008.

University of Toronto Community Medicine Program: “Introduction to Mathematical Modeling of Infectious Diseases”, Biostatistical Methodology Unit short course on infectious diseases modeling. Presented basic elements of communicable disease models (including herd immunity and critical fraction, seasonality, model fitting, and modeling of antibiotic resistance) to 15 community medicine residents from University of Toronto and McMaster University. Two 3-hour sessions, October 10 and October 17, Hamilton and Toronto, Ontario.

Health Policy, Management and Evaluation. 2008 Clinical Epidemiology Institute, planning committee member and faculty (5 x 1.5 hour critical appraisal sessions and 1 hour lecture on “Practical Prognostication: Introduction to Clinical Prediction Rules”.)

“Herd Immunity”. Ontario Public Health Laboratory “Lab Rounds”. March 6, 2008.

“Systematic Review and Meta-Analysis” (2 hour lecture), November 18, 2008.

Respiratory GREAT Network Training Program. This program, created by Dr. Teresa To, provides training in clinical epidemiology and biostatistics to international pediatric respirology trainees.

“Introduction to Mathematical Modeling of Infectious Diseases”, Biostatistical Methodology Unit short course on infectious diseases modeling. Presented basic elements of communicable disease models (including herd immunity and critical fraction, seasonality, model fitting, and modeling of antibiotic resistance) to 25 students from research and clinical infectious disease backgrounds. Two 3-hour sessions, July 7 and July 21, 2008.

“Making Best Bets: Mathematical Modeling as a Tool for Vaccine Policy”. Pediatric Medicine Grand Rounds, January 16, 2008.

Judge, SickKids Student Summer Research Experience Research Day, July 24, 2008.

Speaker, Kids Science “Science Extravaganza” Program (science outreach to high-school students from high-risk backgrounds), Dr. Lisa Robinson, Director, May 8, 2008.

2007

Health Policy, Management and Evaluation. 2007 Clinical Epidemiology Institute, planning committee member and faculty (5 x 1.5 hour critical appraisal sessions).

University of Toronto Division of Infectious Diseases: Haygarth and Snow: Insights into “Emerging Infections” from the Pre-Microbiologic Era. Infectious Disease Fellows Retreat, August 23, 2007.

Judge, Health Policy, Management and Evaluation Student Research Day, May 2, 2007.

Judge, Department of Pediatrics Research Day, May 23 2007.

University of Toronto Division of Infectious Diseases: “Seasonality, Environment and Infectious Diseases”. Departmental Rounds, April 3, 2007.

Introduction to Public Health Surveillance and Microbiology, in partnership with the Ontario Science School (tour and lab session for gifted 12th grade science students). Ontario Public Health Laboratory, May 30, 2007.

“Practical prognostication: a hands-on guide to clinical prediction rules”. Pediatric Outcomes Research Team Rounds, December 13, 2007.

“Climate Change, Environment, and Infectious Diseases”. (with Dr. Amy Greer, Vicky Ng-Brett, and Laura Kinlin). Child Health Evaluative Sciences Seminar Series, October 29, 2007

“Whooping it Up: The Apparent Resurgence of Pertussis in the Greater Toronto Area”. Child Health Evaluative Sciences Seminar Series, September 10, 2007.

Coordinator, Biostatistical Methodology Unit Journal Club.

Judge, SickKids Student Summer Research Experience Research Day, July 18, 2007.

“Under Surveillance: How I Got Into Infectious Disease Epidemiology”. Child Health Evaluative Sciences Outcomes Pillar meeting, May 15, 2007.

- Sticky Situations: Needlesticks and their Implications for Patient Safety". SickKids Patient Safety Rounds, February 28, 2007.
- Introduction to Infectious Disease Modeling (Short Course). With John Edmunds and Beate Sander, 29th Annual Meeting of the Society for Medical Decision Making, Pittsburgh, PA. October 20, 2007.
- 2006 "Seasonality of Infectious Diseases." Ontario Public Health Laboratory Seminar Series. December 14, 2006.
- "There's a Bug in this Model: Transmission Modeling as a Tool for Epidemiology and Health Policy", Child Health Evaluative Sciences Seminar Series, Research Institute of the Hospital for Sick Children, December 4, 2006.
- "There's a Bug in this Model: Transmission Modeling as a Tool for Epidemiology and Health Policy", Infectious Disease Division Research Rounds, November 22, 2006.
- "Sneezonality: What we know (and don't) about seasonality of respiratory infections." Child Health Evaluative Sciences Seminar Series, Research Institute of the Hospital for Sick Children, October 23, 2006.
- "Weather, Seasonality, and Communicable Disease Occurrence". Woodrow Wilson School (Princeton University) Science, Technology and the Environment Program (STEP) Seminar, February 20, 2006.
- "SARS, Emerging Infectious Diseases, and the Basic Reproductive Number". Epidemiology of Infectious Diseases. February 13, 2006. Univ. Medicine and Dentistry of New Jersey School of Public Health, Piscataway, New Jersey.
- 2005 "The Economics of STD Control: Why Transmissibility Matters". Center for Health and Wellbeing Seminar Series, November 28, 2005.
- Public Health Law and Infectious Diseases" (with Drs. John Culhane and Andy Newman). Current Concepts in Law and Medicine. Widener University Law School, Wilmington, Delaware
- "SARS, Emerging Infectious Diseases, and the Basic Reproductive Number". Epidemiology of Infectious Diseases. April 25, 2005. Univ. Medicine and Dentistry of New Jersey School of Public Health, Piscataway, New Jersey.
- 2003 "SARS: Lessons learned (and already forgotten?)". Hahnemann Hospital SARS Planning Committee, Philadelphia, PA, December 17, 2003.
- 2004 Drexel University Math/Computer Science Seminar, April 12, 2004.
- "Dynamic Projection of Effectiveness and Cost-Effectiveness of HSV-2 Vaccines for Young Women: How Good is Good Enough?"
- "One in Five: Adventures in Genital Herpes". Drexel University School of Public Health Grand Rounds. February 19, 2004.
- "SARS" Drexel University College of Medicine, Department of Medicine Hospital Infections Seminar. Hahnemann Hospital, Philadelphia, April 21, 2004.
- "Directly Observed Therapy for HIV: A Useful Paradigm?" Infectious Disease Fellows Lecture Series. Hahnemann Hospital, Philadelphia, March 17, 2004.
- Introduction to Infectious Disease Modeling (Short Course). With John Edmund 26th Annual Meeting of the Society for Medical Decision Making, Atlanta, GA. October 17, 2004.

- 2003 “Bring an umbrella and some penicillin: weather and invasive bacterial disease.” Drexel University School of Public Health Research Friday Lunch Forum. October 31, 2003.
- Hamilton Emergency Services Network. “Smallpox preparedness”. Shalom Village, Hamilton, Ontario, Canada, March 28, 2003.
- “Dynamic projection of the effectiveness and cost-effectiveness of an HSV-2 vaccine for young women”. Hamilton Public Health Research, Education and Development (PHRED) “Share Symposium”, Hamilton, Ontario, Canada, March 25, 2003.
- McMaster University Regional Infectious Diseases Rounds, Division of Infectious Diseases. “Smallpox vaccination: risk vs. risk”. March 13, 2003.
- Hamilton Regional Emergency Medicine Rounds. “Smallpox vaccination: risk vs. risk”. March 12, 2003.
- Hamilton Regional Microbiology Research Day. “Dynamic projection of the effectiveness and cost-effectiveness of an HSV-2 vaccine for young women”, St. Joseph’s Healthcare Centre, February 27, 2003.
- Department of Family Medicine, St. Joseph’s Healthcare Centre, Hamilton, Ontario, Canada. “Public Health Update”. March 14, 2003.
- Center for Evaluation of Medicines Rounds. St. Joseph’s Healthcare Centre, Hamilton, Ontario, Canada. “Invasive group A streptococcal infection: applying pharmacoeconomics to the ‘flesh-eating disease’”. February 11, 2003.
- International Herpes Management Forum, “Strategies for Interrupting the Transmission of HSV” Workshop Participant, Seattle, Washington, May 4-6, 2003.
- 2002 “SARS in Toronto: the good, the bad, and the ugly.” Drexel University College of Medicine Division of Infectious Diseases. Hahnemann Hospital, Philadelphia, November 6, 2003.
- 1-Day Workshop in Communicable Diseases for Emergency Service Workers. Hamilton, Ontario. November 19, 2002.
- “Bloodborne Infectious Diseases: An Overview”. City of Hamilton Police, Fire and Ambulance Designated Medical Officers, Hamilton, Ontario. February 19, 2002.
- Department of Clinical Epidemiology and Biostatistics, Departmental Rounds, McMaster University, Hamilton, Ontario, Canada. “Case-crossover study of needlestick injury”. March 14, 2002.
- Regional Infectious Diseases Rounds, Division of Infectious Diseases. “Sharps-related injuries: identifying precipitants and measuring the costs of prevention”. September 12, 2002.
- Department of Family Medicine Rounds, McMaster University, Hamilton, Ontario, Canada. “Update in Sexually Transmitted Diseases, Part I”. November 27, 2002
- 2001 “Bioterrorism”. City of Hamilton Police, Fire and Ambulance Designated Medical Officers, Hamilton, Ontario. November 27, 2001.
- “Bioterrorism”. City of Hamilton Department of Social and Public Health Services, Hamilton, Ontario. November 9, 2001.
- “Update in STDs”. Infectious Diseases Fellows Academic ½ Day, Faculty of Health Sciences, McMaster University, Hamilton, Ontario. November 21, 2001.

“Bioterrorism”. Infectious Diseases Fellows Academic ½ Day, Faculty of Health Sciences, McMaster University, Hamilton, Ontario. November 7, 2001.

Regional Infectious Diseases Rounds, McMaster University Division of Infectious Diseases. “Bioterrorism”, October, 2001.

Clinical Preceptor, Hamilton Sexually Transmitted Diseases Clinic.

Economic Issues in Infectious Diseases Seminar, Harvard Center for Risk Analysis. “Prickly precipitants: a case-crossover study of sharps-related injuries in healthcare workers”. Spring 2001, Harvard School of Public Health, Boston, MA.

Department of Medicine Special Rounds, St. Joseph’s Healthcare Centre, Hamilton, Ontario, Canada.. “Bioterrorism: thinking about the unthinkable”. November 13, 2001.

Seminar in Clinical Effectiveness. “Clinical and cost-effectiveness of 2 Clinical and cost-effectiveness of 2 management strategies for infected total hip arthroplasty in the elderly.” Spring 2000. Harvard School of Public Health, Boston, MA.

Coordinator, Economic Issues in Infectious Diseases Seminar, Harvard Center for Risk Analysis

Seminar in Clinical Effectiveness. “Survival after percutaneous endoscopic gastrostomy”. Spring 1999.

2000 Economic Issues in Infectious Diseases Seminar, Harvard Center for Risk Analysis. Estimating the costs and benefits of screening monogamous, heterosexual couples for asymptomatic infection with herpes simplex virus type 2. April 2000.

Centre for Outcomes and Policy Research Seminar. “Prickly precipitants: a case-crossover study of sharps-related injuries in healthcare workers.” Dana-Farber Cancer Center, Boston, MA, USA.

Harvard Medical School Division of Infectious Diseases, City-wide Conference. “Clinical and cost-effectiveness of 2 Clinical and cost-effectiveness of 2 management strategies for infected total hip arthroplasty in the elderly.

Centre for Outcomes and Policy Research Seminar. The demise of genital herpes vaccines: using modeling to define ‘Plan B’. Fall 2000. Dana-Farber Cancer Center, Boston, MA, USA.

1999 Visiting Physician (“Teaching Attending”), Department of Medicine, Beth Israel Deaconess Medical Centre, Boston, MA, April 1999.

Caregroup Center for Quality and Value, Beth Israel Deaconess Medical Centre, Boston, MA. “Management of the infected hip prosthesis”.

Department of Orthopedics Departmental Conference, Beth Israel Deaconess Medical Centre, Boston, MA. Management of the infected hip prosthesis”.

Department of Medicine, Beth Israel Deaconess Medical Centre, Boston, MA, Resident Lecture Series. “Fever of unknown origin”

Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Centre, Boston, MA, Resident Lecture Series. “Sexually transmitted diseases: an overview”

Department of Medicine, Beth Israel Deaconess Medical Centre, Boston, MA, Resident Journal Club. “An introduction to decision analysis”.

- Harvard Medical School Division of Infectious Diseases, City-wide Conference. “Infectious disease and hemophagocytosis.”
- 1998 Harvard Medical School Division of Infectious Diseases, City-wide Conference. “Epiglottitis in the immunocompromised host”.
- 1996 Department of Medicine Research Day, Royal Victoria Hospital, Montreal, Quebec. “Intrapleural placement of a nasogastric tube.” Spring 1996.

### **Journal Clubs and Seminar Series**

- 2011- Founder and Coordinator, FitzGerald Seminar Series in Communicable Disease Epidemiology, Dalla Lana School of Public Health
- 2008- Founder and Coordinator, Infectious Disease Epidemiology Afficionados (IDEA) Seminar Series, Fields Institute for Mathematics and Dalla Lana School of Public Health
- 2008-2010 Founder and Coordinator, Infectious Disease Epidemiology Afficionados (IDEA) Journal Club, Hospital for Sick Children.
- 2007-2008 Founder and Coordinator, Hospital for Sick Children Biostatistics Methodology Unit Journal Club.
- 2000-2001 Founder and Coordinator, Economic Issues in Infectious Diseases Seminar Series, Harvard Centre for Risk Analysis

### ***Supervision of Trainees***

#### ***1. Supervisor /Co-Supervisor***

##### ***Post-doctoral Fellows***

- 2010-present Amy Hurford, PhD. Fields Institute for Research in Mathematical Sciences, University of Toronto. *Mathematical modeling of antimicrobial resistance in healthcare settings*. Co-supervisor with Dr. Jianhong Wu (York University).
- 2009-2011 Sharmistha Mishra, University of Toronto. Research mentor/co-supervisor (with Dr. M.C. Boily, Imperial College London)\*, Division of Infectious Diseases, University of Toronto. Dr. Mishra obtained both a Commonwealth Scholarship and a Canadian Institutes for Health Research Fellowship in Public Health Sciences (2009-2011) (\$60,000 per year).
- 2007-2009 Amy L. Greer, PhD. Hospital for Sick Children. Dr. Greer is a disease ecologist by training, and has joined our group to expand her expertise and understanding of *infectious diseases of humans*. Dr. Greer is a recipient of a SickKids Research Training Centre Travel Award (2008) (\$960) and an Ontario Ministry of Innovation Post-doctoral Fellowship Award (2009) (\$26,000).

##### ***Post-graduate Medical Trainees***

- 2005 Wendy Bamberg, Drexel University School of Public Health, Philadelphia PA. *Risk factors for infection after cardiac surgery*. Infectious Disease Fellowship Research Supervisor.

2002-2003 Cheryl Main, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada. *Community MRSA outbreak in a Canadian city jail*. Infectious Disease/Microbiology Fellowship Research Supervisor

### ***Doctoral Students***

2012-present Ashleigh McGirr, PhD Student (Supervisor), Dalla Lana School of Public Health, University of Toronto. *Mathematical modeling of pertussis control strategies*.

2010-present Kevin Brown, PhD Student (Supervisor), Dalla Lana School of Public Health, University of Toronto. *Spatial and temporal patterns in Clostridium difficile outbreaks*. Committee: Allison McGeer, Nick Daneman, Rahim Moineddin. Kevin Brown received a CIHR Banting and Best Doctoral Award in 2010 (\$105,000).

### ***Medical Students***

2010 Tanya Hauck, Faculty of Medicine, University of Toronto. *Pertussis epidemiology in Ontario*. Comprehensive Research Experience for Medical Students (CREMS) Supervisor.

### ***Master's Students***

2013 Sandy Bae, MPH student, Dalla Lana Public Health Sciences, Epidemiology. *Impact of El Nino Southern Oscillation on Infectious Disease Hospitalization Risk in the United States, and Implications for Climate Change*. Practicum Supervisor.

2011-2012 Gregory Kujbida, MPH student, Dalla Lana Public Health Sciences, Epidemiology. *Incorporating fine scale water quality and case data for modeling cholera in Haiti*. Practicum Supervisor.

2010-2011 Ruth Campbell, MSc (Supervisor), Health Policy, Management and Evaluation. *The experiences of immigrants seeking healthcare in Toronto*. Committee: Brian Hodges, Angela Robertson.

2010-2011 Christina Chan, MPH student, Dalla Lana Public Health Sciences, Epidemiology. *Latent class analysis for STD test methods*. Practicum Supervisor.

2009 Laura Kinlin, MPH, University of Toronto. *Sharps injuries in healthcare workers; Prediction of pneumonia after cardiac surgery*. SickKids Summer Student Research Experience.

2009 Ashleigh Tuite, MSc. University of Toronto. *Influenza modeling*. SickKids Summer Student Research Experience.

2008-2009 Laura Kinlin, MPH, University of Toronto. *Epidemiology of invasive meningococcal disease in Ontario, Sydney, Australia, and London, England*. Public Health Sciences Master's Student Practicum Supervisor

2008-2009 Ashleigh Tuite, MSc, University of Toronto. *Biases in discordant couples study designs*. Public Health Sciences Master's Student Practicum Supervisor



- 2005 Rory Gagan, Drexel University School of Public Health, Philadelphia PA. *Hospital-acquired pneumonia after coronary artery bypass grafting: attributable mortality and length of stay*. MPH Thesis Supervisor
- 2005 Kimberly Spaude, Drexel University School of Public Health, Philadelphia PA. *Prior influenza vaccination and mortality among individuals hospitalized with community-acquired pneumonia*. MPH Thesis Supervisor
- 2005 Oumar H. Gaye, Drexel University School of Public Health, Philadelphia PA. *Epidemiology of Lyme disease in Philadelphia*. MPH Thesis Supervisor
- 2005 Joseph Noorigian, Drexel University School of Public Health, Philadelphia PA. *Risk factors for falling in Parkinson's disease*. MPH Thesis Supervisor
- 2004 John F. Ambrose, Drexel University School of Public Health, Philadelphia PA. *Risk factors for sternal wound infection after coronary artery bypass grafting*. MPH Thesis Supervisor

### ***Undergraduate Students***

- 2009 Caitlin McCabe, BSc. University of Toronto. *Directly observed therapy in women with HIV infection*. SickKids Summer Student Research Experience.
- 2007 Laura Kinlin, MPH. University of Toronto. *Environmental influences on invasive meningococcal disease in Philadelphia*. SickKids Summer Student Research Experience.
- 2008 Alexander White. *Environmental influences on campylobacteriosis in Philadelphia*. SickKids Summer Student Research Experience
- 2008 Caitlin McCabe, BSc. University of Toronto. *Compliance with antibiotic treatment guidelines and mortality in community acquired pneumonia*. SickKids Summer Student Research Experience.
- 2008 Stephanie Ross, BSc, University of Toronto. *Systematic review and meta-analysis of relative risk of cervical cancer in Indigenous women in Australia, Canada, New Zealand and the United states*. SickKids Summer Student Research Experience.
- 2008 Jennifer Ku, Applied Health Sciences Co-op Program, University of Waterloo. *Systematic review of factors influencing vaccine acceptance by healthcare workers*. Co-op Placement Supervisor.
- 2007 Alexander White. *Environmental influences on invasive pneumococcal disease in Philadelphia*. SickKids Summer Student Research Experience.
- 2001 Louisa Lowry, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada. *Cost-effectiveness of safer sharps devices*. Supervisor: Student Research, Health Sciences 4L02 (Research Practicum).

### ***Other Supervisory Activities***

- 2009-2010 Ashleigh Tuite, MHS. University of Toronto. *Modeling of vaccination strategies for pandemic H1N1 influenza*. MITACS Accelerate program (in conjunction with Ontario Agency for Health Protection and Promotion).

- 2009-2010 Beate Sander, University of Toronto. *Health economic aspects of pandemic mitigation*. Strategic Training Initiative in Health Research—Health Policy, Dalla Lana School of Public Health and MITACS Accelerate program (in conjunction with Ontario Agency for Health Protection and Promotion).
- Note: The MITACS Accelerate program is an internship experience that fosters the integration of students in applied mathematics and other quantitative backgrounds into the corporate or public sector workplace.*
- 2009-2010 Yanyu Xiao, University of Western Ontario. Mathematical modeling of H1N1 influenza in remote First Nations. CIHR Pan-Canadian Decision-Making Support Network for Pandemic Preparedness (CanPan) internship program.
- 2009-2010 Venkata Duvvuri, York University. Conserved epitopes and cellular immunity as determinants of the epidemiology of the 2009 influenza pandemic. CIHR Pan-Canadian Decision-Making Support Network for Pandemic Preparedness (CanPan) internship program.
- Note: The CanPan program was a national training effort aimed at fostering mathematical modeling expertise as part of Canada's response to the 2009 influenza pandemic. It was supported by the Canadian Institutes for Health Research. Additional information is available at <https://canpan.ca/>.*

## 2. Committee member

### *PhD students*

- 2008-2011 David Vickers, PhD candidate in interdisciplinary studies, University of Saskatchewan. *Epidemiology and immunology of Chlamydia trachomatis*. (Chair Dr. Nathaniel Osgood). Doctoral Thesis Committee.
- 2008- Paul Arora, PhD candidate in Epidemiology, University of Toronto. *Sexually transmitted disease risk in India*. (Chair Dr. Prabhat Jha). Doctoral Thesis Committee.
- 2008- Andrea Stachon MD, PhD candidate, University of Toronto Institute of Medical Sciences, Department of Psychiatry. *Gene expression and psychosis risk in 22q11 microdeletion syndrome*. (Chair Dr. Kathy Siminovich). Doctoral Thesis Committee Member

### *Master's students*

- 2007-2010 Kaede Ota, MD, Health Policy, Management and Evaluation, University of Toronto. *Epidemiology of Antimicrobial Resistant Gonorrhoea in Greater Toronto*. (Chair Dr. Sharon Walmsley). Master's Thesis Committee Member.
- 2008-2010 Elizabeth Brown, Laboratory Medicine and Pathobiology, University of Toronto. *Characterization of the epidemiology and microbiology of blastomycosis in Ontario*. (Chair Dr. Susan Richardson). Master's Thesis Committee Member.

## H. UNIVERSITY SERVICE

### *Faculty Responsibilities*

- 2011 Strategic Planning Steering Committee  
Dalla Lana School of Public Health  
University of Toronto
- 2011 Directorial Search Committee  
Dalla Lana School of Public Health  
University of Toronto
- 2004-2005 Continuing Medical Education Committee  
Drexel University School of Public Health (Dr. Arthur Frank, Chair)
- 2002 - 2003 Local Planning Committee  
Regional Training Centre in Health Services Research  
McMaster University
- 1994 - 1996 Sciences Library Committee  
McGill University

***Departmental Responsibilities***

- 2011- Chair, Scientific Advisory Group for the FitzGerald Seminar Series on Communicable Diseases Control and Prevention
- 2011-2012 Member, Curriculum Review Committee  
Epidemiology Division, Dalla Lana School of Public Health  
University of Toronto
- 2010-2011 Chair, Curriculum Review Committee  
Epidemiology Division, Dalla Lana School of Public Health  
University of Toronto
- 2009- Admissions Committee  
Dalla Lana School of Public Health  
University of Toronto
- 2007- Clinical Epidemiology Institute Planning Committee  
Department of Health Policy, Management and Evaluation  
University of Toronto
- 2004-5 Department of Epidemiology and Biostatistics Chair Search Committee  
Drexel University School of Public Health (Dr. Arthur Frank, Chair)
- 2003-2005 Admissions Committee  
Drexel University School of Public Health (Dr. Todi Villanueva, Chair)
- 2001 Pre-Medical Committee Member and Non-resident Tutor, Cabot House, Harvard College