

BIOGRAPHICAL SKETCH

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NAME: WILLAN, Andrew R

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Professor of Biostatistics, Dalla Lana School of Public Health, University of Toronto

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
York University, Toronto ON	B.A.	1970	Economics/Mathematics
Queen's University, Kingston ON	B.Ed.	1972	Education
Queen's University, Kingston ON	M.Sc.	1976	Statistics
University of Western Ontario, London ON	Ph.D.	1979	Biostatistics

A. Personal Statement

My contributions to statistical methodology include publications in the areas of cost-effectiveness analysis, value of information methods, management trials, crossover trials, non-nested regression analysis and bivariate response models. I have been particularly instrumental in developing the field of statistical analysis of cost-effectiveness data with twenty peer-review articles and a book, co-authored with Professor Andy Briggs, in the Wiley Statistics in Practice series, entitled *Statistical Analysis of Cost-effectiveness Data*. More recently My research interest has focused on using value of information methods for the optimal design and analysis of clinical studies, with seventeen peer-reviewed articles and two book chapters. In addition to my work in methods development I have been a collaborator of hundreds of randomized clinical trials. These collaborations have given me the experience to make me an invaluable member of the research team for this project.

1. Murphy KE, Hannah ME, **Willan AR** *et al.* Multiple courses of antenatal corticosteroids for preterm birth study (MACS): a randomised controlled trial. *Lancet* 2008; **372**(9656):2143-2151.
2. Barrett JFR, Hannah ME, Hutton EK, **Willan AR** *et al.* A randomized trial of planned cesarean or vaginal delivery for twin pregnancy. *NEJM* 2013; **369**(14):1295-1305.
3. Roth DE, Morris S, Zlotkin SK, Gernand AD, Ahmed T, Shanta SS, **Willan AR** *et al.* Vitamin D supplementation in pregnancy and lactation and infant growth. *NEJM* 2018; **379**(6):535-546.
4. Freedman SB, Williamson-Urquhart S, Farion KJ, Gouin S, **Willan AR** *et al.* Multicenter trial of a combination probiotic for children with gastroenteritis. *NEJM* 2018; **379**(21):2015-2026.

B. Positions and Honors

1979-1989	Biostatistician and Head of Biometry, NCIC Clinical Trials Program, Queen's University, Kingston ON
1989-1991	Head, Clinical Trials & Epidemiology, Sunnybrook Health Sciences Centre, Toronto ON
1991-2002	Professor, Clinical Epidemiology and Biostatistics, McMaster University, Hamilton ON
2002-2015	Senior Scientist, CHES, SickKids Research Institute, Toronto ON
2002-present	Professor Emeritus, Clinical Epidemiology and Biostatistics, McMaster University, Hamilton ON
2015-present	Senior Scientist Emeritus, CHES, SickKids Research Institute, Toronto ON
2015-present	Biostatistician/Clinical Trial Methodologist, SickKids Research Institute, Toronto ON

2002-present Professor, Dalla Lana School of Public Health, University of Toronto, Toronto ON

1977-1979 NHRDP Graduate Fellowship

1995 Best Paper Award from the Society for Medical Decision Making, co-author

2000 Research Award for Methodology Excellence, ISPOR, primary author

2002 Research Award for Methodology Excellence, ISPOR, co-author

2003 Research Award for Methodology Excellence, ISPOR, co-author

C. Contributions to Science

I. I have 279 life-time publications with an H-factor of 82 (*i.e.* 82 of those publications have been cited at least 82 times).

II. I have thirty-three publications in the statistical analysis of cost-effectiveness data (four of which have been awarded major international research prizes). As a result of providing leadership in the area, I have been an invited speaker on numerous occasions for the Drug Information Association, the American Public Health Association, University of Oxford, London School of Hygiene and Tropical Medicine, University of Cambridge, University of York, University of Sydney, the Joint Statistics Meetings and the Biometrics Society. In addition, I have participated in workshops sponsored by the University of Oxford, University of Sydney Flinders University, University of York, McMaster University, the University of Aberdeen and the University of Washington. I am consulted frequently by researchers throughout the world regarding the analysis of cost-effectiveness data and the use of value of information methods for the analysis and design of clinical research studies.

1. **Willan AR**, Lin DY, Cook RJ, Chen E. Using inverse-weighting in cost-effectiveness analysis with censored data. *Stat Meth Med Res* 2002; **11**(6):539-551.
2. **Willan AR**, Chen E, Cook RJ, Lin DY. Incremental net benefit in randomized clinical trials with qualify-adjusted survival. *Stat Med* 2003; **22**(3):353-362.
3. **Willan AR**, Lin DY. Incremental net benefit in randomized clinical trials. *Stat Med* 2001; **20**(11):1563-1574.
4. **Willan AR**, Lin DY, Manca A. Regression methods for cost-effectiveness analysis with censored data. *Stat Med* 2005; **24**(1):131-145.

III. I have thirteen publication in the area of value of information and optimal trial design. I am a leading expert in the development of statistical methodology in this area.

1. **Willan AR**, Pinto EM. The expected value of information and optimal clinical trial design. *Stat Med* 2005; **24**(12):1791-1806.
2. **Willan AR**, Kowgier ME. Determining optimal sample sizes for multi-stage randomized clinical trials using value of information methods. *Clinical Trials* 2008; **5**(4):289-300.
3. **Willan AR**. Optimal sample size determinations from an industry perspective based on the expected value of information. *Clinical Trials* 2008; **5**(6):587-594.
4. **Willan AR**, Eckermann S. Value of information and pricing new health interventions. *PharmaEconomics* 2012; **30**(6): 447-459.

IV. I have four publications in the area of statistical design and analysis of crossover trials. The articles are cited routinely in text books, other methods articles and in the reports of the results of crossover trials. I am often consulted with regard to these methods.

1. **Willan AR**, Pater J. Carryover and the two-period crossover clinical trial. *Biometrics* 1986; **42**(3):593-599.
2. **Willan AR**, Pater J. Using baseline measurements in the two period crossover clinical trial. *Control Clin Trials* 1986; **7**(4):282-289.

3. **Willan AR**. Using the maximum test statistic in the two period crossover clinical trial. *Biometrics* 1988; **44**(1):211-218.
4. Cook RJ, **Willan AR**. Design considerations in crossover trials with a single interim analysis and serial patient entry. *Biometrics* 1996; **52**(2):732-739.

V. I have Seventy-seven publications which are the results of several years of collaboration in pediatrics and obstetrics at the Hospital for Sick Children and University of Toronto. They represent the results of CIHR funded randomize clinical trials in obstetrics. One demonstrated the clear superiority of caesarean section over planned vaginal birth for breech presentation. The results of this trial have changed patient care on an international scale as caesarean section has become standard practice.

1. Freedman SB, Williamson-Urquhart S, Farion KJ, Gouin S, **Willan AR et al**. Multicenter trial of a combination probiotic for children with gastroenteritis. *NEJM* 2018; **379**(21):2015-2026.
2. Roth DE, Morris S, Zlotkin SK, Gernand AD, Ahmed T, Shanta SS, **Willan AR et al**. Vitamin D supplementation in pregnancy and lactation and infant growth. *NEJM* 2018; **379**(6):535-546.
3. Murphy KE, **Willan AR**, Hannah ME *et al*. Effect of Antenatal Corticosteroids on Fetal Growth and Gestational Age at Birth *Obs Gyn* 2012; **119**(5): 917-923.
4. Parshuram CS, Dryden-Palmer K, **Willan AR et al**. Effect of a Pediatric Early Warning System on All-Cause Mortality in Hospitalized Pediatric Patients: The EPOCH Randomized Clinical Trial. *JAMA* 2018; **319**(10):1002-1012.
5. Freedman SB, **Willan AR**, Boutis K, Schuh S. Effect of dilute apple juice and preferred fluids vs electrolyte maintenance solution on treatment failure among children with mild gastroenteritis. *JAMA* 2016; **315**(18):1966-1974.
6. Schuh S, Freedman S, Coates A, Allen U, Parkin PC, Stephens D, Ungar W, DaSilva Z, **Willan AR**. Effect of oximetry on hospitalization in bronchiolitis: a randomized clinical trial. *JAMA* 2014; **312**(7):712-718.
7. Hannah ME, Hannah WJ, Hewson SH, Hodnett ED, Saigal S, **Willan AR**. Term Breech Trial: a multicentre international randomised controlled trial of planned caesarean section and planned vaginal birth for breech presentation at term. *Lancet* 2000; **356**(9239):1375-1383.

D. Research Support

1. CIHR - Foundation Scheme – 2nd Live Pilot. Effective Knowledge Translation Strategies for Enhancing Impact and Improving Outcomes in Infant Pain. Bonnie Stevens (Principal Investigator), **Willan AR**, and 13 others. \$3,823,346. 2016-2023.
2. CIHR - Project Scheme – 1st Live Pilot. Evaluating the effectiveness of an online knowledge translation intervention for minimizing procedural pain in hospitalized infants. Bonnie Stevens (Principal Investigator), **Willan AR**, and 13 others. (\$1,116,171). Declined. 2016-2021.
3. CIHR - Foundation Scheme – 2nd Live Pilot. Necrotizing Enterocolitis (NEC) Research Program: introducing innovative therapies to halt the disease progression and promote recovery. Nigel Hall (Principal Investigator), **Willan AR**, and others. \$. 2016-2023.
4. CIHR – Innovative Clinical Trials. Four trials with Pediatric Emergency Research Canada. Klassen TP. (Principal Investigator), **Willan AR**, and 26 others. (\$3,000,000). 2017-21.
5. CIHR – Foundation Scheme. Needles without tears: inoculating children against pain and fear. Anna Taddio (Principal Investigator), **Willan AR**, and others. \$1,266,146. 2018-2025.