

Is Chiropractic Care Associated with the Development of Cauda Equina Syndrome? A Case-crossover Study

Pierre Côté^{1,2}, Eleanor Boyle³, J. David Cassidy^{2,3},
Stephanie Choi², Cesar Hincapié²

1. University of Ontario Institute of Technology
2. University of Toronto
3. University of Southern Denmark

Cauda Equina Syndrome

- Commonly caused by L/S disc herniations
- Presents as low back pain, sciatica, saddle anesthesia, lower extremity weakness, and bowel and bladder dysfunction
- Onset can be acute or insidious
- Surgical emergency
- Population-based incidence is not known
- Little knowledge about risk factors
- Chiropractic care/spinal manipulation hypothesized to increase risk



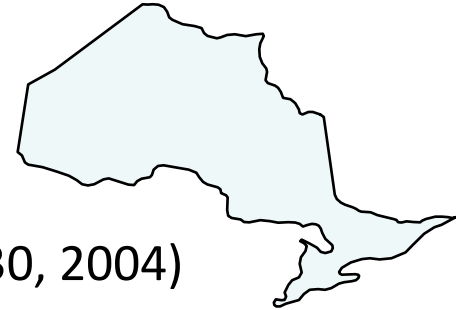
Objectives

1. To investigate the association between visits to chiropractors and cauda equina syndrome in the Ontario adult population
2. To investigate the association between visits to primary care physicians and cauda equina syndrome in the Ontario adult population

Hypothesis: If the association (measured as odds ratios) between chiropractic care and cauda equina syndrome is \leq than the association between physician care and cauda equina syndrome, then chiropractic care does not increase of developing cauda equina syndrome

Study Population and Data

- Design: case-crossover study
- Ontario population
 - Population ~ 11 Million
 - Adult Ontario residents (April 1, 1994 and November 30, 2004)
 - Excluding institutionalized, RCMP, Military and natives living on reserves
- Two universal health care administrative data sources used:
 - Hospitalization data captures cauda equina syndrome as a discharge diagnosis
 - Ambulatory health utilization data (exposures)
 - Captured services provided by chiropractors until 2004



Cases and Controls

- Cases
 - All incident cauda equina syndrome cases hospitalized in Ontario acute care hospitals over 9 years (1993-2004)
 - CES: ICD9-CM: 344.6; ICD10-CA: G83.4 (Sn: 100%; Sp:98%)
 - Were treated with lumbar spine surgery for cauda equina syndrome
- Controls
 - The control is the same person (matched to themselves)
 - Four randomly selected periods within year prior to becoming a case

Exposures

Visits to chiropractors

- Visits in month prior to cauda equina syndrome development
- Ontario Health Insurance Health Plan (OHIP)
- Excluded visits for radiographic services alone
- Identified low back pain and lumbar spine services based on billing codes

Visits to Primary Care Physicians

- Visits in month prior to cauda equina syndrome development
- Ambulatory service and specialty codes used to identify services
- Includes family physicians, general practitioners and community physicians
- Excludes services not involving individual outpatient-based patient care
- Identified low back pain and lumbar spine based on diagnostic codes

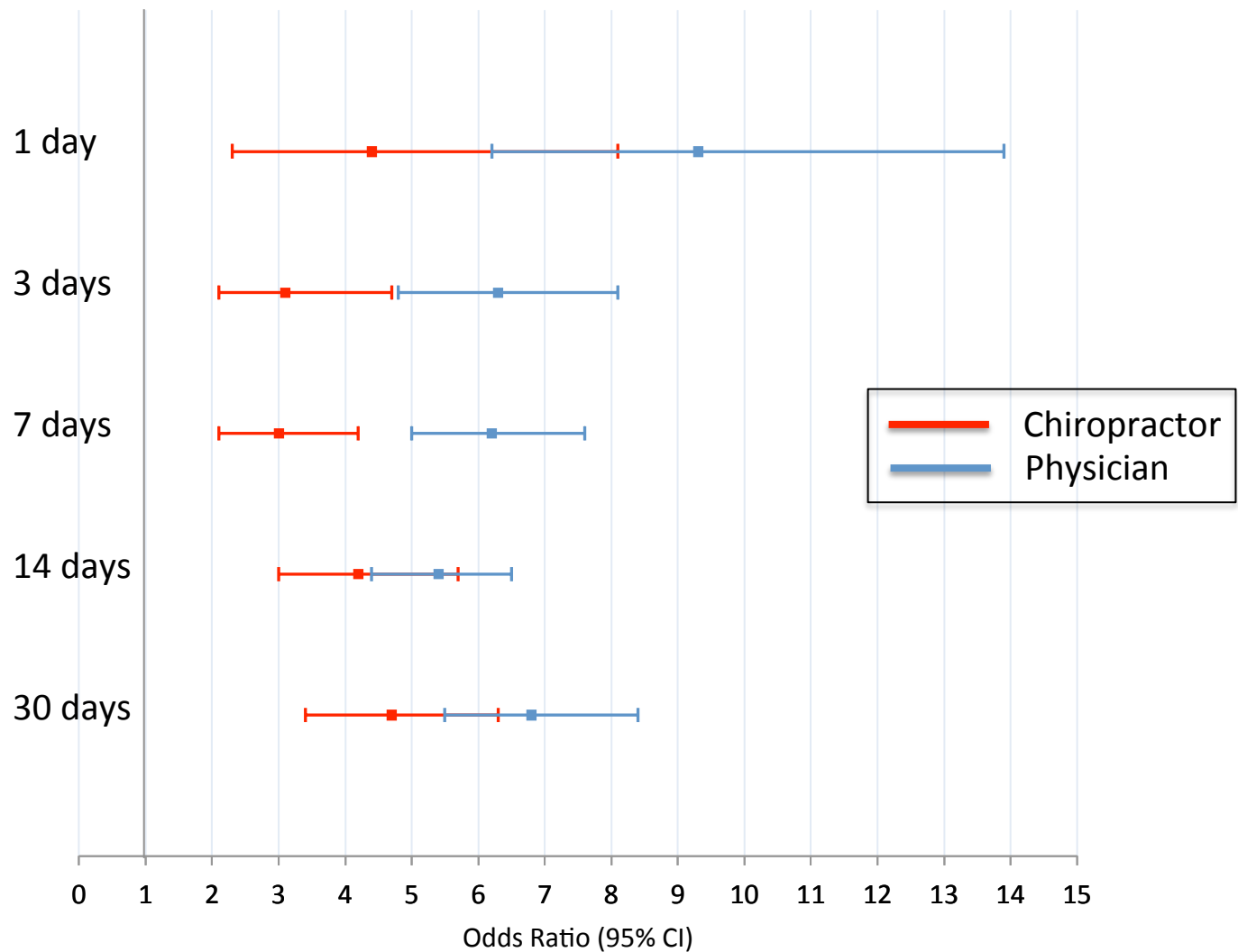
Cauda Equina Syndrome

- 720 cases diagnosed between 1993-2004
- 52.6% cases were males
- Mean age: 44.2 years
- Incidence: 0.8/100,000 person-years (95% CI: 0.7,0.9)
- Incidence peaks between the ages of 30-39 years:
 - 1.3 per 100,000 person-years (95% CI: 1.2, 1.5)
- Incidence rate ratio (male vs. female): IRR=1.2 (95% CI: 1.0, 1.4)

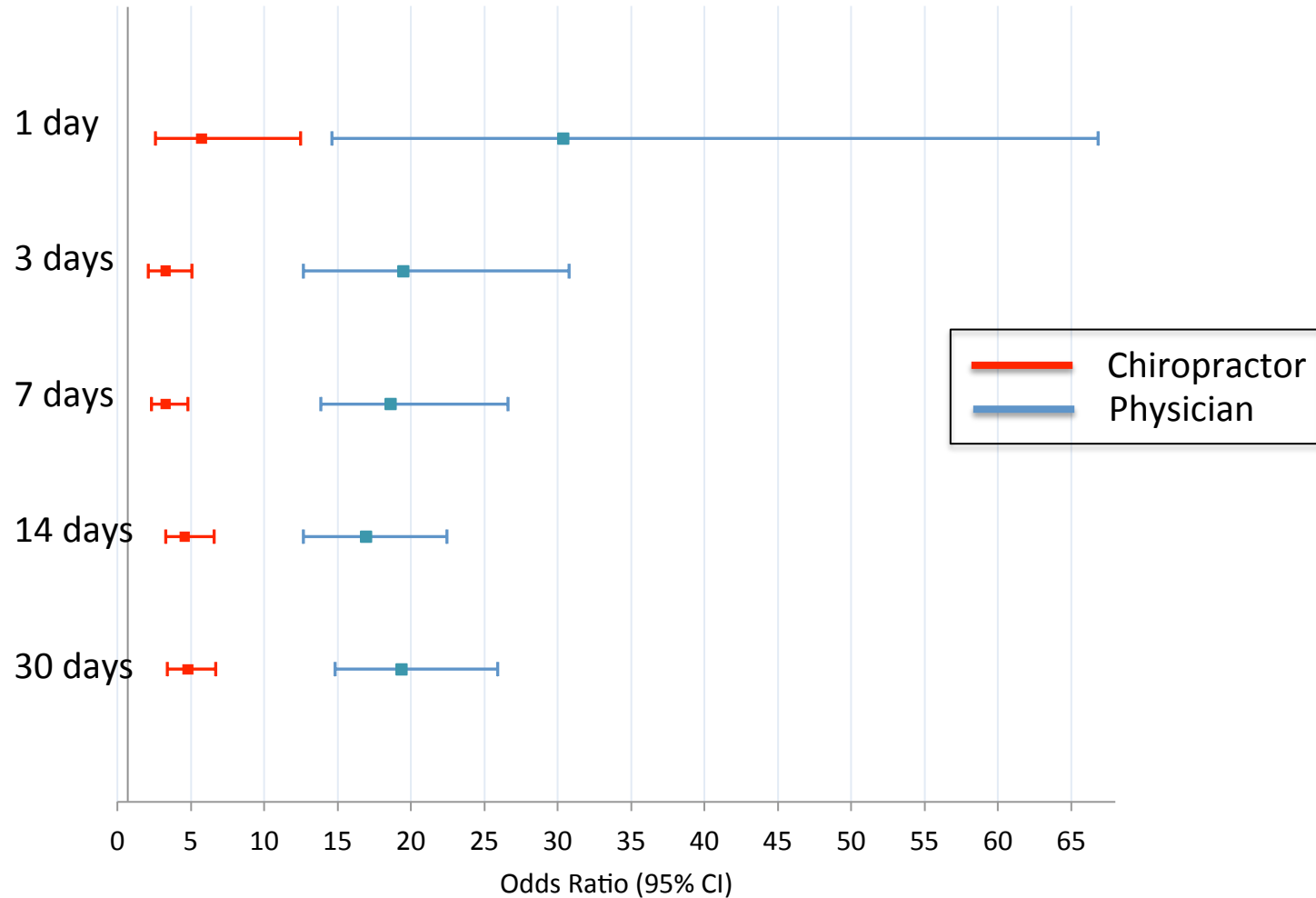


Association between Chiropractors and Physician and CES (All visits)

Time of treatment
prior to incident cauda
equina syndrome

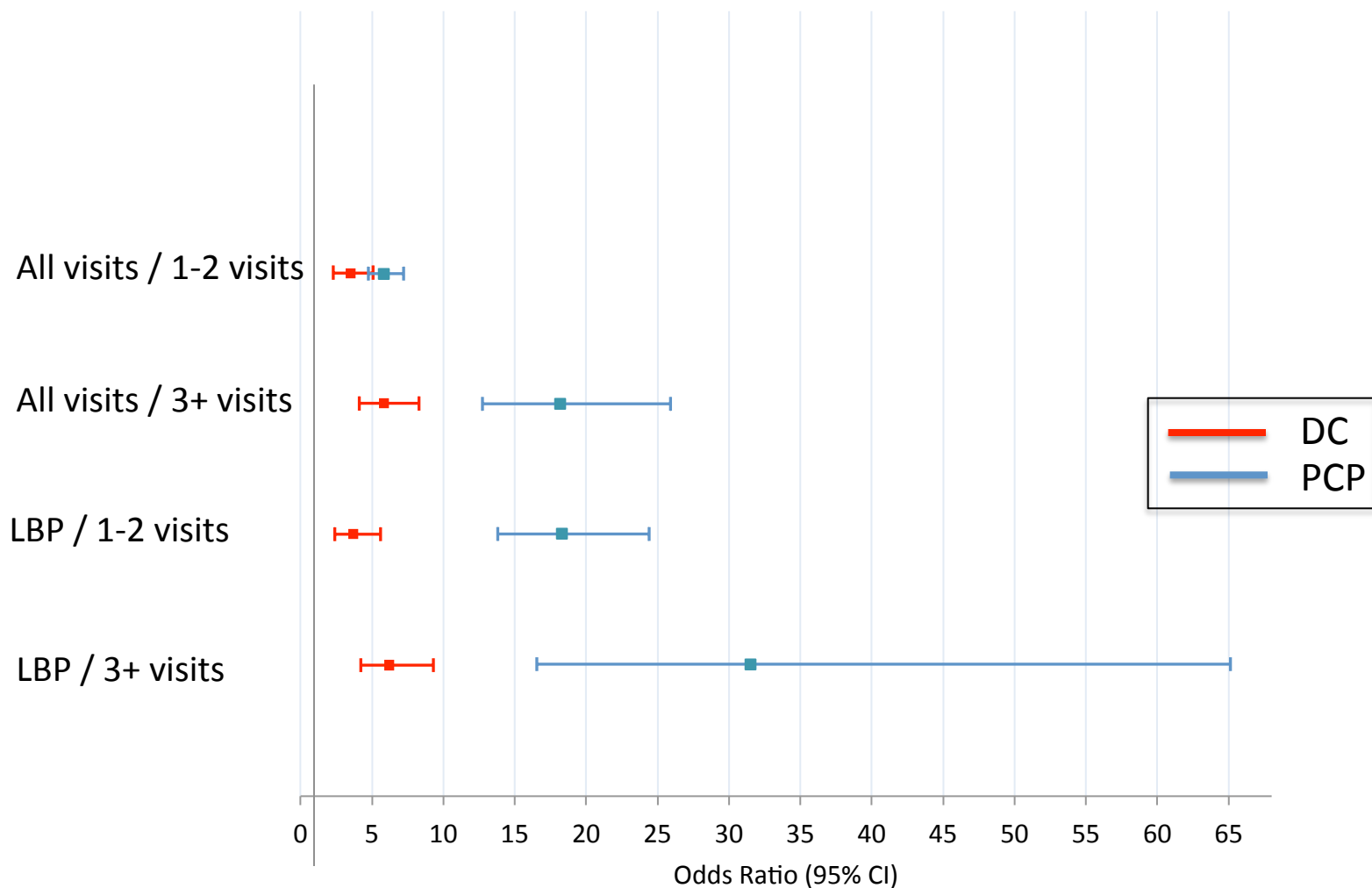


Association between Chiropractors and Physician and CES (Low back pain visits)



Time of treatment prior to incident cauda equina syndrome

Association between Chiropractors and Physician and CES (Number of visits)



Conclusions

- Cauda equina syndrome is very rare in the population
- The association between chiropractic care and cauda equina syndrome is consistently smaller than, or equal to the association between physician care and cauda equina syndrome
- Therefore, patients present to chiropractors and primary care physicians in the prodromal phase (with LBP) of a cauda equina syndrome
- The observed association between chiropractic care and cauda equina syndrome is likely due to prothopathic bias

Acknowledgements



CANADIAN
CHIROPRACTIC
PROTECTIVE
ASSOCIATION



Canada Research Chairs

www.chairs-chaire.gc.ca



Ontario
MINISTRY OF HEALTH AND LONG-TERM CARE