

# Postpartum hospital admissions and emergency department visits among women with intellectual and developmental disabilities

Hilary K. Brown, PhD MSc; Virginie Cobigo, PhD;  
Yona Lunsky, PhD; Simone Vigod, MD MSc FRCPC

**Canadian Association for Health Services and Policy Research**

May 10, 2016



# Intellectual and developmental disabilities (IDD)

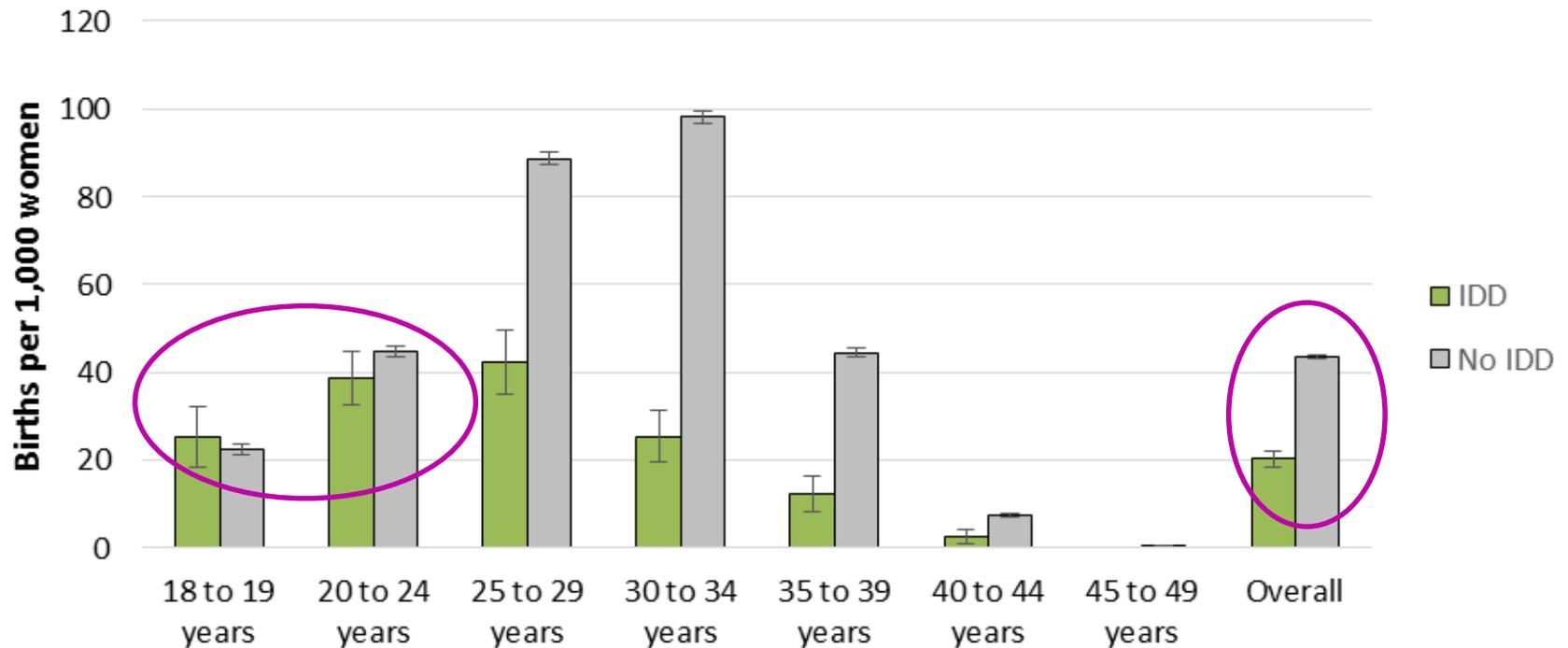
- Affect approximately 1 in every 100 adults (Maulik et al., 2011)
- According to definitions used in cross-jurisdictional legislation:
  - Include a broad range of conditions not based on one specific etiology or overall IQ cutoff
  - Are characterized by variable degrees of cognitive and adaptive limitations (American Psychiatric Association, 2013)
- E.g.: pervasive developmental disorders, fetal alcohol syndrome, Down syndrome, Fragile X syndrome

# Historical context

- **First half of the 20<sup>th</sup> century:** Women with IDD commonly institutionalized and/or sterilized (Aunos et al., 2002)
- **1970s to present:** Establishment of community-based living, recognition of the reproductive rights of persons with disabilities (United Nations, 2006)
- **Present:** Most women with IDD live in the community with varying levels of support

***Changing expectations of and opportunities for childbearing in this population***

# General and age-specific fertility rates



(Brown et al., J Obstet Gynaecol Can, 2016)

# Postpartum health

- Women with IDD experience multiple social and health disparities (Emerson, 2007; Noonan Walsh et al., 2002)
- Increased risk for pregnancy complications (McConnell et al., 2008; Mitra et al., 2015; Parish et al., 2015)
- > 50% also have mental illness during pregnancy (Brown et al., 2016)
- ***Medical and psychiatric health following delivery largely unknown***
- Maternal hospitalizations and emergency department visits following delivery reflect serious maternal morbidity (Liu et al., 2005)

# Objective

Compare the risks for postpartum medical and psychiatric hospital admissions and emergency department visits among women with and without IDD

# Study design and data sources

- **Study design:** Population-based retrospective cohort study in Ontario (2002 to 2011 fiscal years)
- **Data sources:**
  - Institute for Clinical Evaluative Sciences: Ontario health administrative data
  - Ontario Ministry of Community and Social Services: information on Ontario Disability Support Program recipients
  - Linked probabilistically (Lin et al., 2015)

# Data sources, continued

- Institute for Clinical Evaluative Sciences data:**

Database	Description
Canadian Institute for Health Information Discharge Abstract Database	Hospitalizations
Ontario Mental Health Reporting System	Psychiatric hospitalizations
National Ambulatory care Reporting System	Emergency department visits, day surgeries, outpatient visits
Ontario Health Insurance Plan Database	Primary care visits
Registered Persons Database	Demographic data
MOMBABY dataset	Maternal-newborn data

# Study sample: Women with IDD

- Part of a larger cohort in which all individuals aged 18-64 years with IDD in Ontario were identified (Lin et al., 2015)
  - **In health data:** IDD diagnosis recorded in  $\geq 2$  physician visits or in  $\geq 1$  hospitalization or emergency department visit
  - **In social services data:** IDD diagnosis recorded as reason for entry into Ontario Disability Support Program
- **Current study:** Among women with IDD aged 18-49 years, identified all deliveries of a singleton live born infant with a conception date between April 1, 2002 and March 31, 2012

# Study sample: Women without IDD

- **As a referent group:** Among women without IDD aged 18 to 49 years, identified 20% of deliveries of a singleton live born infant with a conception date between April 1, 2002 and March 31, 2012
  - 20% chosen to maximize study power while limiting computing requirements

# Study outcomes

- **Primary outcomes:** Hospital admissions and emergency department (ED) visits 0-42 days following delivery discharge
  - Recorded type of encounter (medical or psychiatric) based on primary discharge diagnosis
  - Recorded occurrence of multiple encounters
- **Secondary outcomes:** Hospital admissions and emergency department visits 0-7 days and 8-42 days following delivery discharge (early and late postpartum periods) (WHO, 2010)

# Covariates

- **Socio-demographic variables:** Maternal age, parity, neighbourhood income quintile, urban/rural residence
- **Pre-pregnancy health conditions:** Pre-existing diabetes mellitus, chronic hypertension, epilepsy, mental health issues
- **Pregnancy complications (pathway variables):** Preeclampsia/eclampsia, venous thromboembolism, hemorrhage, other severe complication, Caesarean section

# Statistical analyses

- Frequencies and percentages to describe the sample
- Cox proportional hazards models to estimate unadjusted and adjusted hazard ratios and 95% confidence intervals
  - Robust sandwich covariance matrix estimate to account for clustering (Lee et al., 1992)
- Controlled for potential confounding variables
- Added pathway variables (pregnancy complications, delivery mode) to models in second step to test impact on results

# Results: Study sample (socio-demographic variables)

Characteristic	IDD (N=3,803)	No IDD (N=378,313)
Maternal age		
<20 years	<b>440 (11.6)</b>	<b>10,643 (2.8)</b>
≥35 years	467 (12.3)	78,588 (20.8)
Primiparous	1,719 (45.2)	168,023 (44.4)
Neighbourhood income quintile		
<b>Q1 (lowest)</b>	<b>1,502 (39.7)</b>	<b>83,276 (22.1)</b>
Q2	868 (23.0)	75,400 (20.0)
Q3	618 (16.4)	77,169 (20.5)
Q4	434 (11.5)	78,316 (20.8)
Q5 (highest)	358 (9.5)	62,320 (16.6)
<b>Rural dwelling</b>	<b>541 (14.2)</b>	<b>39,030 (10.3)</b>

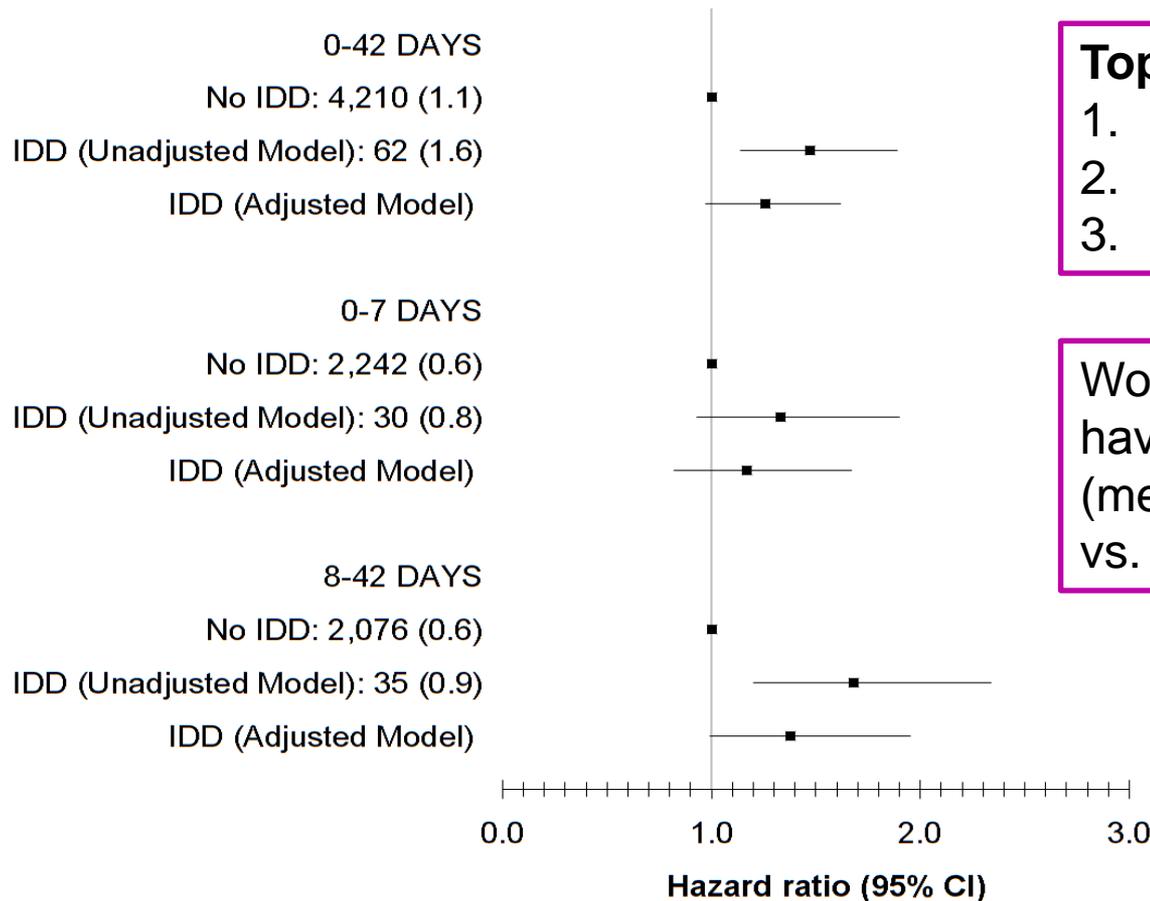
# Results: Study sample (pre-pregnancy health, pregnancy complications)

Characteristic	IDD (N=3,803)	No IDD (N=378,313)
<b>Pre-existing diabetes mellitus</b>	<b>108 (2.8)</b>	<b>5,775 (1.5)</b>
Chronic hypertension	98 (2.6)	9,240 (2.4)
<b>Epilepsy</b>	<b>173 (4.6)</b>	<b>2,293 (0.6)</b>
<b>Mental health issue</b>	<b>2,027 (53.3)</b>	<b>108,874 (28.8)</b>
<b>Preeclampsia/eclampsia</b>	<b>63 (1.7)</b>	<b>3,984 (1.1)</b>
Venous thromboembolism	42 (1.1)	2,431 (0.6)
Hemorrhage	234 (6.2)	17,315 (4.6)
Other obstetric morbidity	302 (7.9)	22,103 (5.8)
Caesarean section	1,078 (28.4)	103,726 (27.4)

# Results: Hospital admissions

- Women with IDD, compared to those without, had increased risk for **postpartum hospital admissions at 0-42 days** following delivery discharge (2.4% vs. 1.2%; aHR 1.76, 95% CI 1.44-2.18)

# Results: Hospital admissions (medical)

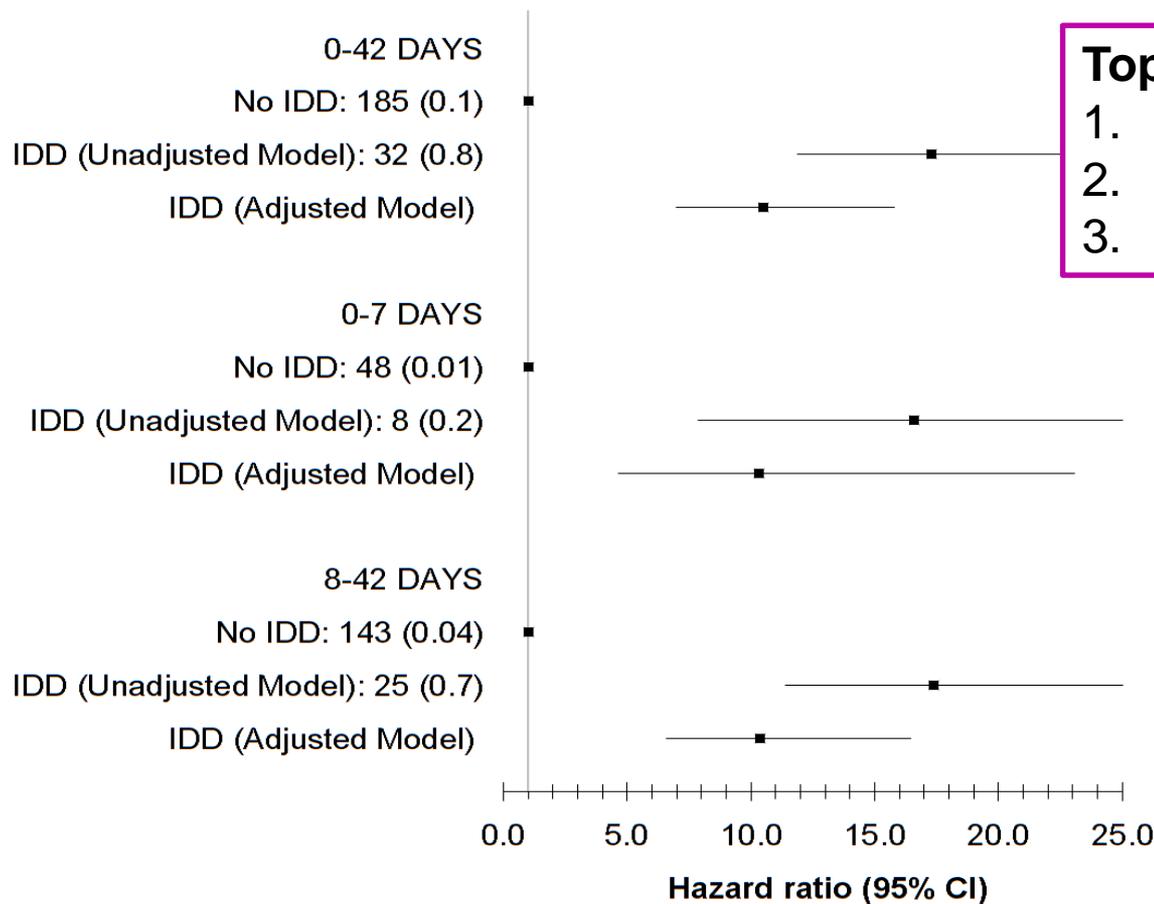


## Top 3 diagnoses (0-42 days):

1. Puerperal infection/sepsis
2. Cholelithiasis
3. Postpartum hemorrhage

Women with IDD more likely to have  $\geq 2$  hospital admissions (medical) at 0-42 days: 0.2% vs. 0.1%

# Results: Hospital admissions (psychiatric)



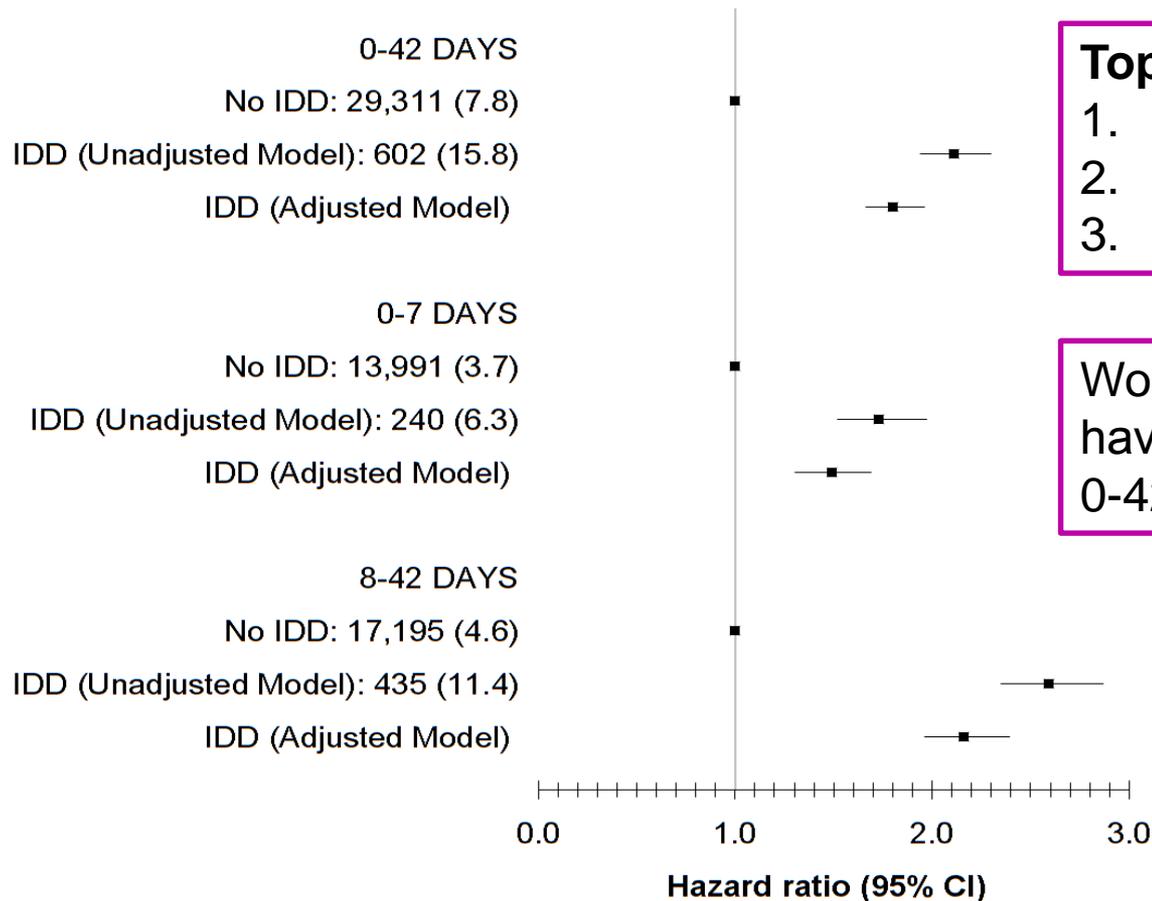
## Top 3 diagnoses (0-42 days):

1. Schizophrenia/psychosis
2. Postpartum depression
3. Bipolar disorder

# Results: ED visits

- Women with IDD, compared to those without, had increased risk for **postpartum ED visits at 0-42 days** following delivery discharge (16.6% vs. 7.9%; aHR 1.86, 95% CI 1.71-2.02)

# Results: ED visits (medical)

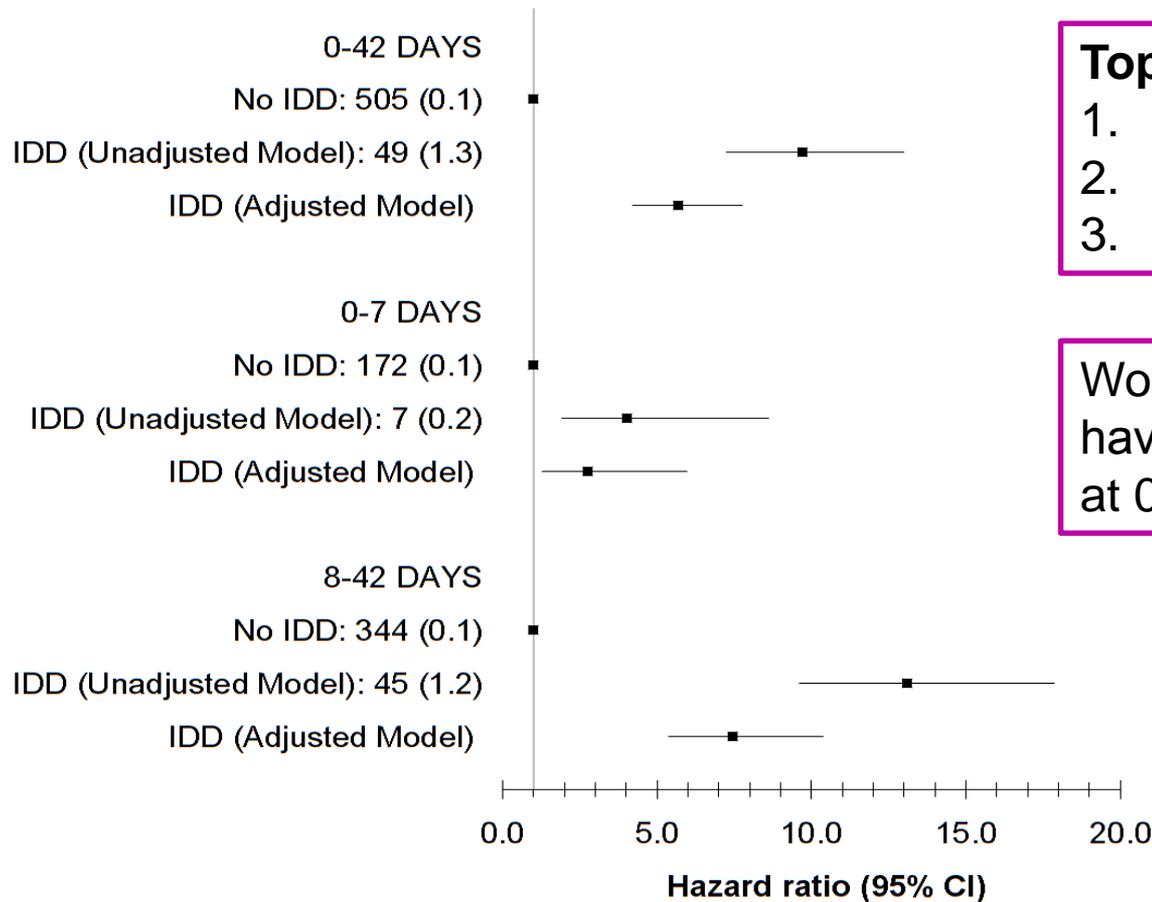


## Top 3 diagnoses (0-42 days):

1. Puerperal infection/sepsis
2. Abdominal/pelvic pain
3. Postpartum hemorrhage

Women with IDD more likely to have  $\geq 2$  ED visits (medical) at 0-42 days: 5.2% vs. 1.7%

# Results: ED visits (psychiatric)



## Top 3 diagnoses (0-42 days):

1. Postpartum depression
2. Anxiety disorder
3. Other mood disorder

Women with IDD more likely to have  $\geq 2$  ED visits (psychiatric) at 0-42 days: 0.2% vs. 0.01%

# Summary of findings

- Women with IDD had double the risk for postpartum hospital admissions
  - Driven by 10-fold higher rate of hospital admissions for psychiatric reasons
- Women with IDD had double the risk for postpartum ED visits
  - Driven by 2-fold higher rate of ED visits for medical reasons and 7-fold higher rate of ED visits for psychiatric reasons
- Top reasons for medical/psychiatric encounters similar for both groups; women with IDD more likely to have multiple encounters

# Context of existing literature

- Little is known about postpartum health among women with IDD
- Swedish retrospective cohort study (N=346) suggested that women with IDD need ongoing care following delivery (high rates of discharge to another facility vs. home) (Hoglund et al., 2012)
- Results are consistent with literature showing high rates of hospital admissions and ED visits among adults with IDD in general (Balogh et al., 2010; Lunsky et al., 2011)

# Study limitations

- Some IDD are invisible to the healthcare and social services systems; these women may have been misclassified as not having IDD (Emerson & Glover, 2008)
- IDD definition includes heterogeneous group of conditions potentially associated with variations in risk
- Could not examine some explanations for findings (e.g., healthcare accessibility, life stressors) (Taggart et al., 2008)

# Potential explanations for findings

- Hypothesized that women with IDD would have high rates of postpartum hospital admissions and ED visits due to known social and health risk factors
- There may be a delay in recognizing complications in this population:
  - Women with IDD often unable to access appropriate health services; have difficulty describing symptoms (Lunsky et al. 2003)
  - Healthcare providers report feeling unprepared for managing their complex medical and social needs (Beake et al., 2013)

# Implications and conclusions

- Address modifiable risk factors (e.g., control of chronic medical and psychiatric conditions, lifestyle behaviours) and monitor for complications
- Use anticipatory guidance prenatally to ensure women with IDD have a plan for managing postpartum period
- Provide longer and more frequent visits during the postpartum period
- Coordinate health and social services so that women are adequately supported between medical appointments

# Acknowledgments

- We gratefully acknowledge the Province of Ontario for their support of this study through their research grants program. The opinions, results and conclusions in this study are those of the authors and do not reflect that of the Province or data providers. No endorsement by the Province or the Institute for Clinical Evaluative Sciences is intended or should be inferred. Parts of this material are based on data and information compiled and provided by the Canadian Institute for Health Information. However, the analyses, conclusions, opinions and statements expressed herein are those of the author, and not necessarily those of the Canadian Institute for Health Information.
- Hilary Brown is funded by a CIHR Postdoctoral Fellowship.

