



# Patterns of Aspirin Use in SLE Pregnancies Within a Multinational Inception Cohort and Relationship to Preeclampsia Risk Factors

Arielle Mendel, MD, Sasha Bernatsky, MD, PhD, SLICC Investigators, Evelyne Vinet, MD, PhD

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**McGill**  
UNIVERSITY

# Disclosures

- None

# Introduction

- Aspirin reduces the risk of preeclampsia (PE) in pregnancies at high risk (RR 0.47, 0.34-0.65)<sup>1</sup>
- Risk factors for preeclampsia include<sup>2</sup>
  - SLE or APS
  - Hypertension
  - Renal disease
  - Diabetes
  - Age >40
  - BMI  $\geq 35$
  - Multifetal gestation
  - Prior preeclampsia
  - Nulliparity

[1] Bujold E et al. *Am J Obstet Gynecol* (2010). 116 (2): 402-14

[2] Welsh A, ed: National Institute for Health and Clinical Excellence; 2011.

# Introduction

- Aspirin is recommended for prevention of preeclampsia among women with risk factors, including SLE<sup>2,3</sup>
- EULAR recommends low-dose aspirin in pregnant SLE women at high risk for PE, especially those with nephritis and +aPL<sup>4</sup>
- Real-world use of aspirin in lupus pregnancy has not been studied

[2] Welsh A, ed: National Institute for Health and Clinical Excellence; 2011.

[3] LeFevre ML and USPSTF. *Ann Intern Med.* 2014;161(11):819-26.

[4] Andreoli L et al. *Ann Rheum Dis.* 2017;76(3):476-85.

# Objectives

Within an international SLE inception cohort, we aimed to:

1. Assess the prevalence of aspirin use in SLE pregnancies
2. Compare aspirin use among pregnant SLE women with and without additional preeclampsia risk factors

# Methods

## Systemic Lupus International Collaborating Clinics

- Inception cohort enrolled within 15 months of SLE diagnosis
- 33 participating sites, 11 countries
- Prospective data collection at yearly study visits



# Methods

## Patients

- Pregnant visits among pre-menopausal women aged 18-45 enrolled in SLICC (2000-2017)

## Data Collection

- Demographic and clinical characteristics
- PE risk factors: Hypertension, Renal disease, Diabetes, Nulliparity, BMI  $\geq 35$ , Age  $> 40$
- Antiphospholipid antibody status (aCL, LAC, anti-B2GP1)
- Aspirin use

## Analysis:

- Prevalence of aspirin use overall
- Prevalence of aspirin use among those with and without additional PE risk factors
- Prevalence of aspirin use over time (2000 – 2017)

# Results

n= 1849 (14 113 visits)  
In SLICC cohort (2000-2017)



n=1227 (8226 visits)  
Premenopausal women aged 18-45



475 pregnancies (300 women)



121 pregnancies with aspirin use  
**(25%, 95% CI 22, 29)**



# Results

Table I. Demographic characteristics overall and according to aspirin use

Characteristic	All pregnant visits (n=475)	Pregnant visits with aspirin (n=121)	Pregnant visits without aspirin (n=354)
Age, mean (SD)	31.0 (4.9)	30.5 (4.6)	31.2 (5.0)
Ethnicity, n (%)			
Asian	66 (14)	7/66 (11)	59/66 (89)
Native North American	7 (2)	6/7 (86)	1/7 (14)
Black	88 (19)	9/88 (10) <sup>†</sup>	79/88 (90)
Caucasian	205 (43)	67/205 (33) <sup>†</sup>	138/205 (67)
Hispanic	62 (13)	20/62 (32)	42/62 (68)
Indian subcontinent	25 (5)	8/25 (30)	17/25 (68)
Other	22 (5)	4/22 (18)	18/22 (81)
Region/Country, n (%)			
Canada	121 (25)	27/121 (22)	94/121 (77)
United States	105 (22)	20/105 (19)	85/105 (81)
Mexico	52 (11)	19/52 (37)	33/52 (63)
Europe	146 (31)	49/146 (34)	97/146 (66)
Asia	51 (11)	6/51 (12)	45/51 (88)
Post-secondary education, n (%)	310/452 (69)	69/310 (22)	241/310 (77)

<sup>†</sup> White women [32% (95%CI 26,39)] vs black women [10% (95%CI 5,18)]

# Results

Table I, Cont'd. SLE characteristics

Characteristic	All pregnant visits (n=475)	Pregnant visits with aspirin (n=121)	Pregnant visits without aspirin (n=354)
Disease duration, mean (SD)	5.6 (3.3)	5.6 (3.3)	5.6 (3.3)
SLEDAI, mean (SD)	3.3 (3.8)	3.0 (3.6)	3.4 (3.9)
SLICC damage score, mean (SD)	0.5 (1.0)	0.6 (1.0)	0.5 (1.0)
+ aPL, n (%)	34/104 (33)	13/34 (38)	21/34 (62)
Nephritis, n (%)	53/475 (11)	11/53 (21)	42/53 (79)

# Results

Table I, Cont'd. Reproductive characteristics

Characteristic	All pregnant visits (n=475)	Pregnant visits with aspirin (n=121)	Pregnant visits without aspirin (n=354)
Parity, mean (SD)	1.1 (1.0)	1.1 (1.0)	1.2 (1.0)
Nulliparous, n (%)	134/461 (30)	37/134 (28)	97/134 (72)
Previous fetal loss <24 weeks, n (%)	84/456 (18)	22/84 (26)	62/84 (74)

# Results

Table I, Cont'd. Co-morbidities

Characteristic	All pregnant visits (n=475)	Pregnant visits with aspirin (n=121)	Pregnant visits without aspirin (n=354)
Any renal disease <sup>†</sup> , n (%)	83/475 (17)	17/83 (20)	66/83 (80)
CKD stage $\leq$ 3 (eGFR $\leq$ 60), n (%)	11/459 (2)	5/11 (45)	6/11 (55)
Hypertension, n(%)	79/475 (17)	24/79 (30)	55/79 (70)
Taking anticoagulation, n(%)	28/475 (6)	12 (43)	15 (54)

<sup>†</sup> CKD (Chronic Kindey Disease), nephritis, nephrotic syndrome within the last year

# Results

Table II. Prevalence of aspirin use according to the presence of PE risk factors

Risk factor	Prevalence of aspirin use	
	With risk factor	Without risk factor
≥1 traditional PE risk factor	58/234 (25, 20-31)	63/241 (26, 21-32)
Hypertension	24/79 (30, 21-41)	97/396 (24, 21-29)
Any renal disease	17/83 (20, 13-30)	104/392 (27, 22-31)
CKD stage 3 or worse	5/11 (45, 21-72)	112/448 (25, 21-29)
Diabetes	0/2 (0, 0-1)	121/473 (26, 22-30)
Age >40	2/14 (14, 4-40)	119/461 (26, 22-30)
BMI ≥35	8/33 (24, 13-41)	113/442 (26, 22-30)
Nulliparous	37/134 (28, 21-36)	79/327 (24, 20-29)

# Results

Table II. Prevalence of aspirin use according to the presence of PE risk factors

Risk factor	Prevalence of aspirin use	
	With risk factor	Without risk factor
aPL +	13/34 (38, 24-55)	16/70 (23, 15-34)
Nephritis	11/53 (21, 12-23)	109/417 (26, 22,30)

# Results

Table III. Prevalence of aspirin use in SLE pregnancy, 2000 - 2017

Year of pregnancy visit	Proportion of subjects on aspirin n (%)
2000 – 2004 n (%)	11/39 (28)
2005 – 2009 n (%)	46/157 (29)
2010 – 2014 n (%)	52/218 (24)
2015 – 2017 n (%)	12/61 (20)

- Aspirin use did not increase from 2000 to 2017  
Chi Square test for trend in proportions,  $p=0.13$

# Results

Aspirin use during pregnancy did not differ from the prevalence of aspirin use in the subsequent and preceding non-pregnant visits in the same women



121/475  
(25%, 95% CI 22, 29)



192/870  
(22%, 95% CI 19, 25)



# Strengths

- First study to assess prevalence of aspirin use in lupus pregnancy
- Data from largest SLE multicentre, multi-national inception cohort
- Uncovered a potential unmet need in SLE reproductive care

# Potential limitations

- Unknown gestational age at pregnant visit
- Unable to assess history of prior preeclampsia as a traditional risk factor
- No data on pregnancy outcomes

# Conclusion

- Most pregnant women were not on aspirin, despite being at high risk for preeclampsia
- Half had preeclampsia risk factors in addition to SLE
- Black SLE women could be a potentially vulnerable group during pregnancy, having the lowest prevalence of aspirin use (10%)

# Future directions

- An understanding of factors contributing to low aspirin use in SLE pregnancy is needed
- Further interventional studies of aspirin in SLE pregnancy may help to strengthen current recommendations

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Sensitivity analysis: prevalence of aspirin use with and without  $\geq 1$  traditional PE risk factor in pregnancies with unique subjects only

Risk factor	Overall ASA use	Prevalence of aspirin use	
		With $\geq 1$ traditional PE risk factor	Without any PE risk factors
All pregnancies (n=475)	121 (25,22-30)	58/234 (25, 20-31)	63/241 (26, 21-32)
First identified pregnancy (n=300)	74 (25, 20-30)	43/169 (25, 19-33)	31/131 (24, 17-32)
Nulliparous only (n=134)	37 (28, 21-36)	15/53 (28, 18-42)*	22/81 (27, 19-38)*

\* Excludes nulliparity as a traditional risk factor