# Vaginal Bleeding in Pregnancy and Cardiovascular Risk in Women

Vaginal bleeding

weeks of a

within 20 gestational

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#### **DATA SOURCES**

#### POPULATION (1979-2017)

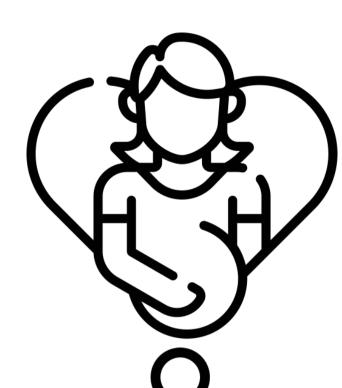
VS

Department of Clinical Epidemiology, Aarhus University is involved in studies with institutional funding from regulators and from various pharmaceutical companies, as research grants to and administered by Aarhus University. None of these studies is related to the current study. ED, EHP, HTS, and VE are salaried employees of Aarhus University.



**JOB** 



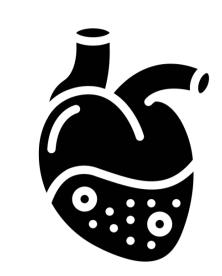


Vaginal bleedingunaffected childbirths (N=2,179,940 among)1,172,715 women)















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### FIGURE. Exposure to vaginal bleeding and women's risk of diabetes and cardiovascular diseases

HR estimates

△ Conventional

O ATT-weighted

□ IPTW

	Vaginal bleeding- affected vs unaffected childbirths	Vaginal bleeding-affected childbirths vs terminations	Vaginal bleeding-affected childbirths vs miscarriages
Diabetes mellitus type 1	1.22 (1.15-1.29)  1.26 (1.19-1.34)	1.28 (1.20-1.37)  1.35 (1.25-1.45)	0.99 (0.91-1.08)
Diabetes mellitus type 2	1.24 (1.17-1.31)  1.21 (1.17-1.25)  1.24 (1.20-1.28)	1.27 (1.19-1.36)  1.24 (1.19-1.29)  1.29 (1.24-1.35)	1.01 (0.97-1.06)
Hypertension	1.22 (1.18-1.26)  1.15 (1.12-1.18)  1.19 (1.16-1.22)	1.21 (1.17-1.26)  1.11 (1.08-1.14)  1.16 (1.12-1.20)	1.02 (0.98-1.05) 1.02 (0.98-1.06)
Ischemic heart disease	1.17 (1.14-1.20)  1.31 (1.27-1.36)  1.42 (1.36-1.47)	1.09 (1.06-1.12)  1.11 (1.06-1.16)  1.17 (1.11-1.23)	0.98 (0.94-1.02) 1.06 (1.01-1.11) 1.07 (1.01-1.13)
	1.35 (1.30-1.40)	1.11 (1.06-1.16)	1.02 (0.97-1.08)
Myocardial infarction	1.26 (1.17-1.36)	1.02 (0.92-1.12)	0.93 (0.83-1.04)
Atrial fibrillation or flutter	1.19 (1.12-1.27) 1.26 (1.19-1.35) 1.23 (1.16-1.31)	1.10 (1.02-1.18) 1.04 (0.96-1.13) 1.05 (0.97-1.12)	0.98 (0.89-1.08) 0.94 (0.86-1.04)
Heart failure	1.21 (1.11-1.33) 1.30 (1.19-1.43) 1.25 (1.14-1.37)	1.01 (0.92-1.12)  1.00 (0.89-1.13)  1.00 (0.91-1.11)	0.96 (0.85-1.08) 0.94 (0.82-1.08) 0.94 (0.82-1.07)
	1.0 2.0	1.00 (0.91-1.11)	1.0 2.0

Vaginal bleeding-Vaginal bleeding-Vaginal bleedingaffected childbirths affected childbirths affected vs unaffected childbirths terminations miscarriages 1.02 (0.94-1.09) 1.26 (1.19-1.33) 1.04 (0.98-1.11) 1.05 (0.98-1.13) 1.33 (1.26-1.41) 1.01 (0.93-1.10) 1.29 (1.22-1.36) 1.05 (0.99-1.12) 0.98 (0.90-1.07) 1.05 (0.94-1.18) 1.27 (1.17-1.39) 1.10 (1.00-1.21) 1.37 (1.25-1.49) 1.04 (0.92-1.18) 1.05 (0.93-1.17) 1.12 (1.02-1.24) 1.05 (0.92-1.19) 1.30 (1.19-1.41) 1.10 (1.01-1.19) 1.31 (1.23-1.39) 1.14 (1.06-1.22) 1.12 (1.02-1.22) 1.37 (1.29-1.46) [1.19 (1.10-1.29)] 1.33 (1.25-1.41) 1.15 (1.07-1.24) 1.05 (0.96-1.16) 1.19 (1.08-1.31) 1.07 (0.96-1.20) 1.27 (1.17-1.39) 1.34 (1.23-1.46) 1.21 (1.08-1.36) 1.10 (0.97-1.25) 1.00 (0.88-1.13) 1.29 (1.18-1.40) 1.15 (1.04-1.27) 1.24 (0.99-1.55) 1.07 (0.84-1.37) 1.01 (0.76-1.36) 0.97 (0.72-1.30) 1.00 (0.71-1.41) 1.36 (1.08-1.70) 1.28 (1.02-1.60) 1.04 (0.80-1.33) 1.02 (0.73-1.41) 0.93 (0.82-1.05) 1.05 (0.96-1.16) 0.96 (0.86-1.06) 1.14 (1.04-1.25) 0.99 (0.88-1.12) 0.92 (0.80-1.05) 1.09 (0.99-1.19) 0.97 (0.87-1.07) 0.92 (0.80-1.05) 1.0 2.0 2.0 2.0 1.0 1.0 HR (95% CI)

DVT, deep vein thrombosis; PE, pulmonary embolism; CABG, coronary artery bypass grafting; PCI, percutaneous coronary intervention

ATT, average effect in the treated; IPTW, inverse probability of treatment weighting

Cox proportional hazards regression models were adjusted for the following: women's pre-pregnancy morbidity, drug utilization, socioeconomics, and reproductive history.

Follow-up started at the date of the diagnostic or procedure record in the Danish National Patient Registry associated with the childbirth, vaginal bleeding, termination, or miscarriage

The follow-up was carried out until the earliest of the outcome of interest, death, emigration, or data end in Dec 2018

## CONCLUSION

In comparison with vaginal bleeding-unaffected childbirths, vaginal bleeding affected-childbirths were associated with 1.2 to 1.3-fold increased hazards of diabetes type 1 and type 2, hypertension; ischaemic heart disease, including myocardial infarction; atrial fibrillation or flutter; heart failure; artery bypass grafting; ischaemic and haemorrhagic stroke.

HR (95% CI)







