

# Risk Across Postpartum Timing of Insertion in Women With Intrauterine Devices

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## DISCLOSURES:

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## BACKGROUND

- Intrauterine devices (IUDs) inserted in early postpartum (PP) time periods, especially immediately PP, may introduce increased risk of uterine perforation and IUD expulsion compared with later PP time periods or among women not giving birth in the year just before IUD insertion.
- Limited information exists to quantify the risk of perforation and expulsion across PP timing. (PP time was dichotomized at 36 weeks in EURAS IUD, the largest assessment to date.)

## OBJECTIVE

- To assess the risk of uterine perforation and IUD expulsion according to PP timing of IUD insertion, using a finer categorization of timing shortly after delivery (0-3 days PP and 4 days to ≤ 6 weeks PP) than previously reported.

## RESULTS

- IUD insertions were identified among 326,658 women.
- Among women with IUD insertions, there were 1,008 uterine perforations and 8,943 IUD expulsions within 641,427 woman-years of follow-up (Table 1).
- Hazard ratios (HRs) for dichotomous categorizations (14 weeks and 36 weeks) indicated increased rates of uterine perforations and IUD expulsions in early PP time periods (Table 2).
- Consideration of heterogeneity in the dichotomous categories led to a separate, prespecified, four-category PP exposure variable.
  - The adjusted HRs for uterine perforation decreased with increasing PP time ≤ 6 weeks, > 6 to ≤ 14 weeks, and through > 14 to ≤ 52 weeks compared with > 52 weeks (including no delivery) (Table 2).
  - The adjusted HRs for IUD expulsion were lowest at > 6 to ≤ 14 weeks (Table 3).
- Post hoc and in consideration of insertions shortly after delivery, a fifth category of 0-3 days was added.
  - With this split in very early PP time periods, lower rates of perforation were seen in IUD insertion 0-3 days PP (Table 2).
  - Higher rates of expulsion were seen in IUD insertion 0-3 days PP.

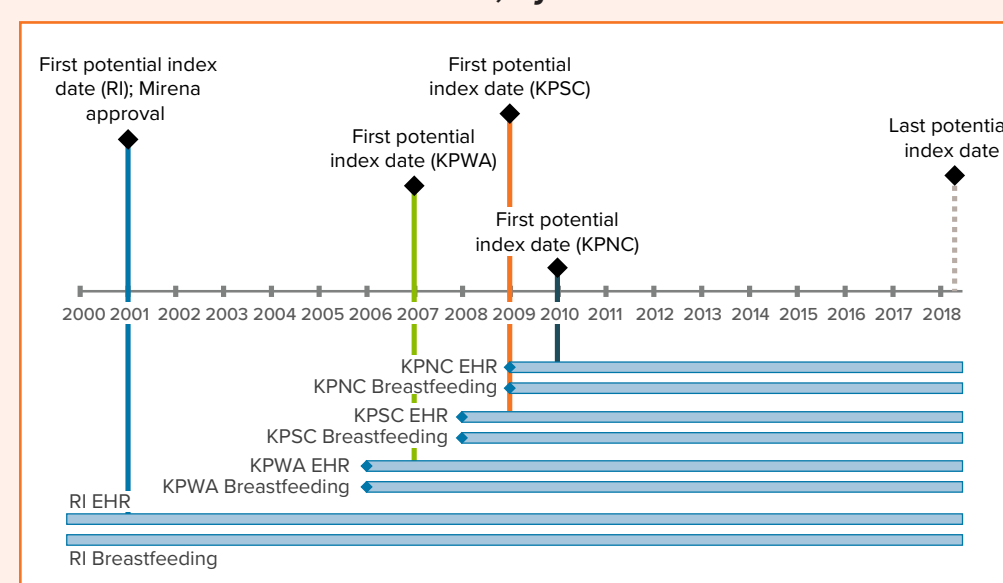
## CONCLUSIONS

- Underlying heterogeneity across the PP time period could lead to differences in risk interpretation based on the categorization of exposure. Risk of uterine perforation may be lower shortly after delivery (0-3 days PP), but this effect would not be seen if categorization of early PP covers the entirety of 0-6 weeks (or longer). Conversely, risk of IUD expulsion may be higher shortly after delivery, and this risk may be attenuated if a broader categorization of early PP was utilized in a study.
- Clinical considerations of interpretation should be used alongside data-driven analyses to determine categorization of exposures. Categorization of early PP IUD insertion may be weighed in accordance with guidelines to better understand the appropriate time for a woman to consider IUD placement based on her risk of uterine perforation and IUD expulsion, as well as benefits and each woman's preference.

## METHODS

- Women receiving IUDs were identified within each of four sites (three Kaiser Permanente sites—Northern California [KPNC], Southern California [KPSC], and Washington [KPWA]—and Regenstrief Institute [RI], Indiana) between January 2001 and April 2018 (start date variable by site).
- Outcomes were assessed through June 2018. (Figure 1)

Figure 1. Start and End Dates of Electronic Health Record Data and Breastfeeding Data, Including First and Last Potential Index Dates, by Site



- PP timing and patient/procedure characteristics were assessed at the time of insertion.
- PP timing was categorized in multiple ways (Figure 2).
- Risk of uterine perforation and IUD expulsion were assessed via Cox proportional hazards models.
- Confounding adjustment in Cox models was conducted via propensity score overlap weighting.

Figure 2. Postpartum Timing Categorizations

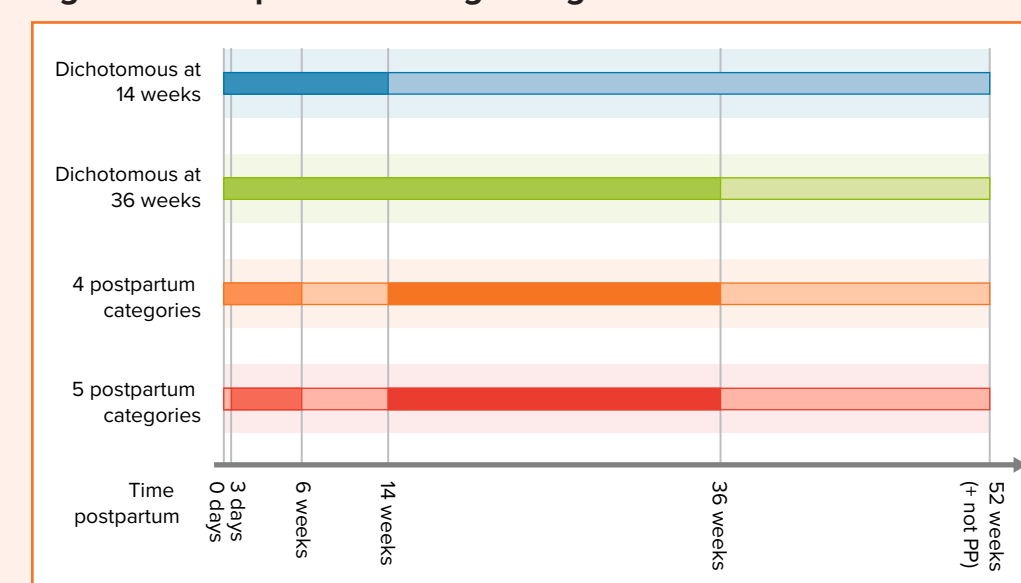


Table 1. Numbers of Women, Woman-Years, Perforations, and Expulsions Overall and by Study Site

	Total	KPNC	KPSC	KPWA	RI
Number of women	326,658	161,442	123,214	20,526	21,476
Woman-years	641,427	325,552	241,923	37,496	36,456
Uterine perforations	1,008	529	324	64	91
IUD expulsions	8,943	5,035	3,172	436	300

Table 2. Adjusted Hazard Ratios for Uterine Perforation by Postpartum Timing, Pooled Across Study Sites

	0 to 3 Days (95% CI)	4 Days to ≤ 6 Weeks (95% CI)	> 6 Weeks to ≤ 14 Weeks (95% CI)	> 14 Weeks to ≤ 36 Weeks (95% CI)	> 36 Weeks to ≤ 52 Weeks (95% CI)	> 52 Weeks or No Delivery (95% CI)
Dichotomous at 14 weeks	3.44 (2.70-4.40)			Referent		
Dichotomous at 36 weeks	4.36 (3.45-5.51)			Referent		
4 categories	6.29 (4.50-8.79)	4.65 (3.49-6.20)		2.94 (2.16-4.01)		Referent
5 categories	2.73 (1.33-5.63)	6.71 (4.80-9.38)	4.64 (3.48-6.18)	2.93 (2.15-4.00)		Referent

CI = confidence interval.

Table 3. Adjusted Hazard Ratios for IUD Expulsion by Postpartum Timing, Pooled Across Study Sites

	0 to 3 Days (95% CI)	4 Days to ≤ 6 Weeks (95% CI)	> 6 Weeks to ≤ 14 Weeks (95% CI)	> 14 Weeks to ≤ 36 Weeks (95% CI)	> 36 Weeks to ≤ 52 Weeks (95% CI)	> 52 Weeks or No Delivery (95% CI)
Dichotomous at 14 weeks	1.08 (0.99-1.19)			Referent		
Dichotomous at 36 weeks	1.26 (1.16-1.37)			Referent		
4 categories	1.57 (1.38-1.78)	1.04 (0.94-1.16)		1.42 (1.28-1.58)		Referent
5 categories	5.34 (4.47-6.39)	1.22 (1.05-1.41)	1.06 (0.95-1.18)	1.43 (1.29-1.60)		Referent

## REFERENCE

1. Heinemann K et al. Contraception. 2015;91(4):280-3.

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