



# The Incidence of Acne Vulgaris Associated with Progestin-Releasing Intrauterine Devices (IUDs)

Ariana Diaz; Marilyn Kouassi-Brou; Alicia Dagrosa, MD; Andrew Scripture, MD  
Dartmouth Hitchcock Department of Dermatology

## Introduction

As hormonal contraceptives have become increasingly popular, it is imperative to learn its possible effects on our bodies. Determining whether there is a relationship between the different classes of birth control and the incidence of a new diagnosis of acne will better inform decisions on this topic. While pathogenesis is multifactorial, androgen-induced elevated sebum secretion has been proven to play a role in the development of acne vulgaris, a chronic inflammatory disorder of the pilosebaceous unit leading to open and closed comedones, and other inflammatory lesions.<sup>2</sup> Exogenous progestins have known intrinsic androgenic activity, and acne vulgaris is a reported side effect of progestin-releasing intrauterine devices (IUDs) as well as some oral contraceptive pills.<sup>1</sup> However, this androgenic potential is variable across different progestin formulations and doses and no randomized controlled studies have been conducted to specifically evaluate the development or exacerbation of acne vulgaris after implantation of a progestin-releasing IUD.

## Objectives

- Review the current literature about the association between different types of birth control and the incidence of acne vulgaris in adult females with a focus on progestin-releasing intrauterine devices (IUDs).
- Identify the incidence of acne vulgaris in adult female patients with progestin-releasing intrauterine devices (IUDs) at a rural level III academic medical center through a retrospective cohort study.

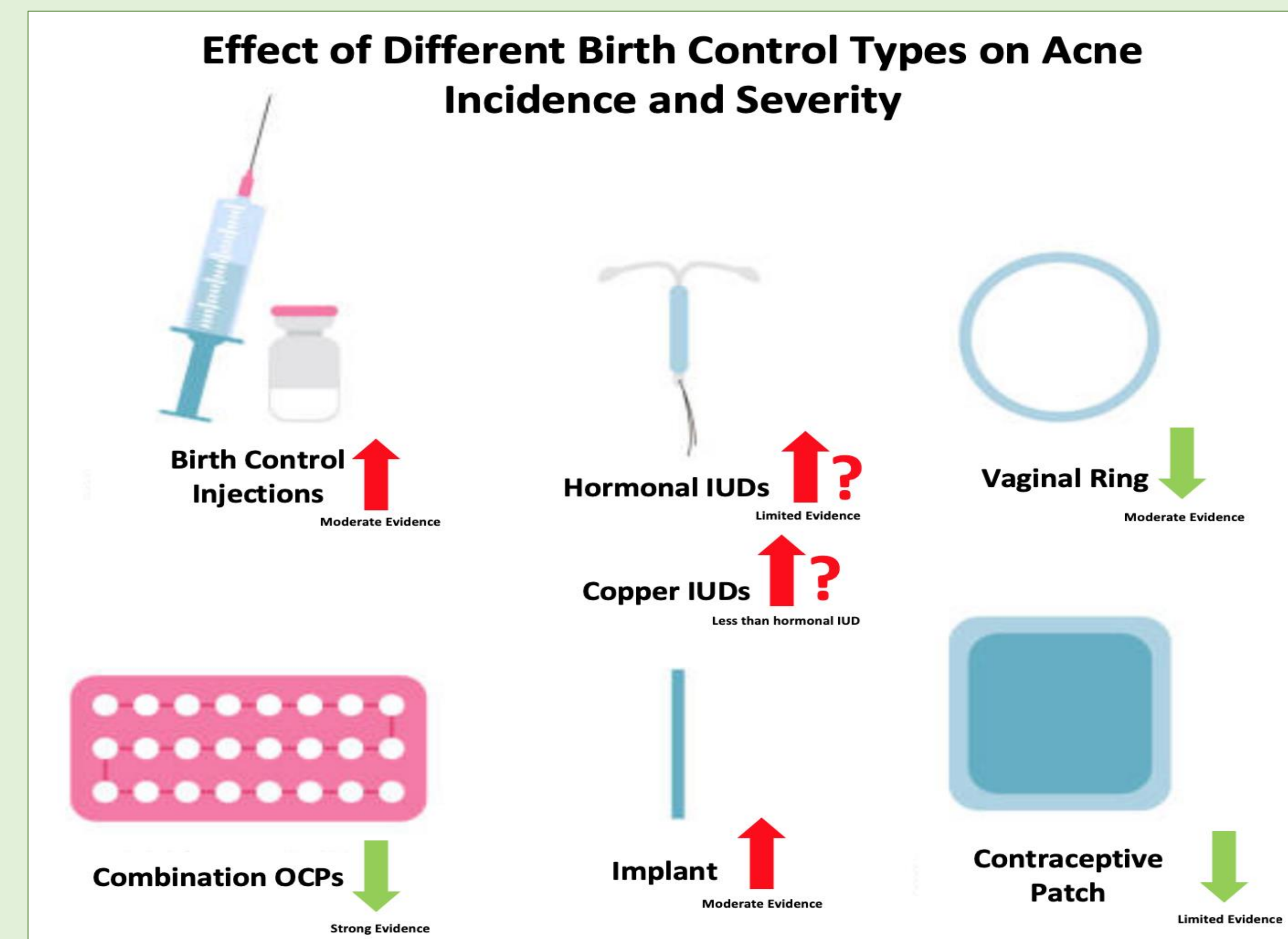
## Methods

- Conduct a literature review: The first search was a PubMed search using the terms "progestin" and "acne" to establish the relationship between hormones and acne vulgaris. Secondly, PUBMED search was performed using the terms "Intrauterine Devices", "birth control", "acne", and "dermatology". We reviewed five primary literature articles each from a different dermatology journal, including a retrospective analysis and several cohort studies using females of reproductive age ranging from 12-45 years old as subjects. There are currently no randomized control trials that directly evaluate the effect of hormonal intrauterine devices on acne.
- Conduct a single center retrospective cohort study using de-identified patient data obtained through the Dartmouth Analytics Institute TriNetX and Clarity informatics technology. We will determine whether there is an association between progestin-releasing IUDs and incidence of acne vulgaris in adult female (age 18-45 years) patients at Dartmouth Hitchcock Medical Center Dermatology and OBGYN clinics from 1/1/2010 to 12/31/2020.

## Results

Research analyzing the relationship between hormonal IUDs and acne vulgaris are limited and does not elucidate a clear role of exogenous progestin in the development of acne.

- However, a recent review article found that in the available literature, including patient-reported data and comparison studies of levonorgestrel-releasing IUDs versus copper-releasing IUDs, the potential for levonorgestrel-releasing IUDs to cause a flare of acne vulgaris was supported.<sup>2</sup>
- Several studies found that respondents with IUDs noted a higher rate of acne worsening<sup>4,6</sup> and another found that patients with hormonal IUD had an increased risk of clinical encounters with an ICD code for acne in the first year after implementation<sup>5</sup>.
- Ultimately, another study found that hormonal IUD faced a higher removal rate for hormone related side effects like acne compared to copper IUDs<sup>3</sup>.

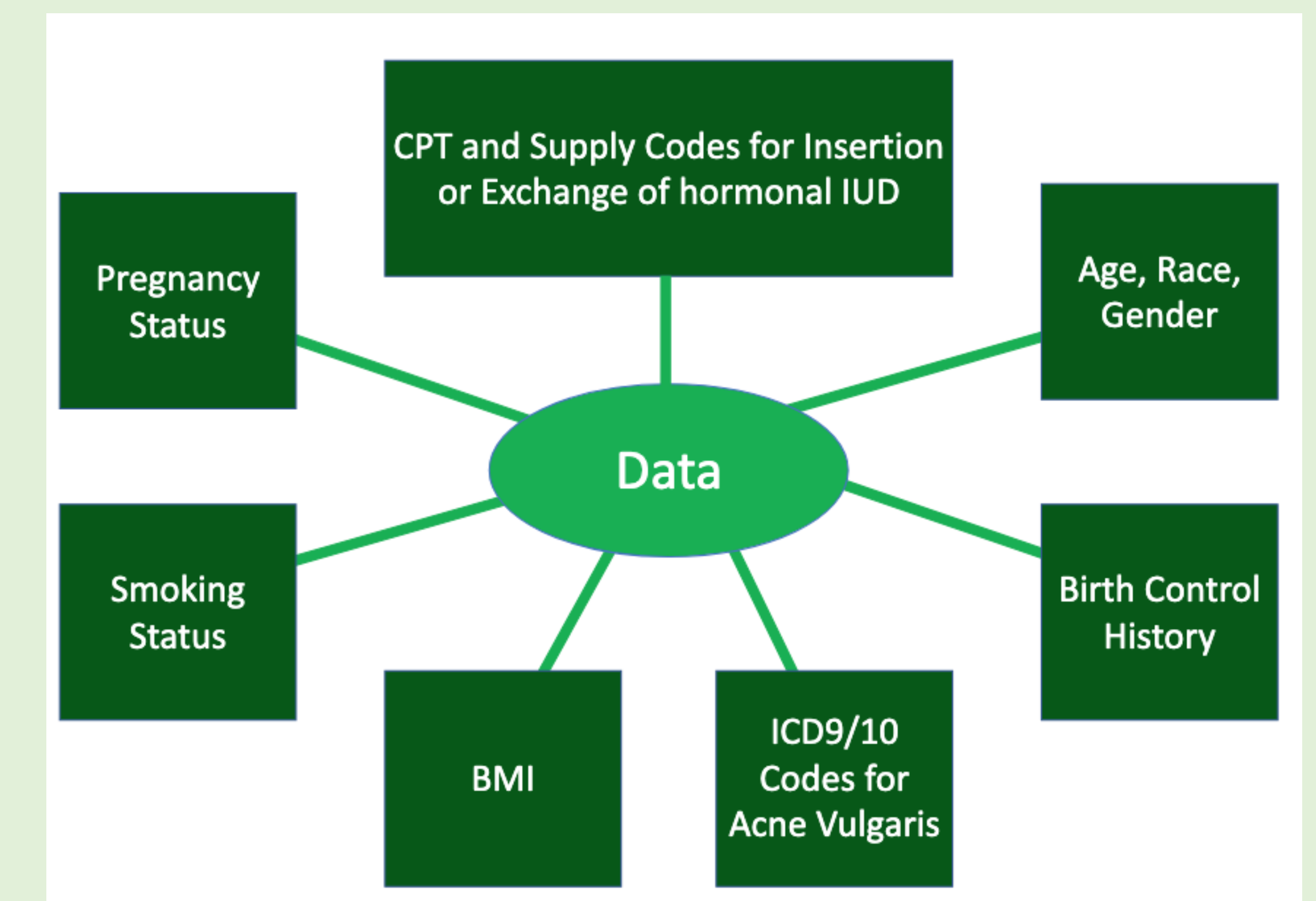


## Discussion

There is limited evidence of progestin IUDs increasing the incidence of acne. Furthermore, this evidence is highly subjective and confounded by self-report bias. Anecdotally in the DHMC Dermatology Clinic, development of acne or the worsening of acne in women after the placement of progestin-releasing IUDs has been observed, and we hypothesize that these devices are a triggering factor for acne vulgaris. We would like to show objectively, using a medical diagnosis of acne vulgaris as the standard, whether in our patient population the incidence of acne vulgaris is increased after implantation of progestin-releasing IUDs compared to baseline rates.

## Future Steps

- A research ticket was submitted to the DH Analytics Institute requesting the data



- Currently pending data retrieval of ICD codes and relevant health measures and will supplement with chart review as needed

## References

1. *Levonorgestrel intrauterine device: Drug information.* Lexicomp Inc.: updated 4/30/21; cited 5/11/21. Available from: <http://online.lexi.com>.
2. Bosanac, Suzana S; Trivedi, Megha; Clark, Ashley K; Sivamani, Raja K; Larsen, Larissa N. *Progestins and acne vulgaris: a review.* Dermatology Online Journal 2018;24(5). PMID: 30142728
3. Chi IC. *An evaluation of the levonorgestrel-releasing IUD: Its advantages and disadvantages when compared to the copper-releasing IUDs.* Contraception 1991;44(6):573-588.
4. Lortscher D, Admani S, Satur N, Eichenfield LF. *Hormonal contraceptives and acne: a retrospective analysis of 2147 patients.* Journal of Drugs in Dermatology 2016;15(6):670-678.
5. Barbieri JS, Mitra N, Margolis DJ, Harper CC, Mostaghimi A, Abuabara K. *Influence of contraception class on incidence and severity of acne vulgaris.* Obstet Gynecol 2020;135:1306-12.
6. Lullo JJ, Ethington E, Arshanapalli A, Reserva J, Jiang A, Adams W, Graziano S, Tung R. *Incidence of androgenic dermatologic side effects following placement of a levonorgestrel intrauterine device for menorrhagia: A survey-based study.* JAAD 2018;79(2):364-365.

## Acknowledgements

Thank you to Geisel School of Medicine, the DHMC Dermatology Department, and Dartmouth Hitchcock Analytics Institute.