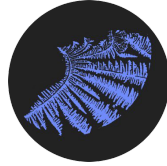


# LEARN BODY LITERACY



## Covid-19 Vaccines and the Menstrual Cycle

*Bleeding Patterns and Potential Menstrual Effects of COVID-19 Vaccinations*

**Learn Body Literacy**

10.25.2022

### INTRODUCTION

Emergency use authorization was granted for two mRNA SARS-CoV-2 vaccines (Pfizer-BioNTech, Moderna), and one adenovirus vaccine (Janssen/Johnson & Johnson) in late 2020 and early 2021. By looking closely at the [clinical trial data](#) we learned that the initial emergency use authorization study for the mRNA SARS-CoV-2 vaccines had required all users to commit to some form of birth control. The study eligibility states that...”Contraceptive use by men or women should be consistent with local availability/regulations regarding the use of contraceptive methods for those participating in clinical trials.

1. Implantable progestogen-only hormone contraception associated with inhibition of ovulation.
2. Intrauterine device.
3. Intrauterine hormone-releasing system.

4. Bilateral tubal occlusion.

5. Vasectomized partner:

- Vasectomized partner is a highly effective contraceptive method provided that the partner is the sole sexual partner of the woman of childbearing potential and the absence of sperm has been confirmed. If not, an additional highly effective method of contraception should be used. The spermatogenesis cycle is approximately 90 days.

6. Combined (estrogen- and progestogen-containing) hormonal contraception associated with inhibition of ovulation:

- Oral;
- Intravaginal;
- Transdermal;
- Injectable.

7. Progestogen-only hormone contraception associated with inhibition of ovulation:

- Oral;
- Injectable.

8. Sexual abstinence:

- Sexual abstinence is considered a highly effective method only if defined as refraining from heterosexual intercourse during the entire period of risk associated with the study intervention. The reliability of sexual abstinence needs to be evaluated in relation to the duration of the study and the preferred and usual lifestyle of the participant.

9. Progestogen-only oral hormonal contraception where inhibition of ovulation is not the primary mode of action.

10. Male or female condom with or without spermicide.

11. Cervical cap, diaphragm, or sponge with spermicide.

12. A combination of male condom with either cervical cap, diaphragm, or sponge with spermicide (double-barrier methods).”

This means that most of the women in the trial were using forms of birth control that suppress ovulation. In other words, only a slim percentage of those thousands of participants had a functioning menstrual cycle at the time they were being studied. This is the case even though a menstrual cycle is the default state of the menstrual body representing around 56% of women of reproductive age globally. [29].

Such exclusion is not uncommon, as most studies have historically avoided studying people with a menstrual cycle. In Maya Dusenbery’s *Doing Harm* she writes “Researchers claimed women were so different from men that including women would destroy the homogeneity of the

study population and “confuse” the results... Furthermore, they argued, women’s various hormonal cycles and states make them a more biologically heterogeneous bunch than men; not only are women different from men, they’re too different from each other. With hormone levels that vary depending on where they are in their menstrual cycle, whether they are on hormonal contraception or hormone replacement therapy, whether they are pregnant, postpartum, or postmenopausal, women introduce too much “noise” that would make it harder to get “clean” findings. In short, studying only one sex was cheaper and easier, and men were the chosen ones because women’s bodies were thought to be too complicated.”

By requiring the use of contraception, the hormonal levels of the female participants of childbearing potential are more comparable to cis men or children, or more similar to the hormonal state of menopause. The requirement of contraception during a clinical trial is usually explained through the framework of a commitment to ethics, and that it would be unethical to run an emergency experimental human trial with people who could become pregnant during the time of study. However, we know that after the study concluded, the SARS-CoV-2 vaccines were promoted as safe for young people of childbearing age, safe for those trying to conceive, and safe for those already pregnant or those who are breastfeeding.

Another, albeit contradictory, excuse used by the research community to justify women’s exclusion in research is that “Sometimes, they claimed that, apart from their reproductive systems, men and women were so alike that any findings derived from studying the former would be perfectly valid for the latter as well. Women’s health advocates countered that such a claim was simply an assumption, one that should be investigated. Since little medical research had actually looked to see if there were sex/gender differences, no one could say for sure that there were any differences, but no one could say for sure that there weren’t either.”

In a similar way, people who use contraceptives are also assumed to be so alike to those with active menstrual cycles that findings derived from studying the former would also be perfectly valid to extrapolate to the latter. This is not a fact but another convenient assumption, and one that has numerous problems. In regards to assessing the safety of SARS-CoV-2 vaccines, people with a menstrual cycle were asked to extrapolate the findings from a large cohort of people using contraceptives who do not have an active menstrual cycle.

In early 2021, menstrual health educators began receiving anecdotal reports from people who had experienced various menstrual effects after they received various SARS-CoV-2 vaccines. People were also reporting a high heterogeneity of symptoms, but symptoms that were notable for them because they considered the events to be out of range or out of pattern with their self knowledge of their menstrual cycle. Without knowing more about their medical history or past menstrual cycle patterns, it would be impossible to deduce more.

Shortly after this, a flood of news reports and articles were disseminated in an organized campaign to refute these anecdotal reports, stating, for several contradictory reasons, that there was no biological mechanism to cause these menstrual irregularities and that there is unlikely to be any correlation between the vaccine and the menstrual cycle. Some reports stated that if there are any effects, these are temporary effects that will have no long-lasting impacts on fertility or menstrual health.

In April 2021, Dr Rakhi Shah, an OB-GYN at Northwestern Medicine Delnor Hospital stated in the [Chicago Tribune](#) “I think that there’s really no biological mechanism that is plausible in terms of how that could be possible,” Shah said. “I think that potentially people are having normal menstrual pain plus the aches and pains that are associated post-vaccine, and maybe combining all of that together and associating it.”

During the same month, Dr. Jerilynn Prior, professor of endocrinology at the University of British Columbia and Scientific Director of the Center for Menstrual Cycle and Ovulation Research stated to [CTV news](#) “I think it’s likely attribution. In other words, when two things happen, we tend to think they’re related, and they may not be,” ““There are lots and lots of reasons other than adverse effects of the vaccine that might alter menstrual cycle[s],” she said. “The main thing that alters menstrual cycles is the stress of living in a pandemic, of being isolated, of not having the hugs that you’re used to.””

Days later, Dr. Melissa Viray, Deputy Director for the Richmond City and Henrico County Health Districts said to [Channel 06 News Richmond](#) ““That’s just not how these vaccines work -- so I’d be very surprised... "Any time you put a stressor on the body, there are definitely -- there are definite changes that occur," Dr. Viray said. "...I could see where it might have, it might influence menstrual cycles in a little way, but just in the way that any stressor or any change to the environment for some for some individuals can change their menstrual cycles.””

Since these initial rebuttals in 2021, there have been a few different studies investigating various trends in connection to the SAR-CoV-2 vaccines and the menstrual cycle, and others that have also examined the connection between SARS-CoV-2 infection itself and the menstrual cycle, both of which report statistically significant changes.

A study published in July 2022 in [Science Advances](#) found “The increased bleeding phenotype appeared to be the most common post vaccination change within our sample...many respondents who had post vaccine changes did not have them until more than a week after inoculation, which extends beyond the typical 7 days of closely monitored adverse symptom reporting (i.e., solicited local and systemic adverse events) in vaccine trials” and that “A few of our findings suggest that vaccination is less likely to be affecting periods via ovarian hormone

pathways, and more likely along these inflammatory pathways. For instance, we found little difference between respondents with spontaneous and hormonally contracepting cycles in the rate of post vaccine heavy menstrual flow. If changes in menstrual bleeding were due to vaccine-related disruption of ovarian hormones, we would expect that regularly menstruating people taking hormonal contraception would be far less likely to experience changes, as their cycles are largely regulated by exogenous hormones.”

Another study published in September of 2022 in [BMJ Medicine](#) found that by using data from the Natural Cycles app and following 19,622 individuals and a total of 250,000 menstrual cycles that “Covid-19 vaccination is associated with a small and likely to be temporary change in menstrual cycle length but no change in menses length... Compared with the unvaccinated group, vaccinated individuals had an adjusted increase in menstrual cycle length of less than one day with both first and second vaccine doses. Individuals who received two doses of a covid-19 vaccine in a single cycle had an adjusted increase in cycle length of 3.70 days compared with the unvaccinated. Additionally, a significant increase was noted in the proportion of respondents who had an increase in cycle length of more than eight days (13.5%, compared with 5.0% in the unvaccinated cohort). Cycle length changes did not remain in the cycle after vaccination, except in the group that received two vaccine doses in one cycle, where cycle length changes were attenuated but still increased compared with the unvaccinated group. Cycle length changes due to covid-19 vaccination appear similar across the different vaccine types. We found no differences in menses length in any group of vaccinated individuals, compared with the unvaccinated cohort.”

In December 2021, the [Norwegian Institute of Public Health](#) found that “There was a high incidence of the various menstrual changes among menstruating women aged 18–30 years. As many as 37.8 per cent reported at least one of the changes during their last period before vaccination. The proportion who reported heavier periods than normal was higher after the first vaccine dose than before vaccination, 13.6 per cent and 7.6 per cent, respectively. After the second dose, the incidence of various disturbances increased. Menstrual changes after the first dose were short-lived and returned to normal by the time for vaccination with the second dose, approximately two to three months after vaccination with the first dose.”

A 2021 [study](#) of 1273 people recruited retrospectively found that they were “ unable to detect strong signals to support the idea that COVID-19 vaccination is linked to menstrual changes. However, large, prospectively recruited studies may be able to find associations that we were not powered to detect.”

The following survey, conducted from September 2021 to April 2022, attempted to look at additional markers that are available to us through biometric tracking, like cervical fluid changes,

clotting patterns, ovulation, and how vaccine administration timing within the cycle changes its potential effects. Although a difference in total cycle length denotes an ovulatory disruption or delay and is a significant side effect, it's far from being the only important marker for menstrual health.

With fertility awareness charting through the symptothermal method, users can see more detailed information about their menstrual cycle, such as whether ovulation occurred or not, whether ovulation was delayed, progesterone levels through basal body temperature, cervical fluid patterns and bleeding patterns which denote levels of estrogen, and more. This survey collected a broad range of menstrual experiences after dose 1 and dose 2 of various vaccines developed for SARS-CoV-2 and is not meant to prove causality but instead to encourage for more studies to be conducted so that the hormonal, inflammatory, immune, and hemostatic changes to menstrual cycles after vaccination can be better understood.

## PURPOSE

The purpose of this survey is to understand the bleeding patterns and potential menstrual effects of being initially vaccinated for COVID-19 with either a one dose or two dose vaccine. The research survey took place before the administration of boosters, to which additional study is needed.

## MATERIALS & METHODS

The eligibility requirements for participation in the survey include

- People who currently have menstrual cycles
- People who have had at least one dose of a vaccine for COVID-19
- People who have tracked the length of their cycles for at least 12 months prior to their first dose
- Age 18+
- If participants practice fertility awareness method and have menstrual charts available before, during, and after administration of the vaccine, they were asked to submit their charts

## ELIGIBILITY

There were 107 survey participants. 18 of those participants were using contraceptives at the

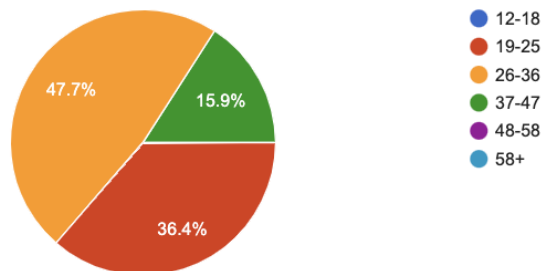
time of vaccination, thus they were removed from this study. However, there is a subgroup listed below to discuss the menstrual related changes that people experienced during contraceptive use.

The data shown below is a summary of the 89 eligible participants who currently have (most likely ovulatory) menstrual cycles and have tracked the length of their cycles for at least 12 months prior to their first dose. Additionally, there are 3 case studies using menstrual charts from the 47 out of 89 participants who practice a form of fertility awareness method.

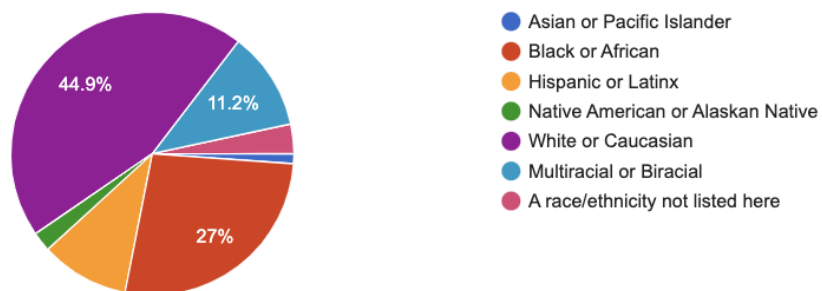
## DATA

### Personal Information & Demographics - 89 Participants

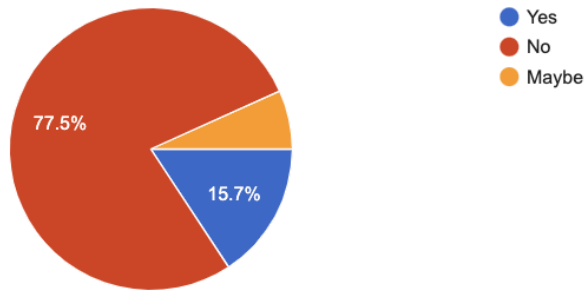
Age Range:



Race or Ethnicity:

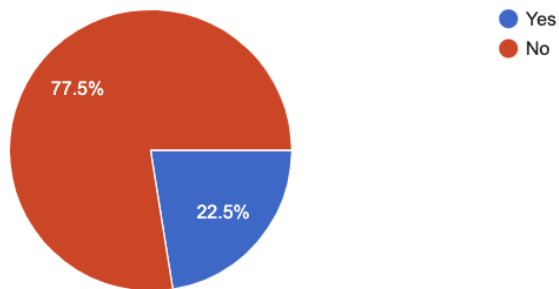


Pre-Existing Conditions:

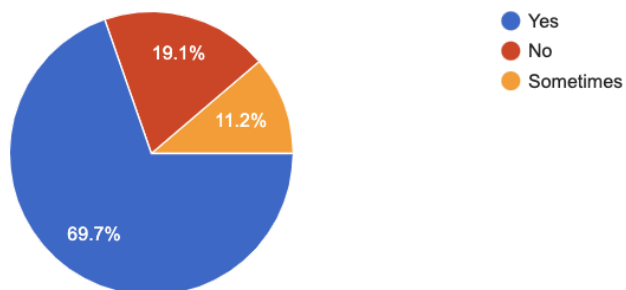


Pre-Existing Conditions Disclosed: PCOS, Arthritis, Hashimoto's Thyroiditis, PTSD, Autoimmune condition, Lupus, Fibromyalgia, Ehler Danlos Syndrome, Ulcerative Colitis, Long Covid, Adult Onset Chronic Immune Thrombocytopenic Purpura, Urticaria Pigmentosa

Daily Pharmaceutical Use:

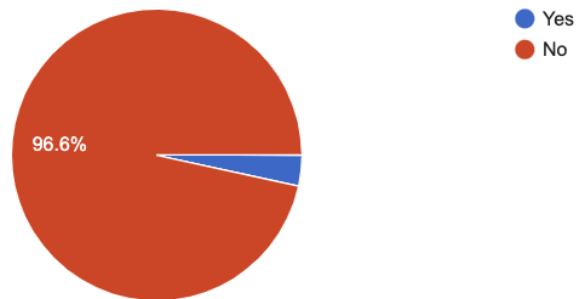


Taking Other Kinds of Herbal Medicine, Vitamins, or Supplements Daily:

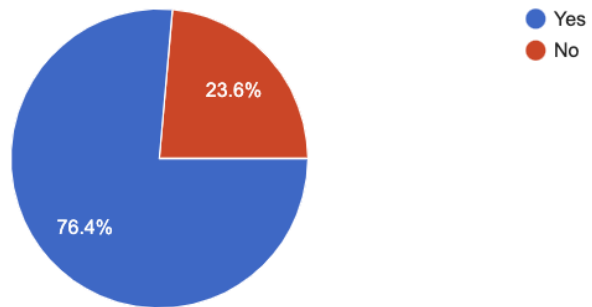




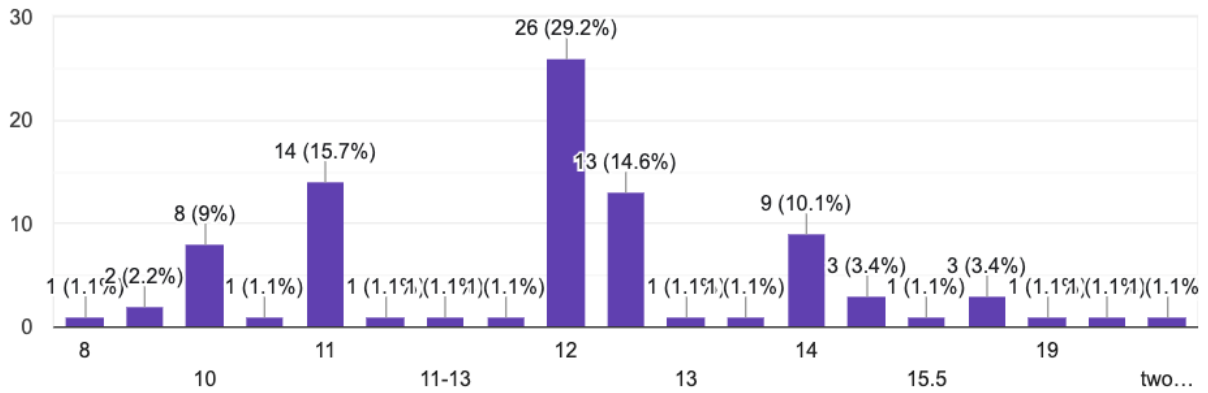
Pregnant or Breastfeeding When Vaccinated:



Experienced Side Effects from Either Dose of the Vaccine:



## Age of First Menstruation:



Most common ages: 12, 11, 13

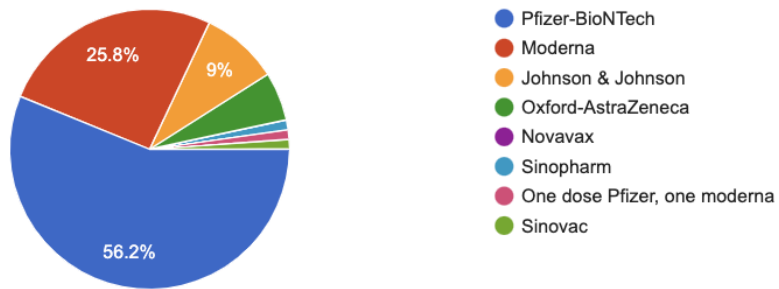
Range - age 8 - 19

## Vaccine Information

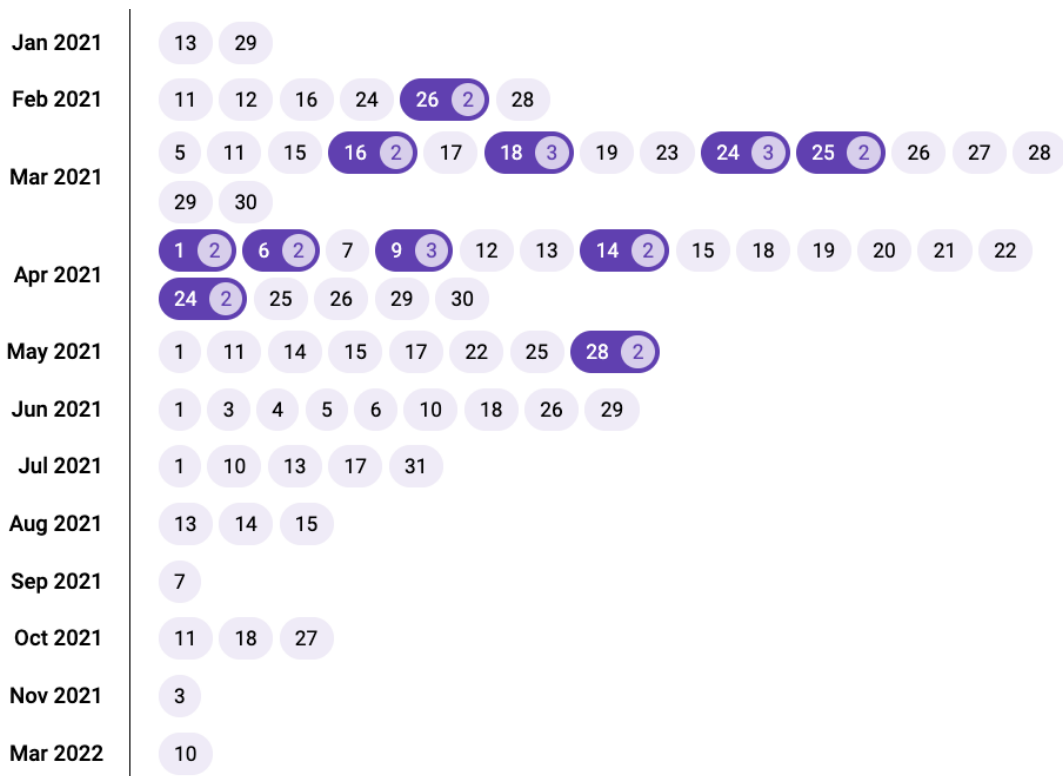
### Participant Reason for Vaccination :

- Safety, self protection
- To prevent the spread of the virus to others, including immunocompromised family
- Covid-19 posed a larger risk than the vaccine, even though vaccine avoidant
- Government required it
- Employment
- Wanted to be able to visit family
- Fear of hospitalization and death
- To travel unrestricted
- Mandatory to attend school
- Public Health

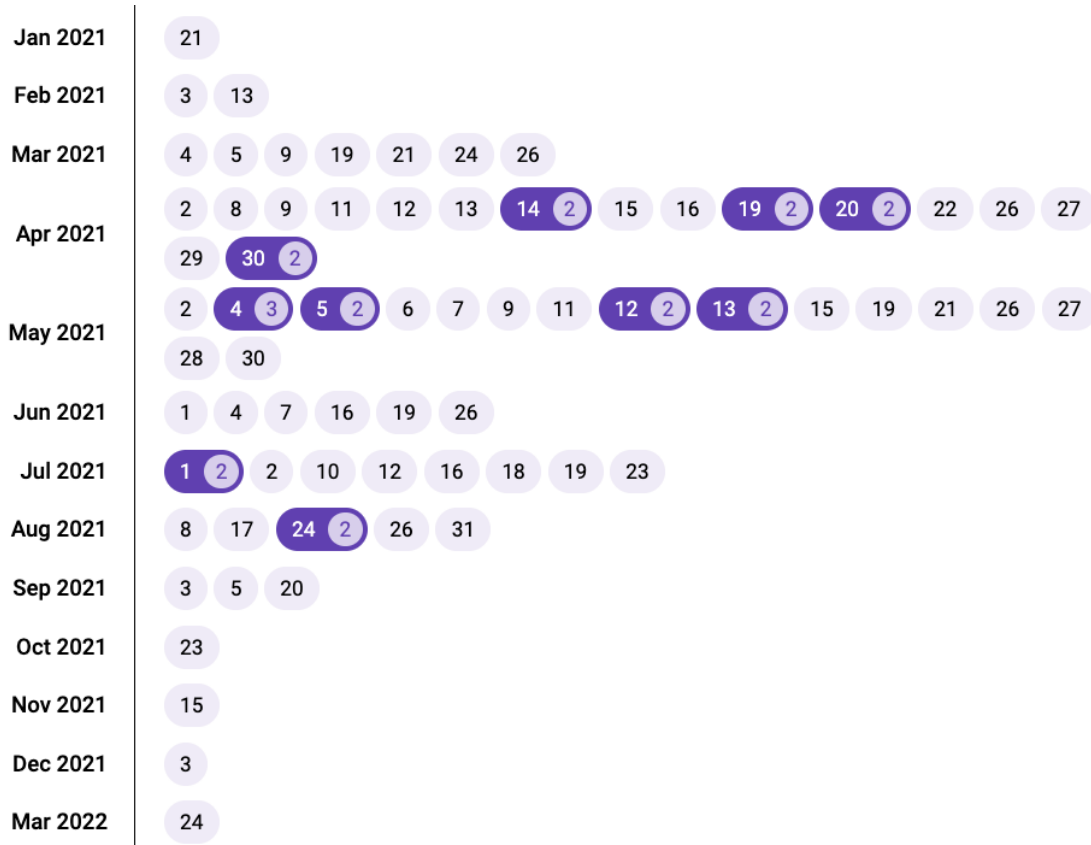
Vaccine Received:



Date of First Dose:

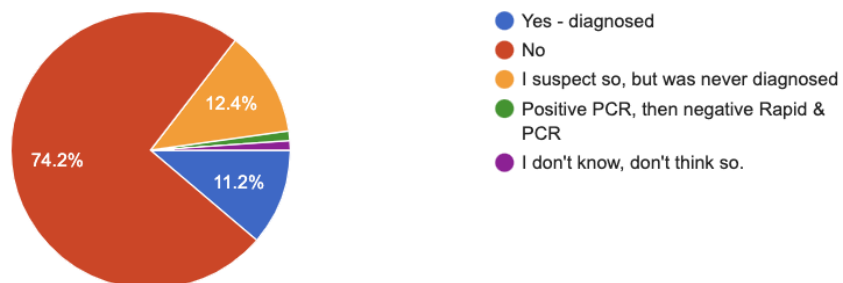


Date of Second Dose:

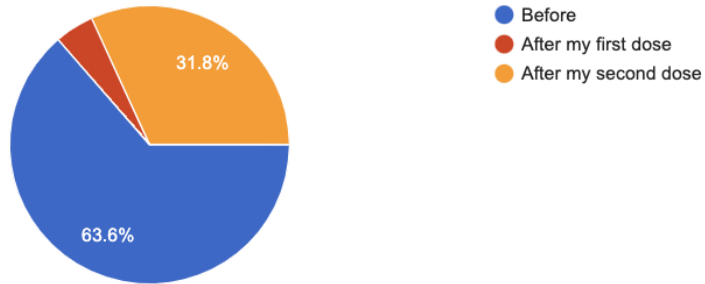


COVID-19 Illness

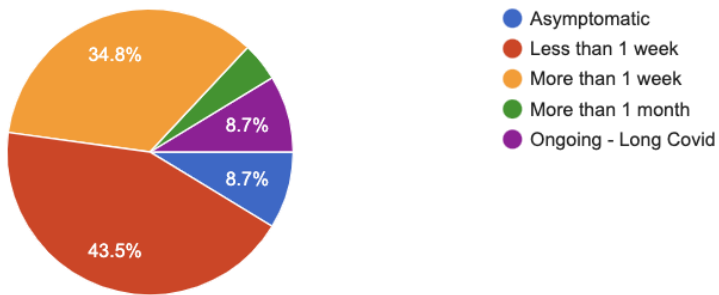
History of Covid-19 Illness:



Contracting Covid-19 Before or After Vaccination (Out of ~11% (22 Participants) Who Had Covid-19):



Length of Symptomatic Illness:

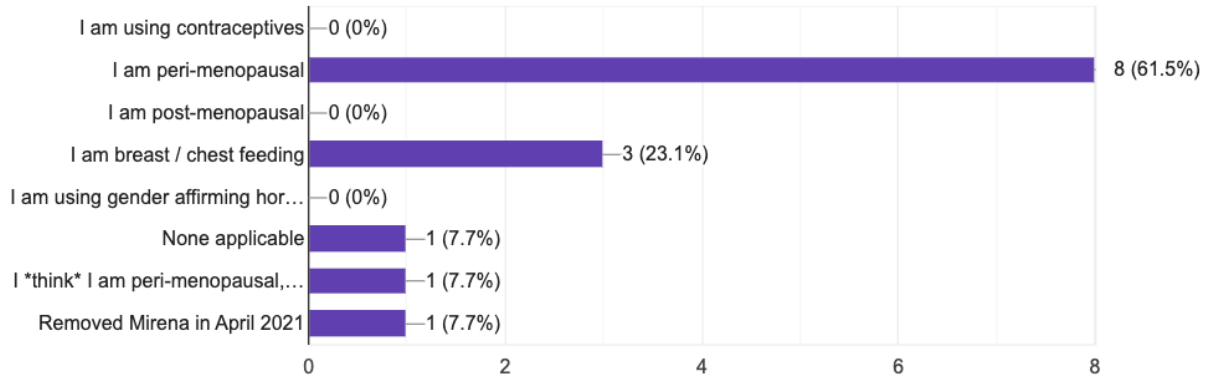


### The Menstrual Cycle

Menstrual Cycle Regularity before Vaccination:



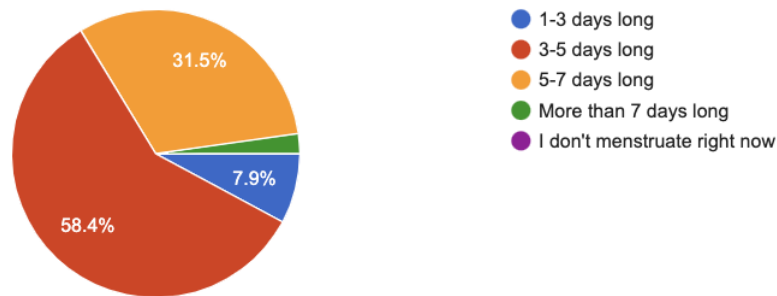
Other Data:



8 Confirmed Participants Perimenopausal

3 Participants Breastfeeding

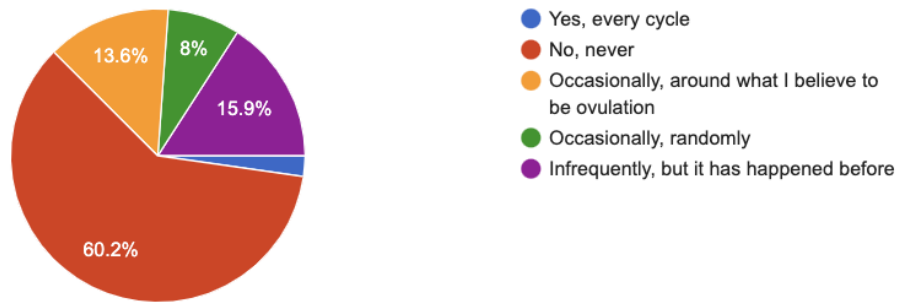
Typical Length of Bleeding During Menstruation Before Vaccination:



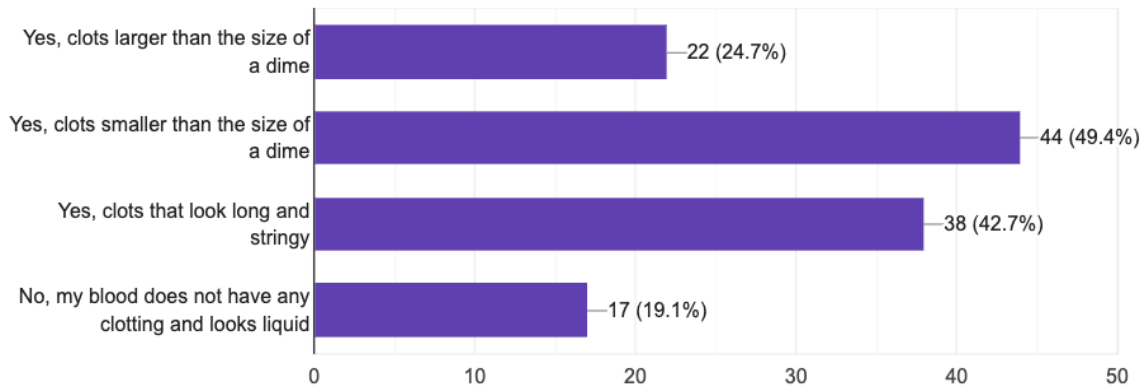
Typical Consistency of Bleeding During Menstruation Before Vaccination:



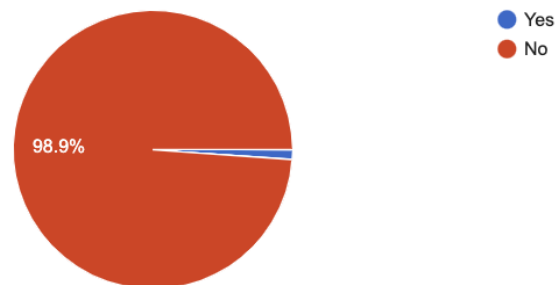
Breakthrough Bleeding or Spotting Patterns Before Vaccination:



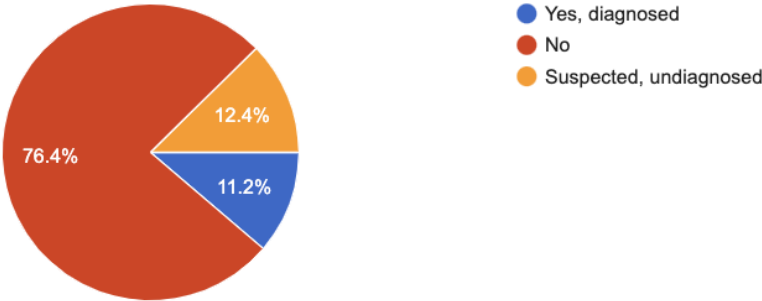
Experience of Menstrual Clots Before Vaccination:



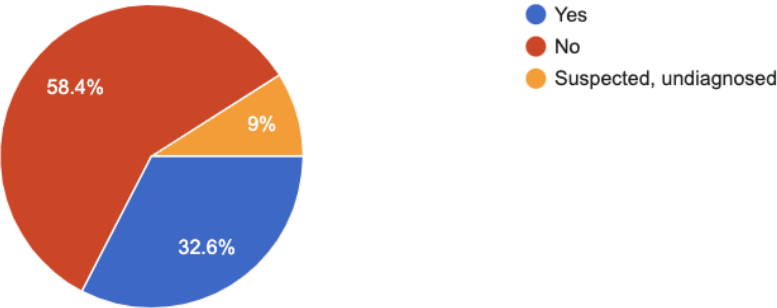
Previous Diagnosis of Bleeding or Clotting Disorder:



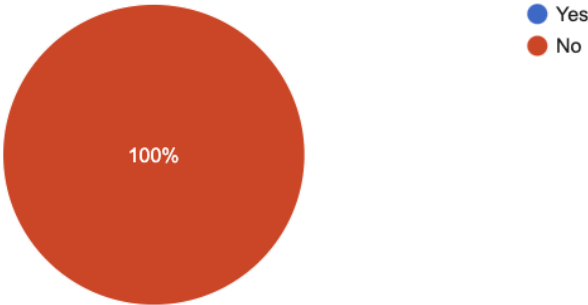
History of Autoimmune Disease:



History of Allergies or Asthma:



Ever Been Treated for Cancer Now or in the Past:





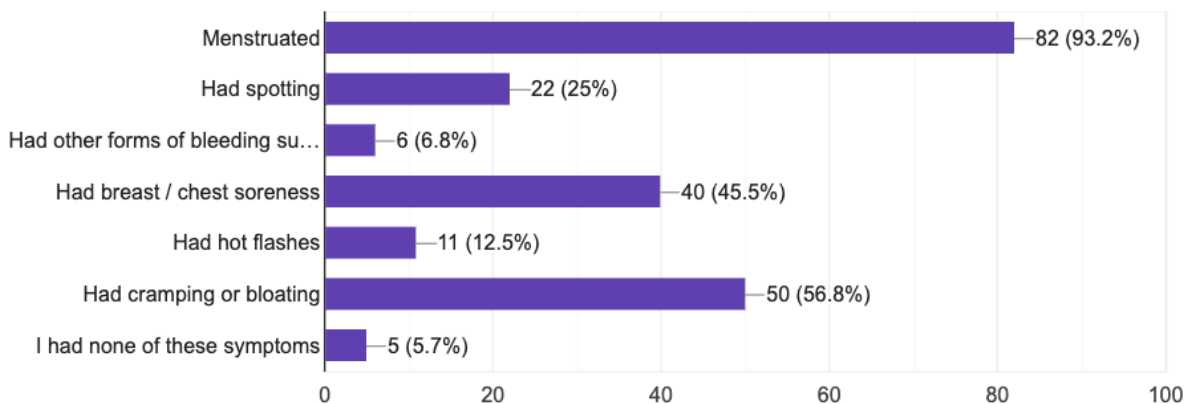
Other Relevant Self Reported Health Information from Participants Before Vaccination:

- Various pharmaceutical use across the lifespan
- Suffers from Migraines
- Eczema
- Alopecia
- IBS-D
- Depression
- Anxiety
- Hypothyroidism
- Ovarian Cyst
- PCOS
- Previous vaccine injury: Gardasil
- Pregnancy loss
- Ectopic pregnancy
- Heart murmur
- Fibroids
- Iron deficiency
- PMDD

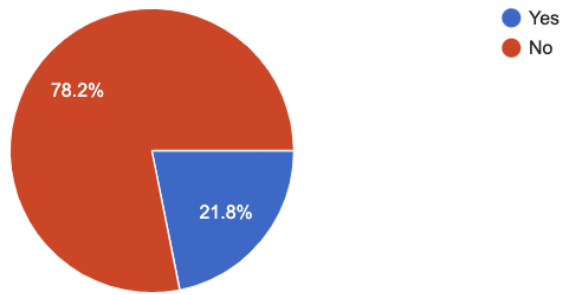
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After Receiving Dose 1:

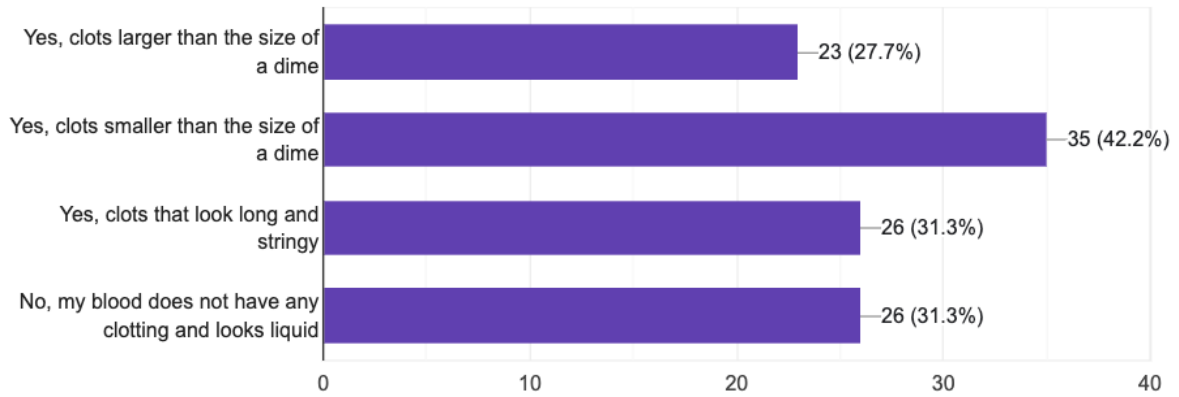
Menstrual Changes:



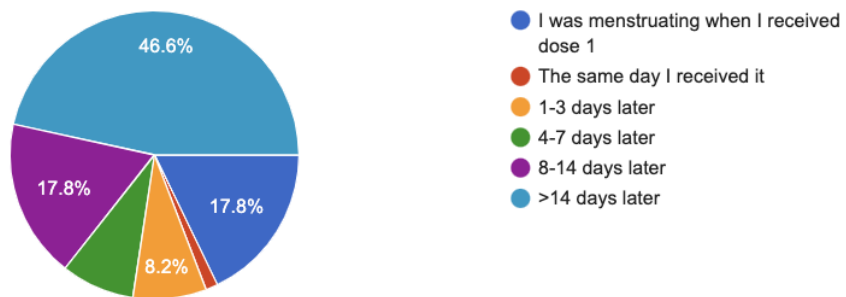
Menstrual Cycle Length Changes After Dose 1:



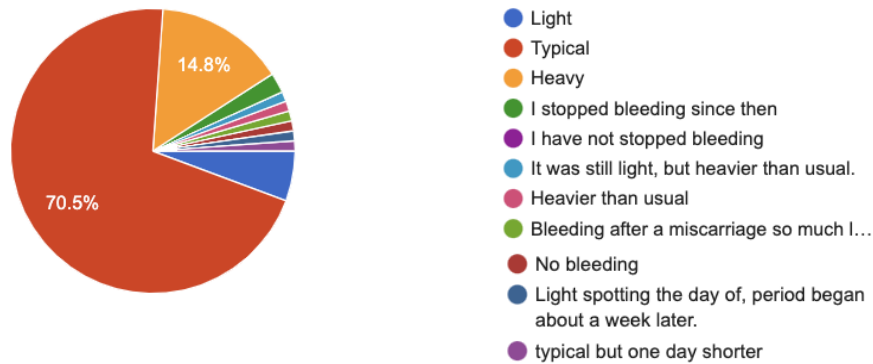
Clotting Changes After Dose 1:



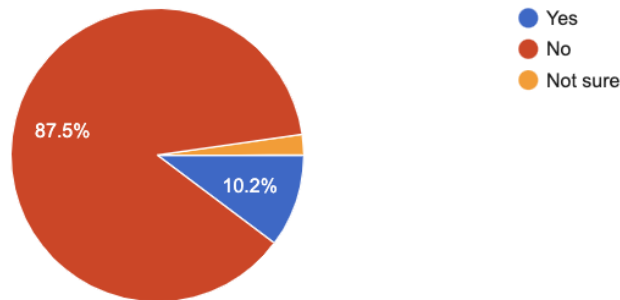
How Many Days After Dose 1 Did Participants Begin Experiencing Symptoms:



After Dose 1, Participants Describe Their First Bleed:



Experience of Random Breakthrough Bleeding or Spotting After Dose 1:



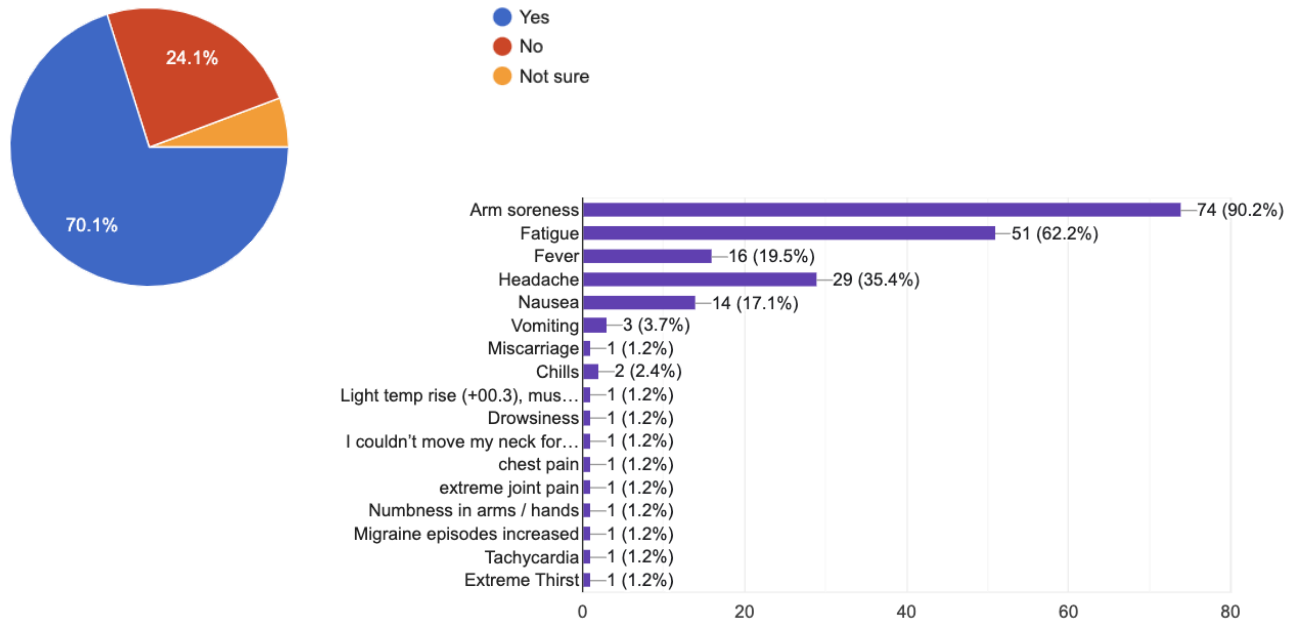
Testimonials from Participants (26 of 89) Who Noted Changes After Dose 1:

1. “My period was late after dose 1 and cramping was probably the worst that I can remember ever having. Even taking prescription strength naproxen, I had cramps, which has never happened before. my period was also light for the first two days then heavy, in contrast to how it used to happen (heavy the first days then light). clotting was intense”
2. “I had an extremely long cycle at first, and I did not bleed. My next 3 periods have been light, which is unusual for me. They are bright red, almost pink, unlike previously they were dark in color. In the 3 cycles since, my bleed has shortened to 3 days and is very light. I have increased cramping and pms.”
3. “Delayed ovulation, typical blood, painful cramps, gastrointestinal issues”
4. “After my first dose, my periods started coming every 3.5 weeks, which they've never done before. I was always between 4-6, never regular. This lasted about 6 months. Dates of

menstruation start were: Mar 28, Apr 22, May 18, June 14, Aug 2, Aug 29, Sept 26, Oct 21. Got the booster Nov 15 and didn't get my period again until Jan 2. (So bad to a long break between periods, as I had pre-vaccination.)”

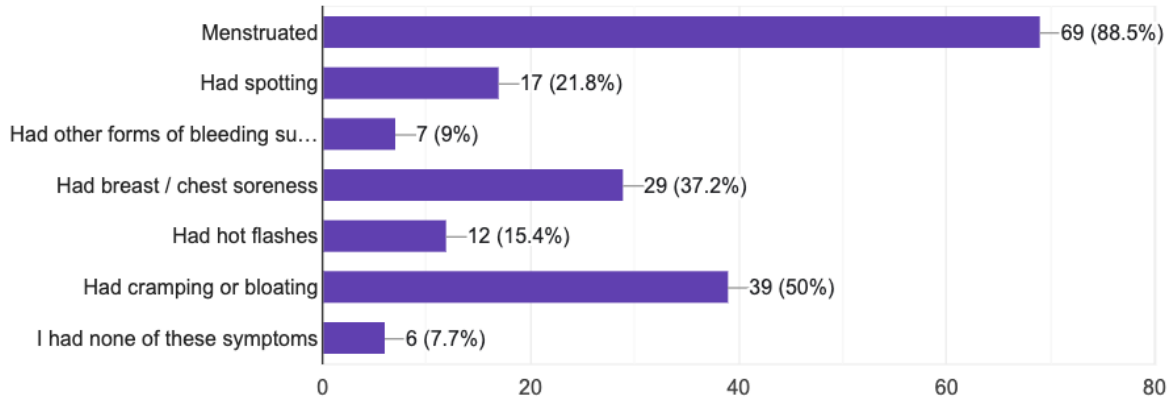
5. “I had some pelvic pain that I haven’t experienced in months/years, came back a few days before bleeding and stayed during the first two days. It was frightening. The cramps were also quite bad and I bled quite a lot in the first two days but then my bleed suddenly transitioned to way less / end spotting”
6. “I was on my period when I received the vaccine and after receiving it, my period stopped. Now, there’s no clotting and whatever is coming out is brown and in an irregular time.”
7. “This was the first heavy bleed with heavy cramping I’d had in a year. Did not realize that until I looked at my app to fill out this survey. I wrote in my notes on the first day of the cycle that I was surprised at the heavy cramping because they had been non existent with all of the clean eating and exercising I had been doing. Beginning with this cycle, my cycle was clotty and much heavier”
8. “Random bleeding for two of my cycles that weren’t near my menstruation start date.”
9. “Period stopped then restarted for a day.”
10. “The first day was heavier than normal. The subsequent days were lighter”

After Dose 1, Any Other Side Effects:

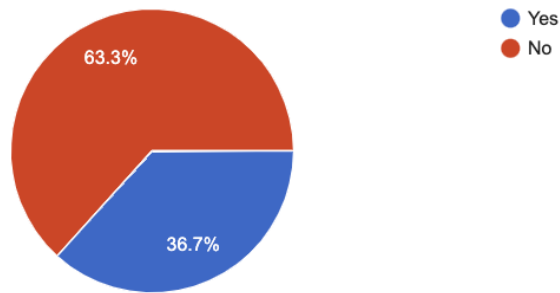


After Receiving Dose 2:

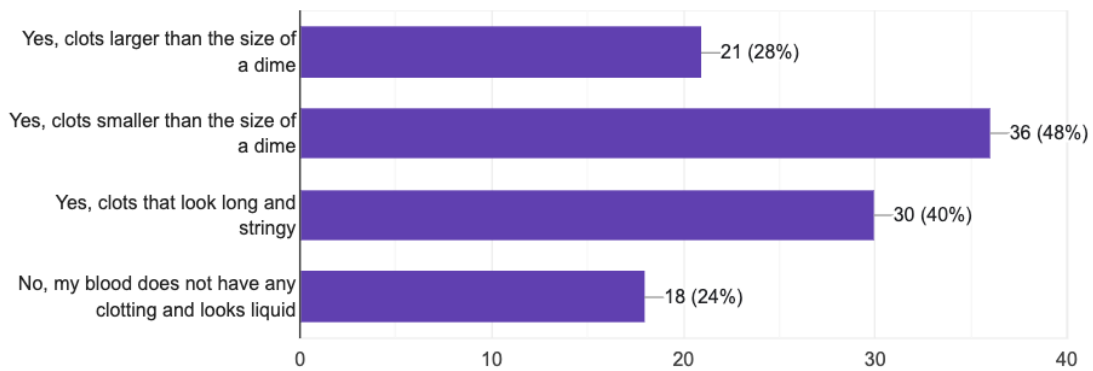
Menstrual Changes:



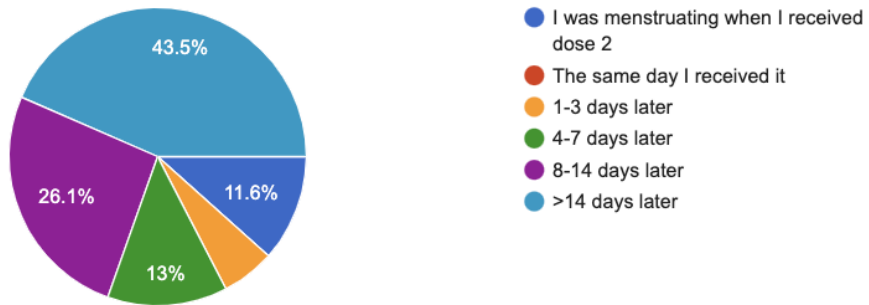
Menstrual Cycle Length Changes After Dose 2:



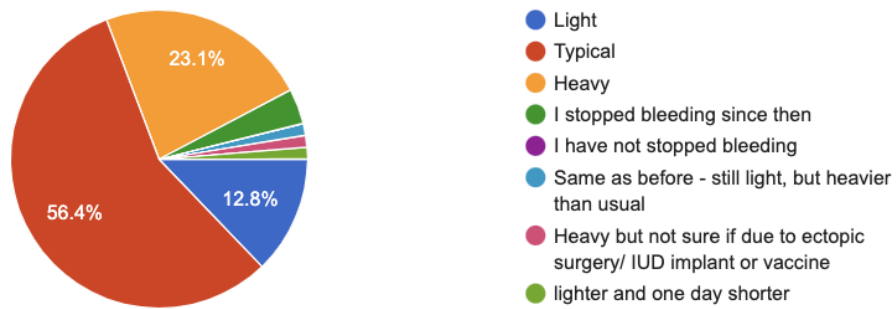
Menstrual Clotting After Dose 2:



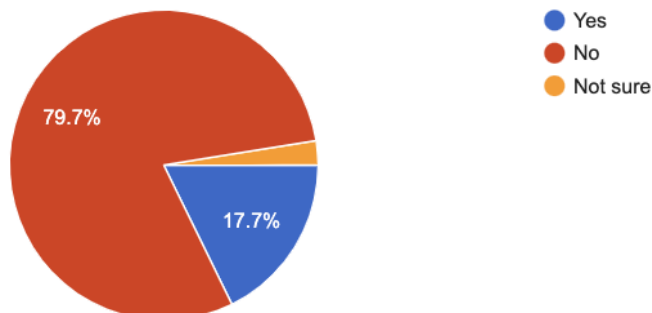
How Many Days After Dose 2 Did Participants Begin Experiencing Symptoms:



After Dose 2, Participants Describe Their First Bleed:



Experience of Random Breakthrough Bleeding or Spotting After Dose 2:



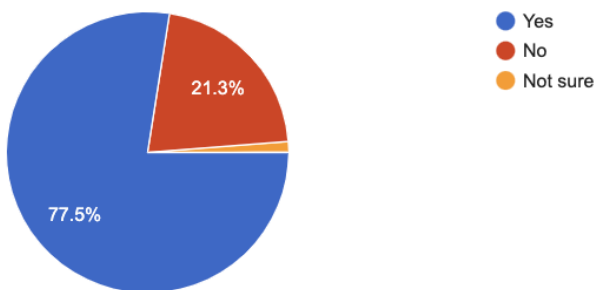
## Testimonials from Participants (20% of total) Who Noted Changes After Dose 2:

1. "Once again very bad cramps and it began light for the first days then got really heavy with lots of clotting. this has continued"
2. "My cycle has gone from 28 days apart to 21 days apart. I track it on an app so I know. I'm 41 so I may be perimenopausal"
3. "After the second dose my menstrual a few months after has taken longer to stop completely"
4. "I started spotting 8 days after dose #2 and started my period one day after the spotting. The bleeding and spotting was typical for me. I received my 2nd dose earlier in my cycle (compared to dose #1) hence why my period started 9 days after my shot. The cycle length was typical for me. I use fertility awareness to chart my cycles."
5. "Bleeding normal. Only thing changed was shortened luteal phase length"
6. "Re: breast soreness, in Sept/Oct I experienced breast soreness like I've never had related to my period. The only other time I've felt that was when I was engorged during breast feeding."
7. "More smooth than usual, no clots."
8. "Irregular cycles, lengthy and then short. Bleeding mid month"
9. "I haven't had my period in 2 and half months"
10. "Only 15 days between, very unusual"
11. "I've almost hit year mark of first dose but only started to notice change in cycle for the last 4-5 cycles."
12. "First 4 cycles following dose 2 were regular (27 days). The next cycle was 44 days long. Following 1 regular cycle (27 days) and my most recent cycle was 32 days."
13. "Light spotting 1-2 days after vaccine"
14. "Period did not arrived until 3 weeks after second dose. Very late. It was short, mostly brown and sticky. Very uncomfortable."
15. "It's been weird - I have had more spotting/breakthrough bleeding, and it is usually brown. Sometimes like little old dried-up clots. I've had spotting almost every day of August and September so far"
16. "My cycle went from 5 days which it has been five days for decade to 3 days and no brown the first day"
17. "I spotted during the middle of my cycle two months after my second dose"
18. "Felt very nauseous and tired. Heaviest and longest period I've had in my life. Usual pain relief such as pain killers, exercise, hot water bottles or increasing water intake either didn't work or exacerbated pain from cramps"
19. "I believe my ovulation was somewhat delayed due to minor sickness experienced after the second shot, so my period was also several days later (but not "significant") and has been

normal and back to my pre-vaccine cycle length ever since my first period after my second shot.”

20. “I had no bleeding around the time of my second dose. Just a light period in August.”
21. “Heavy soaking 4 - 5 pads for two days and the. Ended on day 3”
22. “Since a few months after dose 2, I find that I spot a week or so before my period. It’s the first time I’ve experience spotting”
23. “Random bleeding for two of my cycles that weren’t near my menstruation start date.”
24. “The cycles since dose 2 have been heavier and more painful.”
25. “Extremely heavy had to change my pad almost every hr to hr and a half. Messed up so many clothes”
26. “Don’t know if it’s significant but before my vaccines I had never experienced ovulation bleeding or cramping. That started in April.”
27. “After dose two, periods are very intense. They’re painful and more uncomfortable with more gas and bloating. They’re very messy with heavy flow and large clots. I’m a midwifery student and I have given birth and there was a point in my late August period where the toilet looked like I just gave birth when I emptied my menstrual cup. There was a large clot in the bottom of the toilet as well.”
28. “I got dose 2 on cycle day 17 and my period started 2 days later on what would have been cycle day 19, at least a week early!”
29. “Dark red with some clotting on the 4th day, occasional mild cramps, bloating, and fatigue. Low libido days 1-3, medium-high libido days 4-6. My cycle was typical and any pain or discomfort has been mild.”
30. “Since my cycle the next week after the second dose I have not had a cycle in August or September”

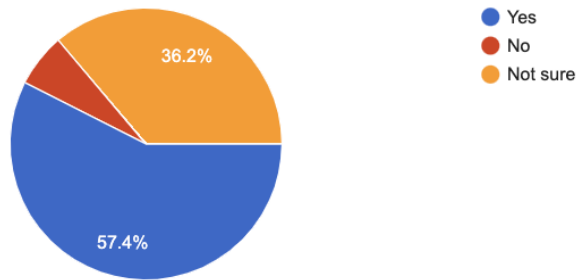
#### After Dose 2, Any Other Side Effects:



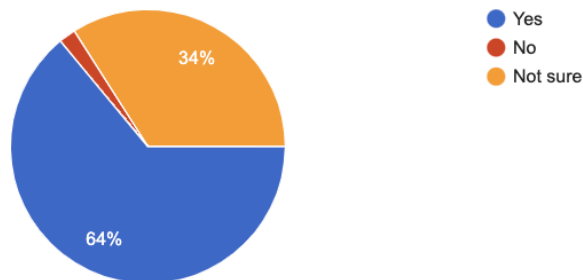


Participants Practicing Fertility Awareness Before and After Vaccination (52.8% or 47 of 89 Participants)

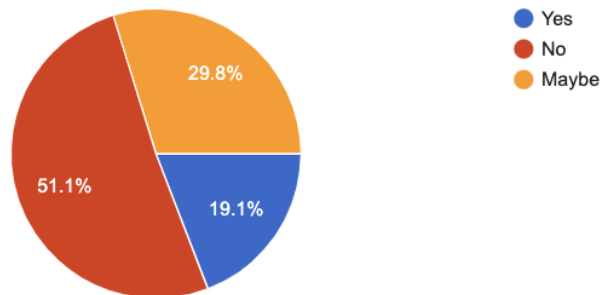
Before Vaccination, Observance of Regular Ovulation Through Thermal Shift Charting:



Before Vaccination, Observance of Cervical Mucus Patterns Through Charting:



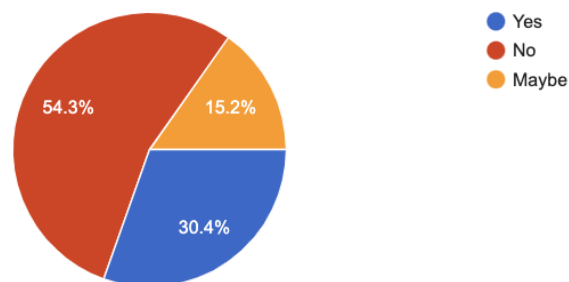
After Vaccination with Either Dose 1 or 2, Changes in Mucus Patterns:



Testimonials from Participants (23.4% or 11 of 47 Participants) Who Noted Changes in Cervical Mucus After Dose 1 or 2:

1. "I no longer get the clearly identifiable transitions of creamy to aloe-like mucus while ovulating. I'm not sure if I have had ovulating mucus presenting the same intensity (color/smell/length) since"
2. "I don't always see the ovulation cervical mucus now. The thick cervical mucus stage seems to last longer"
3. "I don't notice ovulation jelly like i used to. I would def always know when I was ovulating bc I would make the eggy jelly."
4. "It was not the same as before I did not see the ferning pattern"
5. "Less stretchy mucus"
6. "The day i ovulate my cervical mucus isn't as clear as it was typically and the amount is low"
7. "Very dry and sore, sticky cervical mucus"
8. "I don't faithfully chart mucus but I felt like my mucus during ovulation was particularly thick but only lasted for 1 day as opposed to 2-3 days in the past."
9. "My patterns became irregular and my fertility window changed as well"
10. "It's more prominent than before"

After Vaccination with Either Dose 1 or 2, Changes in Ovulation:



Testimonials from Participants (30.4% of total) Who Noted Changes in their Ovulatory Cycle After Dose 1 or 2:

1. "My cycle become shorter"
2. "More pain, almost severe at time of ovulation."
3. "I experienced delayed ovulation and had a 40+ day cycle"
4. "No ovulation during cycle after covid vaccine. No period. No period or ovulation until nearly a month after the second dose. No period between first and second dose. Cycle 3 is the

cycle where both doses occurred.”

5. “I believe my ovulation was somewhat delayed due to minor sickness experienced after the second shot, so my period was also several days later (but not “significant”) and has been normal and back to my pre-vaccine cycle length ever since my first period after my second shot.”
6. “Delayed ovulation ~ 10 days”
7. “It used to be pretty consistent but now I notice it switches up on me.”
8. “Shorter luteal phase”
9. “Hot flashes around ovulation”
10. “Post dose 2 missed ovulation twice using otk”
11. “I ovulated late the first cycle after my second dose. My temperatures were not normal for about two months after my second dose (random dips that did not coincide with hormonal shifts).”
12. “Cycle lengths varied more greatly. It was very consistently 26-29 day cycles (have been tracking since July 2017). Since vaccination, have seen 25 day cycles several weeks, and some that ranged from 30-32 days. I also have seen more irregularities with how long bleeding lasts. Cramping has been more varied. Where it would peak typically first day of period and subside, cramping has continued into day 2 more.”
13. “Ovulation was longer and more painful”
14. “My cycles definitely got shorter than usual by a few days for about 6 months after the vax but are back to normal now.”
15. “Not sure where to put this but I’ve always been really irregular. (Thyroid, suspected PCOS). Got Covid March 2020 in the middle of a 93 day cycle. Finally got my period end of May 2020, followed by 3 months of predictable 31-35 day cycles. Then irregular again. Then got the shot March 2021 and have had regular 31-35 day cycles since. Could be a coincidence - I’ve had occasional periods of regularity before. Or could be something totally unrelated going on. But I’ve been tracking my cycles since 2017 and I’ve literally never ovulated more than three months in a row without skipping. And now (so far, since 3 days post shot) it’s like clockwork.”

## Contraceptive Subgroup

- 18 Participants
- 17 Using Hormonal Contraception, 1 Using Non-hormonal Contraception

Testimonials from Contraceptive Subgroup:

1. “I have only had one cycle since my vaccination but I have now started bleeding brown stale

blood on day 13, (currently writing this on day 16) which hasn't subdued. it is intermittent and very light but more than just spotting)”

2. “Similarly, my period seemed like it was going to start and then didn't come for another week, and again was heavier and more painful than normal.”
3. “Spotting and significantly heavier bleeding after dose 2”
4. After dose 1 “After five days I came on my period two weeks before I was meant too, it was the worse most heaviest period I've had with insanely painful cramps, after two weeks the period turned into spotting which lasted 10 days but still have painful cramps”
5. “I have had intermittent bleeding not during my period.”
6. “I get menstrual cramps simply before period but not a consistently identifiable period of 2 days before bleeding begins like before. My bleeding cycle now lasts 6-7 days consistently instead of at most 5. I spot/light bleed for the additional days.”
7. “Had been getting pill bleeds unpredictable pill bleeds, the shortest being 34 days long. Then “after dose 1 (dose 2 was exactly a month after), i didn't menstruate for 150 days. my period ended 1 day before my 1st dose”
8. “I bled extremely heavily for 10 days after my second dose. My bleed came 3 days early, which was extremely unusual because I take Ortho Tri-Cyclen and my bleed comes on the same day each month. I normally bleed for exactly 7 days. I also had severe abdominal cramps for the full 10 days of my bleed.”
9. “I was spotting for like 3-4 days my period came early. And I'm still on my period “
10. “Bleeding significantly heavier than before “

The remaining 8 participants reported no changes, including both IUD users.

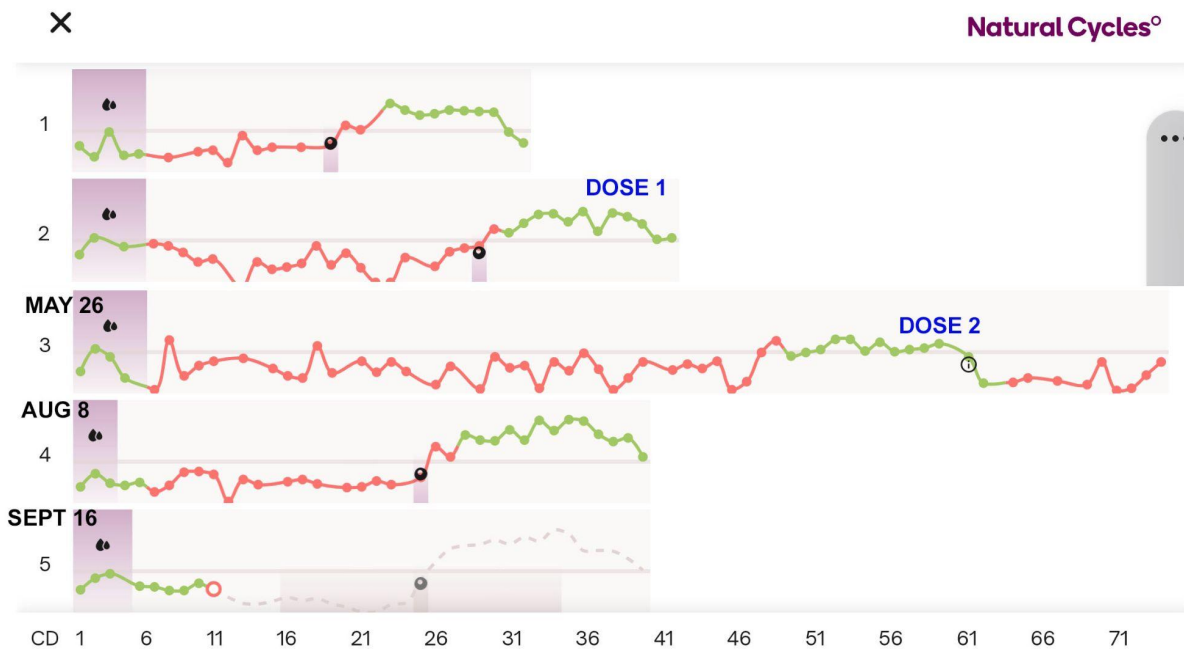
## CASE STUDIES

### Case Study A

- Age 26-36
- No pre-existing conditions or comorbidities
- No previous Covid infection
- Some menstrual irregularity (Shortest cycle was 30, longest cycle was 74 in past 12

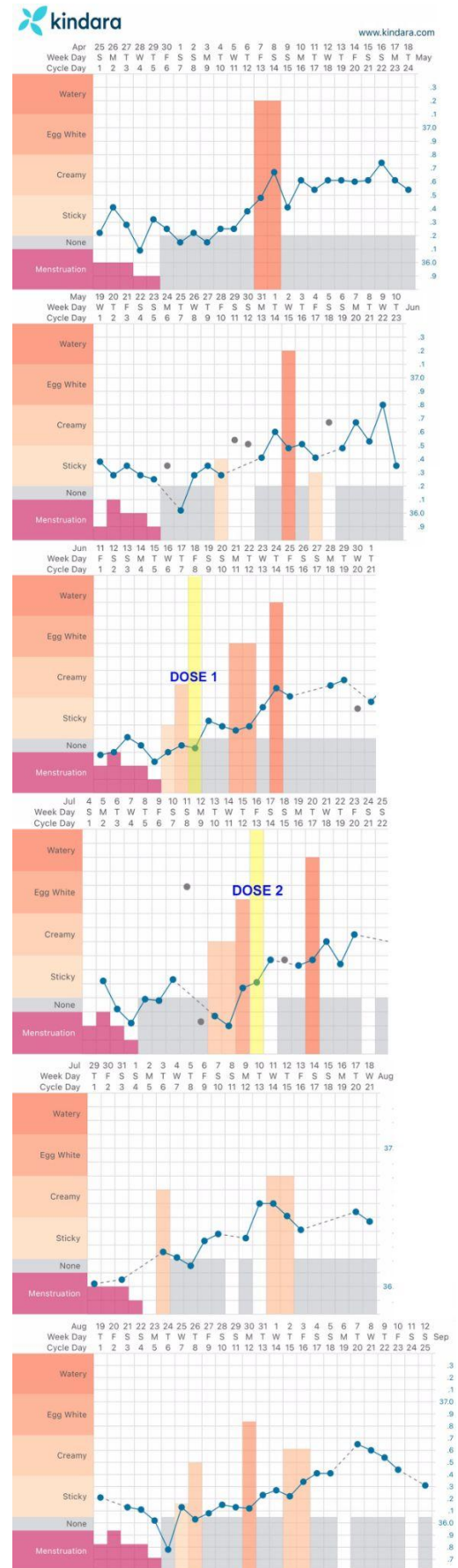
months)

- Ovulating regularly confirmed via thermal shift in menstrual chart, cervical mucus pattern was also typical before vaccination
- Vaccine: Pfizer BioNTech 2 dose course
- First dose: 5/22/21 - Luteal Phase
  - Menstruation 4 days after first dose
  - Ovulatory delay the following cycle. Thermal shift occurs ~Cycle Day 48 after first dose
  - No other side effects reported
- Second dose: 7/23/21 - Luteal Phase/Unclear
  - Delay in menses reported. Temperature dropped to follicular phase levels on Cycle Day 60 but menstruation did not arrive for an additional ~12 days
  - Uncomfortable, brown, sticky cervical fluid changes
  - Side effects reported: fever for 3 days and tired for 7 days
- 62 days between doses



## Case Study B:

- Age 19-25
- No pre-existing conditions or comorbidities
- No diagnosed previous Covid infection, but previous infection suspected
- Menstrual cycles occurred regularly before vaccine with an average of 25 days and a range of 21 days to 27 days long
- Vaccine: Pfizer BioNTech 2 dose course
- First dose: 06/18/21 - Follicular Phase
  - One day shorter than typical menstrual cycle length
- Second dose: 07/16/21 - Ovulatory Phase
  - one day shorter than typical menstrual cycle length, lighter flow, lighter and cloudier cervical mucus with less peak fluids present
- Ovulation and luteal phase appear undisturbed
- Reduction in peak cervical mucus in the two charts after dose 2
- 28 days between doses



## Case Study C

- Age: 26 - 36
- No pre-existing conditions or comorbidities
- No previous Covid infection
- Past 12 months menstrual cycles occurred regularly 25 - 28 days long, heavy, with some cramping
- Vaccine: Pfizer BioNTech 2 dose course
- First Dose: 01/13/21 - Late Luteal Phase
  - “Started bleeding 3 days later, a little bit heavier but not remarkably so”
- Second Dose: 02/03/21 - Mid Luteal Phase
  - “I started spotting 8 days after dose #2 and started my period one day after the spotting. The bleeding and spotting was typical for me. I received my 2nd dose earlier in my cycle (compared to dose #1) hence why my period started 9 days after my shot. The cycle length was typical for me. I use fertility awareness to chart my cycles.”
- Ovulation and luteal phase appear undisturbed
- 48 days between doses



## RESULTS

**Limited Scope of Participation:** This survey was created to investigate vaccine correlated menstrual effects by the general public. The survey had 107 entries with 89 eligible participants. The demographic data reports an age range of 19-47 years old. 47.7% of participants were between the ages of 26-36. A small percentage (3.4%) were pregnant or breastfeeding when they were vaccinated. 8 participants report being perimenopausal. 44.9% of those surveyed identified as white or Caucasion, 27% identified as Black or African, 11.2% identified as biracial, with smaller percentages identifying as Hispanic or Latinx, Native American or Alaskan Native, or another ethnicity. The most common age of first menstruation for the participants were ages 11, 12, or 13 with a range of 8 - 19 years old.

**Pre-Existing Conditions & Interaction with Other Medicine:** 77.5% of participants have no pre-existing conditions. Pre-Existing Conditions Disclosed: PCOS, Arthritis, Hashimoto's Thyroiditis, PTSD, Autoimmune condition, Lupus, Fibromyalgia, Ehler Danlos Syndrome, Ulcerative Colitis, Long Covid, Adult Onset Chronic Immune Thrombocytopenic Purpura, Urticaria pigmentosa. 22.5% of participants take some form of pharmaceuticals on a daily basis. 69.7% of participants take other kinds of herbal medicine, vitamins, or supplements daily.

**History of SARS-COV-2 Illness:** 74.2% of participants had never had Covid-19. 11.2% report a diagnosed case. Of the 22 participants who had Covid-19, 63.3% contracted it before vaccination, 4.9% after their first dose, and 31.8% after their second dose. The majority of these cases were cleared in under one month (78.3%), with 8.7% reporting Long Covid.

**Vaccine Type:** Of the 89 participants, 56.2% received the Pfizer-BioNTech vaccine, with 25.8% receiving Moderna. 9% received Johnson & Johnson with smaller percentages for Oxford-AstraZeneca, Novavax, Sinopharm, Sinovac, and one participant with mixed administration of Pfizer/Moderna for the two dose course. These vaccines were administered between January 13, 2021 and March 24, 2022.

**Menstrual Cycle Before Vaccination:** 74.2% of participants noted a regular menstrual cycle length of under 35 days. 25.8% noted that their menstrual cycle length is irregular, unpredictable, or longer than 35 days, including perimenopause. None of the eligible participants were post-menopausal or amenorrheic (no menses). The vast majority of participants have a menstrual bleed length between 1-7 days long with 70.8% reporting a typical flow. 18% report a heavy flow and 9% report a light flow. 60.2% of participants noted that they never have breakthrough bleeding patterns such as mid-cycle spotting, with another 15.9% reporting infrequent breakthrough bleeding. 13.6% report occasional ovulatory (mid-cycle)



spotting and 8% report occasional random spotting. 19.1% of participants noted no clotting in their menstrual blood, with 49.4% reporting clots smaller than the size of a dime and 42.7% reporting endometrial tissue that appears long and stringy. 24.7% report having had larger menstrual clots in their menstrual blood. Only one of the participants noted a bleeding or clotting disorder and none of the participants have ever been treated for cancer. 11.2% report diagnosed autoimmune disease with another 12.4% reporting a suspected undiagnosed disease. 32.6% report diagnosed allergies or asthma with another 9% reporting suspected, undiagnosed disease.

**After Receiving Dose 1:** After receiving their first dose, 93.2% of participants menstruated. 25% had spotting and 6.8% reported other forms of bleeding. 56.8% had cramping or bloating and 45.5% reported breast / chest soreness, and 12.5% reported hot flashes. 21.8% reported a noticeable change to their menstrual cycle length after dose 1. The majority of participants note menstrual clots smaller than the size of a dime (42.2%), with an additional 31.3% reporting no clotting in their blood. 70.5% of participants reported their first menstruation after dose 1 as a typical amount, with 19.2% reporting a heavier menstruation than normal and 5.7% reporting a lighter menstruation than normal. 10.2% reported breakthrough bleeding events also known as “spotting” after dose 1. Note that 46.6% of participants describe their symptoms as occurring more than 14 days after vaccination. Testimonials from participants included delayed ovulation / menses, pelvic pain, heavy bleeding, and random spotting. One participant noted that they received dose one while menstruating, and their menstruation stopped.

**After Receiving Dose 2:** After receiving their second dose, 88.5% of participants menstruated. 21.8% had spotting and 9% reported other forms of bleeding. 50% had cramping or bloating, 37.2% reported breast / chest soreness, and 15.4% reported hot flashes. 36.7% reported a noticeable change to their menstrual cycle length after dose 2. The majority of participants reported menstrual clots smaller than the size of a dime (48%), with an additional 24% reporting no clotting in their blood. 56.4% of participants report their first menstruation after dose 2 as a typical amount, with 23.1% reporting a heavier menstruation than normal and 12.8% reporting a lighter menstruation than normal. 17.7% reported breakthrough bleeding events also known as “spotting” after dose 2. Note that 43.5% of participants described their symptoms as occurring more than 14 days after vaccination and another 26.1% reported symptoms at 8-14 days later. The number of testimonials tripled after dose two. These testimonials include delayed ovulation / menses, pelvic pain, heavy bleeding, breast soreness, random spotting, shorter cycles, and menstrual nausea.

**Comparison of Dose 1 vs Dose 2:** When comparing the reports from dose 1 to dose 2, dose 2 seems to have caused more noticeable disruption to common menstrual biomarkers.

From dose 1 to dose 2:

- Menstruated: 4.7% decrease
- Spotting: 3.2% decrease
- Other forms of bleeding: 2.2% increase
- Cramping or bloating: 6.8% decrease
- Breast / chest soreness: 8.3% decrease
- Hot Flashes: 2.9% increase
- Change in Menstrual Cycle Length: 14.9% increase
- Menstrual Clots Larger Than A Dime: 5.8% increase
- Clotting In Blood: 7.3% increase
- Atypical Menstruation: 14.1% increase
- Heavier Menstruation: 3.9% increase
- Lighter Menstruation: 7.1% increase
- Breakthrough Bleeding / Spotting After Dose: 7.5% increase

### **Comparison of Pre-Vaccination vs After Dose 2**

Consistency of Bleeding

- Typical: 14.4% decrease
- Heavy: 5.1% increase
- Light: 3.8% increase

Random Breakthrough Bleeding or Spotting

- 60.2% report never spotting before
- 21.6% report occasional spotting before
- 2.2% report spotting every cycle
- 17.7% report bleeding or spotting after dose 2

Menstrual clots

- Clots larger than the size of a dime: 3.3% increase
- Clots smaller than the size of a dime: 1.4% decrease
- Clots that look long and stringy: 2.7% decrease
- No clots, liquid blood: 4.9% increase

**Participants Practicing Fertility Awareness:** 47 of 89 participants in the survey chart their menstrual cycle through a fertility awareness based method (FABM). Before vaccination, 57.4% of these participants reported the observance of regular ovulation confirmed through a thermal shift by using a basal body thermometer daily. 64% of participants observe their cervical mucus patterns through charting. 19.1% of participants noticed some change in their cervical mucus pattern which typically occurs in the center of the menstrual cycle during the follicular phase. Participants report cervical fluid changes, notably, a reduction in peak mucus around ovulation, increased dryness or non-peak fluids, and irregular cervical fluid observations. 30.4% of participants noticed a change in their ovulation after vaccination with either dose 1 or dose 2. These changes include pain during ovulation, delay in ovulation, anovulation, shorter luteal phases, and one person reporting increased regularity of their previously irregular cycle.

**Contraceptive Subgroup:** 18 participants in the survey identified as using contraceptives, which made them ineligible for this study which was focused on people with ovulatory cycles. However, their reports were also interesting and serve as a starting point for comparing the two groups. Out of the 18 participants, 17 were using hormonal contraception (1 hormonal IUD and 16 other hormonal methods), and 1 participant was using non-hormonal contraception (copper IUD). 8 of the participants reported no changes, including both IUD users. The other 10 reported a variety of side effects including cycle length changes, breakthrough bleeding or spotting, heavier and more painful bleeding, and amenorrhea (not bleeding for 150 days).

**Case Study A:** Case Study A appears to have had their first dose administered after their thermal shift during their late luteal phase, with menstruation occurring typically 4 days later. The following cycle (cycle 3) began on May 26th 2021 and had an ovulatory delay exceeding the two previous cycles, with a thermal shift on CD48 (Natural Cycles app guesses the users average ovulation day to occur on CD25 utilizing previous cycle data). The second dose was administered 62 days later, which, because of the ovulatory delay, again occurs in the participants late luteal phase. After the second dose, the participants temperature began to drop to follicular phase levels, which would normally trigger a menstruation, but the participants menstruation was delayed for an additional 12 days.

**Case Study B:** Case Study B, in contrast, had both doses of the vaccine administered during the follicular and ovulatory phases of the cycle in two consecutive cycles. They report one day

shorter than typical menstrual cycle length for both doses, along with a lighter bleed and lighter, cloudier cervical mucus with less peak fluids present. In the charts before, during, and after the two doses, ovulation and luteal phase temperatures appear undisturbed. The two cycles after the second dose note a reduction in peak cervical fluids on the bar graph when compared to the typical pattern pre and during the vaccination course.

**Case Study C:** Case Study 3 had both doses administered during their luteal phase, with dose 1 in the late luteal phase and dose 2 in the mid luteal phase of two consecutive cycles. They report a slight increase in flow after dose 1, but note that after dose 2 their menstruation was typical. In the charts before, during, and after the two doses, ovulation, cervical mucus pattern, and luteal phase temperatures appear undisturbed.

## CONCLUSION

This survey presents testimonials and summary statistics to document relevant menstrual changes after SARS-CoV-2 vaccination. This survey focused specifically on the experiences of adults with regular ovulatory menstrual cycles because this group was considered mostly ineligible during the initial research. The trends observed can be broken down into a few main categories.

Participants reported menstrual changes in these areas:

- Delayed Ovulation / Delayed Menses
- Shorter Cycles (Potential anovulatory cycles)
- Spontaneous Bleeding
- Heavy Bleeding
- Lighter Bleeding
- Cramping/Pain Changes

Such a high heterogeneity in symptoms reported is of interest, especially because clinicians may use a quantitative threshold to determine whether menstrual changes are significant. Although heavy bleeding was the most prevalent report from participants, it is important that each case of menstrual disturbance be investigated by how it diverged from that individual's baseline menstrual cycle and not a statistical average. Further study is needed to examine these heterogeneous side effects, and if they are potentially related to which phase of the menstrual cycle the vaccine was administered.

## The Menstrual Cycle and the Immune System

The menstrual cycle has two major phases (follicular/luteal) which are divided by the event of ovulation. People with ovulatory cycles are operating from different internal homeodynamics in each phase, to which better clinical awareness is needed. These homeodynamic changes are important hormonally, but also extend far beyond the endocrine system alone, as these hormone changes have interconnections with most other body systems (skeletal, cardiovascular, immune).

In the future vaccines, as well as other therapies and surgeries, could be scheduled more appropriately around menstrual cycles to the most opportune phases with the goal of increasing safety, reducing symptoms, and minimizing menstrual disturbances. It is still unclear which phase would be the least disruptive, but sports medicine has begun to study this in regards to [sports injury risk](#), and concluded that directly before the hormonal peak of ovulation or before the hormonal valley of menstruation are some of the most vulnerable times. Anesthesiologists are also beginning to study how the menstrual cycle affects hemodynamic response during [surgical intubation](#), in which current literature points to potentially unfavorable physiological and systemic events in the surgical patient in the premenstrual to menstrual, and preovulatory to ovulatory phases, although the limited data is conflicting.

In 2022, [Edelman et al.](#) noted 358 women who were vaccinated with both doses of the SARS-CoV-2 vaccine in the same menstrual cycle, with 10.6% of women experiencing a change in the length of their menstrual cycle for more than 8 days. After two cycles, the cycle length in all the groups being studied normalized. Informed consent before vaccination could include cautioning people with active menstrual cycles from being vaccinated twice in the same cycle to reduce potential side effects. Eventually, we may learn enough to counsel them on the best phase of the cycle to receive future vaccinations.

## Existing Research Regarding Menstrual Disturbance and Vaccines

There have already been mounting concerns before the pandemic about how vaccines may interact with the reproductive system and fertility. One of the earliest reports in history comes from a 1913 paper about typhoid vaccination, where Lamb AR found several cases of [menstrual disturbance](#) with typhoid vaccination after ruling out other factors. The flu vaccine has also been [anecdotally documented](#) as causing menstrual disturbances for several years, but with very little clinical investigation. The human papillomavirus (HPV) vaccine has had reports of [premature ovarian insufficiency](#) (POI) signaled by amenorrhea, high gonadotropins, and low estradiol after HPV vaccination. Another report finds an association with the HPV vaccine and the onset of [autoimmune disease](#). Gong et al. identified [menstrual irregularities](#) after HPV vaccination

reported through the vaccine adverse events reporting system (VAERS). A small study of Japanese women found [menstrual irregularities](#) after receiving the hepatitis B vaccine. This may lead us to conclude that these menstrual disturbances are not an anomaly for SARS-CoV-2 vaccines but may be a side effect present in vaccination in general.

### Menstrual Disturbances After SARS-CoV-2 Vaccination

This study sought to understand the diverse experiences of post-vaccination changes from the individual's baseline menstrual cycle and to examine fertility awareness charts which could tell us more about the interactions between the ovarian hormones and SARS-CoV-2 vaccinations.

The study results show that the majority of participants did not experience menstrual cycle length changes, but for those that did, such changes were significant, confusing, and disruptive. These changes were more prominent after the second dose of the vaccine than the first dose. Over half the study participants practiced a fertility awareness method and one in five people reported some change in their ovulation and cervical mucus pattern, particularly a reduction in peak mucus and increased dryness.

The 3 fertility awareness case studies included help us better understand the endocrine impact of the vaccination, if any. Case Study A in particular shows curious hormonal menstrual disturbances, which may be the result of the luteal phase timing of dose 1, or the impact that the first dose had on the subsequent brain-ovarian (HPO) messaging required to trigger the next cycle's ovulation. Thus an ovulatory delay was experienced, but ovulation did eventually occur. The second dose was administered in the following luteal phase and further delayed menses in an atypical way, where temperatures returned to follicular phase levels, but no bleed was triggered. Usually, a drop in temperatures such as this would have started a menstruation within 24 hours. Case Study B and Case Study C continued to have regular ovulations and their luteal phase temperatures and thus progesterone levels appear undisturbed by the vaccinations. Only Case Study B noticed changes to their cervical fluid, which may signify that estrogen levels were impacted. Case Study C shows no significant ovarian hormone changes in the first two cycles after vaccination.

It is important to examine fertility awareness charts and to integrate charting biomarkers into clinical study because it allows us to examine more intricacies of hormonal fluctuations across time. Cycle length alone remains a limited scope of understanding how the menstrual cycle may be affected. In addition, those who take hormonal contraceptives suppress the communication between the brain and the ovaries. Their biomarkers do not follow the biphasic pattern seen in the ovulatory menstrual cycle and cannot represent the same hormonal state of those with cycles.

Despite this key difference in hormonal state, the contraceptive subgroup also experienced significant bleeding changes, even though their hormones are plateaued by hormonal contraception. This distinction is notable, that they do not have traditional “cycles” in the way we define them through fertility awareness based methods, but yet experienced changes in the length between their breakthrough bleeding and had many spontaneous bleeding or spotting events. The most common changes in the contraceptive subgroup were significantly heavier bleeding and spontaneous spotting.

This commonality between the actively cycling group and the contraceptive subgroup, is a potential indicator that these effects are not being triggered by a sudden drop in progesterone, or as a breakthrough bleed from a drop in the progestin level in hormonal contraception. Those using contraceptives should have their bleeding patterns or bleeding suppression regulated by the contraceptive, although this is not always the case in practice.

Through examining the fertility awareness charts of those with ovulatory cycles, over half had an undisturbed ovarian hormonal pattern through their vaccination course (54.3%). Case Study A had significant menstrual length changes but continued to ovulate. Case Study B noted lessened peak cervical fluid, which could make conception more difficult during those cycles.

Studies attempting to gather large samples of evidence can potentially hide important data occurring in a minority of people through averaging and analysis. Even though people who experienced changes (with menstrual cycles or those on contraceptives) were the minority, this could potentially represent thousands of peoples’ experiences when a vaccine is administered to a large population. This is especially true if they are dealing with other health conditions, chronic pain, and immune or autoimmune related disorders. Their experience is valuable and it teaches us about how to make medicines safer for all. Patients should not be left wondering if they need to prepare for a spontaneous bleeding event because scientific research neglected to study the effects.

We have established that bleeding and other menstrual events are occurring, and if not solely the result of a drop in ovarian hormones or disturbance in brain-ovarian (HPO) communication, we must investigate other potential reasons for these menstrual changes.

## The Immuno-Menstrual Axis

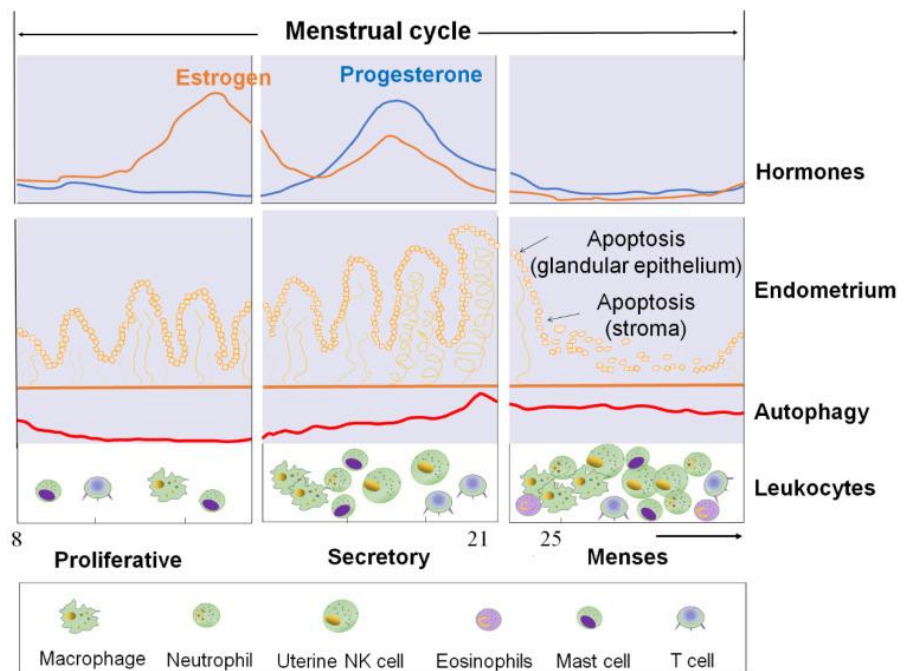
The immuno-menstrual axis describes the communication and interrelationship between the immune system and the menstrual cycle. As hormone levels fluctuate during the cycle, the reproductive system undergoes distinct differences in immune function, as well as autophagy and fluctuation in the prevalence of certain leukocytes.

Each cycle begins with menstruation. Menstruation is an inflammatory event triggered by a drop in estrogen and progesterone levels, which cause autophagy, a natural and organized degradation and recycling of cells. The immune system is integrally linked to menstruation because menstruation requires an infiltration of a diversity of immune cells, predominantly macrophages, uterine natural killer cells, neutrophils, eosinophils, and mast cells, in order to facilitate endometrial shedding, tissue repair, and prevention of infection. [27, image: 27]

After menstruation and during the follicular phase, high levels of estrogen interact with immune cells by attaching to their receptors and changing their cell processes. In a typical menstrual cycle, estrogen is only high for a short period of time in the follicular phase, and one has higher immunoglobulin A antibodies and an increased inflammatory response during this window. However, dysregulated cycles which are characterized by a prolonged exposure to estrogen are

correlated to higher disease risk and cancer risk. The menstrual cycle's immune function operates in balance. The first half of the cycle, the menstrual and follicular phases, are generally characterized as having a predominance of Type 1 helper T cells and their cytokines, and immunoglobulin A antibodies, which help protect the body from foreign pathogens.

After ovulation during the luteal phase, the immune state changes, and is characterized as having higher levels of immunoglobulin G antibodies, innate lymphoid cells, and Type 2 helper T cells. This switch promotes a different kind of immunity that can better support potential





conception. [7] Progesterone is often colloquially described as outright suppressing the immune system by creating a lower inflammatory response (and other related viewpoints about how the fetus could be comparable to a parasite), but this phase can be better understood as an altered type of immune state which is invested in a successful implantation. During the luteal phase of the cycle and the secretory phase of the endometrium, a large increase in “subpopulations of immune cells [mainly uterine NK cells and macrophages] infiltrate the endometrium to modulate uterine receptivity and embryo implantation... many chemokines are involved in these processes.” [27]

Interestingly, a lack of immunoglobulin and T-cell changes were observed in sexually abstinent women, suggesting that [sexual activity](#) also has an effect on the immuno-menstrual axis, which is not a passive axis but a receptive, communicative, and dynamic one that is proactive in its response to external stimulation and environment. Such fluctuations are present in different immune responses present in the mucosa. [9]

The ovulatory menstrual cycle is tightly regulated by hormones which are in constant cross communication with the immune system and play a key role in both conception and the process of healthy menstruation. The menstrual cycle is known to be affected by acute immune events and its dysregulation is associated with chronic immune conditions. Menstrual length changes and spontaneous bleeding events after vaccination may represent that the menstrual cycle is the victim of rapid immune system changes that occur along the immuno-menstrual axis of communication.

Other potential theories for these bleeding events include a sudden spike in levels of cortisol or a disturbance to the hypothalamic-pituitary-adrenal axis that may occur due to the physical stress and/or illness from vaccination. More study is needed to understand the molecular mechanisms that could correlate these changes.

### Rebuttals

A response to initial comments from doctors in April 2021

“Menstrual Changes After SARS-CoV-2 Vaccination Are Caused By...”

- “Stress” - Stress is certainly a factor in the menstrual cycle and its expressed biomarkers, but stress is also used conveniently to dismiss patients and avoid investigating physical issues related to menstruation. None of the participants in this study noted overall or pandemic related stress as a factor in their testimonials or comments.
- “Vaccine anxiety or attribution” - This is another way of saying that people think things

are related when they are not. Now that we have more information to confirm that there is a measurable difference in cycle length among other factors, this can be addressed for what it is, which is a form of medical gaslighting where people who menstruate are not believed when they seek to report changes within their own bodies. Two participants noted previous vaccine injury or vaccine hesitancy.

- “No underlying physiology to explain it” - This study, among others, demonstrates that this phenomena is occurring on a measurable level. We may not fully understand the physiology yet, but that does not mean that there is no underlying physiology. Menstrual exclusion is by design. The focus of future research could attempt to find the reasons why someone starts experiencing menstrual changes and how to prevent this. More study is needed regarding the immuno-menstrual axis and how hormones are impacted from vaccinations.
- “Not enough studies done on female subjects to know if the vaccine changes menstrual cycles” - This is undoubtedly true, women and people with menstrual cycles are historically under researched, but it’s our responsibility to change this.
- “It would be implausible to run another study on the vaccines with the menstrual cycle as the focus” - It is certainly possible to address the omission of ovulatory menstrual data in vaccine research. This should be conducted in the future to understand how to help people make informed medical decisions, how to best administer vaccines to minimize menstrual disturbances, and to expound upon our collective knowledge of the immuno-menstrual axis.

### In Summary

We can no longer ignore the issue of menstrual events after vaccination. These menstrual disturbances are meaningful because they cause disruption, confusion, and anxiety. We must continue to push researchers to design studies which acknowledge and appreciate the infradian rhythm of the menstrual cycle. This research must investigate how people who menstruate may react to different therapeutics, vaccines, surgeries, and procedures in different phases of their cycle. More research is needed to understand the safest time to administer vaccines and whether multiple vaccines should be administered in a single menstrual cycle.

In particular, studies must do better to include vulnerable groups like those who are pregnant or breastfeeding, and those with existing reproductive or autoimmune conditions, so that they can be better counseled. Those trying to conceive should be consulted about changes in their cervical fluid and how this could temporarily affect fertility success. Awareness of ovulation and the menstrual cycle as a significant marker of health have been all but left behind in clinical research when they should be considered medically relevant. It is an indictment of the current

silos of the medical industrial complex that such a glaring exclusion of 56% of the adult female population goes on without correction.

As a researcher, I am extremely grateful to all the participants of the survey. I hope to conduct more follow up research in the future and agitate formal medical establishments to do the same.

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## Abstract

After being contacted on social media about reports of menstrual disturbances after SARS-CoV-2 vaccination, Learn Body Literacy and the fertility awareness education initiative #FAMTaughtMe conducted a web survey from September 2021 to April 2022. The survey collected a broad range of menstrual experiences of people with active menstrual cycles after SARS-CoV-2 vaccination. In addition to measuring cycle length differences, the survey explores additional markers through biometric tracking such as cervical fluid changes, clotting patterns, spotting events, ovulation, and how vaccine timing within the menstrual cycle phases changes its potential effects. In this survey, 19.2% of people with ovulatory menstrual cycles had a



heavier menstruation than usual after dose 1, while 70.5% reported no change after dose 1. 23.1% report heavier bleeding than usual after dose 2, with 56.4% of participants reporting no change after dose 2. Other participants noted various menstrual anomalies such as delayed ovulation, delayed menses, shorter cycles (potential anovulatory cycles), spontaneous bleeding, heavy bleeding, lighter bleeding, and cramping or pain changes. We must continue to push researchers to design studies which acknowledge the infradian rhythm of the menstrual cycle and include more useful information about how people who menstruate react to different therapeutics, vaccines, surgeries, and procedures. Learn Body Literacy encourages more studies to be conducted so that the hormonal, immune, inflammatory, and hemostatic changes to menstrual cycles after vaccination can be better understood.

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