

# Disease Burden of Patients Living with Hypoparathyroidism: Results from the Voices of Hypopara Survey

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## BACKGROUND

- Hypoparathyroidism is a rare disease that is characterized by insufficient levels of parathyroid hormone (PTH), resulting in hypocalcemia, hyperphosphatemia, and hypercalciuria<sup>1</sup>
- Although calcium and active vitamin D have been widely used as standard of care (SoC), symptoms of hypoparathyroidism include tingling, muscle cramps, fatigue/weakness, seizures, headaches, anxiety, and brain fog<sup>1</sup>
- Long-term calcium and active vitamin D supplementation can also lead to severe long-term complications including calcium deposits in organs (e.g., kidney, brain, blood vessels, eye and other soft tissues)<sup>1</sup>
- Despite treatment with standard of care (SoC), some patients may suffer from “calcium crashes”, sudden or extreme drops in calcium levels that can cause confusion, memory loss, mood changes, muscle spasms, severe muscle cramps/tetany, numbness, burning and tingling, and/or seizures<sup>1</sup>
  - A calcium crash can be severe enough to require a visit to the emergency room (ER) or urgent care to receive intravenous (IV) calcium infusion<sup>1</sup>
- The HypoPARathyroidism Association (HPA) is a nonprofit organization dedicated to improving the lives of patients with hypoparathyroidism
- The HPA recently conducted the “Voices of Hypopara” survey to better characterize the patient journey and treatment-related burden in patients with hypoparathyroidism in the US

## METHODS

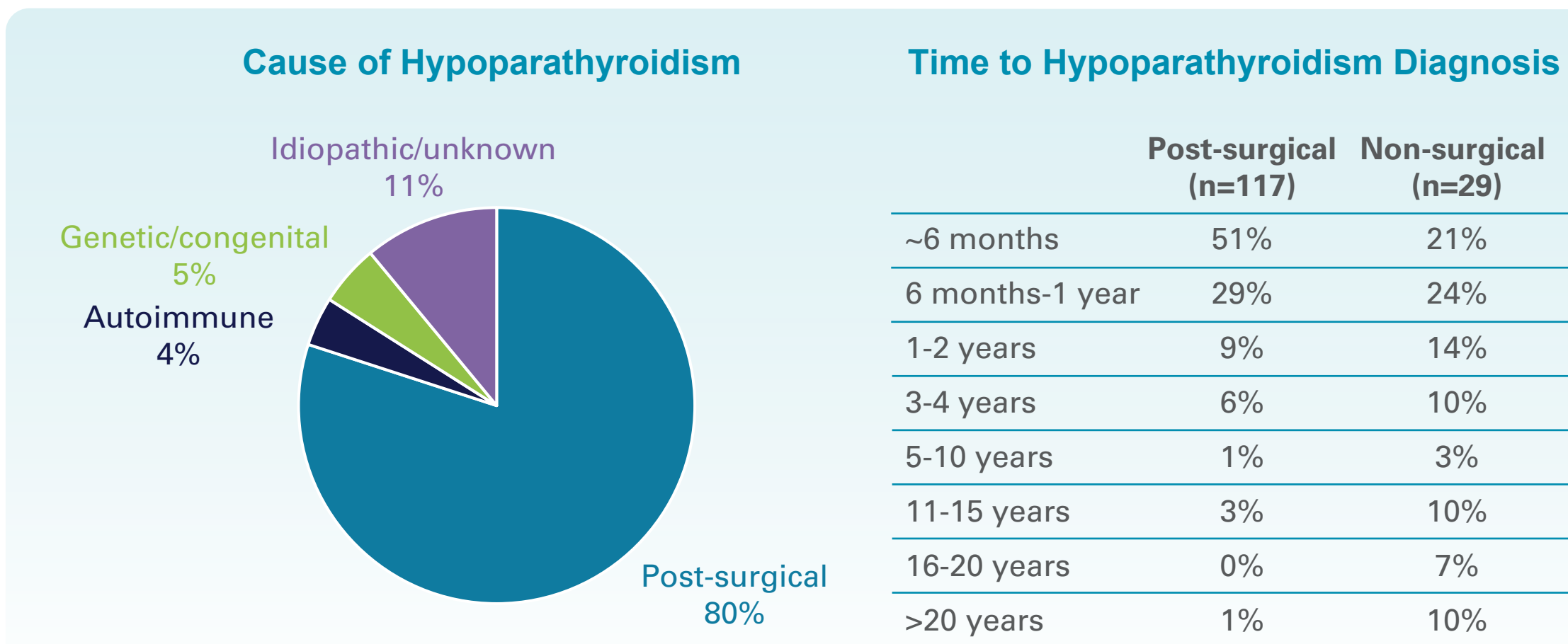
- The online “Voices of Hypopara” survey was distributed to approximately 1,000 HPA members; the completed responses were collected between April 30 and May 8, 2020
- The survey consisted of 58 questions that focused on evaluating patients’ experiences including diagnosis, treatment, quality of care, and impact on daily living

## RESULTS

### BASELINE DEMOGRAPHICS AND DISEASE CHARACTERISTICS

- The survey was completed by 146 HPA members (89% female; 92% white; mean age 51)
- The majority of participants (80%) were diagnosed with post-surgical hypoparathyroidism (Figure 1)
- Diagnosis of hypoparathyroidism was delayed more than 6 months in 55% of participants despite symptoms of chronic hypoparathyroidism (Figure 1)
  - 80% of patients with post-surgical hypoparathyroidism were diagnosed within a year after surgery
  - Patients with non-surgical hypoparathyroidism took much longer to receive a diagnosis, with more than 30% taking >5 years
- 51% underwent >5 physician visits before obtaining a hypoparathyroidism diagnosis
- Most participants reported they are currently taking SoC (calcium supplements in 91%; active vitamin D in 77%)
  - However, over half felt that this did not effectively address their hypoparathyroidism symptoms
  - More than a quarter (27%) were extremely concerned about hypocalcemia despite supplementation
  - Many (69%) viewed SoC as moderately to extremely burdensome
- Other treatments may include phosphate binders, diuretics, PTH replacement, and/or investigational drugs
- Almost all participants (97%) had to adjust their regimens over the course of their disease, with 61% adjusting more than 5 times since diagnosis

Figure 1. Delays in Hypoparathyroidism Diagnosis Despite Symptoms of Chronic Hypoparathyroidism



### DISEASE BURDEN OF PATIENTS LIVING WITH HYPOPARATHYROIDISM

- Participants were moderately to extremely concerned with the following hypoparathyroidism symptoms:
  - Hypocalcemia/calcium crash (84%)
  - Fatigue (83%)
  - Brain fog (e.g., memory loss, difficulty thinking, slow or confused thinking) (82%)
  - Hyperphosphatemia (e.g., muscle weakness, spasms or pain; nausea) (73%)
- When asked about the challenges of living with hypoparathyroidism (Figure 2), most patients (87%) cited minimizing the impact of hypoparathyroidism on their quality of life, including:
  - Controlling daily symptoms (78%)
  - Handling physical activities (75%)
  - Maintaining psychological well being (68%)
  - Balancing social life and relationships with managing symptoms and complications (63%)
- The majority of patients (87%) also expressed concern with management of long-term complications
  - Of those, participants were extremely concerned with cardiovascular health (24%), kidney stones/function (21%), and organ calcification beyond kidney (24%)
- More than 60% of participants checked serum calcium levels at least every couple of months at a physician’s office or lab in the past year, with 36% checking monthly or more frequently (Table 1); the majority of respondents (70%) said the reason was due to symptoms of hypocalcemia
  - Participants viewed the availability of an at-home device for measuring serum calcium, phosphate, and magnesium levels could be one key approach to manage their hypoparathyroidism symptoms (47% ranked as “most preferred”), followed by more effective medications as the second most preferred option (23%)
  - Almost all (99%) responded that they would use an at-home monitoring device; 88% would test at least weekly, 60% at least daily, and 16% would test multiple times a day

Table 1. Frequency of Serum Calcium Levels Checked at a Physician’s Office or a Lab

| Frequency, n (%)  | All participants (N=146) |
|---|--------------------------|
| My serum calcium level hasn’t been checked in the past year | 2 (1)                    |
| 1-2 times in the past year                                  | 27 (18)                  |
| 3-4 times in the past year                                  | 25 (17)                  |
| Every couple of months                                      | 40 (27)                  |
| Monthly   | 36 (25)                  |
| Weekly  | 13 (9)                   |
| More than once a week                                       | 3 (2)                    |
| I don’t know  | 0                        |

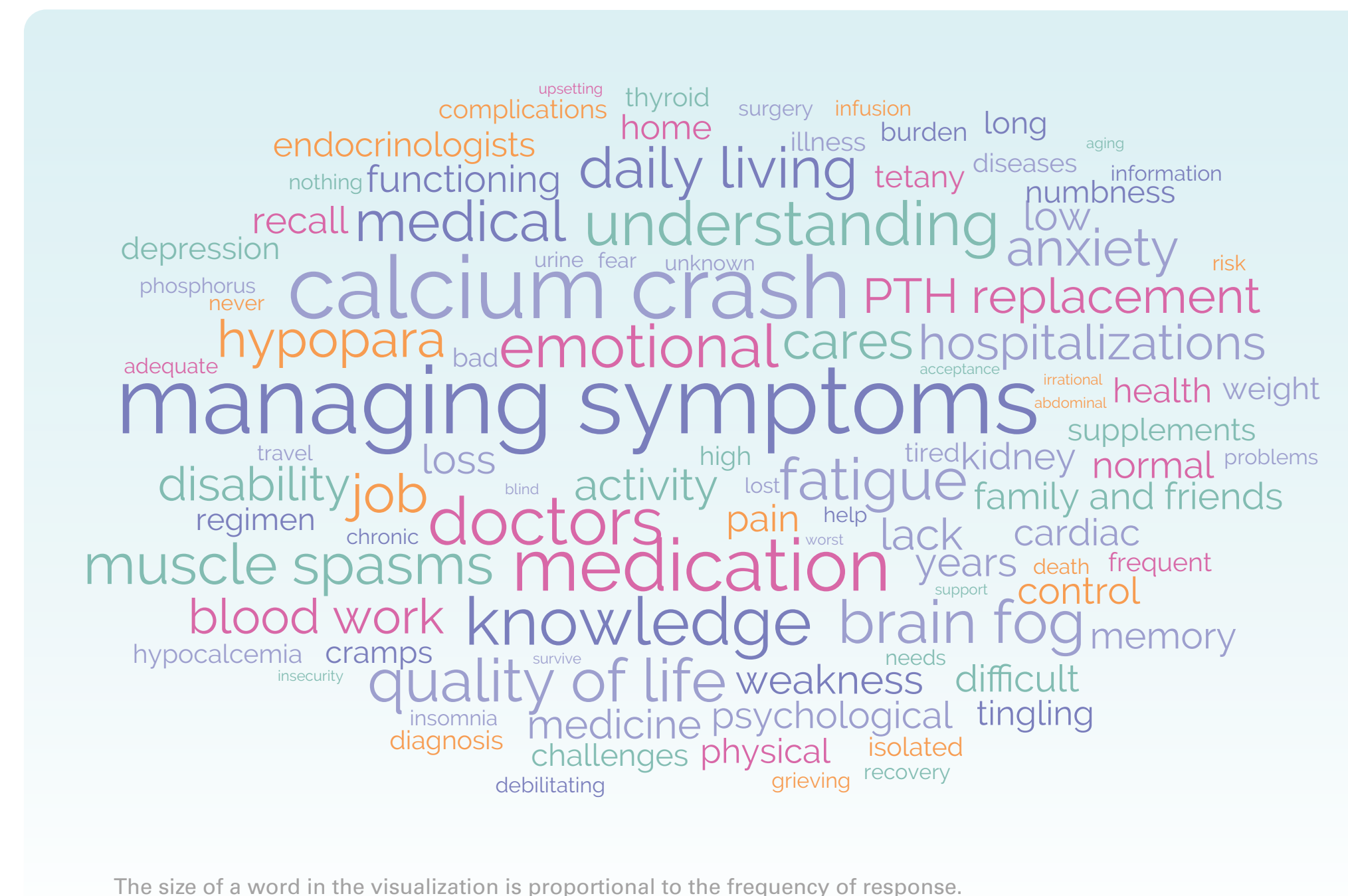
Current guidelines state that subjects who are well controlled could be monitored once or twice a year, whereas others may require more frequent monitoring. When active vitamin D and calcium doses are adjusted, more frequent monitoring is indicated, often several times per week until achievement of stable serum calcium.<sup>2</sup>

## RESULTS

### SELECT QUOTES ABOUT CHALLENGES OF LIVING WITH HYPOPARATHYROIDISM

- “The fatigue, brain fog, and muscle complications have completely changed who I am and how I can function. I was forced to retire early due to frequent hospitalizations and physical issues. I have also not found a physician who understands the complications that occur even with calcium levels that are in a good range.
- I have had to quit my job that I have loved. I have gained weight because I have no energy to do activities. I now have cardiac issues and my kidney function is worse. I am concerned daily about death from complications.
- Because the symptoms aren’t easy to see I often feel like no one understands and feel very isolated.”

Figure 2. Word Cloud of Greatest Challenges Participants Face Living With Hypoparathyroidism



### MANAGEMENT OF SEVERE HYPOPARATHYROIDISM SYMPTOMS

- Despite almost all patients (97%) adjusting their medication regimens, more than two-thirds (69%) of participants reported a calcium crash in the past year; of these, 43% reported calcium crashes monthly or weekly and 4% experienced them daily
- Despite availability of SoC, approximately 42% of participants said they visited an ER and/or urgent care facility in the past year to address their hypoparathyroidism symptoms (Table 2)
  - 63% of participants who visited the ER and/or urgent care received IV calcium to manage their calcium crash; 26% of these participants received IV calcium 5 or more times in the past year
  - 56% of participants who visited the ER and/or urgent care believed that the staff did not know how to manage a calcium crash
  - Nearly 50% of participants who visited the ER and/or urgent care stated that their most recent experience (at the ER and/or urgent care) made them less likely to return in the future for treatment of the signs and symptoms related to their condition

Table 2. ER and Urgent Care Visits to Manage Hypoparathyroidism Symptoms

| Category, n (%)  | Participants who visited the ER/Urgent care (n=62) |
|--|--|
| <b>Number of visits to the ER/Urgent Care for hypoparathyroidism symptoms in the last year</b> |  |
| Once   | 20 (32)  |
| 2-4 times  | 31 (50)  |
| 5-10 times   | 9 (15)   |
| 11-15 times  | 0  |
| >15 times  | 2 (3)  |
| <b>I received IV calcium during my ER/Urgent Care visit in the past year</b>                   | 39 (63)  |
| Once   | 12 (19)  |
| 2-4 times  | 17 (27)  |
| 5-10 times   | 8 (13)   |
| 11-15 times  | 0  |
| >15 times  | 2 (3)  |

### SELECT QUOTES ABOUT MANAGEMENT OF CALCIUM CRASHES

- “My calcium level sits right at the low end of normal or right below - so that is looked over and ignored as the culprit of the symptoms. I have been told it’s anxiety, a possible TIA (transient ischemic attack), and sent through many many unnecessary tests. We can have major symptoms even while appearing slightly low.
- Fortunately I’m well documented now at the ER I go to. And I know others with hypopara visit as well. Most doctors and nurses are caring and ask questions about my treatment. After a couple of years now, they often ask me what I need after labs are done. But I don’t dare go to another ER.
- I have no choice. I need the calcium IV or I can’t function. I have to go no matter what I think of the ER and the doctors. I need my calcium.”

## CONCLUSIONS

- This survey conducted in 146 patients with hypoparathyroidism demonstrates the high disease burden of patients living with hypoparathyroidism
  - Participants experienced delays in diagnosis, despite living with chronic hypoparathyroidism symptoms, especially those eventually diagnosed with non-surgical hypoparathyroidism
  - Sudden hypocalcemic episodes (calcium crashes) were highlighted as a key morbidity despite standard treatment with calcium and active vitamin D supplementation
  - Lack of disease understanding by clinicians was considered as an impediment to optimal treatment of hypoparathyroidism
  - The majority of participants was concerned with the impact of hypoparathyroidism on their quality of life and the risk of long-term complications; participants were interested in methods to improve symptom management, citing at-home device for monitoring calcium levels and more efficacious therapies as their top 2 preferred approaches
- These findings reinforce the need for greater disease understanding among health care workers, more efficacious therapies, and more frequent, easily accessible, and real-time serum calcium level monitoring device to best manage patients with hypoparathyroidism

REFERENCES:  
<sup>1</sup>Marrstadt M, Bilezikian JP, Thakker RV, et al. Hypoparathyroidism. Nat Rev Dis Primers. 2017;3:17055. <sup>2</sup>Brandt ML et al. J Clin Endocrinol Metab. 2016;101(6):2273-83.  
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