SCI-TECH

"You had me at hello."
DOROTHY BOYD, **JERRY MACGUIRE**

Insulin rationing persists despite policy changes, Yale study finds

BY EDIS MESIC AND KALINA BROOKFIELD
STAFF REPORTERS

A recent study from the Yale School of Medicine found that, despite policy changes, insulin rationing continues to persist and threaten the lives of patients with diabetes.

The study, conducted at the Yale Diabetes Center, followed up on a previous 2017 study that examined the rates of insulin rationing due to cost. The team sought to determine if rates of cost-related insulin rationing had changed in the years since the original study, while also exploring other causes of insulin rationing not related to cost.

"We asked additional questions to get at rationing for other reasons, and we looked specifically at insurance delays and pharmacy shortages, because those have been increasingly barriers for patients," Kasia Lipska, senior author and associate professor of medicine in endocrinology at the School of Medicine, said in an interview with the News.

The researchers discovered that insulin rationing due to cost concerns and broader access barriers continue to affect patients.

Lipska said her initial inspiration for exploring the topic of insulin access and rationing stemmed from her experiences as an endocrinologist.

According to Lipska, prices of insulin had skyrocketed between the 1990s and the mid-2010s, and she began increasingly to hear stories from her patients about the difficulties of obtaining the life-saving drug.

"I was starting to notice more and more that people with diabetes were beginning to have trouble affording their medications, and specifically insulin. And I began to kind of ask about why that's the case," Lipska said.

Why ration insulin?

Campbell Mitchell SPH '31, a doctoral student in Social and Behavioral Sciences at the School of Public Health, was diagnosed with Type 1 diabetes at nine years old. Mitchell recalled having had to ration insulin throughout his life.

As Mitchell explained, Type 1 diabetes destroys insulin-producing beta cells, which means the body needs additional insulin to survive. Without insulin, the body is unable to convert sugar in the bloodstream into energy, leading to hyperglycemia — excessively high blood sugar levels. Mitchell likened the experience to simultaneously feeling exhausted and at a sugar high.

Since a lack of insulin means the body cannot use glucose, the body begins to break down fat, causing a buildup of ketones — acids which serve as backup fuel — in the blood. According to Mitchell, the process causes severe aches, blood pH changes, stomach acidity changes, heartburn, nausea and deep, rapid breathing and, if left untreated, death.

"This is how people die," Mitchell told the News in an interview. "Knowing that I can't know what it's going to cost, and there might be factors that I might have no control over, with insurance, with policy, with my job, whether they have it in stock at the pharmacy, I'm going to make darn sure that I'm not down to my last vial."

Mitchell and many others with diabetes end up taking lower doses of insulin, despite the resulting elevated blood sugar and long-term health consequences, to avoid the possibility of completely running out.

When asked why anticipatory rationing persists, Mitchell explained that some patients cannot escape the underlying uncertainty surrounding consistent access to insulin.

For instance, one issue Mitchell has run into is that the insulin prescribed by his doctors is not the same as the insulin covered by his insurance, to which he is allergic. Without consistent regulations saying medically necessary insulin is going to be covered, diabetes patients like Mitchell have to prepare for insurance issues that could prevent access to the lifesaving drug.

"Dying will take place in three to six hours without insulin. This is not something where you can have a 180-day appeal timeline," Mitchell said.

As the head of the Yale chapter of The Diabetes Link, Mitchell has also worked with students with diabetes, many of whom don't have reliable access to refrigeration. Without refrigeration, insulin goes bad in roughly 30 days, and even a few days' delay in pharmacy re-stocking or insurance approval could be life-threatening.

Kristen Whitney Daniels, a disability advocate in Connecticut, was diagnosed with diabetes at 16. When she aged off of her parents' insurance plan, she suddenly faced exorbitant prices for medication and equipment that she was unable to afford, leading her to ration her insulin.

"I was on my very last drops. I remember going through the trash can looking for empty vials of insulin to see if there was any more insulin that I could draw out of it," Daniels said. "I knew that without insulin, I was going to die within 24 hours."

At one point, Daniels was charged $2,400 for a three-month supply of insulin. According to Daniels, the estimated cost of production for a vial of insulin ranges from $3 to $6. Even assuming the higher end of insulin dosage, at six vials a month, the cost of production for the three-month supply could not have exceeded $104.

In a last-ditch effort, Daniels was able to enroll in a community health center's 340B program and obtained the medication for $14. The experience required a day off to navigate enrollment, physician visits and pharmacy delays.

As a part of the Connecticut chapter of #insulin4all, Daniels helped push for state legislation passed in 2020 to cap monthly out-of-pocket costs for insulin and diabetes supplies and establish an emergency insulin access provision, allowing pharmacists to dispense insulin when prescriptions lapse.

However, Daniels cautioned against the growing narrative that the insulin pricing crisis has been resolved, noting that many recent affordability measures rely on voluntary manufacturer programs that can change or disappear without notice.

According to Daniels, patient assistance programs often come with strict annual limits, meaning patients whose insulin needs exceed those caps are left to cover the remaining costs themselves. She added that manufacturers can also discontinue lower-cost insulin options and force patients to pay for more expensive formulations.

"Patients are really susceptible to the winds of the market," Daniels said. "It's just unacceptable that patients have to jump through hoops to obtain this medication that costs between $3 and $6 to manufacture."

Problem continues eight years later

The team's 2017 study, which surveyed Yale Diabetes Center patients with Type 1 and Type 2 diabetes who were prescribed insulin, found that one in four patients underuse insulin because of cost.

According to Sefia Khan, a postgraduate research fellow and the first author of the recently published study, the 2017 study inspired several policies that have since passed that address the growing cost-related barriers to insulin use.

In 2020, Connecticut passed House Bill 6003, which capped out-of-pocket costs for a 30-day supply of insulin and other diabetes supplies at $25 and $100, respectively. Additionally, the federal Inflation Reduction Act, passed in 2022, capped out-of-pocket insulin costs at $35 per month for people enrolled in Medicare Part D.

KIMBERLY ANGELES / STAFF PHOTOGRAPHER

Researchers at the Yale School of Medicine and diabetes advocates are concerned about the lingering health problem.

Despite the passed legislation, the message of the team's new study is "relatively simple" for Lipska: policy changes have not solved the issue.

The follow-up study revealed that one in four patients were found to ration insulin due to high costs in 2024 — the same results found in 2017. Additionally, the follow-up study found that one-third of surveyed patients reported rationing due to broader access barriers, such as insurance delays and shortages.

"We're not done and we can't just focus on cost. We have to really think about how to make these insulins more accessible in other ways as well," Lipska said.

Lipska highlighted that while insulin prices have recently gone down, insulin products are not always available at pharmacies because the companies that make insulin are prioritizing the production of more profitable medications, like Ozempic or Mounjaro.

Laura Nally, an assistant professor of pediatrics and the third author of the recent study, described the cumbersome process of acquiring medications and supplies to manage diabetes as an additional barrier to access.

According to Nally, any given person with Type 1 diabetes could need separate prescriptions for two types of insulin — long-acting and short-acting — a glucose meter, glucose test strips, a lancing device, lancets, insulin pen needles or syringes and glucagon. If they use a glucose sensor, they will also need a separate prescription. If they use an insulin pump, they may have separate prescriptions for the tubing and the pump reservoir — up to a dozen separate prescriptions to manage one condition.

"Many people have limited access to transportation, or work multiple jobs, making it difficult to get to the pharmacy for all of these prescriptions every month," said Nally. "It's especially challenging, because each of the prescriptions could be ready on a different day, requiring numerous trips each month."

Lipska also noted that prior authorizations by insurance companies for the approval of prescriptions can unexpectedly delay access to insulin.

Looking ahead, Lipska believes that there remains more research to be done to better understand why people are still rationing insulin despite policies that have capped out-of-pocket costs.

"I think having just more research or more policies actually look into those barriers, like the pharmacy shortages, the delays, I think that would be a very understudied topic and would definitely be somewhere that I think legislation should focus on," Khan added in an interview.

In light of persisting barriers to access, the team hopes to bring to policymakers' attention that there exist issues beyond cost that need to be solved. The paper discusses the public production of insulin in the state of Connecticut as a potential solution that could address many of the issues associated with price and distribution control.

The study was published in the Journal of General Internal Medicine.

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Scroll or donate: Yalies offer new screen time minimizer

BY ANYA GEIST
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Three Yale students have launched a new app called Scroll Toll for minimizing screen time usage — while encouraging users to donate to charity.

Founded in November by Asher Barondes '26, Benjamin Siegel '29 and Chase Reynders '26, Scroll Toll allows users to set limits on apps on their phone. When users exceed the limits they have set, Scroll Toll prompts them to donate to one of the app's selected charities. This creates a financial incentive against screen time usage and encourages a donation to a small charity.

"We wanted to add more friction to really get people off their phones," Barondes, who works on the app's interface and marketing, told the News. "We recognized that one way to do so is by having some money tied to it. But at least if you did exceed your screen time limit, you would be contributing to some social good."

When users download the app, they set time limits on apps of their choosing and select an amount to donate to a certain charity for each time they exceed their limit. For example, a user could choose to donate 25 cents for every extra five minutes of Instagram usage, Reynders said.

After selecting donation amounts, the app then asks users whether they would like to "enable scheduled fulfillment," which means they would auto-donate to their charity as needed, or whether they want to donate manually. In this way, Barondes said, users can postpone their donation if necessary.

"The only way to actually change behavior is if people have this balance they have to find between money and time," Siegel said, comparing Scroll Toll's effect to congestion pricing in cities and on highways.

Siegel and Barondes were independently working on similar screen-time minimizing apps in 2024 and met, while Siegel was on a gap year before attending Yale, because their brothers were friends. They decided to collaborate and soon brought Reynders onboard as well.

During his gap year, Siegel and a few of his friends created an Instagram and TikTok account called @boys.with.the.bus, where they documented themselves going on various adventures and building various vehicles and rafts. Their Instagram account currently has two million followers. The experience transformed how Siegel approached screen time, he said.

"I would look at the stats on the phone after I posted something on it," Siegel said. "You're like, holy crap. I just wasted 100 years of people's lives in this few-second video I just posted."

Siegel hoped his content was motivational and inspiring to viewers, but regardless he said many people have an unhealthy relationship with their phones. A little bit of social media can be "a good thing," he said, but overall, it is destructive. Through Scroll Toll, he hopes that he can provide users with structure and discipline for screen time and social media usage.

The trio announced their app to the Yale community in November.

Even among the small number of initial users in November, Barondes said the team was seeing results.

"What we're seeing just from these 65 users, while it's a low sample size, is an average reduction of 20 percent to 30 percent in screen time," Barondes said.

Now, in January, Scroll Toll has 130 users. The team has incorporated feedback from users, developing a weekly report about screen time usage.

Evan Daneker '26 lives in a suite with Reynders and has been donating to American Forests, a non-profit focused on forest restoration. Daneker, who has used other screen time apps like Opal, said he appreciated how Scroll Toll did not force users to go "cold turkey" on apps they limited.

Daneker said that when a screen time minimizer shuts down an app completely, the user is likely to just delete the app blocker and return to using social media, rendering the blocker ineffective. Because he was allowed to set and override his own limits on Scroll Toll, Daneker felt the app was more approachable.

"I sort of appreciated that Scroll Toll was a little more permissive but still incentivized you to gradually reduce your screen time usage to a healthier amount," Daneker told the News.

Sofia Jacobson '26, who knows Barondes, had never used an app blocker before. Using Scroll Toll, she learned how to set feasible screen time limits, so that she wasn't frequently requesting more time.

Scroll Toll made her think more about her phone usage, particularly when she was "mindlessly scrolling" and kept getting notifications to extend her screen time.

The trio behind the app is still working on ways to improve their project. In particular, they seek to work more closely with their partner charities and create monthly challenges, such as emphasizing charities related to breast cancer during Breast Cancer Awareness Month.

The founders understand that not all users want to create a financial incentive against phone usage — even if they are only donating $6 or $7 per month. However, they believe they will find an audience.

"At the end of the day, you can always delete the app, and while we would love them to stick with it, we're really trying to be intentional about our audience," Reynders said. "We know this isn't for everybody, but we also believe the people it is for, it really is for."

Breast Cancer Awareness Month is October.

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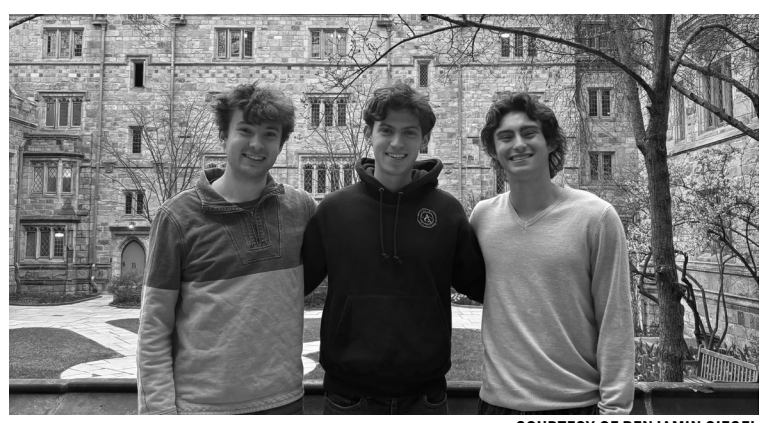

COURTESY OF BENJAMIN SIEGEL

Created by three Yalies, Scroll Toll asks users to donate to a nonprofit when they request extra time on restricted apps.