

Ivermectin Prescriptions Rise 72% in 2021 as Off-Label Use Ramps Up

Analysis of Real-World Data Identifies Trends in Guideline Adherence Among U.S. Healthcare Providers

KEY FINDINGS:

- Between 2019 and the beginning of 2021, the average number of monthly ivermectin prescriptions in the United States increased by 72%, from 39,864 to 68,428.
- In the same time period, the average number of healthcare providers prescribing ivermectin each month increased by 34%, from 15,835 to 21,233.
- The greatest increases in prescriptions were seen in Idaho, New Mexico, and Wyoming, with increases of 258%, 216%, and 204% respectively. The greatest increases in healthcare providers prescribing ivermectin were seen in New Mexico, South Dakota, and Alaska, with increases of 172%, 118%, and 117% respectively.
- The three specialties with the greatest increase in monthly ivermectin prescriptions between 2019 and the beginning of 2021 were anesthesiology, physical medicine and rehabilitation, and pulmonary disease. None of these specialties typically treat conditions for which the use of ivermectin is FDA approved, nor do they treat those for which off-label usage is commonplace. There was no significant change in the number of prescriptions in dermatology, the speciality that most routinely prescribes ivermectin to treat common diseases for which this medication is FDA approved.

EXECUTIVE SUMMARY:

Ivermectin was introduced as a veterinary drug in 1975, and the discovery of its effectiveness in combating certain parasitic diseases in humans won the 2015 Nobel Prize for medicine. The drug is approved by the FDA to treat people with intestinal strongyloidiasis and onchocerciasis, two conditions caused by parasitic worms. In addition, topical forms of ivermectin are approved to treat external parasites such as head lice and for skin conditions such as rosacea.

The drug began to gain visibility as a possible treatment for COVID-19 in April of 2020, when Australian researchers reported that it could inhibit in vitro coronavirus replication in large doses. However, as is the case with many chemicals that may be antiviral at doses unsafe for human consumption, the dose of ivermectin used in this study to inhibit coronavirus replication is known to be toxic to humans. Additionally, [studies have shown](#) that the drug does not speed recovery and U.S. health officials have [warned against its use as a treatment for COVID-19](#).

Despite these warnings, demand for the drug has continued to surge. On August 26, 2021, the CDC published a [report](#) showing a rapid national increase of oral ivermectin prescriptions tied to increases in severe illness associated with its use.

The prescribing of ivermectin for COVID-19 demonstrates a departure from treatment guidelines and medical standards. This behavior from healthcare providers may further exacerbate mistrust in the medical system and in scientific evidence, hindering broader healthcare strategies that are evidence-based. It also has the potential to cause harm to patients due to the dangerous

side effects associated with ivermectin use. Meanwhile, there are approved therapies that work to prevent and treat COVID-19 whose side effects have been studied in detail by regulatory agencies.

In this analysis, Komodo Health followed up on the CDC report to look at state-level ivermectin prescriptions for all clinical preparations of ivermectin. The change in prescriptions across clinical specialties over time was also calculated, as was the change in the number of healthcare providers prescribing ivermectin.

METHODOLOGY:

This analysis used Komodo's Healthcare Map™, the industry's largest and most complete database of de-identified, real-world patient journeys in the U.S., to identify prescriptions for ivermectin from January 1, 2019 through May 31, 2021. Changes in the number of prescriptions and the number of prescribing providers were analyzed over time, and reviewed for trends by state and by prescribing healthcare provider specialty.

Prescription data was sourced from ivermectin claims paid by insurance providers. Claims data for oral and topical forms of ivermectin were included (no claims for injectable or otic ivermectin were found).

National Provider Identifier numbers on claims data were used to classify healthcare providers for this analysis.

The time period of January through December of 2019 was used to establish a pre-COVID-19 baseline in ivermectin prescriptions, comparing it to January through May of 2021. While 2020 was included in our analysis, 2019 was used as the baseline year to avoid any anomalies in clinical trends that may have been prompted by the COVID-19 pandemic.

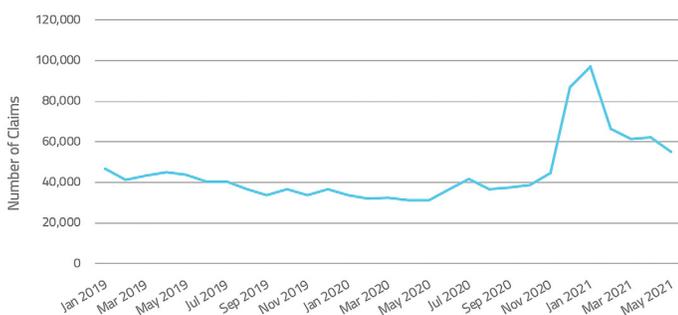
RESULTS:

The number of ivermectin prescriptions, and of healthcare providers prescribing ivermectin, increased significantly during the COVID-19 pandemic

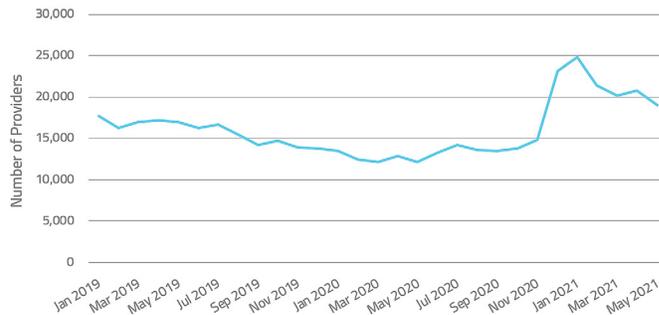
In 2019, a monthly average of 39,864 ivermectin prescriptions were filled. In 2020, this increased slightly to a monthly average of 40,347 prescriptions. Between January and May of 2021, the monthly average was 68,428 prescriptions. This is a 72% increase in prescriptions between 2019 and the first five months of 2021. This significant increase began in December of 2020. Within our observed timeframe, the highest monthly number of prescriptions was seen in January of 2021, at 97,192.

In 2019, a monthly average of 15,835 healthcare providers prescribed ivermectin. Between January and May of 2021, a monthly average of 21,233 healthcare providers prescribed ivermectin. This is a 34% increase in the number of healthcare providers prescribing ivermectin between 2019 and the first five months of 2021. This significant increase also began in December of 2020. Within our observed timeframe, the highest number of healthcare providers prescribing ivermectin was seen in January of 2021, at 24,781.

**NUMBER OF IVERMECTIN CLAIMS
(JAN 2019 – MAY 2021)**



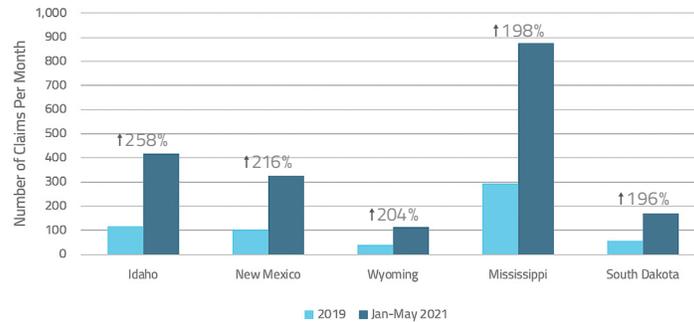
**NUMBER OF IVERMECTIN-PRESCRIBING PROVIDERS
(JAN 2019 – MAY 2021)**



Changes in ivermectin prescriptions, and in healthcare providers prescribing ivermectin, varied significantly by state

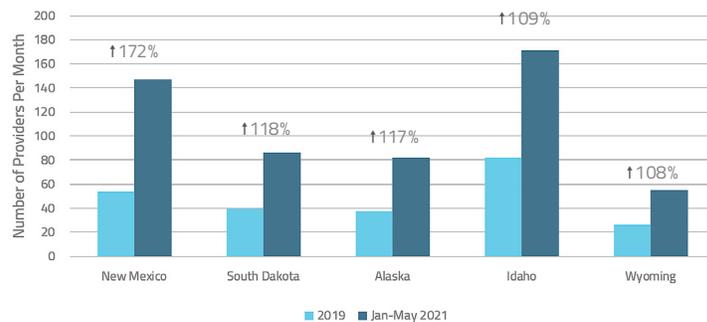
While the number of prescriptions for ivermectin was seen to have increased by less than 20% in nine states, multiple other states had a significant increase. The five greatest increases in prescriptions were seen in Idaho, New Mexico, Wyoming, Mississippi, and South Dakota. Idaho had an average of 116 prescriptions per month in 2019, increasing to an average of 417 prescriptions per month in 2021 – a 258% increase.

CHANGE IN IVERMECTIN CLAIMS, TOP 5 STATES



The five greatest increases in healthcare providers prescribing ivermectin were seen in New Mexico, South Dakota, Alaska, Idaho, and Wyoming. New Mexico had an average of 54 healthcare providers prescribing ivermectin each month in 2019, increasing to 147 in 2021 – a 172% increase.

CHANGE IN IVERMECTIN-PRESCRIBING PROVIDERS, TOP 5 STATES



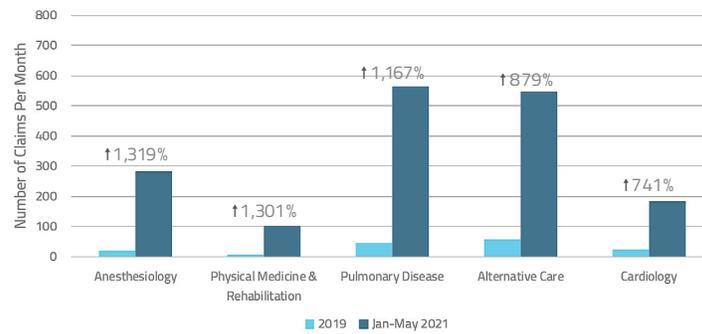
The largest increases in prescriptions were seen in clinical specialties that don't typically treat conditions for which ivermectin is indicated

As stated above, ivermectin is a medication used to treat parasitic infections and is commonly prescribed on-label by specialties including dermatology and gastroenterology. Between 2019 and the first five months of 2021, the five specialties with the greatest increases in average monthly prescriptions for ivermectin were:

- **Anesthesiology:** ivermectin prescriptions by providers in this specialty increased 1,319%.
- **Physical medicine and rehabilitation:** ivermectin prescriptions by providers in this specialty increased 1,301%.
- **Pulmonary disease:** ivermectin prescriptions by providers in this specialty increased 1,167%.
- **Alternative care:** ivermectin prescriptions by providers in this specialty increased 879%.
- **Cardiology:** ivermectin prescriptions by providers in this specialty increased 741%.

Dermatologists typically prescribe ivermectin for on-label usage more often than other specialties. In this specialty, no significant increase in prescriptions was observed, with 14,150 monthly prescriptions in 2019 and 14,439 in the first five months of 2021 – an increase of 2%.

CHANGE IN IVERMECTIN CLAIMS, TOP 5 PROVIDER SPECIALTIES



There was no increase in the prevalence of any disease that ivermectin is FDA approved to treat

A preliminary look at Komodo Health’s data found no evidence of an increase in any of the diseases for which ivermectin use is approved. Between 2019 and the first five months of 2021, there was a 14% decrease in diagnosis of typical uses for ivermectin, including strongyloidiasis, onchocerciasis, head lice, blepharitis, filariasis, and scabies. This decrease is likely related to a decrease in healthcare utilization in general in 2020 due to the pandemic. This further suggests that the increase in prescriptions is due to off-label usage during the COVID-19 pandemic. During this same time period, ivermectin prescriptions increased by 72%.

DISCUSSION:

As no change was observed in the prevalence of any condition that ivermectin is approved to treat, the steep increase in both prescriptions for ivermectin and healthcare providers prescribing it is likely related to off-label use for COVID-19 despite warnings from health officials about its lack of efficacy. This indicates a concerning trend of departure from evidence-based care. This is occurring concurrently with hesitancy from patients to receive FDA-approved vaccines. Many public health officials and government agencies have highlighted the role of misinformation in creating public fear and confusion, hampering efforts to combat the COVID-19 pandemic. It is the responsibility of certified clinical professionals to follow guidelines in treating their patients, as well as to counter misinformed narratives and act as models in encouraging trust and adherence to guidelines. Providers writing prescriptions against the guidelines of the CDC, FDA and other health agencies during a public health crisis could indicate a systemic issue requiring further research. As a data-driven company, Komodo Health believes in the power of data and evidence for decision-making in healthcare for patients and providers alike.

Several limitations should be noted. This analysis used a claims-based dataset that does not account for uninsured patients. It thus did not capture the total number of prescriptions written, nor prescriptions that were paid for out of pocket. This analysis focused on ivermectin sourced from healthcare providers, and did not include over-the-counter ivermectin intended for animals, or prescriptions that were written by a veterinarian. Authors attempted to control for data lag in this analysis.

AUTHORS:

Tabassum Khan, MD, MPH, Medical Director, Komodo Health

Alex Enrique, Healthcare Data Analyst, Komodo Health

Usha Periyannayagam, MD, MPH, Head of Clinical Product and RWE, Komodo Health

About Komodo Health

Komodo Health builds groundbreaking software solutions powered by our Healthcare Map™ – the industry’s largest and most comprehensive database of real-world, patient-level data. With access to data from more than 330 million patients, Komodo Health’s next-generation analytics make it easy to unlock meaningful insights and create more cost-effective, value-driven solutions. We help stakeholders in life sciences, patient advocacy groups, and healthcare payers and providers answer healthcare’s most complex questions in our mission to reduce the global burden of disease.