



# Impact of the COVID-19 Pandemic on Cataract Surgeries in the United States

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## Introduction

The COVID-19 pandemic has profoundly impacted every aspect of health-care delivery in the United States (US).<sup>1,2</sup> For example, during the first two months of the pandemic there was a dramatic decrease in preventative and elective care, which impacted modalities ranging from imaging and procedures to laboratory tests and vaccinations.<sup>1</sup> The field of ophthalmology was not immune to the impact of the pandemic. Notably, one study using surgical claims processed through Change Healthcare found that cataract surgeries were initially reduced early in the 2020 pandemic year but then rebounded to 2019 volume by the end of the year.<sup>2</sup>

The impact that the COVID-19 pandemic has had on access to healthcare has varied depending on the demographic features of populations.<sup>1</sup> Populations more vulnerable to poor outcomes secondary to COVID-19 infection, such as the elderly and immunocompromised, as well as those experiencing changes in health insurance due to financial hardship were anticipated to experience disparities in health-care access during the pandemic.<sup>3</sup> The purpose of this study was to examine the impact of the pandemic on cataract surgery rates among a portion of the higher-risk population: Medicare beneficiaries.

## Materials and Methods

Ambulatory Surgical Center (ASC) Payment System filed limited data sets for 2014 through 2020 were purchased from the Research Data Assistance Center (Minneapolis, Minnesota). The data were obtained through a data use agreement (#24552) with the Centers for Medicare and Medicaid Services and Northwestern University's Surgical Outcomes and Quality Improvement Center. The datasets contain a summary of services by ASCs reimbursed by Medicare, including procedure codes and geographic information for suppliers. The Northwestern Institutional Review Board exempted the study (#STU00071111). The data complies with the HIPAA issued by the US Department of Health and Human Services.

Healthcare Common Procedure Coding System 66984 and 66982 were used to identify routine and complex cataract surgeries, respectively. The total number of each type of surgery was determined by year. Surgery rates per 10,000 Medicare beneficiaries 65 and over were calculated by using population estimates from the US Census Bureau and adjusting the number of eligible beneficiaries by the proportion who enrolled in Medicare Advantage Plans.<sup>4-6</sup>

## Results

The annual number of routine cataract surgeries ranged from a low of 2,298,444 in 2014 to 2,514,676 million in 2020, while complex surgeries reached a nadir in 2019 of 182,427 from a peak in 2017 of 199,250 (Table 1).

The rates of routine cataract surgery have marginally trended upward during the study period from a low of 679 surgeries per 10,000 beneficiaries in 2016 to 744 in 2020. During the 2020 pandemic year, the rate was 744/10,000

**Table I** Routine Cataract Surgeries in the United States 2014–2020

Year	Total Routine Cataract Surgeries	Routine Cataract Surgeries per 10,000 Medicare Beneficiaries	Total Complex Cataract Surgeries	Complex Cataract Surgeries per 10,000 Medicare Beneficiaries
2014	2,298,444	711	183,046	57
2015	2,350,293	715	192,920	59
2016	2,305,782	679	198,262	58
2017	2,317,371	681	199,250	59
2018	2,438,163	716	194,059	57
2019	2,478,461	716	182,427	53
2020	2,514,676	744	185,370	55

beneficiaries, slight greater than the pre-pandemic year rate of 716/10,000. The rates for complex cataract surgery ranged in the 50s per/10,000 beneficiaries and did not substantially change during the study interval (Table 1).

## Discussion

We found no significant change in annual rate of cataract surgery during the 2020 COVID-19 pandemic year when correcting for the annual decline in enrollment being observed in traditional Medicare due to increased uptake of Medicare Advantage Plans.<sup>6</sup> The rates of routine and complex cataract surgery were not impacted by the pandemic when examined in 12-month intervals. These findings are consistent with another study of elective surgical procedures in the US from a nationwide health-care clearinghouse in which the rate of cataract surgery declined precipitously during the initial seven weeks of the pandemic but rebounded to 2019 rates by the fall and winter of 2020.<sup>2</sup>

There were several potential factors behind the lack of decrease in the cataract surgery rates. While the American College of Surgeons (ACS) initially recommended curtailing elective operations due to uncertainties about infection transmission, PPE availability, testing protocols, and access to ventilators, only 35 days following this guideline the ACS released a joint statement providing guidance for the resumption of these services.<sup>2</sup> Additionally, as the pandemic persisted through 2020, new data suggesting infection control at hospitals were adequate and nosocomial transmission of COVID-19 was limited likely reassured patients of the safety of presenting for a surgery.<sup>7</sup> Furthermore, since cataract surgery is an ambulatory surgery not requiring patients to be admitted to the hospital post-operatively, they likely were less impacted by hospital shortages on resources like intensive care unit beds or ventilators.<sup>2</sup> Finally, there were likely financial incentives for institutions to restore surgical volume. Thus, the absence of a decrease in cataract surgeries in the 2020 pandemic year was likely multi-factorial, involving professional organization and hospital guidelines, patient preference, and clinical judgement.

This study has several limitations. It was restricted to Medicare beneficiaries enrolled in traditional Medicare and may not be generalizable to other groups. The results, however, are consistent with those of from a nationwide health-care technology clearinghouse (a non-Medicare administrative dataset) suggesting they reflect a broader national experience.<sup>2</sup>

## Conclusion

We found no significant change in annual rate of cataract surgery during the 2020 COVID-19 pandemic year in traditional Medicare beneficiaries. The reasons that the annual rate of cataract surgeries remained stable despite the pandemic are likely multi-factorial, including perceived medical necessity and various socio-economic pressures. This work adds to the growing literature on the COVID-19 pandemic that will help direct healthcare policy as the virus continues to impact the nation.

## Disclosure

The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government (French and Greenberg). Dr. French is supported by an unrestricted grant from Research to Prevent Blindness, NY, NY, under the grant. Research to Prevent Blindness, NY, NY supported design and conduct of the study, collection, and management. The authors report no other conflicts of interest in this work.

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