

# Disparities in IR Care for Pulmonary Embolism

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**T**he existence of racial and ethnic disparities in health care is broadly documented, but little is known about disparities in access to and delivery of interventional radiology (IR) treatments. Our team designed and conducted a study to determine whether such differences exist in the IR treatments provided to patients hospitalized with acute, high-risk pulmonary embolism (PE).

Previous studies have focused on IR procedures such as uterine fibroid embolization, which is often an elective procedure. We chose to examine an acute, potentially life-threatening condition to mitigate procedural factors such as insurance coverage and to narrow in on disparities caused by unconscious and systemic biases. We also examined the ethnicity and race of in-hospital deaths among these patients, regardless of the treatment they received, to assess the impacts on patient care. This study's findings were recently presented at the Society of International Radiology 2022 annual scientific meeting, which took place in June 2022 in Boston, Massachusetts. The abstract was published in *Journal of Vascular and Interventional Radiology*.<sup>1</sup>

## METHODS

Using the National Inpatient Sample database managed by the Agency for Healthcare Research and Quality, we identified adults aged  $\geq 18$  years in the United States who were hospitalized with acute PE from 2016 to 2019 and treated with one of three procedures: (1) thrombectomy, (2) catheter-directed thrombolysis; or (3) systemic thrombolysis. Of 14,121 patients who met inclusion criteria, 72% were White, 18% were Black, 6% were Hispanic, and the remaining 4% included Asian/Pacific Islander, Native American, and undefined. Logistic regression, chi-squared test, and 95% confidence intervals were used to determine statistical significance.

## RESULTS

In this analysis, Black and Hispanic patients were less likely than White patients to receive IR treatments for acute PE (49% and 48% vs 55%, respectively; odds

## KEY FINDINGS

- Black and Hispanic patients were less likely than White patients to receive IR treatments for acute PE.
- Black patients were more likely than White patients to die while hospitalized with acute PE regardless of whether they underwent an IR procedure.

ratio [OR], 0.82; 95% CI, 0.76-0.90 and OR, 0.77; 95% CI, 0.67-0.89, respectively). Moreover, Black patients were more likely than White patients to die while hospitalized with acute PE regardless of whether the patient received an IR procedure (systemic thrombolysis: 22% Black vs 24.3% White; relative risk [RR], 1.59; 95% CI, 1.21-2.10; thrombectomy and CDT: 5.7% Black vs 3.6% White; RR, 1.27; 95% CI, 1.09-1.47).

Limitations of this study in its current phase include the potential for differences in outcomes seen between racial groups to be explained by differences in rates of comorbid conditions. However, preliminary data comparing mortality rates between racial groups have continued to show significantly greater risk of mortality for Black patients even when stratifying patients based on concurrent diagnosis or individual comorbid conditions. Furthermore, in future analyses, we plan to control for these potential differences in comorbidity rates between races by utilizing a comorbidity index.

## ACCESS TO PE CARE

These findings have important implications for how and where PE care is provided. Disparities can emerge from unconscious bias, which can influence how providers determine which treatment to suggest for which patients. Many medical centers now have PE response teams (PERTs) available 24/7. When a PE patient arrives, these multidisciplinary teams discuss the best treatment plan. At health care locations that do not

yet have these teams, PE treatment is usually decided by whoever sees the patient first, often an emergency department or urgent care physician. PERTs shift decision-making from an individual to a team of experts to discuss the best option. Among other benefits, the PERT approach potentially reduces the influence of any individual bias in deciding who should receive which treatment.

A medical center's location can also affect access to care for certain populations. In the case of IR treatment for PE, disparities may arise between facilities, depending on whether IR services are available—for example, in rural areas versus those near academic medical centers. This leaves many patients without access to IR when the urgency of the condition does not allow time for transport to another facility.

Most patients experiencing a PE are unable to advocate with their care team to consider other treatment options. Clinicians must ensure that IR options are considered and pursued when clinically indicated and that experienced interventional radiologists are available to perform IR treatments.

## FUTURE IMPLICATIONS

The ability to help change even this one disparity extends throughout the United States health care and medical research systems. First, additional studies are needed to understand the scope and possible causes of disparities in IR care. Our research team plans to continue with this vital line of inquiry. Why are Black and Hispanic patients receiving IR care for PE less often than White patients, and beyond that, why is their in-hospital survival rate poorer regardless of their PE care plan?

Interventional radiologists also have a responsibility to help reduce disparities by advocating for multidisciplinary PERT teams—and for IR's role in treatment—at more medical centers to expand this best practice into underserved communities. We can also educate our patients and their physicians about the availability of IR treatments for various diseases and about current disparities in their use.

Management of PE spans multiple hospital departments and functions, including emergency medicine, pulmonology, and vascular surgery. Establishing multidisciplinary teams for PE response can help integrate those functions and convene additional expert perspectives, helping ensure that IR treatment is provided when warranted.

We also need to identify “IR care deserts” and work to address obstacles to the availability of IR treatment for PE and many other ailments. Hospital administrators can help by expanding IR availability to more communities,

thereby potentially lessening the disparities identified in this study for Black and Hispanic populations.

## CONCLUSION

All racial and ethnic populations should have access to care that can achieve positive outcomes less invasively with lower risk and shorter recovery. IR is an exciting, growing field of minimally invasive, image-guided treatment for medical conditions that once required open surgery but now can be treated with reduced complications and quicker recovery time. The field of IR is committed to excellence in value-oriented patient care and improving outcomes for all patients. To achieve this as a profession, we must first determine where racial and ethnic disparities exist for those who could benefit from IR. Identifying gaps such as those found in this study is the first step in advancing care and improving health for all patients. ■

1. Ahmed K, Breuer J, Huynh K, Abi-Jaoudeh N. Abstract no. 277 racial disparity in acute pulmonary embolism treatment. *J Vasc Intervent Radiol*. 2022;33(suppl):S127. <https://doi.org/10.1016/j.jvir.2022.03.358>

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