DANC-specific remission criteria, and such criteria could be adjusted, as appropriate.

Although the highest prevalence of the Duffy null phenotype is found among people with genetic ancestry from sub-Saharan Africa or the Arabian Peninsula, race or ethnic group alone is an inappropriate proxy for DANC. We therefore do not support simple "race based" modifications that have been previously proposed to address disparities associated with the Duffy null phenotype. Our suggested strategies for personalizing aspects of oncology care and ameliorating such disparities are broadly applicable and feasible. Uptake could help ensure that people with the Duffy null phenotype benefit from standards for research participation and clinical management as much as people without it. Investigators, clinicians, and regulators have the knowledge and ability to rectify these disparities and should work together to address them.

An audio interview with Andrew Hantel is available at NEJM.org

Disclosure forms provided by the authors are available at NEJM.org.

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Sickle Cell Trait, Inequity, and the Need for Change

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Sickle cell trait (SCT) is a heterozygous carrier state defined by the inheritance of one sickle β-globin and one normal β-globin allele. It is usually benign. Manifestations of sickle cell disease (SCD), such as vaso-occlusive pain episodes, haven't been observed in people with SCT, although there is evidence of a small number of rare associated complications.[1] Nonetheless, because of misperceptions about risks, people with SCT in the United States may receive inequitable and potentially harmful treatment related to military service, participation in college athletics, and stem-cell transplantation.[2,3] SCT has also been used in troubling ways in forensic determinations of cause of death.[4]

Since in the United States, SCT is most common among people who identify as Black (occurring in 6 to 9% of Black Americans), such practices add to substantial inequities affecting this population. In the past several years, despite other efforts to reduce inequities in medicine, inequities related to SCT have been exacerbated.

SCT-related practices affecting members of the military and athletes generally stem from claims of a significant excess risk of rhabdomyolysis and death during physical exertion among people with SCT. A 2016 retrospective study that included nearly 50,000 Black U.S. Army soldiers, however, showed no increased risk of death associated with SCT. Although SCT was associated with an increased risk of rhabdomyolysis, this effect was similar in magnitude to that associated with tobacco use or having a body-mass index (BMI; the weight in kilograms divided by the square of the height in meters) of 30 or higher, as compared with a BMI of less than 25. It was smaller than the effect associated with recent use of a statin or an antipsychotic agent.[5]

Despite these data, U.S. military branches screen for SCT and single out people with the trait (but not those who smoke or use a statin). During basic training, to indicate that they have a medical condition, Air Force recruits with SCT are required to wear red dog tags, and Navy recruits wear a red belt.[2] We are unaware of an-

Equity Issues Related to Sickle Cell Trait (SCT) and Associated Harms.*

Equity Issue	Harms
Mandatory testing of members of the U.S. military, sometimes accompanied by public identification of people with SCT	Members of the military with SCT may be treated differently from their peers; may face stigma, which could affect promotions; and may have their health information made public.
Mandatory testing of NCAA athletes in all divisions, with no waiver option	Athletes with SCT may be treated differently from their peers (e.g., they may have different training regimens). Testing costs money, and training may be delayed while programs await test results. Athletes may receive inadequate education about SCT.
Use of the phrase "exercise collapse associated with sickle cell trait" (ECAST)	There is a potential for anchoring bias, misdiagnosis, and inadequate treatment in cases of exertion-associated adverse events. SCT is treated as if it were a disease.
Requirements that hematopoietic stem-cell donors donate bone marrow and not peripheral-blood stem cells for transplantation	Although both approaches are safe overall, bone marrow collection is associated with a higher risk of complications.
Use of SCT as a cause of death for people who die in police custody	SCT can be used as a cover for abuse of Black people by law-enforcement officers, leading to a lack of accountability and justice.

* Information is from Ebert et al.,[2] Baker et al.,[3] and LaForgia and Valentino-DeVries.[4] NCAA denotes National Collegiate Athletic Association.

other genetic condition or carrier state that comes with a similar possibility of public identification. Moreover, the risk of adverse events associated with SCT is low and can be mitigated by adopting common-sense training strategies. Special handling of Army recruits with SCT was stopped in the 1990s in favor of universal exercise precautions but was reinstated in 2020.[2] Published articles have provided limited details, but it appears that recent deaths that were reportedly related to SCT were the primary impetus for this change.

Since 2013, the National Collegiate Athletic Association (NCAA) has also mandated SCT testing for all Division I, II, and III athletes.[3] There are limited data supporting this policy. Given potential harms, the American Society of Hematology has opposed mandatory testing in this context, a position that was supported by a 2018 systematic review of the clinical significance of SCT.[1] The NCAA's recommended precautionary measures for athletes with SCT include guidelines that should apply to all sports participants, such as receiving adequate rest and staying well hydrated. Like the Army, the NCAA has recently taken a step backward. Its initial policy allowed athletes to sign a waiver to forgo screening for SCT. In 2022, however, this option was eliminated, and all athletes are now required to undergo testing. The NCAA Legislative Services Database doesn't cite new data to support this requirement but states that "privacy burdens and institutional management of the care of trait positive individuals have evolved."

The numerous issues associated with the current military and NCAA policies include a lack of autonomy regarding the decision to undergo testing and a potential absence of standardized counseling regarding test results. These approaches single out people with a generally benign carrier state and can have negative consequences for others' perceptions of them as members of the military and athletes, including effects on promotion, assignments, and training regimens (see table).[2,3]

In addition, these policies may contribute to the spread of misinformation, such as the idea that SCT is a disease. Several publications use the phrase "exercise collapse associated with sickle cell trait" (ECAST) to describe a condition that can supposedly be differentiated from other exertion-related medical emergencies. Given that conditions such as rhabdomyolysis and heat stroke can affect people with or without SCT, the ECAST designation has the potential to lead to anchoring bias, misdiagnosis, and improper treatment. Under the NCAA and military policies, people without SCT may also be less likely to be afforded adequate rest and hydration by trainers.

Moreover, there are misperceptions about SCT in the medical community. Hematopoietic stem-cell transplantation is an essential procedure for patients with certain hematologic cancers. For the majority of transplants, stem cells are obtained from peripheral blood through a process that involves administering granulocyte colony-stimulating factor (G-CSF) to donors before apheresis. This procedure is associated with a lower rate of serious adverse events than the second-most used procedure, bone marrow harvest,

which doesn't require G-CSF administration. Not administering G-CSF before apheresis reduces collection efficiency and may increase the likelihood of collection failure. Although G-CSF has been associated with vaso-occlusive episodes in patients with SCD, this complication hasn't been observed in multiple studies of stem-cell donors with SCT. Despite clear physiological differences between people with SCT and people with SCD, various organizations and expert groups have recommended against the use of G-CSF in people with SCT who are undergoing stem-cell collection.

Non–evidence-based recommendations can have important clinical consequences. In 2019, a New Jersey high school principal with SCT died from complications related to bone marrow harvest after reportedly being told that he couldn't undergo peripheral-blood stem-cell collection because of the need for G-CSF and the potential for related harm. According to news coverage, the donor had obstructive sleep apnea, leading to concerns about the use of general anesthesia, which is typically used for bone marrow harvest (anesthesia isn't needed for peripheral-blood stem-cell collection). The bone marrow harvest was therefore performed with local anesthesia — an unusual approach.

Finally, a troubling medical practice involves inappropriately implicating SCT as a cause of death. A 2021 *New York Times* article identified 47 cases in which a Black person died in police custody and the death was subsequently attributed to SCT by a medical examiner, prosecuting attorney, or police officer.[4] Despite readily apparent and often severe trauma, autopsy reports frequently mentioned "sickle cell crisis" as a contributor to these deaths — and sometimes as the primary cause of death. The attempted use of SCT as a cause of death continues. For example, the 2023 and 2024 deaths in police custody of Deitric Williams, Jr., in Arkansas and Robert Powell in Georgia were reportedly attributed to SCT.

Inequitable practices related to SCT can lead to harm and undermine individual autonomy in health care decision making. People should not be prohibited from being tested for SCT; however, we believe testing should not be mandatory and should be done in consultation with a qualified health care professional. The medical field could take several steps to address inequitable SCT-related policies and practices.

First, greater advocacy by medical societies is needed to end the inequitable treatment of people with SCT. Societies could communicate directly with entities that issue non–evidence-based policies. Second, an important problem is the lack of knowledge about SCT and the conflation of SCT with SCD among both members of the public and health care professionals.

Furthermore, since people with SCT and people without SCT can have the same avoidable exertion-related medical emergencies, improved awareness and implementation of universal precautions to ensure adequate rest and hydration are needed. It's critical that undergraduate and graduate medical education programs provide training to address these knowledge gaps, which could be supported by both national medical organizations and local efforts.

Finally, further clinical research on SCT will be important, particularly research on the effects of inequitable treatment on people with SCT. The medical community has a responsibility to help others recognize that SCT is not a disease and that people with SCT should not be treated as if they have one.

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