

COVID-19 and Sickle Cell Disease: Frequently Asked Questions

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How do people with sickle cell disease (SCD) do with COVID-19?

Patients with SCD often have underlying cardiopulmonary co-morbidities that may predispose them to poor outcomes if they become infected with SARS-CoV-2. Data are being collected by the [international COVID-19 sickle cell disease registry](#) and by the [ASH Registry](#), and providers are encouraged to report their SCD patients with COVID-19.

The [Sickle Cell Disease Association of America](#) updates its recommendations frequently about best practices for the care of SCD patients in the era of COVID-19. Below, we address FAQs that arise most commonly from providers less familiar with SCD.

How should I evaluate respiratory symptoms in children and adults with an active COVID-19 infection?

There is significant overlap in presenting symptoms between COVID-19, acute chest syndrome (ACS) and other infectious causes of pneumonia. Providers should test for COVID-19 and other infectious pathogens and have a low threshold for imaging. COVID-19 most commonly presents with a more diffuse ground glass appearance, versus more localized infiltrates consistent with pneumonia or ACS. These findings are not always distinct, and all possibilities should remain in the differential. A [detailed checklist for evaluating SCD patients](#) with these symptoms in the emergency department has been developed by ASH in collaboration with ED physicians.

Often transfusion therapy is the only effective therapy for respiratory failure due to ACS, with a goal to reduce the hemoglobin S (HbS) level to approximately 15% via exchange transfusion, in order to ensure that HbS levels remain less than 30% for approximately 4 weeks. Post automated exchange transfusion the hemoglobin should be targeted between 10 and 12g/dL to maximize oxygen carrying capacity. Whether reducing HbS via transfusion improves outcome in COVID-19 respiratory failure is unknown, but decreased sickling in this setting as in ACS is desirable.

Transfer to another facility should be strongly considered early after presentation if automated exchange transfusion therapy cannot be performed. Simple transfusion can be given in the interim, with avoidance of hyperviscosity by targeting a post infusion Hb of less than 10g/dL.

Should I change my use of exchange transfusion for neurological acute symptoms suggesting a stroke or transient ischemic attack?

For acute stroke presentation or transient ischemic attack (TIA), we recommend reducing the percent HbS level to approximately 15% via exchange transfusion. This strategy provides sustained HbS levels less than 30% for approximately 4 weeks and is consistent with the ASH CNS guidelines recommendations for management of acute strokes and TIAs. Early reduction in HbS has been associated with better outcomes after stroke. Simple transfusion can be given while preparing for exchange transfusion, with avoidance of hyperviscosity by targeting a post infusion Hb less than 10g/dL.

Should I change my use of exchange transfusion or regular blood transfusion for primary and secondary stroke prevention, secondary prevention of ACS, pain or priapism?

At present, transfusion practices in children and adults with SCD are being modified on a case by case basis as determined by individual physicians and practice groups. Some providers are electing to relax exchange transfusion endpoints (i.e. allowing 40% HbS) or switching to simple exchange transfusion (for an interim period) to minimize unit consumption.

In areas where severe blood shortages are expected or already occurring, some providers are initiating hydroxyurea in patients on routine blood transfusions because the transition to maximum tolerated dose of hydroxyurea may require up to 6 months to be fully effective. Based on efficacy of hydroxyurea for primary and secondary stroke prevention as compared to no red blood cell transfusion, we would consider starting low dose hydroxyurea in children with an indication for primary or secondary stroke prevention, if blood transfusion services are likely

to be interrupted¹, after discussion with the family and transfusion service personnel. Randomized controlled trial data are not available, but a similar strategy for secondary prevention of stroke is also reasonable for adults.

The evidence for transfusions as secondary prevention of ACS, pain and priapism have not been evaluated prospectively in randomized controlled trials, but rather analyzed posthoc from stroke prevention studies. Collectively, these data, along with extensive clinical experience, suggest that regular blood transfusions do decrease the incidence of acute chest syndrome, acute pain and priapism events, and thus transfusion therapy should be continued on an individualized basis if possible for these indications.

Should we alter approaches to transfusion thresholds and blood use in children and adults with SCD?

The transfusion threshold for common clinical situations i.e., severe anemia, VOC, priapism, etc. may need adjustment due to blood shortages. Transfusions should be given for symptoms arising from severe anemia or acute complications (e.g. ACS or stroke), and not solely based on preestablished hemoglobin thresholds.

How should one balance risk of hospitalization for acute painful vaso-occlusive episode management vs. risk of exposure to COVID-19?

Where possible, consider telemedicine patient contact and optimize the use of oral opioids. To limit exposure to COVID-19, shift as many patients as feasible to receive intravenous narcotics in a day hospital if available rather than the emergency department. Minimizing provider cross coverage between outpatient/day hospital and inpatient units is desirable.

Should a child or adult with severe COVID-19 infection receive therapeutic anticoagulation?

No, they should receive only prophylactic doses, or "intermediate intensity" dosing (0.5mg/kg enoxaparin twice daily) per institutional ICU practice or as part of a clinical trial, unless there is an indication for full anticoagulation.² For additional details, please see the [COVID-19 VTE/anticoagulation FAQs](#).

Is there any specific guidance you are giving patients that are considering stem cell transplantation or gene therapy for SCD?

Many programs are preparing to resume non-emergent treatments including transplantation and gene therapies for SCD. Individuals should contact their primary hematologist or transplant center for updates.

My patient usually receives antigen-matched red cells. Should I use non-matched units if there is a blood shortage?

If possible, continue to transfuse antigen-matched units to prevent alloimmunization, unless blood transfusion is life-saving and time sensitive and matched units are not immediately available. For patients with a history of delayed hemolytic transfusions, at a minimum the minor red cell antigens should be matched for Rh (C, E or C/c, E/e), and K, and should lack any antigens identified in the DHTR evaluation. Additional matching should be considered for Jk^a/Jk^b, Fy^a/Fy^b, and S/s. A conversation with the local or regional blood bank personnel should occur to optimize the best potentially matched units. Immunosuppressive therapy should be considered on a case by case basis for DHTR. In patients with a history of hyperhemolysis, prophylactic immunosuppressive therapy is advised. For more information on transfusion management, see the [ASH transfusion guidelines in SCD](#).

Should I adjust doses of any SCD medications given the COVID-19 threat?

If a patient is doing well, there is no reason to change any SCD medications because of the COVID-19 pandemic or actual infection. If COVID-19 rates remain high in your area, to reduce frequency of clinic and pharmacy visits consider telemedicine visits and increasing the supply of medication to 90 days as allowed.

What is the role of recently approved disease-modifying drugs, voxelotor and crizanlizumab, during the COVID-19 pandemic?

Patients on these medications should be continued. For patients with symptomatic baseline low hemoglobin levels or patients that are difficult to transfuse because of alloantibodies, voxelotor, a therapy designed to increase the baseline hemoglobin level, can be considered. The decision to begin this agent should be based on the relative benefits versus the risks and likelihood of a limited blood supply.

References

1. De Baun, M. Initiating adjunct low dose-hydroxyurea therapy for stroke prevention in children with SCA during the COVID-19 pandemic. In press, *Blood* 2020.
2. Connors, J and Levy, J. COVID-19 and its implications for thrombosis and anticoagulation. *Blood* 2020.

For additional information, see:

- [International registry designed to capture pediatric and adult COVID-19 cases in Sickle Cell Disease patients and report on outcomes in this population](#)
- [An outline to decrease burden and minimize morbidity from COVID-19 in SCD](#)
- [Anticoagulation and COVID-19](#)
- [Alloimmunization and use of antigen matched transfusion](#)
- [Acute chest syndrome in adults with sickle cell disease: COVID-19](#)

[VIEW ALL COVID-19 FAQs](#)