



MEDICAL AND RESEARCH ADVISORY COMMITTEE (MARAC)

MARAC Statement: Update on Penicillin Shortages

April 13, 2023 - SCDAAs Medical and Research Advisory Committee is still receiving reports of intermittent shortages of penicillin VK liquid. Below is a slight update to the statement released on this topic in January.

Penicillin VK solution is suffering from intermittent supply shortages. This can affect children with sickle cell disease. Penicillin VK in liquid form is prescribed for babies and young children with sickle cell disease who are unable to swallow pills as standard care, twice a day, starting as early as 6-8 weeks of age. Children less than 3 years of age should receive oral penicillin 125 mg twice daily, and the dose should be increased to 250 mg twice daily for children older than 3 years.

WHY DO CHILDREN WITH SICKLE CELL DISEASE NEED PENICILLIN?

The strategy of using an antibiotic daily to prevent infection in people with lower immune defense is called prophylaxis. Without medical care, young children with sickle cell disease have extremely high risk of hospitalizations and death from infection. **Strong scientific evidence shows that penicillin twice a day helps young children with sickle cell disease avoid an overwhelming bacterial infection, especially the bacteria called pneumococcus.** Newborn screening diagnosis of sickle cell disease leading to penicillin prophylaxis are the two fundamental starting points of sickle cell comprehensive care.

WHAT CAN THE HEALTH CARE TEAM DO ABOUT PENICILLIN SHORTAGES?

- A. Urge the manufacturers and distributors to improve the supply of penicillin so that we do not lose out on this effective, evidence-based standard of care.
- B. Prioritize sickle cell disease as an immune-compromised condition that has specific guidelines stating the necessity for penicillin prophylaxis.

WHAT DO FAMILIES DO ABOUT PENICILLIN SHORTAGES?

- C. Alternatives to penicillin liquid exist, although all are suboptimal. Discuss with your doctor:

| Medication | Challenges |
|---|--|
| Penicillin VK tablets, crushed | <ul style="list-style-type: none">• Miss out on residual uncrushed portions• Takes time twice a day while the family is already busy with parenting a young child |
| Penicillin G injection, once a month | <ul style="list-style-type: none">• Cannot be administered at home/requires visiting a medical facility• Needle stick (Cober and Phelps 2010) |
| Other alternative antibiotics: <ul style="list-style-type: none">• Amoxicillin 20mg/kg/day• Erythromycin | <ul style="list-style-type: none">• Broader effects on normal bacteria than penicillin• Supply shortages might also be a problem (Cober and Phelps 2010) |



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- D. Make sure your child has all immunizations **as recommended for sickle cell disease**. SCDA MARAC strongly encourages **full immunization, especially pneumococcal vaccines PCV and PPSV-23**.
- E. Fever needs prompt attention in individuals with SCD. Go to the Emergency Department (not urgent care) for blood counts, blood cultures and injection of a strong antibiotic like ceftriaxone.

HOW STRONG ARE THE RECOMMENDATIONS FOR PENICILLIN PROPHYLAXIS?

In the United States, penicillin prophylaxis is written into public health policy, National Institutes of Health guidelines and even state laws. Brazil, Canada, France, Italy, Jamaica, Ghana, Nigeria, Tanzania, Uganda, the United Kingdom and other countries have penicillin prophylaxis in their national guidelines for sickle cell disease.

IS IT SAFE TO GIVE ANTIBIOTICS DAILY?

Penicillin prophylaxis has an excellent track record and has been used to provide safe care to thousands of children for over 30 years. Studies have showed that giving penicillin prophylaxis *continuously* does not cause harmful bacteria to become antibiotic resistant. *On-and-off* periods of penicillin prophylaxis could cause antibiotic resistant bacteria to emerge. Penicillin was chosen for prophylaxis because it is focused on the pneumococcal bacteria that can cause problems in sickle cell disease.

IS PENICILLIN EXPENSIVE?

Penicillin is one of the oldest and most affordable antibiotics. Business analysts say that the low prices of penicillin make few companies motivated to manufacture penicillin.

Citations

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