

**Part  
one**

1. (a), (d), (e), and (f). All must be considered. HIV and tuberculosis must always be considered in a child who has suddenly become ill with a serious infection, but sickle cell disease also presents in this way; as of course, do other infections in an otherwise healthy child.

**Part  
two**

2. (c) Sickle cell anaemia makes children roughly 20 times more susceptible to bacterial infections than are children with normal blood cells. Sickle cells do offer protection against malaria, but not against other pathogens. One in 600 African American babies in the United States have sickle cell anaemia at birth, compared with one in 100 in coastal East Africa.

**Part  
three**

3. (a), (b), (c), and (e). All have been proven to improve child survival in countries where the sickle cell gene is highly prevalent.

**Part  
four**

4. (a), (b), (c), and (d). In countries where diagnosis is made by screening at birth, prophylaxis with penicillin is instituted, and vaccinations against bacterial pathogens are the rule, mortality from sickle cell disease in children under five is greatly reduced. The major lethal pathogens are *haemophilus influenzae type b*, *Streptococcus pneumoniae*, and non-typhi salmonella species.

For further reading please read the *Lancet*, October 17, Vol 374 (9698), 2009, pages 1308–1311 and 1364–1371. The latter is an excellent report by T N Williams and others on bacteraemia in sickle cell disease in East Kenya (from the Kilifi District Hospital).