natureOUTLOOK

SICKLE-CELL DISEASE

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The fate of people with sickle-cell disease is largely determined before they are born. Those in developed nations can be expected to live into their 40s, 50s and beyond. In low-income countries, including many African nations, up to 90% of people with the genetic blood disorder die before their fifth birthday (page S2). This stark difference is attributed to newer, life-long interventions that begin at birth — ones that only those in rich countries can afford.

But even patients with access to good medical care still suffer from painful and debilitating symptoms. Only one drug has been approved to treat the disease (S4), and therapies for the pain crises that accompany sickle cell are limited because researchers are only beginning to understand the underlying mechanisms of the agony (S8). Some serious manifestations of the disease, stroke in particular, can have a permanent effect on both physical and intellectual well-being (S16).

Treatments and technologies offer tantalizing hopes of a cure for those who can afford them. Stem-cell transplantation, which has been used to reverse sickle-cell disease in hundreds of children, is being adapted so that adults can benefit (S14). And the advance of gene-editing techniques could soon allow scientists to perform molecular microsurgery, repairing the genetic error that causes the disorder (S11).

Overcoming the global inequity in sickle-cell outcomes will require difficult but feasible steps involving diagnosis, drug availability and better awareness of the disease among primary-care providers (S10). Testing and education programmes may help to improve treatment and prevent the spread of disease in developing countries (S6).

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Lauren Gravitz and Stephen Pincock
Contributing Editors

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