'For Years There Was No Cure: Until Dr Stuart Turvey changed that...'

Rare disease medicine reached a new threshold in British Columbia this winter, when an 18-year-old from Kelowna became the first person in the world to be successfully treated for chronic granulomatous disease (CGD) using prime editing, a next-generation gene-editing approach designed to correct disease-causing DNA changes at their source. BC Children's Hospital Research Institute says the patient, Ty Sperle, was previously treated at BC Children's Hospital, where clinician-scientist Dr. Stuart Turvey had followed his care for more than a decade. The result, published in the *New England Journal of Medicine*, marks a major milestone for rare disease treatment and for precision medicine more broadly.

CGD is a rare inherited immune disorder that leaves patients vulnerable to serious bacterial and fungal infections because their immune cells cannot fight germs properly. According to BCCHR, the disease affects about one in 200,000 children. In Ty's case, that meant years of infections, long-term preventive medication, and constant caution around something most people take for granted: the chance to live normally without fear that an ordinary exposure could turn dangerous. CBC's *The Current* described how Ty had lived with the condition since childhood and how it shaped everyday decisions, while Global News and Castanet both reported on the same long-running burden of infection and treatment.

What makes this case so vital is that the treatment did not just manage symptoms. It aimed to correct the underlying genetic mutation. Prime editing works like a highly precise "search-and-replace" tool for DNA, allowing scientists to repair a specific error without rewriting the entire genome. In the BCCHR report, Dr. Turvey explained that for patients with genetic conditions like CGD, medicine had long offered relief, but not a true cure. In CBC's interview, he called the result the "ultimate precision medicine," describing it as the correction of a "spelling mistake" in DNA that restored the patient's immune function. Medindia offered a similar explanation for general readers, comparing the technology to a word processor that can locate and fix a single error in a long text.

The treatment itself was carried out through an international clinical trial run out of CHU Sainte-Justine and supported by Prime Medicine. Blood stem cells were removed, edited in the lab to correct the NCF1 mutation, and then returned to the patient. BCCHR reports that Ty spent 24 days in hospital and that his immune system's antimicrobial activity remained durable six months later. CBC's transcript adds a deeply human layer to the story: Ty described feeling nervous about being the first person to try the treatment, but said the news that he had been cured

brought shock, happiness, and gratitude. Global News similarly reported his “insane shock” at the outcome, underscoring how extraordinary the moment was for the patient and his family.

Dr. Stuart Turvey’s role in this story is pivotal, and it is one of the reasons the breakthrough matters so much in BC. He was not simply standing at the edge of the result; he had been caring for Ty for more than a decade, guiding a patient through the realities of a severe inherited immune disorder and then recognizing when the time was right to pursue a trial that could do more than manage disease. As he told BCCHR, what made the opportunity compelling was the chance to edit out the mutation at the DNA level, because that was the only real path to a cure. Castanet and CBC both highlighted that same point: this was the first person in the world to be cured through prime editing, and Turvey’s long-term clinical relationship with the patient helped make that possible.

The broader significance of the case reaches far beyond one patient in British Columbia. The NEJM paper and reporting from BCCHR, Global News, Castanet, CBC, and Medindia all point to the same conclusion: this is a proof-of-principle moment for gene editing in human disease. It does not mean every rare condition now has a cure, and it does not mean the therapy is ready for broad clinical use. But it does show that prime editing can correct a disease-causing mutation in a patient’s own cells and produce a durable immune response. That is a meaningful step for rare disease research, and for the families who have spent years hearing what medicine cannot yet do.

For Dr. Turvey, the story is both scientific and deeply personal in the way good translational medicine often is. It is the result of years of patient care, careful research, and collaboration across institutions and countries. For Ty, it means the chance to imagine a future that was once blocked by infection risk and constant uncertainty. For BC Children’s Hospital Research Institute, it is a reminder that research can move from theory to lived reality, and that sometimes the most important breakthroughs come when a clinician stays with a patient long enough to see the field change around them.

A new paper published in *New England Journal of Medicine* details how an 18-year-old patient being treated at BC Children’s Hospital (BCCH) for a rare disease called chronic granulomatous disease (CGD) became the first person ever to receive and be cured by a gene modification treatment known as “prime editing.”