One of the first children in Britain to receive pioneering gene therapy for an immune system disorder has developed leukemia as a result of his treatment.

The boy, 3, is the first gene therapy patient in Britain to fall ill with leukemia, a known risk of the treatment. A similar gene therapy program in France has caused four cases of the blood cancer, and one death.

The child, who has not been named, was born with X-linked severe combined immunodeficiency (X-SCID), a genetic condition in which the immune system fails to develop. It is often known as “bubble baby syndrome,” as sufferers are shielded against germs in a sterile pouch.

Two years ago, he became the eighth patient to be treated with the gene therapy program at the U.K.’s Great Ormond Street Hospital. The program uses a genetically modified virus to correct the faulty DNA that causes X-SCID.

His immune system responded “extremely well” to the procedure but leukemia was diagnosed last month, the hospital said. This is an acknowledged risk of gene therapy, as inserting the replacement DNA can trigger another gene that promotes cancer.

None of the other 14 children to have had gene therapy for X-SCID and a similar condition, known as ada-SCID, has developed leukemia so far, the hospital said. The cancer, however, has been diagnosed in four of the 11 patients involved in a French trial, one of whom has died while three are in remission.

Professor Adrian Thrasher and professor Bobby Gaspar, who treated the boy, said in a statement: “Our first thoughts are to secure the best treatment for this child and to support his family at this very difficult time. This unfortunate event is the first such development on our program. As with any medical treatment there are associated side-effects. The development of leukemia is now a recognized side-effect in this study, though the risks are balanced by the severity of the condition and the lack of good alternative treatments for X-SCID.

They pointed out that 80 percent of children with leukemia made a full recovery, and there was every chance that the child would survive the cancer and be cured of X-SCID.

The immune system disorder is always fatal without treatment. The only alternative to gene therapy is a bone marrow transplant, which rarely achieves satisfactory results unless a fully matching donor is available.