How do we weigh benefits and risks of human gene editing?

Replacing faulty genes in early human embryos and germ cells is within our grasp. Such changes affect DNA in the nucleus and so would be heritable; ultimately, they could be used to make a genetically modified baby.

There are already reports that groups in China, the U.S. and the biotech industry have done this kind of genetic engineering in the lab, prompting some scientists to call for a moratorium on this work. But the underlying technology is potentially hugely disruptive, offering easier and more precise ways to manipulate genes.

Some scientists are calling for a moratorium on such research in humans. They argue that human germline gene editing is dangerous, unnecessary and would lead to designer babies. They also claim it could lead to a backlash that would impede the use of gene editing for making non-heritable changes to our bodies. A wide range of diseases, from HIV to cancer, could potentially be treated this way.

The trouble is, we don't know yet if germline editing is dangerous. One of the points of trying it with human embryos is to find out. The main worry is so-called off-target mutations, that is, unintended changes to the genome. Studies that have been done with monkeys suggest the risk is low. The risk also has to be viewed in context: the DNA in our cells naturally mutates. Each of us is born with around 50 new mutations, the vast majority of which have no known effect.

Read full, original article: Editing human embryos is genetics' new battleground