

Cord Blood Based Ischemic Stroke Recovery Treatment

- Interview with CBC Health's Head Physician, Dr. med. Nils Thoennissen

Umbilical cord blood has recently emerged as a promising source of stem and progenitor cells for use in novel regenerative cell therapies. Recent clinical trials have demonstrated that **infusing cord blood can noticeably help ischemic stroke survivors improve cognitively and physically**, and medical case report demonstrated **long-term, therapeutic effectiveness** when cord blood was infused five years after a stroke event.



Dr. Nils Thoennissen

With more than 20 years of experience in evidence-based medicine and over 14 years clinical experience in haemotherapy including blood transfusions, as well as transplantation, Dr. Thoennissen is an international specialist in cancer, chronic degenerative diseases, and regenerative medicine with a doctoral thesis in neurological research, graded with "summa cum laude".



CBC Health offers cord blood infusions for ischemic stroke survivors from around the world



1. What is Umbilical Cord Therapy?

Although used mainly for transplantation of hematopoietic stem cells in the treatment of blood disorders, umbilical cord blood is now being used increasingly for novel applications as a potent form of cellular regenerative therapy. In less than 25 years, cord blood has become one of the biggest real success stories in regenerative medicine by using the donated blood and its contents for the systemic treatment of a growing number of chronic degenerative diseases. It is estimated that up to 128 million individuals, or almost 1 in 3 individuals, in the US might benefit from regenerative medicine therapy (Harris DT et al., 2007).

2. What is the main aim of Umbilical Cord Therapy?

Several clinical studies in the past few years demonstrate improvement in reperfusion and markers of organ recovery using Umbilical Cord Blood and its derived cells. Not only growing evidence for clinical regenerative benefits is shown for Cord Blood, but also a high safety profile.

3. How do Umbilical Cord Cells differ from Stem Cells?

In comparison to other sources of stem cells, Umbilical Cord Cells contains not only multiple and diverse populations of pluripotent stem cells and progenitor cells, but also non-stem cell components, including mononuclear cells, platelets, regenerative proteins, and other anti-inflammatory and immunomodulatory substances, such as exosomes. Consequently, Umbilical Cord Blood is capable of giving rise to hematopoietic, epithelial, endothelial, and neural tissues. Because of the unique immunological properties of both the stem cell and non-stem cell components of cord blood, it is possible to utilize allogeneic cells for regenerative applications without needing to influence or compromise the recipient immune system. In the last three decades, UCB therapy has proven to be feasible and well tolerated in patients. Compared to other sources of stem cells, cord blood contains not only diverse populations of high yields of pluri- and multipotent stem cells with more life span, proliferation capacity and long-term safety with superior immunotolerance, but also a non-cellular 'chaperoning' organ-restorative secretome with

strong anti-inflammatory and immunomodulatory properties.

4. What are the main diagnoses that Umbilical Cord Cells works best for?

The main mode of Cord Blood regenerative action is the modification of inflammation, angiogenesis, and neurogenesis that has been proposed by a number of studies. Consequently, the one of the main use Cord Blood is proposed for is the regeneration of ischemic tissue, mainly in stroke, cerebral palsy and traumatic brain injury.

5. When is the best time for a patient to contact you?

One of the many advantages of Umbilical Cord Blood is that it is much more readily available than other sources of stem cells. The general consensus of administration time is "the sooner the better" after the onset of ischemia since Umbilical Cord Blood intervention mainly exerts immunoregulatory and neuroprotective effects. The mechanism of neuroregeneration produces effects long (6 months or longer) after injury.

6. Is Cord Blood therapy a new treatment?

Currently, we may be the only clinic providing this treatment for the public. Other institutions and universities are conducting clinical trials on the topic with growing evidence for safety and efficacy.



7. Do you think Cord Blood treatments could be applied for other diagnoses?

The most commonly reported novel indications for systemic therapy of Umbilical Cord Blood beside stroke and cerebral palsy are neurologic diseases including also Multiple Sclerosis and Alzheimer's, diabetes mellitus, cardiac and vascular diseases, and hepatic diseases such as cirrhosis.

8. How many patients have you treated?

At present, we treat 3 – 4 patients per month with mainly stroke, cerebral palsy, and traumatic brain injury.

9. What were the most common results?

What is frequently seen in neurological patients in the next months after the intravenous application of Cord Blood is improvement in i) gross and fine motor function, ii) cognitive function, iii) speech, iv) social behaviour, v) frequency and intensity of seizures, etc.

10. Did any patients experience negative effects? Are there any side effects to the treatment?

Umbilical Cord Blood is one of the most used sources in regenerative medicine with reliable safety and efficacy. Side effects are rare, and are mainly only short-term and mostly related to DMSO (Dimethylsulfoxide), a cryoprotective agent that is dissolved rapidly in the body. Therefore, premedication before the Umbilical Cord Blood treatment reduces the frequency, and intensity of these symptoms.

11. Do patients feel any pain during the treatment?

Cord Blood application is procured in a non-invasive manner, and has been safely used in transplantation medicine for over two decades. Consequently, it is a very safe intravenous procedure. This very common sort of injection involves inserting a cannula (a short length of plastic tubing) into the vein to give drugs or fluids which may hurt a few seconds in the moment of insertion. If wanted, a cooling spray or a Lidocaine (numbing) cream may be used in preparation for the needle-stick to help decrease the pain or discomfort.

12. How do you monitor the patient's results after?

Once the treatment is completed, the doctor will monitor patient remotely by follow-up consultations for the duration of up to 12 months after the treatment.

13. How long does the treatment take?

For grown-up adult patients we usually need 2 days of treatment for the IV administration of the allogeneic umbilical cord blood with 2 - 3 hours per day under direct physician supervision

14. What is a typical day for a patient having treatment?

After the individual and personal evaluation, premedication is applied IV, followed by the Umbilical Cord Blood infusion. A peripheral IV line is used to administer the allogeneic UCB, usually divided up into three to four units over a period of 2 - 3 hours under direct physician supervision. We use an intravenous route of administration for the UCB, as this is the safest and least invasive method. The patient's vitals are closely monitored throughout the whole procedure. All in all, you can compare the procedure with a simple blood transfusion which is routinely performed in many clinics throughout the world. Patient has its own large room, lying in bed with relaxing atmosphere, able to watch TV, listen to music during the procedure.

15. Why do international patients choose Germany for Cord Blood?

The German healthcare system is noted for its high standards for efficiency, cleanliness, quality, and innovation.

16. How many days do international patients have to stay in Germany?

It is max. 4 days. CBC Health's medical program is designed around the individual patient to make the four-day experience as safe and efficient as possible.

17. Does your medical team speak English or any other languages?

The medical team and doctors are well trained in English language.

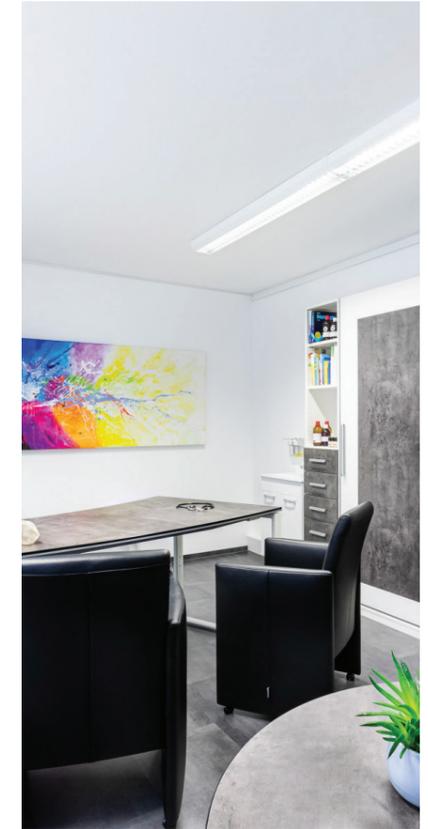
18. Where are you located?

CBC Health's Ischemic Stroke Treatment is available in a specially designed day-clinic in the city centre of Munich, Germany. The German healthcare system is noted for its high standards for efficiency, cleanliness, quality, and innovation.

19. What advice would you give to a patient looking for treatment?

Please look out for:

- source and compounds used for regenerative purposes,
- how many cells are used (Per patient? Per kilogram?),
- doctors vitae and medical experience in cellular therapy,
- testimonials if available,
- country of application.



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