

## Application of continuous renal replacement therapy in first 28 days of life

**Goal:** Acquisition of all newborns within the first 28 days of life, requiring any type of continuous renal replacement therapy.

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**Length of study:** 2 Years, Start July 2023

**Background:** The need for continuous renal replacement therapy increases mortality in newborns and infants (1). Many possible etiologies, triggering the need for renal replacement therapy are found in the literature. This can be disturbances of electrolytes, metabolic acidosis, volume overload, kidney failure and inborn errors of metabolism (2). Congenital kidney abnormalities do not necessarily increase the odds of mortality after continuous renal replacement therapy (3). Due to the development of new devices for dialysis with reduced circulation volume, the weight limit for critically ill infants could be further lowered in recent years. In addition, risks of treatment could be further reduced, and indications could be extended (4). For inborn errors of metabolism, continuous renal replacement therapy seems to be superior to peritoneal dialysis without increasing the risks (5, 6). Therefore, medical and ethical questions arise when and who should receive continuous renal replacement therapy in the newborn period. Valid data regarding the incidence of continuous renal replacement therapy in the newborn period, the frequency of complications related to continuous renal replacement therapy and a national guideline for the use of continuous renal replacement therapy do not exist in Germany.

### Scientific question:

1. How often is continuous renal replacement therapy in the newborn applied in Germany?
2. Which are the underlying etiologies making continuous renal replacement therapy necessary?
3. Which types of continuous renal replacement therapy are used?
4. Which complications and side effect are recognized during the application of continuous renal replacement therapy in the newborn period?

**Case definition:** Application of any continuous renal replacement therapy (e.g. Hemodialysis, Hemofiltration, Hemodiafiltration, ECMO combined with Dialysis/Filtration, Plasmapheresis, Immunoabsorption) in a newborn within 28 days of life.

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