

ABSTRACT

- **Title**

A Prospective Cohort Study to Describe Use and Safety of Cinacalcet in Pediatric Patients Receiving Dialysis in the NAPRTCS Registry

- **Keywords**

Pediatric ESRD, secondary hyperparathyroidism, cinacalcet, pediatric dialysis, safety.

- **Rationale and Background**

Pediatric patients on dialysis often have secondary hyperparathyroidism (SHPT) associated with substantial elevations of parathyroid hormone (PTH) as well as dysregulation of calcium and phosphorus metabolism. SHPT can lead to the development of high-turnover bone disease, and the resultant changes in structural bone integrity may lead to an increased risk of deformities and fractures in children on dialysis. Studies have shown that young adults with end stage renal disease (ESRD) and childhood onset chronic kidney disease (CKD) also display a high incidence of cardiovascular complications. The purpose of this study was to collect and summarize real-world data to better understand the use of cinacalcet in pediatric patients receiving dialysis in clinical practice. Reporting on the characteristics and adverse events of special interest (AESI) in pediatric patients treated with and without cinacalcet in a real-world setting will further our understanding of its effect on the ESRD pediatric population and provide potential ideas for future research in this area.

- **Research Question and Objectives**

Specific objectives of this study are to tabulate and report the listed characteristics and events for CKD subjects on dialysis with data in the NAPRTCS registry who are managed in medical practice with or without cinacalcet treatment. The following data characteristics and events are of interest:

- Demographic characteristics
- Laboratory values
- SHPT medication use
- Occurrence of hypocalcemia
- Occurrence of seizures
- Occurrence of infections requiring hospitalization

- **Study Design**

Prospective cohort study.

- **Setting**

01 August 2012 through 19 February 2016.

- **Subjects and Study Size, Including Dropouts**

Data for this study were acquired from all Dialysis Status forms entered from visits that have taken place between 01 August 2012 and 19 February 2016. There were 1,620

follow-up visits from 538 participants for this report from all Dialysis Status forms entered from visits during the reporting period.

- **Variables and Data Sources**

Patient demographics (gender, race, age), dialysis status, mortality (including cause of death), diagnosis category, dialysis modality, laboratory values (albumin, phosphorus, corrected serum calcium, PTH), calcium and vitamin D supplements, cinacalcet dose and dates administered, changes in hypocalcemia treatment, occurrences of seizures, hospitalizations for infections, and other AESI were collected and summarized. The data source for this study was the NAPRTCS database.

- **Results**

Of the 538 participants, 90 (17%) reported using cinacalcet at some point during the 43-month follow-up period. At first visit, median (range) age was 15.6 (1.0 – 25.5) years in cinacalcet users and 11.9 years (0.1 – 21.2) in non-users, time on dialysis was 17.9 months (0.9 – 120.6) and 1.3 months (0.0 – 143.7) in cinacalcet users and non-users respectively. Gender composition, race and primary diagnosis were comparable in both treatment groups.

The proportion of patients receiving calcium, vitamin D, and paricalcitol were not noticeably different in the two groups. Over the course of the study, the median (mean) PTH in the cinacalcet group was 394 (602) and 241 (378) in the non-cinacalcet group. Subjects were shown as taking 30 mg of cinacalcet most frequently, and the most commonly reported daily frequency was twice per day (95%). Adjusted death rates (0.017 vs. 0.011), seizures (5.6% vs. 4.2%), change in hypocalcemia treatment (11.1% vs. 10.7%), and hospitalization for infection (21.1% vs. 21.0%) were comparable in both groups.

- **Discussion**

In this pediatric cohort, cinacalcet was used to treat older participants who have been on dialysis for longer periods of time than what was observed in the group never receiving cinacalcet. Participants receiving cinacalcet were also more likely to be receiving peritoneal dialysis at start of the follow-up period. The results of this study do not substantially change the benefit-risk profile of cinacalcet.