

## Conference Theme

Global Approach to Renal Care Innovation-  
Balancing Compassion and Health Technologies



# Hyperphosphataemia in patients with CKD5D

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# Presentation outline

**1** Introduction

**2** Objective/s

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# Introduction

- Increased phosphate levels may cause cardio vascular disease. In dialyzed patients the objective of treatment is to reduce high levels of phosphorus.
- Hyperphosphatemia is a risk factor for cardiovascular disease, most studies showing an increase in mortality at phosphorus values over/equal 5.5 mg/dl

Interval associated with increased mortality	Reference interval	Relative risk
<u>5-5,5 mg/dL</u>	<u>4-5 mg/dL</u>	<u>1,1</u>
<u>5-6,5 mg/dL</u>	<u>3-5 mg/dL</u>	<u>1,94</u>
<u>&gt;6,5 mg/dL</u>	<u>3-5 mg/dL</u>	<u>2,02</u>
<u>&gt;11 mg/dL</u>	<u>4-5 mg/dL</u>	<u>2,47</u>

Tab1 Ref. Akram M. Askar – Hyperphosphatemia-The hidden killer in chronic kidney disease

# Introduction

- **Dialysis can eliminate the addition of phosphorus from the blood but it is important to limit the accumulation of it between the dialysis sessions. The body of a patient accumulates 800-1700 mg of phosphorus within two days and a hemodialysis session can only remove 600-1200 mg of phosphorus.**

Dialysis modality	Schedule	Phosphate removal
Conventional hemodialysis	4 h three times a week	600-1200 mg/session 1800-3600 mg / week
Peritoneal dialysis	Continuous	300-360 mg /day 2100-2520 mg / week
Nocturnal hemodialysis	6-10 h, 5-7 nights per week	600-1200 mg / day 3000-8400 mg/week

Tab2. Ref. Kooienga L. Phosphorus balance with daily dialysis. Semin Dial 2007

# Objectives

- **To achieve serum phosphorus levels between 3,5 and 5,5 mg/dl in our 30 patients group included in the study, during 6 months**
- **Identifying nutritional errors and improving a personalized diet**
- **Increasing patient's quality of life**
- **Raising the educational level of patients.**

# Methods

- For the following study, 30 patients with phosphorus values over 6 mg /dl with the age of 30-65 years were selected. These patients were monitored for a period of 6 months (Jul-Dec 2017), during which it was done nutritional conciliation to control PO<sub>4</sub> intake and education to increase adherence to binder therapy.
- Together with the nutritionist and the physician we implemented a diet plan with recommendations for all 30 patients.
- Patients were educated about an appropriate diet in terms of phosphate consumption. It was explained which products should be limited, but eating habits have hardly changed.

# Methods

- Every month, we focus on avoiding especially preserved products since the availability of PO<sub>4</sub> is 100% due to high food additives content that are easily absorbed.
- Patients have been taught that phosphorus can be found also in protein-rich foods such as meat, fish, nuts, dairy, beans and it is absorbed more from animal meat than from fruit and vegetables.

Food	Serving size	Phosphorus (mg)
Yogurt	200 ml	168
Cottage Cheese	250 ml	291-358
Pork	75 g	130-221
Salmon ,canned	75 g	244
Sardines , canned in oil	75 g	368
Sunflower seeds , without shell	60 g	375
Pumpkin seeds	60 g	676
Beans	175 g	286

Tab3. Ref. Nutritional Management of Renal Disease. Academic Press, 2013.

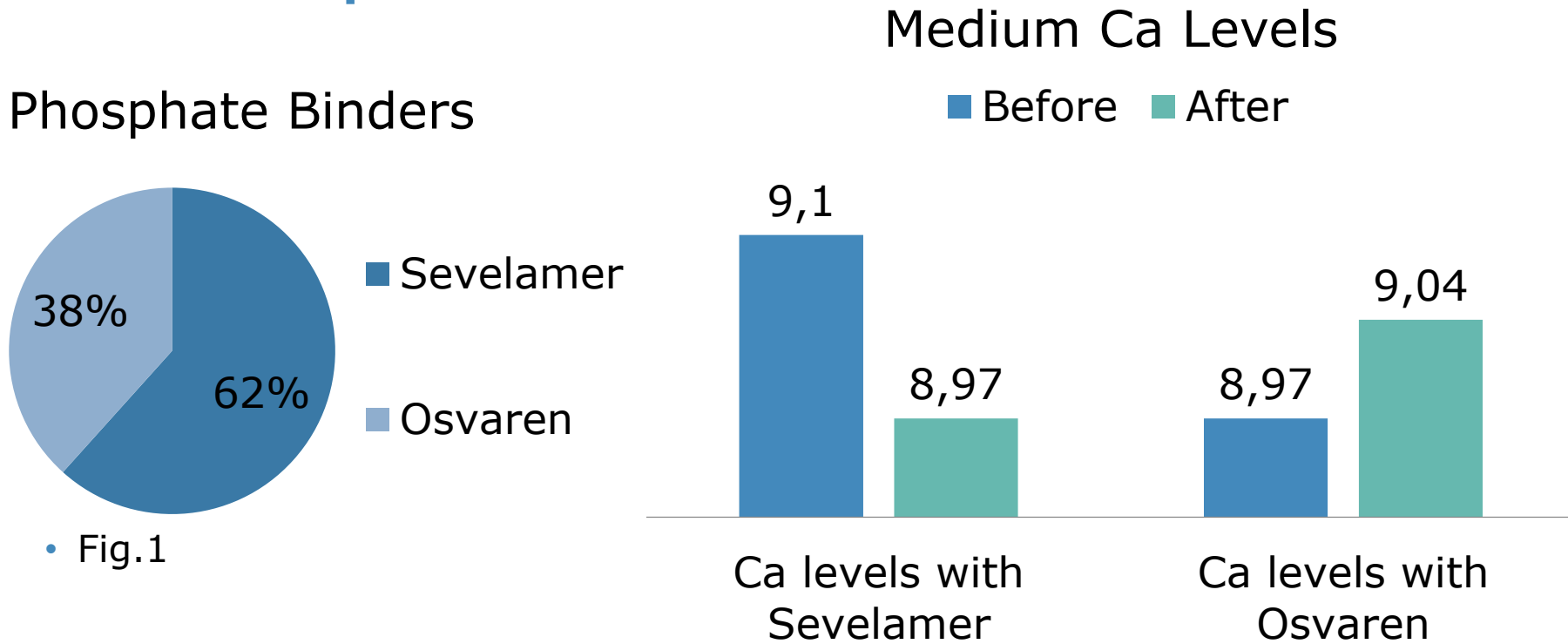
# Methods

- **Drug treatment includes several classes of drugs, that are available in our center. Choosing one or another for a particular patient is based on patient comorbidities, benefits, adverse reactions or relevant biological parameters (calcium, vitamin D, PTH)**
- **Phosphate binders which contain calcium are most often used. The maximum calcium dose should not exceed 1.5 g / day and should be interrupted if hypercalcemia occurs. Sevelamer is a phosphate binder which does not contain calcium and has the advantage of not producing hypercalcemia, the usual dose being 800-1600 mg taken three times per day during main meals.**
- **Also, we provided Osvaren (110 mg Calcium) which at the end of the study showed the following results (fig.1)**



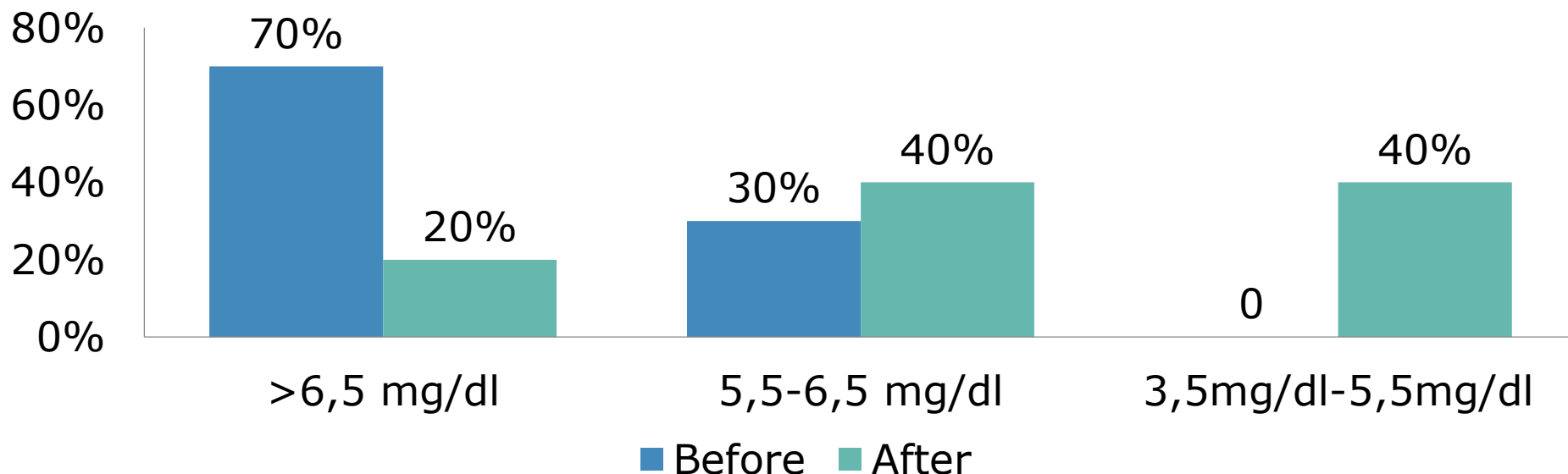
# Methods

- From a total of 30 patients, 62% were treated with Sevelamer and the rest of 38% with Osvaren.
- In the last month of the study we observed that both binders didn't changed very much the Ca levels in all 6 months that patients were treated.



# Results

- **70 % of patients had a serum phosphate >6,5 mg/dl and 30 % between 5,5-6,5 mg/dl at baseline but proportions have changed noticeably at the end. In approximately 80 % of patients high phosphorus values remained unchanged after one month of binder therapy, the results were observed starting with the second month and 40 % of them had normal values at the end of the study.**



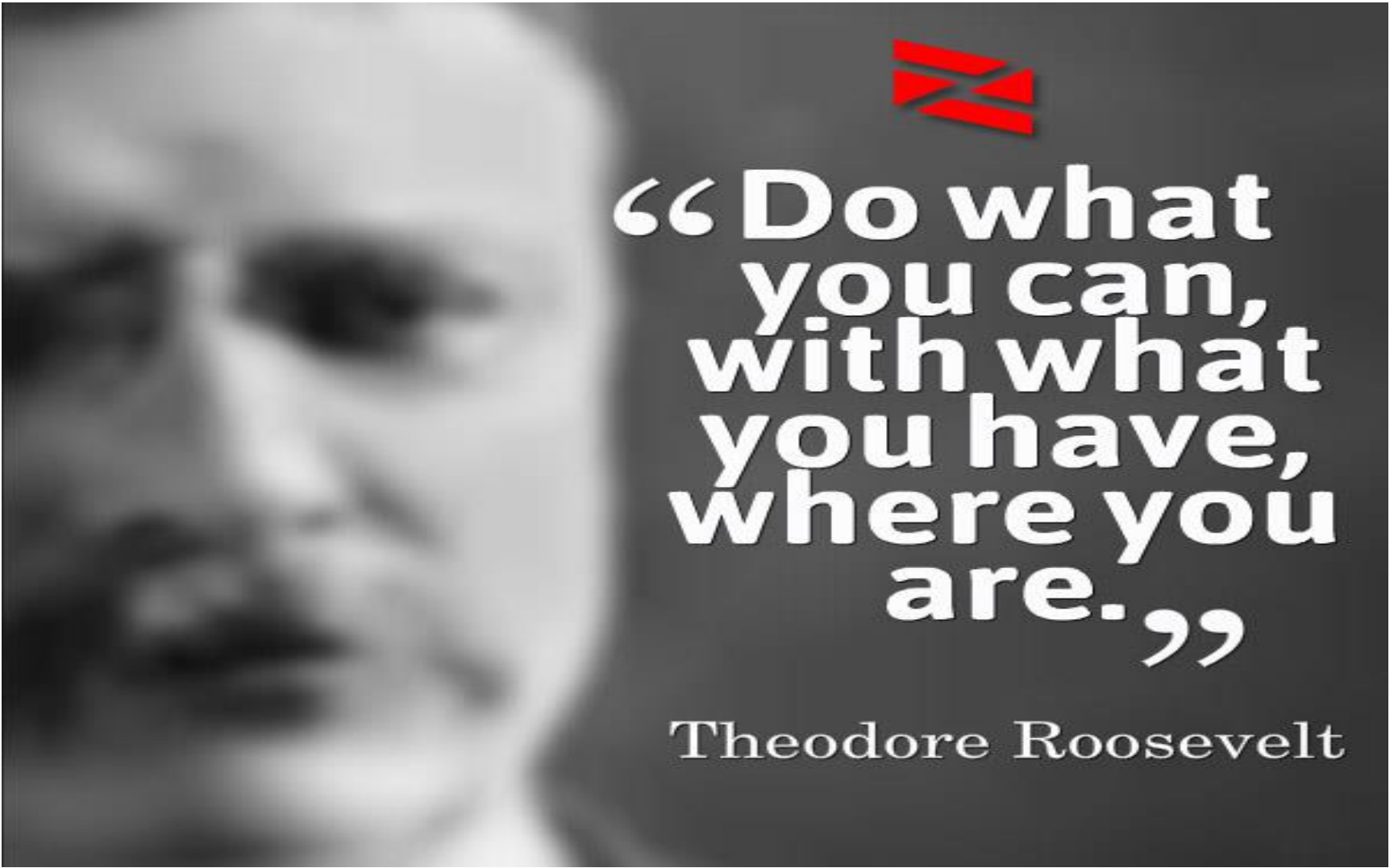
# Conclusions

## **Specific negative factors for changing eating behavior:**

- **Digestive problems**
- **Deficient chewing**
- **The level of immobilization**
- **Dependency on another person**
- **Neurological or psychiatric disorders**

**Education plays an important role, because every patient has to change eating habits to balance phosphorus values.**

**Following prescribed treatment and dietary recommendations , patients have good perspectives to maintain phosphorus values in ranges indicated by actual guidelines.**



**“Do what  
you can,  
with what  
you have,  
where you  
are.”**

**Theodore Roosevelt**

**Thank You  
for Your Attention!**

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