



# **COVID-19 in patients on kidney replacement therapy**

## **Clinical characteristics at triage associated with admission, discharge, readmission and outcomes**

**58th ERA-EDTA Congress, Berlin June 5-8 2021**

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**On behalf of the ERACODA Collaboration**

6 June 2021

## **Disclosures**



- **For ERACODA unrestricted research grants from:**
  - The European Renal Association (ERA-EDTA)
  - The Dutch Kidney Foundation
  - Baxter
  - Sandoz

## Background



- COVID-19 has caused devastation to human lives & major disruption of health care systems globally
- 80% of patients with COVID-19 have mild symptoms, whilst 10–20% develop severe disease
- End Stage Kidney disease (ESKD) patients are highly vulnerable & can present with varying severity
- Characteristics and outcomes of mild to moderate disease Not Hospitalized scarcely reported
- Hence Optimal care pathway for ESKD with varying severity of COVID-19 is unknown
- We need to establish Triage criteria for ESKD patients variably affected by COVID-19 presenting to hospitals, to support decision-making on hospitalization
- Risk stratification and Clinical Triage could improve resource utilization & optimise interventions

## ERACODA - Methods



### European Renal Association COVID-19 Database

- Established March 21, 2020 by the ERA-EDTA Council
- REDCap database with prospective collection of granular data of patients on dialysis or living with a kidney transplant who developed COVID-19

### Aims:

1. To investigate the **clinical course and outcomes** of KRT patients with COVID-19
2. To gain information on **risk factors for mortality**. Such information may guide clinical treatment decisions, support triage strategies for admission to ICUs, and lead to interventions

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Nephrol Dial Transplant 2020

## ERACODA - Methods



### By May 1st, 2021

- Granular, individual level data of about **4700 patients**  
- **24% transplant recipients, 76% dialysis patients**
- Data entered by more than **220 physicians working in 137 centers from 33 countries**, mainly in Europe and bordering the Mediterranean Sea.
- On May 1<sup>st</sup>, the international database has been closed (for first presentations of COVID-19).  
→ final date on which data will be collected is July 31st, 2021 (3 months after the COVID-19 diagnosis).
- Data can still be entered in REDCap (for your own records), but validations will no longer be performed.

Noordzij M, et al  
*Nephrol Dial Transplant* 2020

## Methods



**Study population:** ESKD patients who presented between 1<sup>st</sup> February – 30<sup>th</sup> June, 2020

### Primary outcomes:

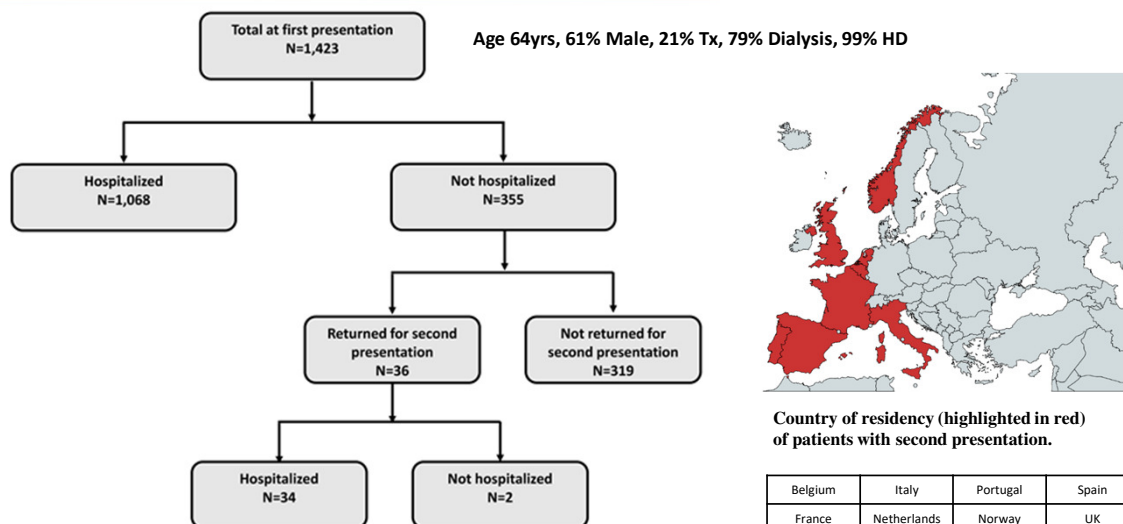
- Hospitalization rate at First presentation
- Rates of Second presentation and Hospitalisation in those not admitted at First presentation
- 28-day mortality rate

### Secondary outcomes

Predictors of hospitalization and 28-day mortality in those not hospitalized at first presentation

**Statistical analysis:** Numbers and proportions were reported and compared using Chi-2 statistics. Predictors of hospitalization and 28-day mortality were identified using Cox proportional-hazards model with backward elimination procedure

## Study Population



## Results (First Presentation)



- 25% of ESKD patients with COVID-19, were **Not hospitalized**, due to milder symptoms.
- Not Hospitalised** N=355 ; 30% of all Dx , 13% all Tx cohort

Parameters	<i>Hospitalised</i>	<i>Not hospitalised</i>
CRP mg/L	38	13
Cough %	58	38
Shortness of breath %	44	11
CXR abnormalities %	44	9
CT abnormalities %	41	6

- Mean Duration of First Hospitalisation - **15 days** (interquartile range: 9-23 days)

## Results (Second Presentation)



- **Not Hospitalised** N=355 ; 30% of all Dx , 13% all Tx cohort
- 10 % of these patients Returned to the hospital (n=36) with **Progressive illness** and **were hospitalised**
- Second presentations were determined mainly by **Progressive disease symptoms and Severity**
- Significant fall in **Oxygen saturation** (97% vs. 90%) & rise in **C-reactive protein** (26 vs. 73 mg/L)
- Return to hospital within 1 week after their initial attendance.  
**Median 5 days** (interquartile range: 2-7d)
- Hospitalisation predicted by respiratory status, older age and history of smoking

## Results



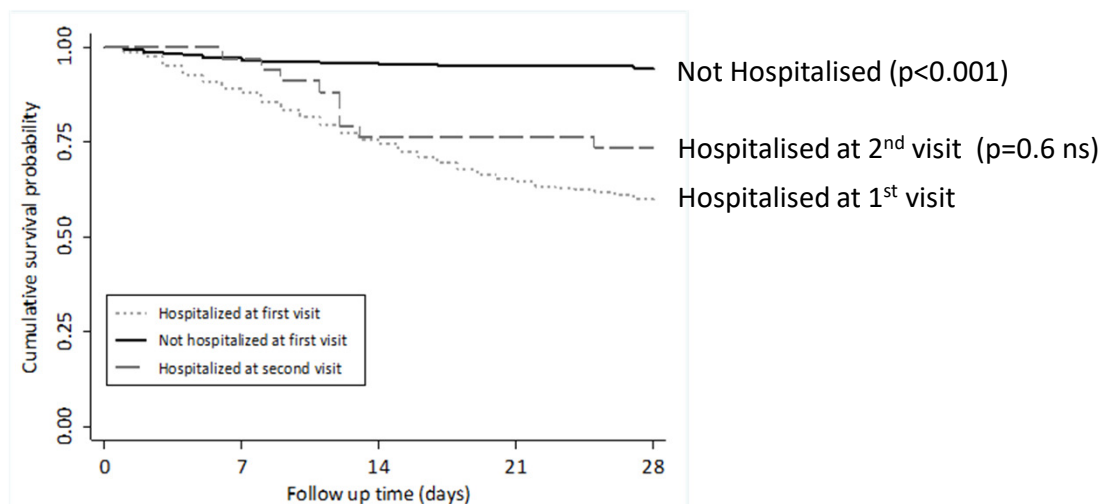
### 28-day mortality for :

Patients hospitalized at 1 <sup>st</sup> presentation	29 %
Patients hospitalized at 2 <sup>nd</sup> presentation	25 %
Patients who did not need hospitalization	6 %

### Predictors of 28-day mortality in Second presenters :

- Higher age
- prior tobacco use
- higher clinical frailty score
- auto-immune disease
- Self reported shortness of breath

## Results (28 day mortality)



## Summary



- 25 % COVID-19 in ESKD had mild pulmonary abnormalities, not needing hospitalisation
- Few returned with a Second presentation (10%) : progressive disease symptoms and severity
- No survival advantage for Early vs Deferred hospitalization (28-day mortality : 25-29%)
- Higher frailty, prior smoking, older age were predictive risk factors for mortality
- A risk-stratified approach to Clinical Triage for ESKD patients with COVID-19 can optimise resource utilisation with minimal adverse impact on mortality
- Supported Outpatient Care is a feasible approach in ESKD with mild COVID
- Analysis based on Multi-Centre practices collated in real time across Europe (ERACODA)

## More information



[www.ERACODA.org](http://www.ERACODA.org)

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## Acknowledgements



### All collaborators of ERACODA

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#### **Sponsors:**

ERA-EDTA  
Dutch Kidney Foundation  
Sandoz  
Baxter

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## ERACODA Publications



- Mitra S, et al. **Clinical triage of patients on kidney replacement therapy presenting with COVID-19 : an ERACODA Registry analysis.** Nephrol Dial Transplant in press
- Goffin E, et al. **COVID-19 related mortality in kidney transplant recipients and dialysis patients. A comparative, prospective registry based study.** Revision Nephrol Dial Transplant.
- Soler MJ, et al. **Renin–Angiotensin System Blockers and the risk of COVID-19 related mortality in patients with kidney failure.** Clin J Am Soc Nephrol 2021, in press.
- Noordzij M, et al. **Pitfalls when comparing COVID-19 related outcomes across studies. Lessons learnt from the ERACODA initiative.** Clin Kidney J 2021; suppl 1, i14–i20.
- Ortiz a, et al. **Chronic kidney disease is the key risk factor for severe COVID-19. A call to action by the European Renal Association.** Nephrol Dial Transplant 2021; 3: 87-94. doi: 10.1093/ndt/gfaa314.
- Hilbrands LB, et al. **COVID-19 related mortality in kidney transplant and dialysis patients. Results of the ERACODA Collaboration.** Nephrol Dial Transplant 2020; 35: 1973-1983. doi: 10.1093/ndt/gfaa261.
- Gansevoort RT & Hilbrands LB. **Chronic kidney disease, the risk factor for COVID-19 mortality.** Nat Rev Nephrol 2020; 26:1-2.
- Noordzij M, et al. **ERACODA: The European database collecting clinical information of patients on kidney replacement therapy with COVID-19.** Nephrol Dial Transplant 2020; 35: 2023-2025.