

# Long-Term Clinical Impact of Acute Kidney Disease in Patients Receiving Extracorporeal Membrane Oxygenation



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## Introduction

- Extracorporeal membrane oxygenation (ECMO) is widely used worldwide
- Studies on the long-term outcomes of ECMO are scarce
- Current guidelines for follow-up ECMO survivors lacks high quality evidence

## Method and Materials

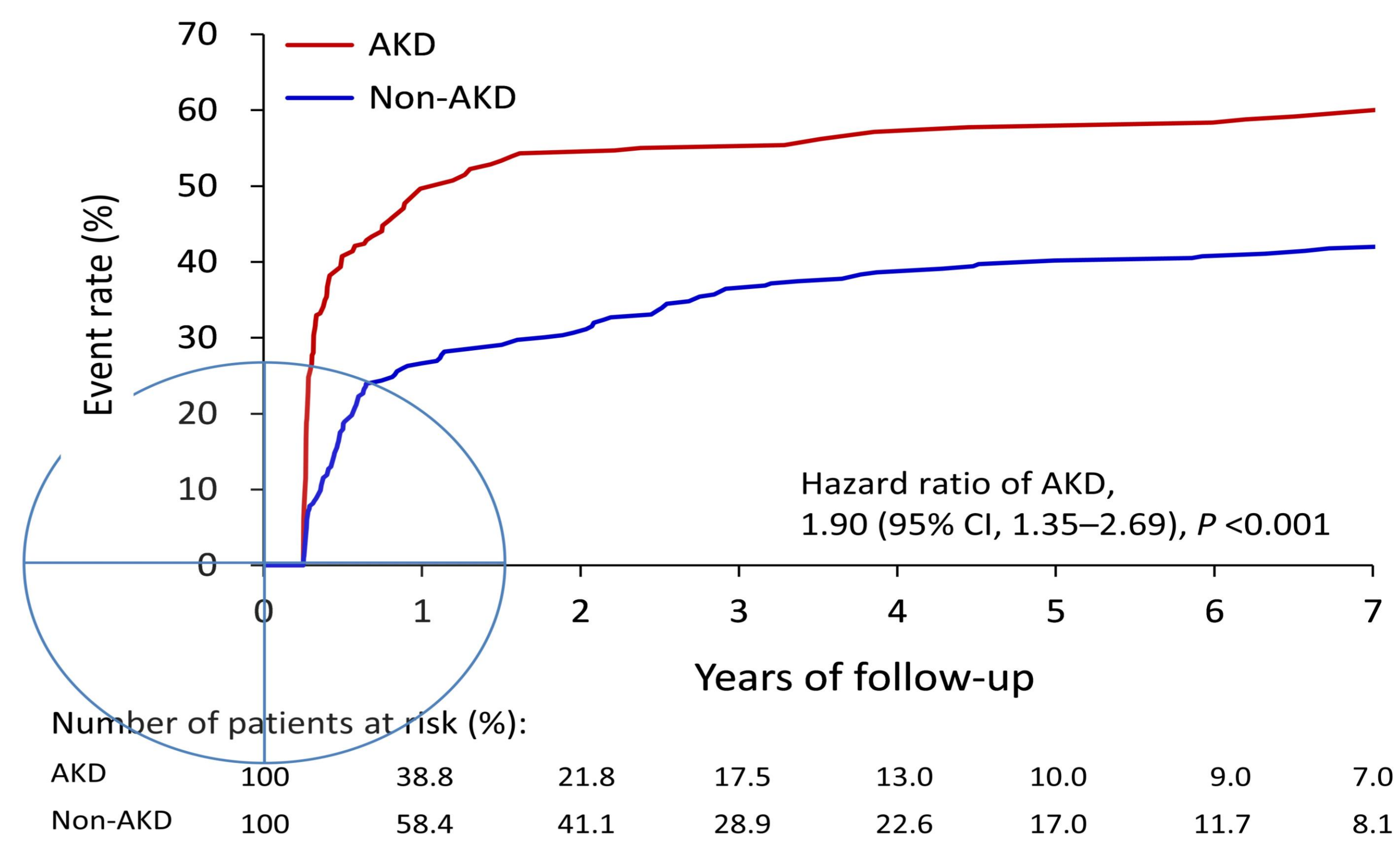
- Retrospective electronic multicenter clinical database (Chang Gung Research Database)
- 2009-2018
- Inverse probability of treatment weighting (IPTW)
- 1<sup>st</sup> endpoint: major adverse kidney events (MAKEs) and major adverse cardiovascular events (MACEs),
- 2<sup>nd</sup> endpoint: all-cause readmission, sepsis-related readmission, infection-related readmission, and dementia.

## Results before IPTW

Variable	Total (n = 395)	AKD (n = 160)	Non-AKD (n = 235)	STD
Age	55.7±14.0	55.8±14.4	55.8±13.8	<0.01
Male	280 (70.9)	67.3%	69.3%	-0.04
eGFR	62.5±31.8	63.1±30.7	63.0±31.7	<0.01
BMI, kg/m <sup>2</sup>	26.6±12.8	25.9±3.6	26.6±13.0	-0.07
V-A mode	320 (81.0)	80.2%	80.6%	-0.01
Hypertension	167 (42.3)	40.7%	41.3%	-0.01
DM	100 (25.3)	23.1%	24.6%	-0.04
CAD	166 (42.0)	37.8%	42.1%	-0.09
Heart failure	46 (11.6)	12.5%	10.1%	0.07
CKD	78 (19.7)	19.0%	18.8%	0.01
CCI	2.2±2.3	2.1±2.4	2.2±2.3	-0.03
SOFA (D2)	11.7±2.4	11.6±2.3	11.4±2.4	0.07
BUN	26.3±20.0	24.9±18.9	25.0±17.1	<0.01
Creatinine	1.3±0.9	1.29±0.88	1.32±0.93	-0.03
Potassium	3.86±0.71	3.8±0.7	3.9±0.7	-0.04
Follow-up (M)	29 [12, 66]	20 [8, 56]	34 [15, 68]	-0.25

## Results after IPTW

Outcomes	AKD (160)	Non-AKD (235)	Hazard Ratio
<b>MAKE</b>	<b>60.9%</b>	<b>42.9%</b>	<b>1.90 (1.35 - 2.69)</b>
All-cause death	19.9%	13.2%	1.95 (1.04 - 3.65)
Recurrent AKI	25.7%	19.6%	1.59 (0.90 - 2.80)
New CKD	46.8%	32.7%	1.93 (1.33 - 2.80)
ESKD	7.3%	3.3%	2.88 (1.12 - 7.42)
<b>MACE</b>	<b>28.8%</b>	<b>28.1%</b>	<b>1.29 (0.84 - 1.98)</b>
CV death	16.2%	9.0%	2.35 (1.05 - 5.23)
AMI	5.1%	5.6%	1.08 (0.43 - 2.74)
Ischemic stroke	3.7%	3.1%	1.40 (0.51 - 3.89)
Heart failure admission	15.7%	17.7%	1.09 (0.61 - 1.97)
<b>Dementia</b>	<b>1.9%</b>	<b>2.5%</b>	<b>0.95 (0.25 - 3.56)</b>
<b>Readmission</b>	<b>64.5%</b>	<b>57.6%</b>	<b>1.41 (1.04 - 1.91)</b>
Sepsis	14.9%	7.2%	2.84 (1.31 - 6.15)
Infection	30.0%	22.7%	1.77 (1.13 - 2.78)



## Conclusions

- AKD is associated with an increased risk of long-term MAKEs but not MACEs
- AKD is associated with increased risks of all-cause, infection-related, and sepsis-related readmissions.



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