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# Disparities in Health Outcomes of Chronic Kidney Disease between <u>Men and Women</u> in the Irish Health System

#### Austin Stack University of Limerick & University Hospital Limerick

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austin.stack@ul.ie https://www.nkdss.ie

SDAP HRB Seminar 26<sup>th</sup> March 2025





## Outline

- The Project
- The Findings
- Challenges, Struggles & Solutions
- The Impact



#### Goals

This project seeks to test whether sex disparities in relation to the morbidity and mortality exist for patients with chronic kidney disease

1. Compare the burden of CKD between men and women

- 2. Compare hospitalisation rates between men and women
- 3. Compare mortality rates between men and women

and

determine whether any observed differences could be explained by baseline health status or health care delivery

SDAP Conference 26<sup>th</sup> March 2025

#### Figure 1: National Kidney Disease Surveillance System illustrating a) geographical coverage in the Midwest Community Healthcare Network of Ireland, b) percent of population included c) Data sources and information characteristics that converge to create a Surveillance System



Full Blood Count

Rheumatoid arthritis

Rasonhils

DNA and Anti-Sm. Complement.Uric acid

Cell Volume - Red cell (MCV), Mean Cell Haemoglobin (MCH), Neutrophils, Lymphocytes, Monocytes, Eosinophils,

C-reactive protein (CRP), ESR, Full Blood count, Rheumatoid factor(RF), ANA (Antinuclear Antibody) Test, Anti-

20-44 45-64 65-74



>75

#### **A Framework for Disease Surveillance Stsyem**

#### Integrated Informatics Engine to capture key health information data from Primary Care to Secondary care





PCRS: <u>https://data.ehealthireland.ie/group/pcrs</u>

HIPE: <u>https://data.ehealthireland.ie/group/about/hpo-hipe</u>

KDCPMS: Hussein et al Kidney360 June 2021

CSO: https://www.cso.ie/en/statistics/birthsdeathsandmarriages/mortalitydifferentialsinireland/

Stack et al: Irish Kidney Disease Surveillance System



5<sup>th</sup> International Seminar in Renal Epidemiology PARIS 18th May 2022

#### Higher prevalence of CKD in Women than Men



### **Replicated Findings in TILDA**







#### Factors Associated with CKD in TILDA







## Women had lower rates of hospitalisation than Men

All-cause hospitalisation by level of kidney function



GFR categories in ml/min/1.73m<sup>2</sup> using CKD-EPI equation N= 125, 890 patients N= 93, 515 hospitalisations

European Renal Association May 2022

#### Relative Risk for Hospitalisation for Men vs Women<sup>1</sup>

Men (vs Women)	<b>Risk Ratio</b>	95%	CI
Unadjusted Model	1.20	1.16	1.24
plus age	1.15	1.12	1.19
plus age, diabetes	1.13	1.19	1.17
plus age, diabetes, eGFR	1.14	1.10	1.17
plus age, diabetes, eGFR, location of supervision	1.07	1.04	1.11
plus age, diabetes, eGFR, location of supervision, year	1.07	1.03	1.10

P-value for interaction for sex and eGFR with hospitalisation: P< 0.001

eGFR (ml/min/1.73m<sup>2</sup>) N=125, 890 patients N= 93,515 hospitalisations Location of medical supervision: inpatient, outpatient, general practice, emergency department <sup>1</sup>Negative binomial model better fit than Poisson regression

#### Women had higher than expected mortality rates than Men by GFR Group



#### Hazard Ratios for Death for Men and Women stratified by GFR Group

Group	<b>HR</b> unadjusted	<b>HR</b> adjusted	
Overall Cohort	1.36	1.62 (1.55-1.70)	
GFR Category			
>=90	2.20	2.16 (1.89-2.46)	
60-89	1.46	1.64 (1.53-1.76)	
45-59	1.33	1.52 (1.38-1.67)	
30-44	1.30	1.40 (1.24-1.59)	
<30	1.10	1.22 (1.00-1.49)	

N= 14, 179 deaths (11.3 %)

GFR ml/min/1.73m<sup>2</sup>

Final model: was adjusted for baseline age, sex, eGFR, ,haemoglobin, white blood cells, serum, potassium, alanine aminotransferase (ALT), alkaline phosphatase(ALP), and location of supervision

#### Conclusion

- 1. Irish women have higher burden of CKD than Irish men
  - They experience lower rates of hospitalisation than men
  - Some of these differences are explained by age, diabetes, GFR
- Women with CKD experience mortality rates that are similar to men
  They loose the normal survival advantage
- **3**. These would suggest that CKD does influence the outcomes of women either due to change in the biology of the disease or in the extent to which women are assessed and treated

### **Expected Challenges**

#### **Governance and Legislation, Organisational framework**, Technical

- 1. No single entity of organisation to guide or facilitate
- 2. No blueprint to follow in this country (National Cancer Registry)
- 3. No unique identifier
- 4. No Data linkage centre (capacity, capability, expertise)
- 5. Lots of silos of health information



NKOSS

#### **Data Controllers, Access & Data Sharing**

#### Information Governance/Data Controllers/Data Processors

- 1 Where is the health data?
- 2. Who is the data controller?
- **3.** Will you share the data?
- 4. Have you authority to link data?
- 5. Have you spoken with CEO?
- 6. Has the Data Protection Office approved data? Another Learning Opportunity
- 7. Have you ethical approval?
- 8. Have you consent?

#### **Unexpected Challenges**



HSE cyber-attack: A wake-up call for healthcare right across Europe How European funded research can boost your cyber resilience in 2022



An Phríomh-Oifig Staidrimh COVID Pandemic 2020-2023

HSE Cyber Attack May 2021



CSO Corporate Governance 2022





## **The Impact**

#### to

## Individuals, health systems & society



- 1. Contribute to Local & Global Policy Advance our understanding of a major chronic disease
  - Invitation to national strategy & Policy events
  - Global health policy: United States: CDC Surveillance of CKD 2023-2024
  - National health policy: Department of Health-Evidence for Reform 2023
  - Regional health policy: Chronic Disease Surveillance Programme



#### **2.** Contribute to Key National Initiatives

- National Registry for Kidney Disease-HSE & Academia
- Chronic Disease Data System HSE & Academia



#### HRB Translation Award 4<sup>th</sup> October 202

## **3. Establish key Infrastructure for Data Systems to generate real world evidence**

- National Kidney Disease Surveillance System (NKDSS)
- Address core issue of data security, data linkage, scalable datasets
- Trusted Research Environment (TRE)





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New research finds that women are 50% more likely to have chronic kidney disease than men

CLIP • 5 MINS • 13 MAR • DRIVETIME



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#### Notes

A new study by researchers at the University of Limerick has revealed an extraordinarily high burden of kidney disease in older individuals in Ireland that suffer from common chronic conditions. We hear from Professor Austin Stack, Senior Author on the study and Consultant Nephrologist at UL.

#### Our greatest Assets







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