A global validation of a minimal-resource pre-screening model for reduced kidney function in patients with Type 2 Diabetes

Background

Diabetes is the leading cause of kidney failure globally

CKD is often asymptomatic in its early stages. Early detection of CKD offers the potential to slow progression.

Regular CKD screening is recommended for patients with Type 2 Diabetes

Guidelines AHA, EASD and NICE

In reality, CKD screening doesn’t take place as often as it’s supposed to...

Low- and middle-income countries have limited resources

Screening every patient isn’t possible due to the fewer resources available combined with the increased prevalence of T2DM in CKD.

High-income countries have been affected by Covid-19

The Covid-19 pandemic has caused global disruption to screening progress. Patient volume has been reduced, and there has been a 40% reduction in serum creatinine testing.

The impact of implementation

Development

UK Only

Validation

21 Countries, 6 Regions

5,618 Patients

5,297 Patients

2,941 Male

Age: 65 yrs (+/- 10.3)

Diabetes of 10yrs

Blood Pressure:

GFR 20 ml/min

50% Male

65 yrs (+/- 13.3)

Type 2 Diabetes

KBP

With GFR less than 60

54.3%

Screening everyone

Sensitivity of 100%

Positive predictive value: 19.3%

Screening prioritized patients

Sensitivity of 82.4%

Positive predictive value: 26.0%

Goal

50%

45%

Relative improvement in PPV

By testing only 54.3%, we still identify 82.4% of people with an eGFR less than 60.

Wider projections

Screening everyone

Selected randomly

Current

3.5 million patients with eGFR less than 60

Regional variation will magnify improvement in PPV across regions with sufficient sample size

Prioritizing patients

Selected using model

Option 1

100 million patients

20.3 million patients with eGFR less than 60

Our study concluded that the model can be used globally to prioritize patients at highest risk of exhibiting an eGFR less than 60.

It can support healthcare professionals to target those most in need. This could be used to address problems such as limited resources on NICE on high demands on healthcare systems, associated Covid-19.

References


