CHRONIC KIDNEY DISEASE

Personal Details

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I am a second-year undergraduate student pursuing B.Tech. in Computer science and engineering at Malla Reddy Engineering college for women, Hyderabad.
I am keenly interested to develop real-time projects using different technologies like AI and ML. I had undergone multiple courses and worked on different projects to polish my skills. I am Skilled in Python, C, Data Structures, Algorithms, Flask, HTML, and Problem Solving. I have participated in 8 hackathons, solving different problems, and exploring new fields.
If I am selected, I shall be able to work around 40 hrs a week on the project, though am open to putting in more effort if the work requires.

Personal Projects:

1.Skin Disease prediction using CNN

2. Heart Disease prediction using ML

3.Spam Classifier

4. Aadhar Card Management using C

Project:

Abstract:

Effective chronic disease care is dependent on well-organized quality improvement (QI) strategies that monitor processes of care and outcomes for optimal care delivery. Although healthcare is provincially/territorially structured in Canada, there are national networks such as the Canadian Primary Care Sentinel Surveillance Network (CPCSSN) as important facilitators for national QI-based studies to improve chronic disease care. The goal of our study is to improve the understanding of how patients with chronic kidney disease (CKD) are managed in primary care and the variation across practices and provinces and territories to drive improvements in care delivery.

Data Variables:

Baseline demographic and clinical characteristics

Characteristics	Overall	Baseline eGFR ≥30 mL/min/1.73 m2	Baseline eGFR <30 mL/min/1.73 m2
Patients, *n*	1834	486	1348
Age (years), median (IQR)	75 (67–80)	73 (64–78)	75 (68–81)
Male (%)	58	64	55
Body mass index (kg/m2), mean (SD)	29 (6)	29 (5)	29 (6)

Primary cause of CKDa,b (%)			
Diabetes	30	25	32
Hypertensive renal disease	33	35	33
Glomerulonephritis	9	10	9
Hereditary disease	4	3	4
Tubulointerstitial disease	6	8	6
Other	17	20	16
Comorbidities (%)			
Diabetes	42	39	42
Hypertension	85	86	85
Heart failure	13	9	14
Coronary artery disease	28	29	28
Cerebrovascular disease	11	12	11
Peripheral vascular disease	20	16	21
eGFR (mL/min/1.73 m2), median (IQR)	25 (21–31)	40 (35–48)	23 (19–26)

Albuminuria (%)			
Normal to mildly increased	19	27	16
Moderately increased	17	17	17
Very high	13	12	13
Nephrotic range	6	3	7
Missing	45	41	47
Hemoglobina (g/dL), mean (SD)	12 (2)	13 (2)	12 (2)
Parathyroid hormone (pg/mL), median (IQR)	103 (66–170)	70 (49–100)	118 (78–199)
Phosphate (mg/dl), mean (SD)	3.69 (0.76)	3.30 (0.66)	3.83 (0.75)
Calcium (mg/dl), mean (SD)	9.27 (0.63)	9.39 (0.53)	9.22 (0.65)
SBPg (mmHg), mean (SD)	139 (19)	136 (18)	139 (20)
DBPg (mmHg), mean (SD)	76 (11)	76 (11)	76 (11)
RAASi prescription (%)	79	80	78
Statin prescription (%)	52	56	51

a.1–10% missing.
b.According to the attending physician.
c.Albuminuria categories from KDIGO 2012 guidelines [15], where moderately increased is albumin 30–300 mg/day, albumin:creatinine ratio 30–300 mg/g, protein 150–500 mg/day, protein:creatinine ratio 150–500 mg/g or trace to 1+ protein reagent strip and severely increased is split into very high (albumin 300–2000 mg/day, albumin:creatinine ratio 300–2000 mg/g, protein 500–3000 mg/day, protein:creatinine ratio 500–3000 mg/g or 2+ protein reagent strip) and nephrotic range (higher than very high ranges).
d.49% missing.
e.Phosphate: mg/dL × 0.3229 = mmol/l.
f.Calcium: mg/dL × 0.2495 = mmol/l.
g.11–20% missing.

Technical Details:

To build a model, we perform the following:

1.Load Modules and Libraries
2.Load data set
3.Clean and preprocess the data
4.Check the Portions of the row with NAN
5.Find the Correlations between features
6.Split the data into train and test set
7.Analyze the data and plot the graphs
8.Choosing parameters with GridSearchCV
9.Plot confusion matrix and ROC curve
10.Find the Accuracy and save the model

Conclusion:

In summary, planning, development and implementation of nephrology services require reliable information systems and databases to capture information on trends in

disease burden, processes of care and related outcomes. In the absence of national/regional health information systems, one way to achieve this is by the creation of surveillance systems using routine practice data, such as the CPCSSN and those established specifically for CKD in other jurisdictions across the world 44–48 (table 3). The established conventions and guidelines on CKD can be leveraged for systematic case definition and evaluation of quality of care across settings. This can be facilitated by validation as well as enactment of quality metrics to measure the processes, quality of care and related outcomes and to generate uniformity across databases which may permit analyses across countries and regions. It is important to detect CKD early enough to be able to implement effective interventions. Ongoing primary care management of key risk factors for CKD (eg, hypertension, vascular disease, diabetes) is likely one effective strategy to reduce progression of CKD and to reduce adverse complication rates. Early detection and treatment of CKD and reducing adverse events with appropriate medications also reduces the morbidity and cost of CKD and related complications. The work described in this protocol therefore has a huge potential to address the identified gaps for optimal care delivery of CKD at the primary care level that would impact positively on patients' outcomes and health system improvement.