

Electronic health records: a new tool to combat chronic kidney disease?

Navaneethan SD, Jolly SE, Sharp J, et al. (2013)

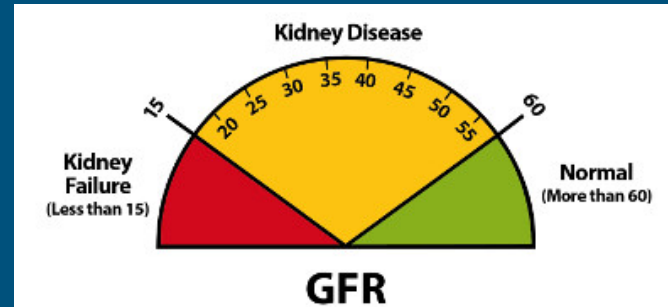
Andreas Sakapetis

Intro

- C.K.D facts
- E.H.R timeline
- What is E.H.R
- Why E.H.R?
- Management of C.K.D
- CCHS
- Development of C.K.D registry
- MyChart
- Limitations
- Questions

Chronic kidney disease (C.K.D) facts:

- ❖ A gradual loss of kidney function over time.
- ❖ 5 stages of kidney damage
 - ❖ Stage 1 (eGFR greater than 90)
 - ❖ Stage 2 (eGFR between 60 and 89)
 - ❖ Stage 3 (eGFR between 30 and 59)
 - ❖ Stage 4 (eGFR between 15 and 29)
 - ❖ Stage 5 (eGFR less than 15)
- ❖ 5–10 million people die annually from kidney disease.
- ❖ Medicare spends over 33 Bn \$ annually for care to C.K.D patients.

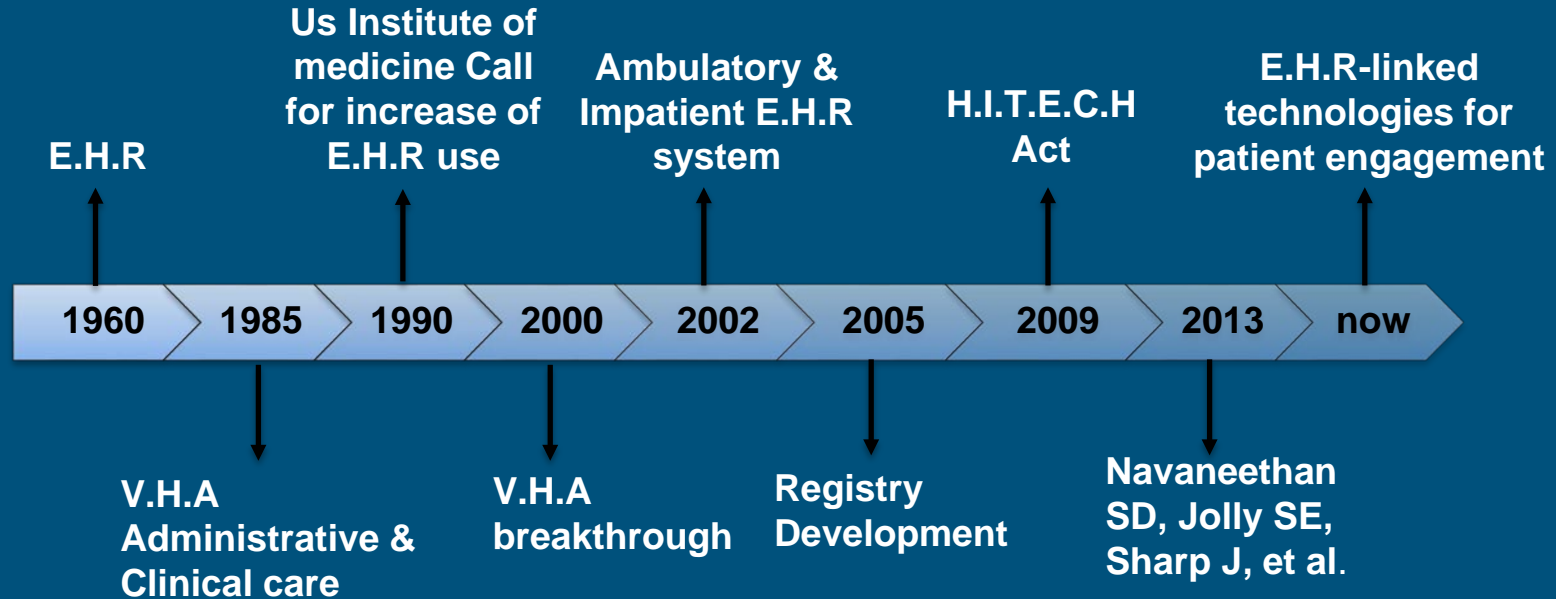


Estimated glomerular filtration rate(eGFR)

- Your doctor can calculate it from the results of your blood creatinine test, your age, body size and gender
- Your eGFR is a number based on your blood test for creatinine, a waste product in your blood. It tells how well your kidneys are working.

$$GFR = \frac{\text{Urine Concentration} \times \text{Urine Flow}}{\text{Plasma Concentration}}$$

Electronic Health Records



Why E.H.R ?

- ❖ Allowed for improved aggregation of patient data.
 - ❖ Reporting of data.
 - ❖ Long Term data (age, gender, ethnicity).
 - ❖ Laboratory results.
 - ❖ Standardized data
 - ❖ Medications.
 - ❖ Diagnoses.
 - ❖ Enhanced surveillance & monitoring.
 - ❖ Decreased medical errors.
 - ❖ Increased adherence in guideline-based care.
- ❖ Data superior to claims and administration data.
 - ❖ Improvement in diabetes quality of care.
 - ❖ Facilitated interventions on smoking cessation.
 - ❖ E.H.Rs systems for large-scale, high-throughput genetic research

Management of C.K.D

Problems

- Late referral to nephrologists !
- Automated estimated glomerular filtration rate (eGFR) is not patient-centered!
- C.K.D management requires coordination care!

Solutions

- ✓ Automated clinical alerts using E.H.Rs.
- ✓ Clinical Decision Support System in E.H.Rs to improve C.K.D care.
- ✓ Referral System using E.H.Rs
 - ❑ Improved AVF placement

Cleveland Clinic health system (CCHS)

- CCHS is comprised of the Cleveland Clinic main hospital and its 15 community-based health centers, along with 8 community hospitals.
- Serve estimated population 1.5 million people with 75% of patients coming from the 7 counties

Development of E.H.R based C.K.D registry (1)

Intent:

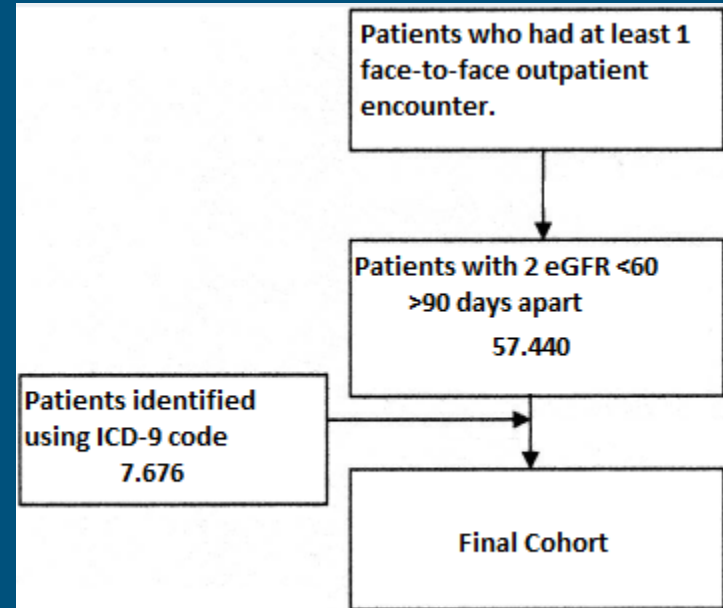
- ❖ Identify novel methods to develop programs that improve C.K.D patient care.
- ❖ E.H.R based registry to support clinical research.

Registry contains data from:

- ❖ Cleveland Clinic Health System E.H.R
- ❖ United States Renal Data System
- ❖ Social Security Death Index

Selection of C.K.D Patients ?

Total Patients: 65.116



Development of E.H.R based C.K.D registry (2)

Contribution

- ❖ Reliability for outcomes research.
- ❖ Identified patients with proteinuria.
- ❖ Identified patients with albuminuria assessments.
- ❖ Identify patients with progressed E.S.R.D
- ❖ Aggregation of patient data for quality improvement.
- ❖ Creation of P.H.R (MyChart)
- ❖ Identifying participants for other clinical trials.
- ❖ Useful for health services research.

Potential

- ❖ C.K.D care might improve with E.H.R based programs.
- ❖ Examine cost incurred for management aspects of C.K.D
- ❖ Development of C.K.D patient navigator program
- ❖ Allows of research at individual patient level, health system and population levels.

MyChart options:

- Activate P.H.R account.
- Access, manage, share health information with health care providers.
- Navigate around the secure web-based application.
- Review and schedule appointments.
- Request prescription renewals.
- View health summaries.
- Access a current list of medications.
- Review test results.
- Patients also receive automated important health reminders.

Key Features



**Clinical
Information**



**Health
tracking**



**Record
sharing**



**Upload
results**



**Account
Security**



**24/7 Access
Anywhere**



Cleveland Clinic

MyChart

Please Identify Yourself

Step 1 of 3

All fields are required.

MyChart Activation Code

Enter your Activation Code as it appears on your enrollment letter (your code is not case sensitive). You will not need to use this code after you complete the signup process.

Last 4 SSN or complete Canada Health Card Number

Please enter Last 4 SSN or complete Canada Health Card Number.

XXXX or XXXXXXXXXXXX



Show SSN/Canada HCN

Date of Birth

Enter your date of birth in the format shown, using 4 digits for the year.

mm / dd / yyyy

NEXT

For assistance activating your
MyChart account:

- Review [step-by-step instructions](#).
- Contact Customer Support:

Cleveland Clinic U.S. Patients

(Ohio, Florida, & Nevada locations)

1.866.915.3383

216.444.1740

Cleveland Clinic Canada Patients

(Toronto location)

1.888.507.6885

416.507.6600

No Activation Code?

REQUEST ACTIVATION CODE
ONLINE



▶ My Medical Record

▶ My Family's Records

▶ My Appointments

▶ My Health Resources

▶ Message Center

▶ Manage My Health Info

▶ MyAccount

▶ Administrative

▶ Preferences

Health Information Center
(Opens in a new window)

You Might Want To...



Review the preventive care services we recommend you schedule soon.



Read your messages. You have 4 new messages.



You have not set your security question/answer. Please take a moment to set them now. With the security question/answer, you can reset your password when you forget it.

Cleveland Clinic News for You

Flu Information: Seasonal and H1N1

Visit clevelandclinic.org/flu for up-to-date information on flu shot availability, vaccine safety, and how to care for children with flu at home.

The Role of Mammograms and Self-Exams in Early Detection

The recent recommendations of the U.S. Preventive Services Task Force (USPSTF) have led to confusion on the role of mammograms and self-exams in the early detection of breast cancer. Research has continuously



My Medical Record

- Health Summary
- Test Results
- Medications
- Allergies
- Immunizations
- Preventive Care
- Current Health Issues
- Health Trends
- Letters

My Family's Records

My Appointments

My Health Resources

Message Center

Manage My Health Info

MyAccount

Administrative

The Health Summary provides you with personal health information from your electronic health record and is made available to you at the discretion of your physician(s). If your health summary does not contain health information that you expected to see, or if you feel any of your information is inaccurate, please ask your physician to update your health summary during your next office visit.



Current Health Issues

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Health Issue	Date Noted
High Blood Pressure	09/07/2009
Lower Back Pain	12/15/2009
Epilepsy	07/29/2009
Sleep Apnea	12/15/2009
Depression	05/11/2009



Medications

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Limitations

- Human and Capital Resources inequalities among health care settings in adopting the E.H.Rs.
- Privacy rules for protecting personal health information.
- Data relating to death and dialysis might not be readily available.
- Usefulness of the P.H.R relies on the level of engagement of patients with their health.

Your Opinion

- ❑ What do you think could be done to improve engagement of patients with their health and so their use of the PHR ?
- ❑ Can E.H.Rs fully function with current privacy rules?

Questions?



References

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- ❖ https://www.kidneynews.org/kidneynews/8_8/11/11.pdf
- ❖ https://my.clevelandclinic.org/ccf/media/files/Nephrology/URL_Center_for_Chronic_Kidney_Disease.pdf
- ❖ Navaneethan SD, Jolly SE, Sharp J, et al. (2011) Development and Validation of an Electronic Health Record Based Chronic Kidney Disease Registry
- ❖ Navaneethan SD, Jolly SE, Sharp J, et al. (2013) Electronic health records: a new tool to combat chronic kidney disease?
- ❖ Seminar Medical Informatics Electronic Health Record 26 February 2019 VerónicaBurriel Coll
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