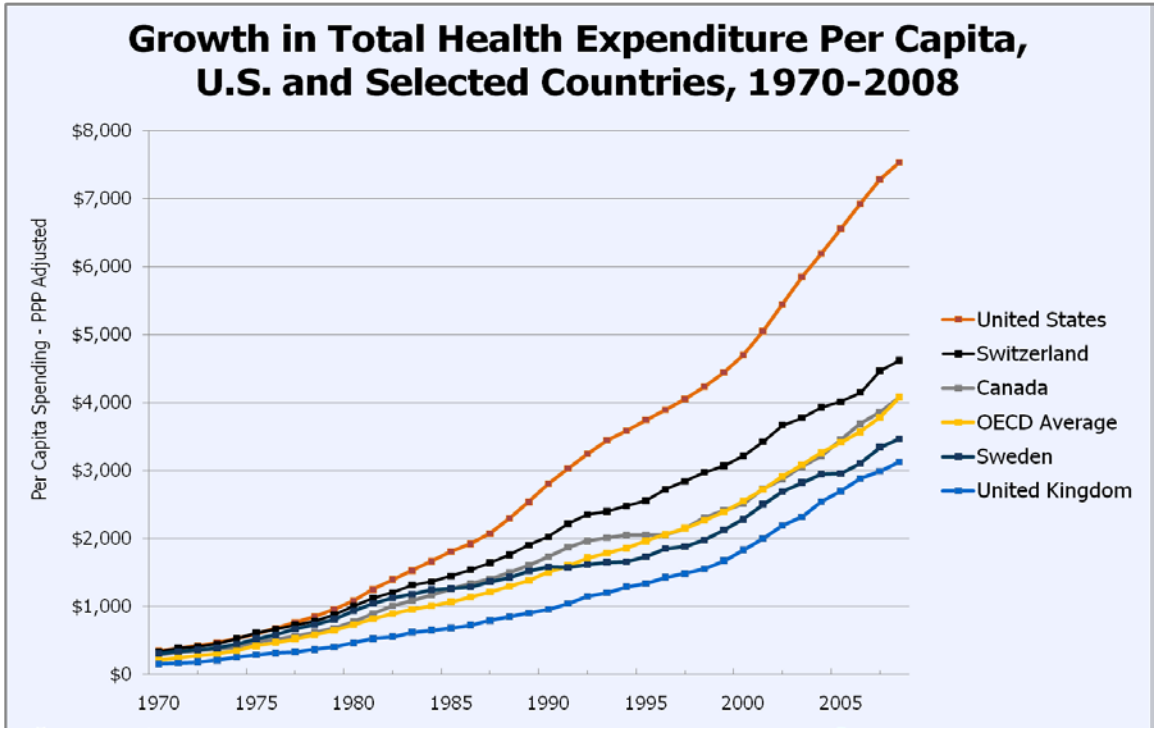
Health care

- Patiënts with chronic disease ↑
- Health care professionals ↓
- Costs ↑



Organisation for Economic Co-operation and Development (2010). OECD Health Data", OECD Health Statistics. Doi: 10.1787/data-00350-en

LUMC Nephrology

Self management

Involving patients into the management of their disease

- Clinical control ↑
- Autonomy ↑
- Adherence ↑

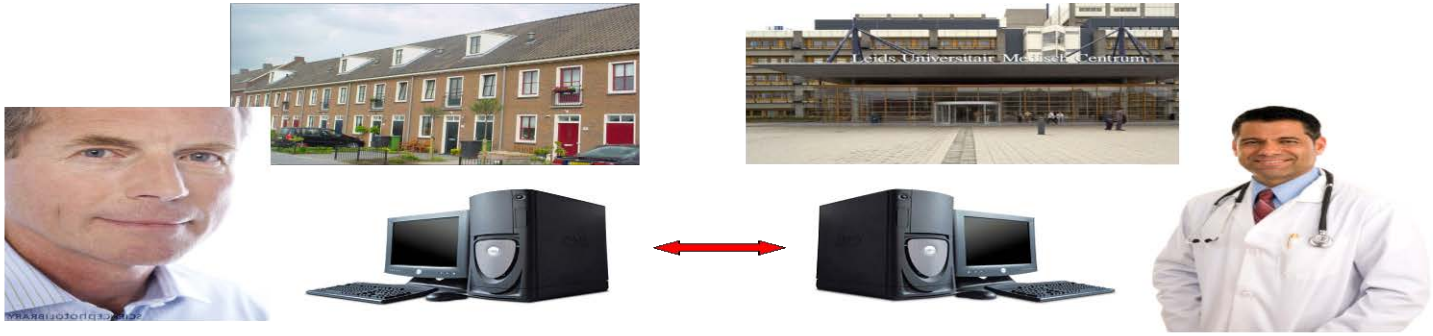
⟹ Clinical results ↑
Quality of Life ↑

⇓

- Healthcare utilization ↓ (Costs ↓)

LUMC Nephrology

Self management



Leefregels

Weinig zout

Bewegen

Controles

Bloeddruk

Nierfunctie

Betere zorg
Betere integratie ziekte in leven
Betere kwaliteit van leven
Reductie zorgkosten

(gedeeltelijke) Regie rol

Coachende rol

Lifestyle

Low salt

Exercise

Monitoring

Blood pressure

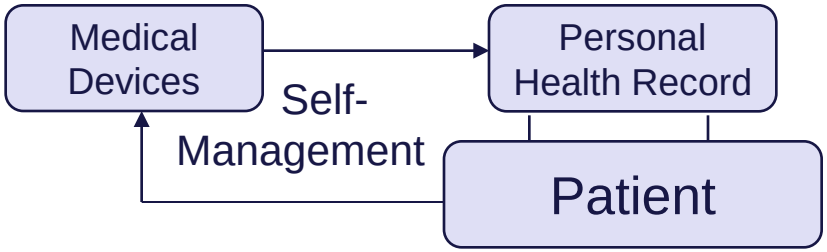
Glucose

More leading (directing) role

Supporting role

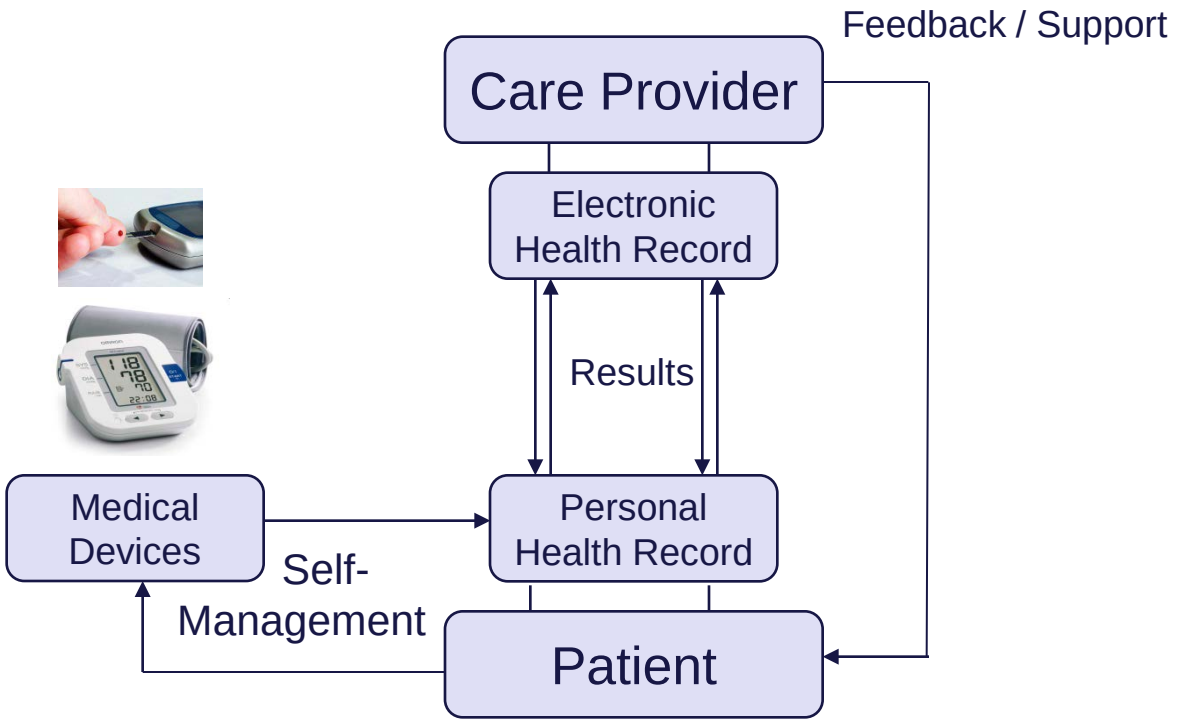
LUMC Nephrology

Disease / Self management



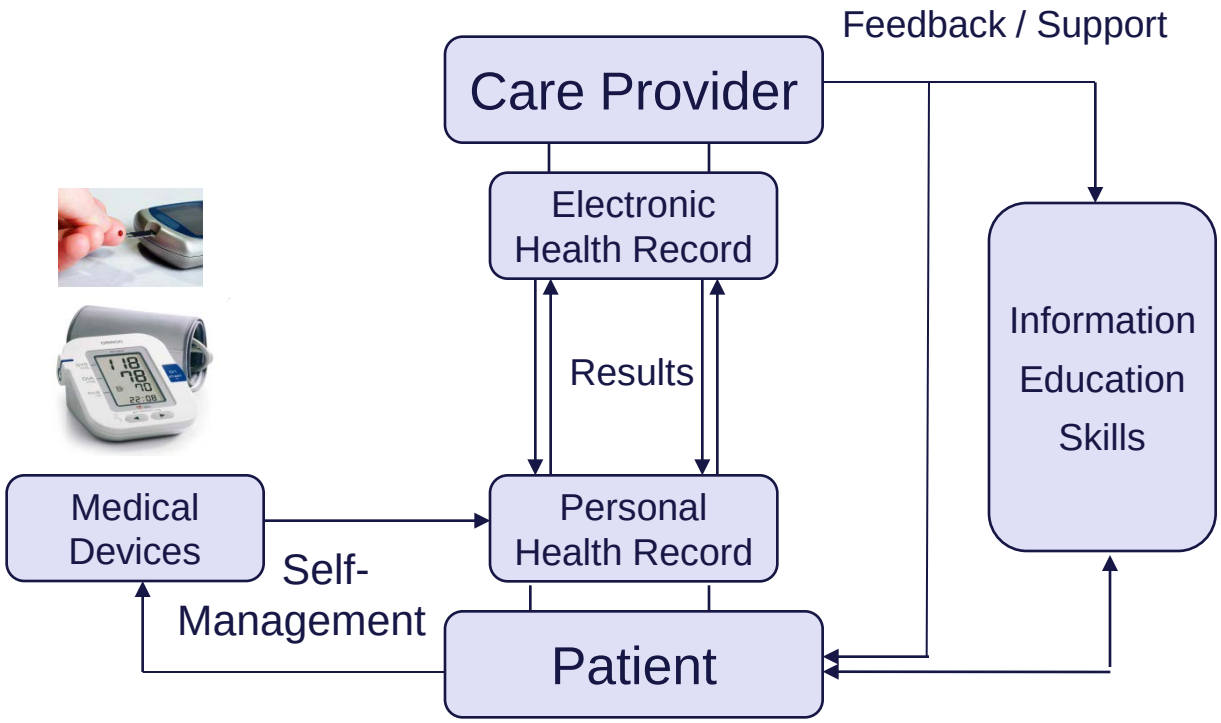
LUMC Nephrology

Disease / Self management



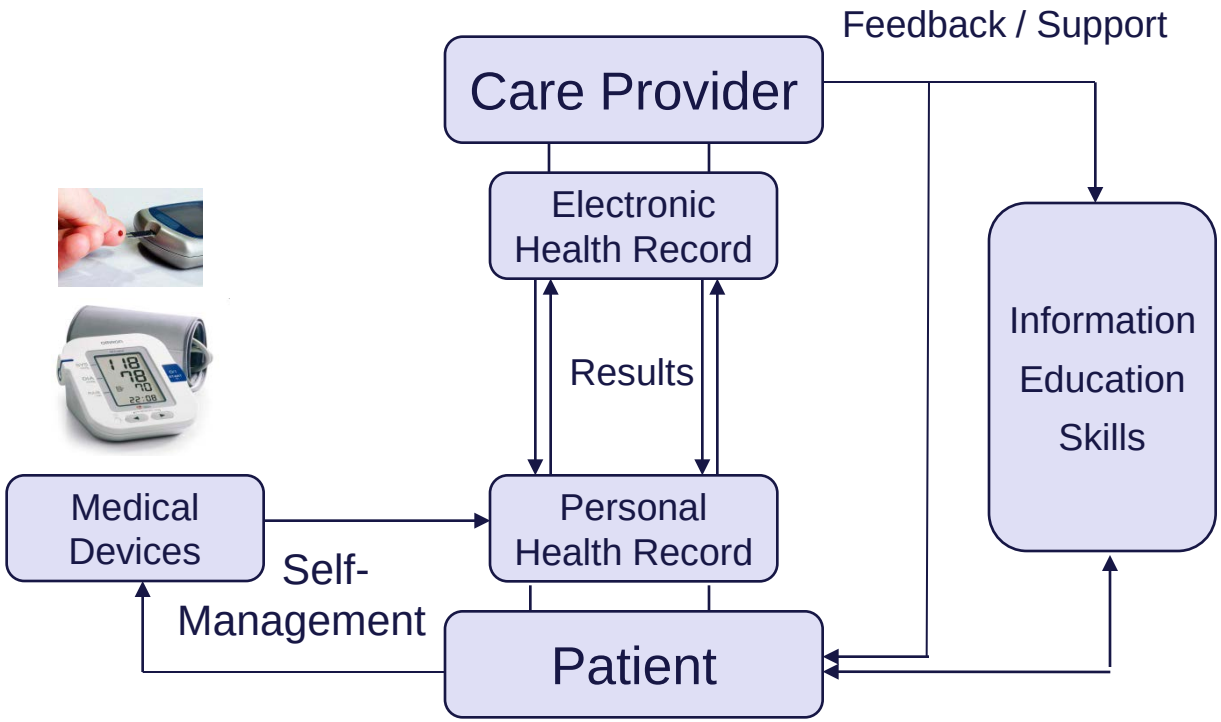
LUMC Nephrology

Disease / Self management



LUMC Nephrology

Disease / Self management



Content | Technical | Organizational | Financial | Social | Scientific

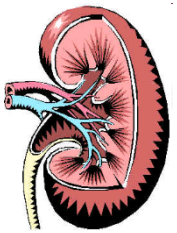
Boundary Conditions

LUMC Nephrology

Need for new medical devices

Renal transplantpatients

First year: 20 visits of outpatient clinic



Most important aspects to be measured:

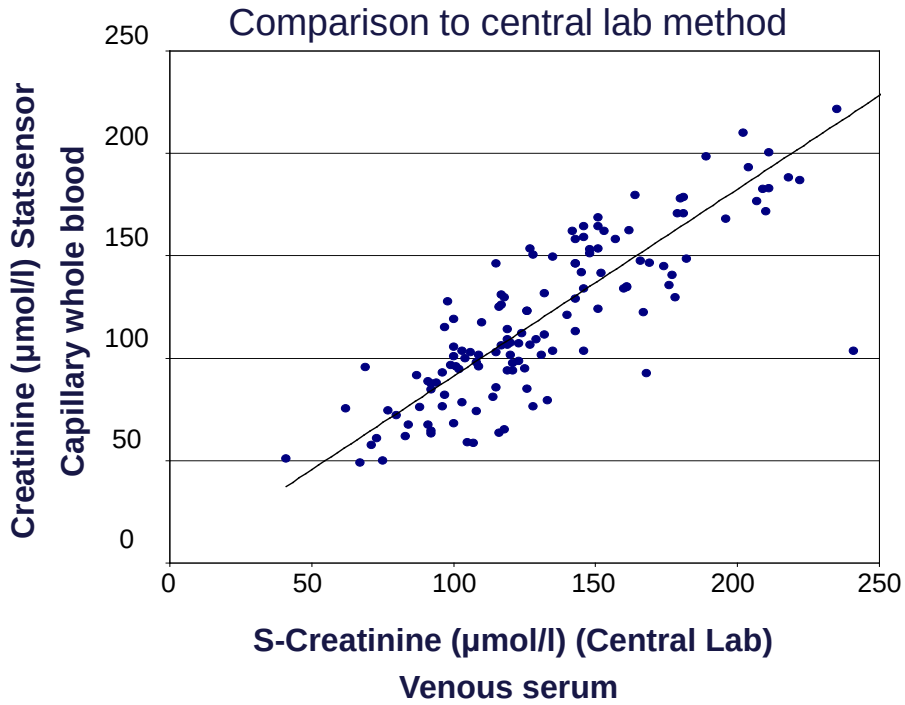
- Creatinine (renal function)
- Blood pressure

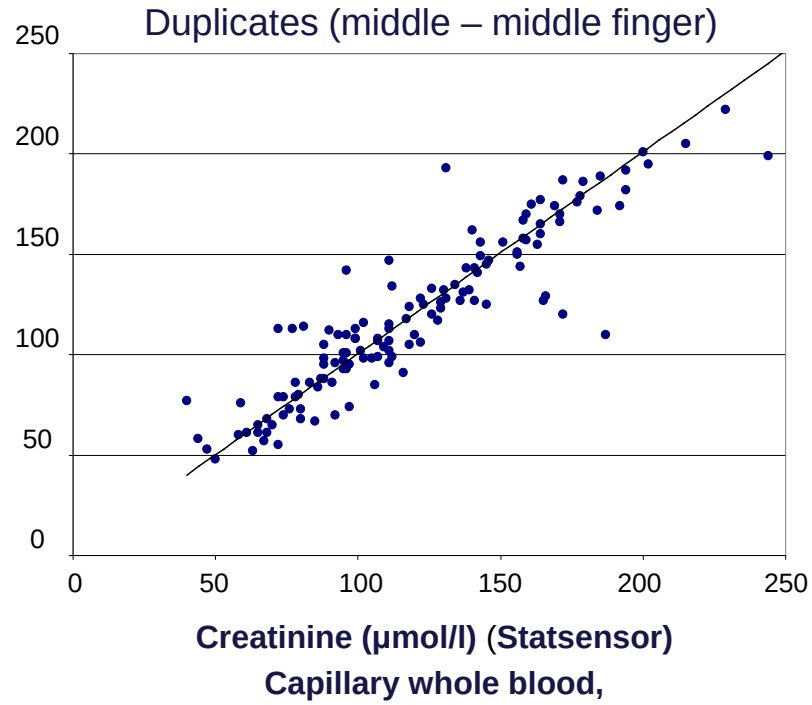
Need for handheld device for measuring creatinine at home

LUMC Nephrology

Point-of-Care Creatinine analyzer
Nova StatSensor®

Analytical validation





Critical difference / Reference Change Values (RCVs):

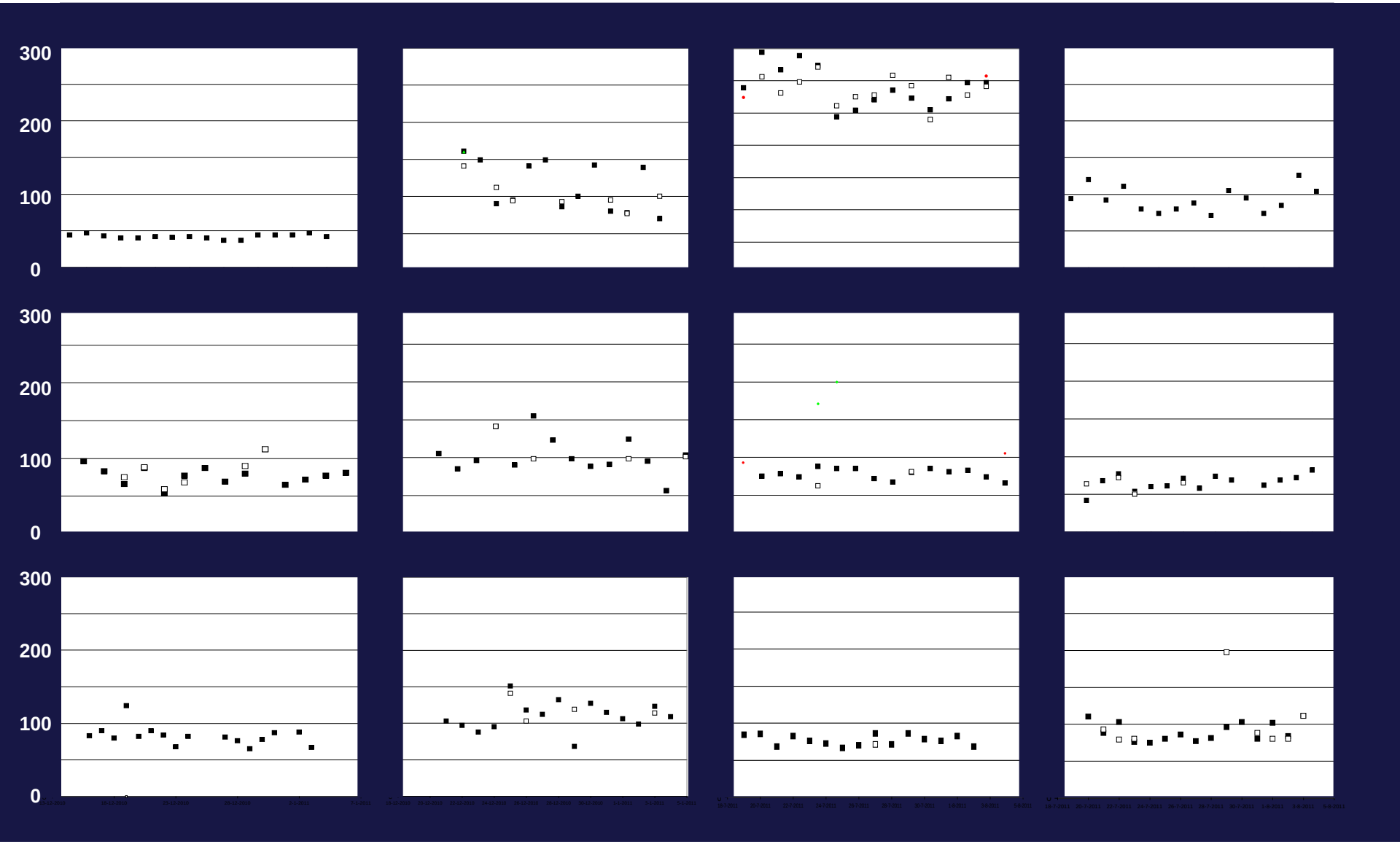
- 35% for StatSensor in fingerprick
- 23% for Statsensor in heparinized venous whole blood,
- 15.5% for the central lab method

RCVs were calculated as $2.8 * (CV_a2 + CV_b2)^{1/2}$.
CV_a = analytical CV; CV_b = intraindividual biological CV. ;
CV_b = 5,3%; (C. Ricos et al. Scand.J.Clin.Lab.Invest 1999;59:491-500)

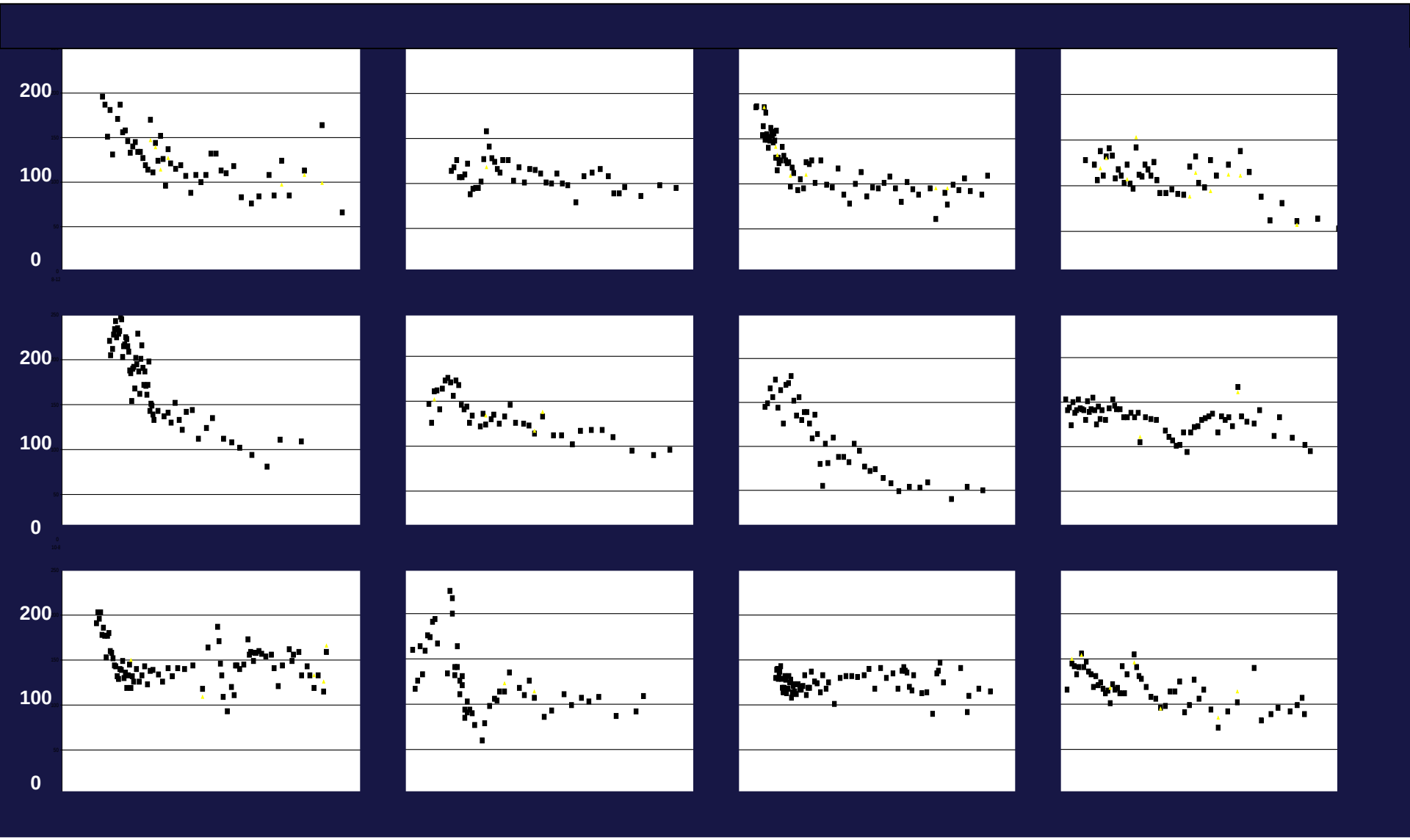
Cobbaert et al, Ned Tijdschr Klin Chem Labgeneesk 2012, vol. 37, no. 2

LUMC Nephrology

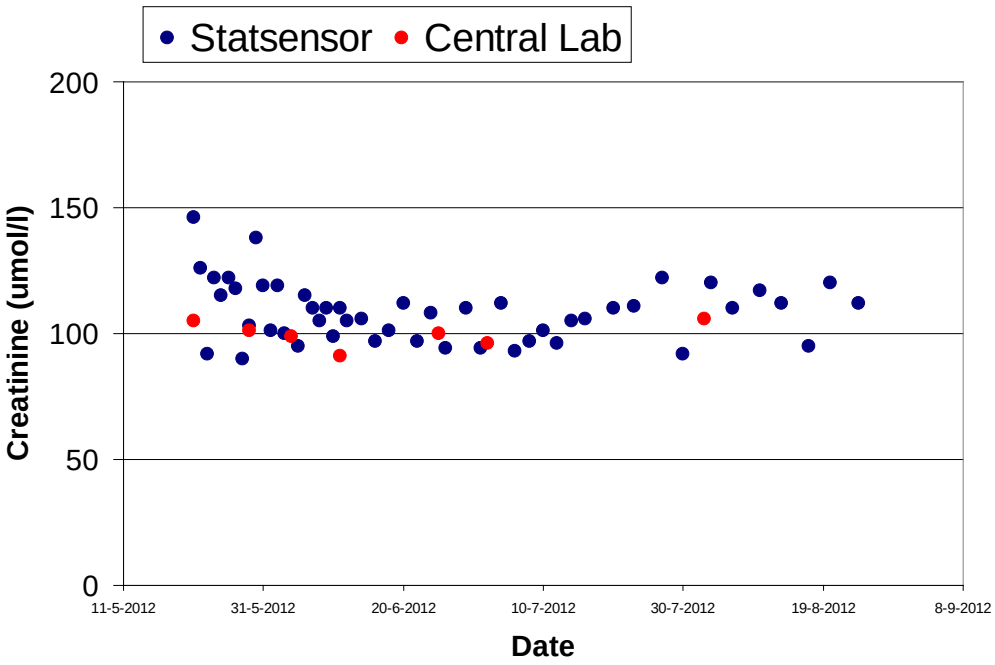
Statsensor: stable kidney-pancreas tx patients



Statsensor: kidney patients direct after Tx



Home-measurements: more frequently



First weeks after transplantation:

- Creatinine Out-patiënt-clinic: 1 x / week
- Creatinine Homemeasurements (Statsensor): 7 x / week

LUMC Nephrology

Conclusion

Device

- High RCV (2.25 increase compared to central lab method)

=> for clinical use central laboratory method can not be replaced by the Statsensor

Performance of measurement

- inter-individual variation

Use in clinical setting

- More measurements (7x)
- Identifiable trends (necessary for detection of rejection)

LUMC Nephrology

feasibility - study

Renal Transplant patients:

- 1rd year 20 times visit outpatient clinic

Most important measurements:

- Creatinine (renal function)
- Blood pressure

Aim:

Home-measurements of creatinine:

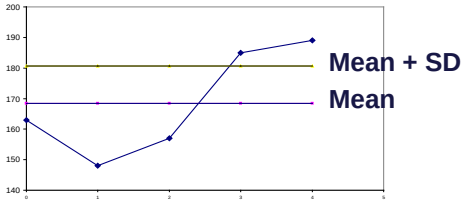
- Detection of trends/rejection?
- Experiences of patients and healthcare professionals

LUMC Nephrology

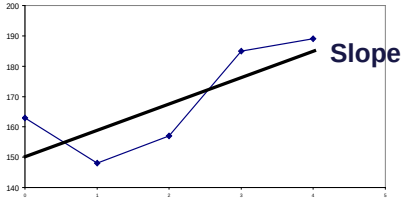
Algorithm

Algorithm based on last measurements

- Deviation from mean (number of individual standard deviations)



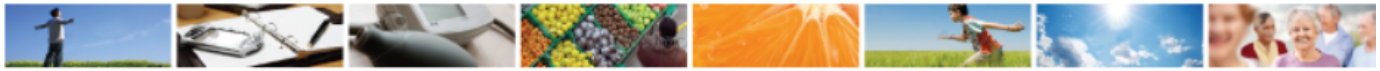
-Slope



If creatinine to high

- Once => repeat measurement
- Twice => contact the hospital

mijnnierinzicht.nl



Home | My Insight | Tables | Communication | Education | Settings | Information

Welcome to mijnnierinzicht

Is your kidneyfunction declining? In that case it is important to do everything in order to prevent or slow down this kidneyfunction decline… With sensible nutrition, sufficient exercises, quit smoking… Do not wait, but anticipate, for your own health!

Mijnnierinzicht.nl will help you!
Mijnnierinzicht.nl has been developed as support for several self-management projects, for the benefit of kidney patients. The Dutch Kidney Foundation makes it possible for kidney patients to use this tool for free! Take your advantage with this offer! More information

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Your settings

Username *

Password

Save password

Login

I don't have an account >
I've lost my password >
I've lost my activationcode >
Activate my account >

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Conditions | Privacy

De kreatininemeter

De kreatininemeter is handzaam en eenvoud

Beweeg de muis over de verschillende ci

Afbeelding bloeddruppel op scherm

Als je een strip in de meter schuift, verschijnt er een druppel op het scherm. Dit betekent dat de meter klaar is voor een meting met een druppel bloed.

Instructievideo kreatinine meten

mijnnierinzicht.nl

Mijn Pagina | Mijn inzicht | Tabellen | Communicatie | Instellingen | Informatie

Dagboek invullen

1 juni 2012

ma 28 mei | di 29 mei | wo 30 mei | do 31 mei | vr 01 jun | za 02 jun | zo 03 jun

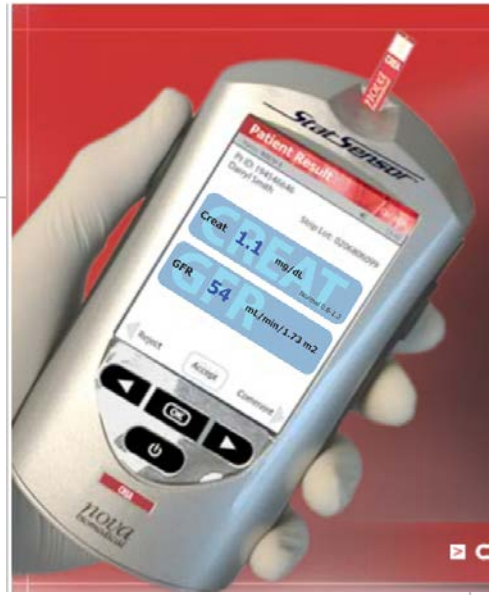
Voeding | Diabetes | Fosfaat | Activiteit | Roken | Meting

Basis
Bloed
Urine

	waarde	commentaar
Kreatinine (stat) (µmol/l)	185	
Kreatinine2 (stat) (µmol/l)		

Opslaan

Toon rapportage



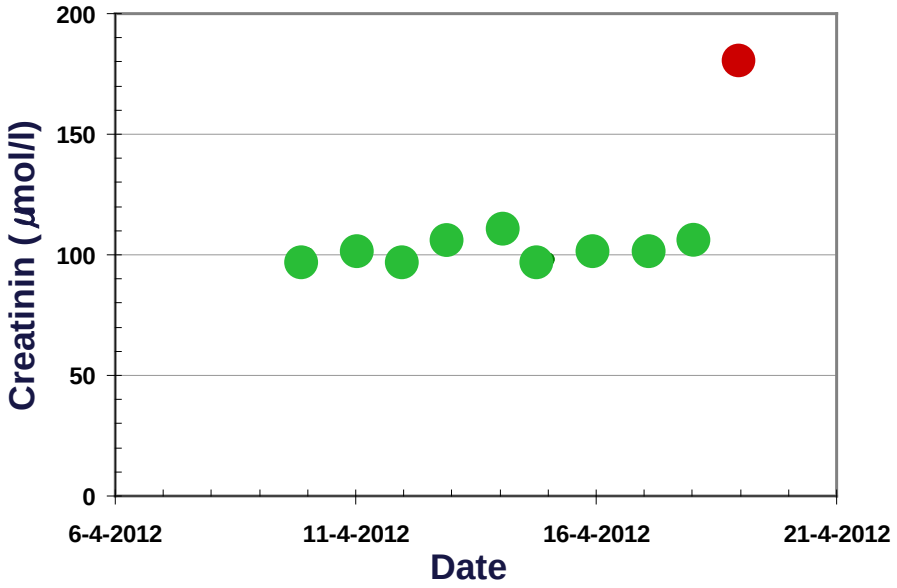
LUMC Nephrology

Feedback to the patient

Feedback results

Result is outside the expected range

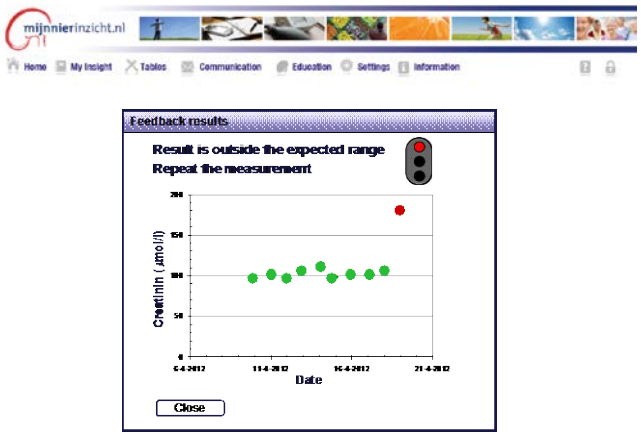
Repeat the measurement

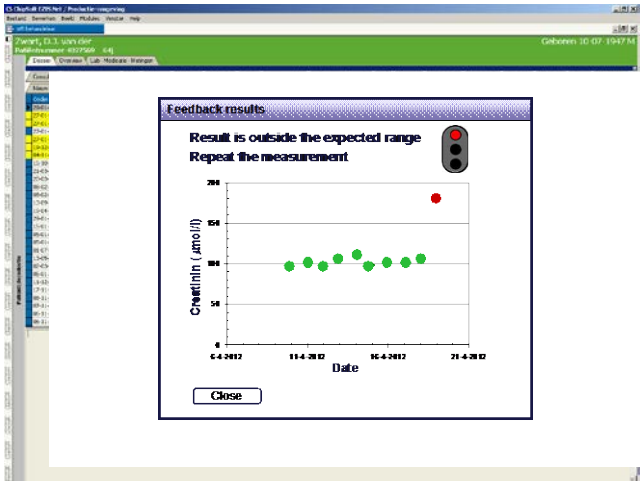


Close

LUMC Nephrology

Results visable in Medical Record Hospital





Web-application of patient

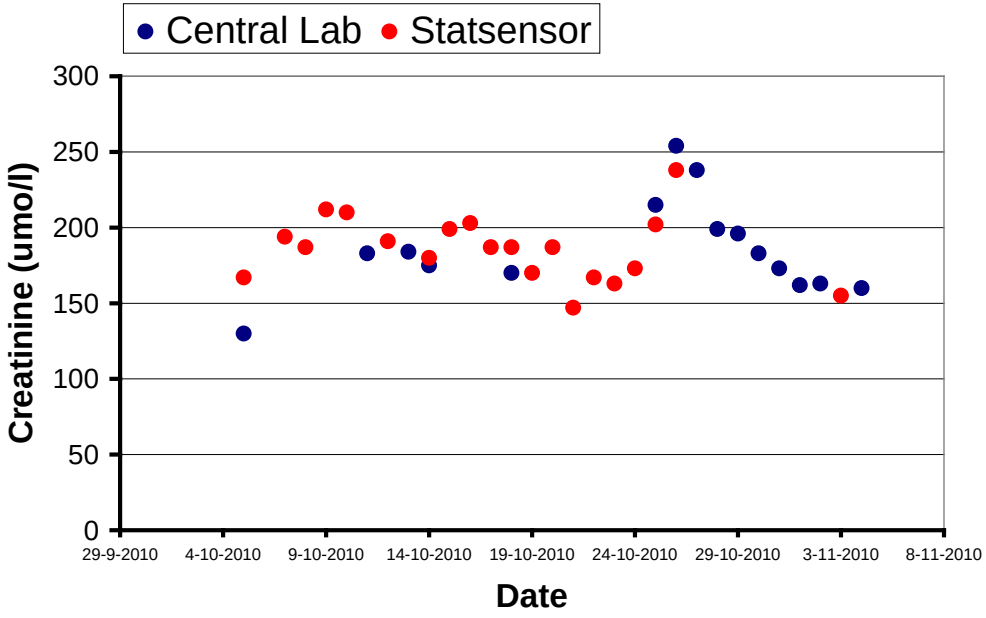
Integration in medical record

LUMC Nephrology

Results feasibility study

4 patients with rejection:

Detectable by both central lab and point of care measurements



Admittance for rejection

LUMC Nephrology

Experiences of doctors

Feasability study:

- Variable support: Less accuracy of Statsensor compared to central lab method

Common barriers (literature):

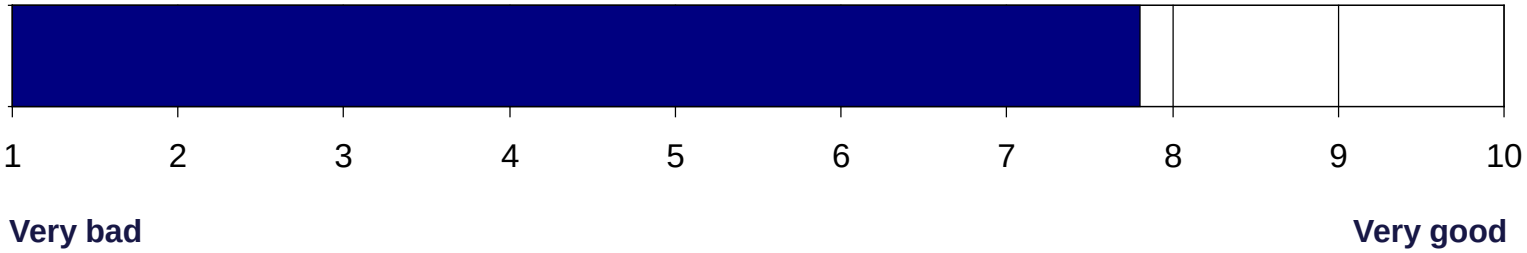
- Change of directive to coaching role
- Vagueness concerning responsibilities
- Fear for loosing control concerning the treatment
- Fear for extra workload (time / administrative)
- Uncertaintity concerning the advantages of selfmanagement

LUMC Nephrology

Experiences of patients

Experiences of patients

General satisfaction:



Main advantages:

- Up to date information concerning the actual renal function
- Quick detection of changes in renal function
- Outpatients visits less stressful
- Better coping with renal disease: more confidence / certainty
- Positive towards reduction of outpatient clinic visits

LUMC Nephrology

Conclusion

Point of care-devices:

- New opportunities for Self management

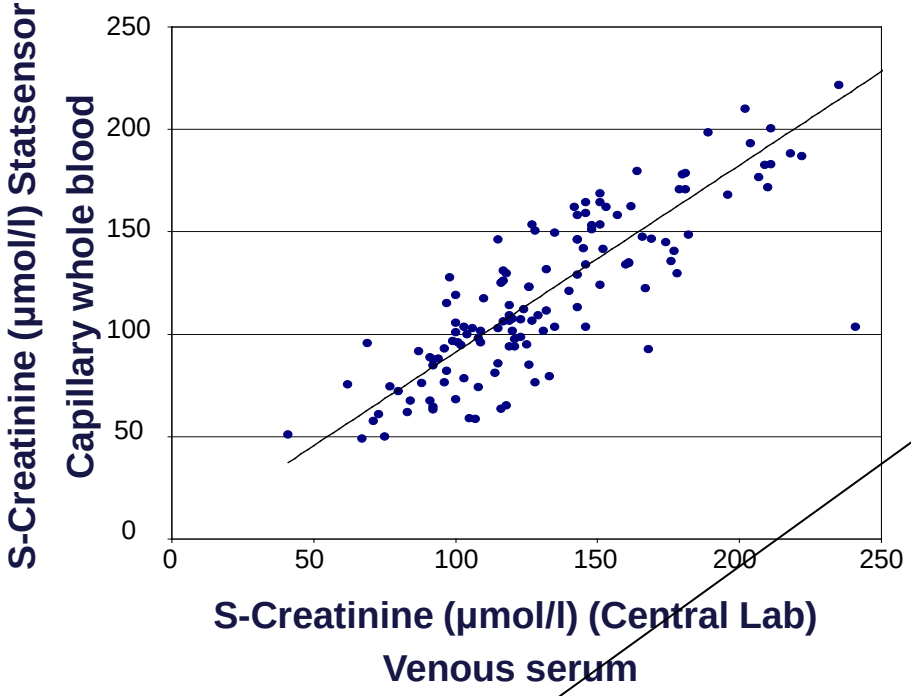
Point of Care Creatinine device (Statsensor)

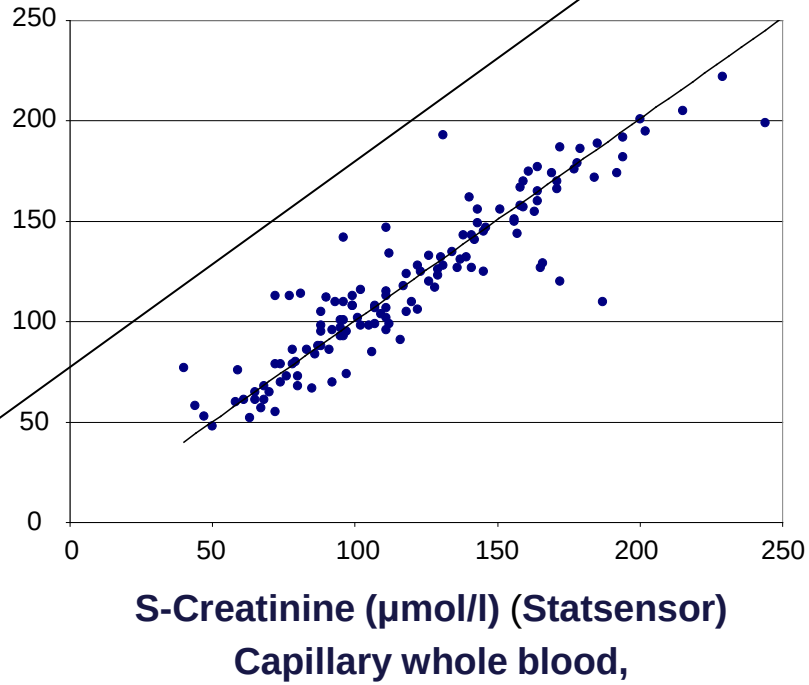
- Improvement is necessary

Combined with frequent measurements and use of algorithms even less accurate devices can be used for home-monitoring

LUMC Nephrology

Analytical validation



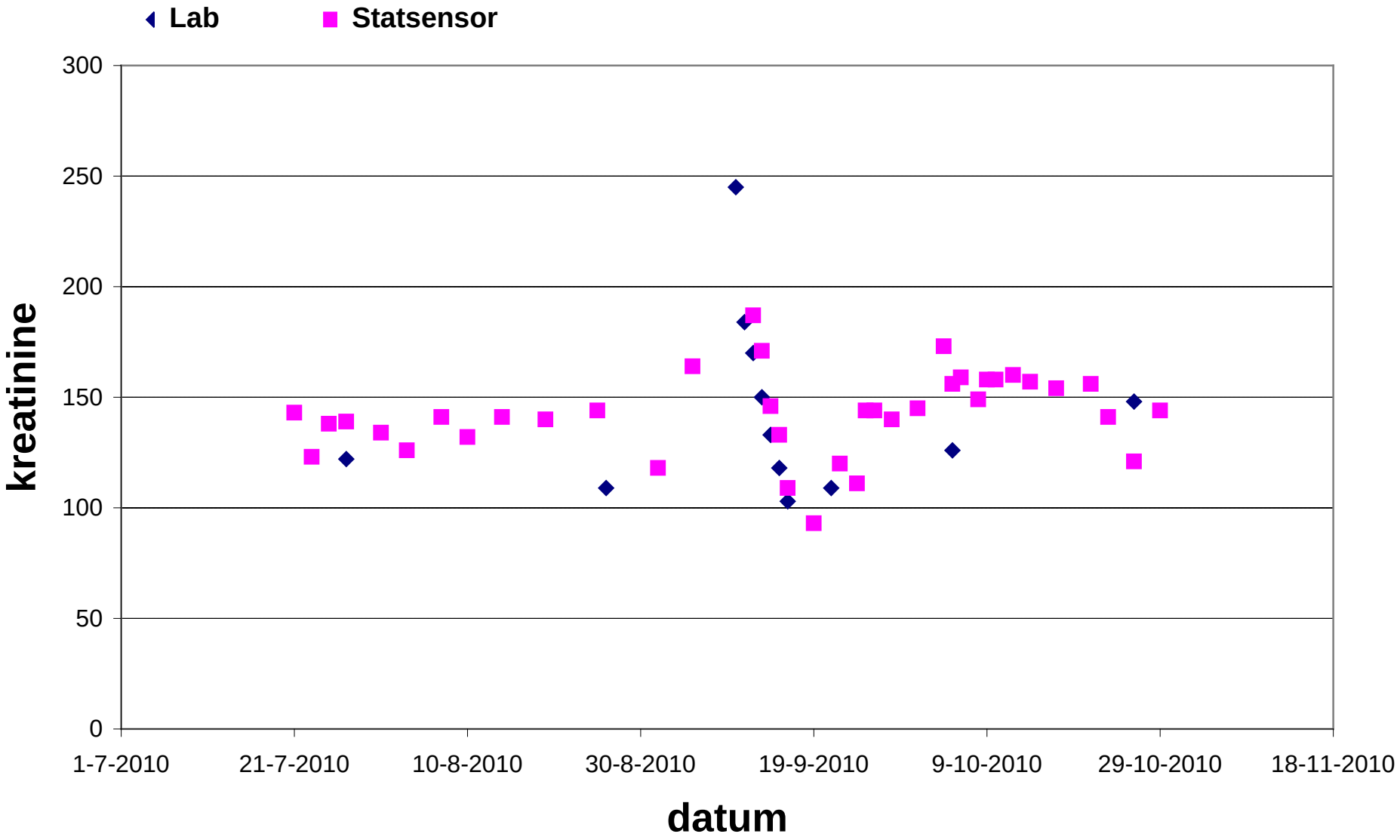


Average error index $(Y-X)/TE_a$: -0.96 (range: -6.61- +5.42).

Difference between two methods: within the TE_a in 39.5% of the samples

(TEa = 6.9%; C. Ricos et al. Scand.J.Clin.Lab.Invest 1999;59:491-500)

Cobbaert et al, Ned Tijdschr Klin Chem Labgeneesk 2012, vol. 37, no. 2

LUMC Nephrology

Data of participant of feasibility study