



The 2002 CKD definition and classification system: concept, impact, criticisms and opportunities to move forward

K.-U. Eckardt

University of Erlangen-Nuremberg

Germany



Desease related to the kidneys

Terminology

Chronic renal insufficiency

Impaired renal function

End stage renal disease

Kidney failure

Pre-uremic state

Bright's disease

Renal failure

Renal insufficiency

End stage kidney disease

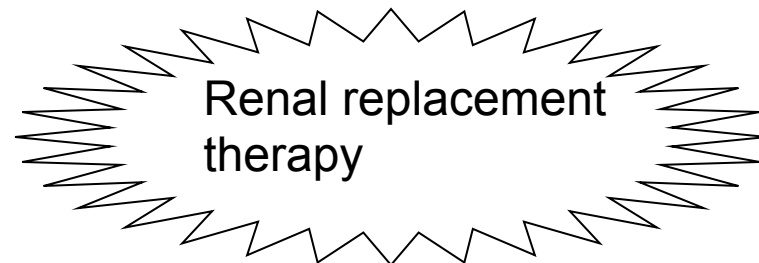
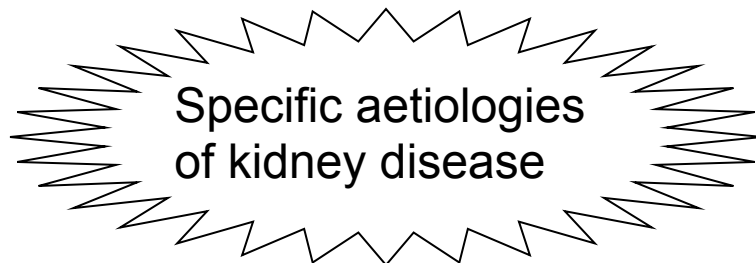
Compensated renal insufficiency

Pre-dialysis state

Renal impairment

Kidney disease

Focus of nephrology





Definition and staging of CKD (KDOQI 2002)

- Goals:
- Terminology: common and precise language
 - Concept: kidney disease can be diagnosed if cause is unknown
 - Differentiation: staging according to severity

Def.: Kidney damage for ≥ 3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased GFR *or* GFR < 60 mL/min/1.73m² for ≥ 3 months, with or without kidney damage

Stages:

Stage	Description	GFR (ml/min/1.73 m ²)
1	Kidney damage with normal or \uparrow GFR	> 90
2	Kidney damage with mild \downarrow in GFR	60 -89
3	Moderate \downarrow in GFR	30-59
4	Severe \downarrow in GFR	15-29
5	Kidney failure	< 15 (or dialysis)



Definition and staging of CKD (KDIGO 2004, 2006)

- Process:
- Questionnaire to ~ 10,000 nephrologists worldwide
 - 2 Controversies conferences (2004, 2006)
 - Intense debate about advantages and disadvantages

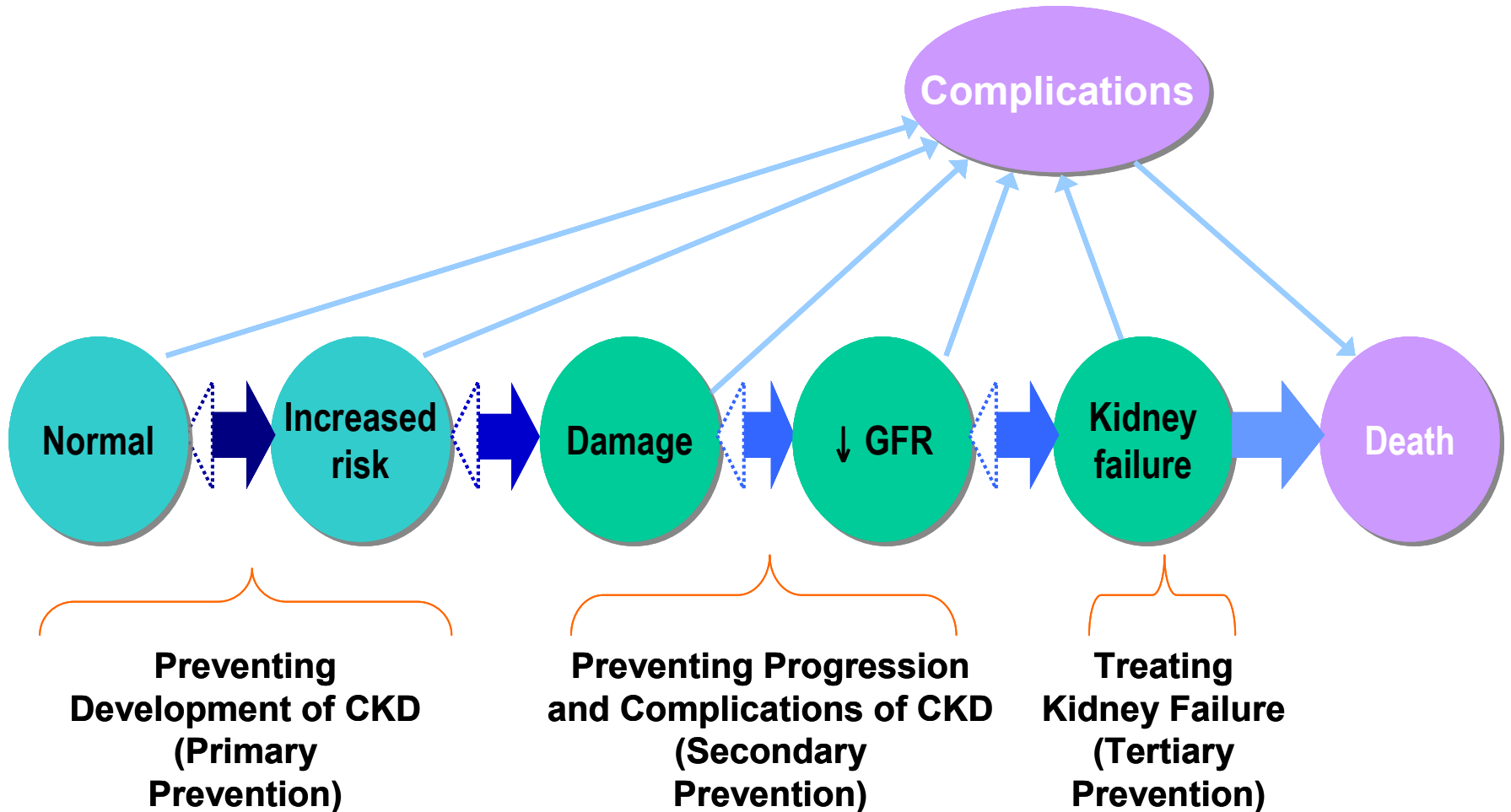
Conclusion: endorsement of global use with 2 modifications

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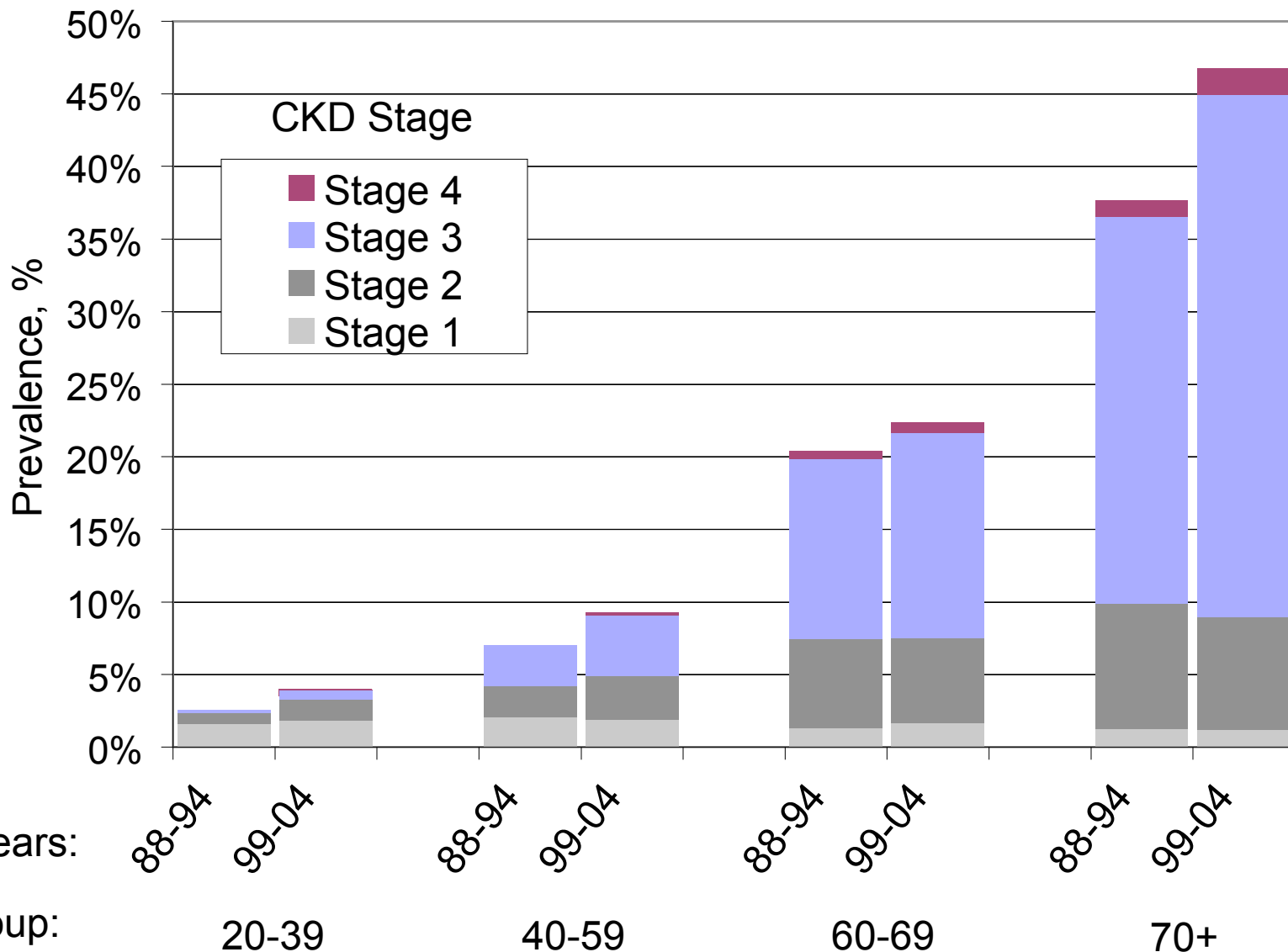
Conceptual model(s) of CKD





US trends in the prevalence of CKD

(Coresh, JAMA 2007)





Definition and staging of CKD

Implications within 7 years ?

HUGE !

Research: projects and funding

- CKD is common
- CKD is harmful (risk multiplier)

Awareness: individuals and populations

- non-nephrology medical professionals
- patients
- health care administrators

Policy: primary and secondary prevention

- detection and follow-up
- scaffold for clinical practice recommendations



Definition and staging of CKD CONCERNS ! (mainly by nephrologists)

Over- and misdiagnosis of CKD

- Prevalence rates considered as implausibly high
- Overuse of speciality resources

Discomfort with terminology

- Disease vs pre-disease vs risk factor
- Use of CKD without knowing the etiology

Methodology

- Imprecision and bias of formulas to estimate GFR
- Lack of validation in specific populations (age, race, comorbidities)
- Methodology and cut-off values for abnormal albumin / protein excretion

Appropriateness of criteria / threshold levels for stages

- CKD stages 1 and 2 – a disease ?
- Microalbuminuria – a CV rather than a renal risk factor?
- eGFR < 60 – sufficient to diagnose CKD ?
- Age-adaptation needed ?



Definition and staging of CKD

Position of KDOQI and KDIGO

The debate is helpful and necessary

- Definitions and classifications are conventions.
- There is a need to adapt them to new knowledge.
- Overdiagnosis is a real concern.

However

The risk to lose the common ground is significant

Therefore

A structured process is needed for review / revision

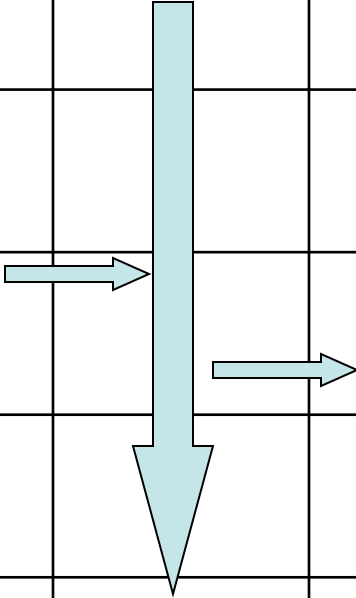
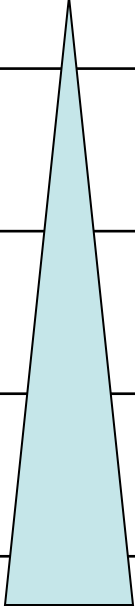
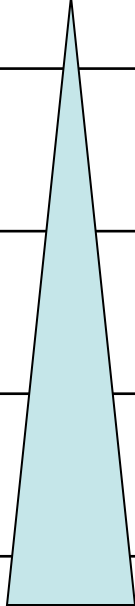
- The goal should be: applying a definition and staging system vs not applying it should lead to better **patient outcomes** !
- There should be consistency with the principles of definition and staging applied in other medical disciplines.
- The benefits of revising a definition and classification need to be balanced against the disadvantages.



Criteria for classification (staging) of different diseases

		<u>Examples</u>
<ul style="list-style-type: none">• Cause• Structure	} Aetiology	GN
<ul style="list-style-type: none">• Dissemination• Function• Symptoms• Prognosis• Treatment•		TNM system
	} Severity	MM
		NYHA
		CKD

Classification of a disease by severity

Stage	Description	Sequence / progression	Symptoms	Adverse outcomes	Consequences for patient management
1				to some extent specific
2				to some extent specific
3				to some extent specific
4				to some extent specific
....				

Classification systems in medicine

CKD –
Does the current CKD staging system follow these principles ?

Stage	Description	Sequence / progression	Symptoms	Adverse outcomes	Consequences for patient management	
1	CKD Stage 1		less relevant		management extent specific	
2	CKD Stage 2				prognosis matters !	to some extent specific
3	CKD Stage 3					to some extent specific
4	CKD Stage 4					to some extent specific
5	CKD Stage 5					



Definition and staging of CKD

Questions to be addressed

Do the current CKD definition and stages predict different levels of risk for modifiable outcomes:

- Cardiovascular disease ?
- CKD progression ?
- Acute kidney injury ?

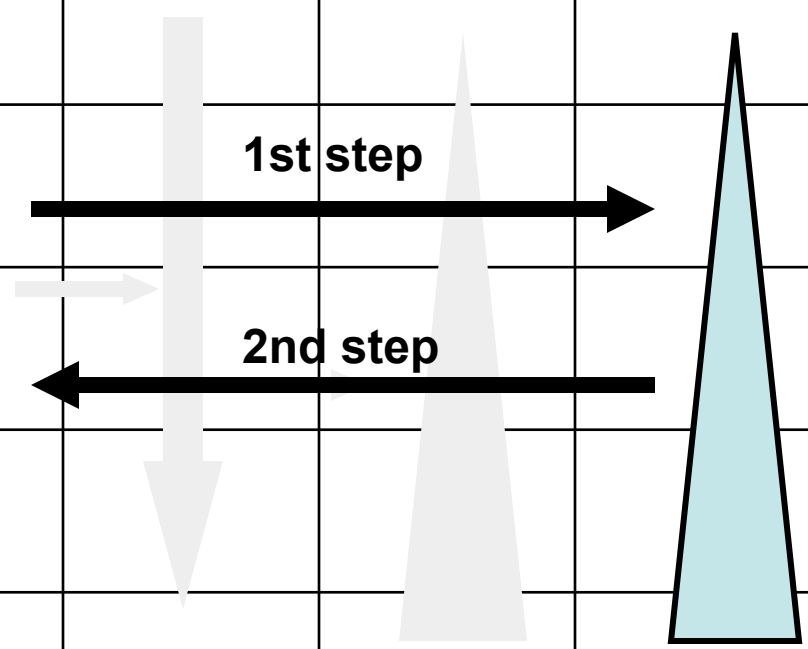
Do they predict risk in different age groups ?

Will modifications improve risk prediction ?

- Different GFR thresholds?
- Proteinuria thresholds?

Classification systems in medicine

Stage	Description	Sequence / progression	Symptoms	Adverse outcomes	Consequences for patient management
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A simple idea

The best data base ever available including more than 1 million individuals with eGFR and albuminuria data.

A unique example for common data analysis.

The largest collaborative research effort in Nephrology.