

Person—creatinine serum level, total micromoles per litre NN[NN]

Identifying and definitional attributes

Metadata item type:	Data Element
Short name:	Creatinine serum level (measured)
METEOR identifier:	360936
Registration status:	<ul style="list-style-type: none">• Health, Standard 01/10/2008
Definition:	A person's serum creatinine level measured in micromoles per litre.

Data element concept attributes

Identifying and definitional attributes

Data element concept:	Person—creatinine serum level
METEOR identifier:	269566
Registration status:	<ul style="list-style-type: none">• Health, Standard 01/03/2005
Definition:	A person's serum creatinine level.
Object class:	Person
Property:	Creatinine serum level

Value domain attributes

Identifying and definitional attributes

Value domain:	Micromoles per litre NN[NN]
METEOR identifier:	270882
Registration status:	<ul style="list-style-type: none">• Health, Standard 01/03/2005
Definition:	Number of micromoles per litre (µmol/L)

Representational attributes

Representation class:	Total
Data type:	String
Format:	NN[NN]
Maximum character length:	4

Unit of measure: Micromole per litre ($\mu\text{mol/L}$)

Data element attributes

Collection and usage attributes

Guide for use: There is no agreed standard as to which units serum creatinine should be recorded in.

Note: If the measurement is obtained in mmol/L it is to be multiplied by 1000.

Collection methods: Measurement of creatinine should be carried out by laboratories, or practices, which have been accredited to perform these tests by the National Association of Testing Authority.

- Single venous blood test taken at the time of other screening blood tests.
- Fasting not required.

Comments:

Serum creatinine can be used to help determine renal function. Serum creatinine by itself is an insensitive measure of renal function because it does not increase until more than 50% of renal function has been lost.

Serum creatinine together with a patient's age, weight and sex can be used to calculate glomerular filtration rate (GFR), which is an indicator of renal status/function. The calculation uses the Cockcroft-Gault formula.

Creatinine is normally produced in fairly constant amounts in the muscles, as a result the breakdown of phosphocreatine. It passes into the blood and is excreted in the urine. Serum creatinine can be used to help determine renal function. The elevation in the creatinine level in the blood indicates disturbance in kidney function.

GFR decreases with age, but serum creatinine remains relatively stable. When serum creatinine is measured, renal function in the elderly tends to be overestimated, and GFR should be used to assess renal function, according to the Cockcroft-Gault formula:

$$\text{GFR (ml/min)} = \frac{(140 - \text{age [yrs]}) \times \text{body wt (kg)}}{814 \times \text{serum creatinine (mmol/l)}} \quad [\times 0.85 \text{ (for women)}]$$

An alternative formula is derived from the Modification of Diet in Renal Disease (MDRD) study and does not rely on knowledge of body weight:

$$\text{GFR (ml/min/1.73m}^2\text{)} = 32788 \times \text{creatinine}^{-1.154} \text{ (umol/L)} \times \text{age}^{-0.203} \times \text{(males: 1, females: 0.742)}.$$

To determine the degree of chronic renal impairment

GFR > 90ml/min - normal

GFR >60 - 90ml/min - mild renal impairment

GFR >30 - 60ml/min - moderate renal impairment

GFR 0 - 30 ml/min - severe renal impairment

Note: The above GFR measurement should be for a period greater than 3 months. GFR may also be assessed by 24-hour creatinine clearance adjusted for body surface area.

In general, patients with GFR < 30 ml/min are at high risk of progressive deterioration in renal function and should be referred to a nephrology service for specialist management of renal failure.

Patients should be assessed for the complications of chronic renal impairment including anaemia, hyperparathyroidism and be referred for specialist management if required.

Patients with rapidly declining renal function or clinical features to suggest that residual renal function may decline rapidly (ie. hypertensive, proteinuric (>1g/24hours), significant comorbid illness) should be considered for referral to a nephrologist well before function declines to less than 30ml/min. (Draft CARI Guidelines 2002. Australian Kidney Foundation). Patients in whom the cause of renal impairment is uncertain should be referred to a nephrologist for assessment.

Source and reference attributes

Submitting organisation: Cardiovascular Data Working Group

National Diabetes Data Working Group

Origin: Caring for Australians with Renal Impairment (CARI) Guidelines. Australian Kidney Foundation

Relational attributes

Related metadata references:

Supersedes [Person—creatinine serum level, micromoles per litre NN\[NN\]](#)

- [Health](#), Superseded 01/10/2008

Implementation in Data Set Specifications:

[Acute coronary syndrome \(clinical\) DSS](#)

[Health](#), Superseded 01/09/2012

[Acute coronary syndrome \(clinical\) DSS](#)

[Health](#), Superseded 02/05/2013

[Acute coronary syndrome \(clinical\) NBPDS 2013-](#)

[Health](#), Standard 02/05/2013

Implementation start date: 01/07/2013

[Cardiovascular disease \(clinical\) DSS](#)

[Health](#), Superseded 01/09/2012

DSS specific information:

In settings where the monitoring of a person's health is ongoing and where a measure can change over time (such as general practice), the Service contact—service contact date, DDMMYYYY should be recorded.

Record absolute result of the most recent serum creatinine measurement in the last 12 months to the nearest µmol/L (micromoles per litre).

[Cardiovascular disease \(clinical\) NBPDS](#)

[Health](#), Superseded 17/10/2018

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[Cardiovascular disease \(clinical\) NBPDS](#)

[Health](#), Standard 17/10/2018

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[Intensive care DSS](#)

[Health](#), Recorded 14/07/2006

DSS specific information:

Used in the calculation of APACHE II and APACHE III scoring systems.

The highest and lowest creatinine values in the first 24 hours are collected. The highest scoring creatinine value is selected using the scoring system.

High abnormal range					Low abnormal range			
+4	+3	+2	+1	0	+1	+2	+3	+4
≥310	177-309	133-176		53-132		<53		

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