

Proteinuria Tutorial

Proteinuria

[Early Detection of Kidney Damage](#) [Definition and Classification](#)

[Proteinuria](#) is an early and sensitive marker of kidney damage in many types of chronic kidney disease. Albuminuria is a more sensitive marker than total protein for chronic kidney disease due to diabetes, hypertension and glomerular diseases.

Information
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UA	01/06/2010	MS Strip	Positiv	01/06/2010	Degree of Proteinuria	
UWBC	2	Alb/Creat		/ /		
URBC	1	Prot/Creat		/ /	False Positive Proteinuria	
UEPI		<i>A positive MS Strip should be supplemented with a quantitative measurement such as an Albumin/Creatinine ratio or a Protein/Creatinine ratio</i>				
UBacteria		Na	145	01/06/2010	ALB	3.1 12/10/2009
Mucous		K	4.4	01/06/2010	AST	30 12/10/2009
Casts		Cl	107	01/06/2010	ALT	25 12/10/2009
Cast #		CO2	30	01/06/2010	ALP	159 12/10/2009
Yeast		Glucose	124	01/06/2010	BILI-D	.0 12/10/2009
Yeast #		BUN	16	01/06/2010	BILI-T	.0 12/10/2009
Protein	100	Creatinine	.9	01/06/2010	TP	6.0 12/10/2009
		Ca	10.0	01/06/2010		

At the top of the **Proteinuria** template are two buttons which give information about the **early detection of kidney damage** and **definitions of proteinuria and albuminuria**.

The first button is entitled “**Early Detection of Kidney Damage**.” When it is launched the following is displayed.

Early Detection of Kidney Damage

- Early detection: Persistently increased urinary excretion of protein is a sensitive marker of kidney damage. Early detection allows more timely introduction of therapy to slow disease progression.
- Albuminuria is more sensitive marker for adults with CKD due to diabetes, hypertension, and glomerular diseases than total protein.

- NKF recommends random spot urine measurements due to the inconvenience and errors associated with timed- urine samples.
- First morning specimens are preferred: if not available, random specimens are acceptable
- If 1+ protein, assess total protein-to-creatinine ratio or albumin-to-creatinine ratio within 3 months.

The second button is entitled “**Definitions of Proteinuria and albuminuria.**” When this button is activated, the following information appears.

Definitions of Proteinuria and Albuminuria

	Urine Collection Method	Normal	Microalbuminuria	Albuminuria or Clinical Proteinuria
Total Protein	24-Hour Excretion (varies with method)	<300 mg/day	NA	>300 mg/day
	Spot Urine Dipstick	<30 mg/dL	NA	>30 mg/dL
	Spot Urine Protein-to-Creatinine Ratio (varies with method)	<200 mg/g	NA	>200 mg/g
Albumin	24-Hour Excretion	<30 mg/day	30–300 mg/day	>300 mg/day
	Spot Urine Albumin-Specific Dipstick	<3 mg/dL	>3 mg/dL	NA
	Spot Urine Albumin-to-Creatinine Ratio (varies by gender ^a)	<17 mg/g (men) <25 mg/g (women)	17–250 mg/g (men) 25–355 mg/g (women)	>250 mg/g (men) >355 mg/g (women)

^a Gender-specific cut-off values are from a single study.¹⁹ Use of the same cut-off value for men and women leads to higher values of prevalence for women than men. Current recommendations from the American Diabetes Association define cut-off values for spot urine albumin-to-creatinine ratio for microalbuminuria and albuminuria as 30 and 300 mg/g, respectively, without regard to gender.⁸

The next hyperlink on this template is entitled **Proteinuria** and when launched, it displays the following information:

Proteinuria

- Albumin is the most abundant urine protein in most types of chronic kidney disease.
- Low molecular weight (LMW) globulins are the most abundant urine proteins in some types of chronic kidney disease.
- Proteinuria includes albuminuria, increased urinary excretion of other specific proteins, and increased excretion of total urine protein.
- **Albuminuria** refers to increased urinary albumin excretion.
- **Microalbuminuria** refers to excretion of small but abnormal amounts of albumin.

OK

Cancel

After the hyperlink entitled **Proteinuria**, there are **two facts about proteinuria** which are very important:

1. Protein is an early and sensitive marker of kidney damage in many types of kidney disease.
2. Albuminuria is a more sensitive marker than total protein for chronic kidney disease due to diabetes, hypertension and glomerular disease.

Proteinuria

[Early Detection of Kidney Damage](#) [Definition and Classification](#)

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[Check for New Labs](#)

Urinalysis	01/06/2010	MS Strip		/ /	Degree of Proteinuria		
UWBC	5	Alb/Creat		/ /			
URBC	1	Prot/Creat		/ /	False Positive Proteinuria		
UEPI		<i>A positive MS Strip should be supplemented with a quantitative measurement such as an Albumin/Creatinine ratio or a Protein/Creatinine ratio</i>					
UBacteria		Na	145	01/06/2010	ALB	3.1	12/10/2009
Mucous		K	4.4	01/06/2010	AST	30	12/10/2009
Casts		Cl	107	01/06/2010	ALT	25	12/10/2009
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Protein	100	Creatinine	.9	01/06/2010	TP	6.0	12/10/2009
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Following these statements, there is a box in which the “**degree of proteinuria**” is automatically documented.

Note: In order for the “degree of proteinuria” to be calculated an **albumin/creatinine ratio** or a **protein/creatinine ratio** must be documented in the lab values.

Above the box entitled “degree of proteinuria,” there is a button of the same name, which when launched displays the following information:

Degree of Proteinuria

normal:	< 150 mg/24hr
microalbuminuria: diabetics)	30-300 mg/24 (specifically albumin; usually measured in
trace proteinuria:	150 to 500 mg/24 hr

mild proteinuria: 500 mg to 1 g/24 hr
moderate proteinuria: 1-3 g/24 hr
nephrotic range proteinuria: > 3 g/24 hr

Beneath the box in which “degree of proteinuria” is displayed, there is a button entitled, “**False Positive Proteinuria.**” When this button is clicked, the following pop-up is displayed..

The screenshot shows a software window titled "Dm Crf Falseprot" with a standard Windows-style title bar (minimize, maximize, close buttons). The main content area has a light gray background. At the top, the title "Common Causes of False Results in Routine Measurement of Urinary Albumin or Total Protein" is displayed in a large, bold, blue font. Below this, a instruction in black text reads: "Select any of the following traits which may be present and causing false results in this patient." There are two columns of checkboxes. The left column is titled "Causes of False Positives" and contains four items: "Dehydration" (checked), "Hematuria" (checked), "Exercise" (checked), and "Infection" (unchecked). The right column is titled "Causes of False Negatives" and contains two items: "Excessive hydration" (unchecked) and "Urine proteins other than albumin" (unchecked). At the bottom center, there are two buttons: "OK" and "Cancel". The "OK" button is highlighted with a dashed border.

Causes of False Positives	Causes of False Negatives
<input checked="" type="checkbox"/> Dehydration	<input type="checkbox"/> Excessive hydration
<input checked="" type="checkbox"/> Hematuria	<input type="checkbox"/> Urine proteins other than albumin
<input checked="" type="checkbox"/> Exercise	
<input type="checkbox"/> Infection	

OK Cancel

This allows the provider to document the presence of any condition which might influence the measurement of urinary protein and which might give a false value.

Below the **Degree-of-Proteinuria box**, there is a caution about the **MS Strip or Micral Strip**. See it below outlined in red.

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UA	01/06/2010
UWBC	2
URBC	1
UEPI	
UBacteria	
Mucous	
Casts	
Cast #	
Yeast	
Yeast #	
Protein	100

MS Strip	Positiv	01/06/2010
Alb/Creat		/ /
Prot/Creat		/ /

Degree of Proteinuria

False Positive Proteinuria

A positive MS Strip should be supplemented with a quantitative measurement such as an Albumin/Creatinine ratio or a [Protein/Creatinine ratio](#)

Na	145	01/06/2010
K	4.4	01/06/2010
Cl	107	01/06/2010
CO2	30	01/06/2010
Glucose	124	01/06/2010
BUN	16	01/06/2010
Creatinine	.9	01/06/2010
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ALB	3.1	12/10/2009
AST	30	12/10/2009
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A hyperlink is attached to the phrase “**Protein/Creatinine Ratio**,” which when launched displays the following:

Evaluation of Proteinuria

Spot protein/creatinine ratio estimates 24-hour excretion of protein in grams/24 hr. To perform the test, a random urine sample is submitted to the laboratory for protein concentration (in mg/dL) and creatinine concentration (in mg/dL). The protein/concentration is divided by the creatinine concentration, and the unit-less number is the estimated daily protein excretion in gm/24 hrs. An abnormal ratio is >0.15 , which estimates a 24 hour protein excretion of >150 mg/day (>0.15 gm/day). Many nephrologists recommend using protein/creatinine ratios to quantify protein excretion instead of a 24 hour urine collection.

Beneath this information is a display of 15 lab values pertinent to Proteinuria evaluation.

To the right of this information there is a series of **information buttons** which launch documents on:

- Evaluation of Urine Dip Stick
- Evaluation of Proteinuria
- Types of ‘Proteinuria
- Normal Urinary Albumin

Followed by a series of articles entitled “**Guidelines for Evaluating Proteinuria.**”

- Adult and Children
- Adult Specific
- Children without Diabetes
- Children with Diabetes