



# NEPHROLOGY Blueprint

For traditional, 10-year Maintenance of Certification (MOC) exam and Longitudinal Knowledge Assessment (LKA)<sup>®</sup>

## ABIM invites diplomates to help develop the Nephrology MOC blueprint

Based on feedback from physicians that MOC assessments should better reflect what they see in practice, in 2016 the American Board of Internal Medicine (ABIM) invited all certified nephrologists to provide ratings of the relative frequency and importance of blueprint topics in practice.

This review process, which resulted in a new MOC exam blueprint, will be used on a periodic basis to inform and update all MOC assessments created by ABIM. No matter what form ABIM's assessments ultimately take, they will need to be informed by front-line clinicians sharing their perspective on what is important to know.

A sample of over 400 nephrologists, similar to the total invited population of nephrologists in age, gender, geographic region, and time spent in direct patient care, provided the blueprint topic ratings. ABIM used this feedback to update the blueprint for MOC assessments (beginning with the Fall 2016 administration of the traditional, 10-year MOC exam).

To inform how assessment content should be distributed across the major blueprint content categories, ABIM considered the average respondent ratings of topic frequency and importance in each of the content categories. A second source of information was the relative frequency of patient conditions in the content categories, as seen by certified nephrologists and documented by national health care data (described further under *Content distribution* below).

To determine prioritization of specific assessment content within each major medical content category, ABIM used the respondent ratings of topic frequency and importance to set thresholds for these parameters in the exam assembly process (described further under *Detailed content outline* below).

## Purpose of the Nephrology MOC Assessments

MOC assessments are designed to evaluate whether a certified nephrologist has maintained competence and currency in the knowledge and judgment required for practice. The MOC assessments emphasize diagnosis and management of prevalent conditions, particularly in areas where practice has changed in recent years. As a result of the blueprint review by ABIM diplomates, MOC assessments place less emphasis on rare conditions and focus more on situations in which physician intervention can have important consequences for patients. For conditions that are usually managed by other specialists, the focus will be on recognition rather than on management.

## Assessment format

The traditional, 10-year MOC exam is composed of 220 single-best-answer multiple-choice questions, of which approximately 50 are new questions that do not count in the examinee's score. Examinees taking the traditional, 10-year MOC exam will have access to an external resource (i.e., UpToDate<sup>®</sup>) for the entire exam.

The LKA for MOC, is a five-year cycle in which physicians answer questions on an ongoing basis and receive feedback on how they're performing along the way. More information on how exams are developed can be found at [abim.org/about/exam-information/exam-development.aspx](http://abim.org/about/exam-information/exam-development.aspx).

Most questions describe patient scenarios and ask about the work done (that is, tasks performed) by physicians in the course of practice:

- **Diagnosis/Testing:** making a diagnosis/ordering and interpreting results of diagnostic tests
- **Treatment/Care Decisions:** recommending treatment or other patient care
- **Risk Assessment/Prognosis/Epidemiology:** assessing risk, determining prognosis, and applying principles from epidemiologic studies
- **Pathophysiology/Basic Science:** understanding the pathophysiology of disease and basic science knowledge applicable to patient care

ABIM is committed to working toward health equity and believes that board-certified physicians should have an understanding of health care disparities. Therefore, health equity content that is clinically important to each discipline will be included in assessments, and the use of gender, race, and ethnicity identifiers will be re-evaluated.

Clinical scenarios presented take place in outpatient or inpatient settings as appropriate to a typical Nephrology practice. Clinical information presented may include patient photographs, ultrasound images, angiograms, micrographs, radiographs, electrocardiograms, and other media to illustrate relevant patient findings.

Exam tutorials, including examples of ABIM exam question format, can be found at [abim.org/maintenance-of-certification/exam-information/nephrology/exam-tutorial.aspx](http://abim.org/maintenance-of-certification/exam-information/nephrology/exam-tutorial.aspx).

## Content distribution

Listed below are the major medical content categories that define the domain for the Nephrology traditional, 10-year MOC exam and the LKA. The relative distribution of content is expressed as a percentage of the total assessment. To determine the content distribution, ABIM considered the average respondent ratings of topic frequency and importance. To cross-validate these self-reported ratings, ABIM also considered the relative frequency of conditions seen in Medicare patients by a cohort of certified nephrologists. Informed by these data, the Nephrology Approval Committee and Board have determined the content category targets shown below.

CONTENT CATEGORY	Target %
Sodium and Water Abnormalities	7%
Acid-Base and Potassium Disorders	9%
Calcium, Phosphorus, and Magnesium Disorders and Stones	4%
Chronic Kidney Disease	25%
Hypertension	10%
Tubular, Interstitial, and Cystic Disorders	4%
Glomerular and Vascular Disorders	11%
Kidney Transplantation	10%
Pharmacology	5%
Acute Kidney Injury and Intensive Care Unit Nephrology	15%
<b>Total</b>	<b>100%</b>

The Nephrology MOC assessments may cover other dimensions of medicine as applicable to the medical content categories, such as adolescent medicine, critical care medicine, clinical epidemiology, geriatric medicine, ethics, and nutrition.

## How the blueprint ratings are used to assemble the MOC assessments

Blueprint reviewers provided ratings of relative frequency in practice for each of the detailed content topics in the blueprint and provided ratings of the relative importance of the topics for each of the tasks described in *Assessment format* above. In rating importance, reviewers were asked to consider factors such as the following:

- High risk of a significant adverse outcome
- Cost of care and stewardship of resources
- Common errors in diagnosis or management
- Effect on population health
- Effect on quality of life
- When failure to intervene by the physician deprives a patient of significant benefit

Frequency and importance were rated on a three-point scale corresponding to low, medium, or high. The median importance ratings are reflected in the *Detailed content outline* below. The Nephrology Approval Committee and Board, in partnership with the physician community, have set the following parameters for selecting MOC assessment questions according to the blueprint review ratings:

- At least 75% of questions will address high-importance content (indicated in green)
- No more than 25% of questions will address medium-importance content (indicated in yellow)
- No questions will address low-importance content (indicated in red)

Independent of the importance and task ratings, no more than 15% of questions will address low-frequency content (indicated by “LF” following the topic description).

The content selection priorities below are applicable beginning with the Spring 2017 traditional, 10-year MOC exam and are subject to change in response to future blueprint review.

**Note:** The same topic may appear in more than one medical content category.

## Detailed content outline for the Nephrology traditional, 10-year MOC exam and the LKA

<span style="display: inline-block; width: 15px; height: 15px; background-color: #005596; border: 1px solid #005596; margin-right: 5px;"></span> – High Relevance: Topics are very likely to appear on the assessment	<span style="display: inline-block; width: 15px; height: 15px; background-color: #8eb9e0; border: 1px solid #005596; margin-right: 5px;"></span> – Medium Relevance: Topics are moderately likely to appear on the assessment	<span style="display: inline-block; width: 15px; height: 15px; border: 1px solid #005596; margin-right: 5px;"></span> – Low Relevance: Topics will not appear on the assessment
<b>LF – Low Frequency:</b> No more than 15% of questions will address topics with this designation, regardless of task or importance.		

SODIUM AND WATER ABNORMALITIES (7% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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### HYPONATREMIA (3% of exam)

Hypotonic				
Syndrome of inappropriate antidiuretic hormone secretion (SIADH)	HIGH	HIGH	HIGH	HIGH
Hypervolemic	HIGH	HIGH	HIGH	HIGH
Low solute intake	HIGH	HIGH	MEDIUM	MEDIUM
Thiazides	HIGH	HIGH	HIGH	HIGH
Other hypotonic (secondary adrenal insufficiency) <b>LF</b>	MEDIUM	HIGH	MEDIUM	MEDIUM
Hypertonic				
Isotonic (pseudohyponatremia) <b>LF</b>	HIGH	MEDIUM	MEDIUM	MEDIUM

### HYPERNATREMIA OR SERUM HYPEROSMOLALITY (<2% of exam)

Osmotic diuresis				
Urea <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Glucose	HIGH	HIGH	MEDIUM	MEDIUM
Water diuresis				
Central diabetes insipidus <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Nephrogenic diabetes insipidus <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Other water diuresis (physiologic saline diuresis)	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other hypernatremia or serum hyperosmolality (hypodipsia; extrarenal water loss)	HIGH	HIGH	MEDIUM	MEDIUM

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■ – Medium Relevance: Topics are moderately likely to appear on the assessment

□ – Low Relevance: Topics will not appear on the assessment

**LF – Low Frequency:** No more than 15% of questions will address topics with this designation, regardless of task or importance.

<b>SODIUM AND WATER ABNORMALITIES</b> <i>continued...</i> (7% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**SALT EXCESS (EDEMA) (2.5% of exam)**

Heart failure	HIGH	HIGH	HIGH	HIGH
Cirrhosis	HIGH	HIGH	HIGH	HIGH
Nephrotic syndrome	HIGH	HIGH	HIGH	HIGH
Chronic kidney disease	HIGH	HIGH	HIGH	HIGH

**SALT DEPLETION (<2% of exam)**

Renal sodium losses				
Postobstructive diuresis	HIGH	HIGH	HIGH	HIGH
Post-acute kidney injury diuresis	HIGH	HIGH	HIGH	MEDIUM
Salt-wasting nephropathy <span style="float: right;">LF</span>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Diuretics	HIGH	HIGH	HIGH	HIGH
Other renal sodium losses (chemotherapy-induced) <span style="float: right;">LF</span>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Extrarenal sodium losses				
	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**POLYURIA (<2% of exam)**

Primary polydipsia <span style="float: right;">LF</span>	HIGH	MEDIUM	MEDIUM	MEDIUM
Other polyuria (iatrogenic) <span style="float: right;">LF</span>	MEDIUM	MEDIUM	MEDIUM	MEDIUM

<b>ACID-BASE AND POTASSIUM DISORDERS</b> (9% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**METABOLIC ACIDOSIS (3.5% of exam)**

Metabolic acidosis (normal anion gap)				
Renal tubular acidosis (normokalemic or hypokalemic)	HIGH	HIGH	MEDIUM	MEDIUM
Renal tubular acidosis (hyperkalemic)	HIGH	HIGH	MEDIUM	HIGH
Nonrenal causes	HIGH	HIGH	MEDIUM	MEDIUM

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**□** – Low Relevance: Topics will not appear on the assessment

**LF** – Low Frequency: No more than 15% of questions will address topics with this designation, regardless of task or importance.

<b>ACID-BASE AND POTASSIUM DISORDERS</b> <i>continued...</i> (9% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**METABOLIC ACIDOSIS** *continued...* (3.5% of exam)

Metabolic acidosis (elevated anion gap)				
Lactic acidosis	HIGH	HIGH	HIGH	HIGH
Ketoacidosis	HIGH	HIGH	HIGH	HIGH
Toxins	HIGH	HIGH	MEDIUM	MEDIUM
Uremic	HIGH	HIGH	HIGH	HIGH
Other metabolic acidosis (low anion gap in multiple myeloma) <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**METABOLIC ALKALOSIS** (<2% of exam)


Associated with normal or low blood pressure				
Renal origin	HIGH	HIGH	MEDIUM	MEDIUM
Other metabolic alkalosis associated with normal or low blood pressure (chemotherapy-induced; hypokalemia; post-hypercapnic)	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Associated with high blood pressure				
Adrenal <b>LF</b>	HIGH	MEDIUM	MEDIUM	MEDIUM
Other metabolic alkalosis associated with high blood pressure (malignant hypertension)	HIGH	HIGH	MEDIUM	MEDIUM


**RESPIRATORY ACID-BASE DISTURBANCES** (<2% of exam)


Respiratory acidosis	HIGH	HIGH	MEDIUM	MEDIUM
Respiratory alkalosis	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**MIXED ACID-BASE DISTURBANCES** (<2% of exam)

Mixed acid-base disturbances	HIGH	HIGH	MEDIUM	HIGH
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 – High Relevance: Topics are very likely to appear on the assessment

 – Medium Relevance: Topics are moderately likely to appear on the assessment

 – Low Relevance: Topics will not appear on the assessment

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## ACID-BASE AND POTASSIUM DISORDERS

continued...

(9% of exam)

### POTASSIUM DISTURBANCES (3.5% of exam)

		Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
Hyperkalemia					
Pseudohyperkalemia	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Transcellular shifts		HIGH	HIGH	MEDIUM	MEDIUM
Medication-induced		HIGH	HIGH	HIGH	MEDIUM
Genetic abnormalities	LF	MEDIUM	MEDIUM	MEDIUM	LOW
Other tubular disorders (hepatitis-associated)	LF	MEDIUM	MEDIUM	LOW	MEDIUM
Postsurgical		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other hyperkalemia (peritoneal dialysis)	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Hypokalemia					
Pseudohypokalemia	LF	MEDIUM	MEDIUM	LOW	MEDIUM
Transcellular shifts		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Renal losses		HIGH	MEDIUM	MEDIUM	MEDIUM
Nonrenal losses		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other hypokalemia (combined therapeutic hypothermia and barbiturate coma)	LF	MEDIUM	MEDIUM	LOW	LOW

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■ – Medium Relevance: Topics are moderately likely to appear on the assessment

□ – Low Relevance: Topics will not appear on the assessment

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<b>CALCIUM, PHOSPHORUS, AND MAGNESIUM DISORDERS AND STONES</b> (4% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**DISORDERS OF CALCIUM METABOLISM** (<2% of exam)

Hypercalcemia					
Primary hyperparathyroidism		HIGH	HIGH	MEDIUM	MEDIUM
Granulomatous diseases	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Malignancy		HIGH	HIGH	MEDIUM	MEDIUM
Familial hypocalciuric hypercalcemia (FHH)	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Vitamin D toxicity	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Medication and vitamin-induced		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Milk alkali syndrome	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM

Hypocalcemia					
Hypoparathyroidism	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Pseudohypoparathyroidism	LF	MEDIUM	LOW	LOW	LOW
Medication-induced		HIGH	MEDIUM	MEDIUM	MEDIUM
Tissue deposition	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Vitamin D deficiency		HIGH	HIGH	MEDIUM	MEDIUM

**DISORDERS OF PHOSPHATE METABOLISM** (<2% of exam)

Hyperphosphatemia					
Decreased renal excretion		HIGH	HIGH	HIGH	HIGH
Increased intake		HIGH	HIGH	MEDIUM	MEDIUM
Tissue redistribution		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Genetic causes		MEDIUM	HIGH	LOW	MEDIUM

Hypophosphatemia					
Increased renal excretion	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Decreased intake and gastrointestinal absorption	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Tissue redistribution	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM

■ – High Relevance: Topics are very likely to appear on the assessment

■ – Medium Relevance: Topics are moderately likely to appear on the assessment

□ – Low Relevance: Topics will not appear on the assessment

LF – Low Frequency: No more than 15% of questions will address topics with this designation, regardless of task or importance.

**CALCIUM, PHOSPHORUS, AND MAGNESIUM DISORDERS AND STONES** *continued...*  
(4% of exam)

Diagnosis/  
Testing

Treatment/  
Care Decisions

Risk Assessment/  
Prognosis/  
Epidemiology

Pathophysiology/  
Basic Science

**DISORDERS OF MAGNESIUM METABOLISM** (<2% of exam)

Hypermagnesemia

Decreased renal excretion	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Increased intake	LF	MEDIUM	MEDIUM	MEDIUM

Hypomagnesemia

Increased renal excretion	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Decreased gastrointestinal absorption	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**NEPHROLITHIASIS** (<2% of exam)

Calcium stones

Idiopathic hypercalciuria	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Hypocitraturia	HIGH	HIGH	MEDIUM	MEDIUM
Hyperoxaluria	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Primary hyperparathyroidism	HIGH	MEDIUM	MEDIUM	MEDIUM
Distal renal tubular acidosis	HIGH	HIGH	MEDIUM	MEDIUM
Other calcium stones (medullary sponge kidney; hypercalciuria in hypoparathyroidism)	LF	MEDIUM	MEDIUM	MEDIUM

Uric acid stones

Idiopathic	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other uric acid (postileostomy)	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM

Struvite stones

Cystine stones	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
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Drug stones

Drug stones	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
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**■** – High Relevance: Topics are very likely to appear on the assessment

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**□** – Low Relevance: Topics will not appear on the assessment

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<b>CHRONIC KIDNEY DISEASE</b> (25% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**KIDNEY FUNCTION PARAMETERS** (<2% of exam)

Glomerular filtration rate (creatinine clearance; estimated glomerular filtration rate)	HIGH	HIGH	HIGH	MEDIUM
Proteinuria	HIGH	HIGH	HIGH	HIGH
Other kidney function parameters (glycemic control; biopsy)	HIGH	HIGH	HIGH	HIGH

**ETIOLOGIES OF CHRONIC KIDNEY DISEASE** (<2% of exam)

Diabetic kidney disease	HIGH	HIGH	HIGH	HIGH
Nondiabetic kidney disease				
Chronic glomerulonephritis	HIGH	HIGH	HIGH	MEDIUM
Hypertensive nephropathy	HIGH	HIGH	HIGH	HIGH
Chronic interstitial nephritis	HIGH	HIGH	MEDIUM	MEDIUM
Genetic diseases <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**PROGRESSION OF CHRONIC KIDNEY DISEASE** (<2% of exam)

Progression of chronic kidney disease	HIGH	HIGH	HIGH	HIGH
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**CHRONIC KIDNEY DISEASE COMPLICATIONS** (2% of exam)

Hypertension	HIGH	HIGH	HIGH	HIGH
Fluid overload	HIGH	HIGH	HIGH	HIGH
Anemia and iron deficiency	HIGH	HIGH	HIGH	MEDIUM
Hyperkalemia	HIGH	HIGH	HIGH	HIGH
Acidosis	HIGH	HIGH	HIGH	HIGH
Protein-energy wasting	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other complications of chronic kidney disease (hyperparathyroidism; hyperphosphatemia)	HIGH	HIGH	HIGH	HIGH

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<b>CHRONIC KIDNEY DISEASE</b> <i>continued...</i> (25% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**STAGE 4 AND 5 CHRONIC KIDNEY DISEASE** (2.5% of exam)

Advanced uremic symptoms	HIGH	HIGH	HIGH	MEDIUM
Preparation for end-stage kidney disease	HIGH	HIGH	HIGH	<i>Not Applicable</i>
Initiation and discontinuation of maintenance dialysis	HIGH	HIGH	HIGH	<i>Not Applicable</i>
Other stage 4 and 5 chronic kidney disease (parathyroid hormone monitoring)	HIGH	HIGH	HIGH	HIGH

**END-STAGE KIDNEY DISEASE** (12.5% of exam)

Hemodialysis				
Adequacy and prescription	HIGH	HIGH	HIGH	HIGH
Dialyzers and dialysate	HIGH	HIGH	MEDIUM	MEDIUM
Vascular access	HIGH	HIGH	HIGH	MEDIUM
Water treatment	HIGH	HIGH	MEDIUM	MEDIUM

Hemodialysis complications				
Hypertension	HIGH	HIGH	HIGH	HIGH
Hypotension	HIGH	HIGH	HIGH	HIGH
Interdialytic weight gain	HIGH	HIGH	HIGH	HIGH
Electrolyte abnormalities	HIGH	HIGH	HIGH	HIGH
Vascular access complications (clotting, dysfunction, infection)	HIGH	HIGH	HIGH	HIGH
Other hemodialysis complications (embolism and thrombosis; heparin-induced thrombocytopenia; loss of residual renal function; hypoalbuminemia)	HIGH	HIGH	MEDIUM	MEDIUM

Peritoneal dialysis				
Adequacy and prescription	HIGH	HIGH	HIGH	MEDIUM
Dialysate	HIGH	HIGH	MEDIUM	MEDIUM
Catheters	HIGH	HIGH	MEDIUM	MEDIUM
Other peritoneal dialysis issues (hypokalemia and hyperkalemia)	HIGH	HIGH	MEDIUM	MEDIUM

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■ – Medium Relevance: Topics are moderately likely to appear on the assessment

□ – Low Relevance: Topics will not appear on the assessment

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<b>CHRONIC KIDNEY DISEASE</b> <i>continued...</i> (25% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**END-STAGE KIDNEY DISEASE** *continued...* (12.5% of exam)

Peritoneal dialysis complications				
Peritonitis and infections	HIGH	HIGH	HIGH	HIGH
Ultrafiltration failure	HIGH	HIGH	MEDIUM	MEDIUM
Other peritoneal dialysis complications (inguinal hernia; atrial fibrillation; peripheral edema)	HIGH	HIGH	MEDIUM	MEDIUM
Home hemodialysis	MEDIUM	MEDIUM	MEDIUM	MEDIUM
End-stage kidney disease complications				
Anemia	HIGH	HIGH	HIGH	HIGH
Cardiovascular disease	HIGH	HIGH	HIGH	HIGH
Blood pressure abnormalities	HIGH	HIGH	HIGH	HIGH
Other complications (hemolysis; hypoalbuminemia; thrombosis; calciphylaxis; uremic polyneuropathy)	HIGH	HIGH	MEDIUM	MEDIUM
Medical director responsibilities and conditions of coverage	MEDIUM	MEDIUM	MEDIUM	<i>Not Applicable</i>

**MINERAL BONE DISEASE** (3% of exam)

Laboratory abnormalities				
Hyperphosphatemia	HIGH	HIGH	HIGH	HIGH
Hyperparathyroidism	HIGH	HIGH	HIGH	HIGH
Other laboratory abnormalities (calcium balance)	HIGH	HIGH	MEDIUM	MEDIUM
Renal osteodystrophy (and related pathophysiology)				
Osteitis fibrosis	LF	MEDIUM	MEDIUM	MEDIUM
Adynamic bone disease	LF	MEDIUM	MEDIUM	MEDIUM
Osteomalacia	LF	MEDIUM	MEDIUM	MEDIUM
Mixed uremic osteodystrophy	LF	MEDIUM	MEDIUM	MEDIUM
Other renal osteodystrophy, including low bone mass (osteoporosis)		MEDIUM	MEDIUM	MEDIUM

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■ – Medium Relevance: Topics are moderately likely to appear on the assessment

□ – Low Relevance: Topics will not appear on the assessment

**LF – Low Frequency:** No more than 15% of questions will address topics with this designation, regardless of task or importance.

<b>CHRONIC KIDNEY DISEASE</b> <i>continued...</i> (25% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**MINERAL BONE DISEASE** *continued...* (3% of exam)

Extrasosseous and vascular calcification				
Medial calcification	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Calciophylaxis	LF	HIGH	HIGH	MEDIUM
Other extrasosseous and vascular calcification, including visceral organs	LF	MEDIUM	MEDIUM	MEDIUM

**SPECIAL TOPICS IN CHRONIC KIDNEY DISEASE** (<2% of exam)

Epidemiology	<i>Not Applicable</i>		MEDIUM	MEDIUM
Ethical considerations	<i>Not Applicable</i>	HIGH	MEDIUM	<i>Not Applicable</i>
Pregnancy	LF	HIGH	HIGH	MEDIUM
Dermatology	LF	MEDIUM	MEDIUM	LOW

Nephrotoxicity of environmental and occupational agents

Lead	LF	MEDIUM	MEDIUM	MEDIUM	LOW
Organic solvents	LF	MEDIUM	MEDIUM	LOW	LOW
Other nephrotoxicity of environmental and occupational agents (cadmium; mercury)	LF	MEDIUM	MEDIUM	LOW	LOW

Other special topics in chronic kidney disease (obesity)	MEDIUM	MEDIUM	MEDIUM	MEDIUM
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<b>HYPERTENSION</b> (10% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**ESSENTIAL HYPERTENSION** (3.5% of exam)

Isolated systolic hypertension	HIGH	HIGH	HIGH	MEDIUM
Severe hypertension	HIGH	HIGH	HIGH	HIGH
Resistant hypertension	HIGH	HIGH	HIGH	HIGH
White coat hypertension	HIGH	HIGH	HIGH	MEDIUM

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<b>HYPERTENSION</b> <i>continued...</i> (10% of exam)		<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**ESSENTIAL HYPERTENSION** *continued...* (3.5% of exam)

Pseudohypertension	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Masked hypertension	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
General essential hypertension		<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM

**SECONDARY CAUSES OF HYPERTENSION** (4% of exam)

Pheochromocytoma	<b>LF</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Renal vascular disease					
Dissection	<b>LF</b>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM
Atherosclerotic		<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM
Hyperaldosteronism					
Adrenal adenoma	<b>LF</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Adrenal hyperplasia	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Genetic causes					
Liddle syndrome	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Dexamethasone suppressible hyperaldosteronism	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other genetic causes (fibromuscular dysplasia)	<b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>HYPERTENSION</b> <i>continued...</i> (10% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**SECONDARY CAUSES OF HYPERTENSION** *continued...* (4% of exam)

Miscellaneous causes				
Renin-secreting tumor (juxtaglomerular cell tumor) <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Syndrome of apparent mineralocorticoid excess <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Coarctation <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Vasculitis and arteritis	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Tuberous sclerosis <b>LF</b>	MEDIUM	MEDIUM	<b>LOW</b>	MEDIUM
Sleep apnea	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM
Drug-induced	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Obstructive uropathy	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Renal compression (Page kidney) <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Cushing syndrome <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other miscellaneous causes (chronic kidney disease; obesity; hypothyroidism)	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM

**END-ORGAN DAMAGE RESULTING FROM HYPERTENSION** (<2% of exam)

Acute kidney injury	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>
Central nervous system and ophthalmologic	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Cardiac (left ventricular hypertrophy; heart failure)	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM

**HYPERTENSION IN SPECIAL SITUATIONS** (<2% of exam)

Pregnancy	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	MEDIUM
Stroke or subarachnoid bleeding	<b>HIGH</b>	<b>HIGH</b>	MEDIUM	MEDIUM
Other hypertension in special situations	MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>TUBULAR, INTERSTITIAL, AND CYSTIC DISORDERS</b> (4% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**RENAL TUBULAR DISORDERS AND FANCONI'S SYNDROME** (<2% of exam)

Drug-induced		HIGH	HIGH	MEDIUM	MEDIUM
Crystal deposition	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Genetic	LF	MEDIUM	MEDIUM	LOW	LOW

**TUBULOINTERSTITIAL NEPHRITIS** (2% of exam)

Acute					
Drug-induced		HIGH	HIGH	MEDIUM	MEDIUM
Immune	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Infectious	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Other acute tubulointerstitial nephritis (multifactorial)		MEDIUM	MEDIUM	MEDIUM	MEDIUM

Chronic					
Drug-induced		HIGH	HIGH	MEDIUM	MEDIUM
Immune	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Granulomatous	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Toxins	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Hemoglobinopathy	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Urinary tract infection		HIGH	HIGH	MEDIUM	MEDIUM
Other chronic tubulointerstitial nephritis (hypokalemic nephropathy; medullary cystic kidney)	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**RENAL CYSTIC DISEASE** (<2% of exam)

Autosomal dominant polycystic kidney disease (ADPKD)					
Genetics		HIGH	HIGH	MEDIUM	MEDIUM
Renal manifestations		HIGH	HIGH	HIGH	HIGH
Nonrenal manifestations		HIGH	HIGH	MEDIUM	MEDIUM
End-stage kidney disease		HIGH	HIGH	HIGH	HIGH
Drug-induced	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>TUBULAR, INTERSTITIAL, AND CYSTIC DISORDERS</b> <i>continued...</i> (4% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**RENAL MASS** (<2% of exam)

Renal mass	HIGH	HIGH	MEDIUM	MEDIUM
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<b>GLOMERULAR AND VASCULAR DISORDERS</b> (11% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**NEPHRITIC GLOMERULAR DISORDERS, VASCULITIS, AND VASCULOPATHY** (4.5% of exam)

IgA nephropathy and IgA-associated vasculitis (Henoch-Schönlein purpura)	HIGH	HIGH	HIGH	MEDIUM
Vasculitis and antineutrophil cytoplasmic antibody	HIGH	HIGH	HIGH	MEDIUM
Anti-glomerular basement membrane disease <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Lupus nephritis	HIGH	HIGH	HIGH	HIGH
Postinfectious glomerulonephritis <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Membranoproliferative glomerulonephritis and C3 glomerulopathies <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Cryoglobulinemic glomerulonephritis <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM
Crescentic glomerulonephritis	HIGH	HIGH	HIGH	MEDIUM
Other disorders (rapidly progressive glomerulonephritis) <b>LF</b>	HIGH	HIGH	HIGH	MEDIUM

**NEPHROTIC AND HEAVY-PROTEINURIC GLOMERULAR DISORDERS** (4.5% of exam)

Minimal change disease				
Primary	HIGH	HIGH	HIGH	MEDIUM
Secondary <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM

Focal segmental glomerulosclerosis				
Primary	HIGH	HIGH	HIGH	MEDIUM
Secondary	HIGH	HIGH	HIGH	MEDIUM
Genetic <b>LF</b>	MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>GLOMERULAR AND VASCULAR DISORDERS</b> <i>continued...</i> (11% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**NEPHROTIC AND HEAVY-PROTEINURIC GLOMERULAR DISORDERS** *continued...* (4.5% of exam)

Membranous nephropathy				
Primary	HIGH	HIGH	HIGH	MEDIUM
Secondary	HIGH	HIGH	HIGH	MEDIUM
Paraprotein-related disorders				
Primary amyloidosis	LF	HIGH	HIGH	MEDIUM
Secondary amyloidosis	LF	HIGH	MEDIUM	MEDIUM
Light chain deposition disease and myeloma		HIGH	HIGH	MEDIUM
Other paraprotein-related disorders	LF	MEDIUM	MEDIUM	MEDIUM
Fibrillary and immunotactoid glomerulonephritis	LF	MEDIUM	MEDIUM	MEDIUM
Fabry's disease	LF	MEDIUM	MEDIUM	LOW
Other disorders (biopsy complication)	LF	HIGH	HIGH	LOW

**THIN BASEMENT MEMBRANE NEPHROPATHY AND ALPORT'S SYNDROME** (<2% of exam)

Thin basement membrane nephropathy and Alport's syndrome	LF	HIGH	MEDIUM	MEDIUM
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**THROMBOTIC MICROANGIOPATHIES** (<2% of exam)

Thrombotic microangiopathies		HIGH	HIGH	MEDIUM
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**HEMOLYTIC UREMIC SYNDROME** (<2% of exam)

Shiga toxin-mediated hemolytic uremic syndrome	LF	HIGH	HIGH	MEDIUM
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<b>GLOMERULAR AND VASCULAR DISORDERS</b> <i>continued...</i> (11% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HEMOLYTIC UREMIC SYNDROME** *continued...* (<2% of exam)

Complement-mediated thrombotic microangiopathy (atypical hemolytic uremic syndrome)					
Drug-associated complement-mediated thrombotic microangiopathy (atypical hemolytic uremic syndrome) (anticancer drugs, clopidogrel, interferon, hemolytic uremic syndrome)	LF	HIGH	HIGH	MEDIUM	MEDIUM
Other complement-mediated thrombotic microangiopathy (atypical hemolytic uremic syndrome) (pregnancy-associated)	LF	HIGH	HIGH	MEDIUM	MEDIUM

**SCLERODERMA RENAL DISEASE** (<2% of exam)

Scleroderma renal disease	LF	HIGH	HIGH	MEDIUM	MEDIUM
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<b>KIDNEY TRANSPLANTATION</b> (10% of exam)	Diagnosis	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**PRE-TRANSPLANTATION** (<2% of exam)

Transplant immunology					
Detection of pre-transplant alloreactivity and immunologic evaluation of transplant candidates	LF	MEDIUM	<i>Not Applicable</i>	MEDIUM	MEDIUM
Potential kidney transplant recipient evaluation					
Glomerular filtration rate listing requirements		<i>Not Applicable</i>	HIGH	HIGH	<i>Not Applicable</i>
Cancer concerns		HIGH	HIGH	HIGH	MEDIUM
Infection concerns		HIGH	HIGH	HIGH	MEDIUM
Cardiac concerns		HIGH	HIGH	HIGH	MEDIUM
Age concerns		<i>Not Applicable</i>	HIGH	MEDIUM	<i>Not Applicable</i>
Comorbidities		HIGH	HIGH	HIGH	MEDIUM
Other potential kidney transplant recipient evaluation (recurrent autoimmune kidney disease)		MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>KIDNEY TRANSPLANTATION</b> <i>continued...</i> (10% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**PRE-TRANSPLANTATION** *continued...* (<2% of exam)

Potential living kidney donor				
Donor evaluation	MEDIUM	Not Applicable		
Risks	Not Applicable		MEDIUM	Not Applicable
Ethics	Not Applicable	MEDIUM	Not Applicable	
Organ allocation				
Deceased donor wait list	Not Applicable	HIGH	Not Applicable	
Organ shortage strategies	Not Applicable	MEDIUM	Not Applicable	
Paired kidney donation and chains	LF	Not Applicable	MEDIUM	Not Applicable

**TRANSPLANTATION** (<2% of exam)

Indications	HIGH	HIGH	HIGH	MEDIUM
Contraindications	HIGH	HIGH	HIGH	MEDIUM
Deceased donor kidney transplantation				
Types	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Outcomes	HIGH	HIGH	HIGH	MEDIUM
Living donor kidney transplant				
Types	HIGH	HIGH	MEDIUM	MEDIUM
Outcomes	HIGH	HIGH	HIGH	MEDIUM

**POST-TRANSPLANTATION** (7% of exam)

Immunosuppression					
Induction	LF	MEDIUM	MEDIUM	MEDIUM	LOW
Maintenance		HIGH	HIGH	HIGH	MEDIUM
Short-term post-transplantation management					
Perioperative management and complications		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Graft dysfunction		HIGH	HIGH	MEDIUM	MEDIUM

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<b>KIDNEY TRANSPLANTATION</b> <i>continued...</i> (10% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**POST-TRANSPLANTATION** *continued...* (7% of exam)

Long-term post-transplantation management				
Graft dysfunction	HIGH	HIGH	HIGH	MEDIUM
Complications	HIGH	HIGH	HIGH	MEDIUM
Other long-term post-transplantation management (graft failure)	HIGH	HIGH	HIGH	MEDIUM

Rejection					
Hyperacute	LF	MEDIUM	MEDIUM	MEDIUM	LOW
T cell	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Antibody-mediated		HIGH	MEDIUM	MEDIUM	MEDIUM

Male and female fertility					
Pregnancy	LF	Not Applicable	MEDIUM	MEDIUM	MEDIUM
Male fertility	LF	Not Applicable	MEDIUM	MEDIUM	LOW

**MULTIORGAN AND EXTRARENAL TRANSPLANTATION** (<2% of exam)

Multiorgan and extrarenal transplantation	LF	MEDIUM	MEDIUM	MEDIUM	LOW
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**ETHICS, SOCIETY, AND PUBLIC POLICY** (<2% of exam)

Ethics, society, and public policy		Not Applicable	MEDIUM	MEDIUM	Not Applicable
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<b>PHARMACOLOGY</b> (5% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**BASIC PHARMACOLOGY** (<2% of exam)

Pharmacokinetics and other basic concepts		MEDIUM	MEDIUM	MEDIUM	MEDIUM
Renal handling of drugs		HIGH	HIGH	MEDIUM	MEDIUM
Principles of dialytic drug removal		Not Applicable	HIGH	MEDIUM	MEDIUM

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<b>PHARMACOLOGY</b> <i>continued...</i> (5% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**DRUG SELECTION IN KIDNEY DISEASE** (<2% of exam)

Antibiotics				
Vancomycin	<i>Not Applicable</i>	HIGH	HIGH	MEDIUM
Aminoglycosides	<i>Not Applicable</i>	HIGH	MEDIUM	MEDIUM
Other antibiotics (cephalosporins)	<i>Not Applicable</i>	HIGH	MEDIUM	MEDIUM
Antineoplastic agents				
Antineoplastic agents	<i>Not Applicable</i>	MEDIUM	MEDIUM	MEDIUM
Antiviral agents	<i>Not Applicable</i>	MEDIUM	MEDIUM	MEDIUM
Other drug selection in kidney disease (metformin; fentanyl)	<i>Not Applicable</i>	HIGH	HIGH	MEDIUM

**NEPHROTOXICITY OF MEDICATIONS** (2% of exam)

Principles and mechanisms of nephrotoxicity	<i>Not Applicable</i>	HIGH	HIGH	MEDIUM
Antibacterial agents				
Aminoglycosides	MEDIUM	HIGH	MEDIUM	MEDIUM
Vancomycin	HIGH	HIGH	HIGH	MEDIUM
Antiviral agents	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Antifungal agents	LF	MEDIUM	MEDIUM	MEDIUM
Antiparasitic agents	LF	LOW	LOW	LOW
Additional antimicrobials	MEDIUM	MEDIUM	MEDIUM	LOW
Pain medications				
Nonsteroidal anti-inflammatory drugs	HIGH	HIGH	HIGH	MEDIUM
Fentanyl	LF	MEDIUM	MEDIUM	LOW
Gabapentin	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Tramadol	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Propofol	MEDIUM	MEDIUM	MEDIUM	MEDIUM

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<b>PHARMACOLOGY</b> <i>continued...</i> (5% of exam)	<b>Diagnosis/ Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**NEPHROTOXICITY OF MEDICATIONS** *continued...* (2% of exam)

Renin-angiotensin-aldosterone system (RAAS) blockade				
Angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and renin inhibitors	HIGH	HIGH	HIGH	HIGH
Aldosterone antagonists	HIGH	HIGH	HIGH	HIGH

Antihypertensive agents				
Beta-adrenergic blockers	MEDIUM	HIGH	MEDIUM	MEDIUM
Calcium channel blockers	MEDIUM	HIGH	MEDIUM	MEDIUM
Minoxidil	LF	MEDIUM	MEDIUM	MEDIUM

Antineoplastic chemotherapy agents				
Interferon	LF	MEDIUM	MEDIUM	LOW
Cisplatin	LF	MEDIUM	MEDIUM	MEDIUM
Methotrexate	LF	MEDIUM	MEDIUM	LOW
Vascular endothelial growth factor inhibitors	LF	MEDIUM	MEDIUM	MEDIUM
Immune checkpoint inhibitors	LF	HIGH	HIGH	HIGH

Iodinated contrast and other imaging agents	HIGH	HIGH	HIGH	MEDIUM
Lithium	HIGH	HIGH	HIGH	MEDIUM

Supplements and herbs				
Aristolochic acid	LF	MEDIUM	MEDIUM	LOW

SGLT2 inhibitors	LF	HIGH	HIGH	HIGH
Other nephrotoxicity of medications (cardiac glycosides; bisphosphonates)	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**NEPHROTOXICITY OF ILLICIT DRUGS** (<2% of exam)

Heroin and other intravenous drugs	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Ecstasy	LF	MEDIUM	MEDIUM	MEDIUM
Cocaine	LF	MEDIUM	MEDIUM	MEDIUM

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<b>PHARMACOLOGY</b> <i>continued...</i> (5% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**DRUG-DRUG INTERACTIONS AND ADVERSE EFFECTS OTHER THAN NEPHROTOXICITY** (<2% of exam)

Drug-drug interactions and adverse effects other than nephrotoxicity	HIGH	HIGH	MEDIUM	MEDIUM
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**DIALYSIS AND OTHER TREATMENT OF TOXIC SUBSTANCES** (<2% of exam)

Ethylene glycol	LF	HIGH	HIGH	HIGH	MEDIUM
Methanol	LF	HIGH	HIGH	HIGH	MEDIUM
Other alcohols	LF	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Lithium	LF	HIGH	HIGH	HIGH	MEDIUM
Other dialysis and treatment of toxic substances (salicylates; dialysis duration prescription)	LF	HIGH	HIGH	MEDIUM	MEDIUM

**ACUTE KIDNEY INJURY AND INTENSIVE CARE UNIT NEPHROLOGY**  
(15% of exam)

	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HEMODYNAMIC (PRERENAL) ACUTE KIDNEY INJURY** (4% of exam)

True volume depletion				
Renal fluid losses	HIGH	HIGH	HIGH	MEDIUM
Extrarenal fluid losses	HIGH	HIGH	HIGH	MEDIUM

Effective volume depletion				
Heart failure	HIGH	HIGH	HIGH	HIGH
Cirrhosis	HIGH	HIGH	HIGH	MEDIUM
Nephrotic syndrome	HIGH	HIGH	HIGH	HIGH

Drugs				
Nonsteroidal anti-inflammatory drugs		HIGH	HIGH	MEDIUM
Calcineurin inhibitors		HIGH	HIGH	MEDIUM
Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers		HIGH	HIGH	HIGH
Radiocontrast agents		HIGH	HIGH	MEDIUM
Other drugs (tenofovir, cisplatin)	LF	MEDIUM	MEDIUM	MEDIUM
Abdominal compartment syndrome	LF	HIGH	HIGH	MEDIUM

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ACUTE KIDNEY INJURY AND INTENSIVE CARE UNIT NEPHROLOGY <i>continued...</i> (15% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**PARENCHYMAL (INTRINSIC) ACUTE KIDNEY INJURY** (4.5% of exam)

Vascular				
Systemic diseases and vasculitis	HIGH	HIGH	HIGH	MEDIUM
Atheroemboli	HIGH	HIGH	MEDIUM	MEDIUM
Renal vein thrombosis	HIGH	HIGH	MEDIUM	MEDIUM

Glomerular				
Drug-induced	HIGH	HIGH	HIGH	MEDIUM
Infectious	HIGH	HIGH	MEDIUM	MEDIUM
General glomerular parenchymal acute kidney injury	HIGH	HIGH	MEDIUM	MEDIUM

Tubular				
Ischemic	HIGH	HIGH	HIGH	HIGH
Nephrotoxic	HIGH	HIGH	HIGH	MEDIUM
Systemic disease	HIGH	HIGH	MEDIUM	MEDIUM

Interstitial				
Drugs	HIGH	HIGH	HIGH	MEDIUM
Systemic disease	HIGH	HIGH	MEDIUM	MEDIUM
Malignancy (infiltrative)	MEDIUM	MEDIUM	MEDIUM	MEDIUM

**POSTRENAL ACUTE KIDNEY INJURY** (<2% of exam)

Retroperitoneal and ureteral				
Idiopathic retroperitoneal fibrosis	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Malignancy	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Crystals and stones	HIGH	HIGH	MEDIUM	MEDIUM
Bleeding (intrarenal hemorrhage)	MEDIUM	MEDIUM	MEDIUM	MEDIUM

Bladder, bladder outlet, and benign prostatic hyperplasia	HIGH	HIGH	MEDIUM	MEDIUM
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ACUTE KIDNEY INJURY AND INTENSIVE CARE UNIT NEPHROLOGY <i>continued...</i> (15% of exam)	Diagnosis/ Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**KIDNEY REPLACEMENT THERAPY** (4.5% of exam)

Indications				
Solute accumulation (potassium, hydrogen ions, phosphate, urea)	HIGH	HIGH	MEDIUM	MEDIUM
Hemodynamic	HIGH	HIGH	HIGH	MEDIUM
Acute kidney injury associated with intoxication	HIGH	HIGH	HIGH	MEDIUM
Tumor lysis syndrome	HIGH	HIGH	HIGH	MEDIUM

Techniques				
Intermittent hemodialysis	HIGH	HIGH	HIGH	HIGH
Continuous kidney replacement therapy	HIGH	HIGH	HIGH	HIGH

Kidney replacement therapy prescription				
Dialysate and replacement fluid	HIGH	HIGH	HIGH	HIGH
Anticoagulation	HIGH	HIGH	HIGH	MEDIUM

Complications				
Hemodynamic	HIGH	HIGH	HIGH	MEDIUM
Other complications (dialysis disequilibrium syndrome, electrolyte abnormalities) <b>LF</b>	HIGH	HIGH	MEDIUM	MEDIUM

**INTENSIVE CARE UNIT NEPHROLOGY** (<2% of exam)

Hemodynamic measures	HIGH	HIGH	HIGH	HIGH
Intravenous fluids and volume status	HIGH	HIGH	HIGH	HIGH
Ethics and palliative care	<i>Not Applicable</i>	HIGH	HIGH	<i>Not Applicable</i>