



# Good Morning

## ACUTE GLOMERULONEPHRITIS

Subject: Medical Surgical Nursing  
IIInd Yr B.S.c Nursing

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# ACUTE GLOMERULONEPHRITIS

## Introduction

It is a term used to refer to several kidney diseases (both kidney) characterized by inflammation either of the glomeruli or of the small blood vessels in the kidney. But not all the diseases necessarily have an inflammatory component.

It occurs due to repeated episodes of acute nephrotic syndrome, nephrosclerosis and hyperlipidemia.

# ACUTE GLOMERULONEPHRITIS

## Definition

Glomerulonephritis is a kidney condition that involves damage/inflammation to the glomeruli.

Acute GN is defined as the sudden onset of hematuria, proteinuria, and red blood cell (RBC) casts in the urine.



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## Anatomy and physiology of Nephron

The nephron consist of a tubule closed at one end, to form the cup-shaped glomerular capsule (bowman's capsule), which almost completely enclose a network of tiny arterial capillaries, the glomerulus. Continuing from the glomerulus capsule, the remainder of the nephron is about 3cm long & is described in three parts:

- The proximal convoluted tubule
- loop of henle ( medullary loop )
- distal convoluted tubule lead them to collecting duct.

# ACUTE GLOMERULONEPHRITIS

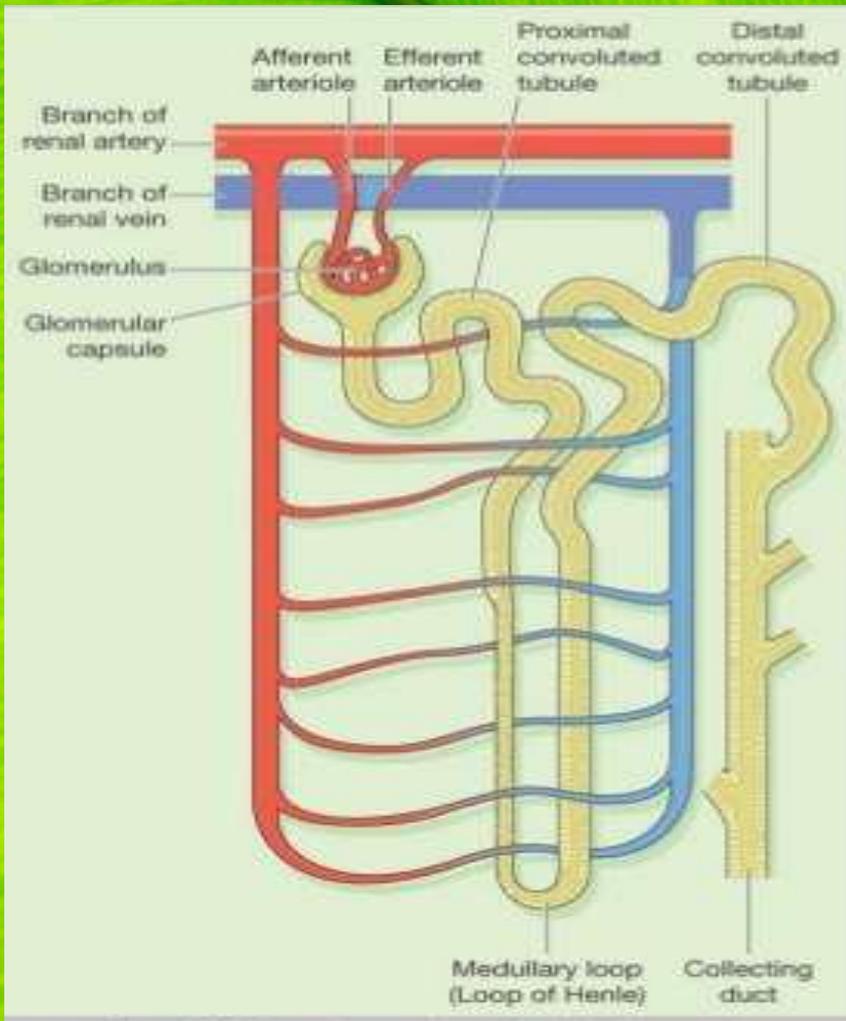
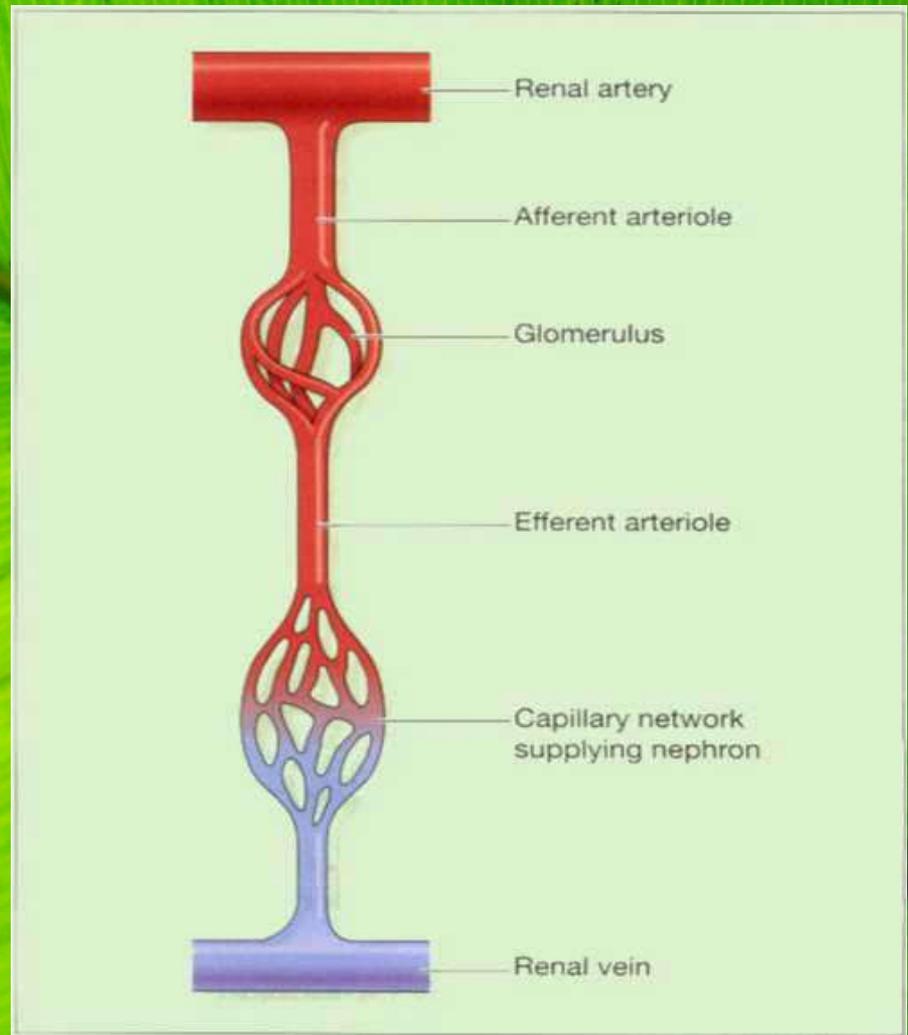
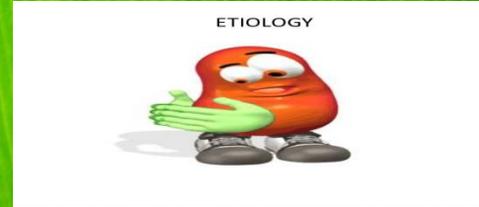


Figure 13.5 A nephron and associated blood vessels.



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## Etiology & risk factor



- Streptococcal infection of the throat (strep throat) or skin (impetigo)
- Hereditary diseases
- Immune diseases, such as SLE
- Diabetes
- High blood pressure
- Vasculitis (inflammation of the blood vessels)
- Viruses (HIV, hepatitis B virus, and hepatitis C virus)
- Endocarditis (infection of the valves of the heart)

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Streptococcal infection of the throat  
( strep throat) or skin ( impetigo)

# ACUTE GLOMERULONEPHRITIS

## Types of glomerulonephritis

- ❖ **Acute glomerulonephritis:** begins suddenly. It occurs after 5-21 days of streptococcal infection.
- ❖ **Chronic glomerulonephritis:** develops gradually over several years. It occurs after the acute phase.



# ACUTE GLOMERULONEPHRITIS

## Pathophysiology

Due to any etiological factor



Release of Ag substance into the circulation



Formation of Ab



formation of Ag and Ab complex in the glomerulus



Inflammatory response



proliferation of epithelial cells lining the glomerulus



Leukocytes infiltration of the glomerulus



Thickening of the glomerular filtration membrane

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## Pathophysiology

### Cont...

scarring and loss of glomerular filtration membrane



decrease GFR and glomerulus plasma flow



Retention of sodium and water



Edema and hypertension



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## Clinical manifestations

- Flank pain
- Foamy urine
- Impetigo
- Cola color or diluted iced tea color urine
- Hematuria
- Oliguria, Dysuria
- Periorbital oedema
- Fever
- Fatigue to anemia and kidney failure
- Hypertension
- Fluid Retention



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## Diagnostic evaluation

- History
- Physical examination
- Urinalysis: high specific gravity.
- Biopsy
- IVP
- Blood Test
- USG
- Streptozyme tests.
- Blood & tissue cultures

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## Complication

- Acute and chronic renal failure
- Nephrotic syndrome
- Hypertension
- Electrolyte imbalances
- Pulmonary edema
- CHF due to fluid overload

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## Management



# ACUTE GLOMERULONEPHRITIS

## Pharmacological Management

Treatment depend on the cause of the disorder, type and severity of the symptoms. High B.P. may be hard to control. Controlling the B.P. usually the most important part of the treatment.

- Dialysis
- Medication
  - Diuretics
  - Immuno-suppressants
  - Anti-hypertensive
  - Antibiotics
  - Loop diuretics
  - Calcium channel blockers
  - Vasodilators

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## Cont...

### ➤ Life style changes

- Sodium and water restriction
- Potassium, phosphorus, magnesium restriction.
- Limit intake of protein in the diet.
- Take calcium supplements.
- Maintain a healthy weight through diet and exercise.

### ➤ Physiotherapy treatment

### ➤ Patient education

- Lymphatic massage to reduce the edema.
- Breathing exercise - pursed lip and diaphragmatic breathing.
- Endurance exercise such as walking, swimming, bicycling, aerobic dancing, circulatory exercise. This exercise improve your blood circulation, accelerate kidney to discharge waste and toxins.

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## Nursing Management



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## Nursing Management

### Nursing Assessment

- **Physical examination.** Obtain complete physical assessment
- **Assess weight.** Monitor daily weight to have a measurable account on the fluid elimination.
- **Monitor intake and output.** Monitor fluid intake and output every 4 hours to know progressing condition via glomerular filtration. Intake should be equal to output.
- **Assess vital signs.** Monitor BP and PR every hour to know progression of hypertension and basis for further nursing intervention or referral.
- **Assess breath sounds.** Assess for adventitious breath sounds to know for possible progression in the lungs.

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## Nursing Management

### Nursing Diagnoses

Based on the assessment data, the major nursing diagnoses are:

- **Ineffective breathing pattern** related to the inflammatory process.
- **Altered urinary elimination** related to decreased bladder capacity or irritation secondary to infection.
- **Excess fluid volume** related to a decrease in regulatory mechanisms (renal failure) with the potential of water.
- **Risk for infection** related to a decrease in the immunological defense.
- **Imbalanced nutrition less than body requirements** related to anorexia, nausea, vomiting.
- **Risk for impaired skin integrity** related to edema and pruritus.
- **Hyperthermia** related to the ineffectiveness of thermoregulation secondary to infection.

# ACUTE GLOMERULONEPHRITIS

## Nursing Management

### Nursing Care Planning and Goals

Nursing care planning goals for a child with acute glomerulonephritis are:

- Excretion of excessive fluid through urination.
- Demonstration of behaviors that would help in excreting excessive fluids in the body.
- Improvement of distended abdominal girth.
- Improvement of respiratory rate.
- Participation and demonstration of various ways to achieve effective tissue perfusion.

# ACUTE GLOMERULONEPHRITIS

## Nursing Interventions

- ❖ **Excess fluid volume related to renal failure.**
- Monitor vital signs every 4 hours; notify any significant changes.
- Auscultate breath sounds for the presence of crackles. Observe for increased work of breathing, cough, and nasal flaring.
- Weigh the pt on the same scale at the same time daily. Monitor intake and output accurately.
- Measure and record abdominal girth daily.
- Administer diuretics as prescribed.
- Instruct pt's relatives to maintain fluid restrictions as indicated.
- Assist the pt to do position changes every 2 hours.
- Elevate edematous body part while the pt is in bed or sitting in a chair.
- Explain to the pt (as appropriate) and family about acute glomerulonephritis, including its signs and symptoms, diagnostics, and management.
- Refer to a dietician for a consultation to develop a meal plan low in sodium, potassium, and protein that includes preferred foods as allowed.

# ACUTE GLOMERULONEPHRITIS

## Nursing Interventions

- ❖ **Activity Intolerance** related to anemia & bed rest.
- Assess the level of weakness and fatigue, ability to move about in bed and engage in activities.
- Encourage bed rest during the acute stage, disturb only when needed.
- Schedule care and provide rest periods after any activity in a quiet environment.
- Provide for reading, TV, games as symptoms subside.
- Explain to the pt and family the purpose of activity restriction.
- Inform pt and relative about the importance of rest after ambulation or any activity.
- Instruct patient to rest when feeling tired.

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## Nursing Interventions

- ❖ Risk for Injury related to impaired renal function
- Assess blood pressure, pulse, respirations every 4 hours (monitor BP every 1 hour if diastolic is more than 90, pulse and respirations every 1 hour if tachycardia, tachypnea or dyspnea present).
- Assess changes in intake and output, extent of edema, decreased urinary output, headache, pallor, electrolyte balance.
- Administer antihypertensives, diuretic therapy, cardiac glycoside as ordered; Observe for therapeutic effect.
- Observe behavior changes including lethargy, irritability, restlessness associated with hypertension and administer anticonvulsives if ordered.
- Encourage foods low in sodium, potassium, and protein during the acute phase of AGN; Instruct to increase intake of food high in carbohydrates and fats (only during the acute phase of AGN), as ordered.
- Limit fluids as ordered; allow intake of the amount lost via urine and insensible losses.

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## Nursing Interventions

❖ Risk for Injury related to impaired renal function

Cont...

- Inform patient to report any weight gain, hematuria with decreased urine output, complaints of headache and anorexia.
- Teach patient regarding dietary inclusion and restriction; provide a list of foods to include and avoid that comply with sodium, potassium, protein allowances.
- Encourage to allow activity/rest periods as energy and fatigue require; progressively increase as condition warrants.
- Reinforce to patient & family the need for follow-up care and supervision.

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## Nursing Interventions

- ❖ Risk for Injury related to impaired renal function

Cont...

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# ACUTE GLOMERULONEPHRITIS

## Nursing Interventions

- ❖ *Risk for Infection* related to Chronic disease.
- Assess temperature, chills, sore throat, cough (presence or recurrence).
- Obtain throat culture for analysis and sensitivities.
- Administer antibiotic therapy to the patient and to family members if ordered.
- Provide proper disposal of used tissues and articles.
- Instruct patient about the importance of taking the full course of antibiotic therapy
- Instruct patient and family to do handwashing after sneezing/coughing and to properly disposed used tissues.
- Instruct patient to avoid exposure to others with an existing upper respiratory infection.
- Instruct patient to notify health care provider if fever, cough, sore throat is present.

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Answer the  
following questions



1. When educating patient regarding known antecedent infections in acute glomerulonephritis, which of the following should the nurse cover?

- A. Scabies
- B. Impetigo
- C. Herpes simplex
- D. Varicella

2. Nurse Jeremy is evaluating a client's fluid intake and output record. Fluid intake and urine output should relate in which way?

- A. Fluid intake should be double the urine output.
- B. Fluid intake should be approximately equal to the urine output.
- C. Fluid intake should be half the urine output.
- D. Fluid intake should be inversely proportional to the urine output.



3. Nurse Kai is evaluating a female patient with acute post-streptococcal glomerulonephritis for signs of improvement. Which finding typically is the earliest sign of improvement?

- A. Increased urine output
- B. Increased appetite
- C. Increased energy level
- D. Decreased diarrhea





4. A teen patient is admitted to the hospital by his physician who suspects a diagnosis of acute glomerulonephritis. Which of the following findings is consistent with this diagnosis? Note: More than one answer may be correct.

- A. Urine specific gravity of 1.040
- B. Urine output of 350 ml in 24 hours
- C. Brown ("tea-colored") urine
- D. Generalized edema

5. Which of the following conditions most commonly causes acute glomerulonephritis?

- A. A congenital condition leading to renal dysfunction
- B. Prior infection with group A Streptococcus within the past 10-14 days
- C. Viral infection of the glomeruli
- D. Nephrotic syndrome



6. A male client is admitted for treatment of glomerulonephritis. On initial assessment, Nurse Miley detects one of the classic signs of acute glomerulonephritis of sudden onset. Such signs include:

- A. Generalized edema, especially of the face and periorbital area.
- B. Green-tinged urine.
- C. Moderate to severe hypotension.
- D. Polyuria.



## Say TRUE or FALSE



1. Glomerulonephritis means inflammation and damage to the glomeruli in the kidneys.
2. Each kidney has about 10 million glomeruli.
3. There are two major types of glomerulonephritis.
4. Infections can cause glomerulonephritis.
5. Systemic lupus erythematosus (SLE) is an important cause of glomerulonephritis.
6. . Frequent use of nonsteroidal anti-inflammatory drugs (NSAIDs) for pain relief cannot cause glomerulonephritis.



7. Based on clinical features, there are three types of glomerulonephritis.
8. Uncontrolled diabetes and high blood pressure can damage glomeruli.
9. Kidney disease can be diagnosed by blood and urine tests.
10. Glomerulonephritis is an untreatable condition.
11. Glomerulonephritis cannot be prevented by certain measures.
12. It is important to diagnose and treat glomerulonephritis to prevent serious complications.

Thank  
You



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