

Standard Treatment Workflow

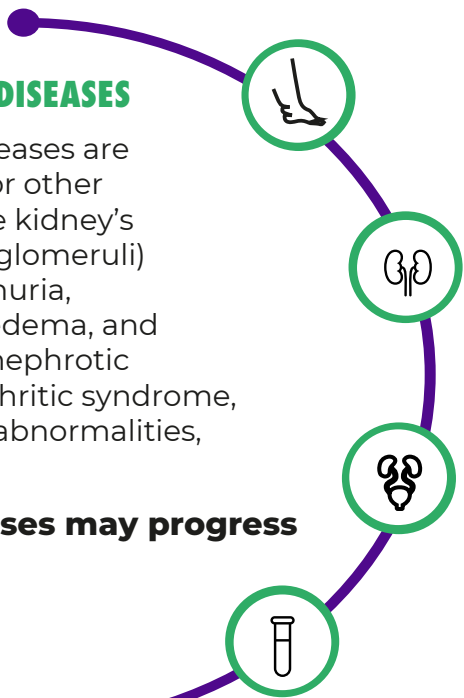
GLOMERULAR DISEASES

ICD-11-N005.9

GLOMERULAR DISEASES

Glomerular diseases are inflammatory or other disorders of the kidney's filtering units (glomeruli) causing proteinuria, hematuria, or edema, and presenting as nephrotic syndrome, nephritic syndrome, RPGN, urinary abnormalities, AKI, or CKD.

Untreated cases may progress to ESKD



Identify the Syndrome	
Syndrome	Key Features
Nephrotic Syndrome	Edema, frothy urine, hypoalbuminemia, hyperlipidemia. Proteinuria (Nephrotic Range): Adults: >3.5 g/1.73 m²/day or spot urine PCR >3 g/g Children: > 1000 mg/m2 per day or spot urine PCR >2 g/g
Nephritic Syndrome	Cola-coloured urine, oliguria, edema, hypertension, Hematuria (± RBC casts), no or mild proteinuria
Rapidly Progressive Glomerulonephritis	Rapid increase of Serum Creatinine within days to weeks. May have constitutional symptoms, e.g. pulmonary hemorrhage, fever, joint pains
Asymptomatic Urinary Abnormalities	Isolated proteinuria or hematuria, usually detected on screening. Repeat urine microscopy, dipstick, proteinuria quantification Refer to nephrologist if abnormalities persist

NEPHROTIC SYNDROME

Common Causes	Key Tests	Management PHC Level/CHC Level	Special Paediatric Precautions
Children: Minimal Change Disease (most common, steroid-responsive) Adults: Minimal Change Disease, FSGS, Membranous Nephropathy, Diabetic Nephropathy, Lupus Nephritis	- Urine Microscopy - Proteinuria quantification - Serum albumin - Lipid profile - ANA, anti-dsDNA, C3, C4 - Anti-PLA2R - Hepatitis B/C, HIV - Myeloma profile (SPEP, serum free light chain assay) - Blood Sugar F/PP - Kidney Biopsy: as per indication - Other tests as per clinical context	- Salt restriction - Loop diuretics for edema (monitor Na⁺/K⁺; consider loop + thiazide for resistant edema; aim for 0.5–1 kg/day weight loss in adults) - ACEi/ARB for proteinuria reduction - Statins for dyslipidemia District hospital/Tertiary level - Steroid Protocol: To be done by specialised team - Children: Prednisolone 2 mg/kg/day (max 60 mg) × 6 weeks → 1.5 mg/kg (max 40 mg) on alternate days × 6 weeks - Adults: Treatment should be done as per kidney biopsy reports - Thromboprophylaxis if albumin <2.5 g/dL	- Screen for TB before steroid initiation (Mantoux, CXR) - Avoid live vaccines during and 3 months after steroids - Regular growth and BP monitoring - Avoid ACEi/ARB in steroid-sensitive cases with normal kidney function - Relapses may occur, hence look for proteinuria during intercurrent illness - Steroids in intercurrent illness

NEPHRITIC SYNDROME

Common Causes
Post-infectious GN, HSP (children) IgA nephropathy, lupus nephritis, vasculitis

Key Tests
Urinalysis (RBCs, RBC cast, protein)
Serum creatinine
C3/C4, ANA, anti-dsDNA
ASO titre (if H/o sore throat or skin lesions)

Management PHC Level/CHC Level
BP control (<130/80 adults; <95th percentile children)
Supportive fluid management
Avoid NSAIDs/nephrotoxins
Treat underlying cause
Refer if unresponsive or atypical

RAPIDLY PROGRESSIVE GLOMERULONEPHRITIS (RPGN)

Definition:
Rapid renal decline (doubling of creatinine within days–weeks)

Causes:
ANCA vasculitis, anti-GBM disease, lupus nephritis, severe IgA nephropathy , Pauci-immune Glomerulonephritis

Key Tests:
Urinalysis, serum creatinine
ANCA (anti PR3, anti MPO titres), anti-GBM, ANA, anti-dsDNA, complements C3, C4, CXR
Look for coexisting diseases

**Management
PHC Level/CHC Level**
Immediate nephrology referral

District hospital/Tertiary level
Kidney Biopsy
IV methylprednisolone 500–1000 mg × 3 days
Cyclophosphamide/rituximab ± plasmapheresis

REFERRAL TO NEPHROLOGIST (DISTRICT HOSPITAL OR NEAREST AVAILABLE CENTRE)

Immediate – Same Day (Red Flag Signs)

Rapidly Progressive Glomerulonephritis

Pulmonary-renal syndrome

Suspected peritonitis in nephrotic syndrome

Hypertensive emergency

Pregnancy

Red Flag Signs

- Respiratory distress
- Severe abdominal pain
- Unilateral limb swelling
- Oliguria or anuria
- Seizures
- Hypotension
- Acute febrile illness

Look for complications

- Malnutrition
- Hypovolemia
- AKI
- Thromboembolism
- Infections

General Management Principles

- Maintain BP target <130/80 mmHg (adults) or <95th percentile (children)
- Restrict salt (unless paediatric without edema)
- Reverse edema gradually to prevent hypovolemia
- Avoid NSAIDs and aminoglycosides
- Maintain adequate nutrition and encourage physical activity

Glomerular Diseases

Nephrotic Syndrome	Nephritic Syndrome	RPGN	Asymptomatic Urinary Abnormalities
- Proteinuria > 3.5 g/day - Hypoalbuminemia - Edema, Hyperlipidemia	- Hematuria, RBC Casts - Hypertension, - Mild Proteinuria ↓ GFR	- Rapid Renal Decline (Days to weeks) - Crescentic GN on Biopsy	- Microscopic Hematuria - Proteinuria - Normal Renal Function

Infection Prevention

- Update Vaccinations before starting immunosuppressive therapy, if possible
- Pneumococcal and annual inactivated influenza vaccines are safe and recommended
- Maintain strict hygiene (handwashing, safe food and drinking water)
- While on immunosuppressive therapy, avoid crowded areas and wear mask

Monitor regularly

- BP & weight - each visit
- Urine Examination - monthly
- Serum creatinine and eGFR- (1–3 month) (more often in active disease)
- Monitor growth in children every 6 months
- Eye evaluation for posterior subcapsular cataract every 6 months

ABBREVIATIONS

ACR: Albumin-to-Creatinine Ratio
AKI: Acute Kidney Injury
ANA: Antinuclear Antibody
ACEi: Angiotensin-Converting Enzyme Inhibitor
C3/C4: Complement C3 and C4

CKD: Chronic Kidney Disease
dsDNA: Double-Stranded DNA
eGFR: Estimated Glomerular Filtration Rate
ESKD: End-Stage Kidney Disease
FSGS: Focal Segmental Glomerulosclerosis
HSP: Henoch-Schonlein Purpura

MCD: Minimal Change Disease
NSAIDs: Non-Steroidal Anti-Inflammatory Drugs
RPGN: Rapidly Progressive Glomerulonephritis
SPEP: Serum Protein Electrophoresis

REFERENCES

- KDIGO 2021 Clinical Practice Guidelines for the management of Glomerular Diseases, available at www.kdigo.org

👉 GLOMERULAR DISEASES: DETECT EARLY, TREAT TIMELY, PREVENT CKD/ESKD

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