Top 10 Takeaways for Clinicians from the KDIGO 2021 Clinical Practice Guideline for General Principles for the Management of Glomerular Diseases

1 Kidney biopsy

The kidney biopsy is the "gold standard" for the diagnostic evaluation of glomerular diseases to facilitate the initiation or modification of treatment and/or to provide prognostic information. Under some circumstances, treatment may proceed without a kidney biopsy. (Figure 1)

2 Proteinuria evaluation

In adults, the measurement of protein and creatinine on a 24-hour urine collection is the optimal way to determine total protein excretion; a reasonable compromise is to collect an "intended" 24-hour urine sample and calculate a PCR in an aliquot of the collection. For pediatrics, monitoring first morning PCR is an alternative. Random "spot" urine collections are not ideal due to variation over time in both protein and creatinine excretion.

3 Examination of the urine

Proteinuria should be quantified and followed sequentially. Hematuria should be assessed microscopically for acanthocytes and red blood cell casts in all forms of glomerular disease.

4 Treat edema, hypertension, and proteinuria

Dietary sodium restriction and loop diuretics should be first-line therapy. For resistant edema, add diuretics with actions on other tubule segments, and rarely intravenous albumin. In severe cases, hemodialysis or kidney replacement therapy for ultrafiltration may be needed. Use ACEi or ARBs titrated to maximal tolerability to reduce proteinuria and control hypertension, while monitoring frequently for safety. Consider facilitating their use with the judicious addition of potassium wasting diuretics and oral K binders. (Figure 2)

5 Treat metabolic acidosis and hyperlipidemia

Maintain serum bicarbonate >22 mmol/l.
Consider starting a statin as first-line therapy for persistent hyperlipidemia.

6 Treat thrombotic complications

Prescribe full-dose anticoagulation for pulmonary embolus, arterial and venous thrombosis, and non-valvular atrial fibrillation for at least 6–12 months or until the nephrotic syndrome is resolved. Consider full-dose anticoagulant prophylaxis for serum albumin <20–25 g/l. In patients with absolute and relative contraindications to anticoagulants or at high bleeding risk, aspirin may be a reasonable alternative. A risk calculator is available at https://www.med.unc.edu/gntools/bleedrisk.html

7 Glomerular disease treatment

Choose a glomerular disease treatment that minimizes immediate morbidity of the primary disease, prevents disease progression, and minimizes treatment side effects.

8 Prevent infection during immunosuppressive treatment

Screen for and treat underlying latent infections prior to administering immunosuppression. Vaccinate against infectious agents avoiding live attenuated vaccines. Use prophylaxis against agents of concern generally including pneumocystis (trimethoprim-sulfamethoxazole, atovaquone, dapsone) and meningococcus specifically when using complement inhibition (vaccines for meningococcal serotypes a, c, w, y and b; concomitant penicillin or ciprofloxacin for the penicillin-allergic).

9 Optimal pregnancy outcomes require planning

(ideally pre-natal) among the patient, obstetrician, and nephrologist. Prevent fetotoxicity during immunosuppressive treatment with effective contraception. Optimal pregnancy outcomes are achieved if pregnancy is delayed until glomerular disease remission.

10 Employ lifestyle modification synergy

to enhance antihypertensive and antiproteinuric strategies. Normalize weight, undertake regular exercise, consume a heart-healthy diet avoiding dietary protein excess, and avoid smoking. (Figure 2)

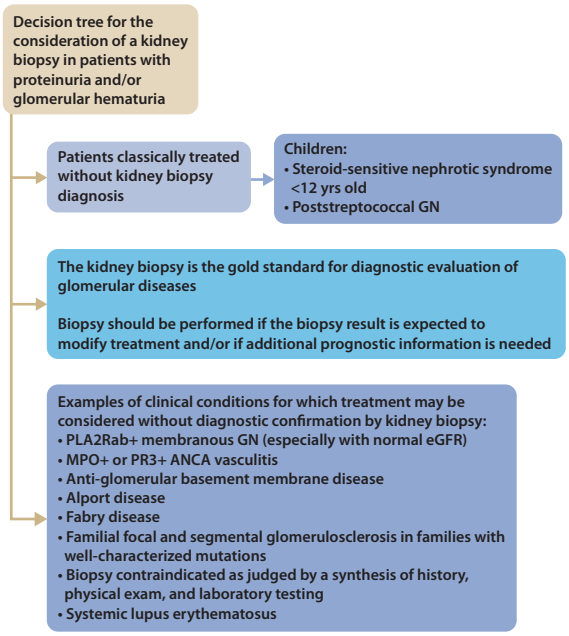

Figure 1

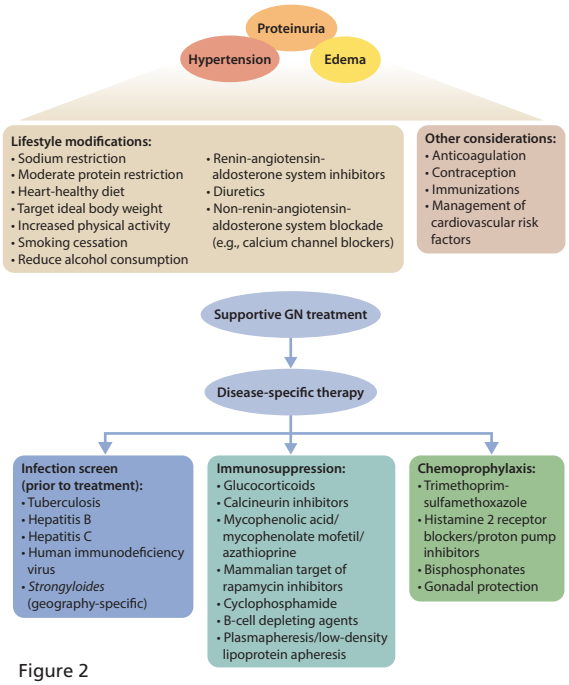

Figure 2

Abbreviations: ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; GFR, glomerular filtration rate; PCR, protein-creatinine ratio