Tab 1

IPNA clinical practice recommendations for the diagnosis and management of children with IgA nephropathy and IgA vasculitis nephritis

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INTRODUCTION

Immunoglobulin A nephropathy (IgAN):

- The most common primary glomerulonephritis worldwide, which is caused by IgA1-IgG immune complex deposition in glomeruli, leading to inflammation and kidney damage.
- It presents in the second or third decade of life [Median age of presentation in children is 10.9 years].
- *Presentation:* hematuria, proteinuria, and variable kidney dysfunction, occasionally progressing rapidly in adolescents and adults. However, ethnicity and age influence severity.

IgA vasculitis (IgAV):

- It involves systemic small vessel inflammation (Kidney involvement (IgAVN) ~ 20–54% of pediatric cases).
- IgAVN is more severe with age, it is generally milder and sometimes self-remitting in children.

The International Pediatric Nephrology Association (IPNA) has developed clinical practice recommendations to guide the diagnosis and management of IgAN and IgAVN in children, addressing gaps in the adult-focused KDIGO guidelines.

Clinical practice recommendations for IgAN

1. Initial assessment, diagnosis, and indications for kidney biopsy

Common definitions for IgA nephropathy (IgA) and IgA vasculitis nephritis (IgAVN)

Definitions	Description
IgA nephropathy (IgAN)	Dominant or codominant glomerular (mesangial or mesangial plus capillary wall) IgA staining on kidney biopsy and the exclusion of differential diagnoses on clinical or pathological grounds
Relapse IgAN	Reappearance of urinary protein creatinine ratio (UPCR–based on first-morning void, preferably) >0.5 mg/mg (50 mg/mmol) or proteinuria >500 mg/day in 24-h collection based on at least two urine samples collected 1-2 weeks apart in patients who achieved remission. Hematuria and/or reduced eGFR (<90 mL/min/1.73 m^2) or declining eGFR after exclusion of other causes of kidney injury can also be present
Remission IgAN	Resolution of proteinuria (UPCR <0.2 mg/mg or 20 mg/mmol) or proteinuria <100 mg/m^2 per day or <0.2 g/day in 24-h collection) based on at least two urine samples collected at least 1 month apart in the presence of normal (≥90 mL/min/1.73 m^2) or stable eGFR. Complete remission includes, in addition to these features, the resolution of hematuria, defined as a negative dipstick for blood and/or <5 RBC/high-power microscopic field
Synpharyngitic hematuria	Macroscopic hematuria (i.e., red or brown urine with RBCs noted on microscopy) occurring during the course of an upper respiratory infection
Hematuria	RBCs ≥5/hpf, urine dipstick ≥1+ blood on at least two separate samples, and/or presence of dysmorphic RBCs (acanthocytes), and/or RBC casts in a fresh spot urine sample
Persistent microscopic hematuria	RBCs ≥5/hpf, urine dipstick ≥1+ blood on at least two urine samples collected at least one month apart
Orthostatic proteinuria	An elevated urine protein excretion while in the upright position only, with normal urine protein excretion in a supine position
Nephrotic-range proteinuria	UPCR ≥2 mg/mg (200 mg/mmol) in spot urine, or proteinuria ≥1000 mg/m^2/day in a 24-h urine sample corresponding to 3+ (300-1000 mg/dL) or 4+ (≥1000 mg/dL) by urine dipstick
Nephrotic syndrome	Nephrotic-range proteinuria and either hypoalbuminemia (serum albumin <30 g/L) or edema when serum albumin is not available
Recurrence of IgAN	Transplant kidney biopsy showing glomerular IgA deposits in a

	patient whose native disease was IgAN
IgA vasculitis (IgAV)	A systemic vasculitis with IgA-dominant immune deposits affecting small vessels (predominantly capillaries, venules, or arterioles)
IgA vasculitis with nephritis (IgAVN)	Glomerulonephritis is characterised by dominant or co-dominant IgA glomerular deposition, defined by kidney involvement in a patient with IgAV, morphologically indistinguishable from IgAN
Remission of IgAVN	Resolution of proteinuria (UPCR <0.2 mg/mg or 20 mg/mmol) or proteinuria <100 mg/m^2 per day or <0.2 g/day in a 24-h collection) based on at least two urine samples collected at least 1 month apart in the presence of normal (≥90 mL/min/1.73 m^2) or stable eGFR. Complete remission includes, in addition to these features, the resolution of hematuria, defined as a negative dipstick for blood and/or <5 RBC/high-power microscopic field
Relapse of IgAVN	Recurrence of hematuria (gross hematuria or ≥2+ in dipstick or 5 RBCs/hpf) and/or proteinuria (UPCR ≥0.2 mg/mg or 20 mg/mmol) on first-morning void in at least two urine samples and/or reduced kidney function (eGFR <90 mL/min/1.73 m^2 or >25% reduction from baseline) in a patient who has achieved a complete remission for at least 1 month
Glucocorticoid toxicity (*consideration for change in treatment strategy)	New or worsening obesity/overweight, sustained hypertension, hyperglycemia, behavioral/psychiatric disorders, sleep disruption, impaired statural growth (height velocity <25th percentile and/or height <3rd percentile) in a child with normal growth before start of steroid treatment, Cushingoid features, striae rubrae/distensae, glaucoma, ocular cataract, bone pain, avascular necrosis
Recurrence of IgAVN	Transplant kidney biopsy showing glomerular IgA deposits in a patient whose native disease was IgAVN
Rapidly progressive glomerulonephritis	<50% of normal kidney function or rapid loss of renal function accompanied by crescentic lesions and necrosis in the kidney biopsy

- **Indications for kidney biopsy in primary IgAN:**
    - Presence of hematuria with proteinuria (UPCR ≥ 20 mg/mmol or 0.2 mg/mg) persisting in over 2-3 weeks, at minimum 2 measurements 1-2 weeks apart, without Lower urinary tract symptoms (LUTS) etiologies or features of systemic disease and normal serum C3 level
    - Persistent (>2-3 weeks) or recurrent (>2-3 times) gross hematuria during URTI

- Persistent or recurrent hematuria and nephrotic-range proteinuria (UPCR >200 mg/mmo or 2 mg/mgl) and/or reduced eGFR
- Persistent or recurrent hematuria and UPCR >50 mg/mmol (0.5 mg/mg), at minimum two measurements 1-2 weeks apart
- Persistent or recurrent hematuria and UPCR between 20-50 mg/mmol (0.2-0.5 mg/mg), at minimum three measurements 1-2 weeks apart

- Diagnosis of primary IgAN requires dominant or co-dominant IgA glomerular staining among immunoglobulins, excluding differential diagnosis for clinical and/or pathologic reasons (e.g. IgAVN, secondary IgAN, IgA-dominant postinfectious GN).

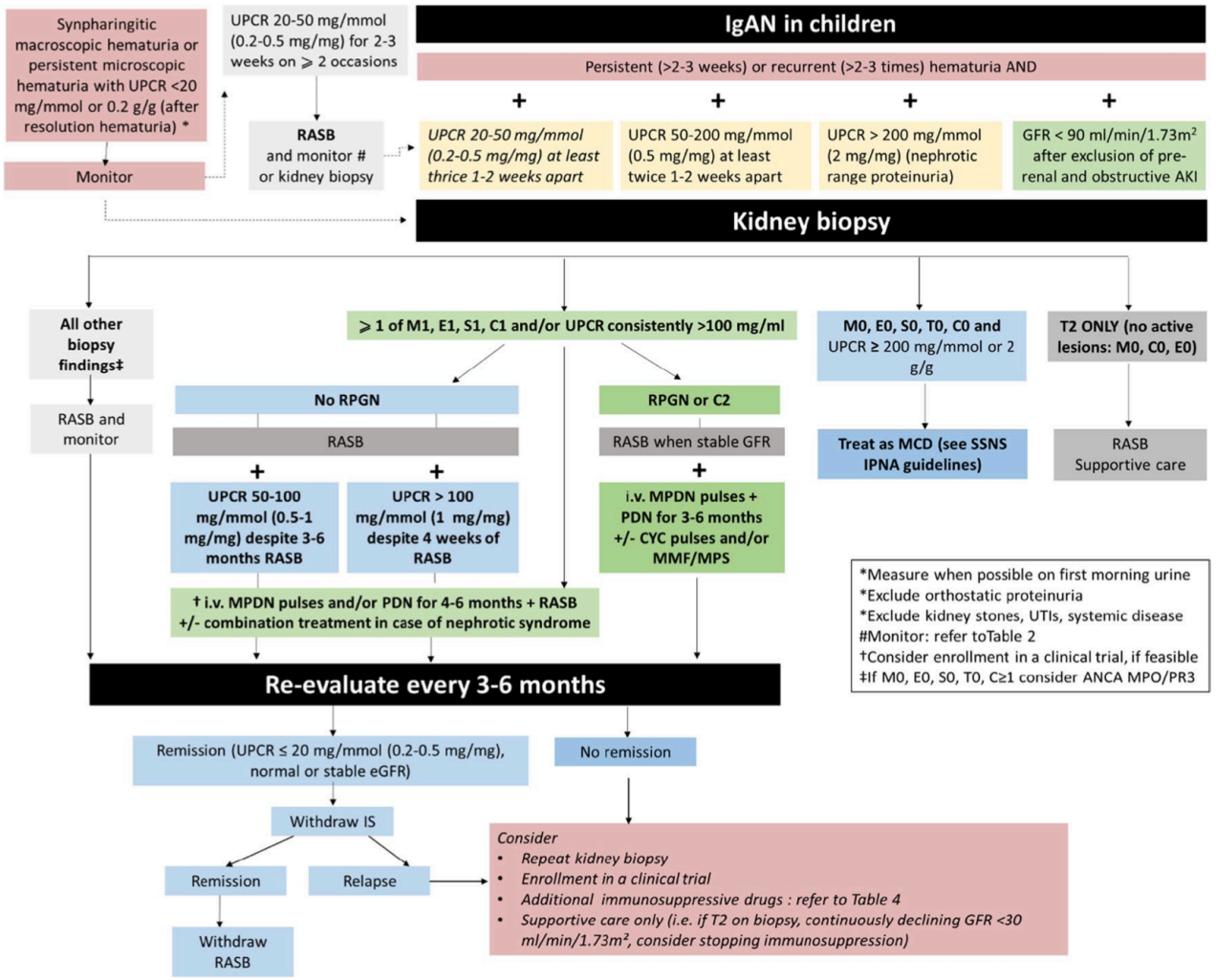
Major differential diagnosis of IgA nephropathy in children

Table 3 Major differential diagnosis of IgA nephropathy in children

Condition	Clinical presentation	Diagnosis
Thin basement membrane disease	Persistent glomerular hematuria (microscopic ± gross), minimal proteinuria	Kidney biopsy (EM) shows diffusely thin glomerular basement membranes for patient age
Alport syndrome (autosomal recessive or X-linked)	Recurrent gross hematuria, persistent microscopic hematuria with or without proteinuria and/or sensorineural hearing loss and/or ocular abnormalities (i.e., lenticonus), most often in boys	Genetic testing (mutations in *COL4A5*, *COL4A3*, or *COL4A4* genes), skin biopsy for the absence of collagen alpha-5(IV) chain in the epidermal basement membrane (X-linked), kidney biopsy (electron microscopy) shows lamellated GBM
Post-infectious glomerulonephritis	Microscopic ± gross hematuria starting 1–3 weeks after an upper respiratory infection, usually with proteinuria, often hypertension, reduced kidney function, edema	Low serum C3 levels, elevated anti-streptococcal titer (ASOT), renal biopsy shows diffuse glomerulonephritis, C3 ± IgG deposits, subepithelial "humps" by electron microscopy
Lupus nephritis	Photosensitive rash, joint pains, hematuria, proteinuria, normal or reduced kidney function, ± hypertension	ANA, anti-dsDNA positive, low serum C3 and C4 levels, renal biopsy with varying histologic findings but "full house" (IgG, IgA, IgM, C1q, C3) immune deposits
IgA vasculitis nephritis	Purpuric rash predominantly over lower limbs and trunk, ± abdominal and joint pain, hematuria often with proteinuria, normal or reduced kidney function	Clinical criteria of EULAR/PRES, normal serum C3, biopsy of skin lesions with leukocytoclastic vasculitis + IgA in dermal vessels, indistinguishable from IgA nephropathy on kidney biopsy
ANCA-associated vasculitis	Decreased kidney function, often rapidly progressive with active urine sediment and variable proteinuria, may be features of systemic vasculitis	Serology positive for anti-MPO or anti-PR3, normal serum C3, renal biopsy shows necrotizing/crescentic GN with few or no immune deposits by IF and EM

EM, electron microscopy; *ANA*, antinuclear antibody; *EULAR/PRES*, European League Anti-Rheumatic Disease/Pediatric Rheumatology European Society

- The use of immunosuppressive drugs before kidney biopsy is not recommended, unless GFR declines rapidly (suggesting rapidly progressive glomerulonephritis)



Management algorithm for IgA nephropathy

2. Follow-up

- Long-term follow-up in children with IgAN is recommended as urinary abnormalities may reappear and kidney failure may progress.

- Follow-up intervals can be adjusted based on the severity of clinical symptoms, histopathological features, treatment regimen, and response to treatment. Low-risk group, a follow- up interval of every 6-12 months for at least 10 years is suggested.

- After 3-6 months of supportive treatment, it is recommended to exclude secondary IgAN for children with persistent proteinuria (UPCR ≥ 20 mg/mmo or 0.2 mg/mgl).

- In patients with a history of pediatric IgAN, yearly monitoring of blood pressure and urinalysis is recommended.

3. A. Treatment and management of biopsy-proven IgAN

- Patients with UPCR ≥ 20 mg/mmo (0.2 mg/mg)l:
  - Dietary salt intake < 3-5 g/day.
  - Treatment with RASB, either as ACE-Inhibitor or angiotensin receptor blocker (ARB) at maximally tolerated doses. Consider dose reduction or discontinuation if there is a decrease in blood pressure or eGFR or there is an increase in serum potassium.
- For children with CKD stage 2 or higher, 24-h mean arterial BP is targeted at ≤ 50th percentile or ≤ 75th percentile for age, sex, and height.
- Lifestyle modification:
  - Regular aerobic exercise, and no smoking or vaping.
  - In obese, weight reduction resulted in a decrease in proteinuria.
- Counselling of patients & parents regarding the risk of progression of kidney disease, associated with being overweight and obese, including nutritional counseling.
- Routine use of glucocorticoid: Consider treatment of glucocorticoids for 6 months if proteinuria >1 g/ day persisted unchanged after 3-6 months of RASB.
- Treatment in children with clinical risk of progression → 4–6-month course of glucocorticoid treatment should be considered
  - Children with clinical risk of progression In those with:
    - UPCR 0.5–1 mg/mg (50–100 mg/mmol) despite 3–6 months of RASB
    - UPCR > 1 mg/mg (100 mg/mmol) despite 4 weeks of RASB
    - Active MEST-C scores (1 or more of the following scores: M1, E1, S1 with podocyte lesions, C1) and/or UPCR consistently (i.e., persisting over 2–3 weeks in at least two measurements 1–2 weeks apart) > 1 mg/mg 100 mg/mmol)
  - Conventional pediatric protocol for glucocorticoids: of 2 mg/kg/day (max 60 mg/m2/day) of oral prednisone/prednisolone (or equivalent) for a maximum of 4 weeks followed by alternate-day dosing tapered over 5–6 months.
- A methylprednisolone pulse regimen → selected and modulated on an individual basis in patients with higher clinical and histological risk for progression, such as:

- Children with acute onset of IgAN and declining kidney function (eGFR < 90 mL/min/1.73 m2) and/or PCR >1 mg/mg (100 mg/mmol) with active severe MEST-C scores (2 or more of the following scores: M1, E1, S1 with podocyte lesions, C1)
- Children with crescentic forms of IgAN (C2). → irrespective of proteinuria, the use of i.v. glucocorticoids is suggested

- The methylprednisolone iv protocol:
  - 3 methylprednisolone i.v. pulses given at the dose of 15 mg/ kg/day each (max dose, 500 mg/dose) on 3 consecutive or alternate days followed by oral prednisone/prednisolone as indicated above.
  - Alternatively, the i.v. pulses can be repeated three times at 2-month intervals, with oral prednisone/prednisolone given at 0.5 mg/kg/day for 2 months between pulse cycles, for a total of 6 months

Dose, monitoring, and adverse effects of main agents used to treat IgAN

Therapeutic agents	
Dose	Monitoring
Oral glucocorticoids: ● Prednisolone or Prednisone (PDN) 1-2 mg/kg/day (maximum dose 60 mg) for 4 weeks then alternate-day dosing tapered over 3-6 months ● IV glucocorticoids pulses: methylprednisolone, three doses given daily for 3 days at induction, 500 mg/m^2 per dose (maximum dose 1000 mg). May be repeated	Quarterly: blood pressure, height, weight Yearly: ophthalmological examination
Mizobirine: Purine antimetabolite mainly available in Japan 4 mg/kg/day (maximum dose 150 mg)	Initially monthly, later quarterly: ● CBC ● Uric acid
Mycophenolate mofetil (MMF)/ mycophenolic sodium (MPS): **MMF:** 1200 mg/m2 per2day in two divided doses every 12 h (usually start at 600 mg/m in two doses for the first week to improve tolerance) **MPS:** 360 mg corresponds to 500 mg of MMF Therapeutic drug monitoring using a limited sampling strategy: The most effective MPA AUC is above 50 mg × h/L	Quarterly: ● CBC ● LFTs
Calcineurin inhibitors: **Cyclosporine** Start: 3–5 mg/kg per day (maximum dose 250 mg) in two divided doses Target: C0 60–100 ng/mL *or* C2 300 two 550 ng/mL (aiming for the lowest possible dose to maintain remission)	Quarterly: ● Blood pressure ● CBC, Creatinine,eGFR, K^+ ● LFTs, lipids ● Uric acid (CsA)

Tacrolimus Start: 0.1–0.2 mg/kg per day (maximum dose 10 mg) in two divided doses Target: C0 level between 3 and 7 ng/mL (aiming for the lowest possible dose to maintain remission)	• Mg^{+} (TAC) • Fasting glucose (TAC) • Drug levels Consider discontinuation or a kidney biopsy after 2-3 years to avoid/detect toxicity
Cyclophosphamide: IV pulses of 500 mg/1.73 m every 2 weeks for a maximum of six doses No more than two courses (max TCD 168 mg/kg)	CBC and urine culture every 14 days during therapy

CBC, complete blood count; LFT, liver function tests; CsA, cyclosporine; TAC, tacrolimus; eGFR, estimated glomerular filtration rate; K+, potassium; Mg, magnesium; CYC, cyclophosphamide

B. Use of other immunosuppressive drugs in children with IgAN

- The use of additional immunosuppressive drugs combined with glucocorticoids is suggested in selected cases.
- Combination treatment is recommended for rapidly progressive IgAN with acutely decreased eGFR, following the 2021 KDIGO Guideline for ANCA-associated vasculitis.

C. Additional supportive measures necessary for children with IgAN

- Vitamin D supplementation.
- Immunizations: live vaccines should not be administered in children receiving daily glucocorticoids and/or immunosuppressive medications.
- The use of fish oil and tonsillectomy is not recommended

4. Atypical forms of IgAN: definitions and treatment

- Children with nephrotic syndrome and MCD on biopsy with associated IgA deposition should be treated according to the IPNA Steroid Sensitive Nephrotic Syndrome (SSNS) Guideline
- **IgAN with RPGN**
  - A kidney biopsy should be performed in children presenting with signs of IgAN and rapidly progressive glomerulonephritis (RPGN), defined as an unexplained >50% decline in eGFR within ≤3 months
  - IgAN with RPGN should be defined as IgAN with >50% decline in eGFR over ≤3 months, accompanied by evidence of endocapillary proliferation (E1) and crescents in at least 25% of glomeruli (C2)

- IgAN with RPGN should be treated with intravenous glucocorticoids, with or without additional immunosuppressive therapies such as cyclophosphamide or mycophenolate mofetil

5. Remission and relapse

- Remission: Resolution of proteinuria, with a UPCR < 0.2 mg/mg (20 mg/mmol) or proteinuria < 100 mg/m² per day (Two urine samples collected at least one month apart), accompanied by a normal (≥90 mL/min/1.73 m²) or stable eGFR.
- Complete remission is additionally defined by the resolution of hematuria, indicated by a negative dipstick for blood and/or <5 RBC per high-power microscopic field.
- Relapse: Reappearance of PCR > 0.5 mg/mg (50 mg/mmol) or proteinuria > 0.5 g/day (> 0.25 g/m² per day) (Two urine samples collected 1–2 weeks apart) in patients who had previously achieved remission.
- Relapse is further supported by the presence of concomitant hematuria and/or a reduced eGFR (<90 mL/min/1.73 m²) or a declining eGFR, after ruling out other causes of kidney injury.
- Gray zone: proteinuria levels between 0.2 and 0.5 g/g (20–50 mg/mmol, 0.2–0.5 g/day, or 0.1–0.25 mg/m² per day) → reassess proteinuria 3-4x over 4-8 weeks
- Management of relapse:
  - Lifelong follow-up: urinalysis, blood pressure, periodic clinical evaluations
  - Optimal conservative treatment: moderate sodium intake (<3–5 g/day) and maximal RASB
  - Additional treatment options: therapies used during the initial treatment of IgAN

6. Treatment discontinuation in children with IgAN

- Immunosuppressive treatment discontinuation: full remission (UPCR < 0.2 g/g or 20 mg/mmol) for at least 12 months.
- Supportive therapy with RASB should be continued alongside lifelong monitoring, tailored to the severity of the condition and the patient's response to treatment.

7. Recurrence of IgAN post-kidney transplantation

Diagnosis

- The diagnosis of recurrent IgAN post-transplantation is recommended to require the demonstration of dominant or co-dominant glomerular IgA deposits in a kidney transplant biopsy.
- The diagnosis should be based on biopsy findings in a patient whose native kidney disease was IgAN.
- Findings from perioperative or post-implantation biopsies, which may reflect IgA from the donor kidney, should not be included in the diagnostic criteria.

Management

- Supportive care: Dietary counseling to reduce salt intake, regular aerobic exercise, achieving ideal body weight, and avoiding smoking or vaping.
- Maximal RASB for all children.
- Further treatment options for recurrent IgAN post-transplantation include all therapies used for IgAN in the native kidney.
- Glucocorticoid withdrawal is not recommended in children with recurrent IgAN post-transplantation.
- Enrollment in clinical trials, if proteinuria persists despite adherence to the immunosuppressive regimen and optimal conservative therapy

Clinical practice recommendations for IgA vasculitis nephritis (IgAVN)

1. **IgAVN in children: workup and diagnosis**

Diagnosis of IgAVN in children

- The diagnosis of IgAV is typically straightforward in children with suggestive clinical features, such as:
    - Palpable purpura in a typical distribution (mainly extensor surfaces of lower limbs).
    - Abdominal pain.
    - Arthritis/arthralgia.
    - Exclusion of alternative autoimmune vasculitides (e.g., ANCA-associated vasculitis, polyarteritis nodosa, lupus) and other causes (e.g., leukemia, autoimmune thrombocytopenia).

- Rarely, other organ systems like the central nervous system or respiratory tract may be affected.
- Two main classification criteria for IgAV:
    - American College of Rheumatology (ACR) criteria.
    - Ankara 2008 criteria, which are preferred for pediatric IgAV as they are validated for childhood-onset disease based on a large international patient registry.
- Palpable purpura, predominantly on the buttocks and lower limbs, is typical in IgAV. Skin biopsy with IgA staining can aid diagnosis in atypical cases, such as extensive lesions or when excluding alternative diagnoses (e.g., ANCA-associated vasculitis in older children). Typical lesions do not require biopsy. The absence of IgA staining does not exclude IgAV, and its presence does not confirm it. Biopsies should target fresh lesions and include sufficient dermal depth to detect IgA staining effectively.

Initial assessments

- Kidney involvement in children with IgAV should be assessed through:
    - Evaluation of peripheral edema
    - Measurement of blood pressure and plasma albumin
    - Calculation of eGFR.
    - Quantification of hematuria and proteinuria.

Indications for kidney biopsy in children with suspected IgAVN

- A kidney biopsy **is recommended:**
    - IgAV and nephrotic-range proteinuria (UPCR > 2 mg/mg or 200 mg/mmol).
    - IgAV and eGFR < 90 mL/min/1.73 m², regardless of proteinuria levels.
- A kidney biopsy **is suggested:**
    - IgAV and moderate proteinuria (UPCR 1–2 mg/mg or 100–200 mg/mmol) persisting for 2–4 weeks.
    - IgAV and mild proteinuria (UPCR 0.2–0.5 mg/mg or 20–50 mg/mmol) persisting for more than 4 weeks.

Follow-up and subsequent assessments

- Follow-up should occur at least monthly for the first 6 months, even if urinalysis remains normal.

- Patients with clinical nephritis should be closely monitored for at least 5 years, with extended follow-up for those with initially active disease, which may be conducted by primary care providers.
- For patients with kidney involvement, the suggested monitoring frequency is:
  - Monthly for the first 6 months.
  - Every 3 months for the subsequent 6 months.
  - Every 6 months thereafter for a minimum of 5 years

Indications for kidney biopsy in IgA vasculitis

Table 5 Indications for kidney biopsy in IgA vasculitis

Clinical or laboratory feature	Level of evidence
Absolute indications	
Severe proteinuria > 2 mg/mg or 200 mg/mmol	D
Persistent moderate proteinuria: 1–2 mg/mg or 100–200 mg/mmol for 2–4 weeks	D
Impaired eGFR: < 90 mL/min/1.73 m^2	D
Relative indications	
Persistent mild proteinuria: 1–2 mg/mg or 20–100 mg/mmol for 12 weeks	D
Hypertension	D

eGFR, estimated glomerular filtration rate

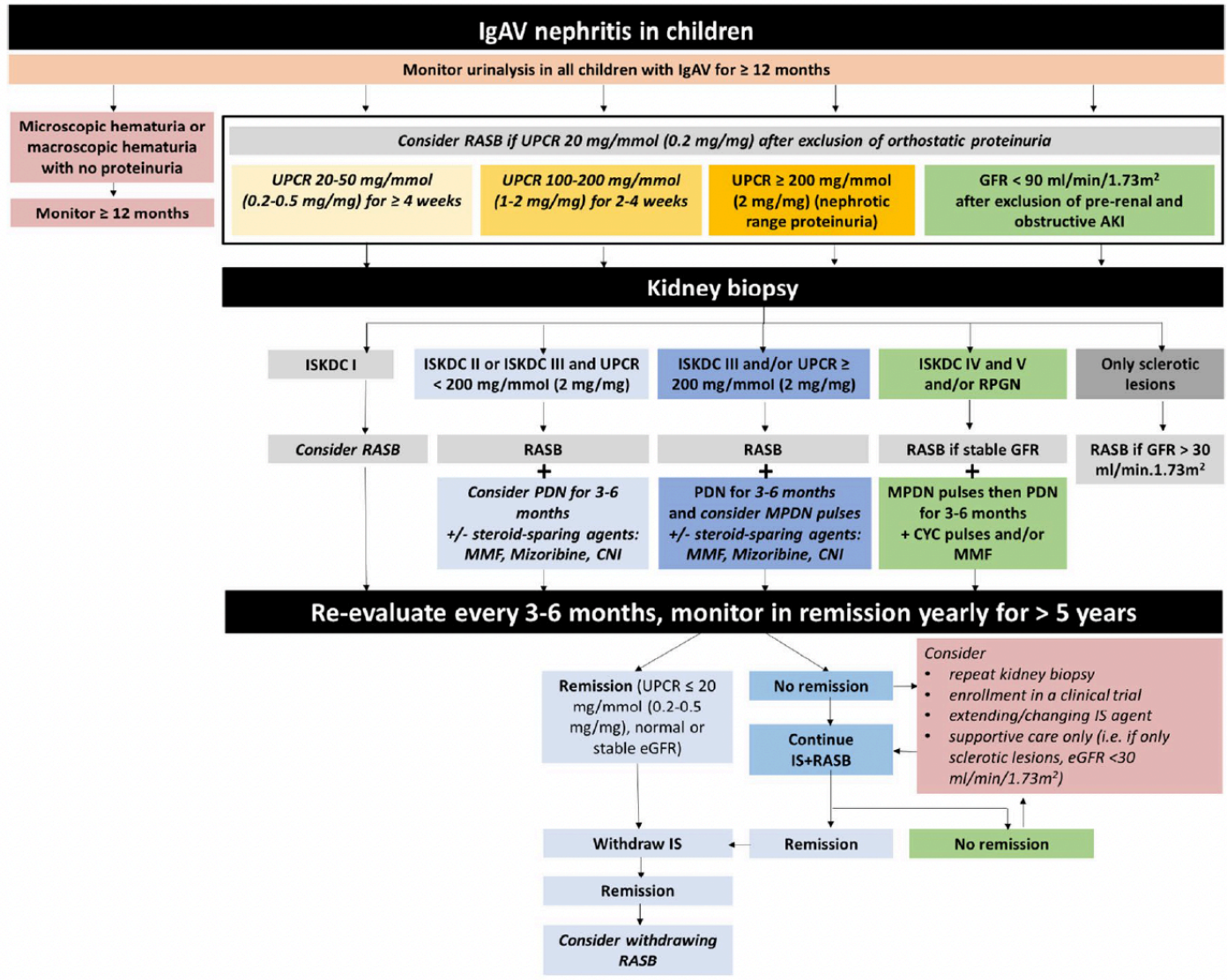
2. Prevention and management of IgAVN

Prevention of IgAVN

- The use of glucocorticoids → not recommended
- The use of heparin, dipyridamole, aspirin, or montelukast → not recommended

Treatment of IgAVN

- Monitoring for the development of proteinuria in children with IgAVN is suggested for at least 12 months.
- The treatment goal: ↓ proteinuria to UPCR < 0.2 mg/mg (20 mg/mmol).
- Follow-up should continue for at least 5 years to detect relapses.
- The use of glucocorticoids **is not recommended** in isolated microscopic or macroscopic hematuria without proteinuria (UPCR < 0.2 mg/mg or 20 mg/mmol).
- A 3–6-month course of glucocorticoids, either as intravenous pulses followed by tapering oral doses or as an oral course, is suggested for children with nephrotic-range proteinuria (UPCR > 2 mg/mg or 200 mg/mmol) or RPGN with histological risk for progression (ISKDC ≥ II).
- Other immunosuppressive agents, such as CNIs, cyclophosphamide, mizoribine (if available), or mycophenolate mofetil, are suggested in addition to glucocorticoids to reduce the glucocorticoid dose and/or when UPCR > 2 mg/mg (200 mg/mmol) or there is an insufficient response to glucocorticoids.
- The use of RASB (ACE inhibitors or ARBs) is suggested in children with IgAVN and proteinuria (UPCR ≥ 0.2 mg/mg or 20 mg/mmol).
- A repeat kidney biopsy is suggested for histological re-evaluation if proteinuria persists for more than 4 weeks.



Management algorithm for IgAVN

Antihypertensives

- BP target: < 90th percentile for age, sex, and height
- In children with CKD stage 2 or higher:
  - UPCR > 0.5 mg/mg (50 mg/mmol): A 24-hour mean arterial BP ≤ P50
  - No proteinuria: ambulatory 24-hour BP monitoring target ≤ P75
  - Antihypertensive medications from non-RASB classes should be added to maintain BP within normal levels when optimal control (BP < 90th percentile or < 50th

percentile for proteinuria > 0.5 mg/mg (50 mg/mmol)) is not achieved with maximum tolerated doses of RASB.

- Yearly life- long monitoring: blood pressure and urinalysis

3. Diagnosing and treating relapse in IgAVN, and treatment discontinuation

Definition of remission and relapse

- Remission: Resolution of proteinuria (UPCR < 0.2 mg/mg or 20 mg/mmol, or proteinuria < 100 mg/m² per day or < 0.2 g/day) based on at least two urine samples collected at least 1 month apart, with normal or stable eGFR (≥ 90 mL/min/1.73 m²).
- Complete remission: Resolution of hematuria, defined as a negative dipstick for blood and/or < 5 RBC/high-power microscopic field.
- Relapse: Recurrence of hematuria (gross hematuria or ≥ 1+ in dipstick or 5 RBC/high-power microscopic field), and/or proteinuria (UPCR ≥ 0.2 mg/mg or 20 mg/mmol) in at least two urine samples, and/or reduced kidney function (eGFR < 90 mL/min/1.73 m² or > 25% reduction from baseline) in a patient who had achieved complete remission for at least 1 month.

Repeat biopsy

- Cases of relapse in proteinuria ± an unexplained decline in eGFR, OR
- Proteinuria persists despite treatment

Evaluation of relapses

- Urine sediment, PCR on the first-morning void, and eGFR

Treatment of relapses

- Relapses of IgAVN in children should be treated following the recommendations for the initial episode
- The decision to treat relapses should consider the response to specific drugs during the initial episode and the toxicity associated with the treatment

Treatment discontinuation

- Immunosuppressive treatment should be used in children with IgAVN for at least 8–12 weeks.
- Immunosuppressive treatment should be discontinued in children with IgAVN after at least 4 weeks of remission of proteinuria (PCR < 0.2 mg/mg or 20 mg/mmol) and absence of gross hematuria, with normal eGFR (> 90 mL/min/1.73 m²)

Follow-up

- Children with IgAVN should be monitored for at least 5 years after the initial episode, with evaluations of urinalysis, eGFR, and blood pressure. Follow-up may be conducted by the primary care provider.
- Lifelong monitoring should be suggested for children who received therapy, individualized according to the severity and response to treatment.

Transition in children with IgAN and IgAVN

- Staff members in adult units should be trained to assist young people and their parents or caregivers with the transition to adult services.
- A transition plan should be developed for all young people with IgAN and IgAV, in collaboration with the multi-professional team and the young person.
- A named transition worker should be allocated for each young person.
- Support should be provided for a minimum of 6 months before and after the transfer.
- Support should include self-management to encourage young people to make health decisions and improve well-being, such as adhering to BP medications and RASB.
- Young adult-specific information should be provided in adult units.
- Counseling, career, financial, and benefits advice should be easily accessible.
- Access to a peer support network should be provided.

CONCLUSION

Despite these limitations, the study concludes that early administration of rituximab, in conjunction with Cyclosporine A and multi-agent therapy, may improve long-term outcomes for patients. However, further prospective research is necessary to validate these findings.

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Tab 2