

COVID-19 in Children with Kidney Disease on Immunosuppression

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Introduction

- It is clear that COVID-19 is significantly less severe in children, compared to adults
- There are emerging data suggesting that immunosuppression may not worsen the disease
- Many parents are anxious to know the additional risks to their children who have kidney disease and are on immunosuppressive medication
- Rapid international collaboration is the only way to quickly gain some research evidence

Methods

- ERKNet study in collaboration with IPNA and ESPN



- Survey hosted by ERKNet and sent out through ERKNet, ESPN and IPNA.
- Survey open from 15/03/2020 with multiple reminders.

Methods

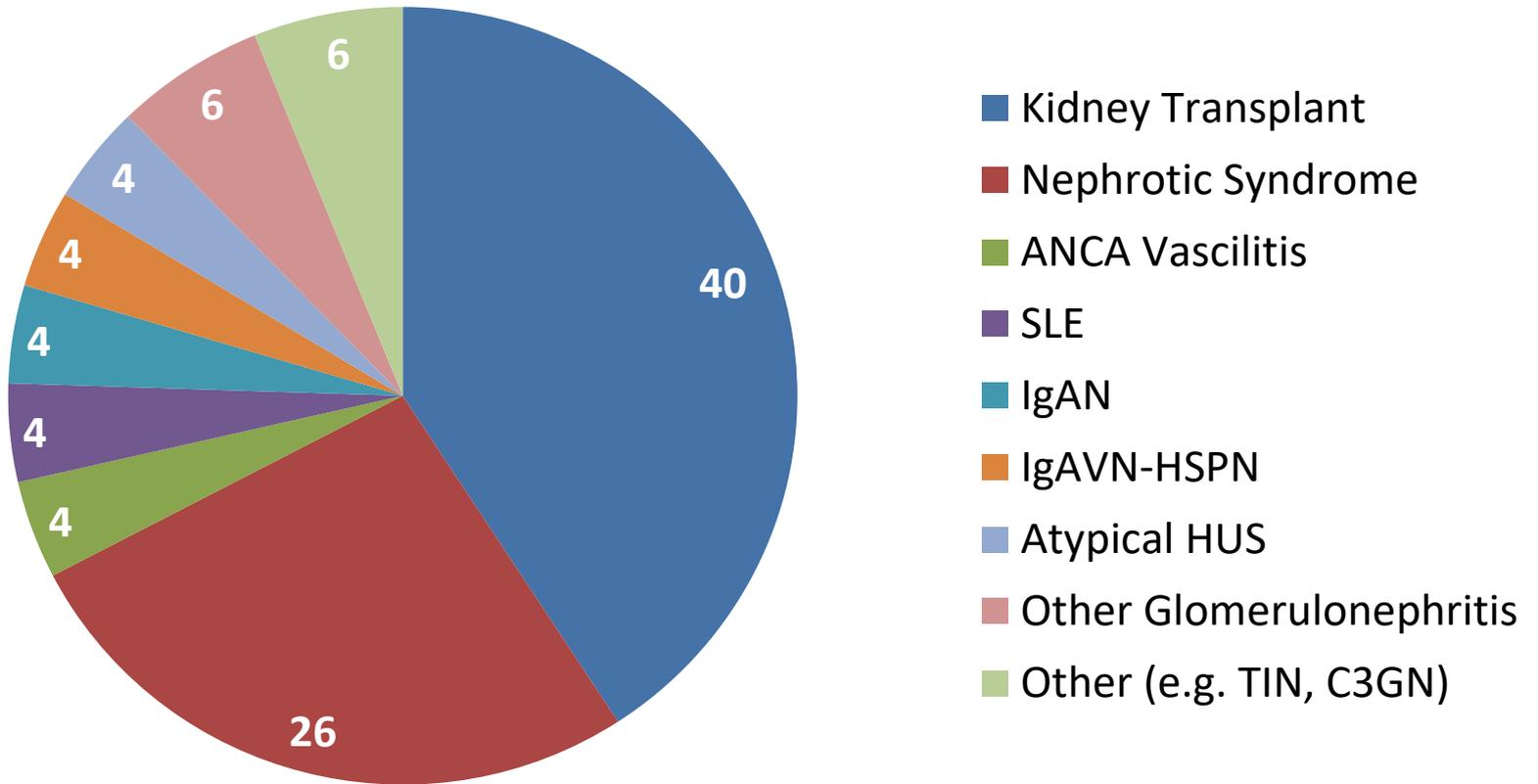
- Survey designed to be deliberately brief (10-15 minutes to complete per patient)
- Baseline demographic data collected
- Symptoms of COVID-19 at presentation
- Underlying kidney condition and immunosuppressive medication
- Laboratory data where available
- Need for respiratory support and clinical outcome



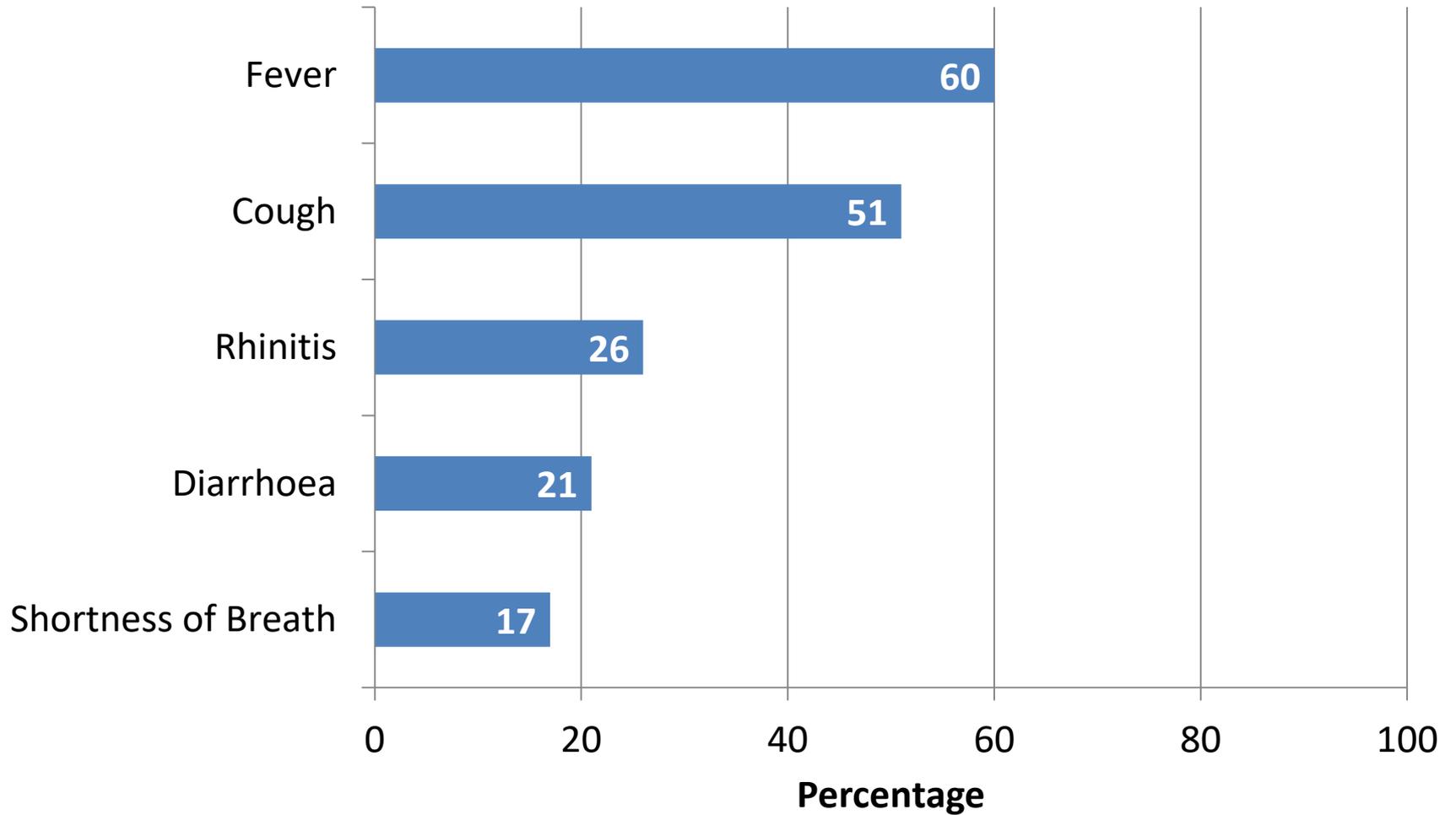
Current Results (as of 05/06/2020)

Total	47 children
Mean Current Age of patient (IQR)	11 years (8-16 years)
Sex	25 Male (53%) 22 Female (47%)
Median days since onset of illness at time of reporting (IQR)	6.5 days (3-14 days)
Children on dialysis	5 Haemodialysis (11%) 2 Peritoneal Dialysis (4%)

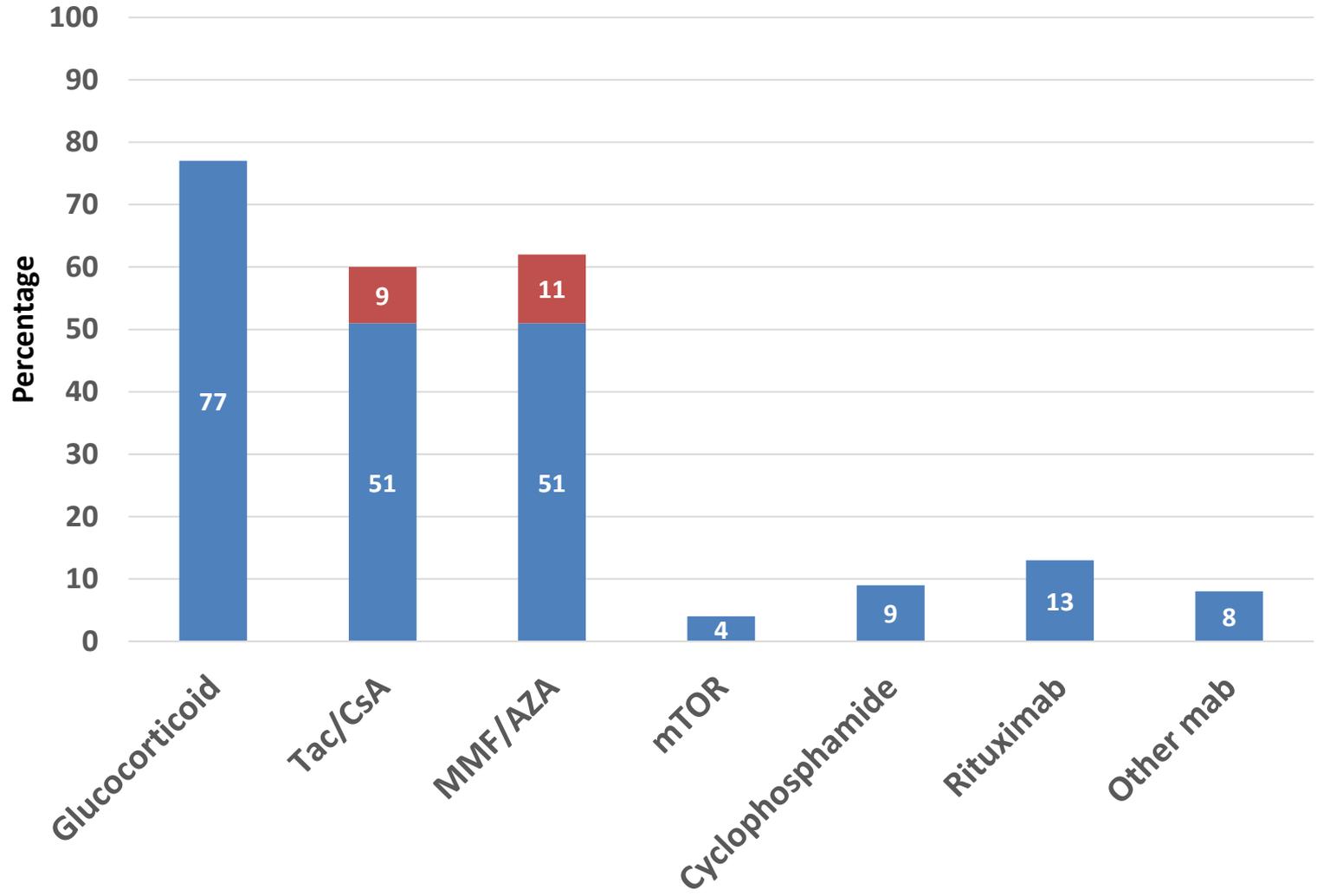
Kidney Disease or Reason for Immunosuppression (%)



Proportion of children with each symptom of COVID-19



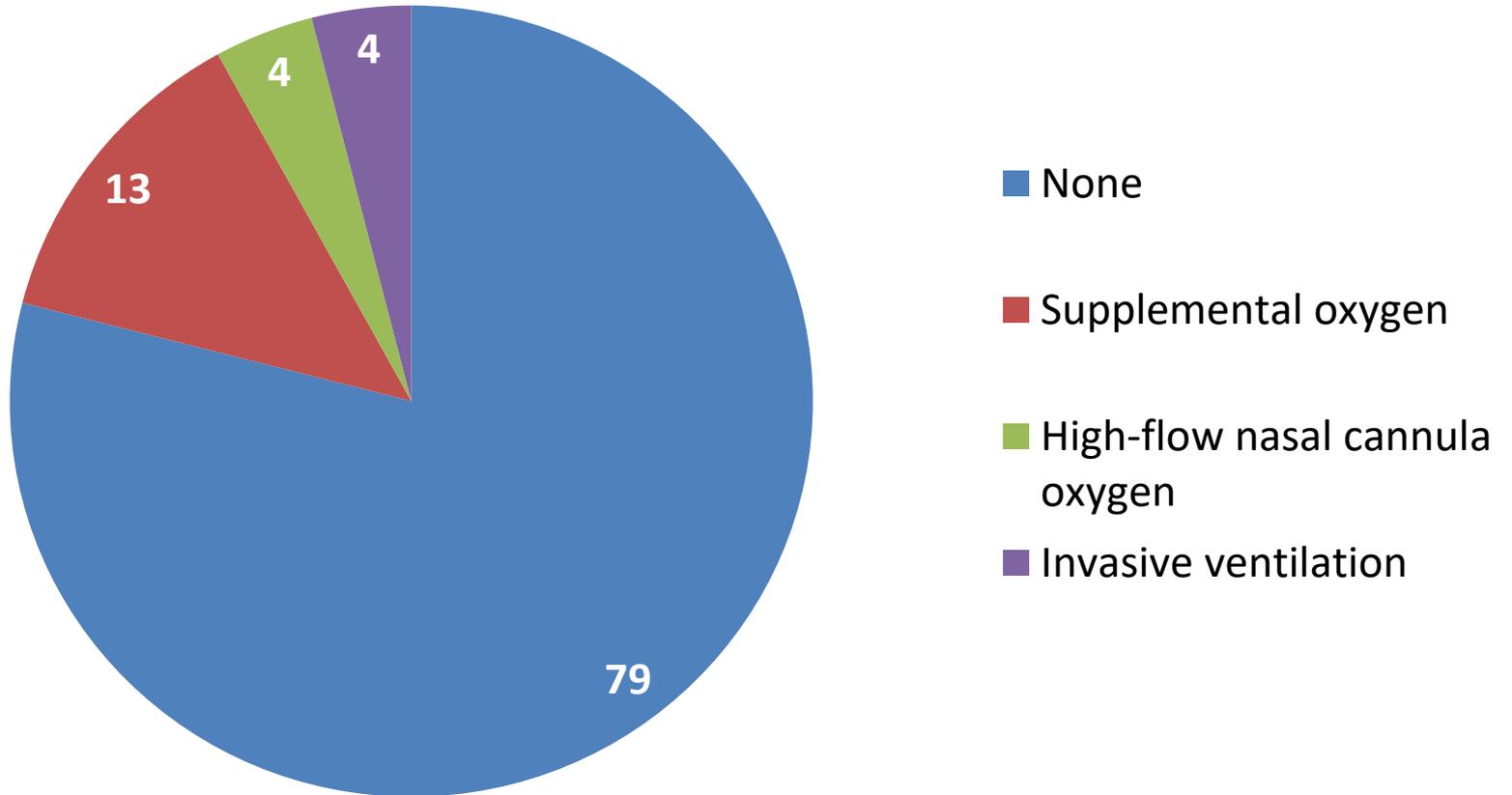
Immunosuppressive Medication



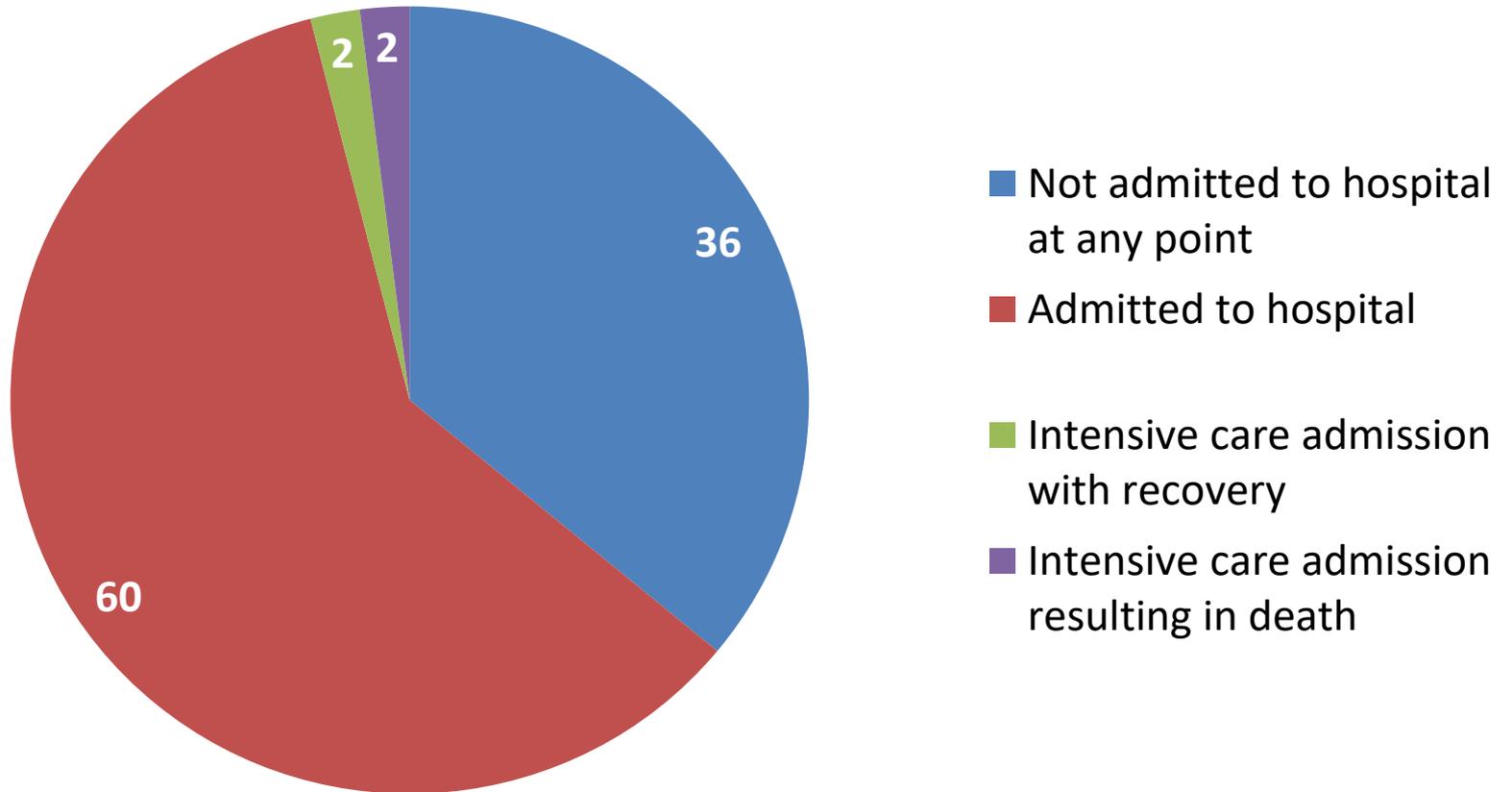
Serum Creatinine

Mean serum creatinine when last checked before COVID-19 illness	100 $\mu\text{mol/L}$ 1.13 mg/dL
Mean peak serum creatinine during COVID-19 illness	117 $\mu\text{mol/L}$ 1.32 mg/dL
Mean serum creatinine most recently during/after COVID-19 illness	88 $\mu\text{mol/L}$ 1 mg/dL

Maximum Respiratory Support (%)



Clinical Outcome (%)



Discussion

- How should we advise the families of children on immunosuppressant medication?
- Should immunosuppressant medication be adjusted if they are admitted with COVID-19?
- Is immunosuppression in itself a risk factor, or are other co-morbidities more relevant?

Discussion

44415 cases from Chinese Centre for Disease Control and Prevention	2135 paediatric cases from China	47 paediatric cases from ERKNet Study
2087 critical (5%)	13 critical (0.6%)	2 critical (4%)

- Comparison of proportion critically unwell with:
 - 2135 paediatric cases from China (Dong et al. *Pediatrics*, 2020;145(6):e20200702).
 - 44415 cases (adult and paediatric) from China (Wu et al. *JAMA*, 2020;323(13):1239-1242).

Discussion

- There is emerging literature on the indirect harms of COVID-19 on children:
 - Safeguarding concerns
 - Education
 - Psychological wellbeing
 - Delayed presentation to healthcare for other problems

Conclusions

- COVID-19 remains a mild illness in the majority of children who have kidney disease and are on immunosuppressive medication
- There are many greater risks to the health of children aside from COVID-19
- Further ongoing study is required to confirm these findings in larger cohorts

Thank you

- All colleagues who contributed cases to this study

