

New Zealand Paediatric Surveillance Unit

HAEMOLYTIC URAEMIC SYNDROME (HUS)

Study Objectives:

To study the epidemiology of infection related Haemolytic Uraemic Syndrome (HUS) in New Zealand children;

1. to determine the incidence of HUS, including diarrhoea-associated, pneumococcal sepsis-associated and other;
2. to determine the geographical location, age, sex and ethnicity of affected children;
3. to describe management features including fluid and surgical management.

CASE DEFINITION AND REPORTING INSTRUCTIONS

Please report any new patient seen in the last month, less than 16 years of age with infection related Haemolytic Uraemic Syndrome, defined as:

1. *Microangiopathic haemolytic anaemia (Hb < 10g/dl with microscopic evidence of fragmented red blood cells) and*
2. *Thrombocytopenia (Platelets < 150,000 x 10⁹) and*
3. *Acute kidney impairment (oliguria or anuria or serum urea and creatinine elevated)*

N.B. There may or may not be a history of preceding diarrhoeal illness or evidence of concurrent invasive pneumococcal infection. The degree of anaemia, thrombocytopenia and renal impairment may vary considerably (some children having minimal haematological disturbance in the presence of significant renal impairment) and they may not all be present simultaneously.

Additional Instructions (laboratory specimen)

- i. Diarrhoea-related HUS please send (request your laboratory forward to ESR) stool specimen or rectal swab as soon as possible after diagnosis of D+ HUS for identification of E coli and serotyping (Attention Shevaun Paine and Julianna Lees).*
- ii. Invasive pneumococcal disease is a notifiable condition – sterile site pneumococcal isolates will be sent and serotyped at ESR. However, if pneumococcal related HUS is clinically likely and a pneumococcal isolate from a site other than blood culture is available (for example mastoid surgical site or from chest drain) please request laboratory sends to ESR for serotyping (attention: Julie Morgan, Una Ren)*

Please report any new patients with definite or suspected Haemolytic Uraemic Syndrome who you have seen this month to NZPSU through our monthly reporting surveys or via email to nzpsu@otago.ac.nz.

Follow-up of positive returns:

A short questionnaire requesting demographic and clinical details will be forwarded to respondents reporting a case.

Background:

Haemolytic Uraemic Syndrome is defined as microangiopathic haemolytic anaemia (anaemia with microscopic evidence of fragmented red blood cells), thrombocytopenia and acute kidney impairment (oliguria or anuria, with elevated serum urea and creatinine). In previously healthy children HUS occurs most commonly following an infectious trigger and in those aged less than 5 years.

Distinct clinical subgroups have been identified. In the majority of infection related HUS there is a prodrome of diarrhoea (usually bloody), disease occurs in the summer and most patients make a good renal recovery. Other forms of infection related HUS have no diarrheal prodrome but evidence of other infectious trigger (eg invasive pneumococcal infection or less commonly influenza). Pneumococcal HUS can be more severe and has concurrent IPD complications such as pleural empyema, bacteraemic sepsis or meningitis.

The incidence of diarrhoea associated HUS is higher in Aotearoa New Zealand children compared to other developed countries, at 1.2 per 100,000 (1). Shigatoxin producing Enterohaemorrhagic E.coli (STEC also known as VTEC) is the most common cause of HUS associated with a diarrhoeal prodrome, and STEC serotype O157:H7 are the most frequently implicated. Shigella dysenteriae acquired from overseas travel can also produce the same diarrhoeal HUS syndrome. Aotearoa NZ also reports high rates of pneumococcal related HUS (2,3).

Investigators:

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THANK YOU FOR YOUR HELP AND SUPPORT

THE RESULTS OF THIS SURVEILLANCE WILL BE INCLUDED IN THE ANNUAL REPORT OF THE NZPSU WHICH WILL BE AVAILABLE ON THE NZPSU WEBSITE AND CAN BE REQUESTED DIRECTLY FROM NZPSU

References

1. Wong W, Prestidge C, Dickens A, Ronaldson J. Diarrhoea-associated haemolytic uraemic syndrome and Shiga toxin-producing Escherichia coli infections in New Zealand children: Clinical features and short-term complications from a 23-year cohort study. J Paediatr Child Health 2023
2. Prestidge C, Wong W. Ten years of pneumococcal-associated haemolytic uraemic syndrome in New Zealand children. J Paediatr Child Health.2009 Dec
3. Humphrey A, Prestidge C, Dickens A, Wong W, Sinclair O, Anglemyer A, Best E. Dramatic increase in pneumococcal haemolytic uraemic syndrome in New Zealand. Published abstract at World Society for Pediatric Infectious diseases, Durban, South Africa Nov 2023. <https://wspid2023.com/wp-content/uploads/sites/16/2023/11/WSPID23-Abstract-book.pdf>