complication group, largely as a result of increased expenses related to immunosuppressant therapy, hospitalizations and specialty consultations. Within the gastrointestinal complication group, MMF dose adjustment incurred an additional $1,871 cost.

MMF-related gastrointestinal complications are common, serious and expensive. The authors of this study aim to enhance physicians' awareness of the problem in the hope that they will make concerted efforts to optimize the efficacy and safety of MMF immunosuppression.

Rachael Williams

Original article Tierce JC *et al.* (2005) Impact of mycophenolate mofetil (MMF)-related gastrointestinal complications and MMF dose alterations on transplant outcomes and healthcare costs in renal transplant recipients. *Clin Transplant* **19:** 779–784

Growth hormone underutilized in pediatric hemodialysis population

Short stature is common among pediatric hemodialysis patients, and is an indicator of poor outcome. A retrospective analysis of data from the US Centers for Medicare & Medicaid Services End-stage Renal Disease Clinical Performance Measures Project has confirmed that many children with renal failure are not prescribed recombinant human growth hormone (rhGH), despite its potential benefits. The study also identifies worrying racial and weight-related disparities in rhGH use.

Of the 651 children (age 0–17 years) included in the study, 41% were of short stature (STANDARDIZED HEIGHT SCORE <–1.88). Patients with end-stage renal disease of congenital or urologic origin, and those who had been on dialysis for longer, were more likely to be of short stature. Only 80 of the 214 short stature patients for whom data on rhGH were available had received the hormone. Growth hormone use was positively associated with white race (ODDS RATIO [OR] 2.1, 95% CI 1.1–4.0; $P<0.05$), duration of dialysis (OR 1.13 per extra year of dialysis, 95% CI 1.05–1.22; $P<0.01$) and BMI below 16.5 kg/m^2 (OR 3.1, 95% CI 1.2–8.4; $P<0.05$), but was independent of height and age.

Risk of rhGH-related adverse effects, such as increased parathyroid hormone levels, might discourage physicians from prescribing the treatment. Nevertheless, Gorman *et al*. note that other factors act as unnecessary barriers to rhGH use. As increased BMI can reflect gain of weight rather than height, such a change should not preclude rhGH prescription. In addition, efforts should be made to identify the causes of, and thereby dispel, racial disparities in rhGH use.

Rachael Williams

Original article Gorman G *et al.* (2005) Short stature and growth hormone use in pediatric hemodialysis patients. *Pediatr Nephrol* **20:** 1794–1800

Esomeprazole for cysteamine-induced gastrointestinal symptoms in children with cystinosis

The sulfhydryl agent cysteamine (also known as mercaptamine) is the only available treatment for CYSTINOSIS, but is often associated with compliance-compromising overproduction of gastric acid. Results of a small prospective investigation indicate that esomeprazole—a proton-pump inhibitor—slows gastric acid secretion and improves gastrointestinal symptoms in pediatric patients.

The gastric contents of 12 children (average age 5.8 years) with cystinosis plus cysteamine-associated gastrointestinal complications were aspirated to determine basal, maximum and peak ACID OUTPUTS. Mean maximum and peak acid outputs after cysteamine ingestion were substantially higher than mean pre-cysteamine basal acid output, confirming the link between cysteamine and gastric acid hypersecretion.

Mean basal, maximum and peak acid outputs fell by more than 50% after 16 weeks of esomeprazole therapy (mean dose 1.7 mg/kg/day; $P=0.014$, $P<0.027$ and $P<0.027$, respectively). Gastrointestinal symptoms, particularly those that might be acid-induced, such as pain and vomiting, also improved during this period. Mild adverse effects of esomeprazole were reported in one patient only. Importantly, esomeprazole did not significantly alter plasma levels of cysteamine.

Seven of eight children who had previously been treated with other proton-pump inhibitors—including esomeprazole's ENANTIOMER omeprazole—chose to remain on the study drug. Larger controlled trials are needed to confirm the superiority of esomeprazole for the relief of adverse gastrointestinal effects associated with cysteamine.

Rachael Williams

Original article Dohil R *et al.* (2005) Esomeprazole therapy for gastric acid hypersecretion in children with cystinosis. *Pediatr Nephrol* **20:** 1786–1793

GLOSSARY

STANDARDIZED HEIGHT SCORE
Parameters from NHANES III (2000), including age-specific and gender-specific average and standard deviation, are used to calculate this score; scores <–1.88 indicate short stature

ODDS RATIO (OR)
Ratio of odds of an event in intervention group to odds in control group; when <1 for an undesirable outcome, the intervention reduced the risk

CYSTINOSIS
An autosomal recessive condition characterized by systemic intralysosomal deposition, and urinary excretion, of the amino acid cystine

ACID OUTPUTS
Estimated from aspirated gastric contents collected over 60 min in four 15-min periods before (basal acid output) and after (maximum acid output) administration of cysteamine; peak acid output is estimated from the two highest values in consecutive 15-min periods in the 2-h period after cysteamine administration

ENANTIOMER
A pair of chiral isomers (stereoisomers) that are direct, non-superimposable mirror images of each other