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P353 -Remote urine dipstick analysis for faster treatment of urinary tract infections using smartphone technology

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Urinary tract infections are the most common infection affecting patients with a kidney transplant. Prompt treatment is essential to prevent complications such as sepsis and acute kidney injury. The kidney transplant team care for almost 700 patients spread across a wide geographical area. Swift identification and treatment of urinary tract infections is challenging; patients are directed to their general practitioner with wide variations in investigations performed, time to treatment and antibiotic type and course length. Our project aims to examine whether use of the home-based urinalysis test 'Dip.io' is able to identify patients with a urinary tract infection and therefore enable quicker treatment with an appropriate course of antibiotics.

22 patients with a renal transplant who had 2 or more urine infections per year and access to a smartphone were invited to take part in the pilot improvement project. Patients will use the Dip.io kit when they notice symptoms of a typical urine infection. The app guides the patient through the dip test and analysis using the smartphone's camera. The results are automatically sent to the transplant team for clinical interpretation. Following a telephone discussion with the transplant team, patients with positive urinalysis are advised to bring a mid-stream urine (MSU) to the hospital or their general practitioner and commence antibiotics. Patients with negative dipsticks are reassured and asked to repeat the sample if remain symptomatic in 48 hours. Patients deemed to be significantly unwell are advised to seek medical review.

To date the dip.io kit has been used 9 times for symptoms suggestive of UTI and 4 times following treatment of infection. On the 9 occasions tested for possible infection the urinalysis was suggestive of infection on 6 occasions and patients commenced antibiotic treatment within a few hours of undertaking the urine dipstick. Of the remaining 3 samples, one patient was reassured and a decision was made to treat as infection in the 2 other cases. 5 of the 6 positive urinalysis results were confirmed infection on MSU and one of the 6 was equivocal. Unfortunately an MSU was not available on the 2 patients with negative urinalysis who commenced treatment. Further results are expected over the coming months.

We have shown that home-based urinalysis testing using Dip.io app and kit can detect urinary tract infections in the kidney transplant population and enable quicker detection and treatment. Further study is required to establish whether this technology will reduce the incidence of acute kidney injury and hospital admission in this high-risk population.