



RACP Foundation Research Awards

FINAL REPORT

Project / Program Title		The Quick-Wee Randomised Controlled Trial
Name		Dr Jonathan Kaufman
Award Received		2016 Basser Research Entry Scholarship
Report Date		21 January 2017
Chief Investigator / Supervisor		A/Prof Franz Babl
Administering Institution		Murdoch Children's Research Institute
Funding Period	Start Date:	1 February 2016
	Finish Date:	31 January 2017

PROJECT SUMMARY

Thank you to the RACP Foundation for the support of the Basser Research Entry Scholarship, supporting the Quick-Wee RCT at the Royal Children's Hospital, Melbourne. This trial investigates a novel method, Quick-Wee, to improve urine sample collection from young children.

Urinary Tract Infections (UTI) are a common infection in young children, and if untreated can lead to serious complications. Collecting a urine sample to investigate a suspected UTI is frequently required for young children, but is often a difficult procedure. Non-invasive methods of urine sample collection (such as using an adhesive urine bag, or trying to catch a sample when the child voids spontaneously) are gentle, but can be unsuccessful. It is difficult to prevent samples collected this way becoming contaminated by incidental skin bacteria, which is highly undesirable and corrupts the test result. Invasive methods of urine sample collection (such as a catheter or needle sample) can be more reliable, but require equipment and expertise to perform, and cause pain and distress to the child. Outside of hospital centres, clinicians may lack the resources or training required to perform invasive methods when non-invasive methods have been unsuccessful.

Quick-Wee, a novel voiding stimulation method for non-invasive urine collection, is based on the physiology and clinical observations of newborn voiding reflexes. The method involves gentle cutaneous stimulation to trigger voiding, to facilitate catching a urine sample without long delays or the need for invasive catheter or needle samples. The simple technique involves gently rubbing the skin of the lower abdomen using wet gauze, which is well tolerated by most children.

Results of the trial are highly favourable, demonstrating that infants are 2.6 times more likely to void within 5 minutes using the QuickWee method compared to standard Clean Catch Urine practice (31 % vs 12%), with associated higher parental and clinician satisfaction with the method. This simple, pragmatic method of stimulating voiding for urine collection is easy to perform for clinicians, gentle for children, and practical to use in busy clinical environments and in resource limited settings.

PROJECT AIMS / OBJECTIVES

Urinary tract infection (UTI) is a common and important early childhood febrile illness. A urine sample is required to exclude or diagnose UTI, but collecting urine from young pre-continent children can be challenging. Limitations exist with current collection methods, guidelines vary, and clinicians have different preferences.

Invasive collection methods (catheter or suprapubic needle aspirate) are recommended by American guidelines for definitive UTI diagnosis, but cause pain and distress to the child. Noninvasive methods (urine collection bags, pads or clean catch collection) are recommended by UK guidelines, but can be time consuming or unsuccessful. Improved non-invasive collection methods have been identified as a research priority.

Voiding stimulation techniques remain under-investigated as a means to expedite non-invasive urine collection. This trial assesses the effectiveness of a novel method using cold fluid suprapubic stimulation to trigger cutaneous voiding reflexes, to hasten Clean Catch Urine (CCU) collection in infants.

SIGNIFICANCE AND OUTCOMES

Recruitment for the trial has been completed. 344 patients were included in the analysis, 50% were male, mean age 5.4 months.

31 % (54/174) voided within 5 minutes in the Quick-Wee group, 11.8% (20/170) in the standard CCU group, difference in proportions 19.2% (95%CI for difference 10.9% - 27.7%).

The risk ratio for voiding within 5 minutes with Quick-Wee compared to standard CCU was 2.6.

Compared to standard CCU, Quick-Wee also had higher rates of successfully catching urine, higher parental and clinician satisfaction, and lower contamination.

In conclusion the Quick-Wee method of cold fluid suprapubic stimulation is effective in triggering voiding in infants, and significantly improves the 5-minute success rate of non-invasive CCU collection in the paediatric emergency department.

The Quick-Wee method of voiding stimulation for urine collection is simple and pragmatic and is easy to perform for clinicians, gentle for children, and practical to use in busy clinical environments and in resource limited settings.

PUBLICATIONS / PRESENTATIONS

Kaufman J, Tosif S, Fitzpatrick P, Hopper S, Donath S, Bryant P, Babl F. QuickWee: a novel non-invasive urine collection method. *Emergency Medicine Journal* 2016 doi: 10.1136/emered-2016-206000

Kaufman J, Fitzpatrick P, Tosif S, Hopper S, Donath S, Bryant P, Babl F. The QuickWee Trial: protocol for a randomised controlled trial of gentle suprapubic cutaneous stimulation to hasten non-invasive urine collection from infants. *BMJ Open* 2016;6(8) doi: 10.1136/bmjopen-2016-011357

Kaufman J, Fitzpatrick P, Tosif S, Hopper S, Bryant P, Babl F. The Quick-Wee RCT: A Novel Stimulation Method For Quick Clean Catch Urine Collection in Infants. Oral Presentation. Australasian College For Emergency Medicine, Queenstown, New Zealand 2016

Kaufman J, Fitzpatrick P, Tosif S, Hopper S, Bryant P, Babl F. The Quick-Wee RCT: A Novel Stimulation Method For Quick Clean Catch Urine Collection in Infants. Oral Presentation. Congress of the European Academy of Paediatric Societies, Geneva, Switzerland 2016

PREDICT Prize in Paediatric Emergency Medicine: Paediatric Research in Emergency Medicine Departments International Collaborative - PREDICT Network (2016)

Best Trainee Paper Prize: Australasian College of Emergency Medicine Annual Scientific Meeting (2016)

Best Oral Presentation Award (1st year doctorate student): Australian Society for Medical Research, Victorian Student Symposium (2016)

1st Year PhD/Honours 2nd Prize: Student Symposium, Murdoch Childrens Research Institute (2016)