

MIDSTREAM URINE IN OBSTETRICS: IMPROVING DIAGNOSTIC ACCURACY

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Introduction

Urinary tract infection (UTI) can affect up to approximately one fifth of women at some point in their life¹. The incidence is even higher in obstetrics, affecting 8% of pregnant women at any one time². It is important to identify as they may progress to pyelonephritis and subsequently increase the risk of preterm birth³. In order to maximize identification of asymptomatic bacteriuria (incidence 2-5%), all pregnant women should have a MSU sent at their booking visit⁴.

Diagnosis should be made on a clean catch midstream urine (MSU) to culture organisms. The conventional method for obtaining MSUs can be difficult to perform and more often than not, patients are not instructed properly, thus increasing the risk of sample contamination.

Royal Surrey County Hospital (RSCH) has **3200** deliveries per year. On average **340/month** obstetric MSUs are sent. Excluding booking samples, **888/year** MSUs are sent at a cost of **£7.62** each.

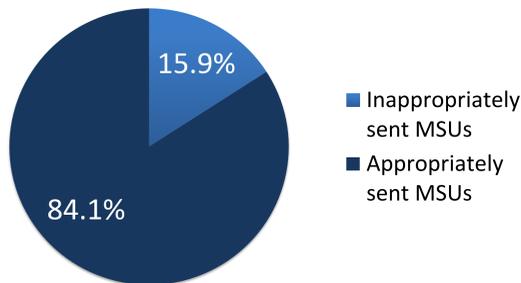
Methods

- A retrospective audit was performed.
 - Inclusion criteria: pregnancies booked prior 12 weeks gestation and continued their care culminating in delivery at RSCH.
 - 100 most recent deliveries from 08/09/17.
 - Variables examined: MSUs sent in total, positive MSUs, antibiotics administered to protocol, contamination rate.
- A service evaluation study was performed testing a novel MSU collection device (Peezy PE50).
 - Setting
 - Antenatal clinic
 - St Catherine's ward (antenatal ward)
 - Inclusion criteria
 - Attending antenatal ward or clinic
 - Adult females currently pregnant
 - All gestations
 - Those that test positive for nitrites and/or leucocytes on urine dipstick.
 - Exclusion criteria: those with indwelling catheters
 - Sampling method
 - All patients were given a leaflet and Peezy PE50 device pack.
 - Sample size 40.

Results

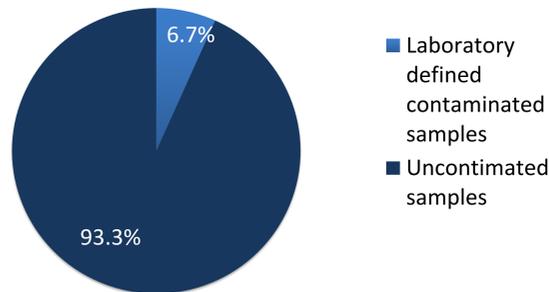
Audit results

- 1140 urine dips averaging **11.4 urine dips per pregnancy**.
- 227** MSUs sent (95 booking MSUs)



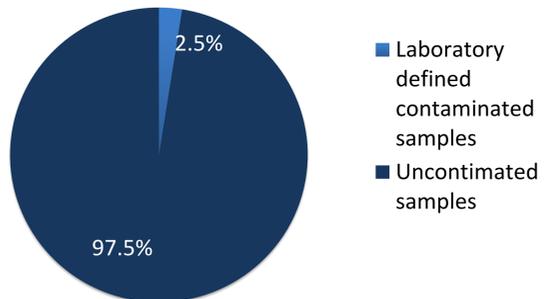
- = **£5120 per year** spent on unnecessary MSUs.

- 5%** positive culture rate.
 - = **95.5%** false positive rate and **treated unnecessarily**.
 - = **£25,847/year** spent on contaminated dipstick samples.



- = **£2088/year** spent on laboratory defined contaminated samples.

Study results

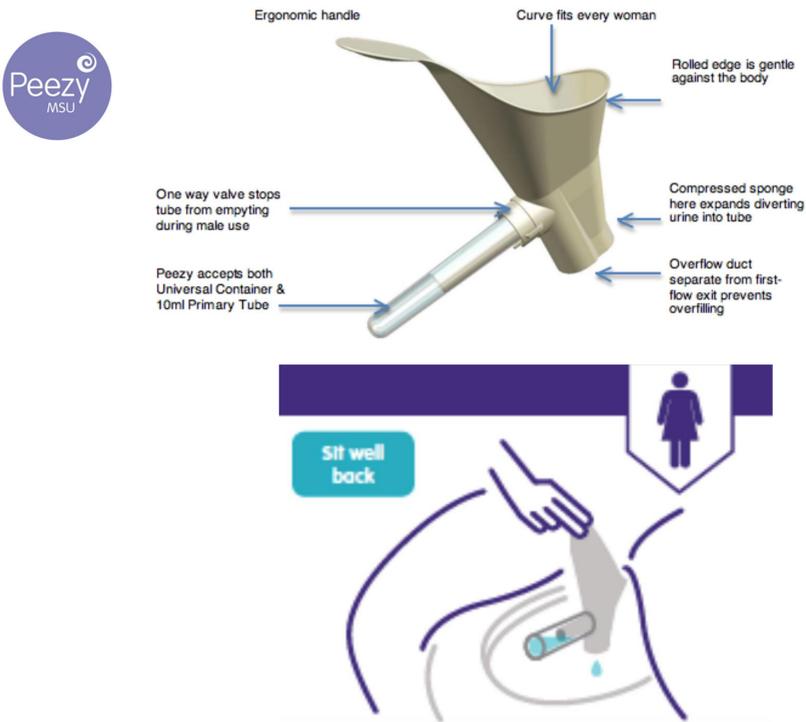


- A reduction in laboratory contamination to **2.5%**
- 70%** found the PE50 user friendly.

Conclusion

- Reduction in laboratory defined contamination rate using the Peezy PE50 device has been shown.
- There is scope for using Peezy to reduce false positive dip tests in initial urine collection but further studies need to be conducted.
- There is potential for further use of Peezy in collecting all future obstetric MSUs as it improves diagnostic accuracy and is cost-effective.

The Peezy PE50 device ejects the first 10ml of urine produced, capturing a true midstream urine sample. This device costs £0.87 as per NHS Chain Supply.



1. Nicolle L (2008) *Uncomplicated urinary tract infection in adults including uncomplicated pyelonephritis*. Urologic Clinics of North America 35 (1): 1-12.
 2. Patterson T et al (1987). *Bacteriuria in Pregnancy*. Infectious Disease Clinics of North America 1: 807-22.
 3. Fiander A et al (2010). *Your Essential Revision GuideL MRCOG Part One* (ver 1). RCOG Press.
 4. Lorie et al (2002) *Genitourinary Infections and Their Association with Preterm Labour*. American Family Physician 15;65(2):241-9.