COLLECTING URINE SAMPLES IN YOUNG CHILDREN AND INFANTS

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INTRODUCTION

Having cared for sick children over the last 10 years, I have spent many hours and possibly days standing over the urinalysis machine waiting for the stick to be spat out and the result to appear. This bears no relation to the amount of time (hours, days, weeks!) spent waiting for the little ones to actually produce the few much-needed drops of urine.

The indications for testing urine are clear: to aid diagnosis and to assist in monitoring disease. The practicalities of collecting samples in non-toilet-trained children are not so straightforward. It has been suggested that it is particularly difficult to obtain urine samples in the community with Liaw *et al*⁽¹⁾ pointing out that parents often find collecting urine samples at home difficult and van der Voort *et al*⁽²⁾ indicating that general practitioners (GPs) do not investigate urinary tract infection (UTI) in febrile infants due to practical difficulties in obtaining samples.

Obtaining a quality sample is of paramount importance for two reasons. A child with a UTI who is not treated or only partially treated may be subject to renal scarring and future problems. A child without a UTI who is treated as such will be subject to numerous unnecessary and expensive routine investigations. In view of this it is worth persevering and ensuring a quality sample is obtained.

WHO TO TEST?

In hospital our guidelines suggest that the following children should be screened for UTI:

- infants under 18 months with unexplained fever over 38.5°C
- unexplained vomiting/abdominal pain
- frequency of micturition, dysuria, enuresis
- failure to thrive
- prolonged jaundice in the newborn
- non-specific illness
- suspected sexual abuse
- haematuria.

METHODS OF COLLECTING URINE

Clean catch

Used for babies and children who are not toilet-trained. The child is bathed or washed and then held over a paper multicup or sterile bowl until he passes urine that is caught, then transferred to a sterile universal container. This is viewed as

the choice method in non-toilet-trained children. With babies this method can be particularly successful when tried during or immediately after feeding. Anecdotal evidence also suggests that it is worthwhile having a container to hand when undressing any infant. On a changing mat or examination couch, many a sample has been caught in mid-air, particularly with boys! The clean catch method can be difficult, particularly with lively toddlers who don't want to sit still and tend to place their 'clean' bottoms directly onto the floor in an attempt to escape!

Urine pad

This method was developed following studies which looked at retrieving urine from disposable nappies. It proved difficult to retrieve the urine due to modern super-absorbent nappies, but did, however, lead to the development of specialised urine collection pads. A good pad sample can be sent to the lab for microscopy when a clean catch is unobtainable. Indeed, a nurse unsure of the protocol who rang the lab for confirmation of this was met with the response "Believe it or not we can actually tell the difference between an organism and a piece of pad when viewed under a microscope!"

Pads have been shown to have a lower contamination rate than the urine bags previously used for collecting samples in children⁽³⁾ and in one study in a district general hospital it was found that there were no significant differences between clean catch and pad samples⁽⁴⁾.

Following bathing, a urine pad similar to a sanitary towel is placed in the child's nappy and secured with an adhesive strip. The pad is checked regularly for signs of urination (every 10 minutes). If urination has not occurred within one hour the pad is discarded and the process repeated. Once the child has urinated the pad is removed and a few mls of urine are aspirated with a sterile 5ml syringe and decanted into a universal container. This method can also be used for collecting large amounts of urine. The pads are cheap and are supplied from NHS stores in a sterile packet, which contains two pads, a syringe and a universal container.

Clean potty

This method is not supported by any of the paediatricians I know!

The parent's perspective: A study of parental preference found that parents preferred urine collection by pads, finding them comfortable and easy to use⁽¹⁾. Bags were difficult to use, leaked and left the children sore. Parents supported clean-catch

methods only in cases when their infant voided immediately. Otherwise they complained that this method was time-consuming and in many cases they abandoned the collection. Indeed, clean catches can be time-consuming and messy. However, careful preparation and a full explanation of the importance of achieving a good sample usually convince parents of the benefits of persevering.

TRANSFER OF SAMPLES

Parents should be advised to take samples of urine to their GP or hospital lab as soon as possible, and reminded to store samples in their refrigerator if there is to be any delay.

CONCLUSION

- collecting a good urine sample from a child can be difficult but is highly important
- when collecting samples from young children in the community it is crucial to secure the parents' compliance and commitment
- good hygiene is paramount to securing a good quality sample. Parents and carers must be taught to wash or bath the child prior to collecting the sample as well as washing their own hands prior to collecting or transferring the urine
- samples should be sent to the lab for culture as soon as possible.

REFERENCES

- 1 Liaw L, Nayar DM, Pedler SJ, Coulthard MG. Home collection of urine for culture from infants by three methods: survey of parents' preferences and bacterial contamination rates. *Br Med J* 2000;320(7245):1312-13
- 2 van der Voort J, Edwards A, Roberts R, Verrier Jones K. The struggle to diagnose UTI in children under two in primary care. *Fam Pract* 1997;14(1):44-48
- 3 Feasey S. Are Newcastle urine collection pads suitable as a means of collecting urine from infants? *Paediatr Nurs* 1999;11(9):17-21
- 4 Lewis J. Clean-catch versus urine collection pads: a prospective trial. *Paediatr Nurs* 1998;10(1):15-16

Order details for Newcastle urine collection pads (2 pads, 1 syringe, 1 universal container): Code FSW 106, cost 55p per pack or 52p per pack if a box of 40 is ordered.

Illustrations courtesy of Staff Nurse Andrea Callen, Paediatric Department, RLI.

CIRCUMCISION

This letter was sent to a local doctor in 1950 by the late Sir James Spence of Newcastle upon Tyne

My dear C.,

Your patient C. D., aetat 7 months, has the prepuce with which he was born. You ask me, with a note of persuasion in your question, if it should be excised. Am I to make this decision on scientific grounds, or am I to acquiesce in a ritual which took its origin at the behest of that arch-sanitarian Moses?

If you can show good reason why a ritual designed to ease the penalties of concupiscence amidst the sand and flies of the Syrian deserts should be continued in this England of clean bed-linen and lesser opportunity, I shall listen to your argument; but if you base your argument on anatomical faults, then I must refute it. The anatomists have never studied the form and evolution of the preputial orifice. They

do not understand that Nature does not intend it to be stretched and retracted in the Temples of the Welfare Centres or ritually removed in the precincts of the operating theatres. Retract the prepuce and you see a pinpoint opening, but draw it forward and you see a channel wide enough for all the purposes for which the infant needs the organ at that early age. What looks like a pinpoint opening at 7 months will become a wide channel of communication at 17 years.

Nature is a possessive mistress, and whatever mistakes she makes about the structure of the less essential organs such as the brain and stomach, in which she is not much interested, you can be sure that she knows best about genital organs.

*Sir James Spence
1950*