

# Evidence review

## CleanCatch<sup>®</sup> Midstream urine collection device

CEP 07004

January 2008



Verdict

-  RECOMMENDED
-  SIGNIFICANT POTENTIAL
-  EVIDENCE INCONCLUSIVE
-  NOT RECOMMENDED

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Summary .....	3
Introduction.....	6
Methods.....	8
Evidence review .....	9
Economic analysis.....	12
Conclusions.....	16
References .....	17
Appendix 1: Biodegradable product line.....	19
Appendix 2: Collection and analysis pathways .....	20
Author and report information.....	21

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## The product

CleanCatch<sup>®</sup> Midstream manufactured and supplied by JBOL Ltd, Oxford, UK. The product was previously known as Whiz Midstream urine collection device.

## Field of use

A midstream urine (MSU) sample is required for routine diagnosis of urinary tract infection. However, urine samples are prone to contamination with bacterial flora from the patient. Attempts to minimise such contamination have focussed on discarding the initial flow of urine and then collecting the “mid-stream urine” without interrupting the flow. This can be difficult to achieve without spillage of urine onto the patient’s hands and the external surface of the collection container.

The CleanCatch<sup>®</sup> Midstream device has been designed to collect MSU specimens hygienically, minimising issues of patient compliance by standardising the sample collection process. The manufacturer claims that the device reduces the incidence of specimen contamination and the associated costs of retesting. The device is intended for use by females and males although clinical trials have been on females only.

## National guidance

The National Standard Method for the Investigation of Urine (BSOP41) [9] outlines best practice in the collection, storage, and transport of MSU samples for microbiological testing. It recommends that urine specimens are collected into sterile leakproof containers.

NICE Clinical Guideline 6 (CG6) states that “pregnant women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy. Identification and treatment of asymptomatic bacteriuria reduces the risk of preterm birth” [10]

## Evidence reviewed

We reviewed one peer-reviewed paper and two poster presentations.

An economic analysis was undertaken, based on the existing clinical evidence, to evaluate the economic outcome from using the CleanCatch<sup>®</sup> Midstream compared with conventional methods of collecting midstream urine samples.

## CEP's verdict – **Significant potential**

The available evidence indicated that the device can significantly reduce contamination rates in MSU samples from asymptomatic females. Results on a small number of elderly patients indicated that the device may also reduce contamination rates in this population. Further studies are required on patient groups with potentially reduced compliance (e.g. elderly women and children).

The economic analysis highlighted the potential savings associated with use of the device for antenatal screening. However, further economic research is required before firm conclusions can be drawn on the cost-effectiveness of CleanCatch<sup>®</sup> Midstream for the collection of midstream urine.

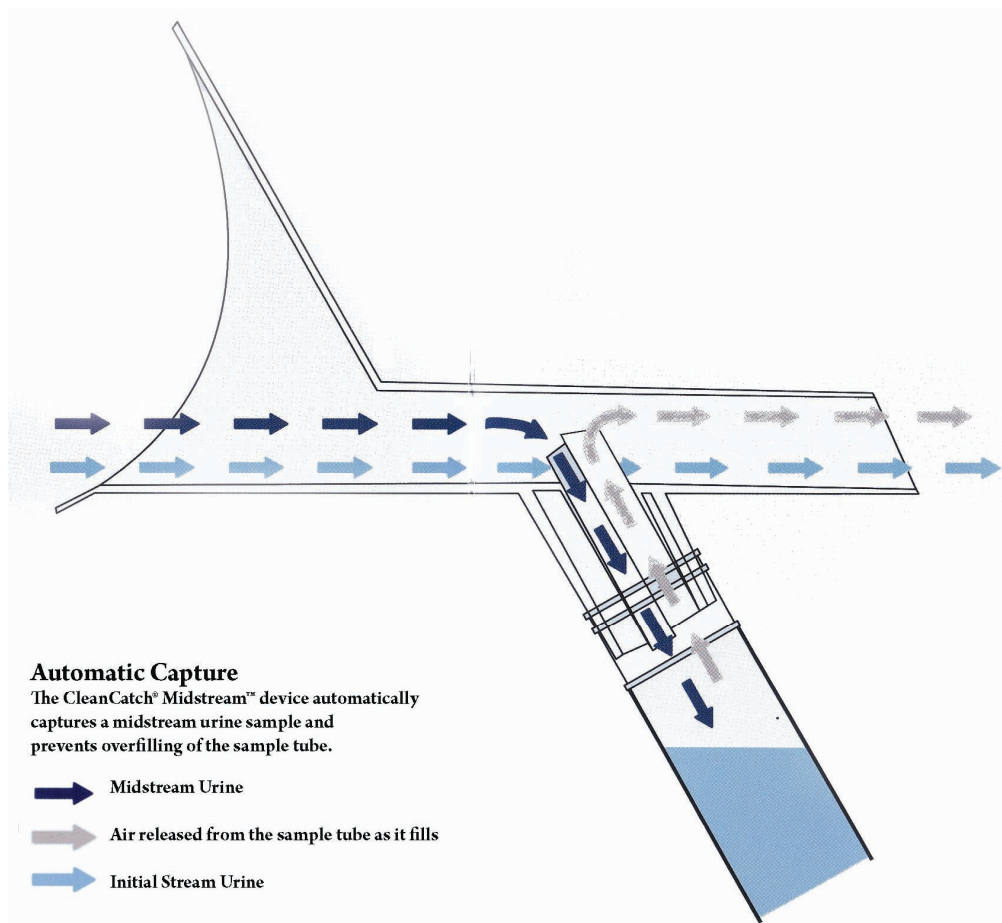
Compared with conventional collection methods the CleanCatch<sup>®</sup> Midstream was more hygienic, significantly reducing spillage of urine.

The CleanCatch<sup>®</sup> Midstream device is designed to collect midstream urine (MSU) from females or males and is intended to make the process more hygienic, and to reduce the incidence of midstream urine contamination, thereby reducing the requirement for retesting and the associated costs [1, 2]. The device minimises issues of patient compliance by standardising the sample collection process. This evidence review summarises current urine collection and testing procedures and analyses available scientific and economic evidence for using the CleanCatch<sup>®</sup> Midstream.

## Product design

The CleanCatch<sup>®</sup> Midstream device is sterile. It has a channelling feature which automatically discards the first flow part of the urine specimen (see Figure 1), capturing the MSU (without interrupting the urine flow) in a sterile bottle attached to the device. This bottle can then be detached, sealed and sent for diagnostic testing [1, 2]. A biodegradable version of the product is to be launched early in 2008 (Appendix 1).

**Figure 1: The CleanCatch<sup>®</sup> Midstream device**



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## Urinary tract infection

Urinary Tract Infection (UTI) results from the presence and multiplication of bacteria in one or more structures of the urinary tract with associated tissue invasion. This can give rise to a wide variety of clinical syndromes. Females are most commonly affected by UTIs with approximately 40 to 60% experiencing at least one UTI episode in their lifetimes, while males are less affected [3, 4, 5]. The prevalence of UTI increases with increasing age for both sexes [6, 7]. Pregnant women and the elderly may also present with asymptomatic bacteriuria.

## National guidance

European standardisation on the sterility of single use containers for collection of specimens (other than blood) is outlined in BS EN14254:2004. This refers to the need for containers to be subjected to a validated process designed to achieve sterility claims [8].

The National Standard Method for the Investigation of Urine (BSOP41) [9] outlines best practice in the collection, storage, and transport of MSU samples for microbiological testing, and provides further information on the clinical manifestations, incidence and diagnosis of UTI. It recommends that urine specimens are collected into sterile leakproof containers.

NICE Clinical Guideline 6 (CG6) states that “pregnant women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy. Identification and treatment of asymptomatic bacteriuria reduces the risk of preterm birth” [10]. NICE Clinical Guideline 54 (CG54) provides guidance on the diagnosis, treatment and long-term management of urinary tract infection in children [11].

## Urine collection

Routine microbiological testing is most commonly undertaken on MSU samples. The MSU method consists of the patient ‘catching’ the urine in midstream (*ie* without interrupting the urine flow) into a sterile collection container. The urine should be collected, stored and transported in a sterile container [9, 12]. It is important to catch the midstream specimen as first flow urine has been shown to have a higher rate of contamination [13].

Despite the ease of obtaining a MSU, there are several problems. Firstly, the method of collection is considered unhygienic with the potential for spillage. Secondly, there is a high rate of contamination in specimens from females, often due to vaginal flora. Several guidelines recommend external cleansing of the genitalia prior to specimen collection though some studies have found this has no significant effect on the rate of contamination in the urine sample. In men contamination is less likely as the conventional MSU collection method removes commensals from around the urethra [13, 14, 15].

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## UTI diagnosis and urine contamination rates

Urine testing procedures vary depending on local policy. Urine culture with microscopy is almost universally employed. Some laboratories have adopted dipsticks or semi-automated methods that screen out negative urines, which are not cultured. For antenatal screening, NICE recommends that pregnant women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy, since identification and treatment of asymptomatic bacteriuria reduces the risk of preterm birth [10].

Urine culture is typically semi-quantitative with different levels of growth indicating that either a UTI is present or the sample is contaminated. Early studies in pregnant women demonstrated that bacterial counts of  $\geq 10^8$  cfu/L ( $\geq 10^5$  cfu/mL) are indicative of infection and counts below this indicated contamination [16, 17]. Quantitative criteria for the definition of significant bacteriuria have subsequently been established for a variety of different patient populations and specimen types [9], but for asymptomatic pregnant women the presence of  $\geq 10^8$  cfu/L ( $\geq 10^5$  cfu/mL) remains indicative of infection.

Polymicrobial culture is used as a marker of contamination since multiple organisms are rarely found in confirmed urinary tract infection. Contaminated specimens should be retested if clinically indicated as contamination can mask the presence of UTI. Undiagnosed UTI can lead to complications such as septicaemia, renal scarring and pre-term birth.

Published contamination rates vary significantly due to the different variables employed in the studies, eg patient populations, specimen numbers, specimen collection and transportation techniques. Valenstein studied contamination rates in 906 institutions and reported a range between 5.6 and 36.8%. However, these are combined rates for females and males and the underlying figures show that females had significantly higher rates of contamination compared with males. The median institution reported that 18.1% of urine cultures were contaminated) [15]. Lifshitz [18] found almost identical contamination rates of 29%, 32% and 31% for 242 consecutive female patients with symptoms suggestive of UTI and randomised to three groups respectively: (a) urine collected with no cleansing and specimen not obtained midstream; n=77 (b) with perineal cleansing using a bactericidal wipe and collection of midstream urine; n=84 (c) with cleansing, collection of midstream urine as well as addition of a vaginal tampon; n=81.

Cabedo Garcia [19] reported contamination rates of 41% in an 'intervention' group (279 women) and 56% in a 'control' group (236 women). The women were randomly assigned to the two groups. The majority of women were asymptomatic, they were generally older patients ( $41 \pm 14$  years) and 79.8% had only completed primary education. The control group were given a sterile receptacle in which to place the urine but no instructions were given on the urine collection method. For the intervention group a nurse explained how to collect midstream urine and also provided an explanatory leaflet. The instructions covered collection of the first urine in the morning, washing of hands and genitals, taking care not to touch the inside of the container and closing the lid straight after collecting the urine.

Jackson [20] reported a contamination rate of 15.56% in a study of 2823 mainly asymptomatic females using conventional MSU collection methods.

## Databases

Studies on the CleanCatch<sup>®</sup> Midstream device were researched using PubMed ([www.ncbi.nlm.nih.gov/sites/entrez](http://www.ncbi.nlm.nih.gov/sites/entrez)), [www.highwire.org](http://www.highwire.org) and the Centre for Reviews and Dissemination ([www.york.ac.uk/inst/crd](http://www.york.ac.uk/inst/crd)). General information on resource use and clinical procedure involved in the collection and analysis of MSU samples were researched using the same sources, plus HTA and NICE reports.

## Search terms

Keywords used were: Whiz; Whiz urine; Whiz Midstream; Whiz Midstream UCD; Whiz urine collection device; Whiz CleanCatch; JBOL. Additional keywords used for the economics search strategy were midstream; MSU; UCD; urine collection device; urine collection. Economic search terms combined with these keywords were: economics (MeSH); cost and cost analysis (MeSH); economic; cost; cost analysis; cost effectiveness; cost benefit; utility; price.

## Inclusion criteria

The search for data specific to efficacy of the CleanCatch<sup>®</sup> Midstream was limited to the period from January 2002 to September 2007. Studies for the economic analysis were included if they addressed costs and/or outcomes of urine collection or analysis.

## Poster presentations

The availability of the two poster presentations was identified after discussion with the manufacturer.

### Study 1: Jackson *et al*

The study [20] was based in four centres in the UK. The study population comprised 2823 female outpatients. Most (85%) were recruited from antenatal clinics where routine screening of urine is performed. The remainder were from general practice. The patients were randomised to two different collection methods, the CleanCatch<sup>®</sup> Midstream urine collection device (known as the Whiz Midstream at the time of the study) and conventional methods. Patients given the CleanCatch<sup>®</sup> device were asked to read the instructions provided on the pack and no other collection instructions were given by the nurses. Patients providing conventional MSU samples were given instructions according to the usual collection procedures used in each centre.

When the specimens arrived at the laboratory, they were identified by unique serial numbers so that laboratory staff were unaware of the collection method. The device was also rated by both patients and clinical staff for ease of use. Rates of spillage, contamination and UTI were investigated and compared. The mostly asymptomatic female study population minimised confounding factors.

### Results

2182 specimens were cultured using local procedures (table 1). Of the 2823 patient specimens recruited to the study, 641 were excluded due to labelling or specimen processing errors. These excluded specimens did not introduce bias into the study.

**Table 1: Semi – quantitative culture results for urine specimens from conventional and CleanCatch<sup>®</sup> Midstream collections**

Culture result	Number of specimens		
	Conventional	CleanCatch <sup>®</sup> Midstream UCD	Total
No significant growth	902	927	1829
Equivocal single species	17	16	33
Equivocal mixed growth	122	89	211
Heavy mixed growth	33	13	46
UTI	31	32	63
<b>Total</b>	<b>1105</b>	<b>1077</b>	<b>2182</b>

Notes: UTI was defined as >100,000 CFU/ mL with 1 or 2 different organisms identified.

### Analysis of results

In this study, 172 specimens (15.56%) from the conventional arm of the study, and 118 specimens (10.96%) from the CleanCatch<sup>®</sup> Midstream UCD arm of the study had to be re-tested. This was due to the occurrence of equivocal or heavy growth cultures indicating specimen contamination. The CleanCatch<sup>®</sup> Midstream UCD therefore resulted in a significantly lower rate of re-tests compared with conventional methods ( $P = 0.002$ ). The paper quotes a relative reduction in re-tests between the two methods of ~31 %. For heavy

mixed growth culture results the use of the CleanCatch<sup>®</sup> Midstream resulted in a 59.63 % reduction compared to conventional methods.

Thirty-one UTIs were detected using conventional collection methods and 32 were detected using the CleanCatch<sup>®</sup> Midstream, indicating that overall diagnosis of UTI was not dependent on the method used.

User acceptance was also studied. There was no significant difference between ease of use scores although the CleanCatch<sup>®</sup> Midstream had a significantly lower spillage rate than conventional methods (27% versus 46%). In addition, 67.5% of patients preferred the CleanCatch<sup>®</sup> Midstream method. Twelve clinical staff were interviewed and all expressed a preference for the CleanCatch<sup>®</sup> Midstream device.

## Study limitations

The study was limited to women, predominantly (72.1%) aged between 20 and 35 years, attending outpatient clinics. The other age groups were less than 20 years (4.3%), between 36 and 49 years (21.2%), between 50 and 64 years (1.7%) and 65 years or more (0.69%). Most patients (85 %) were recruited from antenatal clinics, with the remainder from general practice. The authors highlight the need for further studies in other groups of patients, particularly where there may be reduced compliance with conventional urine collection methods, or high rates of sample contamination.

## Study conclusions

Jackson *et al* concluded that the CleanCatch<sup>®</sup> Midstream UCD reduced contamination of urine specimens in the population studied. Both patients and clinical staff found it more hygienic to use. Clinical staff indicated that the device saved time, but this was not objectively measured.

## Study 2: Aich *et al*

This study [21] was presented as a poster at the 31<sup>st</sup> annual meeting of the International Urogynecological Association. This small assessment examined 100 specimens collected using conventional methods, and another 100 specimens collected using the CleanCatch<sup>®</sup> Midstream collection device (known as Whiz Midstream at the time of the study). The conventional data were analysed retrospectively. All specimens were collected from antenatal and gynaecology clinics.

This study appeared to show a reduction in contamination rates for samples collected from the antenatal clinic, but an increase in contamination rates in samples collected from the gynaecology clinic. In both populations, contamination rates were higher than those determined by Jackson *et al* (5), ranging from 35 to 51 %. The data are however, difficult to interpret, and the sample numbers involved too low to draw firm conclusions about the performance of the CleanCatch<sup>®</sup> Midstream.

### Study 3: Dryden *et al*

Dryden *et al* [22] undertook a study to determine whether the CleanCatch® Midstream device reduced the contamination rate of urine sampling in family practice and improved the quality of the diagnostic test. Family care surgeries collected MSUs from women, either conventionally (in universal pots) or using the CleanCatch® Midstream (tables 2 and 3). The allocation of collection method was randomised.

**Table 2: Comparison of conventional versus CleanCatch® Midstream system at 6 sites**

Site	Conventional collection		CleanCatch Midstream system		
	Number of specimens	Number contaminated (%)	Number of specimens	Number contaminated (%)	
Site 1	230	28 (12%)	576	25 (4.3%)	
Site 2	400	118 (30%)	400	21 (5.25%)	
Site 3	50	6 (12%)	44	2 (4.5%)	
Site 4	19	9 (47%)	17	2 (11.7%)	
Site 5	N/A	N/A	N/A	N/A	N/A
Site 6	6000	1800 (30%)	6000	240 (4%)	

**Table 3: Combined results for sites 1 to 3**

	Unequivocal result (pos or neg)	Contaminated(result not possible to interpret)	Total
CleanCatch Midstream system	972	48 (4.7%)	1020
Conventional sample	528	152 (22.35%)	680

Sites 1, 2 and 3 collected specimens from a population of predominantly young women, the majority of whom were asymptomatic and were being screened for bacteriuria during pregnancy (table 2). The combined results (table 3) show a relative reduction in contamination between the two methods of 79% (chi-squared test = 125.8, df=1, P<0.001). For a small number of asymptomatic elderly patients (site 4) there was also a reduction in contamination, with relative reduction around 74%.

Site 5 changed entirely to the CleanCatch® Midstream and therefore did not compare it with conventional collection in a randomised fashion. It was standard policy at this site to screen out negative urines by dipstick testing. Specimens testing positive for leucocyte esterase or nitrites were sent to the laboratory. Samples negative by dipstick were discarded. When using conventional sampling, the site sent an average of 300 MSUs a month to the laboratory, but this reduced to 111 per month for the same patient population after changing to CleanCatch® Midstream urine collection, possibly indicating a reduction in the number of false positive dipstick tests due to reduced sample contamination.

Site 6 was a family medical centre associated with Site 2 and provided audit data of urine collection methods and contamination rates over a two year period (table 2). In this large scale audit in a primary care setting, contamination rates were 30% when using conventional collection methods and 4% when using CleanCatch® Midstream.

## Cost impact analysis

We carried out a cost impact analysis to assess the economic impact of using the CleanCatch<sup>®</sup> Midstream for midstream urine collection from asymptomatic females presenting for routine antenatal screening, compared with a conventional method of collecting midstream samples. The analysis explored the potential economic benefit associated with a reduction in sample contamination rates.

The analysis estimates the total cost per patient per completed diagnostic episode (i.e. including a single retest where this is required), but does not include cost of treatment post-diagnosis. Resource implications of delayed diagnosis due to retesting are not included in the analysis. Costs included (table 4) are the direct NHS costs of collection and analysis of midstream samples, plus the cost of the urine collection device and accessories, urinalysis and midwife time for administrative tasks. The cost of retesting a sample is based on contamination rates from Jackson *et al* [20] (table 5) and includes the additional urine collection device, laboratory costs and staff administrative time, as specified in table 4. It is assumed that the methods of urine collection and laboratory analysis employed for the initial procedure are also used for repeat samples. It is also assumed that each contaminated sample is retested only once.

Evidence was not available on the resource use associated with the collection of MSU or diagnosis of UTI for an asymptomatic female population. The pathway for the collection and analysis of midstream urine specimens in an antenatal setting was determined by reference to national guidelines [9, 10] and consultation with practising midwives and microbiologists. Clinical practice varies, but it appears that the majority of MSU samples are collected into aseptically produced universal containers. We have therefore used this type of universal container to model the conventional MSU collection procedure. However, in order to provide a like-for-like comparison, we have also assessed the impact of utilising a sterile urine collection device, the Uripot, available from NHS Supply Chain (product code FSW241). Diagnosis did not include dipstick testing of urine and all specimens were subject to laboratory analysis. The collection and analysis pathways are presented in Appendix 2.

Time taken by the midwife to initiate MSU collection was based on correspondence with practising midwives. For the CleanCatch<sup>®</sup> Midstream no midwife time is included for explanation of the collection procedure; in accordance with Jackson *et al*, the instructions provided with the device are assumed to be adequate. For the conventional method, 5 minutes is required prior to collection to explain the procedure. All samples require 2 minutes to carry out the administrative tasks and all repeat samples required 5 minutes to account for notification that a second sample is needed. The midwife is graded at Band 6.

**Table 4: Resource use costs**

Resource	Cost*	Source
Cost of sterile 30 ml CleanCatch <sup>®</sup> Midstream (FSW243)**	£1.12	NHS Supply Chain [23]
Cost of conventional 30ml universal specimen container (KCP079) <sup>†</sup>	£0.09	NHS Supply Chain [23]
Cost of 30ml sterile Uripot collection device (FSW241) <sup>††</sup>	£0.55	NHS Supply Chain [23]
Laboratory analysis: culture and microscopy	£5.87	Newcastle upon Tyne Hospitals NHS Trust [24]
Cost of time taken to explain MSU collection procedure	£2.08	PSSRU Unit Costs of Health and Social Care 2006 [25] Correspondence with Ealing Hospital and Nottingham University Hospitals NHS Trust
Cost of time taken for administrative tasks: Completion of laboratory request form and container labelling by hand	£0.83	
Cost of time taken to notify patient that a repeat MSU sample is required	£2.08	

**Notes:** \* All costs are inclusive of VAT where applicable.  
 \*\* Individually packaged and sterilized by electron beam irradiation.  
 † Band 2 price. NHS Supply Chain's catalogue does not list a sterile universal container.  
 †† Individually packaged and sterilized.

Contamination rates and the rate at which contaminated samples are retested for the reference case are presented in table 5. It is assumed that all contaminated samples will be retested, in accordance with best practice.

It is assumed that all midstream urines are cultured, in accordance with NICE clinical guidelines [10], and mirroring the testing regime of Jackson *et al.*

**Table 5: Contamination rates**

Parameter	Rate	Source
Contamination rate for conventional method of urine collection	15.53%	Jackson <i>et al</i> [20]
Contamination rate using CleanCatch <sup>®</sup> Midstream	10.96%	Jackson <i>et al</i> [20]
Retest rate for contaminated samples	100%	

Based on the figures presented in tables 4 and 5, using the CleanCatch<sup>®</sup> Midstream for antenatal screening instead of a conventional universal container saves £1.69 per patient, per completed diagnostic episode, when all samples are cultured and all contaminated samples are retested. The expected cost of collection and analysis using the CleanCatch<sup>®</sup> Midstream was £8.92 per patient per completed diagnostic episode and £10.61 per patient per completed diagnostic episode using a conventional container. The savings are associated with reduced contamination rates, and therefore reduced retesting costs, as well as the absence of any requirement to explain the collection procedure. Results are presented in table 6.

**Table 6: Results of the cost impact analysis**

	Total cost per patient per completed diagnostic episode
Average total cost of using CleanCatch <sup>®</sup> Midstream	£8.92
Average total cost using conventional universal container (KCP079)	£10.61
Cost saving from using CleanCatch <sup>®</sup> Midstream for routine antenatal screening	£1.69

Replacing the conventional universal container with the 30ml sterile Uripot collection device at £0.55 [23], in accordance with the National Standard Method for Investigation of Urine [9], would increase the savings attributable to use of the CleanCatch<sup>®</sup> Midstream for antenatal screening to £2.22 per patient per completed diagnostic episode. The average total cost of the conventional method would increase to £11.14 per patient per completed diagnostic episode.

## Limitations

It should be noted that the results of this cost impact analysis are representative of just one of a number of possible scenarios and cannot be assumed to be valid for other patient populations. There is a lack of published resource use data on the collection and analysis of midstream urine.

Clinical practice in the collection and analysis of MSU samples varies widely, and local practice will influence the results of the cost impact analysis. We performed a number of one-way sensitivity analyses to address the uncertainty surrounding the parameter estimates in the cost impact analysis.

## Sensitivity analysis

The parameters assessed were contamination rates, cost of the urine collection device and laboratory tests, rate of retest, cost of healthcare professional time and time taken to explain the MSU collection procedure. The sensitivity analyses showed results to be most sensitive to changes in the length of time taken to explain the MSU collection procedure and the cost per minute of healthcare professional time. To allow prospective purchasers to assess the impact of local differences in the parameters used to construct the economic model, we have provided an interactive model at

<http://www.pasa.nhs.uk/PASAWeb/NHSprocurement/CEP/outputs/Genmedsocialcare.htm#urology>

Two studies indicated that use of the CleanCatch<sup>®</sup> Midstream device resulted in clinically significant relative reduction in urine contamination of 31% and 79% [20, 22] compared with conventional collection methods. These studies were based on random allocation of urine collection methods among female populations the majority of whom were asymptomatic and antenatal clinic attendees. A reduction in contamination was also observed in a small number of elderly patients. Reported urine contamination rates vary significantly with studies quoting rates between 15 and 56%. Use of the CleanCatch<sup>®</sup> Midstream device could therefore lead to significant reduction of these rates.

Compared with conventional collection methods the CleanCatch<sup>®</sup> Midstream was more hygienic, significantly reducing spillage of urine.

Methods of urine collection and urine analysis could also be improved by complying with national guidelines and best practice. The CleanCatch<sup>®</sup> Midstream might help to achieve greater compliance in this regard, since it minimises variation in the sample collection procedure. Current alternative procedures appear to be subject to significant variation, for example:

- sterile containers are required for urine culture, but best practice might not always be followed
- laboratory techniques (*ie* microscopy, dipsticks, urine analysers and culture) are applied in different combinations in different laboratories
- best practice might not always be followed in obtaining repeat urine specimens where contamination is found in the initial sample
- patient instructions for conventional urine collection can vary considerably and can have a significant influence on the quality of the MSU sample collected (e.g as described by Garcia).

For routine MSU collection in an antenatal setting when culture and microscopy are undertaken for all MSU specimens, the CleanCatch<sup>®</sup> Midstream urine collection device can provide savings in terms of staff time, and in terms of the additional resources required for repeat collection and testing of MSU samples due to contamination. There might be additional benefits not captured in the cost impact analysis, such as the value of enhanced compliance with best practice and national guidelines, and how this might impact on local risk assessment strategies.

Further research is required on resource use and for other patient populations.

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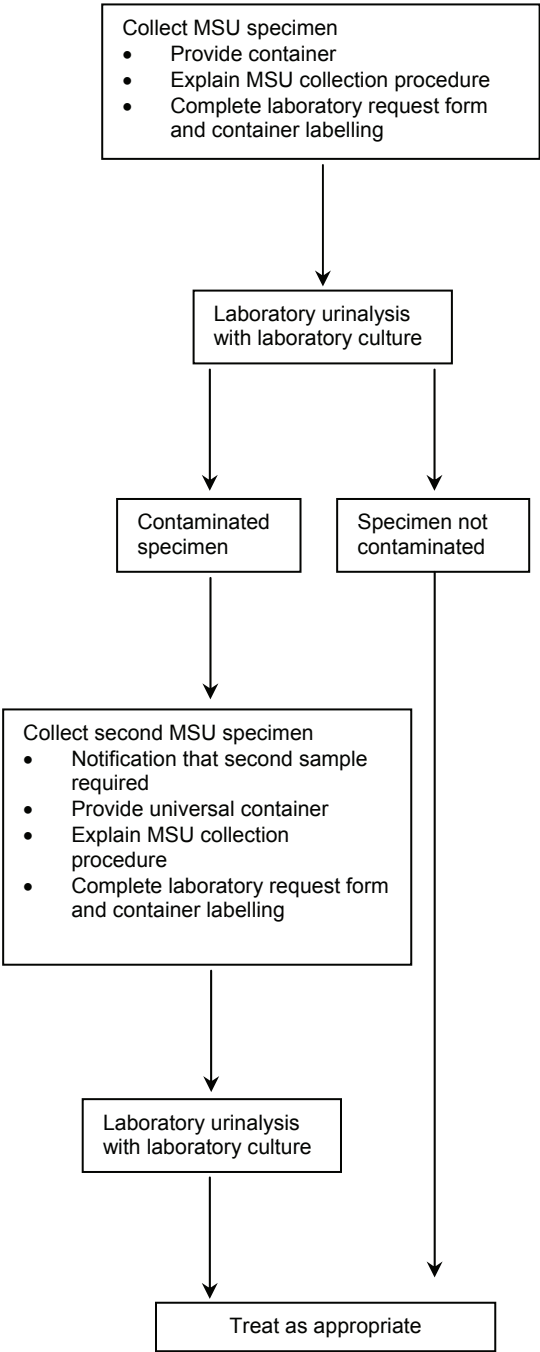
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### **Biodegradable version of the CleanCatch® Midstream**

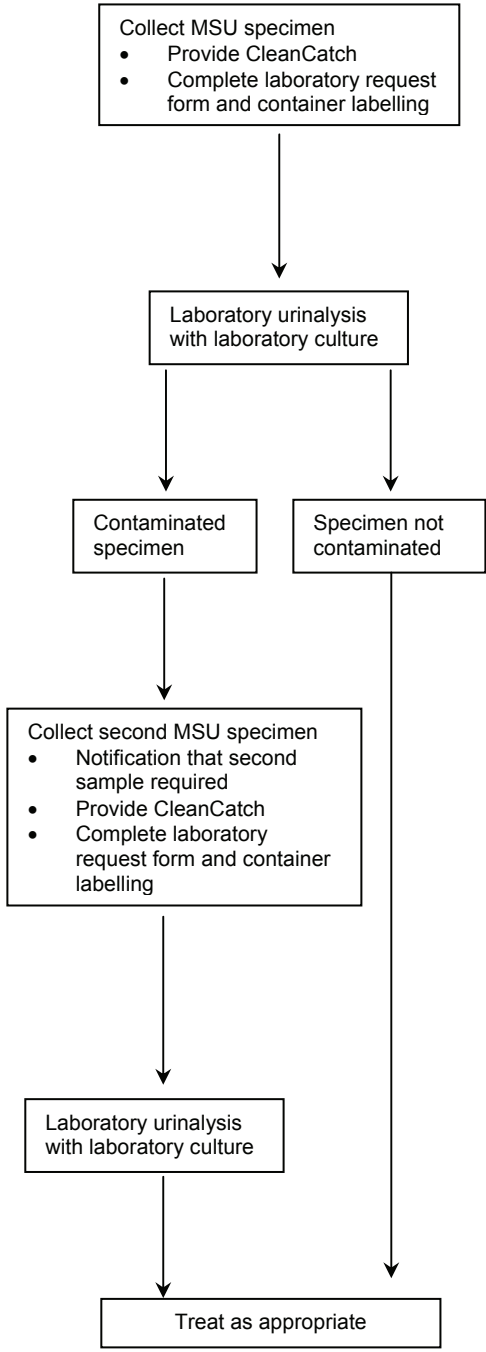
The CleanCatch® Midstream G is a biodegradable version of the device's channelling feature made from Thermo Plastic Starch (TPS). The manufacturers claim that this is proven to fully disperse in water and can be flushed into the sewage system. The device needs to be placed in water (e.g. toilet or cistern) for 20 minutes at room temperature prior to flushing. The agitation caused by flushing further breaks down the material and speeds up the dispersion. The material will also degrade in soil if discarded via an organic composter or land fill. The CleanCatch® Midstream G is available from early 2008 with a 15% addition to the current product price. CEP has not reviewed this version of the product.

Collection and analysis pathways in the cost impact analysis

Conventional procedure for MSU specimen collection and urine analysis represented in the reported economic analysis



Procedure for MSU collection using the CleanCatch® Midstream for MSU collection and analysis represented in the reported economic analysis



## Evidence review: CleanCatch Midstream

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## About CEP

The Centre for Evidence-based Purchasing (CEP) is part of the Policy and Innovation Directorate of the NHS Purchasing and Supply Agency. We underpin purchasing decisions by providing objective evidence to support the uptake of useful, safe and innovative products and related procedures in health and social care.

We are here to help you make informed purchasing decisions by gathering evidence globally to support the use of innovative technologies, assess value and cost effectiveness of products, and develop nationally agreed protocols.

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