

Costs Associated with Using NAATs

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The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention



Test Cost Comparison

Test	CMS National Limit (2008 dollars)
CT or GC direct probe, single antigen	\$28
Multiple antigen direct probe	56
CT or GC amplified probe, single antigen	49
Multiple antigen amplified probe	98
CT EIA	17
GC Culture	9

Additional Costs for Collecting Invasive Specimens

- Clinician time + materials*:
 - pelvic exam: \$26-\$67
 - if not otherwise performing a pelvic exam
 - additional swab: \$1-\$2
 - if already performing a pelvic exam for other reasons
- These costs narrow the gap between amplified and non-amplified assays

* Shafer, Arch Pediatr Adolesc Med 1999; 153:119-25; Howell Sex Transm Dis 1998; 25:108-17

Advantages of Non-Invasive Specimens

- They allow screening in more locations
 - Emergency departments
 - Jails
 - Schools
 - CBOs
 - Drug treatment centers
 - Health fairs
 - Street intercepts
- They make re-screening potentially easier
 - Patients can be seen on an expedited basis in a clinic
 - Patients can mail a urine specimen to a clinic or lab

Advantages of Non-Invasive Specimens, Continued

- Some female patients dislike pelvic exams
 - Urine specimens most liked by adolescents*
 - preferably home-collected†
- Male screening is feasible
- All of these factors suggest testing volume can increase using non-invasive specimens
- This can have implications for the cost-effectiveness of NAATs vs. non-NAATs

*Serlin, Arch Pediatr Adolesc Med 2002; 156:588-91

†Tebb, J Adolesc Health 2004; 35:462-7

Cost Implications of NAATs' Higher Sensitivity than Non-Amplified Assays

- Detection of chlamydial and gonococcal infections through screening can prevent costly sequelae
- Pelvic inflammatory disease (PID) per case:
 - \$2210- \$5060, discounted 2008 dollars*
 - Includes sequelae and productivity losses
- PID rate in CT and GC estimated to be 5%-30%
 - Caveats:
 - Re-infection is common, so averted PID costs may only be deferred for a time
 - Individual programs may not avert many or any costs through PID reduction

*Yeh, Sex Transm Dis 2003; 30:369-78, Blandford Sex Transm Dis 2006; 33:S117-21

Cost-Effective vs. Cost-Saving

- NAATs don't have to be cost-equivalent to non-NAATs to be cost-effective
- Health benefits are worth paying money for
- In terms of quality-adjusted life years (QALYs):
 - PID QALY loss per case $\approx 0.3-0.6^*$
 - Net societal costs of $< \$14,000/\text{QALY}$ saved among the most cost-effective in a systematic review[†]

*Institute of Medicine 1999, Vaccines for the 21st Century; Smith, Sex Transm Dis 2008; 35:286-90

†Maciosek, Am J Prev Med 2006; 31:52-61

Does This Mean Every Program Should Use NAATs?

- Not necessarily—
 - Cost-effectiveness calculations based on averted sequelae costs
 - Individual programs do not usually capture those gains
 - Programs with fixed budgets may not be able to deploy NAATs and maintain a given level of screening coverage

Testing on a Fixed Budget

- Example:
 - Clinic does pelvic exams for all women, with no plans for expanding screening to other venues
 - \$100,000 testing & treatment budget
 - NAAT cost \$49, non-NAAT cost \$30, treatment cost \$25
 - NAAT sensitivity 90%, specificity 99%
 - Non-NAAT sensitivity 70%, specificity 99%
 - Prevalence 8%
- With NAAT: screen 1960 patients, treat 141 infections
- Non-NAAT: screen 3162 patients, treat 177 infections
 - To screen 3162 patients with the NAAT would treat 228 infections, but cost about \$61,000 more for testing and treatment
- Given the budget constraint:
 - NAATs may not be the optimal choice

Cost of NAATs vs. non-NAATs

- Test cost is only part of the equation
- Other factors have cost impact:
 - Cost of specimen collection
 - Overall volume of testing
 - Averted costs through increased case detection
- Even if costs not equivalent, NAATs deliver more health benefits in most instances
 - Costs need not balance for NAATs to be cost-effective