



Australian Government

Department of Health

Application 1627:

Point-of-care testing for sexually transmitted infections provided by Aboriginal Medical Services or Aboriginal Community Controlled Health Services in rural or remote areas

**Ratified
PICO Confirmation**

Summary of PICO/PPICO criteria to define the question(s) to be addressed in an Assessment Report to the Medical Services Advisory Committee (MSAC)

Table 1 PICO criteria for individuals attending a health clinic in regional or remote area with high STI burden

Component	Description
Population	Symptomatic individuals, or asymptomatic individuals (including those who do not disclose symptoms) at risk of sexually transmitted infection, attending Aboriginal Medical Services or Aboriginal Community Controlled Health Services in rural and remote areas
Prior tests	NA
Intervention	<p>Test</p> <p>Molecular-based tests for the detection of <i>Chlamydia trachomatis</i> (CT) and/or <i>Neisseria gonorrhoeae</i> (NG), and <i>Trichomonas vaginalis</i> (TV) infection using GeneXpert nucleic acid amplification technology (NAAT) approved by the TGA for use at the point-of-care (POC). These are two tests, each using a separate cartridge, one for the dual (simultaneous) diagnosis of CT and/or NG, and the other for diagnosis of TV.</p> <p>Treatment</p> <p>In symptomatic patients regardless of test result and in asymptomatic patients (including those who do not disclose symptoms) who are found to be test-positive, appropriate guideline recommended antibiotic treatment will be prescribed shortly after the initial consultation.</p> <p>Contact tracing and testing of partner(s) of those positive</p>
Comparator	<p>Test</p> <p>Usual care in which a sample would be sent to a laboratory for testing.</p> <p>Treatment for symptomatic individuals</p> <p>Empiric antibiotics for both CT/NG would be offered at the time of the initial consultation as per appropriate guidelines for the management of symptomatic individuals. Additional treatment for TV is not recommended until receipt of test results unless abnormal vaginal discharge and a pH test is indicative of infection.</p> <p>Treatment for asymptomatic individuals</p> <p>Treatment will be guided by the result of the laboratory test, upon receipt of the results (usually a delay in receiving the result).</p> <p>Contact tracing and testing of partner(s) of those positive</p>
Outcomes	<p>Safety Outcomes:</p> <p>Safety outcomes from sample collection (urine) or swabs (e.g. cervical or vaginal).</p> <p>Clinical Effectiveness Outcomes:</p> <p><i>Analytical validity</i></p> <p>Analytic sensitivity, specificity, or concordance compared to laboratory testing (reference standard, NAAT)</p> <p>Rate of repeat testing</p> <p><i>Clinical utility</i></p> <p><u>Change in management (therapeutic efficacy)</u></p>

Component	Description
	<p>Uptake of testing</p> <p>Uptake of treatment</p> <p>Time to treatment</p> <p>Time to partner testing (and appropriate treatment where applicable)</p> <p><u>Change in individual health outcomes</u></p> <p>Period of infectiousness</p> <p>Complications of CT and NG and TV (e.g. pelvic inflammatory disease (PID), chronic pelvic pain, ectopic pregnancy, infertility for women and epididymitis for men. Disseminated gonococcal infection (DGI) and reactive arthritis and septic arthritis are also associated with untreated infection.)</p> <p>Hospitalisations related to complications of CT, NG, or TV (such as progression of acute PID, complications related to PID, disseminated gonococcal infection, including septic arthritis and endocarditis)</p> <p>Health-related quality of life</p> <p>Psychosocial quality of life (relationships etc)</p> <p><u>Change in population health outcomes (long-term)</u></p> <p>Transmission of CT/NG/TV to partners</p> <p>Transmission of other sexually transmitted infections/diseases eg HIV</p> <p>Prevalence of CT/NG/TV in the community</p> <p>Rates of antibiotic resistance</p> <p>Healthcare system outcomes</p> <p>Cost of testing per individual</p> <p>Incremental cost-effectiveness of POC testing, such as:</p> <ul style="list-style-type: none"> • Cost per quality adjusted life-year (QALY) gained • Cost per complications of CT and NG and TV avoided <p>Financial implications (Change in uptake of test, financial impact, overall healthcare costs, etc).</p> <p>Other relevant considerations</p> <p>Decrease in disparity of health outcomes related to STIs for Aboriginal and/or Torres Strait Islander Peoples</p> <p>Ethical considerations</p> <p>Individual acceptability and preferences (including cultural appropriateness)</p>

PICO rationale

Population

The proposed intervention of point-of-care (POC) testing is intended for use in remote and regional parts of Australia, where there is a high burden and risk of transmission of STIs and testing of at-risk individuals is recommended. POC testing will be focused towards access for the Aboriginal and Torres Strait Islander people living in those areas. However, anyone attending a regional or remote (as defined by the Australian Bureau of Statistics) Aboriginal Medical Service or Aboriginal Community Controlled Health Service enrolled in a formal POC training and quality assurance program with the proposed point of care testing (POCT) GeneXpert platform and cartridges for STIs, would be eligible for the tests.

PASC supported the applicants' proposal for POCT to be available to any individuals who attend an Aboriginal Health Service or Aboriginal Community Controlled Health Service, whether they were an Aboriginal or Torres Strait Islander person or not.

There is a disparity in sexual health in Australia, whereby Aboriginal and Torres Strait Islander people have disproportionately high rates of STIs compared with non-indigenous Australians, particularly in remote and regional areas. Aboriginal and Torres Strait Islander young people of 16-29 years residing in remote areas are particularly at risk of STIs, and for pregnant women, untreated STIs can lead to maternal and neonatal morbidity. Untreated CT/NG/TV are associated with the premature rupture of membranes and preterm birth. In newborns CT and NG can cause eye and lung infections. People attending health clinics in areas where there is a high risk of STI will be able to access the proposed rapid POC testing for *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG), and *Trichomonas vaginalis* (TV).

The POC tests will be offered to symptomatic males and females, and those without symptoms but at risk of STI. To undergo testing, individuals must agree to provide a urine sample, cervical or vaginal swab, rectal swab, or pharyngeal swab, either by a self-collection method, or collected by the health professional at the clinic.

STIs are transmitted by oral, vaginal, or anal sex, and are responsible for multiple health conditions that are largely preventable with access to the appropriate antibiotic treatments. For women, bacterial CT infection can cause urethritis and salpingitis, with symptoms of dysuria, abnormal vaginal discharge, and post-coital bleeding. Upper genital tract infection can cause irregular uterine bleeding, abdominal pain, PID, ectopic pregnancy and fallopian tube damage and infertility. Men with CT infection may experience symptoms of urethritis, and occasionally epididymo-orchitis or proctitis. Eye infections (self-inoculated CT or NG) can cause conjunctivitis, and when related to gonorrhoea can cause loss of vision. NG is the bacterial infection responsible for gonorrhoea, which causes abnormal vaginal discharge, bleeding and dysuria in women, and urethral discharge and dysuria in men. DGI can present in a range of ways such as septic arthritis, polyarthralgia, tenosynovitis, petechial/pustular skin lesions, bacteraemia, or, on rare occasions, endocarditis, or meningitis. Untreated NG can lead to septic arthritis, disseminated gonococcaemia, and gonococcal ophthalmia neonatorum. TV has similar symptoms to NG for men and women, but also carries a risk of infertility by causing decreased sperm cell motility in men and cervical dysplasia in women. TV co-infections are commonly found with NG, and less frequently, with CT.

Despite Aboriginal young women attending health services more frequently and being tested more often than young men in these settings, sequelae of STIs remain major issues. Secondary analysis of published data among young Aboriginal women living in remote settings suggests that CT and/or NG infection accounts for 40% of PID presentations to emergency departments and hospitalisations, with 21% attributable to any CT infection and 33% to any NG infection (Causer, L et al. 2021 Under review, Guy, R et al. 2015).

The risk of PID has been found to increase with CT, NG, and TV infections, and the likelihood of PID increasing with subsequent STIs. PID can lead to significant morbidity and is known to cause an increased risk of tubal infertility, ectopic pregnancy, premature delivery, and perinatal mortality. Infections passed on to a baby in vaginal delivery can lead to poor neonatal outcomes, including infant conjunctivitis and pneumonia. As well as adverse pregnancy outcomes, NG and CT infections have been associated with poor psychosocial consequences, and increased risk of HIV infection.

Prevalence

Silver et al (2015) published incidence data for 17,849 rural and remote Aboriginal and Torres Strait Islanders who were tested for CT, NG, and TV over a period of 35 months, in a retrospective study. The data were collected during a trial of health service strategies in 68 remote Aboriginal communities in central and northern Australia¹. Baseline prevalence rates were reported to be 11.1%, 9.5%, and 17.6% for CT, NG, and TV respectively. The median age of those tested (at first test) was 30 years (IQR 22-40 years) (Silver et al. 2015).

During the 35-month period, individuals who were initially negative for the STIs were retested, enabling the calculation of incidence rates for each of the three STIs. Of 7171 retested for CT, there were 651 positive cases out of 7171 individuals retested (9.1%); of 7439 retested for NG, 609 tested positive (8.2%); of 4946 retested for TV, 486 tested positive (9.8%) (Silver et al. 2015).

Infection rates were highest in the youngest age group (16-19-year-old) for all three STIs. For CT, the prevalence was 26.5% for women and 20.2% for men in the 16-19-year-old group. Overall prevalence was higher in women than men (12.1% versus 9.7%, $p < 0.01$). For NG, the prevalence was higher for men (21.6%) compared to women (20.1%) in the 16-19-year-old group, and overall (10.4% versus 8.9%, $p < 0.01$). TV prevalence was highest in women in the 16-19-year-old age group (31.5%) and highest for men in the >35 year old age group (7.8%). Overall women were 3.6 times more likely to test positive for TV than men (23.9% versus 6.7%, $p < 0.01$) (Silver et al. 2015).

Coinfection of CT, NG, and or TV is frequent amongst rural and remote communities. Data from the same trial (Ward et al. 2013) found that of 13,480 individuals tested for all three STIs, 33.3% of women and 21.3% of men had at least one infection. Of the coinfections, CT/NG was the most frequent with 2.0% of women and 4.1% of men having dual positivity. These rates were twice as frequent in 16-19-year-olds (4.3% in women and 9.8% in men). Triple CT/NG/TV infections were also more frequent in the 16-19-year-olds (Guy, R et al. 2015). The Kirby Institute (Kirby Institute 2017) provides data comparing notifiable STI rates between Aboriginal and Torres Strait Islander people and non-Indigenous Australians. The notified STI rates are significantly higher in younger ages. The reported rates of CT are four to five times higher in persons 15 to 19 years, and three times higher in

¹ The STRIVE trial (STIs in remote communities: Improved and enhanced primary health care)(Ward et al. 2013)

persons 20 to 29 years for indigenous compared to non-indigenous populations. In remote and very remote regions this rate increases to five times that in non-Indigenous Australians. The rates of NG are similar in their disparity between indigenous and non-indigenous people for the 15 to 19-year age group. The rate of transmission of NG in remote and very remote regions is 30 times higher than that in non-Indigenous communities. TV occurs in higher rates in older women (17.6%) and pregnant women (25.2%) of Aboriginal and Torres Strait Islander communities, while relatively rare in urban Australia (Kirby Institute 2017).

Rationale

A randomised control trial (RCT) has been performed using samples collected from 12 remote health services in Australia, recommended age 16 to 29 years (Guy, RJ et al. 2018) ([ANZCTR Trial Registration](#)) Although trials have been performed in relevant high-risk sites, other peer reviewed literature will have been performed in non-Aboriginal and Torres Strait Islander populations. The evaluation may need to expand the population for the analytic/clinical validity and use the evidence from Australian settings to determine management impact.

Women tend to have higher rates of STI than men in areas of high STI burden (Graham et al. 2016). This is especially important for pregnant women due to the impact on the baby. Studies showing the effectiveness of POCT NAAT testing in these specific populations would therefore be of particular relevance to the HTA.

The Cepheid CT/NG assay has been validated with the following specimen types - endocervical swabs, self-collected vaginal swabs, male and female pharyngeal swabs, male and female rectal swabs, male and female urine (Xpert® CT/NG 1 Package Insert 302-0538, Rev. B April 2020).

Some serotypes of CT can cause blindness, and lymphogranuloma venereum (LGV), a sexually transmitted infection which affects the lymphatic system.

The applicant has informed PASC that all serovars are detectable with the proposed POCT. However, if there is a clinical concern of LGV following a positive CT NAAT, additional specific LGV serotyping would be requested and performed at a suitable reference laboratory.

PASC queried how “remote” and “rural” are defined, and it was explained that the definitions used by the Australian Bureau of Statistics (ABS) are used, which would be consistent with the Modified Monash Model (MMM).

PASC noted that the proposed intervention is for both asymptomatic and symptomatic people, and that not all symptomatic individuals will present or be managed the same way due to potential differential diagnoses. At a post-PASC meeting with the applicant, it was noted that due to cultural or personal reasons, individuals may choose to not disclose the presence of symptoms that may be due to an STI, and therefore these individuals should be considered among the asymptomatic presenters for the purpose of this application.

PASC discussed whether symptomatic individuals would have any change in management due to test results that indicate an STI, as many are treated empirically, and a false-negative test result may occur very rarely due to high test sensitivity. For example, pelvic inflammatory disease (PID) is a clinical diagnosis and would be treated regardless of test result. In these cases, a test-positive would

support the diagnosis, but a test-negative would not mean the absence of disease or change the provision of empirical treatment.

However, it was explained that there is a proportion of individuals who have symptoms which may be due to an STI (for example, vaginal discharge), but which may also be due to other causes, such as thrush. In the absence of POCT, clinicians need to make a clinical judgement about the most likely cause of the symptoms and recommend the most appropriate treatment, or management. In these symptomatic patients a POCT positive test result would influence clinical management.

There are some symptomatic individuals who are suspected of having an STI, who in the absence of having POCT, will be treated with a combination of antibiotics with broad coverage. Where appropriate, having POCT available allows a specific antibiotic to be chosen instead of the non-directed combination. If the POC test is negative, a clinical diagnosis may be determined and a decision about treatment including the use of antibiotics, will be made.

There will be some cases where test results will not change the management of the STI in the symptomatic individual. However, contact tracing, testing and treatment may only occur after the receipt of test results indicating a STI in the index case. In these circumstances earlier detection through POCT would expedite treatment of contacts.

The population is therefore proposed to remain as both asymptomatic and symptomatic individuals, but with additional explanation of the variety of ways in which POCT may change management for the individuals or their contacts.

PASC recommended that mention of prostatitis be removed as they are only very rarely associated with STIs. Neonatal outcomes were considered to be too multifactorial in origin to be influenced by STI testing.

Intervention

The proposed diagnostic tests (CT/NG and TV) are qualitative in vitro real-time nucleic acid amplification test (NAAT) with rapid turn-around, performed on the GeneXpert platform (Cepheid, Sunnyvale, CA, USA) using system specific assay cartridges. The CT/NG cartridge contains reagents that allow for testing of both bacteria together, whereas the TV assay requires a second cartridge specific to that microbe. Cartridges contain the necessary reagents, are single use items and would be disposed of after use. The test regime is proposed for POCT as it can be performed at remote and regional clinics that carry the specified equipment and test cartridges, and can provide a result within 90 minutes for CT/NG and 60 minutes for TV (not including patient consultation time). As the GeneXpert platform can test two, four or eight cartridges at once, the tests can be performed concurrently and the total turn-around is expected to be 90 minutes.

Infrastructure required for the POCT include:

1. Cepheid GeneXpert assay instrument
2. swab collection devices (required by 30-40% of patients)
3. Laptop with appropriate proprietary software to perform the test and data transmission software, a dongle, and UPS unit
4. Internet connectivity

5. CT/NG assay cartridges; TV assay cartridges

6. Barcode scanner for registering specimens and testing consumables.

The diagnostic service will be performed by specially trained staff at the health clinic. A clinical consultation will be required, including collection of medical history data and/or physical examination. Sample collection will be performed by the individual or clinician. The diagnostic service is expected to take approximately 35 minutes (30 to 40 minutes) of staff time, the majority provided by attending nurse and remainder by a clinic doctor. The service also includes electronic logging of the POCT request under the individual's name. The tests can be performed on routine urine samples, or urethral, rectal, vaginal, or cervical swabs.

The short turn-around of the proposed testing regime is of particular benefit to the remote Aboriginal and Torres Strait Islander people as there tends to be increased delays between testing and treatment with increasing remoteness of the service. Remote and regional areas also tend to have highly mobile populations, making it difficult to contact some individuals and perform contact tracing. Test and consultation time is estimated at 90 minutes in total if testing is begun and consultation is held while the test is running, otherwise there is 35-minute consult time plus 90-minute test time. With a short turn-around time more timely treatment is likely to reduce complications from STIs, such as PID, and also reduce loss to follow-up. The short turn-around time of POCT is likely to have the benefit of reducing unnecessary antibiotic treatment as only positive cases will be treated, thereby reducing the risk of developing antimicrobial resistance (AMR).

Quality assurance

Service management processes should also be noted for POCT for STIs, under which participating in a program providing QA, training and reporting support meets national POCT guidelines. A program similar to the Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS) Program for diabetes management is proposed to coordinate the proposed service and manage quality control. Training and quality assurance schemes have been developed in accordance with Australian Guidelines for POCT. POCT will only be performed by health professionals who have undertaken the standardised STI POCT training program that is delivered in person and/or remotely through the Flinders University International Centre for Point-of-Care Testing. QAAMS is funded by the Commonwealth Government Department of Health and is a partnership between the Community Point-of-Care Services unit at Flinders University and the Royal College of Pathologists Australasia (RCPA). QAAMS also supports POCT for haemoglobin A1c (HbA_{1c}) and urine albumin:creatinine ratio (ACR) testing for Aboriginal individuals with diabetes.

Retesting

Individuals testing positive and given treatment would be recalled in 3 months' time for a follow-up test (irrespective of initial test methodology), to determine whether they have been reinfected. *The applicant commented that currently less than 20% of individuals are retested within a one-year period.*

PASC noted that the intervention is proposed to also be used for retesting of test-positive individuals after 3 months to check for reinfection.

Rationale

A novel system for notification of CT or NG infections has been developed to use in conjunction with POC testing. The system has been trialled and successfully enables secure notification that can replace central laboratory reporting and complies with various state regulations.

Specimens provided for POCT can potentially provide samples for culture in central laboratories enabling sensitivity testing for AMR. In usual practice when a specimen tests positive for NG by POCT, treatment for NG is prescribed as per the appropriate guidelines for the clinical setting, and the specimen is sent for AMR sensitivity (culture and /or molecular AMR testing) at a central laboratory. If testing shows resistance to a specific antibiotic, the information is fed back to the health centre clinician who can review and consider whether a change in treatment is required. The sensitivity results would contribute to national NG AMR surveillance.

It is proposed that the practice of POCT may improve surveillance of NG AMR. Currently only a small proportion of samples collected at POCT are suitable for culture (14% in Western Australia).

Funding for POCT for CT and NG was provided by the National Health and Medical Research Council (NHMRC) through the TTANGO (Test Treat And GO) trial from 2011-2016. Funding for POCT for CT, NG and TV has been provided by NHMRC, WA Health, Qld Health and Australian Government Department of Health since then through the TTANGO2 trial in regional and remote areas. This application for MBS items is to ensure that the POCT program is sustainable beyond the end of TTANGO2.

Comparator

The proposed tests would replace laboratory testing for screening/diagnosis. In the current scenario, samples or swabs collected at the initial consultation at the health clinic would be sent to a regional laboratory and then to a central diagnostic laboratory (for NAAT testing) for diagnosis of CT, NG, or TV, which could return results in one to two weeks. The laboratory would be a National Association of Testing Authorities (NATA) Accredited Pathology Laboratory, able to claim MBS items for testing of CT, NG and TV (see Box 1, page 11). An individual testing positive would need to be recalled to the clinic, which may incur further delay, to receive the results, and contact tracing could start at this time.

Most central laboratories use a NAAT of some kind to diagnose STIs. Some laboratories may use the GeneXpert system for CT/NG and TV testing, but other commercially available assays may also be used including Aptima Combo 2 (Gen-Probe, San Diego, CA, USA) and Cobas 4800 (Roche Diagnostics, Pleasanton, CA, USA). In-house CT and NG assays may also be used (as stated in the TTANGO trial).

Transport of samples to a central laboratory is limited by remoteness of the clinic. In some cases, samples may be collected and sent only once a week and may take up to two weeks in transit. For clinics that do not access the mail service, transport is managed by the service, and the cost is born by the service.

For symptomatic individuals, where there is a high clinical suspicion of an STI, the comparator also includes empiric treatment² with antibiotics for suspected CT/NG, prescribed at the first consultation, prior to the results of the diagnostic testing being returned. Treatment for TV is recommended to only commence after receipt of test results unless abnormal discharge and a pH test is indicative of infection. In individuals with mild symptoms and uncertain diagnosis, treatment may only be initiated after receipt of test results (as with TV). There may also be some cases, where the threshold for laboratory testing is not met (but who may undergo testing if POCT were available).

Recall testing-repeat of page 10 under 'Retesting'

Individuals who are treated would be recalled three months after initial diagnosis for further testing to confirm that the individual has not been reinfected.

Rationale

Some central laboratories may carry out culture on the samples and perform standard microbiological testing. Culture of samples would enable testing for AMR, which may be necessary for individuals who do not respond to standard antibiotic treatment. (Antibiotic resistance is reportable.)

According to the applicant, currently one in six specimens tested for NG would be cultured for antimicrobial sensitivity testing. However not all specimens sent are suitable for culture as the viability of pathogens is often compromised (NG is highly sensitive to temperature and transport delays). POCT should enable prioritisation of specimens for transport and therefore improve the culture success rate.

PASC recommended that the description regarding what happens in the comparator scenario be expanded to capture that not all individuals who are symptomatic will receive empiric antibiotic treatment for a STI owing to other clinical diagnoses being made.

Currently claimed items for CT, NG and TV testing.

Currently the cost for testing is claimed under the MBS item numbers 69316, 69317, 69319, and 69494. The MBS item 73938 is claimed for the collection, transport, and storage of specimens by a pathology provider. Items can be seen in Box 1.

² Empiric treatment = treatment given without knowledge of cause of disorder.

Box 1 MBS items claimed for the comparator service

<p>Category 6 – PATHOLOGY SERVICE</p> <p>69316</p> <p>Detection of Chlamydia trachomatis by any method - 1 test (Item is subject to rule 26) (Item is subject to restrictions in rule PR.9.1 of explanatory notes to this category)</p> <p>Fee: \$28.65 Benefit: 75% = \$21.50 85% = \$24.40</p>
<p>Category 6 – PATHOLOGY SERVICE</p> <p>69317</p> <p>1 test described in item 69494 and a test described in 69316. (Item is subject to rule 26)</p> <p>Fee: \$35.85 Benefit: 75% = \$26.90 85% = \$30.50</p>
<p>Category 6 – PATHOLOGY SERVICE</p> <p>69319</p> <p>2 tests described in item 69494 and a test described in 69316. (Item is subject to rule 26)</p> <p>Fee: \$42.95 Benefit: 75% = \$32.25 85% = \$36.55</p>
<p>Category 6 – PATHOLOGY SERVICE</p> <p>69494</p> <p>Detection of a virus or microbial antigen or microbial nucleic acid (not elsewhere specified) 1 test (Item is subject to rule 6 and 26)</p> <p>Fee: \$28.65 Benefit: 75% = \$21.50 85% = \$24.40</p>
<p>Category 6 – PATHOLOGY SERVICE</p> <p>73938</p> <p>Initiation of a patient episode by collection of a specimen for 1 or more services (other than those services described in items 73922, 73924 or 73926) if the specimen is collected by or on behalf of the treating practitioner. Unless item 73939 applies</p> <p>Fee: \$7.95 Benefit: 75% = \$6.00 85% = \$6.80</p>

Reference standard

There is no gold standard testing by which to compare the accuracy of POCT and laboratory testing. The reference standard is therefore the same as the comparator, i.e., diagnosis of CT, NG or TV made by NAAT testing within a laboratory.

PASC noted that there is no distinction between the reference standard for analytical validity versus clinical validity (the reference standard for both is NAAT laboratory-based testing).

Outcomes

Safety

The proposed medical service is equivalent for safety to other laboratory tests that involve sampling of urine or collection of cervical/vaginal swabs. Therefore, the safety of the medical service would not need to be considered, unless the availability of POCT increases the uptake rate.

Effectiveness

Analytical validity

Although studies comparing the accuracy of POCT against laboratory-based testing would be possible, it is acknowledged that a more common outcome measure to report when comparing two of the same types of technology (in this case, NAAT), is concordance.

Analytic sensitivity, specificity, or concordance compared to laboratory testing (reference standard or NAAT) Rate of repeat testing

Clinical utility

Change in management (therapeutic efficacy)

Uptake of testing

Uptake of treatment

Time to treatment (from testing or diagnosis)

Time to partner testing (and appropriate treatment where applicable)

Change in individual health outcomes

Period of infectiousness

Complications of CT and NG and TV (e.g. PID, chronic pelvic pain, ectopic pregnancy, infertility,)

Hospitalisations related to complications of CT, NG, or TV (such as progression of PID, disseminated infection, including septic arthritis and endocarditis or epididymitis/orchitis)

Health-related quality of life

Psychosocial quality of life (relationships etc)

Change in pregnancy and neonatal outcomes

Preterm birth (special or intensive care admission), premature rupture of membranes (leading to premature birth or pre-viability pregnancy loss),

Change in population health outcomes (long-term)³

³ It may be difficult to provide data on long-term outcomes. They may need to be provided through modelling.

Transmission of CT/NG/TV to partners
Transmission of other sexually transmitted infections/diseases
Prevalence of CT/NG/TV in the community

Healthcare system

Cost of testing per individual
Incremental cost-effectiveness of POC testing, such as:

- Cost per quality adjusted life-year (QALY) gained
- Cost per complications of CT and NG and TV avoided

Financial implications (Change in uptake of test, financial impact, overall healthcare costs, etc)

Other relevant considerations

Strengthened antimicrobial resistance surveillance in those test-positive for NG
Improved antibiotic stewardship, with intension to reduce antibiotic resistance
Decrease in disparity of health outcomes related to STIs
Ethical considerations
Individual acceptability and preferences (including cultural appropriateness)

PASC suggested that harms from overtreatment/incorrect treatment due to empiric treatment rather than treatment based on test results need not be considered. Likewise, cost per inappropriate treatment avoided need not be considered.

PASC supported the suggestion by the applicants to remove the outcomes of “stillbirth, perinatal death, neonatal adverse neurodevelopmental outcomes, and cerebral palsy” as these are multifactorial.

Current and Proposed Clinical Management Algorithms

Current clinical management algorithm for identified population

In the absence of POCT NAAT testing, the timing of treatment is different, depending on whether the person attending the health clinic is symptomatic for an STI or not. Management pathways are found in Figure 1.

Individuals attending remote or regional health clinics who clearly show symptoms of an STI will be given broad spectrum antibiotic treatment at the time of the consultation, without waiting until test results are returned. For example, a sexually active man presenting with epididymo-orchitis would be treated presumptively for CT and NG by a combination of antibiotics (ceftriaxone plus either doxycycline or azithromycin). A urine sample, or vaginal or cervical swab, rectal swab or pharyngeal swab will be sent to the nearest central laboratory that performs CT, NG, and/or TV testing. Once results are received at the clinic in approximately one to two weeks' time, the individual is recalled. On return of the individual to the clinic, further antibiotic treatment can be given if required, and contact tracing can be carried out.

The individual may also require further treatment locally, or hospitalisation depending on their symptoms. For example, if the individual has PID, clinical guidelines appropriate for the setting will be used to guide treatment of the individual for PID, depending on the severity of the disease. If the individual does not return to the clinic, the clinic 'driver' is tasked with finding the person in question to notify them. If the individual is not found, they will remain on the contact list.

Some individuals may present with symptoms that do not allow a clear diagnosis. For example, vaginal discharge and dysuria could be due to CT, NG, or TV (which require antibiotic treatment), but could also be due to non-infectious causes such as candidiasis, which would be made worse by antibiotics. If mild, it is possible that some of these individuals would not be tested for CT, NG, and TV. Low grade symptoms such as mild pelvic pain due to chlamydia may not be severe enough to trigger a diagnosis, and individuals may only get treated after receipt of test results (if they are able to be contacted after return of test results).

Testing of non-symptomatic but at-risk people occurs opportunistically. If an individual attending the clinic agrees to a sexual health investigation and STI testing, samples will be collected and sent to the central laboratory. In the absence of symptoms, antibiotics would not be given until a positive test result is returned. The individual testing positive would be recalled to be given the results and appropriate antibiotic treatment. If the person cannot be contacted, the driver will physically search for them, and if still not found, they will remain on the contact list. When the person comes back to the clinic, antibiotic treatment can be given, and contact tracing can be performed. For those testing negative, there will be no need to recall them to the clinic.

Individuals that tested positive will be recommended to return to the clinic after 3 months to test for re-infection.

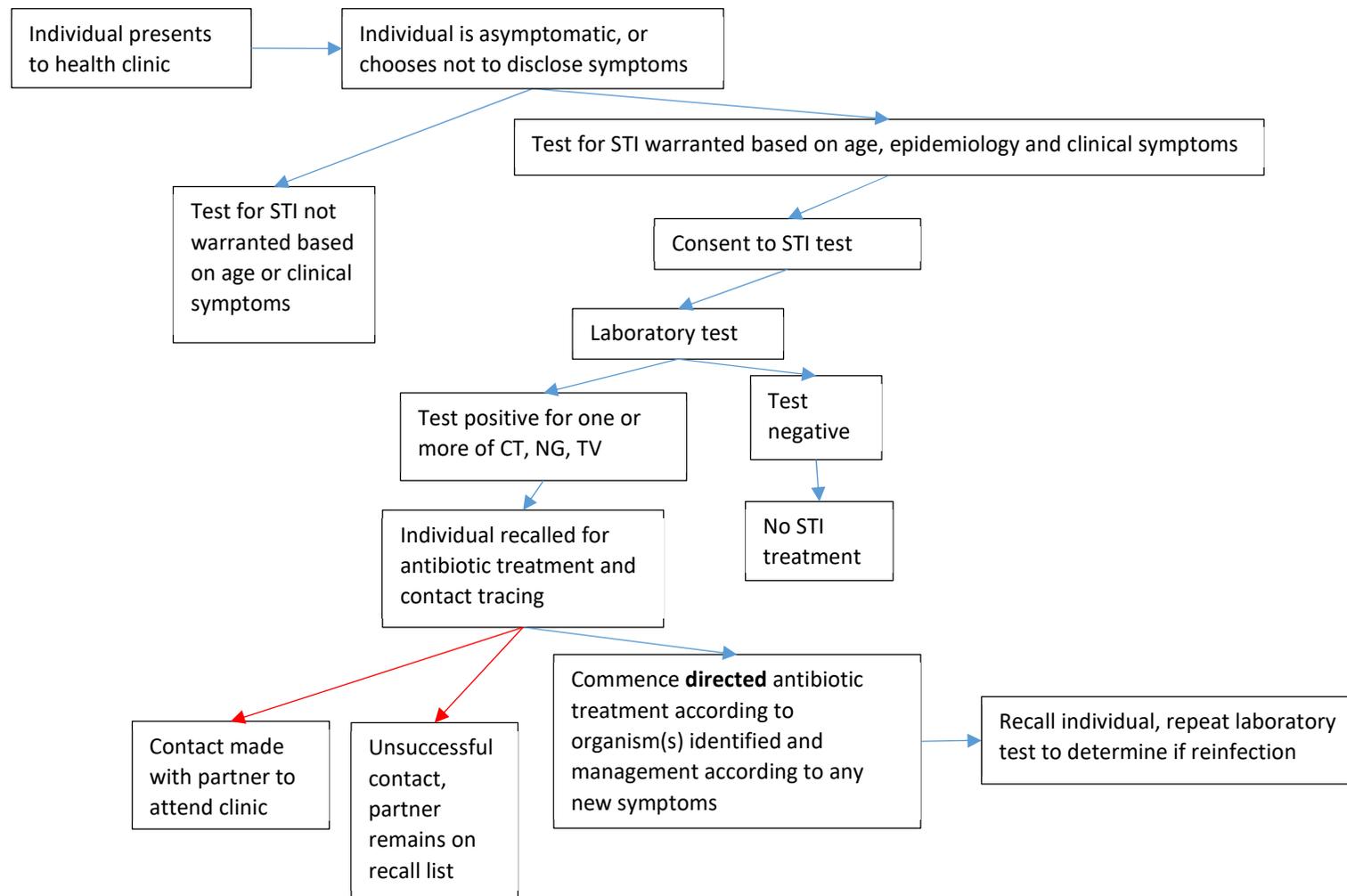


Figure 1 Current clinical management pathways for diagnosis and treatment of STIs in remote and regional health clinics with standard laboratory testing – asymptomatic individuals or those not disclosing symptoms

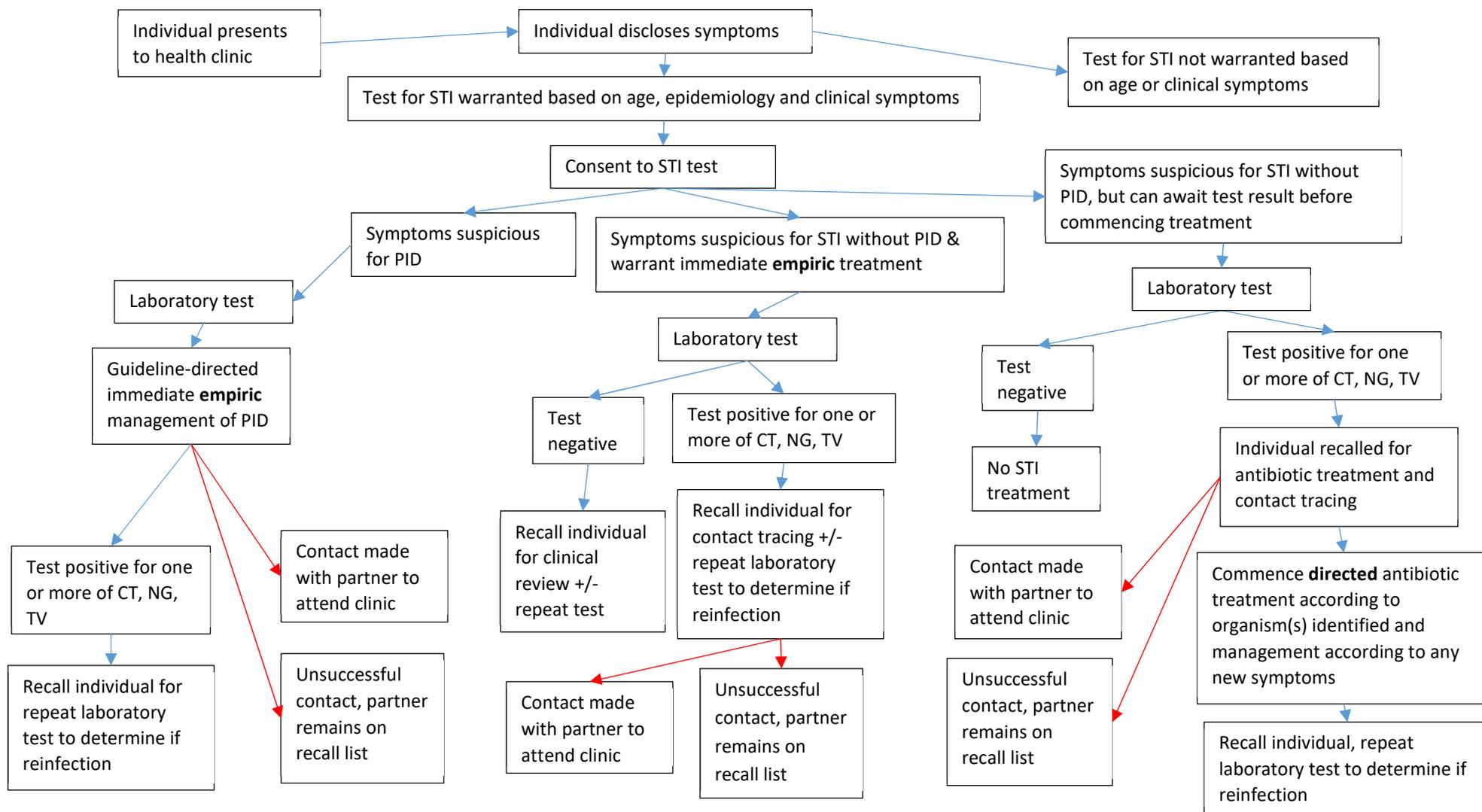


Figure 2 Current clinical management pathways for diagnosis and treatment of STIs in remote and regional health clinics with standard laboratory testing –symptomatic individuals

Proposed clinical management algorithm for identified population

The clinical management pathways for the proposed diagnostic tests and treatment are illustrated in

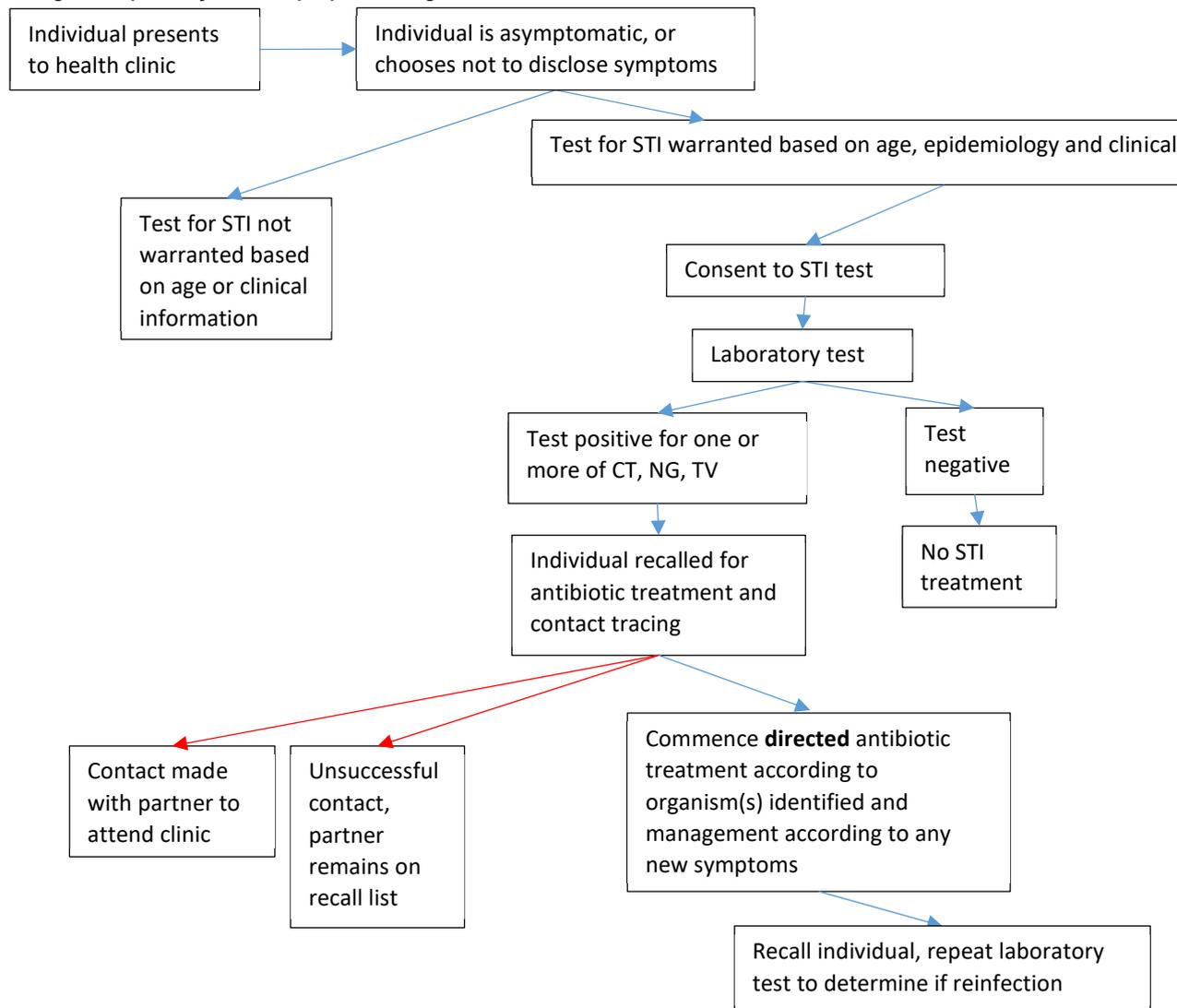


Figure 3 Proposed clinical management pathways for diagnosis and treatment of STIs in remote and regional health clinics with rapid POCT NAAT testing – asymptomatic individuals or those not disclosing symptoms

. The timing of treatment is the same for both symptomatic and non-symptomatic individuals attending the rural or regional health clinic using the proposed intervention in that following a positive test result in asymptomatic individual's treatment is started earlier than with current testing, and for symptomatic individuals their treatment may be better directed depending on the organism identified.

For individuals with symptoms of an STI, a clinical consultation will be required, including collection of medical history data and physical examination. A sample will be collected, either self-collected or by the attending clinician. The individual will be electronically logged, and a request for the POC testing will be made. The sample will then be added to the CT/NG and TV cartridges and inserted into the GeneXpert instrument for testing. Results will be available in 90 minutes and will be available on the laptop used locally. Assuming the individual has remained in the clinic or in the close vicinity, they will be notified of the results immediately afterwards. Antibiotic treatment will be

given to symptomatic individuals testing positive. Further treatment for symptomatic individuals may be required, for example if they have PID symptoms. The individual will be advised to follow-up to check that the STI has cleared, and that symptoms are improving. Contact tracing will be performed as soon as possible. For symptomatic individuals testing negative no antibiotic treatment will be given, although symptoms may be further investigated.

For non-symptomatic individuals, testing will be opportunistic. If a person attending the clinic agrees to a sexual health check-up and STI tests, then these will be performed as for the symptomatic individual. A sample will be collected and a request for POCT CT/NG and TV testing will be electronically logged. The results will be available in 90 minutes having been transferred to the local laptop. Non-symptomatic individuals testing positive will be given the results and appropriate antibiotic treatment immediately, assuming the person has remained within the clinic or near vicinity. Contact tracing will be performed. A follow-up time will be organised for the individual to check that the STI has cleared. Non-symptomatic individuals testing negative will be notified of the test results and not treated for STIs.

If individuals that tested positive for STI/s do not remain at the clinic to receive the POCT results, attempts will be made to contact them and ask them to return for antibiotic treatment and contact tracing. Because the test turn-around time is short, the proportion of individuals not remaining for results is expected to be small.

Individuals that tested positive will be recommended to return to the clinic after 3 months to test for re-infection with the previous STI.

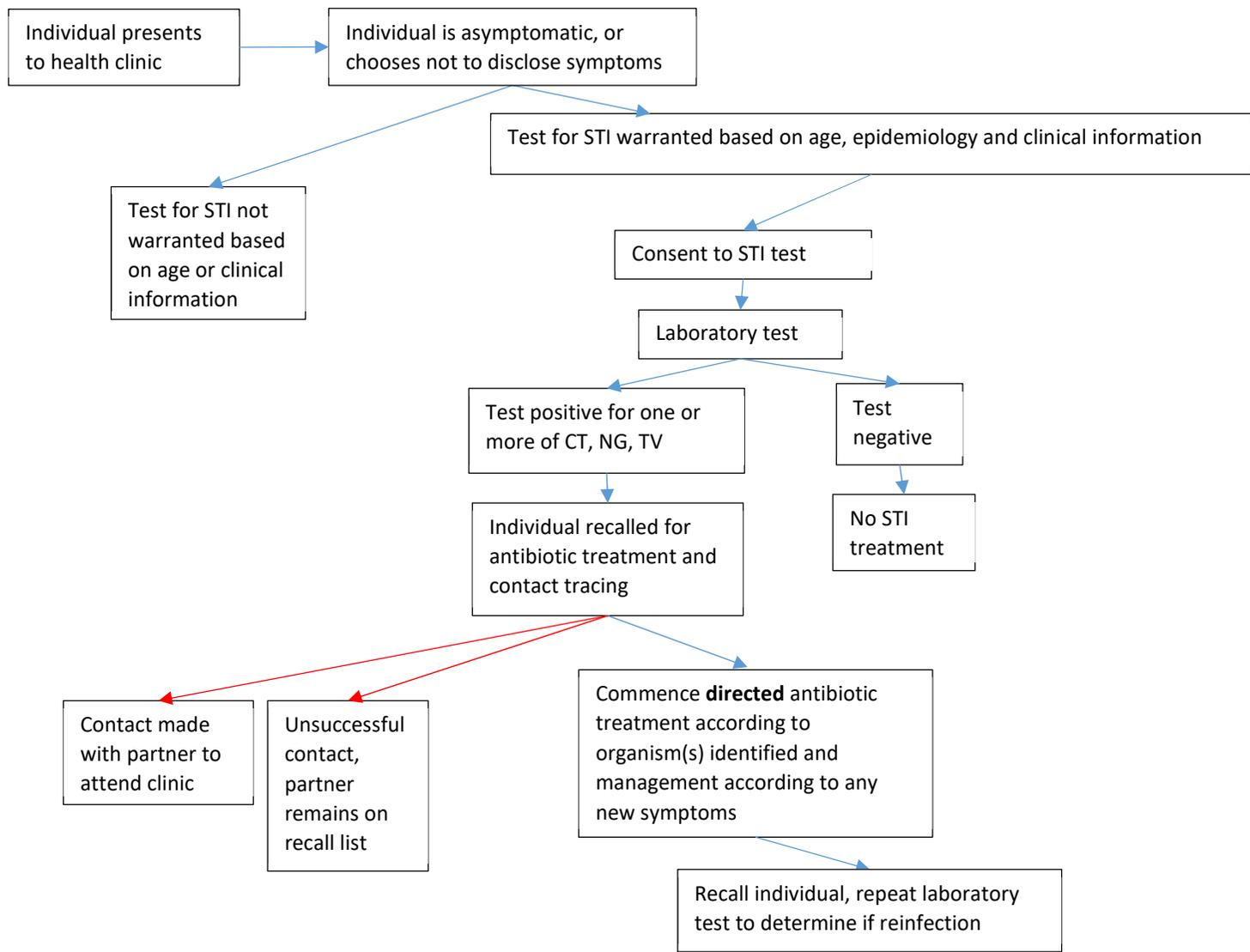


Figure 3 Proposed clinical management pathways for diagnosis and treatment of STIs in remote and regional health clinics with rapid POCT NAAT testing – asymptomatic individuals or those not disclosing symptoms

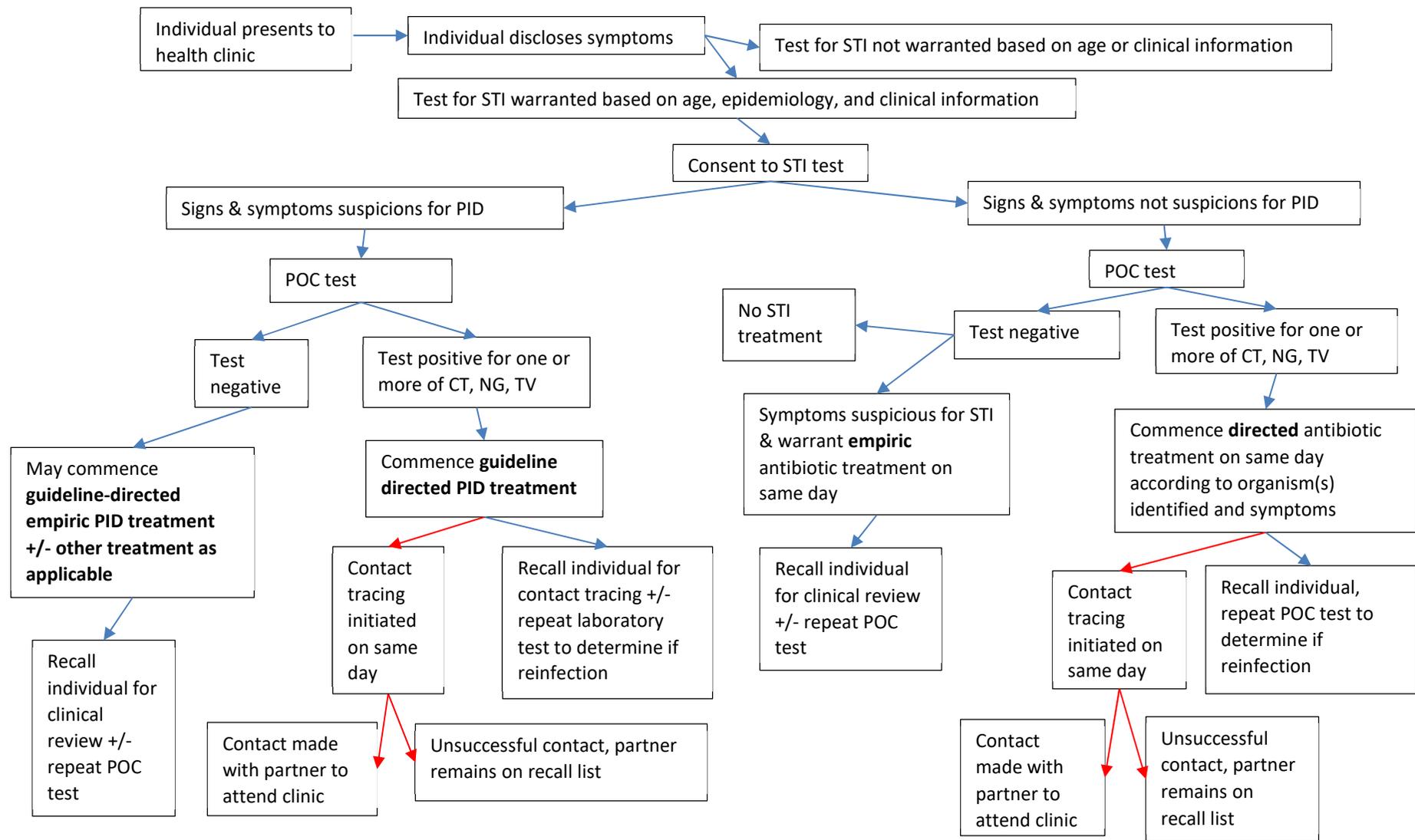


Figure 4 Proposed clinical management pathways for diagnosis and treatment of STIs in remote and regional health clinics with rapid POCT NAAT testing –symptomatic individuals

Proposed economic evaluation

The overall clinical claim is that the proposed point of care test is superior in terms of effectiveness versus the main comparator (laboratory testing with delayed results) in individuals who are symptomatic or asymptomatic (at high risk) for STIs (CT and NG and/or TV). Given the claim of clinical superiority, a cost-effectiveness or cost-utility analysis should be presented.

The cost and health outcomes may likely differ based on the individual and disease characteristics such as age, gender, and symptom presentation (asymptomatic or symptomatic). Sensitivity or scenario analyses may be considered to assess the impact of varying these variables on resulting ICERs.

PASC noted that the claim is that POCT for CT, NG and TV is as accurate as laboratory testing, and leads to superior health outcomes. The appropriate economic evaluation is therefore a cost effectiveness or cost-utility analysis.

PASC advised that the threshold for testing individuals could be lower for the POCT than laboratory-based testing, so an increase in utilisation should be incorporated into the financial analysis. PASC confirmed that the economic analyses should take into account the cost of labour required to follow-up individuals.

Other relevant considerations

Ethics analysis

The ethical issues below are raised in the application and would benefit from analysis and consideration.

Reduction in health inequities

Consider how the technology may be of additional value by virtue of reducing health inequities, specifically helping to reduce health inequalities between two sets of populations: (1) rural/remote and urban populations; and (2) Aboriginal and Torres Strait Islander and non-Indigenous populations.

Cultural acceptability and individual preferences

PASC requested the cultural acceptability and individual preference for POCT versus laboratory testing be taken into account in the assessment. The applicants explained that there is a high level of cultural acceptability for POCT, and the TTANGO and TTANGO2 trials provide acceptability data, which show that testing is highly acceptable, and appreciated. They worked closely with Indigenous reference groups throughout, and the program has been designed and developed to be appropriate for the communities as well as staff. In addition, the potential for an expansion of the test population when using the POCT as compared to laboratory testing, not just an exchange of test, should be specifically addressed, and quantified, in relation to the proposed test setting.

Proposed item descriptors

Although it is expected that individuals will initially be tested for CT, NG and TV, it is proposed that separate MBS items be created as outlined below, so that partner testing and follow-up testing may be specific to the infection identified.

The initial proposal was that each of the following items have the clause 'Item is subject to restrictions in rule PR.9.1 of explanatory notes to this category' which refers to oversight of the POC testing by the Quality Assurance in Aboriginal Medical Services (QAAMS) Program. However, this program is specific to diabetes. It is suggested that a similar quality assurance program be developed, with oversight from the Flinders University International Centre for Point of Care testing.

Box 2 Proposed MBS item descriptors

Category 6 – PATHOLOGY SERVICE	Group PXX – Point of Care Tests
MBS [Item number XXX]	
Detection of CT (<i>Chlamydia trachomatis</i>) and/or NG (<i>Neisseria gonorrhoeae</i>) via point-of-care testing performed at Aboriginal Medical Services or Aboriginal Community Controlled Health Services in rural or remote settings for the diagnosis of CT or NG infection.	
Fee: REDACTED	
Category 6 – PATHOLOGY SERVICE	Group PXX – Point of Care Tests
MBS [Item number YYY]	
Detection of CT (<i>Chlamydia trachomatis</i>) and/or NG (<i>Neisseria gonorrhoeae</i>) via point-of-care testing performed at Aboriginal Medical Services or Aboriginal Community Controlled Health Services in rural or remote settings, following previous CT or NG infection.	
Fee: REDACTED	
Category 6 – PATHOLOGY SERVICE	Group PXX – Point of Care Tests
MBS [Item number ZZZ]	
Detection of TV (<i>Trichomonas vaginalis</i>) via point of care testing performed at Aboriginal Medical Services or Aboriginal Community Controlled Health Services in rural or remote settings for the diagnosis of TV infection.	
Fee: REDACTED	

Consultation feedback

Consultation Feedback was received from the following three (3) organisations and one (1) individual:

- The National Rural Health Alliance (NRHA)
- The Royal Australian College of Physicians (RACP)
- National Pathology Accreditation Advisory Council (NPAAC)

The feedback was supportive of the application and suggested the following advantages:

- Potential reduction in spread of STIs within the community.
- Reduction of burden of disease due to impact of communicable diseases.
- Reduction in conditions linked to STIs such as infertility and pelvic inflammatory disease.
- Improvement of management and patient prognosis.

- Timely diagnosis leading to reduced time to begin treatment
- Expedited contact tracing
- Potential decrease in prevalence of STIs within these communities
- There is a long history of experience with POCT in this setting

Disadvantages stated in the feedback received was:

- 90 minutes may be too long for individuals to wait for a result

Other information provided in the consultation feedback is:

- Services may also benefit non-Aboriginal communities in both inner and outer regional areas where access to specialised health services are limited.
- Services may benefit other populations with high rates of STIs such as men who have sex with men.
- A proposal to government for an alternative funding programme to enable the health provider to purchase required equipment and infrastructure to provide the proposed service would be supported.
- The STIs discussed are a significant public health issue in predominantly Aboriginal and Torres Strait Islander communities in remote and very remote Australia.
- There must be adequate quality control and training of providers to ensure effective provision of this service.
- Service providers should have support from a supporting pathology laboratory or clinical microbiologist in case of technical/clinical difficulty.
- Providers should have access to advice should there be test failures or EQA issues
- Providers should have access to advice regarding testing platforms
- NPAAC Standard on Requirements for POCT in community settings is in final draft and awaiting release – to replace existing guidelines.
- RCPAQAP will develop a program for STI POCT in 2022

PASC noted that all the consultation feedback received was in favour of use of POCT for STIs in rural and remote areas.

PASC noted additional feedback received which suggested that 90 minutes is still a long time to wait to get results, so not everyone will wait for test results. However, the ability to find the person after that time interval is much greater than when testing is performed in a laboratory.

[Next Steps](#)

The Applicant advised they will be submitting an Applicant Developed Assessment Report.

[Applicant Comment to PICO Confirmation](#)

Population

Nil comment

Intervention

Nil Comment

Comparator

Nil Comment

Outcomes

Nil Comment

Current and proposed clinical management algorithm

The Applicant pointed out that the CARPA guidelines indicate that presumptive antibiotic treatment is not always indicated if symptoms of mild PID may not be definitive, i.e. dysuria in women. Recommended management is STI workup and test, urine test and clinical examination. A bimanual examination is dependent on the skill level of the person on duty at the time and may not be conducted. If undecided about the diagnosis, other causes are investigated. Antibiotic treatment is not recommended, and the patient is advised to return if pain continues. Access to POC test may therefore aid in establishing a diagnosis. CARPA guidelines are produced for multi-disciplinary rural health care providers by the Central Australian Rural Practitioners Association.

Proposed Economic Evaluation

Nil Comment

Other Relevant Considerations

Nil Comment

Proposed Item Descriptors

Nil Comment

Consultation feedback

Nil Comment

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