Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP)

2023-2024 Implementation Report

Table of Contents

Abbreviations

AMR	Antimicrobial resistance
CDC	United States Centres for Disease Control and Prevention
DSTDP	Division of STD Prevention
EGASP	Enhanced Gonococcal Antimicrobial Surveillance Programme
EUCAST	European Committee on Antimicrobial Susceptibility Testing
GAP-AMR	Global Action Plan on Antimicrobial Resistance
GASP	Gonococcal Antimicrobial Surveillance Programme
GCLP	Good Clinical Laboratory Practice
GLASS	Global Antimicrobial Resistance and Use Surveillance System
HCP	Healthcare provider
HIV	Human immunodeficiency virus
HTS	HIV testing services
ISO	International Organization for Standardization
LMIC	Low- and middle-income country
MIC	Minimum inhibitory concentration
MOHCC	Ministry of Health and Child Care (Zimbabwe)
MRCZ	Medical Research Council of Zimbabwe
NAAT	Nucleic acid amplification test
NCHHSTP	National Center for HIV/AIDS, Viral Hepatitis, STDs and TB Prevention
NICD	National Institute for Communicable Diseases
NMRL	National Microbiology Reference Laboratory
PC	Pus cells
SOP	Standard operating procedure
STI	Sexually transmitted infection
WHO	World Health Organization

1. Background

Gonorrhoea is a sexually transmitted infection (STI) caused by the bacterium *N.gonorrhoeae*. It is a condition that commonly presents with purulent urethral discharge in men and mucopurulent cervical discharge in women. However, men and especially women with gonorrhoea may be completely asymptomatic, but still risk developing complications of the infection and transmitting the infection to their partners. Potential complications include pelvic inflammatory disease, and epididymo-orchitis, conditions that cause infertility and may increase the risk of ectopic pregnancy.[1] Furthermore, similar to other STIs, gonorrhoea infection also increases the risk of transmission and acquisition of HIV.[2]

N.gonorrhoeae is the second most prevalent bacterial sexually transmitted infection. According to the WHO 2021 estimates, in 2020 approximately 82,4 million new infections occurred among adults aged 15-49 years. Antimicrobial resistance (AMR) in Gonorrhoea appeared soon after the antimicrobial medicines started to be used. This has continued to expand over the past 80 years, affecting medicines such as tetracyclines, macrolides (including azithromycin), sulphonamides and trimethoprim combinations and more recently quinolones. In many countries, including Zimbabwe, ciprofloxacin resistance is exceedingly high, azithromycin resistance is increasing and resistance or decreased susceptibility to cephalosporins (cefixime and ceftriaxone) continue to emerge. A major concern is the emergence of resistance to cephalosporins which is the last line third generation cephalosporin. If gonococcal infections become untreatable there are critical implications to the sexual and reproductive health of men and women, as well as maternal and newborn health consequences.

Evidence from recent studies among young people in Zimbabwe show relatively high prevalence of gonorrhoea.[4,5] The last planned GASP for 2019/2020 was disrupted by the COVID-19 pandemic. As a result, the last completed GASP in Zimbabwe was in 2015/2016, where all 102 isolates were susceptible to ceftriaxone and cefixime. Resistance to kanamycin and ciprofloxacin was 2.0% and 18.6%, respectively. Results from the 2010 surveillance influenced the change in management guidelines from use of quinolone to cephalosporin-based regimens.

Implementation of EGASP commenced in Zimbabwe in October 2023. The Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP) aims to strengthen sentinel surveillance for gonococcal antimicrobial resistance in selected countries. EGASP is a special project under the Global Antimicrobial Resistance Surveillance System (GLASS) umbrella. EGASP is a collaboration between the WHO, the United States Centers for Disease Control and Prevention (CDC) and other WHO collaborating centres. EGASP monitors trends in antimicrobial susceptibility in N. gonorrhoeae by using standardised sampling and laboratory protocols. This surveillance approach allows collaborators to improve the quality, comparability and timeliness of gonococcal antimicrobial resistance data across multiple countries. It also aims at enhancing the capacity of early detection and reporting of N. gonorrhoeae strains with elevated minimum inhibitory concentrations (MICs) to the internationally recommended treatment for gonorrhoea and emerging or novel mechanisms of resistance to new antibiotics for gonorrhoea at the national and global levels[3].

2. Aims and Objectives

The objectives of EGASP are:

1 To monitor trends in antimicrobial susceptibility in *N. gonorrhoeae* using standardized protocols for systematic inclusion of patients and quality-assured laboratory testing

2 To epidemiologically characterise men with gonorrhoea at selected sentinel sites, especially those with *N. gonorrhoeae* not susceptible to recommended antimicrobial agents.

Additionally, implementing EGASP will also strengthen:

- The capacity for improving the epidemiology and surveillance of STIs and AMR
- The clinical, epidemiological and laboratory understanding of the personnel of the participating clinics.
- The epidemiological and laboratory capacity of the personnel of the participating laboratories.

3. Implementation Overview

I. Site Selection

Former GASP sentinel sites with high burden of urethral discharge were selected to participate in EGASP from October 2023 to date. These include:

- Bulawayo
    - Khami Road Clinic
- Beitbridge
    - Dulibadzimu Clinic

Cowdray Park Clinic in Bulawayo was selected as a new site that also commenced sample collection in October 2023. Subsequently two additional sites were identified, assessed, and trained in Harare (Epworth Clinic and Hopely Clinic) to start sample collection in the 2024/2025 cycle.

II. *Site Assessments*

Fig 1: National team conducting lab assessment.

Assessment team

A team of comprising of Ministry of Health and Child Care (MoHCC), National Microbiology Reference Laboratory (NMRL) and WHO In-Country officials conducted the site assessments.

Purpose of the assessment

The site assessments were conducted to ensure that the facilities have the necessary infrastructure, resources and capabilities to support accurate, efficient and compliant surveillance activities. The assessments also provided insights into the clinic and laboratory workflows related to EGASP and determined the gaps or deficiencies that need to be addressed to ensure smooth surveillance operations. The laboratory assessments were also conducted to assess requirements to capacitate sentinel laboratories to process samples.

Assessment dates and duration of the assessment

Initial clinical assessments were conducted at Dulibadzimu Clinic in Beitbridge, Khami Road Clinic, and Cowdry Park Clinic in Bulawayo and laboratory assessments were conducted at Beitbridge District Hospital Laboratory and Mpilo Central Hospital Laboratory from 17-20 July 2023.

Subsequent clinical assessments were conducted at Hopley satellite clinic and Epworth polyclinic in Harare from 9-10 July 2024.

Data collection

A questionnaire was administered to the nurse-in-charge at the clinics and the head of the department at the laboratories to gather information on human resources and personnel, infrastructure, patient treatment and management, specimen collection and handling, sample transportation, infection prevention and control, inventory management and quality management systems. A checklist was also used to assess availability laboratory equipment and supplies. Visual inspections were conducted to examine surroundings, infrastructure, and facilities. The findings from the assessments are summarized in the tables below:

Table 1: Summary of findings for Clinical Assessments for Dulibadzimu, Khami Road and Cowdray Park Clinics (17-20 July 2023)

Site	Dulibadzimu Clinic	Khami Road Clinic	Cowdry Park Clinic
Clinic overview	• Located in Matabeleland South	• Located in Bulawayo Metropolitan	• Located in Bulawayo Metropolitan

	Province operated by the Beitbridge Town Council. • The clinic was previously enrolled in GASP	Province operated by Bulawayo City Council. • The clinic was previously enrolled in GASP	Province operated by Bulawayo City Council.
Total number of nurses	7 (3 at the satellite clinic)	7	8
Number of nurses available for EGASP	2 (1 from the satellite clinic)	2	2
Physical set-up and Infrastructure	• Suitable: One consultation room which provides a private screening area for patients and specimen collection. • The facility also has a lockable cabinet for secure data storage. • A computer with internet connectivity is also available.	• Suitable: Two consultation rooms which may provide private screening areas for patients and specimen collection. The facility has a lockable cabinet for secure data storage. • A computer with internet connectivity is also available.	• Suitable: One consultation room which provides a private screening area for patients and specimen collection. • The facility does not have a lockable cabinet for secure data storage. • A computer with internet connectivity is available.
Patient flow	Suitable workflow for consultation, sample collection, testing, and treatment	Suitable workflow for consultation, sample collection, testing, and treatment	Suitable workflow for consultation, sample collection, testing, and treatment
Patient management and follow up	Meets the minimum requirement for providing care and maintaining patient follow up.	Meets the minimum requirement for providing care and maintaining patient follow up.	Meets the minimum requirement for providing care and maintaining patient follow up.
Specimen collection and transportation	• Integrated sample transportation system used: • Rider for the local route collects samples daily at 3.30pm. • The clinic is the last collection point after which the rider proceeds to Beitbridge District Hospital Laboratory.	• Integrated sample transportation system used: • Riders collect samples daily at 10.00am. • Samples are referred to Mpilo Central Hospital Laboratory.	• Integrated sample transportation system used: • Riders collect samples daily between 9am – 11am • Samples are referred to Mpilo Central Hospital Laboratory.

Availability of medicines for testing and treatment	• Intermittent supply of diagnostic test kits: (HIV/Syphillis Duo, Sphillis). • Intermittent supply of medicines: (Metronidazole, Benzathine penicillin G, and Azithromycin).	• STI medicines and HIV and syphilis test kits were available. • Azithromycin was reported out of stock. • Ceftriaxone runs out quickly due to high volume of clients. However, stocks were available on visit.	The clinic did not report any stock outs of essential medicines and supplies for STI treatment and testing.
Average urethral discharge statistics Apr -Jun 2023	36	135	13
Challenges	• Travellers in transit do not return for follow up consultation. • Intermittent supply of medicines and test kits.	• High volume site hence used by most clients with STI resulting in high consumption of medicines and test kits .	• User fees presents a barrier to follow up.

Table 2: Summary of findings for Laboratory Assessments – Beitbridge and Mpilo

Site	**Beitbridge District Hospital Laboratory**	**Mpilo Central Hospital Laboratory**
Overview	• A multidisciplinary diagnostic laboratory • Laboratory was involved in the previous GASP responsible for packing samples to be transported to the NMRL. • Last performed microbiology culture and sensitivity tests in 2021 due to shortage of reagents. • Was capacitated to culture Vibrio Cholerae when cholera cases were reported in 2023.	• The Laboratory was involved in the previous GASP responsible for packing samples to be transported to the NMRL. • Currently performing culture and sensitivity.
Total number of Lab personnel	9	5
Lab personnel for EGASP	2	2 (1 Scientist to be assigned to Bulawayo City Clinics)
Physical set-up and Infrastructure	• The microbiology bench has sufficient laboratory space with adequate light.	• The laboratory was renovated under the Fleming Fund.

	• There is no lockable cupboard for secure data storage. • A computer with internet connectivity is available	• Has sufficient laboratory space with adequate light. • A secure place for data storage is available. • A computer is available however internet availability is a challenge.
Biosafety cabinet and CO_2 Jar for culture	Yes	Yes
Autoclave and media preparation area	Yes	Yes
Hand washing area with running water	Yes	Yes
Slide preparation and staining area	Yes	Yes
Incubator and CO_2 Jar for culture	Yes	Yes
Biosafety cabinet	Yes	Yes
Refrigerator with working temperature (-70°C - 80°C).	A -15°C freezer is available	A -30°C freezer is available
Microscope	Yes	Yes
Water bath	No	Yes
Specimen transportation	• Samples will be transported to the NMRL through FEDEX or DHL. • Supplies for triple packaging of samples are in short supply and improvised materials are used	• Samples will be transported to the NMRL through swift. • Supplies for triple packaging of samples are in short supply and improvised materials are used.
Sample reception, processing and reporting of results	• Laboratory staff receive samples for their workstation process them and report results.	• All scientists receive samples, process them and report results. The head of department reviews results before dispatch.
Quality management system	• Participates in External Quality Assurance programs from NMRL for HIV and TB samples, NHLS South Africa for Viral load and TB. • ZINQAP for malaria and TB (less frequently). • SLMTA based on ISO 15189:2012 in use.	• Participates in External Quality Assurance programs from EQuAfrica. • Zimbabwe National Quality Assurance Program (ZINQAP) (less frequently). • SLMTA based on ISO 15189:2012 in use.

Infection prevention and control	• The laboratory has standard operating procedures for waste management and disposal of bio-hazardous materials. • There was no documented evidence of training on shipping of biological substances, Biosafety in Microbiology. • Lab personnel enroll for some Open WHO courses Occupational Safety.	• The laboratory has standard operating procedures for waste management and disposal of bio-hazardous materials. • There was no documented evidence of training on shipping of biological substances, Biosafety in Microbiology and handling of laboratory chemicals.
Inventory management .	• Kits and reagents are stored under appropriate conditions. • All reagents for EGASP will need to be acquired to capacitate the laboratory to perform culture and sensitivity testing for N. gonorrhoae.	• Kits and reagents are stored under appropriate conditions. • All reagents for EGASP will need to be acquired to capacitate the laboratory to perform culture and sensitivity testing for N. gonorrhoae.
Challenges	• Laboratory currently not performing culture.	• A cold room for storage of reagents is available. However there is an intermittent supply of electricity, the laboratory generator is currently non-functional.

Table 3: Summary of finding for Clinical Assessments Hopely and Epworth Clinics (9-10 July 2024)

Site	**Epworth Poly Clinic**	**Hopley Satellite Clinic**
Clinic overview	• Located in Harare Metropolitan Province operated under Provincial Medical Director's Office. • The clinic was not previously enrolled in GASP.	• Located in Harare Metropolitan Province operated under Provincial Medical Director's Office. • The clinic was not previously enrolled in GASP.
Total number of nurses	59	8
Number of nurses available for EGASP	7 nurses and 2 Doctors	2
Physical set-up and Infrastructure	• Suitable: 1 consultation room which provides a private screening area for patients and specimen collection. • The facility also has a lockable cabinet for secure data storage	• Suitable: Two consultation rooms which provide private screening areas for patients and specimen collection but one of the rooms doesn't have an examination couch but use

	but for purposes of EGASP surveillance a separate lockable cupboard is required for storage of data collection forms and sample collection kits. • A computer with internet connectivity is also available.	surgical bed for examination of patients. • The facility does not have a lockable cupboard in the consultation room where STI clients are examined for storage of data collection tools .
Patient flow	Suitable workflow for consultation, sample collection, testing, and treatment.	Suitable workflow for consultation, sample collection, testing, and treatment.
Patient management and follow up	Meets the minimum requirement for providing care and maintaining patient follow up	Meets the minimum requirement for providing care and maintaining patient follow up
Specimen collection and transportation	• Integrated sample transportation system used: • Rider for the local route collects samples daily at 11:00am. • Samples are referred to NMRL. **Additional fuel required to accommodate EGASP samples.**	• Integrated sample transportation system used however one of the bikes is broken down leaving only 1. • Riders collect samples daily around 11 am . • Samples are referred to NMRL. Additional fuel required to accommodate EGASP.
Availability of medicines for testing and treatment	• Stock outs of diagnostic test kits: (Insti, HIV/Syphilis duo). • Limited stock of chembio • Stock outs of medicines: (metronidazole, erythromycin, benzathine penicillin G, doxycycline and Azithromycin) however Ceftriaxone 1 g was available. • Very limited condom stocks.	• STI medicines and HIV and syphilis test kits were available. • Azithromycin was reported out of stock. • Ceftriaxone runs out quickly due to high volume of clients. However, stocks were available on visit. • Very limited male condom stocks.
Average urethral discharge statistics Apr -Jun 2024	37	30
Challenges	• Patients do not return for follow up consultation. • Intermittent supply of medicines and test kits. • Dose, frequency route and duration of prescribed medicines need to be	• Most patients in the area prefer to access services from organizations that offer free services through outreach because they fail to pay user fee at the clinic. • Majority of STI patients usually come to the clinic

	documented in STI Register. • Sexual Partner notification slips are required.	during weekends and bikers work during weekdays only. • Intermittent supply of medicines and test kits. • Patients presenting with other STIs are not screened for syphilis except for those presenting with genital ulcer disease. • Prescribed STI medicines are not documented in full, dose, frequency, duration and route are not documented in STI register. • Using outdated STI register and not current version. • Sphygmomanometer had no batteries and blood pressure checks were not done. • Inadequate condom demonstration models • Sexual partner notification slips were not available. • Male condoms were not placed at strategic points but only female condoms. It was reported that young people come to loot male condoms from outlets within facility for sale.

Table 4: Clinic Laboratory Assessments

Site	**Epworth polyclinic laboratory**	**Hopley satellite clinic**
Overview	• A small diagnostic laboratory is available for point of care testing. • Not suitable for performing culture.	• There is no laboratory at the site.
Specimen transportation	• Laboratory personnel will be involved in packing samples to be transported to the NMRL. • Supplies for triple packaging of samples are in short supply and improvised materials are used.	• The nurses will be responsible for packing samples to be transported to the NMRL. • Supplies for triple packaging of samples are in short supply and improvised materials are used.

Infection prevention and control	There was no documented evidence of training on shipping of biological substances, Biosafety in Microbiology.	
Challenges	• Laboratory does not perform culture	

Key findings and recommendations

- Training gaps were observed on sample collection and transportation requirements for EGASP.
  - There is need to design appropriate training material and conduct trainings in line with the protocols and standard operating procedures to address these gaps.
  - Facilitate training and distribution of national guidelines on the management and treatment of clients presenting with urethral discharge.

- A logistical challenge in the transportation of samples from clinics to the laboratory was identified. The riders collect samples from the clinics between 10am and 11 am, however clients present to the clinics throughout the day. In addition, sample transportation interruptions were anticipated during the rainy season. Arrangements will need to be made for samples which will require overnight courier to NMRL.
  - Bulawayo City Health management teams together with the IST coordinators will be engaged to determine a suitable arrangement and any additional resources that may be required to ensure that samples are transported with the required urgency.
  - Alternative solutions may be explored to ensure that riders are able to collect urethral swab samples at a specified time.

- Efforts should be made to address the underlying issues causing the shortages of medicines for the treatment of STIs and rapid diagnostic test kits for HIV and Syphilis at project sites.

- Dulibadzimu satellite clinic should be included in the training for EGASP as it is an extension of Dulibadzimu clinic, contributing to the overall statistics.
- Capacitation of central, provincial and district laboratories to perform microbiological culture.

III. Training of Health Workers

Training of health workers on EGASP was conducted in Bulawayo and Beitbridge (July 2023) for 3 sentinel sites that commenced sample collection in October 2023 and training for Harare sentinel sites (Hopley Tariro clinic and Epworth polyclinic) was conducted in October 2024.

Training Objectives:

1. Provide an overview of EGASP.
2. Orient participants on the EGASP protocol.

3. Discuss diagnosis and management of Neisseria Gonorrhoeae infection.
4. Discuss clinical and laboratory standard operating procedures.
5. Discuss sample collection, labelling, packaging and transportation procedures.
6. Discuss data management procedures

Training participants

The target audience for these trainings included hospital management, nurses, laboratory scientists and technicians, government medical officers from Epworth Polyclinic and Hopley Tariro clinics and riders for health who are responsible for integrated sample collection. The training team is indicated in the table below:

Table 5: List of Trainers

Team member	Organization
Anna Machiha	National STI Prevention and Condom Coordinator ((MoHCC)
Mr Tarupiwa	HOD Chief laboratory scientist (MoHCC, National Microbiology Reference Laboratory)
Kudzai Patience Takarinda	Medical laboratory scientist (MoHCC, National Microbiology Reference Laboratory)
Dr Muchaneta Mugabe	National Laboratory officer (WHO)
Dr Mkhokheli Ngwenya	National Professional Officer (WHO)
Charmaine Chivandire	Analyst, Clinton Health Access Initiative
Tatenda Ngorima	Laboratory Scientist NMRL
Sylvia Gwekwe	Laboratory Scientist NMRL

Fig 2: Mr Tarupiwa facilitating lab module.

Fig 3: Harare and Beitbridge training

Training Methodology

The training curriculum included a review of the EGASP protocol, data collection tools and consent form. The training content included procedures for collecting and handling samples including guidance on patient preparation. Laboratory standard procedures for the isolation, identification and antimicrobial susceptibility testing of samples were outlined including recommended results turn-around-time. Logistics of transporting samples to the laboratory according to the recommended standards were also covered. Aspects on management of EGASP data, confidentiality and timely reporting for public health action were also discussed.

The trainings were delivered using didactic lectures which included presentations, lectures, discussions, and demonstrations. Participants were expected to listen to the instructor and take notes. Recaps were used to assess participants' understanding of the material and to identify areas for additional discussion and improvement.

Key Discussion Points

- The timeframe for patient follow-up visit was set at 7-14 days after which a test of cure will be provided.
- Samples will be collected from Monday – Friday excluding holidays.
- Riders for health were unable to attend the training in Beitbridge and will require orientation on EGASP and their specific roles.

- The cut-off time by which samples are to be received at the laboratory for shipping was established at 3.30pm.
- Riders will need additional fuel to ensure smooth implementation of the surveillance.
- One driver may be assigned to the collection of EGASP samples, preferably rider who is responsible for sample collection for the local sites.

Next Steps

- There is need to strengthen microscopy for the preliminary screening and diagnosis of *Neisseria gonorrhoeae* at current sentinel sites. It was proposed that this may be done by microscopists who are already stationed for TB screening at most levels of the health facilities to augment syndromic surveillance where Nucleic acid testing of *N. gonorrhoeae* is largely inaccessible due to implementation costs.
- A proposal was made to include Ciprofloxacin on the antimicrobial testing panel in the next EGASP cycle of 2024 to better understand its susceptibility since it is a drug which is easily accessible for treatment.
- The consent form and participant information sheet are to be translated to local languages Shona, Ndebele, and Venda.
- Determine which courier service will be best for daily overnight sample transportation (FEDEX or DHL).

IV. Post Training Support Visits.

Post training support visits were conducted from the 28th to the 31st of October 2024. The visits were conducted by a team from MOHCC, NMRL and WHO Country Office.

Team members:

Anna Machiha – National STI and Condom Programming Coordinator (MOHCC)

Tatenda Ngorima – Lab Scientist (NMRL)

Precious Andifasi – NPO HIV, STIs and Hepatitis Care and Treatment (WHO)

Tapfumaneyi Mashe – AMR Coordinator (WHO)

Visit Objectives

- Provide feedback to sites on sample collection and packaging from October 2023 to June 2024 cycle.

- To deliver consumables for sample collection and project reporting tools for the next project cycle.
- To provide mentorship and on-job training as required.

Mpilo and Beitbridge Laboratory

Fig 5: Demonstration of sample packaging with Mpilo

Fig 6: National team with Beitbridge Hospital Lab team

Discussion Points:

- Lab is performing the role of packaging and documenting samples from the clinic and sending them to NMRL through Fedex.
    - Sample packaging was demonstrated to the laboratory teams, particularly new staff.
- Fuel is being supplied through the Bulawayo City Health directorate for riders who transport specimens from the clinic to the laboratory.
- Fedex is collecting samples from the laboratory and transporting to NMRL.
    - Packaging should indicate type of specimen for expedited delivery by Fedex.
- Delivery to NMRL should be within 24hrs as Neisseria gonorrhea is fastidious and can survive only 24hrs on the transport media.
    - In May (5) and June (12) transportation of some samples was delayed which resulted in a reduction in isolation rate
- Sample collection was not being done on a Friday due to concerns with specimen transportation to NMRL over the weekend.
    - Facilities advised to collect samples on Friday as Fedex has provision to transport specimens for receipt by NMRL on a Saturday.
- Beitbridge lab created a WhatsApp group with clinical staff to post updates on sample collection.

Khami Road, Cowdray Park and Dulivadzimu Clinics

Fig 7: Meeting with Dulivadzimu Clinic staff

- EGASP data collection forms were reviewed with clinic staff and were staff reoriented on completion of the forms.
- Health workers were briefed on new treatment recommendation for gonorrhea with Ceftriaxone 1g.
- Challenges noted with sample transportation by riders during the rainy season.
    - Can communicate direct pick-up from sites by Fedex during the rainy season if riders not available.
- Contaminants noted on a significant proportion of swabs.
    - To utilize initial discharge for slides and subsequent discharge for swabs to minimize growth of contaminants.
- Attrition of trained staff at some of the sites noted.
- Project is missing some clients who come over the weekend.
- Some supply interruptions for ceftriaxone, single syphilis test kits and Insti noted at sites.

Recommendations:

- In the long term to capacitate regional laboratory to prepare isolates locally.
- To strengthen documentation:
    - To include full description of contents of package on Fedex form.
    - Documentation in laboratory register should include date and time sample received, date and time collected, Fedex tracking number and name of person who packaged the sample.
    - Time-out column in lab register to be signed by Fedex.
    - Completion of section on antibiotic use in the past two weeks.
    - Need to also explore the use of herbs and traditional concoctions.
    - Indicate name of person who collected sample on the form.
    - Need to indicate any other STIs that are present.
- Provision of airtime for communication between lab and sites.

- Sites to resume sample collection on a Friday, lab to design roster for Friday afternoon cover.
- Laboratory to file consignment slips.
- To create a WhatsApp group with Fedex for more effective communication of sample transportation.

V. Sample Collection

Samples were collected from men attending participating clinics with urethral discharge (suspected urogenital gonorrhoea episode). Eligible men were identified during registration and informed about the surveillance by appointed clinic personnel.

Inclusion criteria:

- Attending a participating clinic (for the first time for the current suspected urogenital gonorrhoea episode).
- 18 years of age and above.
- Able and willing to provide consent to participate in the enhanced surveillance.
- Able and willing to provide a urethral specimen for testing.

Exclusion criteria:

- Attending the clinic to follow up of a previously treated (un-enrolled) urogenital gonorrhoea episode (to avoid duplicate sampling for the same EGASP event).
- Do not give informed consent to participate in the study.

Patient's history was collected using an EGASP data collection questionnaire administered by the health care worker. The form captures data on sex, gender identity, age, country of birth, antibiotic use in previous 2 weeks, history of travel within preceding 30 days, gender of sexual partners, number of sexual partners in the preceding 30 days, nationality of sexual partners, and type of sex had by the participant. Clinical signs and symptoms and treatment provided was recorded. All participants were treated for urethral discharge in accordance with current Zimbabwe national management guidelines, namely ceftriaxone 250mg intramuscularly together with a one-week course of doxycycline 100mg twice daily[6]. The questionnaire was not linked to the participant's name or date of birth and only captured the participant's surveillance unique identifier (EGASP ID).

For each participant, two urethral swabs were collected. The first swab was used to prepare a Gram stain smear at the clinic. The second swab was placed in Amies transport medium with charcoal for culture.

Both the urethral swab and Gram stain smear were labelled by placing a sticky label with the same EGASP unique ID matching the ID on the data collection form. The swab placed in Amies transport medium with charcoal will be stored at room temperature and transported to NMRL overnight for processing within 24 hours of sample collection.

Sample transportation

Sample transportation for EGASP is integrated with the already existing sample transportation system used to transport other samples for the HIV program. The rider collects samples from

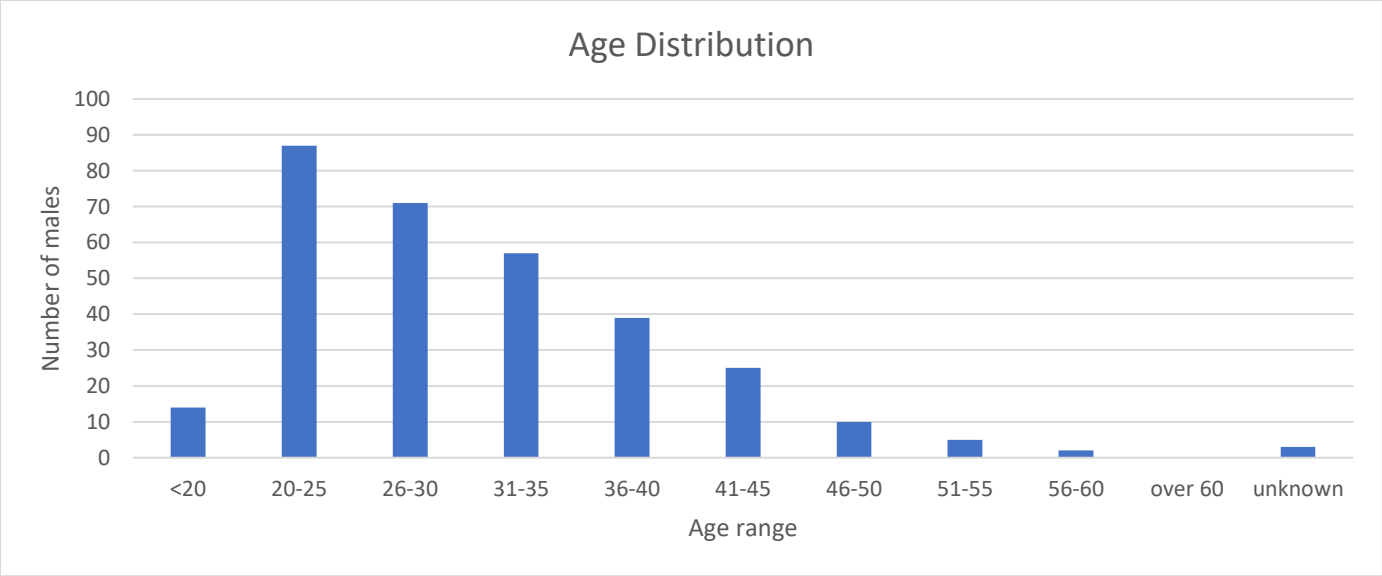
sentinel site and transports them to local laboratory and then to the courier company for overnight transportation to National Microbiology Reference Laboratory. The turnaround time is 24 hours because gonorrhoea is a fastidious organism. Additional fuel was required for EGASP in order to transport samples collected after the usual round to clinics .

VI. Laboratory procedures and findings

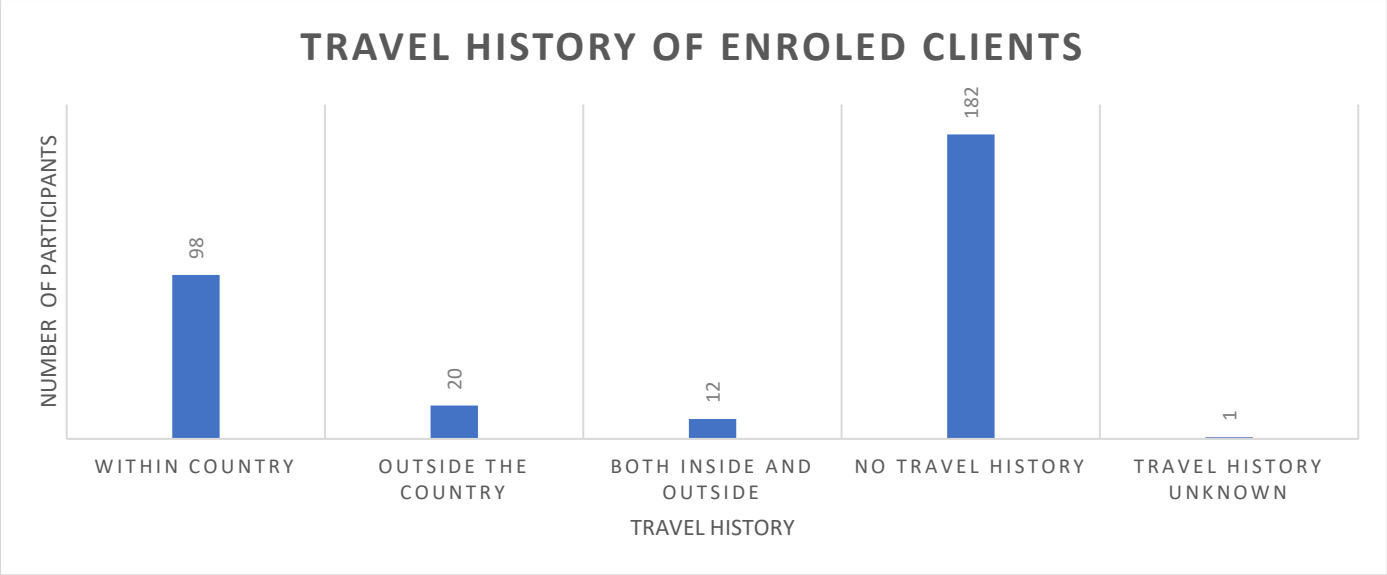
Scope:
This report covers the findings from the Zimbabwe EGASP laboratory data collected between October 2023 and June 2024.

Data collection sites:
Specimens and data collection forms were collected from three sites: Dulibadzimu Clinic (Beitbridge), Cowdry and Khami Road clinics in Bulawayo.
Specimens were collected using standardised methods and they were shipped within 24 hours after collection to the laboratory at room temperature in sealed biohazard bags.
Specimens were transported to NMRL in Amies transport medium with charcoal to maintain viability and prevent overgrowth of competing bacteria. Laboratory support visits were done, to ensure compliance with EGASP laboratory protocols/ standards

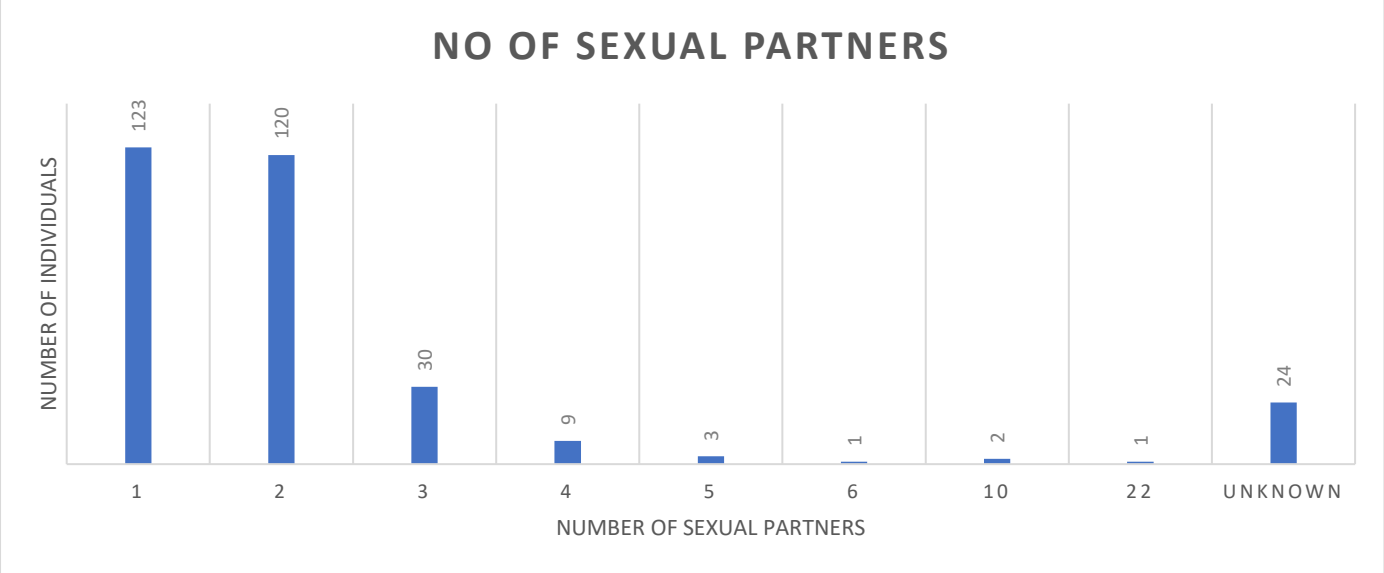
Selected indicators on epidemiological data collected for EGASP participants were analysed and results are shown below



Majority (68.69 %) of recruited clients were aged between 20-35 years of age.



58% of recruited clients reported no history of travel , whilst 42% reported history of travel , however majority of travel 31% was within the country .



Majority 63.89 % of clients reported encounters with more than 1 sexual partner.
Risk of STIs increases with number of sexual partners.

HIV and syphilis testing
Out of 313 clients recruited only 266 were tested for HIV and 42 tested positive for HIV, whilst a total of 257 clients were tested for syphilis and 14 were positive.

<u>Media used:</u>
MNYC agar, GC agar+1% Isovitalex, chocolate agar. The prepared media managed to pass the internal quality control checks, and it was used for culture, purification of GC isolates and antimicrobial susceptibility testing (AST).

Laboratory culture and confirmation of Neisseria gonorrhoeae (GC):

Presumptive identification N. gonorrhoeae
Gram stain- Gram negative diplococci
Culture Techniques -translucent colonies
Oxidase test - positive
Superoxol Test – Positive

Confirmation of GC isolates
Confirmed GC using the Vitek MS machine.

Internal quality control.

The following quality control strains were tested with each test run: WHO L, (WHO X, WHO Y- for high MICs) and WHO U. For β-lactamase testing, the WHO M strain was used on each run to determine β-lactamase positivity.

Laboratory results
Cumulatively 313 urethral swab samples were processed from October 2023 to 30 June 2024 with 122 confirmed GC isolates. Antimicrobial susceptibility testing was done on confirmed GC isolates.

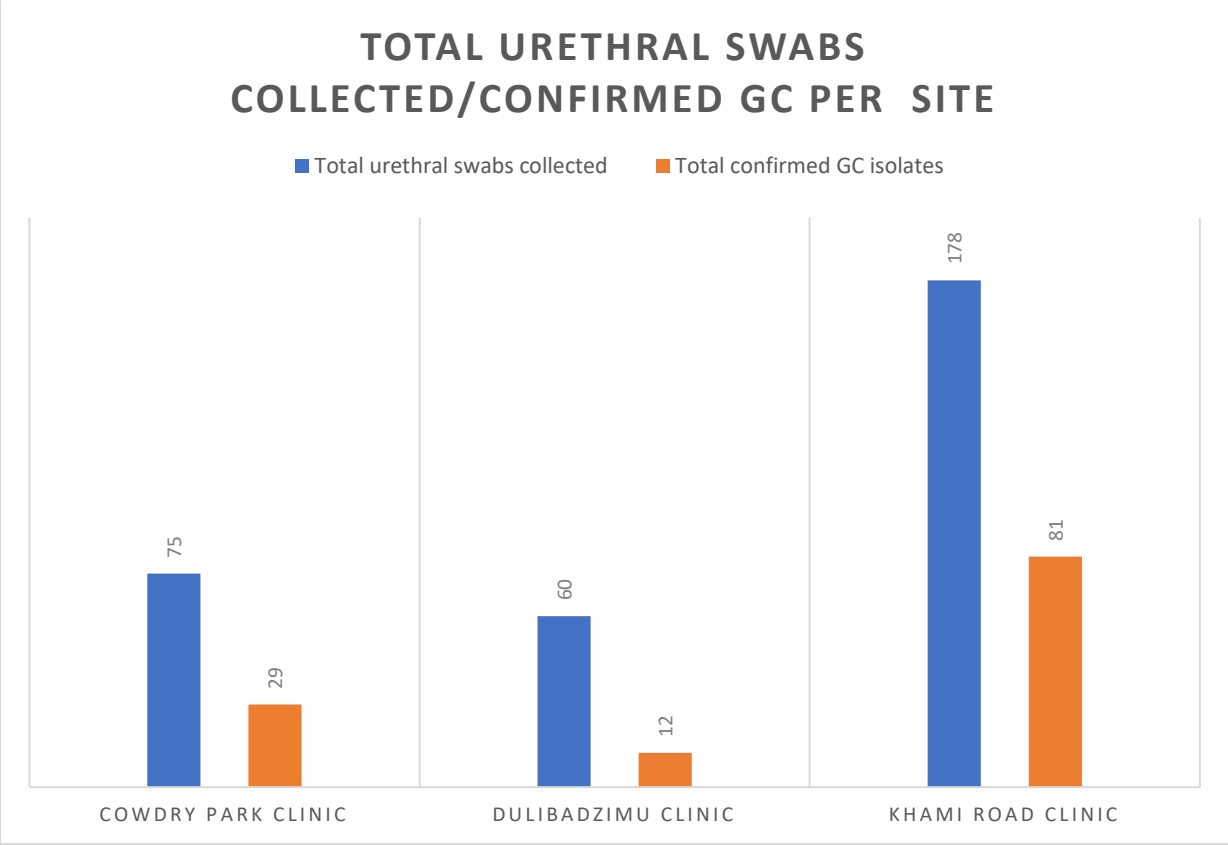


Fig 8: Total number of urethral swabs collected and confirmed GC isolates

The isolation rates for the sites were 39% (Cowdry clinic), 20% (Dulibadzimu clinic) and 46% (Khami road clinic). The overall isolation rate was 39%.

Sample processed and positivity rate

- Total number of samples collected = 313
- Total number of confirmed N. gonorrhoeae isolates= 122
- Overall positivity rate = 39%

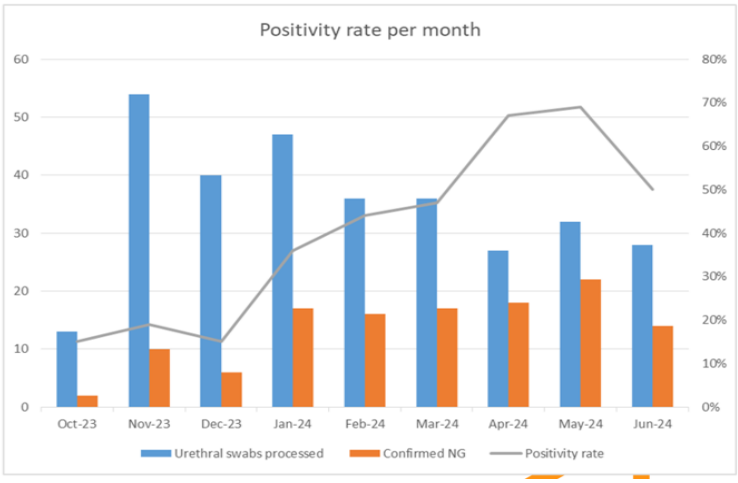


Fig 9: Samples processed and positivity rate

Antimicrobial Susceptibility Testing (AST)

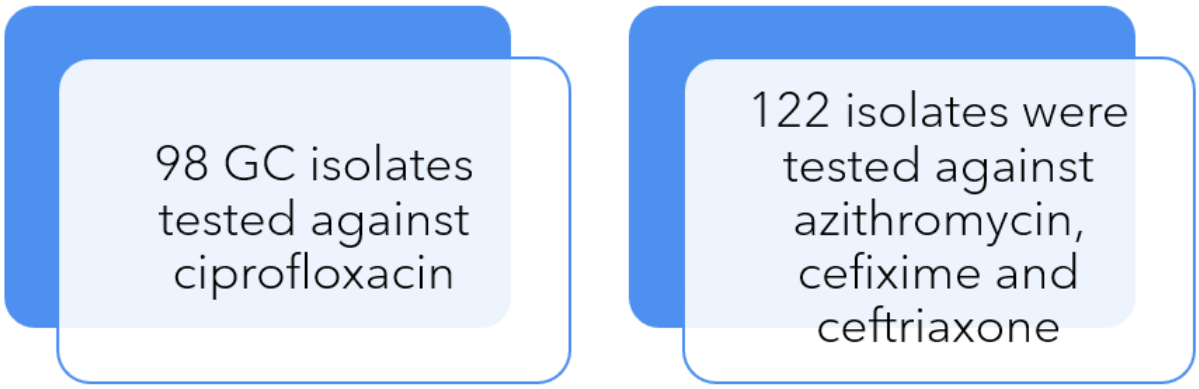


Fig 10 AST Susceptibility Testing

E strips for Ciprofloxacin were in short supply so only 98 isolates were tested.
Majority of the isolates were susceptible to azithromycin, except for 2 isolates that showed resistance. It is important to note that Doxycycline is the medicine used to treat chlamydia trachomatis in Zimbabwe according to National Guidelines whilst other countries use Azithromycin.

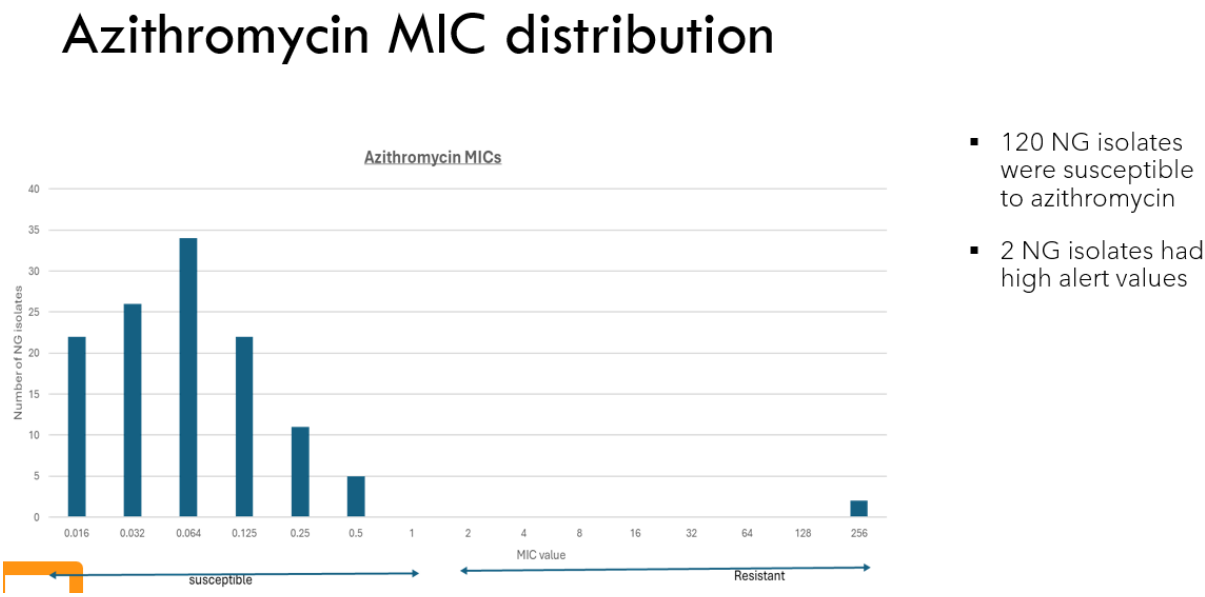


Fig 11: MIC distribution for Azithromycin

All 122 isolates were susceptible to ceftriaxone. Ceftriaxone is the first line treatment for Neisseria gonorrhoeae in Zimbabwe.

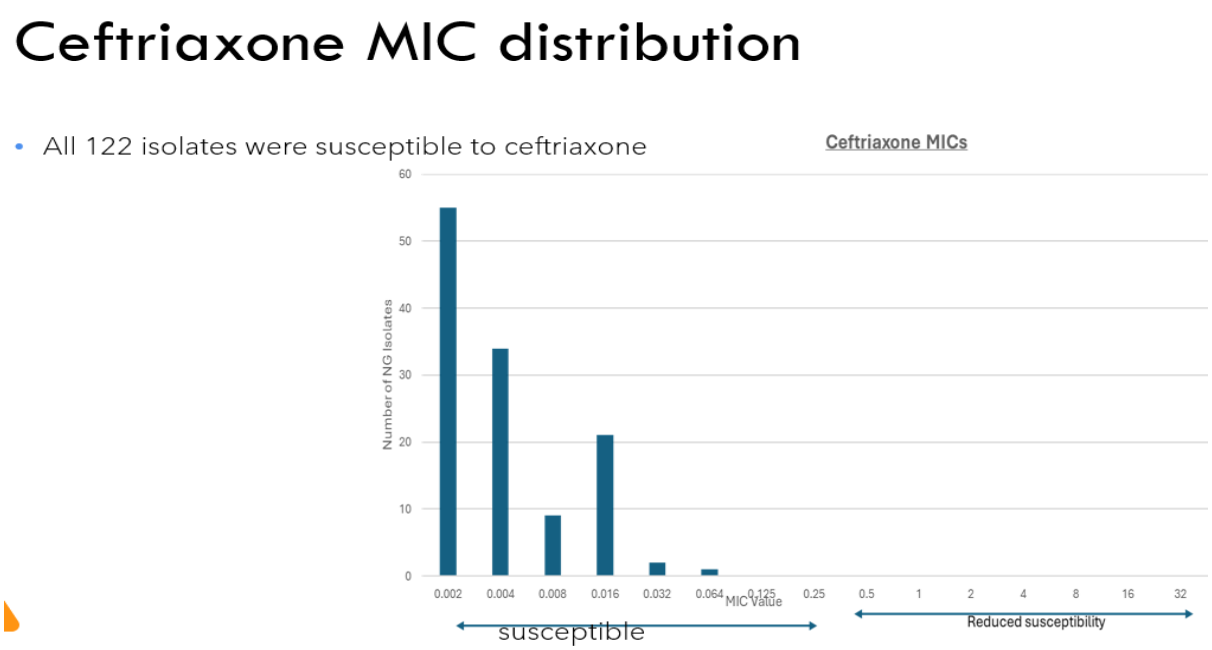


Fig 12: MIC distribution for ceftriaxone

Antimicrobial susceptibility testing was done on 98 isolates for ciprofloxacin. More than 52 % resistance was observed as indicated in the graph below.

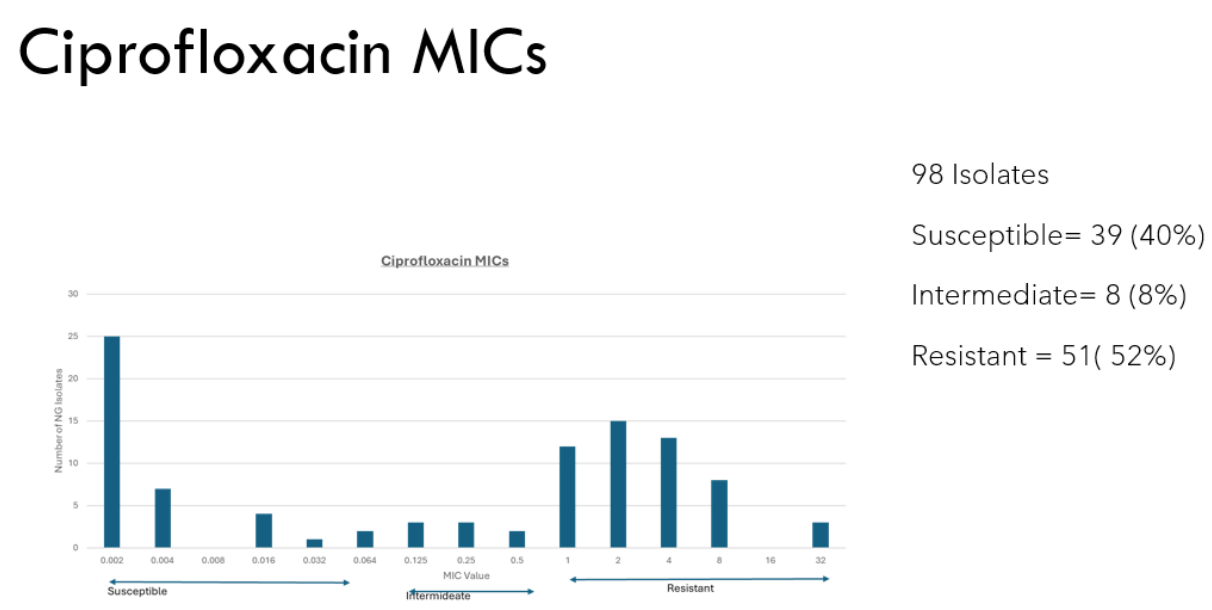


Fig 13: MIC Distribution for ciprofloxacin

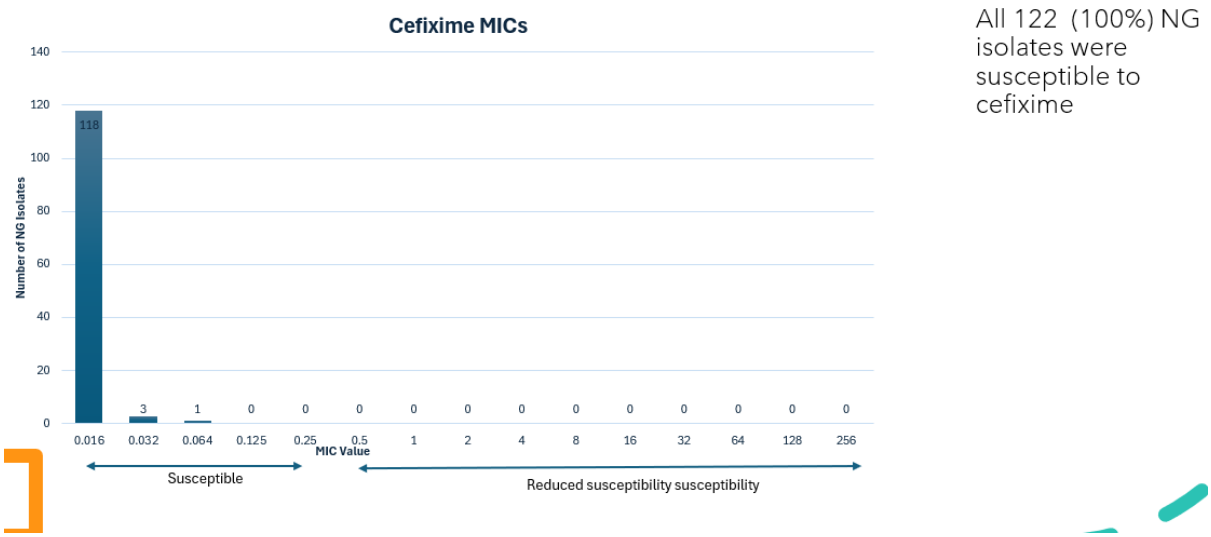


Fig 14: MIC distribution for cefixime

All 122 isolates were susceptible to cefixime.

VII. External Quality Assessment

Fifteen EQA cultures were provided for External Quality Assessment by CDC for antimicrobial susceptibility testing. The NMRL scored 82% overall. The score was above the acceptable pass mark (80%).

Storage of isolates
All the 122 Neisseria gonorrhoeae isolates are suspended in trypticase soy broth containing 10% (v/v) glycerol), frozen at –80°C in triplicate.

4. Challenges and Recommendations

Challenge	Recommendation
Stock outs of laboratory consumables	• There is need to procure laboratory consumables and reagents way ahead time to avoid stock outs • WHO to create a system where countries can easily pool reagents and consumables not found locally.
Delays in sample transportation to NMRL	• Clinics and coordinating laboratories should keep registers of samples submitted indicating date of sample collection, date and time of submission to courier, and the laboratory should state on the consignment form the exact

	number of samples and their EGASP codes. • The courier company, coordinating laboratories, MoHCC to create a WhatApp group where challenges with sample transportation delays can be discussed and resolved.

5. References

1. Rowley J, Vander Hoorn S, Korenromp E, et al. Chlamydia, gonorrhoea, trichomoniasis and syphilis: global prevalence and incidence estimates, 2016. Bull World Health Organ 2019; 97(8): 548-62P.
2. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Transm Infect 1999; 75(1): 3-17.
3. Weston EJ, Wi T, Papp J. Strengthening Global Surveillance for Antimicrobial Drug-Resistant Neisseria gonorrhoeae through the Enhanced Gonococcal Antimicrobial Surveillance Program. Emerg Infect Dis 2017; 23(13): S47-52.
4. Martin K, Dziva Chikwari C, Mackworth-Young CRS, et al. "It was difficult to offer same day results": evaluation of community-based point-of-care testing for sexually transmitted infections among youth using the GeneXpert platform in Zimbabwe. BMC Health Services Research 2022; 22(1): 171.
5. Martin K, Olaru ID, Buwu N, et al. Uptake of and factors associated with testing for sexually transmitted infections in community-based settings among youth in Zimbabwe: a mixed-methods study. Lancet Child Adolesc Health 2021.
6. Zimbabwe Ministry of Health and Child Care. National STI Management Guidelines. 2019.

6. Annex

Annex 1: Clinical and Laboratory Site Assessment Form

Enhanced Gonococcal Antimicrobial Surveillance Programme (EGASP) Clinical and Laboratory Site Assessment Form

Date of visit:	
Country	
Province:	
District:	
Name of Facility:	
Type of facility	
Name of Clinic Head	
Total number of Clinic personnel	

Health worker details

Name	Designation	Contact Email and phone

Assessor(s)

Name	**Designation**	**Organization**

Section A: Clinical Assessment

Clinical Staff

1.1 How many staff are involved in EGASP? _____

1.2 How many staff are trained to support the EGASP? _____

1.3 Has the staff been trained on the following Data collection tools?

a. Is the EGASP Clinical Case Abstraction Form Yes/ No
b. Informed consent form Yes/ No
c. Laboratory request form Yes/ No
d. Patient treatment card Yes/ No
e. Clinic patient log book Yes/ No

1.4 Does the facility have a computer with internet Yes/ No

1.5 Is there a secure place for data storage
(eg lockable cupboards and password proof for laptops Yes/ No

Specimen collection and handling

1.6 Are the following available for specimen collection and transportation?

a. Swabs: plastic or wire shafts with rayon, Dacron or calcium alginate tips or wire loops Yes/ No
b. Transport media Yes/ No

Infrastructure

1.7 Are the following infrastructure related requirements available?

a. Client flow chart Yes/ No
b. Registration and screening area Yes/ No
c. Patient privacy (history taking and screening) Yes/ No
d. Specimen collection room with privacy, hand washing area Yes/ No
e. An area to keep EGASP Clinical laboratory forms Yes/ No

1.8 Describe here how the specimen collection procedure will be performed in the clinic

_____

_____

1.9 Describe here how the inoculation of the culture plate will be performed in the clinic

_____

1.10 Describe here how the Gram stain smear will be prepared in the clinic

_____

_____

2.0 Are the following sample transportation requirements available?

a. Biohazard bags Yes/ No
b. Transportation containers Yes/ No
c. Temperature control system (Thermometers?) Yes/ No
d. Absorbent material eg. Cotton Yes/ No

e. Icepacks Yes/ No
f. Sample transportation mechanism from clinic to the lab Yes/ No

2.1. Describe here how the transportation of the samples will be transported from the clinic to the referral laboratory

_____

_____

Patient treatment and management

2.2 Describe here how patients presenting with urethral discharge are managed

_____

_____

2.3 Describe the follow up process of patients post laboratory results for treatment (Phone number?)

_____

2.4 Describe here how the counseling procedure will be performed in the clinic

_____

2.5 Describe how the procedure will be performed in the clinic (eg Follow up visit 7 days)

_____

2.6 How are patients complaining of persistent urethral discharge managed?

_____

2.7 Describe here how the TOC procedure will be performed in the clinic

_____

Section B: Laboratory Assessment

General information

Date of visit:	
Name of Facility:	
Province:	
District:	
Name of Laboratory Head	
Total number of laboratory personnel	

Health worker details

Name	**Designation**	**Contact Email and phone**

Personnel

3.0 How many Lab staff who will support EGASP? _____

3.1. How many staff trained in laboratory EGASP systems? _____

3.2 Is there a designated person responsible for receiving the samples? Yes/ No

3.3 How many people are responsible for running samples? _____

3.4 Is the a designated person responsible for reporting results to the coordinator (including alert values communicating with sentinel sites Yes/ No

Documents and SOPs

3.5 Does the laboratory use the following quality management tools

a. SLIPTA Yes/ No

b. SLMTA Yes/ No

3.6 Does the laboratory participate in EQA, Which ones? _____

3.7 Does the laboratory have an EGASP Laboratory SOP? Yes/ No

3.8 Does the laboratory have the following?

a. E-test EGASP ETEST MIC Conversions? Yes/ No

b. MIC Quality Control Ranges for N. gonorrhoeae (µg/ml) Yes/ No
c. EQA MIC Results Form Yes/ NO
d. Personal protective equipment (PPE): gloves, lab coat, googles/glasses Yes/ No
e. Specimen handling SOP Yes/ No

NB. Clinical specimens, microbial cultures and inoculated products should be considered infectious and handled appropriately

Infection prevention and control

3.9 Does the laboratory have the following standard precautions for handling clinical specimens and bacteria cultures

a. Waste management SOP Yes/ No
b. Procedures for disposal of bio-hazardous materials including clinical specimens and bacterial cultures Yes/ No
c. Protection of laboratory Workers from Occupational Acquired Infections; Approved Guideline – Current revision Yes/ No

4.0 Does the laboratory have documented evidence of laboratory safety training of lab staff?

a. Handling of blood-borne pathogen Yes/ No
b. Managing laboratory chemicals training Yes/ No
c. Shipping of biological substances training Yes/ No
d. Good clinical laboratory practice training Yes/ No
e. Biosafety in Microbiology and Biomedical Laboratories Yes/ No

Infrastructure

4.1 Does the laboratory have the following infrastructure related requirements available?

a. Sufficient laboratory space with adequate natural or artificial illumination Yes/ No
b. Biosafety cabinet for GC culture Yes/ No
c. Autoclave and media preparation room Yes/ No
d. Slide preparation and staining area Yes/ No
e. Hand washing area with running water, soap Yes/ No
f. Refrigerator with working temperature control/ thermometer Yes/ No
g. Freezer with working temperature control/ thermometer Yes/ No

4.2 Is there a secure place for data storage

(eg lockable cupboards and password proof for laptops Yes/ No

Sample transportation

4.3 Are the following sample transportation requirements available?

a. Transport for sample collection and delivery Yes/No
b. Availability of fuel for sample collection and transportation Yes/No
c. Supplies for triple packaging (Biohazard bags, icepacks cooler boxes, etc) Yes/No

Stock management

4.4 Are kits and reagents stored under appropriate conditions? Yes/No

4.5 Designated personnel for laboratory inventory management? Yes/No

5 2.6 Equipment and Lab Supplies (consumables)

Item	**Available (Y/N)**	**Item**	**Available (Y/N)**
CO_2incubator or a regular incubator plus CO_2 source: - Candle-extinction jar using unscented candles (e.g. votive candles); CO2-generating tablets		Enrichment: IsoVitalex (Becton Dickinson)	
Ultralow freezer (-70°C- 80°C)		VCN (Vancomycin, Colistin, Nystatin; Becton Dickinson)	
Autoclave		Sterile cotton swabs	
Microscope		Erlenmeyer flask 2000 mL	
Biohazard waste bins		Erlenmeyer flask 250 mL	
Slide and cover slip		Erlenmeyer flask 500 mL	
Cylinder 250ml and 500 ml		Sterile Petri dish Ø 150 mm	
Cylinder 100 ml and 1000 ml		Sterile Petri dish Ø 90 mm	
Hemoglobin		Distilled water	
GC agar base		Timer	
Magnetic stirrer		Tray for Gram stain	
Magnetic bar		Gram stain dye set: Crystal violet, Gram Iodine, Decolorizer, Safranin	
Forceps		Gauze	
Scissors		Lens paper	
Water bath		Slide box	
Labels		Alcohol	
Sticker		Immersion oil	
Beta-lactamase disk		0.5 McFarland standard	

Inoculating loop		3 ml of sterile 0.9% saline solution / sterile Mueller Hinton broth	
Oxidase reagent		Etest strips (bioMérieux) : Ceftriaxone, Ciprofloxacin, Azithromycin, Cefixime	
30% H_2O_2 (Superoxol reagent)		!% defined growth supplement	
Filter paper		Spill kits	
Gram stain		Nephelometer: Suspension turbidity detector / Wickerham Card for 0.5 McFarland standard	