DISSEMINATED GONORRHEA INFECTIONS:
FREQUENTLY ASKED QUESTIONS FOR HEALTH CARE PROVIDERS

Since late 2020, the California Department of Public Health (CDPH) has received increasing reports of disseminated gonorrhea infections (DGI) throughout our state.[1] Below you will find information on the diagnosis, management, and reporting of DGI to prepare you in the event you see DGI cases in your practice.

1) What is DGI and how commonly does it occur?

DGI is a rare, disseminated form of gonococcal infection.

DGI occurs when the sexually transmitted pathogen *Neisseria gonorrhoeae* invades the bloodstream and travels to distant sites of the body. DGI is rare – occurring in just 0.5-3 percent of untreated gonococcal infections[2] – but carries a risk of serious complications, potentially including death.[3] For this reason, it is essential to quickly diagnose and aggressively treat DGI cases.

2) When should you suspect a diagnosis of DGI?

DGI manifestations include: arthritis-dermatitis syndrome and purulent mono/oligoarticular septic arthritis.

DGI can present as an arthritis-dermatitis syndrome, with petechial/pustular skin lesions (typically on the distal extremities, including the palms/soles), migratory polyarthralgias, and tenosynovitis. It can also present as a purulent mono or oligoarticular septic arthritis. Patients may be febrile and/or bacteremic; they may rarely present with perihepatitis, meningitis, endocarditis, or osteomyelitis.[1,4]

In California in 2020-2021, a proportion of DGI cases occurred among both male and female patients who were experiencing homelessness and/or using drugs, particularly methamphetamine.[1] Hispanic/Latinx individuals have also been disproportionately affected. Medical comorbidities that could increase susceptibility to DGI include immunodeficiencies (e.g., terminal complement deficiencies), HIV co-infection, and systemic lupus erythematosus.[5]

3) How is DGI diagnosed?

DGI diagnosis is confirmed by culture from a disseminated site. Nucleic acid amplification testing (NAAT)/culture of a mucosal site can support diagnosis.

The diagnosis of DGI is confirmed by isolating *Neisseria gonorrhoeae* from culture of a disseminated site such as blood, skin/abscess(es), cerebrospinal fluid (CSF), and/or synovial fluid. In cases where DGI is clinically suspected, nucleic acid amplification testing (NAAT) and/or culture should also be performed on mucosal sites (pharynx, rectum, and urogenital as applicable). If these tests are positive in the context of high clinical suspicion, a diagnosis of DGI is probable and the patient should be managed accordingly.

4) How is DGI managed?

DGI is treated with a regimen of longer duration than what is used for uncomplicated gonorrhea.

The Centers for Disease Control and Prevention (CDC) recommends the following treatments for DGI:[4]

- For arthritis-dermatitis syndrome: Ceftriaxone 1 gm intravenously/intramuscularly (IV/IM) every 24 hours for a course of at least 7 days[a]
    - If chlamydial infection has not been excluded, providers should treat for chlamydia with doxycycline 100 mg orally 2 times a day for 7 days

- For meningitis and endocarditis: Ceftriaxone 1-2 gm IV/IM q12-24 hours for 10-14 days for meningitis and at least 4 weeks for endocarditis
    - If chlamydial infection has not been excluded, providers should treat for chlamydia with doxycycline 100 mg orally 2 times a day for 7 days

Hospitalization and infectious diseases consultation are recommended for initial therapy. Note that patients may require procedures/surgeries such as incision and drainage of affected joints or skin abscesses, lumbar punctures in cases of suspected meningitis, or even cardiac surgery in cases of endocarditis secondary to DGI. Treatment of gonococcal perihepatitis should be managed in accordance with the CDC-recommendations for PID.[4]

5) Do sexual partners also need to be tested and treated for gonorrhea?

Sexual partners within 60 days of a DGI patient's symptom onset should be tested and treated for gonorrhea.

Sexual contacts within the last 60 days should also be referred for sexually transmitted disease (STD) testing and empiric treatment for gonorrhea, per the 2020 Update to CDC's Treatment Guidelines for Gonococcal Infection.[6] DGI patients and their partners should also be tested for other STDs, including syphilis, chlamydia, and HIV.

6) Should DGI cases be reported to public health?

Yes, all gonorrhea cases are reportable.

Providers should report all laboratory confirmed and clinically suspected cases of DGI to the local health department within 24 hours of identification. The CDC DGI Case Reporting Form[7] is available for this use. Providers should also notify DGI patients that they may receive a call from the public health department.

7) What should we do with *Neisseria gonorrhoeae* isolates from DGI cases?

Isolates from culture specimens in all DGI cases should be saved and tested for antimicrobial susceptibility.

All *Neisseria gonorrhoeae* isolates in DGI cases should be tested for antimicrobial susceptibility, which requires culture. Please contact your local health department for guidelines on obtaining culture if not available at your clinic site. In addition, you should encourage your labs to save all *Neisseria gonorrhoeae* isolates from DGI cases and send them to the local public health laboratory. From there, local health departments can submit the isolates to the CDC for additional testing.

8) Where should I go for more information?

There are numerous resources on DGI - see links below.

For more information on DGI, please refer to the CDPH STD Control Branch DGI webpage.[8] Clinical consultation for DGI management is also available through the online STD Clinical Consultation Network.[9]

Footnotes:

[a] When treating the arthritis-dermatitis syndrome, providers can switch to an oral agent guided by antimicrobial susceptibility testing (AST) 24-48 hours after significant clinical improvement to complete a total of 7 days of therapy. When AST is unavailable, cefixime 800 mg orally twice per day is the recommended empiric oral treatment regimen.[7]

References:

[1] Tang et al. Characterizing the rise of disseminated gonococcal infections in California, July 2020-July 2021. *Clin Infect Dis*. January 2023;76(2):194-200.

[2] Douedi et al. Disseminated *Neisseria gonorrhea* of the wrist. *ID Cases*. April 2020. 2020;20:e00763.

[3] CDC. Disseminated gonococcal infections and meningitis – Pennsylvania. *MMWR*. March 30, 1984 / 33(12);158-60,165. Available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/00000306.htm.

[4] CDC 2021 STD treatment guidelines – available at: https://www.cdc.gov/std/treatment-guidelines/gonorrhea.htm

[5] Lee et al. Disseminated gonococcal infection presenting as bacteremia and liver abscesses in a healthy adult. *Infect Chemother*. March 2015;47(1)60-63.

[6] CDC. Update to CDC's treatment guidelines for gonococcal infection, 2020. *MMWR*. December 18, 2020 / 69(50);1911–1916. Available at: https://www.cdc.gov/mmwr/volumes/69/wr/mm6950a6.htm.

[7]Barbee and St Cyr. Management of *Neisseria gonorrhoeae* in the United States: Summary of Evidence from the development of the 2020 Gonorrhea Treatment Recommendations and the 2021 Centers for Disease Control and Prevention Sexually Transmitted Infection Treatment Guidelines. *Clin Infect Dis.* April 2022;74(Suppl_2):S95-S111.

Resources:

[8] CDC. DGI Case Reporting Form. Available at: https://www.cdc.gov/std/program/outbreakresources/DGICaseReportingForm-508.pdf.

[9] CDPH, STD Control Branch. Disseminated Gonococcal Infection (DGI) webpage. Available at: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Disseminated-Gonococcal-Infection.aspx.

[10] National Network of STD Clinical Prevention Training Centers. **STD Clinical Consultation Network**. Online forum for submitting STD-related clinical questions. Available at: https://www.stdccn.org/render/Public.