

Management of gonorrhoea in a hospital network: are we following best practice?

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Abstract. *Background:* Gonorrhoea is usually managed in community sexual health or general practice, but a proportion of cases present to hospital settings. In this study, we examined how gonorrhoea was managed through a large hospital network and what the implications may be for public health management. *Methods:* A retrospective chart review was performed of the management of patients with *Neisseria gonorrhoeae* infection diagnosed at a large Australian healthcare network from January 2015 to May 2018. Documentation rates of five parameters of care were assessed: (1) the presence (or absence) of previous sexually transmissible infections (STIs); (2) recent travel; (3) discussion of HIV testing; (4) contact tracing; and (5) public health notification. *Results:* In all, 110 cases (48 male, 62 female) were analysed. Most cases were in the 15–39 years age group; 98 cases (89%) were symptomatic, and 12 (11%) were screening tests. The most common presenting syndromes were pelvic inflammatory disease (32%; 31/98 symptomatic cases), urethritis (26%; 25/98) and epididymo-orchitis (13%; 13/98). None of the five parameters assessed were documented in most cases. Documentation was most likely to occur in patients admitted to hospital. When HIV testing was performed, no new cases of HIV were identified. *Conclusion:* Infections with gonorrhoea present on a regular basis to hospital practice, but overall management is suboptimal. Automated prompts for other recommended tests, including HIV testing when testing for other sexually transmissible diseases is ordered, may improve management. Better awareness of best practice is needed, which can be facilitated with ongoing education. However, the greatest benefit is likely achieved by linking patients back to community-based services, which are best placed to provide ongoing long-term care.

Additional keywords: infectious diseases, *Neisseria gonorrhoeae*, public health, sexually transmitted infection, sexual health.

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Introduction

The incidence of gonorrhoea is increasing in Australia¹ and worldwide,² and is complicated by increasing antimicrobial resistance.^{2–4} Gonorrhoea is also an indication for HIV testing.^{5–7} Best practice in managing a patient with gonorrhoea includes eliciting a sexual and travel history, culture of specimens for antimicrobial susceptibility testing (AST), consideration of HIV testing, contact tracing to identify and treat other potential cases and notification to health authorities for ongoing surveillance.^{6,7} In this study we examined the management of gonorrhoea diagnosed at our hospital network.

Methods

Our hospital network, Monash Health, includes three emergency departments (EDs), has over 2000 in-patient beds

and serves a population of 1.3 million people. However, there is no dedicated sexual health service in our area of south-eastern metropolitan Melbourne. We identified patients with *Neisseria gonorrhoeae* either isolated on culture, detected by initial and confirmatory polymerase chain reaction (PCR) tests, or both. We conducted a retrospective chart review of these patients, stratifying by location of treatment (in-patient (admitted to hospital), out-patient (treated in clinics) or ED (treated in the ED without hospital admission)) and assessed management based on documentation of the following five parameters in the chart: (1) the presence (or absence) of previous sexually transmissible infections (STIs); (2) recent travel; (3) discussion of HIV testing; (4) contact tracing; and (5) public health notification. Fisher's exact test was used to determine statistical significance.

Results

In all, 110 consecutive cases were identified from January 2015 to May 2018. Most (56.4%; 62/110) were female. Most cases in both sexes were in the 15–39 years age group (89% (55/62) of women, 75% (36/48) of men). The age grouping is consistent with Victorian state-wide data, but the female majority in our cohort differs from Victorian¹ and national⁸ data. Eleven per cent (12/110) of patients were diagnosed through screening; all others presented symptomatically. The most common documented presenting syndromes were pelvic inflammatory disease (32%; 31/98 symptomatic cases), urethritis (26%; 25/98) and epididymo-orchitis (13%; 13/98). Other presentations included conjunctivitis, septic arthritis and undifferentiated syndromes that were documented as symptoms including discharge and abdominal pain. Most (77%; 85/110) had both PCR and culture performed, 16% (18/110) had only PCR performed and 6% (7/110) had only culture performed. Our multiplex STI PCR assay detects both *N. gonorrhoeae* and *Chlamydia trachomatis* DNA, and chlamydia coinfection was identified in 18% (19/103) of cases (the remaining seven had only culture performed).

The investigation and management of patients with *N. gonorrhoeae* infection by location are summarised in Table 1. Most patients were managed either as in-patients or in the ED, in generally equal proportions. The remainder were managed as out-patients, primarily in infectious disease or obstetrics/gynaecology clinics. None of the five parameters of care we measured were documented in most cases. Only 45% of cases (47 of 105, because five had a prior diagnosis of HIV) had HIV testing offered, including 31% of men and 55% of women. In-patients had significantly higher rates of documentation of STI history ($P = 0.0387$), discussion of HIV testing ($P = 0.0004$), disease notification ($P < 0.0001$) and contact tracing ($P < 0.0001$) compared with ED patients, and significantly higher rates of documentation for disease notification ($P = 0.0003$) and contact tracing ($P < 0.0001$) compared with out-patients. There were no significant differences in any of the parameters between patients in the ED and out-patients. There was no significant difference in travel history documentation rates across all locations. Where HIV testing was performed, no new cases were detected. However, we have previously reported a person presenting with advanced-stage HIV who, 1 year prior, had been diagnosed with gonorrhoea but had not been tested for HIV.⁵

N. gonorrhoeae was isolated by culture in 47 cases and AST was performed by the Melbourne Diagnostic Unit Public Health

Laboratory for 46 isolates (one was non-viable on subculture). For penicillin, 78% (36/46) had intermediate susceptibility (minimum inhibitory concentration (MIC) 0.125–0.5 mg L⁻¹) and 22% (10/46) were resistant (MIC >0.5 mg L⁻¹). For ciprofloxacin, 72% (33/46) were susceptible (MIC <0.06 mg L⁻¹) and 28% (13/46) were resistant (MIC >0.5 mg L⁻¹). All isolates were susceptible to ceftriaxone (MIC <0.06 mg L⁻¹). Only 43 isolates had azithromycin susceptibility reported; one had low-level azithromycin resistance (MIC 2 mg L⁻¹) and all others were susceptible (MIC ≤0.5 mg L⁻¹).

Discussion

Although gonorrhoea is often managed in the community (general practice or sexual health clinics), cases do present to hospital, usually through the ED.⁹ Previous studies have shown that the documentation of sexual histories and management of STIs in EDs is generally suboptimal,^{9,10} and our data reflect this. We hypothesise that the primary goal of the ED (management of acute conditions) explains why aspects of STI management beyond antimicrobial treatment may be neglected. Furthermore, patients not admitted to hospital are usually treated empirically for STIs and discharged before test results are available, with advice to follow-up with a general practitioner (GP), although many patients may not have a regular GP. Contact tracing and disease notification are often discussed when an STI diagnosis is confirmed, and ED patients are not typically followed-up after discharge. Nevertheless, it remains important that comprehensive patient care takes place, regardless of location.

This study is limited by the reliance on documentation to indicate practice, and it is possible certain parameters of care, such as taking a travel history, were explored but not documented. The inability to easily access documentation of care in the community outside the hospital system is another limitation. However, the pathology system is likely to be a comprehensive guide to what testing actually occurred within the network. In addition, in our setting, testing was driven by symptoms, suggesting that an STI was at least considered. Furthermore, proper documentation is critical for subsequent episodes of care, facilitates communication between clinicians and should function as an extension of good clinical practice.

In the era of electronic test ordering, we suggest that automatic prompts for other recommended tests could be provided when STI tests are ordered, including for clinicians to discuss HIV testing with the patient. Increased awareness of important practice points in STI management among clinicians

Table 1. Management of cases of gonorrhoea presenting to a healthcare network by department

Data show the documentation rates, in percentages, of each parameter of care for patients treated in each location, with the number of patients in parentheses. ED, emergency department; STI, sexually transmissible infection

	STI history	Travel history	HIV testing ^A	Disease notification	Contact tracing
In-patients	52 (26/50)	16 (8/50)	61 (30/49)	66 (33/50)	80 (40/50)
Out-patients	38 (5/13)	8 (1/13)	60 (6/10)	8 (1/13)	15 (2/13)
ED	30 (14/47)	15 (7/47)	24 (11/46)	13 (6/47)	26 (12/47)
Total	41 (45/110)	15 (16/110)	45 (47/105)	36 (40/110)	49 (54/110)

^AOne in-patient, three out-patients and one ED patient were known to be HIV positive at the time of presentation and hence did not require further HIV testing.

could be facilitated through ongoing medical education. However, perhaps most importantly, patients should be linked to community services such as GP clinics, which are best placed to provide follow-up and long-term continuity of care.

Conflicts of interest

The authors declare no conflict of interest.

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