

Male Urethritis in King County, Washington, 1974–75: I. Incidence

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Abstract: In a population-based study in King County, Washington an attempt was made to enumerate all cases of male urethritis receiving primary care from all sources over a defined period of time. The incidence of gonococcal (GCU) and non-gonococcal urethritis (NGU) was estimated to be 1,143 and 2,541 cases per year per 100,000 men age 15 and over, respectively, during 1974–1975. Private practitioners treat 62 per cent of GCU and 64 per cent of NGU estimated to occur in the county. They report only 3 per cent GCU which they see to the Health Department. Only 60 per

cent of the general practitioners, 33 per cent of the internists and 65 per cent of the urologists had treated males with GCU in the three months prior to being questioned but these three groups of specialists see 95 per cent of all male urethritis treated by private practitioners. The proportion of all male urethritis cases which were GCU ranged from .16 in a university student health clinic to .35 in private practices and Health Department clinics. (Am. J. Public Health 68:20–25, 1978)

Introduction

Reported cases of gonorrhea are increasing.¹ Because of the vast underreporting of gonococcal urethritis (GCU) from physicians in private practice,^{2, 3} published figures for the U.S. as a whole reflect largely the experience of publicly financed venereal disease clinics. No U.S. data are available from defined populations for non-gonococcal urethritis (NGU), a condition whose incidence exceeds that of GCU in Great Britain.⁴ Because of impending venereal disease (VD) policy decisions to be made prior to implementation of any national health insurance plan, we believe it important to examine disease trends in non-public care settings more closely. The VD data are particularly poor from these providers because incentives for reporting are few.

Limitations of previous national surveys were imposed, in part, by the scope of the undertaking. These included a poor response rate, a failure to distinguish between numbers of reported cases by sex, no data on treatment practices or NGU incidence, and no prospective data. By starting with a smaller population base, we have avoided these drawbacks.

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Methods

All physicians licensed to practice medicine in King County, Washington (population 1.2 million), including the city of Seattle, were surveyed by mail during September–October 1974. The list was obtained from the Division of Professional Licenses of the State of Washington and consisted initially of approximately 3,200 MDs and DOs who listed their address within the County.

Information requested included physician specialty, the number of cases of GCU and NGU diagnosed in males by that practitioner between June 1 and August 31, 1974, the methods of diagnosis used, and the usual treatment schedule used for each condition. Up to three mailings, followed by a telephone call if necessary, were used to elicit the information. The definition of a case of GCU or NGU was left entirely to the respondents. Physicians were categorized by specialty or “not in private practice” if they were interns or resident housestaff, in full-time positions as emergency room physicians, administrators, research workers, radiologists, pathologists, or anesthesiologists. Public health department physicians were excluded from the analysis of the questionnaires.

Records of male urethritis cases diagnosed at all seven Seattle-King County Department of Health venereal disease clinics were reviewed for the period June 1, 1974 through August 31, 1975. Patients with a history of recent urethral discharge or dysuria and/or urethral discharge present during the clinic visit were considered to have urethritis. They were classified as GCU or NGU on the basis of examination of their urethral smears. Repeat visits by the same patient for

the same diagnosis within 28 days where additional sexual exposure was specifically denied were considered treatment failures and not coded. Otherwise, they were counted as new episodes.

Seventeen of 21 King County hospitals with full-time emergency room/walk-in clinic staff permitted us to screen their microbiology laboratory log books, and subsequently abstract the clinical records of males from whom urethral smears or cultures for *Neisseria gonorrhoeae* had been submitted from the period September 1, 1974 through August 31, 1975.

Other clinical sites contacted over the same period included 16 "free clinics" who were supplied with urethritis case forms and pre-stamped return envelopes and paid \$0.50 for each abstract submitted, the only two physician staffed university student health clinics in the county, and the single military dispensary. Records of the largest university clinic were abstracted and urethritis case forms and mailers were provided for the smaller clinic and the dispensary. No other facility treating significant numbers of male urethritis cases in the county could be identified.

The sampling frame of all urologists, internists, and general/family practitioners in private practice were stratified by medical degree (DO, MD), location of practice (the county was divided into five areas), and specialty; every fifth name was systematically selected as a "sentinel sample". The 124 physicians selected by this procedure included 13 osteopathic general practitioners, 68 medical general practitioners, 35 MD general internists, and eight urologists. All but one internist agreed to report all urethritis cases in males which they diagnosed, by mailing in a form together with an unstained smear of urethral exudate in a prepaid mailer. Code numbers were used on forms and slides to insure patient confidentiality. This part of the study ran from January 7 through August 15, 1975. Diagnostic and therapeutic methods determined by the retrospective questionnaire and a comparison of results of examinations by the sentinel physicians with the slides stained and examined in our own laboratory are presented in another report.⁵ All participants were contacted by telephone once per month if they did not report any cases to us.

Results

The 2,327 physicians responding to the questionnaire comprised 89 per cent of all physicians (N = 2,615) finally estimated to be alive and practicing in King County as of August 1, 1974. Because a large number of physicians not responding were known to practice specialties not treating urethritis in males (obstetricians-gynecologists, psychiatrists, radiologists, etc.), we believe that we contacted close to 100 per cent of urethritis-treating physicians.

Of the responding physicians, 18 per cent stated they had treated one or more cases of GCU in males during the prior three-month period (Table 1), an average of 3.8 cases each (range 1-40). General practitioners, general internists, and urologists treated 95 per cent of all cases seen by private practitioners or 84 per cent of the total seen outside the King

County Health Department clinics. Within specialties, the proportion of physicians treating one or more cases varied considerably from over 50 per cent for general practitioners and urologists, to 33 per cent for general internists, to less than 10 per cent for other specialties.

Overall, private physicians saw 62 per cent of the GCU cases treated in King County during the three study months as estimated by the questionnaire and record reviews (Table 2). The Health Department saw 27 per cent of cases and other facilities saw the remaining 11 per cent. During this period, 47 gonorrhea cases in males were reported to the Health Department by private physicians for an estimated 3 per cent reporting rate, based on responses to the mailed questionnaire. Reporting rates for other facilities outside the Health Department were estimated at 18 per cent.*

Of the 2,327 physician respondents to the postal survey, 479 (21 per cent) reported treating male NGU during the same three months (Table 1), averaging 6.4 cases per physician.** Eighty-nine per cent of the reported cases of NGU were treated by general practitioners, general internists, and urologists, representing 97 per cent of the cases seen by private practitioners. Ninety-five per cent of treating urologists reported seeing at least one or more cases per month, while private practitioners other than urologists, internists, and general practitioners reported a mean of one or more cases per month in only 26 per cent of practices.

The distribution of NGU cases by source of care was similar to that of GCU (Table 2). The ratio of GCU to NGU cases was roughly 1 to 2 in both private physicians' practices and in Health Department clinics. Hospital emergency rooms and walk-in clinics with physicians present tended to treat more GCU as compared to clinics without physicians usually present. This is seen in greater detail in Table 3.

The 20 per cent "sentinel" physician sample prospectively reported fewer cases of urethritis than expected on the basis of the three-month retrospective survey (Table 4). The per cent physicians treating cases within categories (except DO general practitioners) appear similar to the entire physician population for GCU and NGU (Table 1).

Three rough but independent methods were used to check the discrepancies noted between the two methods of data collection. At the conclusion of the prospective study, all 123 participating physicians were mailed a letter asking them to estimate the number of GCU and NGU cases which they had treated since joining the study, but had not reported on our surveillance form. Seventy-four (60 per cent) of the physicians responded and indicated that they had not reported 101 GCU and 275 NGU cases. In other words, the sentinel physicians, by their own appraisal at the end of the study, estimated notifying us about only 38 per cent and 37

* This difference in reporting rate may be due in part to an over-estimation of cases recalled as being treated by private practitioners, further discussed below. The denominator of cases seen by physicians not in private practice or "other" facilities was based on our review of their patient and laboratory log books. If this number were relatively smaller, the proportion reported would be higher.

** If the single urologist who reported treating 480 cases is excluded, the remaining 478 physicians treated 2,604 cases for a mean of 5.4 cases per physician.

TABLE 1—Proportion of Physicians Treating Urethritis According to Category of Physician and Type of Urethritis,* King County, Washington, June 1–August 31, 1974

Category of Physician	No. of MDs	Type of Urethritis	
		GCU	NGU
		(%)	(%)
<i>Private Practice</i>			
General Practice (MD)	341	59.5	66.6
General Practice (DO)	74	60.8	71.6
General Internists	186	32.8	38.7
Urologists	52	65.4	84.6
Subspecialty Internists	213	4.2	4.2
General Surgeons	169	5.3	6.5
Pediatricians	164	3.0	4.9
Dermatologists	34	5.9	11.8
Remainder	678	0.4	0.6
<i>Other**</i>	388	12.1	11.6
TOTAL	2,327	18.0	20.6

* Based on retrospective questionnaire and exclusive of health department physicians.

** Includes housestaff, full-time emergency room physicians, pathologists, anesthesiologists, radiologists, and physicians not in patient care.

per cent respectively, of all the urethritis cases, which they actually saw during the time of the study. Dividing the sentinel sample's number of 63 GCU and 162 NGU cases reported to us (Table 4) by .38 and .37, we can estimate that this sample actually saw 164 GCU and 438 NGU cases during these six months, or would have seen 328 GCU and 876 NGU cases at these rates over one year. Correcting for the fact that this was a 20 per cent sample, and that these specialties see 95 per cent and 96 per cent of GCU and NGU cases, we can estimate that 1,726 GCU and 4,562 NGU cases were seen annually by physicians in private practice. These figures correspond to annual incidence rates of 434.9 per 100,000 (GCU) and 1,149.3 per 100,000 (NGU) males age 15 and over. From the data in Table 5, we can estimate incidence figures for the Health Department, other facilities and the entire county (Table 5). These correspond to 857.1 GCU and 1,905.8 NGU cases per 100,000 males of all ages and represent our best estimates of annual incidences of these conditions.

As a second method, a separate sample of 124 physicians was chosen in the same manner as the original sentinel panel from the same specialties. From the 97 successfully contacted by telephone, eight GCU and 33 NGU cases were reported seen and treated during the previous seven days. Extrapolating figures from this 97 to all private practitioners seeing patients for one year in the manner indicated in the paragraph above, we get incidence rates of 551.6 (GCU) and 2,251.6 (NGU) per 100,000 men age 15 and over per year.

Finally, many of the hospitals whose laboratory records were reviewed also reviewed urethral smears from patients seen in private physicians' offices. By identifying the requesting physician, we noted 21 such smears submitted by physicians in our sentinel panel. By matching dates in the hospital laboratory books with the dates on our surveillance form, we determined that only five of the 21 (24 per cent) had been reported to us during the prospective sentinel physician study. Dividing this per cent into 63 GCU and 275 NGU cases seen by our sentinel physicians as outlined above, we can

TABLE 2—Percentage Distribution of Urethritis Cases, According to Diagnosis and Source of Care,* King County, Washington, June 1–August 31, 1974

Source of Care	Type of Urethritis		
	GCU	NGU	Total
	(N:2256)	(N:4466)	(N:6722)
<i>Private</i>			
General Practitioner (MD)	36.0	25.9	29.3
General Practitioner (DO)	9.3	7.9	8.4
General Internal Medicine	7.2	6.0	6.4
Urology	6.6	21.3	16.3
Remainder	3.2	2.8	2.9
SUBTOTAL	62.3	63.9	63.3
<i>Other Physicians**</i>	8.0	5.1	6.1
<i>Health Department</i>	26.6	25.6	25.9
<i>Other Facilities***</i>	3.2	5.4	4.6
TOTAL	100.1	100.0	99.9

*Based on retrospective questionnaire for physicians (exclusive of Health Department physicians) and review of institutional records.

** Includes housestaff, full-time emergency room physicians, pathologists, anesthesiologists, radiologists, and physicians not in patient care.

*** Facilities not staffed by physicians including some walk-in clinics and emergency rooms and "free" clinics.

TABLE 3—Proportion GCU of All Male Urethritis Cases Treated According to Source of Care*

Source of Care	Total Male Urethritis Cases Treated	Proportion GCU
Private Physicians	4,159	.34
Health Department	3,547	.36
Hospital Walk-in	173	.27
Hospital Emergency	106	.36
Student Health	307	.16
"Free" Clinics	34	.21
TOTAL	8,326	.34

* As determined by review of records of all Health Department, hospital, student health, and "free" clinics, March 1–August 31, 1975 and private physician retrospective questionnaire June 1–August 31, 1974.

estimate for private physicians' practices annual incidence rates per 100,000 males age 15 and over as 348.1 (GCU) and 885.7 (NGU).

During the 13 months of this study, no discernible seasonal influence on urethritis incidence was noted for men treated in the Health Department clinics over this time period. We do not know if the Health Department/private practice ratio varied seasonally.

Information about age was available only from the Health Department clinics and private patients reported by the sentinel physician sample (Figures 1 and 2). The age distribution of the Health Department cases is somewhat older than that reported for the entire U.S.⁶ In our sample of cases from private practices, the age group with the largest number of cases was five years older than the public clinic cases. This age difference was also true for NGU. If these differences are real they might reflect a greater desire in older men to shun public clinics or, conversely, a greater openness and willingness to be treated in a public clinic by younger men who entered the age of sexual activity during or after the emergence of more open attitudes about sex. Increased ability of older men to pay a physician fee might also be a factor. Alternatively, private physicians could have selectively reported slightly older cases to us. We have no evidence to support this explanation, however.

Discussion

The data presented provide estimates of absolute GCU and NGU incidence in men in an open population, the distribution of cases by type of health care, the proportion of GCU cases attending each facility, and the per cent GCU

cases reported to the Health Department. In interpreting our estimates, several factors should be born in mind. First, for our retrospective mail questionnaire no definitions of GCU or NGU were offered to respondents. All responses were based on the physician's own idea of what constituted a "case" of either condition. However, no definition seemed workable, since we would have been unable to verify its use. Since the Health Department has no minimal criteria of a case, such a definition on our part would have made comparisons difficult.

Furthermore, in a busy practice, a physician faced with a mail questionnaire such as ours almost certainly did not go to his or her records to verify urethritis cases seen in the previous three months. If one or more cases were seen, the number recorded in our retrospective survey may well have been subject to a rounding bias which over-estimated the cases seen. In general, the number of cases reported as they occurred (prospectively) was only 10–15 per cent of the number reported retrospectively. Physician recall of gonorrhea cases in Alaska has been recently shown to exceed cases actually seen, as validated by a record review.⁷ It is not clear to what extent inferences drawn in that study can be applied to our study, however. For example, in Alaska physicians were asked by U.S. Public Health Service advisors or physicians during a personal interview to recall cases seen for a period of one year instead of three months. Also, the degree of overreporting may vary with the rate of gonorrhea. Alaska had 1.7 times the number of reported cases as Seattle in 1974.⁸ Finally, Alaskan and King County, Washington physicians may well not be comparable in certain unknown characteristics important to recalling the number of cases seen, such as age of physician or interest in urethritis.

Finally, we have no estimate of the number of cases

TABLE 4—Prospective Reporting of Male Urethritis by Private Physician Sample, March 1–August 31, 1975 (6 months)

Physician Specialty	No. Physicians Reporting/ No. in Sample (%)	GCU Cases	NGU Cases	Other Urethritis	TOTAL
General Practice (MD)	38/68 (55.9%)	56	115	6	177
General Practice (DO)	4/13 (30.8%)	0	4	2	6
Internal Medicine	10/35 (28.6%)	1	19	2	22
Urology	5/8 (62.5%)	6	24	1	31
TOTAL	57/124 (46.0%)	63	162	11	236

Note: Diagnosis is that made by the reporting physician.

TABLE 5—Estimated King County Urethritis Incidence^a

	GCU (%)	NGU (%)
Primary Private Practice	434.9	1,149.3
Health Department ^b	636.9	1,150.3
Other ^c	71.0	241.3
TOTAL	1,142.7 (100)	2,540.9 (100)

^a rates per 100,000 males age 15 and over, based on "best estimates" (see text).

^b based on record review of Health Department Clinics

^c based on record review of hospital clinics, "free" clinics, and student health clinic

seen by more than one physician for the same episode and reported twice, since we did not have the patients' names. Since few males came to Health Department clinics with a history of prior treatment from private physicians for the same episode, it may be guessed that few went to more than one private physician for a single episode. However, we have no evidence on this point.

Although every effort was made to encourage reporting of urethritis cases by our sentinel physician sample on an ongoing basis, apparently only 20–40 per cent of those cases were reported. Correcting for this error, we are left with an overall estimate of GCU seen in private practice of between 348.1 and 551.6 per 100,000 men age 15 and over per year, and of comparable NGU rates of between 885.7 and 2,251.6. Although the ranges in incidence rates are less precise than one might wish, they still are useful for several reasons. They emphasize the magnitude of our NGU problem. Despite the fact that NGU is seen almost twice as frequently as

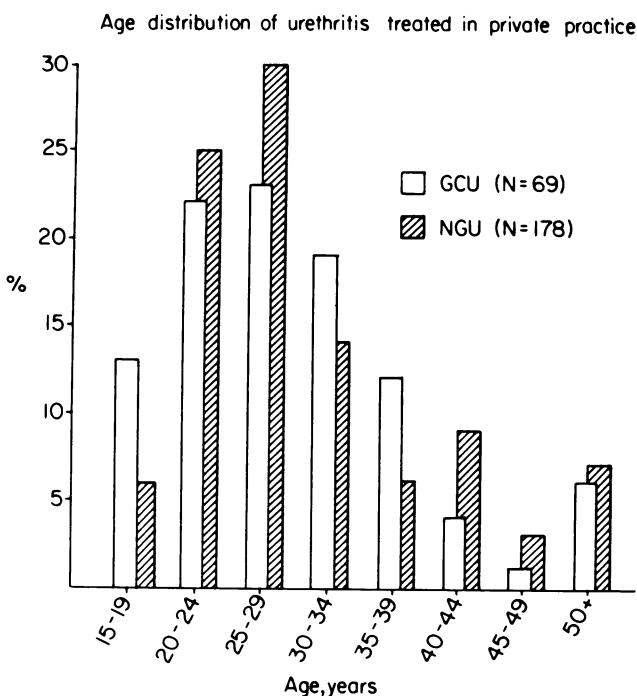


FIGURE 1—Age Distribution of Male GCU and NGU Patients Reported by Sentinel Physician Sample.

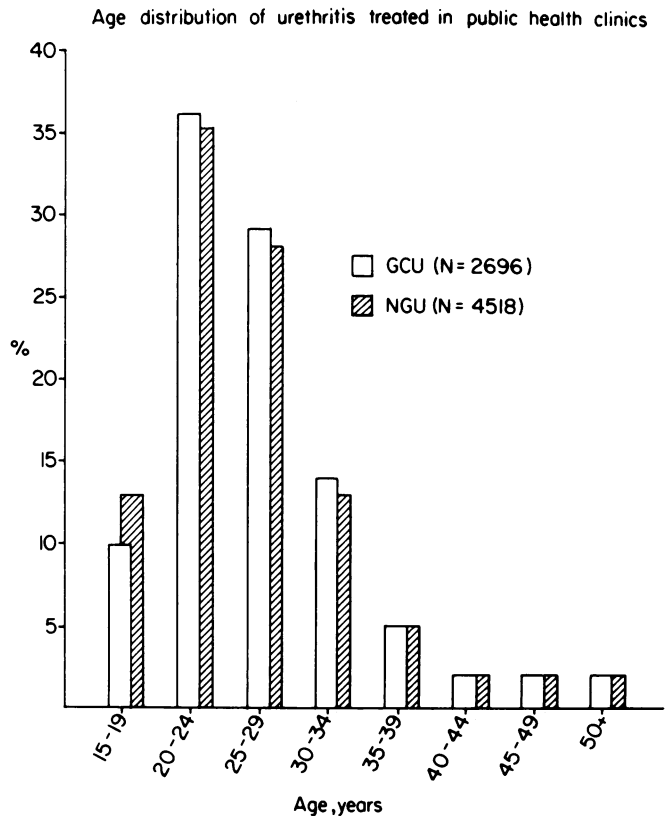


FIGURE 2—Age Distribution of Male GCU and NGU Patients Reported by the Seattle-King County Health Department Clinics.

GCU, it is not reportable in the United States. Although the entire issue of reporting by private physicians deserves careful review, trends of NGU in males and its approximate frequency relative to GCU could be easily obtained from public clinics where much GCU information is now obtained.

The present study also underlines the continued under-reporting of GCU by private physicians. These findings are consistent with larger, earlier surveys^{2, 3} and suggest that requirements for mandatory GCU reporting by private physicians be re-evaluated. If reporting by private physicians is actually important, then better efforts should be made to explain the reasons for and the benefits from better reporting. Alternatively, the information might be gathered from a panel of sentinel physicians. However, it is not clear what incentives would have to be offered to induce full, active participation by busy practitioners in such a reporting system.

Furthermore, if one-third to one-half of all urethritis cases are seen in public health clinics, these facilities may provide sensitive enough indicators of urethritis trends, particularly in large cities. State and local health departments might then consider removing the requirement of mandatory GCU reporting altogether from private physicians.

REFERENCES

1. Reported Morbidity and Mortality in the United States. Morbidity and Mortality Weekly Report (Annual Supplement Summary 1975) 24 (No. 54):61, 1976.
2. Curtis, A. C. National survey of venereal disease treatment. JAMA 186:46-49, 1963.

3. Fleming, W. L., Brown, W. J., Donohue, J. F. and Branigin, P. W. National survey of venereal disease treated by physicians in 1968. JAMA 211:1827-1830, 1970.
4. King, A. Failure to control venereal disease. Brit. Med. J. 1:1-7, 1970.
5. Hinds, M. W. and Gale, J. L. The diagnosis and treatment of male urethritis, King County, Washington, 1974-75. Accompanying manuscript.
6. American Social Health Association. Today's V.D. control problem. 1975. Page 16.
7. Eisenberg, M. S. and Wiesner, P. J. Reporting and treating gonorrhea: Results of a statewide survey in Alaska. J. Amer. Vener. Dis. Assoc. 3:79, 1976.
8. V.D. Fact Sheet 1974, Edition 31. DHEW Publication No. (CDC) 75-8195.

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 Site: Orlando, Florida
 Date: January 17-19, 1978
- Spring 1978 Meeting
 "Innovations in Management Data Reporting"
 Site: Indianapolis, Indiana
 Date: May 24-26, 1978
- Fall 1978 Meeting
 (Topic to be announced)
 Site: Louisville, Kentucky
 Date: September 1978

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