

Supplementary Table 1. Key model assumptions

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- 1 The decision framework assumes that after a maximum of 3 courses of treatment the individual would be cured. In standard care, this could take up to 56 days in total; therefore, the cycle length is one day and time horizon is 56 days.
  - 2 Screening options will confirm diagnosis between 1-21 days; treatment options will last for a maximum of 7 days and 2 weekly cycles are imposed between treatment regimens. In current practice, we assume that individuals return on day 8 for test results in the base-case.
  - 3 The sensitivity (true positive) and specificity (true negative) of POCT for each infection does not vary across the different POC strategies nor does it vary between patient sub-groups.
  - 4 The model accounts for the impact of single and dual infections (CT, NG, TV and MG).
  - 5 The proportion lost-to-follow-up varies by STI and gender due to the nature of symptoms and severity of individual STIs.
  - 6 STI symptoms remain at the same clinical level of severity across the time horizon.
  - 7 The model incorporates an 'Other Infection' category which includes all other infections that cause similar lower genital symptoms diagnosed initially (day 0) that rule out an initial diagnosis of CT/NG/MG/TV. These may include candida and allergic reactions. The proportion of the cohort who we assume fall into the "Other infection" category is 1 in 2 for women, 1 in 3 for MSW and 1 in 4 for MSM. We vary this assumption in scenario analysis.
  - 8 Once results from screening options are confirmed those with a confirmed STI are treated and partners are made aware of the infection to access treatment.
  - 9 Each index infection is assumed to have 1 partner for women and MSW and 2 partners for MSM per 7-day period; this assumption, as well as the number of sexual acts per week, is varied in sensitivity analysis.
  - 10 In the absence of any data on changes in sexual behaviour following diagnosis with an STI, it is assumed sexual behaviour is not changed due to a diagnosis. This assumption affords the identification of all potential transmissions; however, taken at face value would be an overestimation of transmissions.
  - 11 The model assumes STI transmission rates are constant over the duration of exposure.
  - 12 The model assumes different treatment regimens for the different infections as informed by clinical guidance.
  - 13 The model assumes the correct treatment for true CT/NG/MG/TV infection is 100% efficacious and ignores antibiotic resistant strains in NG and MG, thereby underestimating the total costs associated with STI infection.
  - 14 The model does not include re-infections.
  - 15 The model does not consider adverse events associated with treatment options.
  - 16 The model does not consider long-term complications associated with STI infection.
  - 17 The model limits sub-group analysis to women, MSW and MSM; treatment pathways do not vary by sub-group.
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CT, *Chlamydia trachomatis*; MG, *Mycoplasma genitalium*; MSM, men-who-have-sex-with-men; MSW, men-who-have-sex-with-women; NG, *Neisseria gonorrhoea*; POCT, point of care test; STI, sexually transmitted infection, TV, *Trichomonas vaginalis*.

Supplementary Table 2. Summary of GUM clinician survey (October 2016) relevant to patient pathways

Survey question	Median	Lowest	Highest
Roughly how many patients attend your service every month?	1,700	80	6,000
What proportion of your patients are MSM?	10%	5%	100%
What proportion of your patients are MSW?	30%	0%	85%
What proportion of your patients are women?	53%	0%	60%
What proportion of MSM attend with a symptomatic lower genital tract infection?	50%	5%	90%
What proportion of MSW attend with a symptomatic lower genital tract infection?	40%	0%	90%
What proportion of women attend with a symptomatic lower genital tract infection?	50%	0%	80%
What proportion of symptomatic men have a swab that is sent for microscopy?	80%	25%	100%
What proportion of symptomatic men have a swab that is sent for culture?	60%	5%	100%
What proportion of symptomatic women have a swab that is sent for microscopy?	88%	0%	100%
What proportion of symptomatic women have a swab that is sent for culture?	58%	0%	100%
What proportion of MSM are tested for MG?	0%	0%	10%
What proportion of MSW are tested for MG?	0%	0%	20%
What proportion of women are tested for MG?	0%	0%	15%
<b>Men who test negative for CT/NG</b>			
What proportion return to your service for a follow-up appointment?	50%	5%	100%
Of those who return, what proportion receive further tests?	25%	0%	80%
Of those who return, what proportion receive presumptive treatment for another infection?	18%	5%	90%
What proportion are referred to / decide to attend another healthcare setting (e.g. GP)?	23%	0%	65%
<b>Women who test negative for CT/NG</b>			
What proportion return to your service for a follow-up appointment?	30%	0%	75%
Of those who return, what proportion receive further tests?	50%	10%	100%
Of those who return, what proportion receive presumptive treatment for another infection?	28%	5%	100%
What proportion are referred to / decide to attend another healthcare setting (e.g. GP)?	20%	0%	85%

CT, *Chlamydia trachomatis*; GP, General Practice; GUM, genitourinary medicine; MG, *Mycoplasma genitalium*; MSM, men-who-have-sex-with-men; MSW, men-who-have-sex-with-women; NG, *Neisseria gonorrhoea*; TV, *Trichomonas vaginalis*.

The online survey was completed by 23 GUM clinicians, 10 from London and 13 from elsewhere in the UK.

Supplementary Table 3. Scenarios assessed

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1	Higher prevalence of MG and TV (double the current estimated prevalence)
2	Higher prevalence of MG and TV based on estimated prevalence in symptomatic patients in the US (MG: women 21.1%; men 19.3% and TV: women 25.9%; men 6.3%)
3	Increase proportion with 'Other infection' as follows: women: 66.6%, MSW: 50%, MSM: 50%
4	Decrease proportion with 'Other infection' as follows: women: 33.3%, MSW: 25%, MSM: 20%
5	100% increase the rate of LTFU
6	50% decrease the rate of LTFU
7	Specificity/sensitivity of POCT is 75%
8	Specificity/sensitivity of POCT is 80%
9	Specificity/sensitivity of POCT is 85%
10	Specificity/sensitivity of POCT is 85% for NG (but unaltered for CT, MG and TV)
11	Specificity/sensitivity of POCT is 85% for CT (but unaltered for NG, MG and TV)
12	Specificity/sensitivity of POCT is 85% for MG (but unaltered for CT, NG and TV)
13	No microscopy used in any testing strategy
14	50% people get microscopy
15	75% people get microscopy
16	100% people get microscopy
17	84% use of microscopy in current pathway and no use of microscopy in the POC strategy C
18	No microscopy for men (only) in POC strategy C
19	No microscopy for women (only) in POC strategy C
20	Use of microscopy in POC strategy C only after a negative test result
21	No presumptive treatment for CT
22	25% presumptive treatment for CT (of those not diagnosed with NG/TV in microscopy)
23	75% presumptive treatment for CT (of those not diagnosed with NG/TV in microscopy)
24	100% presumptive treatment for CT (of those not diagnosed with NG/TV in microscopy)
25	Use 10% reduction in symptomatic utility scores
26	Excluding the cost of PID (as not all PID will be treated in the GUM service)
27	Inclusion of the drug costs for doxycycline as treatment for anyone NG/CT/MG/TV negative
28	POCT CT-NG costs the same as laboratory based NAAT
29	POCT CT-NG-MG cost the same as laboratory based NAAT
30	POCT CT-NG-MG-TV costs the same as laboratory based NAAT
31	All POCTs cost the same as laboratory based NAAT
32	All POCTs cost £2 less than in base-case

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CT, *Chlamydia trachomatis*; GUM, genitourinary medicine; LTFU, lost-to-follow-up; MG, *Mycoplasma genitalium*; MSM, men-who-have-sex-with-men; MSW, men-who-have-sex-with-women; NAAT, nucleic acid amplification test; NG, *Neisseria gonorrhoea*; POC, point-of-care; POCT, point-of-care test; TV, *Trichomonas vaginalis*; US, United States (of America).

Supplementary Table 4. Cost-effectiveness comparison for scenario analyses using micro-costings - All

All	Cost-effectiveness comparison (£/QALY gained)				
	Scenario	POC A vs SC	POC B vs SC	POC C vs SC	POC B vs POC A
1	Dominated	£ 17,389	£ 41,381	£7,153	Dominated
2	Dominated	£ 20,530	£ 56,548	£8,228	Dominated
3	£ 224,378	£ 22,979	£ 69,517	£12,300	Dominated
4	Dominated	£ 15,818	£ 24,163	£7,107	£6,353
5	Dominated	£ 19,691	£ 35,749	£9,196	Dominated
6	Dominated	£ 19,363	£ 36,221	£9,196	Dominated
7	Dominated	£ 21,665	£ 82,996	£8,870	Dominated
8	Dominated	£ 21,220	£ 69,561	£8,865	Dominated
9	Dominated	£ 20,735	£ 57,596	£8,891	Dominated
10	Dominated	£ 19,726	£ 39,414	£8,986	Dominated
11	Dominated	£ 20,431	£ 43,314	£8,265	Dominated
12	Dominated	£ 19,647	£ 40,917	£10,034	Dominated
13	Dominated	£ 16,204	£ 29,594	£8,703	Dominated
14	Dominated	£ 18,061	£ 33,245	£8,989	Dominated
15	Dominated	£ 19,088	£ 35,286	£9,140	Dominated
16	Dominated	£ 20,191	£ 37,493	£9,297	Dominated
17	Dominated	£ 19,476	£ 16,053	£9,196	£23,574
18	Dominated	£ 19,476	£ 28,889	£9,196	£7,998
19	Dominated	£ 19,476	£ 23,566	£9,196	£14,332
20	Dominated	£ 19,476	£ 16,053	£9,196	£23,574
21	Dominated	£7,339	£9,092	£3,792	£2,859
22	Dominated	£ 12,055	£ 18,039	£5,910	£552
23	Dominated	£ 32,870	£ 91,155	£14,987	Dominated
24	Dominated	£ 64,300	Dominated	£27,913	Dominated
25	£ 46,988	£ 17,310	£ 15,627	£10,948	£4,554
26	Dominated	£ 19,510	£ 36,120	£9,211	Dominated
27	Dominated	£ 19,476	£ 37,040	£9,196	Dominated
28	£ 43,475	£ 19,476	£ 36,060	£21,718	Dominated
29	Dominated	Cost-saving	£ 36,060	Cost-saving	Dominated
30	Dominated	£ 19,476	Cost-saving	£9,196	£74,924
31	£ 43,475	Cost-saving	Cost-saving	£218	£20,817
32	Dominated	£ 16,667	£ 31,058	£9,196	Dominated

POCT, point-of-care test strategy; QALY, quality-adjusted life year.

Supplementary Table 5. Cost-effectiveness comparison for scenario analyses using micro-costings - Women

Women	Cost-effectiveness comparison (£/QALY gained)				
	Scenario	POC A vs SC	POC B vs SC	POC C vs SC	POC B vs POC A
1	Dominated	£8,843	£ 25,961	£4,199	Dominated
2	Dominated	£8,932	£ 52,744	£3,587	Dominated
3	Dominated	£ 13,611	£ 46,391	£7,257	Dominated
4	Dominated	£6,915	£ 10,406	£3,249	£5,070
5	Dominated	£9,013	£ 21,182	£4,368	£1,662
6	Dominated	£8,827	£ 22,264	£4,368	£1,662
7	Dominated	£8,012	£ 48,866	£3,769	£180
8	Dominated	£8,124	£ 41,683	£3,848	£350
9	Dominated	£8,279	£ 34,918	£3,954	£588
10	Dominated	£8,732	£ 22,995	£4,249	£1,398
11	Dominated	£8,597	£ 25,567	£3,827	£1,542
12	Dominated	£8,630	£ 24,992	£4,563	£1,556
13	Dominated	£8,344	£ 19,947	£4,136	£2,008
14	Dominated	£8,661	£ 21,070	£4,271	£1,808
15	Dominated	£8,829	£ 21,658	£4,341	£1,702
16	Dominated	£9,004	£ 22,264	£4,415	£1,590
17	Dominated	£8,891	Cost-saving	£4,368	£14,160
18	Dominated	£8,891	£ 21,874	£4,368	£1,662
19	Dominated	£8,891	Cost-saving	£4,368	£14,160
20	Dominated	£8,891	Cost-saving	£4,368	£14,160
21	Dominated	£4,042	£1,678	£1,846	£6,724
22	Dominated	£6,046	£8,172	£2,856	£4,238
23	Dominated	£ 13,250	£ 69,756	£6,878	Dominated
24	Dominated	£ 20,769	Dominated	£11,866	Dominated
25	Dominated	£9,256	£9,545	£5,197	£7,575
26	Dominated	£8,930	£ 21,981	£4,383	£1,662
27	Dominated	£8,891	£ 23,150	£4,368	£951
28	Dominated	£8,891	£ 21,874	£6,916	£1,662
29	Dominated	£ 143	£ 21,874	Cost-saving	Dominated
30	Dominated	£8,891	Cost-saving	£4,368	£23,924
31	Dominated	£ 143	Cost-saving	Cost-saving	£10,304
32	Dominated	£6,671	£ 15,666	£4,368	£1,662

POCT, point-of-care test strategy; QALY, quality-adjusted life year.

Supplementary Table 6. Cost-effectiveness comparison for scenario analyses using micro-costings - MSW

MSW	Cost-effectiveness comparison (£/QALY gained)				
	Scenario	POC A vs SC	POC B vs SC	POC C vs SC	POC B vs POC A
1	£12,263	£22,566	£21,976	£39,978	£20,481
2	£6,136	£21,655	£20,324	£70,648	£17,318
3	£6,705	£20,051	£33,219	£53,907	£163,024
4	£10,163	£104,518	£12,897	Dominated	Cost-saving
5	£12,052	£61,168	£19,205	Dominated	Cost-saving
6	£7,525	£53,665	£16,992	Dominated	Cost-saving
7	£265,801	Dominated	£64,478	Dominated	Cost-saving
8	£100,276	Dominated	£50,420	Dominated	Cost-saving
9	£49,716	Dominated	£38,304	Dominated	Cost-saving
10	£10,139	£60,983	£19,061	Dominated	Cost-saving
11	£44,559	£243,310	£28,123	Dominated	Cost-saving
12	£9,005	£109,035	£22,985	Dominated	Cost-saving
13	£5,013	£44,501	£15,654	Dominated	Cost-saving
14	£7,253	£50,948	£16,857	Dominated	Cost-saving
15	£8,521	£54,669	£17,490	Dominated	Cost-saving
16	£9,906	£58,793	£18,147	Dominated	Cost-saving
17	£9,005	£56,104	Cost-saving	Dominated	Cost-saving
18	£9,005	£56,104	Cost-saving	Dominated	Cost-saving
19	£9,005	£56,104	£17,724	Dominated	Cost-saving
20	£9,005	£56,104	Cost-saving	Dominated	Cost-saving
21	Cost-saving	Cost-saving	Cost-saving	£20,002	£929
22	Cost-saving	£9,663	£4,599	£121,977	Cost-saving
23	£80,063	Dominated	£62,970	Dominated	Cost-saving
24	Dominated	Dominated	Dominated	Dominated	Cost-saving
25	£3,870	£24,112	£7,614	Dominated	Cost-saving
26	£9,005	£56,104	£17,724	Dominated	Cost-saving
27	£9,005	£56,104	£18,456	Dominated	Cost-saving
28	Cost-saving	£56,104	£17,724	Dominated	Cost-saving
29	£9,005	£2,696	£17,724	£36,667	£26,789
30	£9,005	£56,104	Cost-saving	Dominated	Cost-saving
31	Cost-saving	£2,696	Cost-saving	Dominated	Cost-saving
32	Cost-saving	£42,549	£12,624	Dominated	Cost-saving

MSW, Men-who-have-sex-with-women; POCT, point-of-care test strategy; QALY, quality-adjusted life year.

Supplementary Table 7. Cost-effectiveness comparisons for scenario analyses using micro-costings - MSM

MSM	Cost-effectiveness comparison (£/QALY gained)				
	Scenario	POC A vs SC	POC B vs SC	POC C vs SC	POC B vs POC A
1	£137,378	£95,423	£139,260	£49,813	Dominated
2	£119,952	£83,250	£145,988	£42,999	Dominated
3	£91,163	£83,961	£332,964	£71,307	Dominated
4	£140,882	£160,599	£115,724	£235,703	£52,018
5	£135,796	£145,798	£134,186	£175,909	£104,258
6	£127,894	£139,636	£1,044	£175,909	£1,317
7	£833,775	£2,053,305	£350,136	Dominated	£78,956
8	£425,499	£591,462	£268,835	£4,264,237	£84,090
9	£271,627	£324,923	£211,896	£579,296	£89,914
10	£191,294	£191,613	£173,306	£192,369	£130,727
11	£168,341	£173,675	£143,342	£187,785	£85,861
12	£130,508	£167,524	£141,202	£406,528	£88,559
13	£47,590	£64,826	£74,079	£189,798	£126,208
14	£80,744	£98,423	£101,384	£181,298	£112,461
15	£113,144	£127,453	£122,040	£177,307	£106,349
16	£175,783	£175,089	£151,216	£173,474	£100,673
17	£130,508	£141,683	£131,189	£175,909	£83,111
18	£130,508	£141,683	£131,189	£175,909	£83,111
19	£130,508	£141,683	£131,319	£175,909	£104,258
20	£130,508	£141,683	£131,189	£175,909	£83,111
21	£60,065	£77,460	£84,981	£164,890	£116,909
22	£85,266	£101,948	£103,897	£170,152	£110,577
23	£235,470	£217,337	£174,644	£182,233	£97,951
24	£747,941	£417,789	£253,365	£189,212	£91,656
25	£56,093	£60,884	£56,420	£75,544	£44,773
26	£130,508	£141,683	£131,319	£175,909	£104,258
27	£130,508	£141,683	£131,648	£175,909	£105,447
28	Cost-saving	£141,683	£131,319	£869,045	£104,258
29	£130,508	Cost-saving	£131,319	Cost-saving	£681,008
30	£130,508	£141,683	Cost-saving	£175,909	Cost-saving
31	Cost-saving	Cost-saving	Cost-saving	Cost-saving	Cost-saving
32	£130,508	£141,683	£131,319	£175,909	£104,258

MSM, Men-who-have-sex-with-men; POCT, point-of-care test strategy; QALY, quality-adjusted life year.