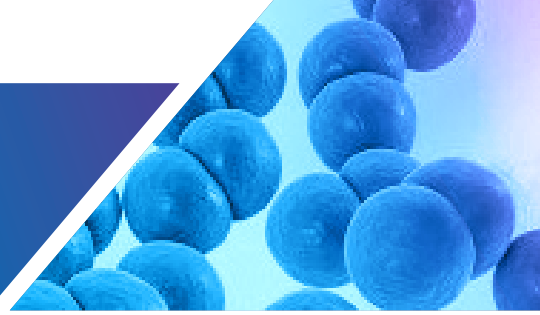
Resistant gonorrhoea
A public health issue



Using diagnostics to define appropriate treatment options

- *Neisseria gonorrhoeae* infections that do not respond to recommended front-line dual therapy have now been reported.[1,2]
- Extensively drug-resistant (XDR) *N. gonorrhoeae* strains exhibit high-level azithromycin resistance as well as resistance to ceftriaxone and most other alternative antimicrobials.[3,4]
- There is a global call for measures to preserve ceftriaxone and azithromycin as viable treatment options.[3]

Over half the reported gonorrhoea infections could be treated with a simple oral antibiotic.[5-8]

Resistance Guided Therapy

Better diagnostics to combat the rise in antimicrobial resistance (AMR).

Diagnostic tests that detect bacterial infection and genetic markers for antibiotic resistance in a single test can address the looming issue of global AMR[9] by enabling Resistance Guided Therapy (RGT).

- Patients receive targeted treatment[9]
- Healthcare costs are reduced[9]
- Spread of resistant infections minimised
- Antibiotic stewardship practices improved[9]

*Resistance*Plus® GC*

Test for ciprofloxacin susceptibility.

Ciprofloxican susceptibility testing can deliver a positive change in your clinic practises. Latest surveillance data (see table) suggest over half of reported infections could be treated with a simple oral antibiotic.[5-8]

- Reported rates of ciprofloxacin resistance have declined in many regions
- RGT ensures patients receive targeted treatment
- Healthcare costs reduced by minimising use of injectable treatments (e.g. ceftriaxone)
- Preserve front-line dual-therapy options for appropriate cases

	Cipro-floxacin resistance	Azithro-mycin resistance	Ceftri-axone resistance	% Susceptible to Cipro-floxacin
Austria[a]	78%	1%	0	22
Belgium[a]	53%	0%	0	47
Cyprus[a]	88%	25%	0	12
Denmark[a]	53%	7%	0	47
France[a]	53%	0%	0	47
Germany[a]	49%	2%	0	51
Greece[a]	71%	29%	0	29
Hungary[a]	73%	0%	0	27
Iceland[a]	40%	0%	0	60
Italy[a]	50%	0%	0	50
Latvia[a]	26%	16%	0	74
Malta[a]	40%	0%	0	60
Netherlands[a]	36%	2%	0	64
Norway[a]	80%	11%	0	20
Portugal[a]	46%	19%	0	54
Slovakia[a]	47%	0%	0	53
Slovenia[a]	61%	0%	0	39
Spain[a]	65%	9%	4%	35
Sweden[a]	56%	10%	0	44
UK[a]	26%	0%	0	74
Australia[b]	27%	3%	1.8%[e]	73
New Zealand[c]	32%	2%	2.6%[e]	68
USA[d]	30%	2.5%	0.8%[e]	70

Neisserria gonorrhoeae (GC) resistance data (% of total isolates) from national sureveillance programs. (a) European Gonococcal Antimicrobial Surveillance Programme,[4] (b) Australian Gonococcal Surveillance Programme,[5] the (c) New Zealand Public Health surveillance,[6] and the (d) Gonococcal Isolate Surveillance Project, United States.[7] (e) data indicate reduced susceptibility to ceftriaxone.

ResistancePlus® GC*

Detect *Neisseria gonorrhoeae* and key mutations that predict susceptibility to ciprofloxacin[10]

Channel	Target
1	*N. gonorrhoeae (Opa)*
2	*N. gonorrhoeae (PorA)*
3	*gyrA* mutation
4	*gyrA* wild type
5	Internal Control

Single well test combining multiple *N. gonorrhoeae* (GC) targets with markers associated with resistance or susceptibility to ciprofloxacin.

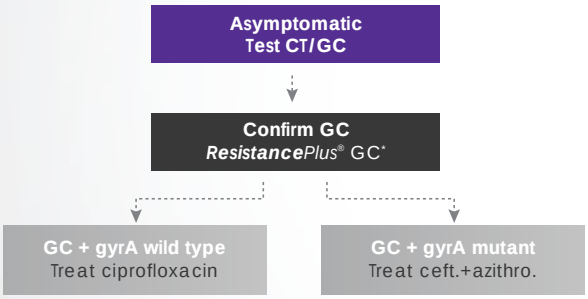
Built-in confirmatory target for use in front-line testing

Performance data

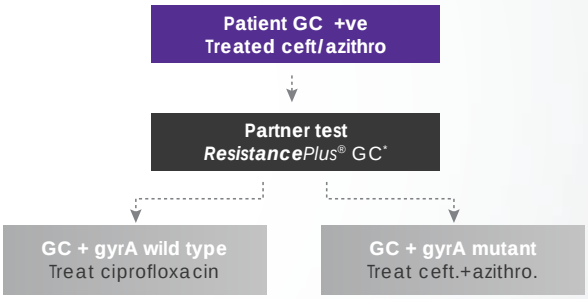
- GC detection; 96.9% sensitivity 99.7% specificity
- Mutation detection; 100% sensitivity 98.6% specificity
- Ciprofloxacin resistance/susceptibility; 100% correlation to clinical isolates

Diagnostics Defining Therapy: Test and treat algorithms to support your patient therapy decisions.

Screening or postal service



Partner testing



Guideline for testing/treatment algorithm, based on BASHH gonorrhoea guidelines that indicate ciprofloxacin should be preferentially used if infection is known to be quinolone sensitive.[11] §

ResistancePlus*® GC in your testing algorithm will reduce the need for injectable antibiotics and contribute towards the preservation of ceftriaxone and azithromycin dual therapy.

- Improve antibiotic stewardship, maximal use of existing treatment options
- Reduce in-clinic adverse events, simple oral medication
- Free up clinician staff, oral medication delivered by nursing staff
- Expand capacity of your service, treat patients out of clinic hours
- Reduce use of injectable, patients more agreeable to treatment

**Not for sale in the USA*

§Any testing algorithm used should adhere to relevant national testing regulations.

References: **1.** PHE Health Protection Report Volume 12, Number 11. 2018 **2.** AU DoH Media Statement April17th 2018. **3.** Rapid Risk Assessment 7 May 2018. Stockholm: ECDC; 2018. **4.** Eyre DW et al. Euro Surveill. 2019;24(10):pii=1900147. **5.** Harris SR et al. Lancet Infect Dis Published online May 15th 2018 **6.** Lahra MM et al. Australian Gonococcal Surveillance Programme annual report, 2015 **7.** Heffernan H et al. Antimicrobial resistance and molecular epidemiology of gonococci in NZ, 2014-5 **8.** Kirkcaldy RD et al. MMWR Surveillance Summaries July 15, 2016 / 65(7);1–19 **9.** O'Neill J. The Review on Antimicrobial Resistance. May 2016:35. **10.** Siedner MJ et al. J. Clin. Microbiol. 45, 1250–1254 (2007) **11.** Fifer et al. British Association for Sexual Health and HIV national guideline for the management of infection with *Neisseria gonorrhoeae* (2019).

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