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Objectives

- To examine the cost-effectiveness of current chlamydia testing to prevent pelvic inflammatory disease (PID) and tubal factor infertility (TFI) among those aged 15-24 in Scotland using the cost per Quality Adjusted Life Years (QALYs) gained including the incremental cost-effectiveness ratio.
- To explore the cost-effectiveness of various strategies for Scotland.

Background

Scottish chlamydia testing guidelines target symptomatic and high-risk asymptomatic individuals.¹ Recent publications, indicating a low risk of progression to serious chlamydia-related outcomes, particularly tubal factor infertility (TFI), question the validity of high levels of opportunistic testing especially among asymptomatic individuals.²

An Expert Advisory Group was established by the Chief Medical Officer in Scotland in January, 2011 in response to change in the evidence. Initial recommendations from the group included discontinuing all opportunistic testing. However, on further discussion with other partners including Public Health England, the final recommendation was to undertake a cost-effectiveness study.

Box 1: Genital chlamydia testing background information

- There were over 268,800 chlamydia tests performed among those aged 15 to 49 in 2010 in Scotland (based on aggregated chlamydia testing data collated from all testing laboratories)
- 48% of all chlamydia testing was performed on those <25
- The majority of testing (73%) was performed on women
- 73% of positive tests were among those <25
- The proportion positive among those aged <25 varied geographically and by gender:
Women; 8%-13% (median 10%)
Men; 11%-21% (median 16%)

Key points

- Current chlamydia testing coverage in Scotland is not cost-effective under our model assumptions.
- We used conservative parameter estimates: testing is likely to be more cost-effective than indicated by the model.
- Increasing partner notification is cost-effective and increases the cost-effectiveness of all testing.

Methods

- A compartmental deterministic model of chlamydia infection in those aged 15-24 in Scotland was developed to examine the impact of testing coverage and partner notification (PN) on number and cost of PID & TFI cases prevented. (Box 2)
- Cost-effectiveness calculations were informed by best estimates of the QALYs lost due to PID & TFI.³
- Sensitivity analyses were performed to test the sensitivity of the cost-effectiveness calculations to key model.
- The key parameters used in the cost-effectiveness calculations are shown in Box 2.
- The testing rates are based on Scottish data available to 2010 among those aged 15 to 24.
- The chlamydia prevalence was based on the NATSAL 3 data collected in Scotland.⁴

Box 2: Key model parameters used in the cost-effectiveness study

- Baseline testing coverage: 16.8% average**
25.6% (females) and 8.3% (males)
- Baseline prevalence: 4.4% (NATSAL 3)⁴**
3.1% in women and 5.3% in men 15-24y
- No. of partners notified per positive index; 0.4**
- Health state utility values (HSUV)⁵**
PID: 0.9 (±0.22) which applies for 3m
TFI: 0.76 (±0.24) which applies for 1 year

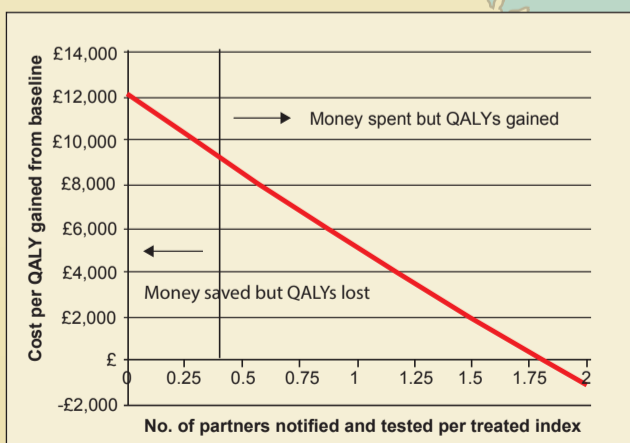
Results

- At baseline test coverage the total cost of testing is £5.4million (Table 1).
- Current testing is estimated to prevent 2062 and 258 PID & TFI cases, respectively, each year in young women aged 15 to 24.
- The cost per QALY gained is £40,034 compared to no testing using mid-range HSUV.
- Reducing testing by 50% from current levels will result in 669 and 84 more PID & TFI cases, respectively.

Table 1: Cost per QALY of genital chlamydia testing in Scotland

	Overall testing coverage			
	0.0%	8.4%	16.8%	25.2%
Total cost of chlamydia testing (£millions)	0	£2.81m	£5.42m	£8.00m
No. PID cases averted from no testing baseline	0	1393	2062	2765
No. TFI cases averted from no testing baseline	0	174	258	346
QALYs gained by new scenario	0	77	113	152
Cost saving due to costs of outcomes averted	--	£595,424	£881,268	£1,181,732
Cost per QALY gained (compared to no testing)	--	£28,851	£40,034	£44,836
Incremental cost per QALY gained (moving from one coverage level to the next)	--	£28,851	£63,329	£58,921
		(0.0% to 8.4%)	(8.4% to 16.8%)	(16.8% to 25.2%)

Figure 1: Incremental cost per QALY gained if partner notification efficacy is changed from the baseline of 0.4



Conclusions

- Current chlamydia testing activities in Scotland are not cost-effective using our model parameters.
- Some data gaps necessitated the use of conservative estimates for the model and our model is sensitive to several parameters, particularly the HSUV.
- These may lead to an over-estimate of cost-effectiveness, that is testing may be more cost-effective than our model suggests.
- There is potential to improve chlamydia testing cost-effectiveness, for example, by increasing partner notification.
- Increasing PN would result in a decrease in the number of adverse reproductive outcomes and thus, overall costs.

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