Frequencies and patterns of microbiology test requests from general practice

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Background Microbiological tests requested from primary care are currently almost entirely performed in a central NHS laboratory. New diagnostic technologies allowing results to be available at the point of prescription could contribute to antimicrobial stewardship.

Aims To quantify the demand for microbiology tests in primary care and highlight the most important individual and combinations of tests, and pathogens to inform the development of new single and multiplexed point-of-care tests.

Methods A retrospective cohort of all Oxfordshire primary care patients for whom a microbiology test was requested between 2008-2018. We described test frequencies overall, positive test results, pathogens identified, and trends over time. We also investigated patterns of co-testing in the same and subsequent visits with heat-maps and hierarchical cluster analysis overall and in sex and age categories.

Results 1,596,752 microbiology tests were requested for 393,905 patients of which 65.3% were women and 48.8% aged 18-49 years old. We organized individual tests into 19 microbiology test groups, 8 combined cultures and microscopies, and 11 related to individual pathogens. Urine cultures and microscopies (n=673,612) accounted for 42% of all microbiology tests and were mainly requested in isolation but also in follow-up visits after 7 and 14 days. Of all urine cultures, 27 % were positive and 26% had equivocal results. E. coli was the most prevalent pathogen in urine cultures (65.2%). Antenatal urine cultures and blood tests (Hepatitis B, HIV, Syphilis, and Rubella) formed the most common combination of tests particularly among women aged 18-49.

Conclusions The greatest burden of microbiology testing in primary care can be attributable to urine cultures. Antenatal urine and blood tests done in women aged 18-49 are also a significant contributor to the burden of microbiology testing. Further research should focus on the impact of the development of point-of-care tests on these care pathways.

Keywords
Microbiology, primary care, testing