Changing of minimum criteria for species identification of *E. coli* in urinary samples following implementation of BD Kiestra Total Laboratory Automation (TLA) at Karolinska University Laboratory

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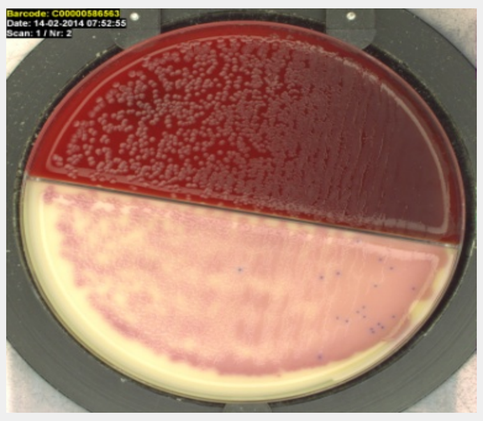
Introduction and methods

In 2013 we changed the processing of the microbiology samples in our diagnostic laboratory. All urinary samples were to be inoculated, incubated, read and processed (follow up-work) in a fully automatic laboratory system.

In the urinary diagnostics we traditionally have identified *Escherichia coli* by a combination of pink colonies on chromogenic agar (galactosidase-positive) and a positive indole-spot test. The indole-spot test was previously performed directly from the agar plates at the laboratory benches, which was impractical following the automation.



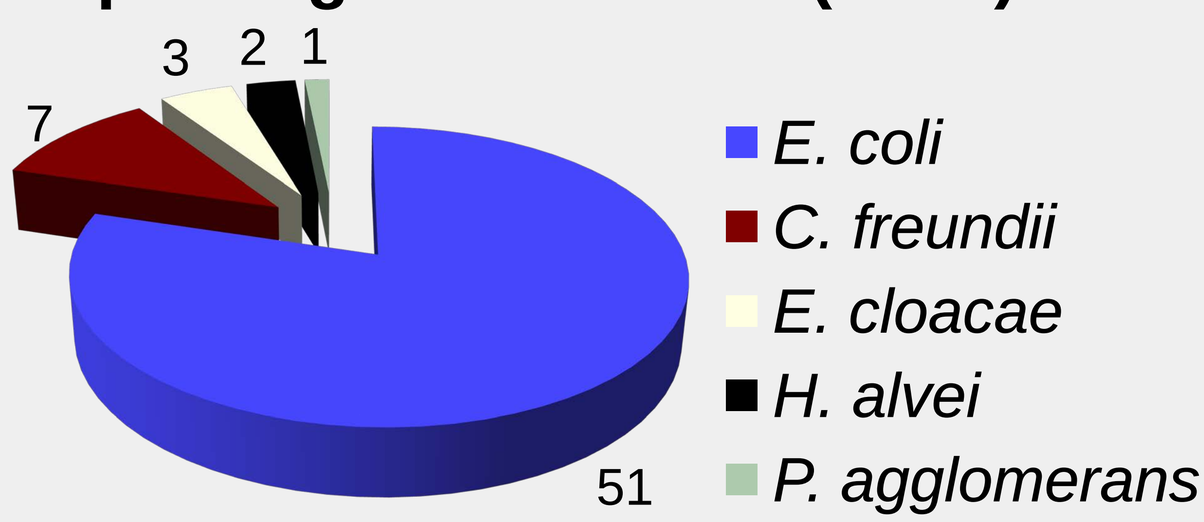
The hypothesis for the study was that by using a combination of the chromogenic properties and the typical antibiogram of *E. coli* , indole-spot testing no longer would be needed as a routine test for identifying *E. coli* in a standard urine culture.

We perform direct susceptibility testing for the in Sweden most used oral antibiotics on every urine culture sample and the validated growth to use this is >100. 000 CFU/mL.

We knew that other species than *E. coli*, e.g. *Citrobacter freundii* sometimes are galactosidase-positive only and therefore only pink.

During a time period, all consecutive galactosidase-positive and indole-spot negative isolates were investigated, to see if the antibiogram could be used to identify those isolates that needed further testing to verify the species.

Galctosidase-positive, indole-spot negative isolates (n=64)



Results

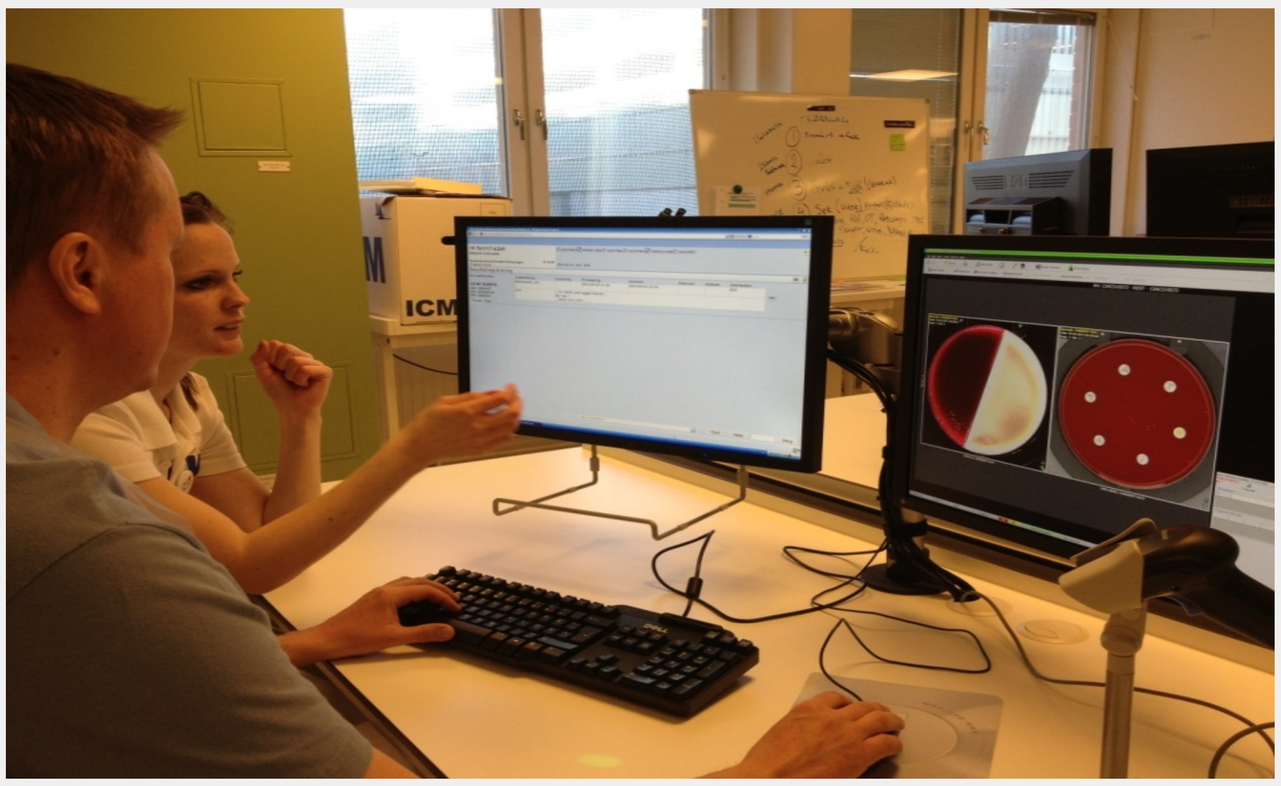
Between 2012-09-28 and 2013-01-24 the total amount of urine samples processed in the laboratory were 25,608.

5705 *E. coli* isolates were found.

64 isolates were galactosidase-positive and indole-spot negative. They were identified by Maldi-Tof or biochemical methods.

51 (79,7%) isolates were identified as *E. coli.*

The 13 remaining isolates consisted of the following species : 7 *Citrobacter freundii*, 3 *Enterobacter cloacae*, 2 *Hafnia alvei*, 1 *Pantoea agglomeran*s. All these isolates, except one isolate of *C. freundii* had an antibiogram with resistance to cefadroxil and/or nitrofurantoin.



Conclusion

We found in our study that if we have >100.000 CFU/mL of pink colonies on the chromogenic agar combined with an antibiogram showing susceptibility to cefadroxil and nitrofurantoin, there is no need to include indole-spot testing as a criterion for *E. coli*.

Though as a safety measure, we always perform indole-spot test when additional susceptibility tests are done.

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