

Implementation of Blood and Various Body Fluids for Inoculation Using Automated Specimen Inoculation System

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Introduction

Background

The process of plate streaking has been automated to improve the culture readings and workflow of microbiology laboratories. Although there are many evaluation reports about the inoculation of urine samples, few evaluations have been reported for blood or other body fluids.

Aim of the study

To evaluate automatic inoculation of various samples including, blood cultures and body fluids, using automated inoculating instrument, Previlisola® (bioMérieux, France).

Materials and Methods

Blood culture samples, showing positive signals on the automated microbial detection system, body fluids, and urine samples were collected.

All samples were inoculated on both sheep blood agar and MacConkey agar using two methods, automated and manual method.

Four plates were created for each samples.

We read all plates at 18 and 24 hours after incubation.

We compared two methods according to culture results, number of colony counts and hands-on time required for inoculation.

Results

A total of 240 non-duplicate samples

54 blood cultures, 44 body fluids (13 ascitic fluids, 9 cerebrospinal fluids, 7 bile fluids, 6 pleural fluids, 4 closed pus, 4 joint fluids, 1 pancreatic fluid), 142 urine

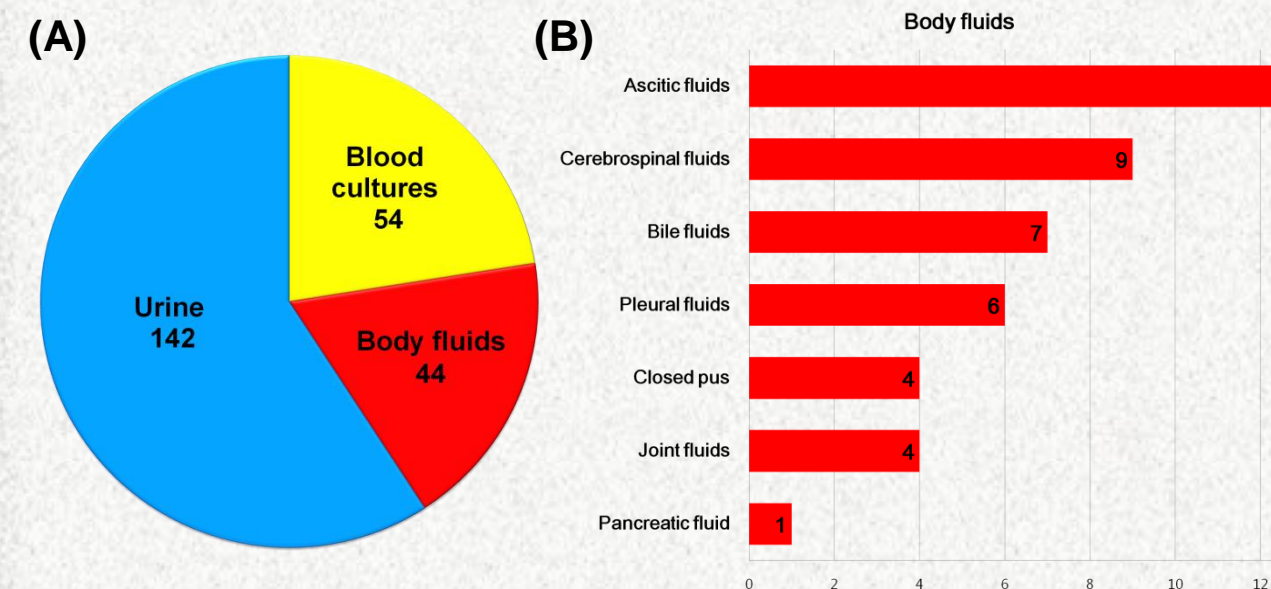


Figure 1. Distributions of (A) specimens and (B) body fluids

Culture results

Total concordance rate of two methods was 95%.

Blood cultures

52 of 54 samples (96%) showed concordant culture results.

Body fluid cultures

In total 44 various body fluid, culture results of 42 samples (95%) were concordant between two methods.

Urine cultures

135/142 urine samples (95%), concordant culture results were obtained with the two methods.

Number of colony counts

A total of 16 samples (1 blood culture, 1 body fluid, 14 urine) showed discordant results.

Hands-on time

Average hands-on time was 7m 18s per 10samples.

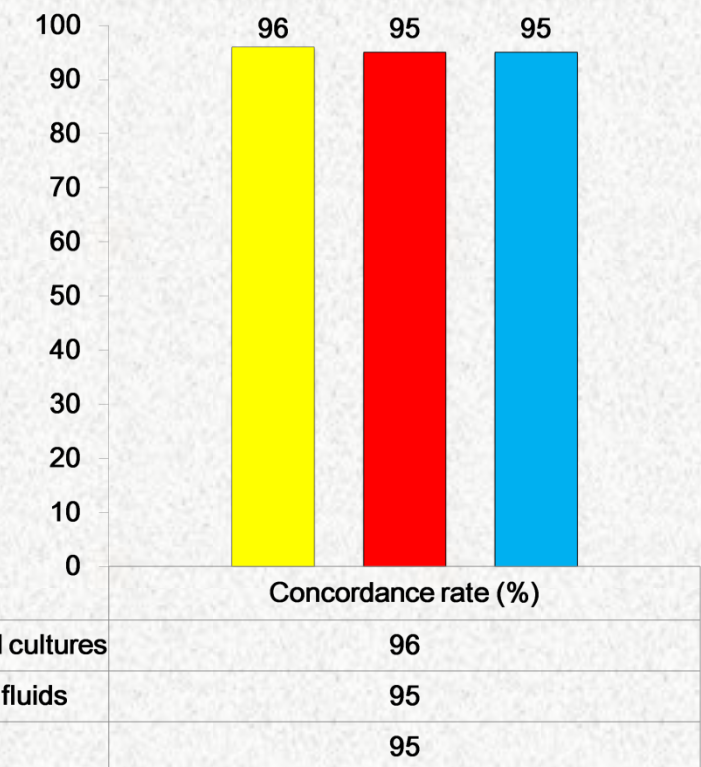


Figure 2. Concordance rates of each specimens between automated method and manual method

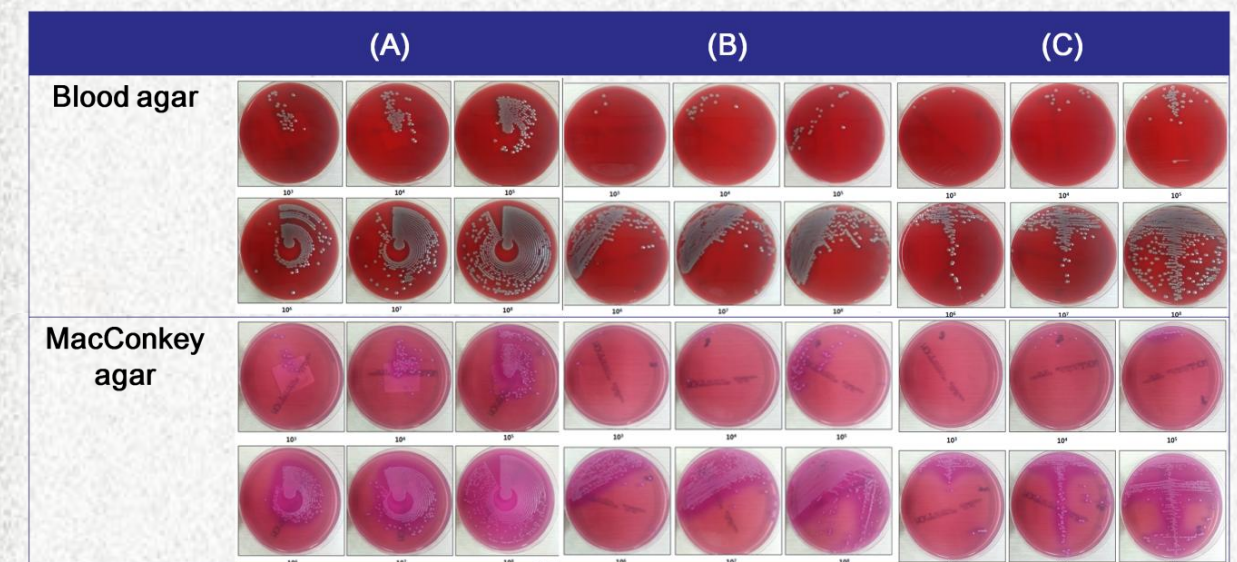


Figure 3. Enumerations reading grid for (A) automated method, (B) manual method (blood and body fluids), and (C) manual method (urine)

Conclusions

We report the first clinical evaluation of Previlisola® automated specimen inoculation for blood cultures and various body fluid samples.

Inoculation by Previlisola® showed relative good concordance with manual method, improved culture quality, and shortened hands-on time.