# Efficiency of an automated Gram-staining system for bacteriological diagnostics

KEY POINTS

- Scope: Microbiology / FMLA
- Kind of publication: Marketing evaluation : comparison of the performances of PREVI Color Gram versus the manual bath method
- Product promotion: Aid for PREVI® Color Gram promotion as this poster demonstrates good performance and PREVI® Color Core messages compared to the manual bath system
- Key arguments:
  - Accurate standardised result : PREVI® Color Gram provides a very good correlation compared to the manual method for the isolated strain and clinical specimen
  - Cost effective method : PREVI® Color Gram is an excellent cost effective alternative to manual gram staining. PREVI® Color Gram saves tech time.

TITLE AND SOURCE	**Efficiency of an automated Gram-staining system for bacteriological diagnostics** **Johannes K.-M. Knobloch, Germany, comparative evaluation**
OBJECTIVE OF THE STUDY	This study was performed to evaluate : - The performance of the PREVI® Color Gram system on pure strains and biological samples in comparison with the manual bath staining method - PREVI® Color Gram process and tech time

MATERIALS AND METHODS	Two slides were prepared from each of 700 specimens. Samples included in the study:
	- 151 urine
	- 99 sputum
	- 100 stools
	- 50 BAL
	- 99 genital swabs
	- 151 wound swabs
	- 50 pure culture isolates
	Methods:
	Manual: Manual and automatic stainings were carried out in parallel. Manual Gram stain was performed according to the conventional procedure, using Color Gram 2 reagents (bioMérieux, France) and home- made acetone-alcohol
	Automated: PREVI® Color Gram: The Gram staining on PREVI® Color Gram 30 system was performed using the decolorizer 2 and 3 programs.
RESULTS	- **Comparison of the performances:**
	- Staining results of all investigated specimens(n=700). The majority (71.3%) displayed an equal staining result. The automated system is played superior results in 21.1% of investigated specimens. For the manual method, superior results were observed in 7.6% of investigated specimens
	- Staining results of non-complex specimen : This evaluation indicates that, in non-complex specimens containing low amounts of human cells and extra cellular matrix molecules, PREVI® Color Gram shows an equivalent of the quality of the staining to the manual method.
	- Staining results of complex specimen : PREVI® Color Gram displayed significant superiority staining compared to manual Gram-staining for all investigated complex specimens such as: genital swabs, sputum, stool specimens, wound swabs.
	- This data indicates that, for complex specimens containing high amounts of human cells and extra cellular matrix molecules mixed with a wide variety of different bacterial spees, Automated Gram staining should be the method of choice to assure correct interpretation of the staining results.
	- **Comparison of the time tech :**
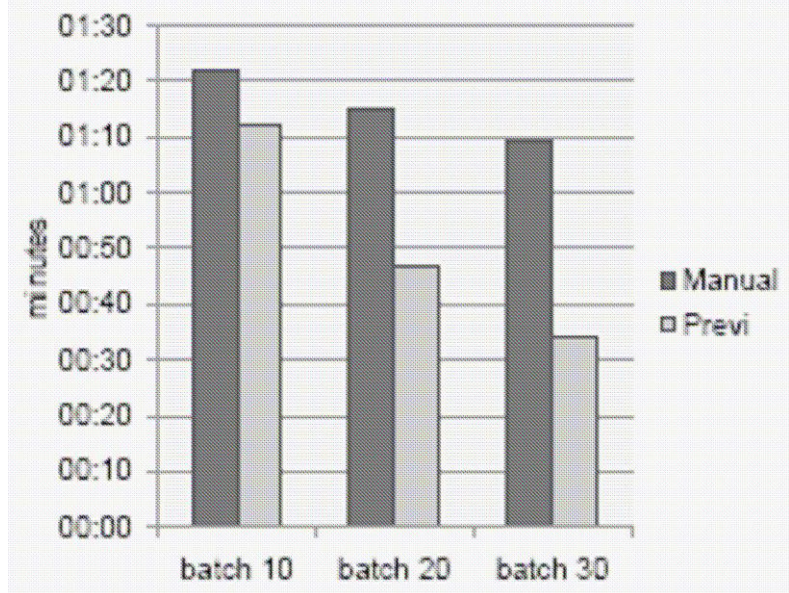
- Average time for processing of a single slide for automated (light grey) and manual (dark grey) Gram staining.

- Average times for representative batches of 10, 20 and 30 slides are displayed. Increasing the batch size resulted in a significantly higher time saving for automated staining.

CONCLUSIONS	
	• Automated Gram-staining significantly decreased hands on time of laboratory personnel compared to manual Gram-staining.
	• Standardization of the staining procedure resulted in equal or higher staining quality for all specimens.
	• For complex clinical specimens (genital swabs, sputum, stool specimens, and wound swabs), automated staining showed significantly better results.
	• This data suggests that the introduction of automated Gram staining is able to reduce personnel costs together with increased quality of staining