



2° CONGRESSO NEWMICRO

I laboratori di Microbiologia e la Clinical Governance



Proposte organizzative in batteriologia, micologia, parassitologia

A. Camporese

SOC Microbiologia e Virologia

Azienda Ospedaliera S.Maria degli Angeli, Pordenone

At the beginning of the 21st century, a high proportion of diagnostic tests are still performed according to methodologies pioneered by Pasteur at the end of the 19th century, i.e. **methods based on culture, microscopy, and serology.**

Bissonnette L and Bergeron MG. CMI 2010.



Specimen processing and culture workup specifically remain manual tasks, and **few changes to the methods** used to perform these tasks **have been made in the recent past.**

Bourbeau PP and Swartz BL. J Clin Microbiol, 2009.



Clinical microbiology laboratories **have largely been bypassed by the advances** in automation that have benefitted other areas of the clinical laboratory in recent years.

Bourbeau PP and Swartz BL. J Clin Microbiol, 2009.

The need for overall **efficiency** in providing results is now given the same importance as **accuracy**.

Camporese A. Inf Med 2004;12:118-125

It is now possible to obtain an enhanced clinical impact of microbiology by introducing new technologies, automation, cost-effective management changes, computerization and a revision of work shifts of technical personnel.

Camporese A. Inf Med 2004;12:118-125



First Evaluation of the WASP, a New Automated Microbiology Plating Instrument[∇]

Paul P. Bourbeau* and Brandi Lynn Swartz

Geisinger Medical Center, Danville, Pennsylvania



We believe that WASP offers opportunities **to automate** the processing of microbiology specimens to an **extent that has not been possible to date.**

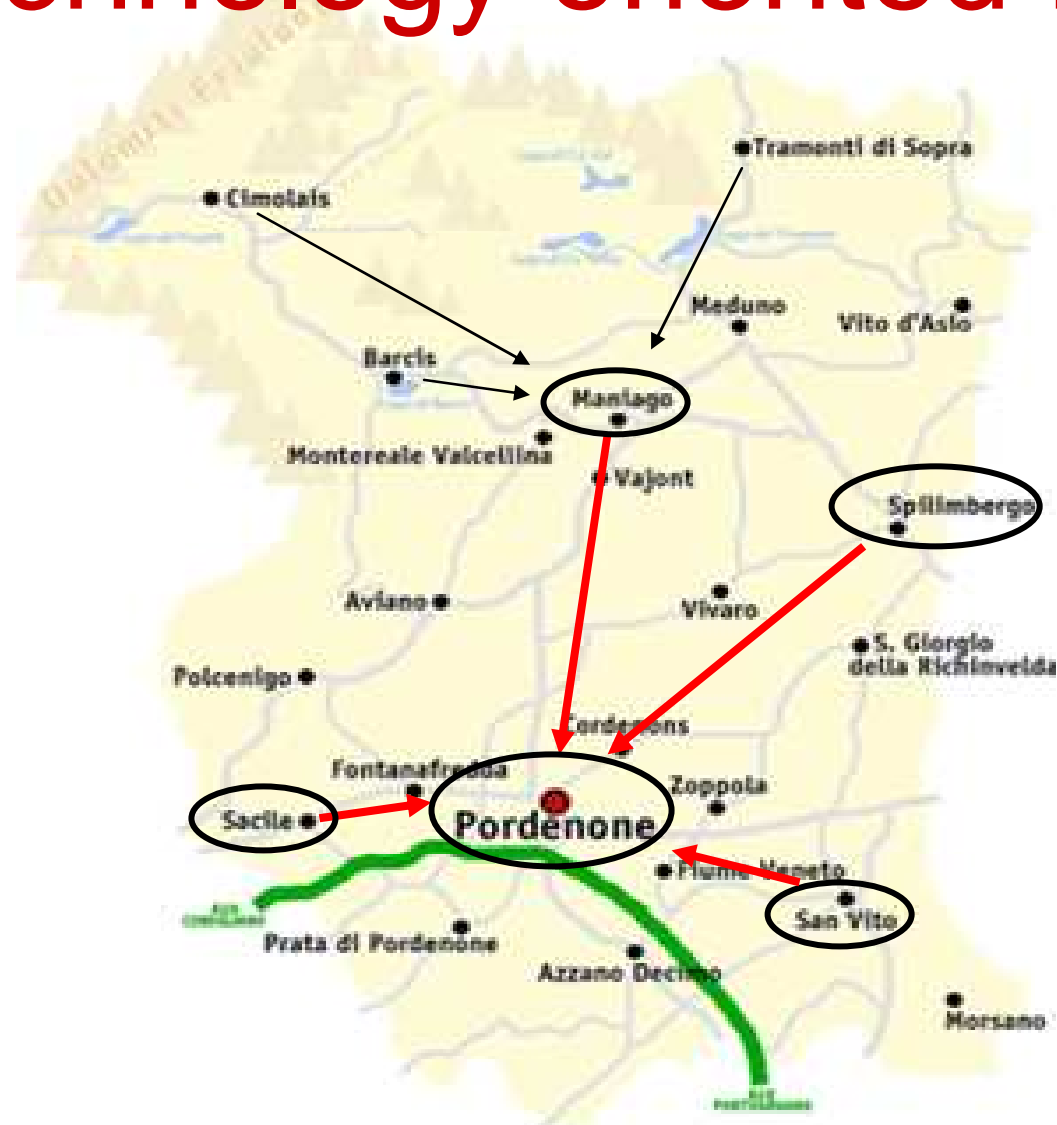
Liquid-based microbiology and automation: a new frontier in the management of bacteriology laboratory

Proper transport of clinical specimens for culturing infectious agents may be the most important factor affecting the successful evaluation of these specimens.

Because many samples are submitted from sites distant from clinical microbiology laboratories, it is essential that viability of the organism be maintained.



Pathology oriented and/or technology oriented Lab



Rapid techniques for nucleic acid amplification and characterization combined with automation and user-friendly software have significantly broadened the diagnostic arsenal for the clinical microbiologist.

Advanced Techniques in Diagnostic Microbiology.
Tang, Yi-Wei; Stratton, Charles W. (Eds), 2006.



The physical structure of laboratories, staffing patterns, workflow, and turnaround time **all will be influenced profoundly** by these technical advances.

Advanced Techniques in Diagnostic Microbiology.
Tang, Yi-Wei; Stratton, Charles W. (Eds), 2006.



Optimization of laboratory strategy

Strategies should be developed adapting

- the evolution of the **technology**
- the **population** of patients served (children, elderly, and immunocompromised patients)
- the **number and nature of the agents** that can be covered
- the **resources** available (infrastructure, staff, full-time service or service limited during some hours-day/some days-week)

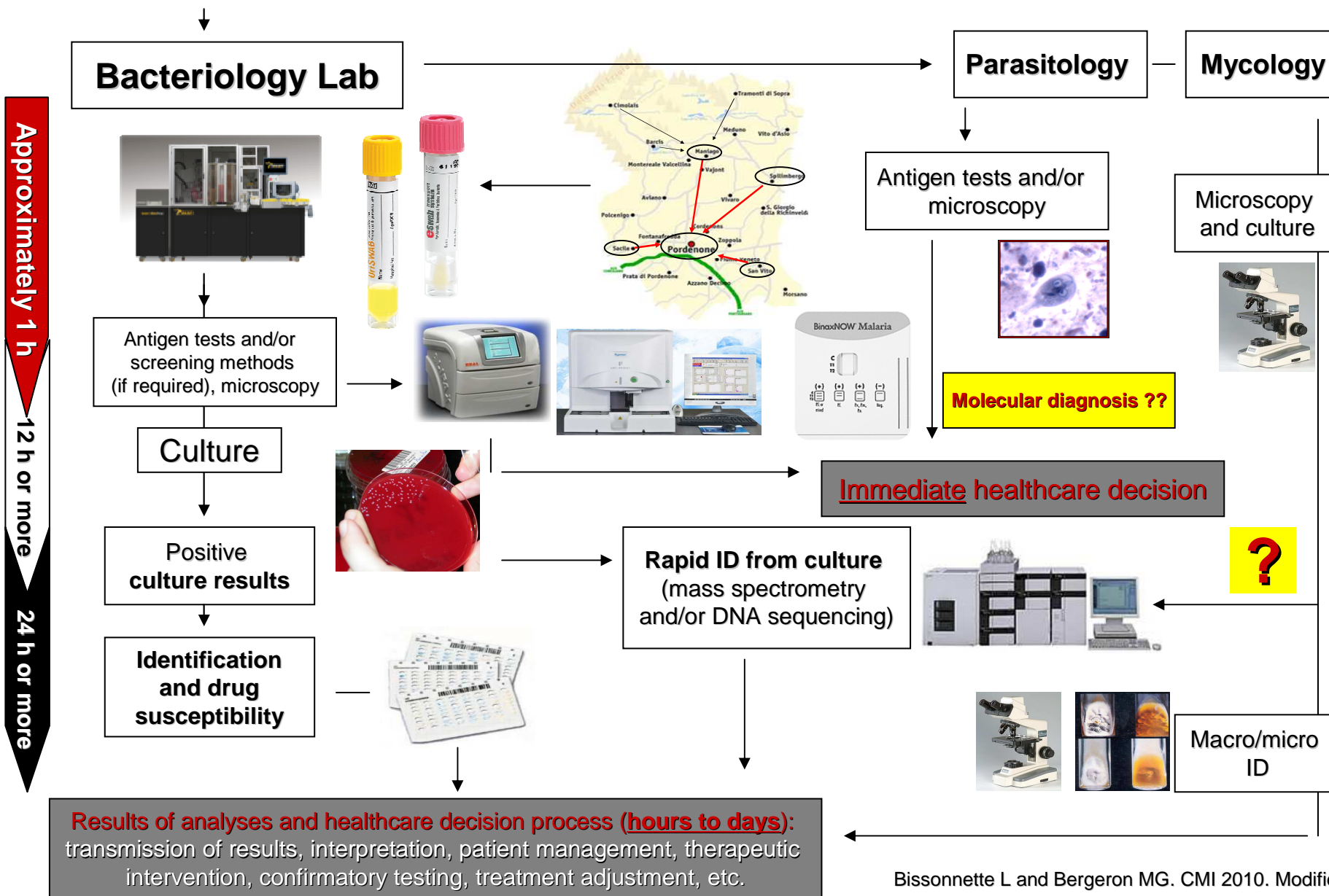
Ensure timely identification of microbial pathogens and resistance

	Survey anno 2001	Survey anno 2010	Laboratori di Microbiologia	Laboratori Generali
Non esamina le emocolture nei giorni festivi	66.3%	48.1%	39%	50%
Non esegue di routine l'esame microscopico	13.9%	11%	-	-
Non esegue Identificazioni dirette	90.7%	67%	55.3%	74.2%
Non esegue test di sensibilità diretti	82.1%	71%	34.2%	56.5%

Modificato da: Goglio A, Nicoletti P. Survey of blood cultures methods in Italy in 2010. Microbiologia Medica 2011; 26 (3): 156-168.

Entrance into the diagnostic cycle:

patient arrival, primary evaluation, questionnaire and physical examination by physician, presumptive diagnosis, physician laboratory analysis request(s), clinical sampling, transfer to laboratories, etc.



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Approximately 1 - 5 h

24 Ours Emergency & POC Microbiology Laboratory

- Microscopy
- Antigen POC tests
- *Molecular POC like tests*
- *Molecular mono-multipanel tests*
- Biomarkers (Procalcitonin...)



Molecular bacteriology, for ICA and MDR diagnosis/surveillance

- *C.difficile*
- MRSA
- VRE
- KPC
- BK MDR
- Therapeutic Drug Monitoring (TDM)

Approx. 5 - 8h

Molecular bacteriology, *pathology oriented*

- Sepsis
- Meningitis/encephalitis
- Lower Respiratory Tract Infections (LRTI)
- Gastroenteritis and diarrhoea
- Sexually transmitted infections (STIs)

Panel	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Panel 1	+	+	+	+	+	+	+	+	+	+
Panel 2	+	+	+	+	+	+	+	+	+	+
Panel 3	+	+	+	+	+	+	+	+	+	+
Panel 4	+	+	+	+	+	+	+	+	+	+
Panel 5	+	+	+	+	+	+	+	+	+	+
Panel 6	+	+	+	+	+	+	+	+	+	+
Panel 7	+	+	+	+	+	+	+	+	+	+
Panel 8	+	+	+	+	+	+	+	+	+	+
Panel 9	+	+	+	+	+	+	+	+	+	+
Panel 10	+	+	+	+	+	+	+	+	+	+



Results of analyses and healthcare decision process (hours to days):
transmission of results, interpretation, patient management, therapeutic intervention, confirmatory testing, treatment adjustment, etc.

Nucleic acid-based POC tests

The definition of a POC test has progressively broadened, and the process of diagnosing infectious diseases is gradually entering an era where a physician is in the position to obtain valuable information on a time-scale comparable to those in other fields of diagnostic medicine.

Clerc O and Greub G. Clin Microbiol Infect 2010.



"I'm sure Koch and Pasteur would probably say, "It's about time".

*Fred Tenover, Ph.D.
Cepheid Senior Director of Scientific Affairs*

www.Cepheidinternational.com





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**Vi ringrazio per
l'attenzione**

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