IAI INTRA-ABDOMINAL INFECTION APPLICATION

The Unyvero IAI Application is a high-quality tool to detect pathogens (bacteria and fungi), toxins, and antibiotic resistance markers in severe intra-abdominal infections. The Unyvero IAI Cartridge analyzes simultaneously in one patient sample over 100 DNA targets. In a few hours, specific analytes for resistance markers, pathogens, toxins and also a Universal Bacteria primer are assayed. Intra-abdominal infections are associated with unmet medical needs. The Unyvero approach helps to make informed treatment decisions at an earlier stage.
Improving treatment of patients with acute abdomen, including peritonitis, acute pancreatitis and megacolon requires rapid pathogen identification.

INTRA-ABDOMINAL INFECTION
SECOND MOST COMMON CAUSE OF MORTALITY FROM INFECTIONS IN INTENSIVE CARE

Intra-abdominal infections (IAI), associated with abdominal cavity exudations, elicit within the peritoneum complex inflammatory responses to microorganisms and their toxins. IAI is the second most common type of infections in patients with severe sepsis and ranks second as cause of death in US intensive care units.

In addition, complicated IAI, with a yearly incidence rate of 300,000 cases in the US, present a significant burden to health care systems.

INTRA-ABDOMINAL INFECTIONS ARE CLASSIFIED AS:
> community-acquired intra-abdominal infection (CA-IAI)
> healthcare-acquired intra-abdominal infection (HA-IAI)

The acute abdomen, a case of emergency, often caused by severe infections and necessitate timely medical attention.

Sources of infections are mostly the appendix, gall bladder, or are associated with colon or gastro-duodenal perforations, or diverticulitis.
The medical challenge of today is to treat complex IAI infections that are due to multiple pathogens, together with the significant risk of complications. Therefore, in cases of nosocomial intra-abdominal infections, the first choice of antimicrobial treatment is of major importance. According to various publications, unsuitable antimicrobial therapy seems to be linked to longer inpatient residence and higher fatality rates. An increasing resistance to Gram-negative pathogens, which are responsible for serious nosocomial infections, e.g. intra-abdominal infections such as:

- β-lactam resistance Enterobacteriaceae
- carbapenem resistance Enterobacteriaceae
- MDR P. aeruginosa

is the result of an increasing acquisition of resistance genes worldwide.

The global alliance to optimize rational use of antimicrobials for intra-abdominal infections (AGORA) recommended:

An optimal antimicrobial approach to treating IAI involves a delicate balance between the optimization of empiric therapy, which improves clinical outcomes, and the reduction of excessive antimicrobial use that increases the rate of emergence of antimicrobial-resistant strains.

Early pathogen and antibiotic resistance gene identification with rapid molecular tests may overcome those problems.
1. Unyvero T1/B1 Sample Tube for preparation of the patient sample, pre-filled with specific lysis reagents.
2. Unyvero T1/B1 Sample Tube Cap seals the Unyvero Sample Tube and contains proteinase K and an internal control gene for quality control.
3. Unyvero T1 Sample Pre-Treatment Tool is an aid for preparation and processing of sample materials.
4. Unyvero M1 Master Mix Tube containing reagents for DNA amplification.
GOLDEN HOUR
In the face of emerging multiresistant organisms, antimicrobial selection becomes more and more difficult, because many different genetic mechanisms are involved. Therefore, testing a broad spectrum with over 100 targets is required to get accurate information for guiding adequate, targeted therapy.

UNYVERO HELPS TO
- focus on the appropriate therapy
- choose the right antibiotic
- improve disease outcome

1. COVERAGE
A selection of pathogens, toxins, and antibiotic resistances based on incidence, clinical importance, and treatment guidelines
> OVER 100 TARGETs

2. DIVERSITY
Enables testing of clinically relevant sample types of abdominal cavity
- BILE, PERITONEAL FLUID AND ASCITES
- TISSUE
- SWABS, CATHETER TIPS
- POSITIVE IAI FLUID IN BLOOD CULTURE BOTTLE

3. SPEED
Delivers clinically relevant answers in time
4 – 5 H

PREREQUISITES
> DETECTION OF COMPLICATED INTRA-ABDOMINAL INFECTIONS
> VARIOUS NATIVE SAMPLE TYPES
> ANY INFECTION FOCUS
> OVER 100 TARGETs
> 1 CARTRIDGE

### COVERAGE - ANTIBIOTIC RESISTANCES, CLINICALLY RELEVANT PATHOGENS AND TOXINS INCLUDING UNIVERSAL BACTERIA PRIMER

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<th>PATHOGEN</th>
<th>GENIE</th>
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<td>Oxacillin</td>
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<td>Aminoglycoside</td>
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<td>aac(3)-IId-M</td>
<td>3rd generation Cephalosporin</td>
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1 incl. S. saprophyticus, S. hominis, S. epidermidis, S. warneri, S. haemolyticus, S. capitis, S. lugdunensis
2 incl. E. faecalis, E. faecium, E. gallinarum, E. casseliflavus, E. avium, E. durans, E. raffinosus
3 incl. S. pneumoniae, S. constellatus, S. agalactiae, S. pyogenes, S. anginosus
4 incl. A. hydrophila subsp. hydrophila, A. sobria, A. media, A. veronii, A. caviae
5 incl. B. fragilis, B. ovatus, B. thetaiotaomicron, B. uniformis
7 incl. E. cloacae, E. asburiae, E. hormaechei
8 incl. Klebsiella pneumoniae Cluster kp I + II, Alves et al., J Clin Microbiol, 44(10), 2006;
9 incl. Klebsiella variicola (Cluster kp III; formerly K. pneumoniae, 2004 classified as its own species.
10 incl. P. vulgaris, P. mirabilis, P. morganii, P. tabaci
11 incl. A. baumannii, A. oleivorans, A. calcoaceticus, A. pittii

The Comprehensive Unyvero Intra-abdominal Infection Panel Covers Many Clinically Relevant Pathogens – Universal Bacteria and Candida spp. and Important Antibiotic Resistance Markers and Toxins

**Caution** – Investigational Device, Limited by Federal (or US) Law to Investigational Use. Not available for Sale in the United States.
WIDE RANGE OF NATIVE SAMPLE TYPES
OVERCOMING CHALLENGES IN DIAGNOSING IAI

Intra-abdominal infections include a wide range of clinical pictures ranging from infections of the peritoneum, pancreas and colon, requiring the testing of many different and complex sample types, of various natures and qualities.

The Unyvero IAI application improves the identification of pathogens and resistance genes in acute bacterial infections of the abdomen, and uniquely combines it with the detection of toxin markers in one test. It facilitates testing of ascites- and peritoneal fluid, pancreatic juice, as well as bile. Additionally, it handles e.g. catheter tips and drainage fluid, swabs tissue, and samples from positive flagged blood cultures.

Compared to traditional IAI diagnostic measures, which are laborious and time consuming based on growing cultures and microscopy, multiple closely related non-pathogenic organisms, prior medication, and the number of involved pathogens no longer pose a problem.
Because of its universal applicability, the Curetis technology can use a single sample preparation protocol for many different sample types of any clinical application. Curetis’ proprietary and universal sample preparation technology prepares DNA from any native clinical sample type without losing time needed for preculturing.
The intuitive simple workflow is consistent across all clinical applications and sample types, thus drastically reducing invalid tests due to operator errors.

**STEP 1**
TRANSFER OF SAMPLES AND LYSIS

~ 60 seconds:
1. The patient sample is transferred to the Unyvero Sample Tube, sealed in with the Unyvero Sample Tube Cap, and lysed for 30 minutes in the Unyvero Lysator.

**STEP 2**
ASSEMBLING THE UNYVERO CARTRIDGE

~ 30 seconds:
2. After 30 minutes the Unyvero Sample Tube is removed from the Lysator. Then the A cartridge is assembled with the Unyvero Sample Tube and Unyvero Master Mix Tube.

**STEP 3**
SCANNING AND INSERTING THE UNYVERO CARTRIDGE

~ 20 seconds:
3. The Cartridge is scanned and inserted into the Unyvero Analyzer. Two cartridges per analyzer can be analyzed simultaneously.

**STEP 4**
FOUR TO FIVE HOURS ANALYSIS PROCESS

It takes just a few minutes for subsequent result analysis:
4. The Unyvero analysis runs for four to five hours. The results are displayed on the screen or can be exported as a PDF.

THE UNYVERO SOLUTION FEATURES A «SAMPLE TO ANSWER» APPROACH AND CONSISTS OF:

- the Unyvero L4 Lysator for sample lysis
- the application specific Unyvero Cartridge
- the Unyvero A50 Analyzer processing the Unyvero Cartridge
- the Unyvero C8 Cockpit for intuitive user interaction

The Unyvero System translates a complex laboratory process into an easy-to-use format. The analytical process requires merely the addition of the unprocessed patient sample and enzymes for DNA amplification. All other reagents are preloaded into a self-contained, contamination-safe cartridge. After the patient sample and the Master Mix are inserted into the cartridge, the cartridge is loaded into the analyzer and processed fully automatically. The Unyvero System generates complete diagnostic information in 4 – 5 hours, without any further operator interaction.

UNYVERO
AT A GLANCE

THE UNYVERO SOLUTION

> detects a broad panel of pathogens and antibiotic resistances, as well as toxins from a single sample in one run

> enables the testing of many clinically relevant native samples

> delivers clinically relevant information in 4 – 5 hours, helps with fact-based treatment decisions as early as possible

> allows point of need testing

> provides high productivity by
  - minimizing operator time to a few minutes with full walk-away automation, based on a simple and consistent workflow for any clinical application
  - low implementation requirements and low total ownership cost, as neither skilled molecular biology staff nor special infrastructure is needed
  - configurations that meet individual customer needs, satisfying processing time requirements
  - optimizing routine hospital workflow by sophisticated information management
