

RAMJA GENOSENSOR

Right Antibiotic @ Right Time



IN ASSOCIATION WITH



सत्यमेव जयते

Department of Health Research
Ministry of Health and Family Welfare
Government of India

**MedTech
mitra** | Handholding MedTech
innovators for clinical
evaluation, regulatory
facilitation and uptake
of new products

A NITI Aayog-ICMR-CDSCO initiative



PRATHAMASENSETM GENOSENSOR



PRATHAMASENSE GENOSENSOR

WORLD'S 1st INDIAN COMPANY THAT OFFERS SMART, INNOVATIVE PAPER-BASED GENOSENSORS

for the detection of microbial infection and antimicrobial resistance detection in **90 min.**

RAMJA GENOSENSOR is a revolutionary I.I.T. Delhi incubated MedTech startup, with a manufacturing unit at Okhla, New Delhi, India. We developed a pathbreaking technology, based on Electrochemical DNA Biosensors, which detects any infection along with antimicrobial resistance (AMR) within 90 minutes. **This Technology has been granted patent in India and US patent has been accepted.** Our Panels are in sync with **WHO** study published in Lancet 2022. which offers faster treatment for UTI, Sepsis, Pneumonia & Hospital acquired infection.

ULTRA-FAST

Result in 90min



PORTABLE

Sturdy and Unique



USER-FRIENDLY

Lab Technician can perform



ACCURATE

Gene-Specific



ECONOMICAL

Up to 95% reduction in infrastructure



PATENTED

Clinical trial at AIIMS
ISO13485 2016

Multichannel
(Model- PG/M/001)



Single channel
(Model- PG/S/001)



PRATHAMASENSE GENOSENSOR

PRATHAMASENSE is a groundbreaking device capable of detecting infection and antimicrobial resistance within an impressive 90 minutes in blood, urine and any body fluid, ensuring high sensitivity and accuracy in diagnostic results.



Sensor and Sample processing

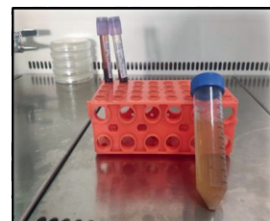
SCREEN PRINTED
ELECTRODE



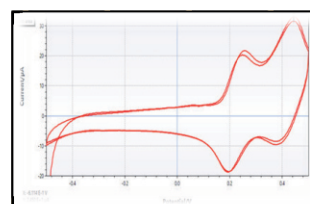
HYBRIDIZATION



NUCLEIC ACID
EXTRACTION



PRATHAMASENSE
GENOSENSOR



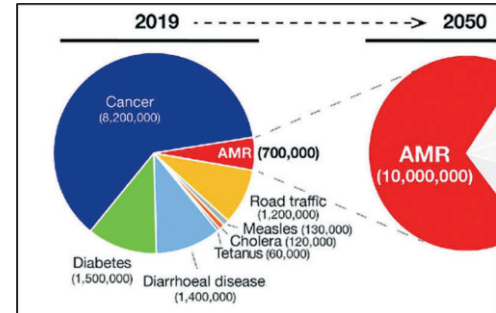
Current > 15uA = CFU > 10^{-3}

DETECTION & REPORT

AMR ANTIMICROBIAL RESISTANCE

AMR, flagged by WHO, claims a life every 45 seconds, potentially worsening to a fatality every 3 seconds by 2050.

ICU patients, are more vulnerable to infections, face heightened risks with every hour delay, increasing mortality rates by up to 80%. Conventional method of detecting takes 3-4 days, often leads to the overuse of broad-spectrum antibiotics, fueling AMR.



RAMJA Genosensor's DNA-based technology detects infections and AMR in under 90 mins, allowing for rapid, precise treatment and combating superbugs effectively. Prathamasense can detect bacterial and fungal infection with AMR in all the body fluids like blood, urine, tracheal fluid, CSF, BAL, BILE etc.

PrathamaSense validation study on Sepsis, UTI, Typhoid, Fungus, and Antimicrobial Resistance was conducted over the last four years across multiple AIIMS centers in PAN India. Compared to culture, Q-PCR, MALDI-TOF, Serotyping and Biochemical Testing the study reported an impressive sensitivity and specificity of over 94%.



ANTIMICROBIAL RESISTANCE KIT

(MODEL NO :- PG/IVD/AMR-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Carbapenemase

- KPC
- NDM
- OXA-48
- OXA-23
- IMP
- VIM

Colistin

- MCR-1

ESBL

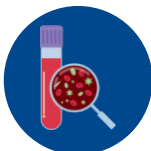
- CTX-M

Methicillin

- Mec A

Vancomycin Resistance

- Van A



CARBAPENEMASE PANEL

(MODEL NO :- PG/IVD/AMR-002) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- KPC
- NDM

- OXA-48
- OXA-23

- IMP
- VIM



INFECTION & AMR DETECTION KIT



SMART TYPHOID PANEL

(MODEL NO :- PG/IVD/TP-001) (SAMPLE TYPE : EDTA BLOOD, BACTEC CULTURE, BHI CULTURE, URINE & ANY OTHER BIOLOGICAL FLUID) (QTY : 5-10 ML)

Typhoid Detection

- TTR gene
- STG gene

AMR

- Gyrase resistance (gyrA)
- Topoisomerase resistance (Par C)



PAN TYPHOID PANEL

(MODEL NO :- PG/IVD/TP-002) (SAMPLE TYPE : EDTA BLOOD, BACTEC CULTURE, BHI CULTURE, URINE & ANY OTHER BIOLOGICAL FLUID) (QTY : 5-10 ML)

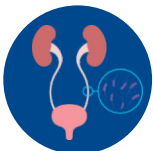
Focusing on typhoid, this kit aims to provide timely diagnosis and treatment in regions with high disease burden.

Typhoid Detection

- TTR gene
- STG gene
- Flagellin-1 gene
- Flagellin-2 gene

AMR

- Gyrase resistance (gyrA)
- Topoisomerase resistance (Par C)
- ESBL resistance (CTX-M)



URINARY TRACT INFECTION (UTI) PANEL

(MODEL NO :- PG/IVD/UTI-001) (SAMPLE TYPE : URINE | QTY : 5-10 ML)

UTI kit targets the global concern of urinary tract infections (UTIs) with rapid and accurate results in 90 minutes, aiming to improve antibiotic therapy outcomes.

Gram Negative Bacteria

- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Acinetobacter baumannii*
- *Proteus mirabilis*

Gram Positive Bacteria

- *Staphylococcus aureus*
- *Enterococcus faecalis*
- *Staphylococcus saprophyticus*



INFECTION & AMR DETECTION KIT



SMART SEPSIS PANEL

(MODEL NO :- PG/IVD/SP-001) (SAMPLE TYPE : EDTA BLOOD, TRACHEAL FLUID, OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

This panel targets critical care issues like sepsis in ICU patients, this panel emphasizes the importance of early detection and management in ICU patients.

Bacterial species

Gram Negative Bacteria

- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Acinetobacter baumannii*

Gram Positive Bacteria

- *Streptococcus pneumoniae*
- *Enterococcus faecalis*
- *Staphylococcus aureus*

Fungus Species

Yeast:

- *Candida albicans*

AMR

Carbapenemase

- KPC
- NDM
- OXA-48

Colistin

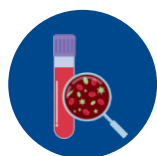
- MCR-1

ESBL

- CTX-M

Methicillin

- MRSA



SEPSIS PANEL

(MODEL NO :- PG/IVD/SP-002) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacterial species

Gram Negative Bacteria

- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Acinetobacter baumannii*
- *Enterobacteriaceae*
- *Proteus mirabilis*
- *Salmonella species*
- *Neisseria meningitidis*
- *Haemophilus influenzae*

Gram Positive Bacteria

- *Streptococcus pneumoniae*
- *Streptococcus agalactiae*
- *Listeria monocytogens*
- *Streptococcus pyogenes*
- *Staphylococcus aureus*
- *Enterococcus faecalis*
- *Mycobacterium tuberculosis*
- *Staphylococcus saprophyticus*

Fungus Species

Yeast

- *Candida albicans*
- *Candida auris*
- *Candida glabrata*
- *Candida krusei*
- *Candida parapsilosis*

AMR

Carbapenemase

- KPC
- NDM
- OXA-48
- OXA-23

Colistin

- MCR-1

ESBL

- CTX-M

Methicillin

- Mec A gene



INFECTION & AMR DETECTION KIT



PNEUMONIAE PANEL

(MODEL NO. PG/IVD/PN-001) (SAMPLE TYPE : EDTA BLOOD, TRACHEAL FLUID OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacterial species

Gram Negative Bacteria

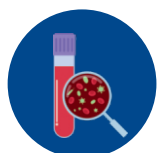
- *Haemophilus influenzae*
- *Acinetobacter Baumannii*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Proteus mirabilis*
- *Escherichia coli*

Gram Positive Bacteria

- *Streptococcus pneumoniae*
- *Streptococcus agalactiae*
- *Staphylococcus aureus*

AMR

- KPC
- NDM
- OXA-48
- OXA-23
- MEC
- CTX-M



NEONATAL SEPSIS PANEL

(MODEL NO :- PG/IVD/NSP-001) (SAMPLE TYPE : EDTA BLOOD, TRACHEAL FLUID, OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacterial species

Gram Negative Bacteria

- *Escherichia coli*
- *Serratia marcescens*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Acinetobacter baumannii*

Gram Positive Bacteria

- *Streptococcus pneumoniae*
- *Streptococcus agalactiae* (GBS)
- *Staphylococcus aureus*
- *Staphylococcus epidermis* (CoNS)

Fungus Species

Yeast:

- *Candida albicans*

AMR

Carbapenemase

- KPC
- NDM
- OXA-48
- OXA-23

ESBL

- CTX-M

Methicillin

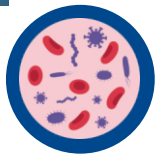
- Mec A gene

Vancomycin resistance

- Van A



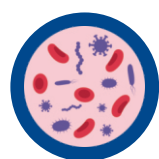
INFECTION & AMR DETECTION KIT



SMART FUNGUS PANEL

(MODEL NO :- PG/IVD/FP-001) (SAMPLE TYPE : EDTA BLOOD, TRACHEAL FLUID, URINE OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- Candida Albicans
- Candida auris
- Aspergillus fumigatus
- Rhizopus
- Mucor



PAN FUNGUS PANEL

(MODEL NO :- PG/IVD/FP-002) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

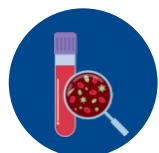
Fungus Species

Yeast:

- *Candida albicans*
- *Candida glabrata*
- *Candida auris*
- *Candida tropicalis*
- *Candida parapsilosis*
- *Candida krusei*

Mould:

- *Aspergillus fumigatus*
- *Rhizopus*
- *Mucor*



PAN CANDIDA SPECIES PANEL

(MODEL NO. PG/IVD/FP-003) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- Candida Albicans
- Candida auris
- Candida Glabrata
- Candida Krusei
- Candida Parapsilosis



TUBERCULOSIS (TB) DETECTION KIT*

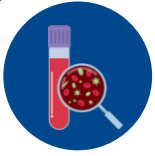
(MODEL NO :- PG/IVD/TB-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- IS6110
- MPB64
- 16S rRNA
- Rifampicin
- XDR



INFECTION & AMR

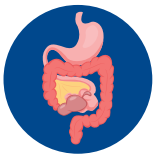
DETECTION KIT



SMART GI PANEL

(MODEL NO :- PG/IVD/GIP-001) (SAMPLE TYPE : STOOL OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Shigella dysenteriae*
- *Salmonella TTR*
- *Vibrio cholerae*
- *E.coli-O157*



PAN GASTROINTESTINAL (GI) PANEL

(MODEL NO :- PG/IVD/GIP-002) (SAMPLE TYPE : STOOL OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacteria

- *Campylobacter jejuni*
- *Plesiomonas shigelloides*
- *Salmonella TTR*
- *Vibrio cholerae*
- *Yersinia enterocolitica*

Diarrheagenic E.coli/Shigella

- Enterohaggregative *E.coli* (EAEC)
- Enteropathogenic *E.coli* (EPEC)
- Enterotoxigenic *E.coli* (ETEC)
- *Shigella*

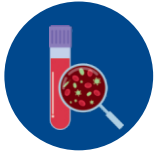


SMART SKIN INFECTION PANEL

(MODEL NO. PG/IVD/SKP-001) (SAMPLE TYPE : EDTA BLOOD, TRACHEAL FLUID OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Staphylococcus aureus*
- *Group A β -hemolytic streptococci*
- *Candida Albicans*

INFECTION & AMR DETECTION KIT



SKIN INFECTION PANEL

(MODEL NO. PG/IVD/SKP-002) (SAMPLE TYPE : BLOOD, TRACHEAL FLUID OR ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacterial species

- *Escherichia coli*
- *Staphylococcus aureus*
- *Corynebacterium diphtheriae*
- Group A β -hemolytic streptococci
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Enterococcus faecalis*

Fungus Species

- *Candida Albicans*
- *Aspergillus species*



OSTEO-MYELITIS PANEL

(MODEL NO :- PG/IVD/OP-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Bacterial species

Gram Negative Bacteria

- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*
- *Salmonella typhimurium*

Gram Positive Bacteria

- *Enterococcus faecalis*
- *Staphylococcus aureus*
- *Streptococcus agalactiae*

AMR

- *MecA*

Fungus Species

- *Candida Albicans*



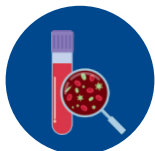
INFECTION & AMR DETECTION KIT



VANCOMYCIN – RESISTANT ENTEROCOCCUS (VRE) DETECTION KIT

(MODEL NO :- PG/IVD/VRE-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

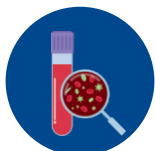
- VAN A GENE



MRSA & S AUREUS DETECTION KIT (PRE- OPERATIVE TEST)

(MODEL NO :- PG/IVD/MRSA-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- Staphylococcus aureus
- MRSA



CANDIDA ALBICANS DETECTION KIT

(MODEL NO :- PG/IVD/CAD-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- Candida Albicans



ASPERGILLUS FUMIGATUS DETECTION KIT

(MODEL NO. PG/IVD/AFK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

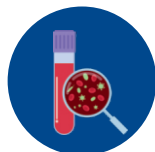
- Aspergillus Fumigatus



MUCORALES DETECTION KIT

(MODEL NO. PG/IVD/MK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- Mucor



RHIZOPUS DETECTION KIT

(MODEL NO. PG/IVD/RK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

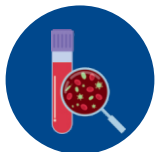
- Rhizopus homothallicus



CLOSTRIDIUM DIFFICILE DETECTION KIT

(MODEL NO :- PG/IVD/CDK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Clostridium difficile*



GROUP A STREPTOCOCCUS DNA DETECTION KIT

(MODEL NO. PG/IVD/GSD-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Group a Streptococcus*

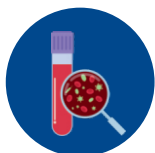
INFECTION & AMR DETECTION KIT



CHOLERA DNA DETECTION KIT

(MODEL NO. PG/IVD/CDD-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

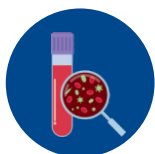
- *Vibrio cholerae*



SHIGELLA DNA DETECTION KIT

(MODEL NO. PG/IVD/SGD-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Shigella dysenteriae*



SALMONELLA TYPHIMURIUM DNA DETECTION KIT

(MODEL NO. PG/IVD/STK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

- *Salmonella TTR*
- *STG gene*



MENINGITIS DETECTION KIT*

(MODEL NO :- PG/IVD/MN-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Addressing the urgent need for early detection of meningitis, this kit aims to improve treatment outcomes and reduce morbidity and mortality rates associated with the disease.



SEXUALLY TRANSMITTED DISEASE (STD) DETECTION KIT*

(MODEL NO :- PG/IVD/STD-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Providing discreet self-screening options for common STDs, this kit emphasizes the importance of professional medical consultation for accurate diagnosis and treatment.



MALARIA INFECTION DETECTION KIT*

(MODEL NO :- PG/IVD/MP-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

With a focus on endemic regions like India, this kit aims to improve malaria treatment outcomes by addressing drug-resistant strains through faster diagnostics.



LYMPHATIC FILARIASIS DETECTION KIT*

(MODEL NO :- PG/IVD/LFK-001) (SAMPLE TYPE : ANY BIOLOGICAL FLUID | QTY : 5-10 ML)

Addressing the challenges of lymphatic filariasis diagnosis and treatment, this kit aims to enhance treatment efficiency through faster diagnostics.

* Coming Soon, currently under R&D

RAMJA GENOSENSOR TEST REPORT



RAMJA Genosensor Pvt. Ltd.

Patient Report

UHID:

Age/Gender:

Sample: Blood

Patient Name:

Hospital :

Date:

Time:

SEPSIS PANEL								
	Current	< -10 μ A	\geq -10 μ A	\geq -15 μ A	\geq -25 μ A	\geq -35 μ A	\geq -45 μ A	\geq -55 μ A
	CFU (Colony forming Unit)	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5-6}	10^{-7-8}	10^{-9-10}
Bacterial species								
<i>E. coli</i>				Detected				
<i>Klebsiella pneumoniae</i>		Not Detected						
<i>Pseudomonas aeruginosa</i>		Not Detected						
<i>Acinetobacter baumannii</i>				Detected				
<i>Proteus mirabilis</i>		Not Detected						
<i>Salmonella species</i>		Not Tested						
<i>Neisseria meningitidis</i>		Not Tested						
<i>Haemophilus influenzae</i>		Not Tested						
<i>Streptococcus pneumoniae</i>		Not Detected						
<i>Staphylococcus aureus</i>		Not Detected						
<i>Enterococcus faecalis</i>		Not Detected						
<i>Staphylococcus saprophyticus</i>		Not Tested						
<i>Tuberculosis</i>		Not Tested						
<i>Listeria monocytogenes</i>		Not Tested						
<i>Streptococcus pyogenes</i>		Not Tested						

Address: F-89/7, Second Floor, Okhla Phase-1, Delhi Website: www.ramjagenosensor.com

Email: ramjagenosensor@gmail.com Ph. No.: 01144469753

RAMJA GENOSENSOR TEST REPORT



RAMJA Genosensor Pvt. Ltd.

<i>Streptococcus agalactiae</i>		Not Tested						
Fungus Species								
<i>Aspergillus fumigatus</i>		Not Detected						
<i>Mucor</i>		Not Tested						
<i>Rhizopus</i>		Not Tested						
<i>Candida albicans</i>		Not Detected						
<i>Candida Glabrata</i>		Not Detected						
<i>Candida Auris</i>		Not Detected						
<i>Candida Krusei</i>		Not Detected						
<i>Candida Parapsilosis</i>		Not Detected						
<i>Candida Tropicalis</i>		Not Tested						
Anti - Microbial Resistance								
<i>KPC</i>		Not Tested						
<i>NDM</i>		Not Tested						
<i>OXA-48</i>					Detected			
<i>OXA-23</i>					Detected			
<i>MCR-1</i>		Not Tested						
<i>CTX-M</i>					Detected			
<i>Mec</i>		Not Tested						

Bacterial Detected: *E.coli* & *A.baumannii*

AMR Detected: *CTX-M*, *OXA-48* & *OXA-23*

Address: F-89/7, Second Floor, Okhla Phase-1, Delhi **Website:** www.ramjagenosensor.com

Email: ramjagenosensor@gmail.com **Ph. No.:** 01144469753

RAMJA GENOSENSOR TEST REPORT

ICMR GUIDELINES FOR INFECTION MANAGEMENT



RAMJA Genosensor Pvt. Ltd.

Recommendations for the management of carbapenem resistant gram-negative infections

It is almost always difficult to choose an antimicrobial regimen for carbapenem-resistant gram-negative infections. Understanding of the mechanism of resistance, either by carbapenemase production (KPC, IMP, VIM, NDM, OXA-48, OXA-23/24 like) or by other mechanisms (carbapenem resistance due to efflux pump and porin loss) has important clinical implications. New beta-lactamase combinations have become available in recent years, and preliminary results indicate that they are safer and more effective for the treatment of CRE infections than some of the older agents, particularly polymyxin regimens. Table 1 summarizes the preferred and alternative treatment options for carbapenem-resistant gram-negative infections (based on the specific mechanism of carbapenem resistance mechanism).

Clinical Management

1.1 Empiric therapy:

Empiric regimens should be based on

1. The organisms identified earlier in the patient in the previous 6 months and their anti-microbial susceptibility
 2. The antimicrobial exposure in the previous 30 days, and
 3. Local antibiogram
- For hospital acquired organisms like carbapenem resistant *Acinetobacter* and *S. maltophilia* distinction should be made between bacterial colonization and true infection and because in general, empiric regimens do not target these organisms, any decision to treat must be made after careful evaluation of the risk versus benefit of therapy.

1.2 Directed Therapy >

1.2.1 Carbapenem Resistant Enterobacterales (*K. pneumoniae*, *E. coli*)

a) Treatment options when carbapenemase testing result is available are given in Table 1.

b) Treatment options when Carbapenemase testing result is not available

1. For complicated infections or hemodynamically unstable patients, polymyxins (do not use polymyxin B for UTI) plus another agent to which organism has demonstrated susceptible MIC (like tigecycline, aminoglycosides, IV fosfomycin) or high dose carbapenems if MIC < 16.
2. Ceftazidime-avibactam alone if in-vitro susceptibility has been demonstrated or in combination with aztreonam if synergy test is demonstrating zone of inhibition.
3. Tigecycline (approved for intra-abdominal infection and skin-soft tissue infection)- DO NOT use for bloodstream infection or pneumonia as a standalone agent.
4. Polymyxins (colistin is preferred over polymyxin B for UTI) as a single agent (for uncomplicated infections like UTI, any other infection for which source reduction has been done and patient is hemodynamically stable).
5. Aminoglycosides (for uncomplicated infections like UTI, any other infection for which source reduction has been done).

Table 1: Available treatment options for carbapenem resistant Enterobacterales in India

Patient ID: 8800000090	Patient Name: Ankit	Sample: Urine
Address: F-89/7, Second Floor, Okhla Phase-1, Delhi	Website: www.ramjagenosensor.com	
Email: ramjagenosensor@gmail.com	Ph. No.: 01144469753	
		3/7



RAMJA Genosensor Pvt. Ltd.

pediatric situations, de-ranged creatinine clearance and CNS infections. (Consultation with an Infectious Disease Physician or a physician having experience in treating such infection is advised)

** Ceftazidime-avibactam alone: Apart from carbapenemase test; in-vitro susceptibility testing is recommended prior to use.

1.2.2 Carbapenem Resistant Non-Enterobacterales (*Acinetobacter baumannii*, *Pseudomonas aeruginosa*)

a. Carbapenem Resistant *Acinetobacter baumannii* (CRAB) Treatment Options

1. High dose sulbactam (6-9g/day) on its own or as ampicillin-sulbactam (if susceptible) or ceftoperazone-sulbactam (1g/1g).
 2. Polymyxins (use colistin instead of polymyxin B for UTI)
 3. Minocycline
 4. Tigecycline (do not use for UTI)
 5. Other agents like trimethoprim-sulfamethoxazole, aminoglycosides, if susceptible.
- The use of these agents as standalone therapy or in combination is a matter of debate.

Combination therapy with at least two active agents (include high dose sulbactam even if non-susceptible), whenever possible, is suggested for the treatment of moderate to severe CRAB infections.

A single active agent may be considered for the treatment of patients with mild CRAB infections. Mild infections, although maybe difficult to define, but may include urinary tract infection or skin and soft tissue infections without hemodynamic instability. The agent of choice is sulbactam due to sulbactam's activity against CRAB demonstrated in-vitro. It is useful to note that even if non-susceptibility to sulbactam is demonstrated, high dose sulbactam may still be an effective option.

Nebulized antibiotics for the treatment of respiratory CRAB is not recommended due to the unequal distribution of the drugs in the infected lung and the potential for adverse reactions like bronchoconstriction.

b. Carbapenem Resistant *Pseudomonas aeruginosa* Treatment Options

1. Use a β -Lactam (ceftazidime or cefepime) or β -lactam- β -lactamase inhibitor combination (piperacillin-tazobactam or ceftoperazone-sulbactam) if in-vitro susceptibility is demonstrated.
2. Aminoglycosides (if in-vitro susceptibility is demonstrated).
3. Polymyxins (for infections in which no other treatment option is available).

For patients with severe infections caused by CRPA susceptible in vitro only to polymyxins, aminoglycosides, or fosfomycin, a combination therapy is suggested. Polymyxins plus another agent to which the organism has demonstrated susceptible MIC or is in intermediate range or SDD (susceptible dose dependent) can be used in such scenarios. (Consultation with an Infectious Disease Physician or a physician having experience in treating such infections is advised)

In patients with non-severe infections or among patients with low-risk CRPA infections, monotherapy should be considered on an individual basis according to the source of infection.

Table 2: Treatment of choice as per clinical syndrome

Clinical Syndrome	Treatment options
	Trimethoprim-sulfamethoxazole Nitrofurantoin

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Carbapenemase	
Metallo-β-lactamase (eg. NDM)	1st Choice: Prolonged infusion of ceftazidime-avibactam and aztreonam (over 3 hours)* Other options: a. Polymyxins (Do-not use polymyxin B for UTI) plus other agent to which organism has demonstrated susceptible MIC (like tigecycline, aminoglycosides, IV fosfomycin) or high dose carbapenems if MIC < 16 b. Tigecycline (approved for intra-abdominal infection and skin-soft tissue infection)- DO-NOT use for blood stream infection or pneumonia as a standalone agent c. Aminoglycosides (for uncomplicated infections like UTI, any other infection for which source reduction has been done)
Metallo-β-lactamase (eg. NDM) + OXA-48	1st Choice: Prolonged infusion of ceftazidime-avibactam and aztreonam (over 3 hours)* Other options: a. Polymyxins (do-not use polymyxin B for UTI) plus other agent to which organism has demonstrated susceptible MIC (like tigecycline, aminoglycosides, IV fosfomycin) or high dose carbapenems if MIC < 16 b. Tigecycline (approved for intra-abdominal infection and skin-soft tissue infection)- DO-NOT use for blood stream infection or pneumonia as a standalone agent c. Aminoglycosides (for uncomplicated infections like UTI, any other infection for which source reduction has been done)
OXA-48 like	1st Choice: Prolonged infusion of ceftazidime-avibactam** Other options: a. Polymyxins (do-not use polymyxin B for UTI) plus other agent to which organism has demonstrated susceptible MIC (like tigecycline, aminoglycosides, IV fosfomycin) or high dose carbapenems if MIC < 16 b. Tigecycline (approved for intra-abdominal infection and skin-soft tissue infection)- DO-NOT use for blood stream infection or pneumonia as a standalone agent c. Aminoglycosides (for uncomplicated infections like UTI, any other infection for which source reduction has been done)
KPC	1st Choice: Prolonged infusion of ceftazidime-avibactam** Other options: a. Polymyxins (do-not use polymyxin B for UTI) plus other agent to which organism has demonstrated susceptible MIC (like tigecycline, aminoglycosides, IV fosfomycin) or high dose carbapenems if MIC < 16 b. Tigecycline (approved for intra-abdominal infection and skin-soft tissue infection)- DO-NOT use for blood stream infection or pneumonia as a standalone agent c. Aminoglycosides (for uncomplicated infections like UTI, any other infection for which source reduction has been done)

*Ceftazidime-avibactam + aztreonam: Perform a synergy test and demonstrate zone of inhibition. Prolonged infusion over 3 hours yields the best result. This combination is not well studied in

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Uncomplicated cystitis	Oral Fosfomycin (single dose) Single-dose aminoglycoside
Pyelonephritis and complicated Urinary Tract Infections	Choose therapy as per discussion above ✓ Do not use Tigecycline or Polymyxin B
Infections outside urinary tract	Choose therapy as per discussion above ✓ Tigecycline is an acceptable alternative in patients with intra-abdominal infections ✓ Avoid using aminoglycosides for lung and intra-abdominal infection (use if other options are not available)

Table 3: Duration of therapy for common clinical syndromes

Clinical Syndromes	Duration of therapy
Ventilator associated pneumonia or hospital acquired pneumonia	7-10 days
Complicated urinary tract infections	10 days
Catheter associated UTI	5-7 days
Intra-abdominal infections	4-7 days
Central line associated blood stream Infections	10 days

*Removal of catheter or central line is strongly recommended if infection with an MDR organism is confirmed

Table 4: Dosage of common antibiotics used in treatment of MDR Organisms

Antibiotics	Dosage in adults
Ceftazidime-avibactam and aztreonam	Ceftazidime-avibactam: 2.5 g IV q8h, infused over 3 hours Aztreonam: 2 g IV q8h, infused over 3 hours
Colistin	9 million units as loading dose and then 4.5 million units q12h
Polymyxin B	15 lacs IU as loading dose and then 7.5 lacs IU q12h.
High dose meropenem	2 g IV q8h, infused over 3 hours

Patient ID: 8800000090 Patient Name: Ankit Sample: Urine

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NANOSHOTTM SURFACE DISINFECTION

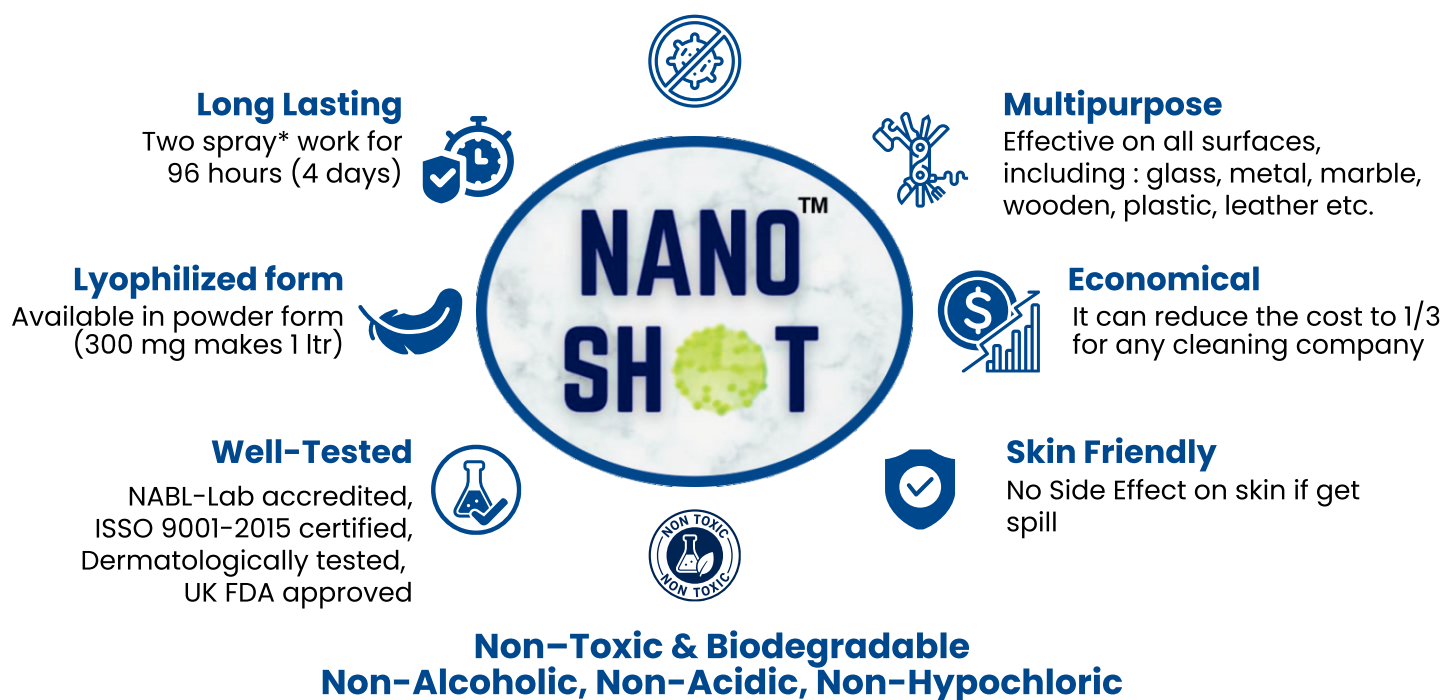


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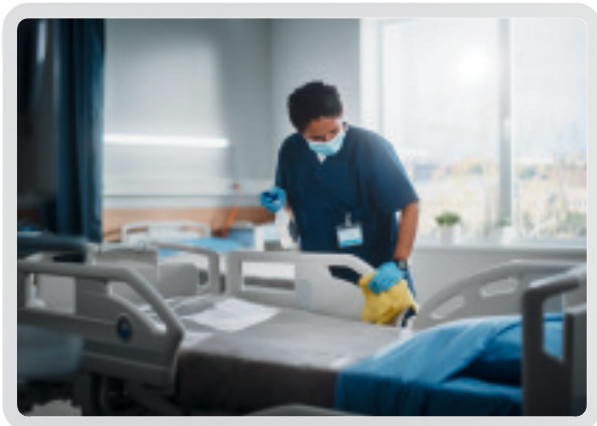
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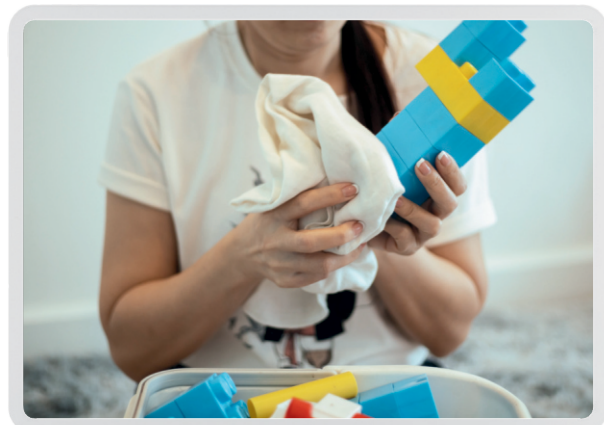
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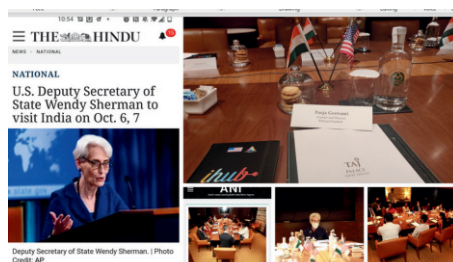
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- Pfizer grant of 1 Lakh for intellectual property in 2020
- Facebook small business grant of 1 Lakh in 2021
- Nidhi Covid Grant of 10 Lakh in 2021
- SIDBI Swablamban challenge grant of 35 Lakh in 2022
- TOP 10 Finalist of ASIA Pacific MedTech Innovator 2022
- Winner of Pfizer Innovation Award 2022 for Rs. 65 Lakh
- BIRAC-Winer award 2022 for Rs. 5 Lakh
- Top-6 winner of Together 2023
- Top-5 winner of Bio Asia 2023 for Rs. 50k
- Nominee of Ficci Excellence Healthcare Award among the top 4 2023
- Winner of Bits Pilani pitching award 2023 for Rs. 40 Lakh
- Top-3 winner of the Winer (Women Entrepreneurship) Award at Global Bio India 2023 for Rs. 25 Lakh
- Finalist of Rockefeller award for 1.5 Cr grant 2023
- Top 5 winners of Mompreneur of 2024
- NAT health first runner award (2024)
- Winner of UK India Bootcamp (2024)
- Voice of health Founder of year award (2024)
- Selected in KOICA India programme (2024)
- IVLP Fellow (2024)

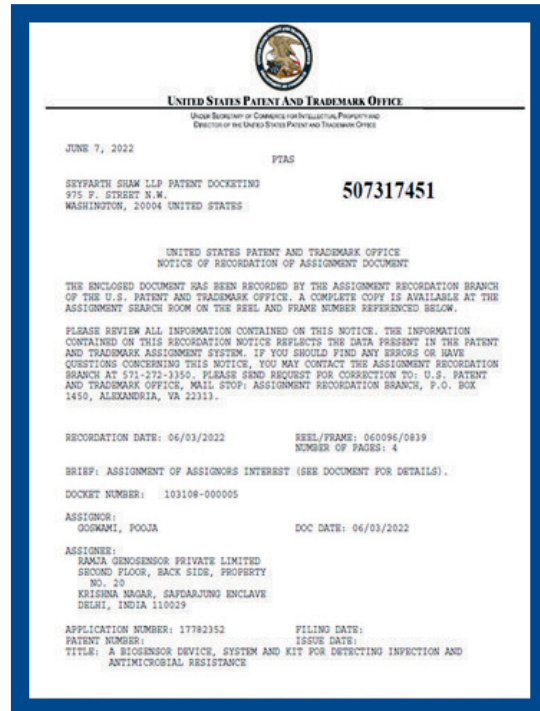
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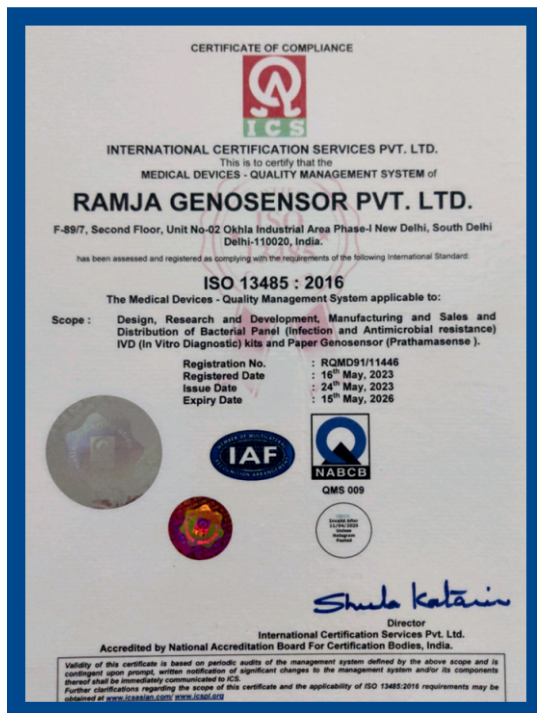
PATENTS & LICENCE



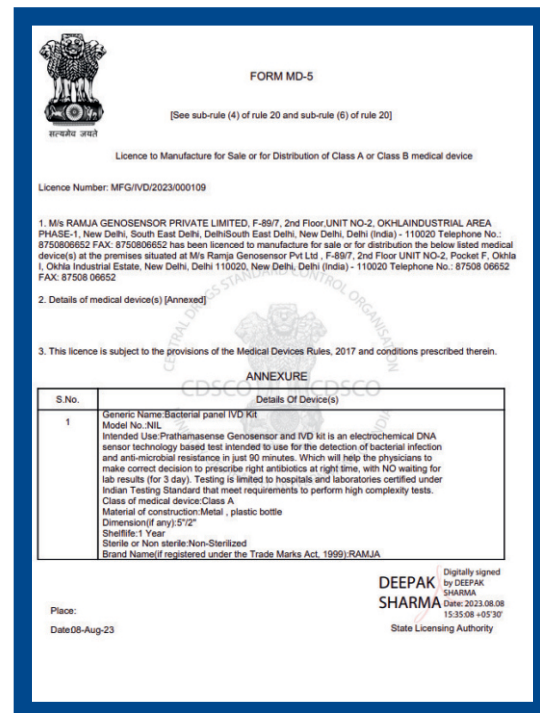
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The Story Behind this Invention:

The inventor lost her father due to infection during cancer in 2014. She received her father's Infection report after he passed away, this was the biggest setback of her life. She decided to fill this gap in infection detection time from 3 days to lesser, and RAMJA is proud to successfully developed the technology, which detects infection and antimicrobial resistance in 90 minutes, in blood, urine and in any biological fluids. RAMJA, is a combination of Inventor and her father's name **RAMJA=Ramesh + Pooja**

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