

# Sesión 3: Vigilancia de datos agregados y a nivel de aislamiento

## Session 3: Surveillance: Aggregated and isolate level data



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**Central Medical Laboratory**

**Colombia, July 2023**

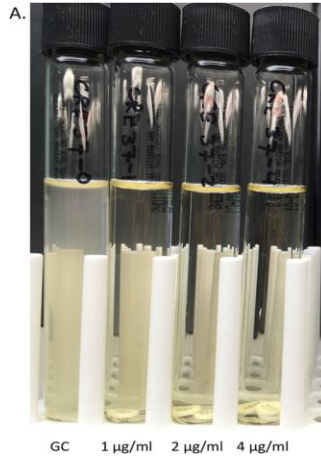


# System Structure

- Central Medical Laboratory: National Referral Laboratory
  - Clinical
  - Public Health
  - Referral
- 4 health regions:
  - 3 regional hospital labs
  - 3 community hospital labs
  - 2 polyclinic labs
  - 1 referral hospital: KHMH
  - Polyclinics and clinics



# Antimicrobial Resistance Testing Capabilities



# Computer Tools



User Name

Password

Login

Powered by **Populus**  
(Populus Global Solutions Inc.)

A screenshot of an Excel spreadsheet titled 'Bacteriology Gram Negative'. The spreadsheet contains a table with columns for Log Number, Patient Identification, Request, Sex, Date of Birth, Age, Specimen, Site, Institution, Ward, Type of Infection, Date of Admission, Date Collected, Date Received, Date Entered, Date Validated, and Processed Type. The table lists various patient records with their respective details. The spreadsheet also includes a summary table for antibiotic susceptibility testing results, with columns for ESBL (Positive or Negative), AM, D/T, CFZ, CFX, CAZ, CAX, CPE, ETP, IMP, AK, GM, CP, LVX, and TIGE. Each antibiotic column has sub-columns for Zone, Int., and S. The spreadsheet is displayed in a Microsoft Excel window with the ribbon visible at the top.

## WHOnet Antibiogram software



# Information Flow



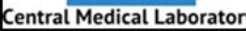
Culture/Sensit.	
Result	Value
1. Specimen	<input type="text"/>
1. Specimen Remarks	<input type="text"/>
1. Growth	<input type="text"/>
1. Pathogen Isolated	<input type="text"/>
1. Pathogen	<input type="text"/>
1. Pathogen Remarks	<input type="text"/>
1. Colony Count	<input type="text"/>
1. Diameter of Growth	<input type="text"/>
1. Minimum Inhibition Concentration (MIC)	<input type="text"/>
1. Growth Type	<input type="text"/>
1. Antibiotic	<input type="text"/>
1. Culture Remarks	<input type="text"/>
1. Sensitivity	<input type="text"/>
1. Mechanism of Resistance	<input type="text"/>
1. Carbapenemase Detected	<input type="text"/> <ul style="list-style-type: none"> <li>Methicillin-resistant Staphylococcus aureus</li> <li>Vancomycin-intermediate S. aureus</li> <li>Vancomycin-resistant S. aureus</li> <li>Vancomycin-resistant enterococci</li> <li>Extended-spectrum <math>\beta</math>-lactamases</li> <li>Carbapenem-Resistant Organism</li> <li>Carbapenemase-producing organisms</li> </ul>
10. Pathogen	
10. Diameter of Growth	
10. Growth Type	
10. Antibiotic	<input type="text"/>
10. Sensitivity	<input type="text"/>
2. Pathogen	<input type="text"/>

Culture/Sensit.	
Result	Value
1. Specimen	<input type="text"/>
1. Specimen Remarks	<input type="text"/>
1. Growth	<input type="text"/>
1. Pathogen Isolated	<input type="text"/>
1. Pathogen	<input type="text"/>
1. Pathogen Remarks	<input type="text"/>
1. Colony Count	<input type="text"/>
1. Diameter of Growth	<input type="text"/>
1. Minimum Inhibition Concentration (MIC)	<input type="text"/>
1. Growth Type	<input type="text"/>
1. Antibiotic	<input type="text"/>
1. Culture Remarks	<input type="text"/>
1. Sensitivity	<input type="text"/>
1. Mechanism of Resistance	<input type="text"/>
1. Carbapenemase Detected	<input type="text"/> <ul style="list-style-type: none"> <li>Unknown</li> <li>Not Detected</li> <li>Imipenemase</li> <li>Verona Integron-Mediated</li> <li>New Delhi Metallo-beta-lactamase</li> <li>Klebsiella pneumoniae Carbapenemase</li> <li>Class D Oxacillinase</li> </ul>
10. Pathogen	
10. Diameter of Growth	
10. Growth Type	
10. Antibiotic	<input type="text"/>
10. Sensitivity	<input type="text"/>
2. Pathogen	<input type="text"/>



# Data Quality Assurance (Quality Control)

- Participation in PCC-CAR with very good results
- CLSI guidelines
- Recording of patient id # and test request id #
- Validation of results at time of release
- Revision of results at time of data collection



# Surveillance

- Detected Carbapenemase in 2021 for the 1<sup>st</sup> time
  - MBL-NDM
- Detected further CP-CRO
  - NDM
  - VIM
  - KPC
  - E. coli, K. pneumoniae, A. baumannii complex, and P. aeruginosa



# Enterobacteriales

Cuadro 1. Resumen de los ocho aislamientos de *Enterobacteriales* referidos al CNRB

Antibiótico	8131537 <i>Kpn</i>	8136891 <i>Kpn</i>	8133946 <i>Kpn</i>	8135838 <i>Kpn</i>	8191252 <i>Kpn</i>	8269941 <i>Kpn</i>	8135195 <i>Eco</i>	8262326 <i>Eco</i>
Ampicilina (mm) *	6 RN	6 RN	6 RN	6 RN	6 RN	6 RN	6	6
Amoxicilina ácido clavulánico (mm) *	15	13	7	9	12	10	10	8
Aztreonam (mm) *	11	16	11	6	16	6	6	6
Cefazolina (mm) *	6 RN	6 RN	6 RN	6 RN	6 RN	6 RN	6	6
Ceftazidima (mm) *	14	18	6	6	6	6	6	6
Ceftazidima ácido clavulánico (mm)*	26	26	7	9	11	9	10	8
Cefotaxima (mm)*	10	10	6	6	7	6	6	6
Cefotaxima ácido clavulánico (mm)*	28	29	8	7	14	10	6	12
Cefepima (mm)*	18	18	7	6	16	11	6	9
Cefoxitina (mm)*	23	22	6	6	6	6	6	6
Ertapenem (mm)*	25	27	7	6	14	9	11	13
Imipenem (mm)*	30	28	11	12	20	17	15	17
Meropenem (mm)*	28	29	10	9	20	14	15	18
Piperacilina tazobactam (mm)*	17	22	6	6	13	12	6	12
Amikacina (mm)*	17	19	16	16	18	15	22	22
Gentamicina (mm)*	22	6	8	6	6	9	15	8
Acido nalidíxico (mm)*	14	19	6	6	6	6	6	6
Ciprofloxacina (mm)*	13	17	6	6	6	6	6	6
Trimetoprim sulfametoxazole (mm)*	6	6	6	6	6	6	6	6
Fosfomicina (mm)*	22	21	21	22	22	20	30	27
Tigeciclina (mm)*	23	21	22	17	23	20	26	22
Colistina (µg/mL)**	0,5	0,5	0,5	0,5	0,5	0,5	8	0,5
<b>Prueba</b>								
mCIM	NR	NR	NR	NR	6	6	NR	6
PCR BLEE tipo CTX-M	+	+	+	+	+	+	+	+
PCR AmpC tipo CMY	NR	-	-	-	-	-	-	-
PCR MBL-NDM	NR	-	+	+	+	+	+	+
PCR KPC	NR	-	-	-	-	-	-	-
PCR qnr	qnrB	qnrB	qnrS	qnrB y qnrS	qnrS	qnrS	qnrA	qnrS

Prueba de sensibilidad por \*difusión de disco (mm), \*\*microdilución en caldo (µg/mL). **Eco**: *E. coli*, **Kpn**: *Klebsiella pneumoniae*. **RN**: resistencia natural, **NR**: no realizado, **mCIM**: método de inactivación de carbapenem modificado. **+**: positivo, **-**: negativo.

Fuente: Centro Nacional de Referencia de Bacteriología, Inciensa





# Acinetobacter baumannii

Cuadro 2. Resumen de ocho aislamientos de *A. baumannii* referidos al CNRB

Antibiótico	8133975	8139498	8260242	8262476	8265414	8266976	8268773	8330177
Ampicilina sulbactam (mm)*	6	6	6	6	6	6	6	6
Ceftazidima (mm)*	6	6	6	6	6	6	6	6
Cefepima (mm)*	6	6	6	6	6	6	6	6
Imipenem (mm)*	6	6	6	6	6	6	6	6
Meropenem (mm)*	6	6	6	6	6	6	6	6
Piperacilina tazobactam (mm)*	9	6	8	10	6	10	6	NR
Amikacina (mm)*	6	6	6	13	6	6	6	6
Gentamicina (mm)*	6	6	6	6	6	6	6	6
Doxiciclina (mm)*	6	6	6	9	7	7	7	7
Minociclina (mm)*	17	18	17	21	17	17	17	17
Ciprofloxacina (mm)*	6	6	6	6	6	6	6	6
Levofloxacina (mm)*	6	6	6	6	6	6	6	6
Tigeciclina (mm)*	21	22	22	21	23	23	22	22
Colistina (µg/mL)**	1	1	1	1	2	1	1	1
Trimetoprima sulfametoxazole (mm)*	6	6	6	6	6	6	6	6
<b>Prueba</b>								
E-test MBL	+	+	+	+	+	+	+	+
PCR MBL-NDM	+	+	+	+	+	+	+	+

Prueba de sensibilidad por \*difusión de disco (mm), \*\*microdilución en caldo (µg/mL).

Fuente: Centro Nacional de Referencia de Bacteriología, Inciensa



# Epidemiological Alert



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Fax: (501) 223-2475  
E-mail: [laboratorydirector@health.gov.bz](mailto:laboratorydirector@health.gov.bz)**

## MEMORANDUM

**MY REF: DLS (21) 46**

**FROM: Director of Medical Laboratory Services, Ministry of Health and Wellness**

**TO: Ministry of Health and Wellness, Belize**

**DATE: August 31, 2021**

**SUBJECT: EPIDEMIOLOGICAL ALERT ON FIRST DETECTION OF CARBAPENEMASES**

**TYPE NEW DELHI METALLO- $\beta$ -LACTAMASE (NDM)**

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### Background

In April 2015, the World Health Assembly passed the Resolution WHA 68.7 entitled "Global Action Plan on antimicrobial resistance". On September 21, 2016, the United Nations convened a high-level meeting of member states to focus on the topic of Antimicrobial Resistance (AMR). The World Health Organization (WHO) has alerted that the world may be approaching a post-antibiotic era. There has been a steady increase in microorganisms developing antimicrobial resistance. Several factors are contributing to this.

One of the mechanisms developed by microorganisms is against Carbapenem antibiotics by producing carbapenemase – enzymes that hydrolyze the  $\beta$ -lactamase antibiotics. Carbapenems are potent (last resort) antibiotics used in the treatment of serious infections caused by resistant strains of bacteria. There are several types of carbapenemases reported all over the world. The





Central Medical Laboratory

