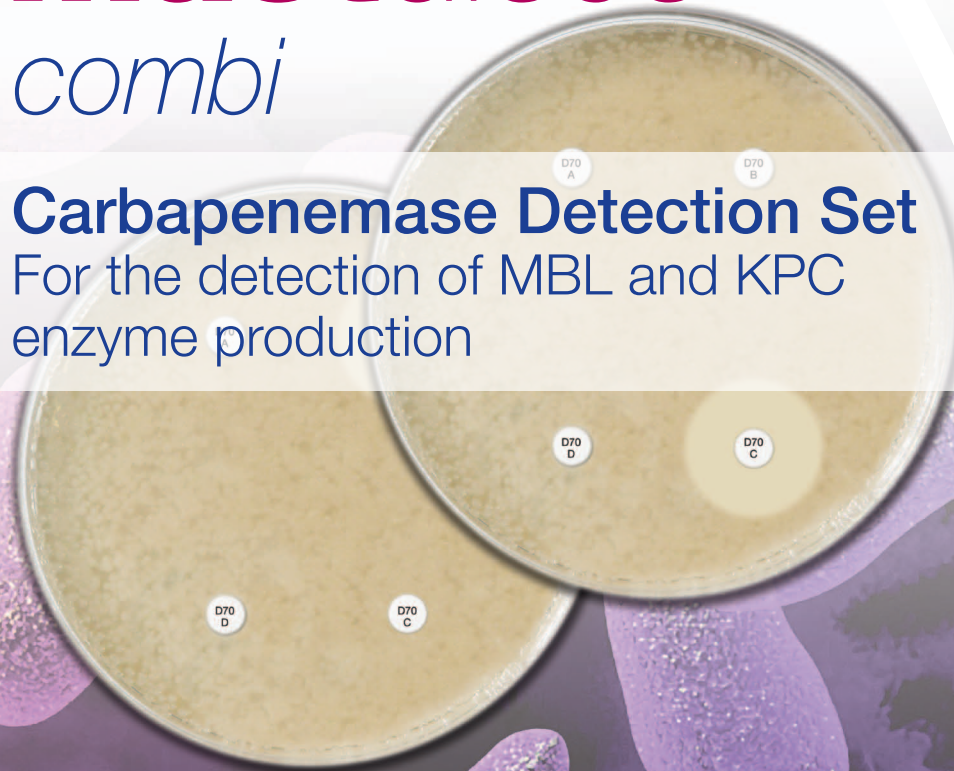


# **mastdiscs**<sup>TM</sup> *combi*

## **Carbapenemase Detection Set**

For the detection of MBL and KPC  
enzyme production



- Identification of MBL & KPC
- Rapid and cost effective
- Simple comparative interpretation
- Helps guide appropriate antibiotic usage

**Mast continues to lead the market in the classification, identification and detection of enzyme producing pathogens. The Carbapenemase Detection Set (D70C) is the latest product in the portfolio to be developed.**

## Background

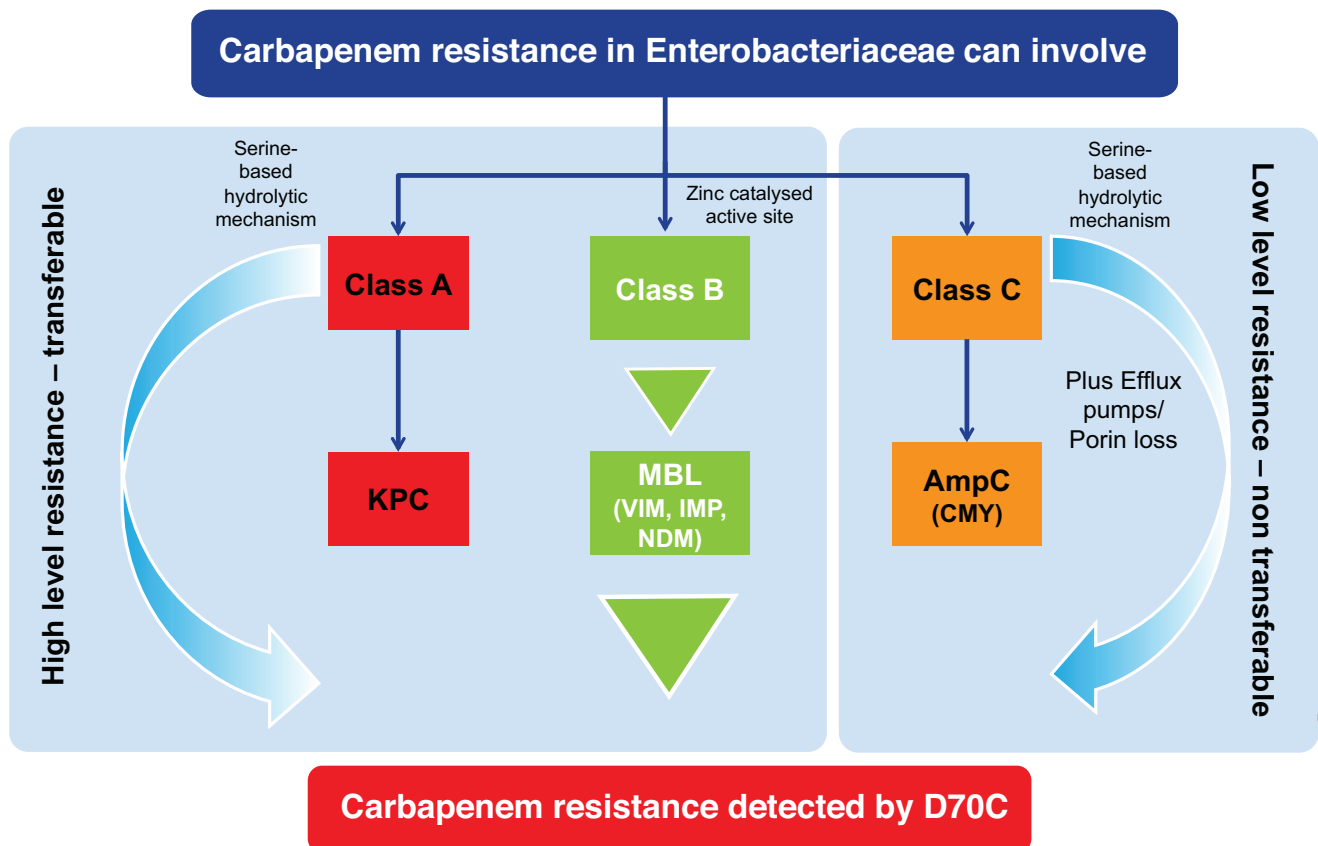
The global increase of carbapenem resistance in the Enterobacteriaceae poses one of the greatest threats to clinical and public healthcare, and has become an increasingly important and thought-provoking issue in recent years.

Carbapenems possess the broadest spectrum of activity and potency against many bacteria, and are often used as 'last-line' therapeutic agents for the treatment of life-threatening infections caused by extended spectrum beta lactamases (ESBLs). Of particular concern, resistance to these broad spectrum agents severely limits clinical options to target multi drug resistant (MDR) bacteria.

Accordingly, the emergence and spread of carbapenemases in Enterobacteriaceae has made surveillance of carbapenemases in Gram negative bacteria amongst the highest priorities.

## What are Carbapenemases?

Carbapenemases are bacterial enzymes that can efficiently hydrolyse most beta lactam antibiotics (See Fig 1). They are readily transferable, and have emerged and spread amongst all members of the Enterobacteriaceae family worldwide. Carbapenem resistance can also present in combination with AmpC producers with porin loss, although these strains rarely spread.



(Fig 1) Carbapenem resistance mechanisms

# Benefits of Mast Carbapenemase Detection Set

## Identification of Carbapenemase Producers

A simple calculation based on zone size comparison indicates the presence of KPC or MBL enzyme production, or AmpC with porin loss. Addition of a Temocillin 30ug disc (TEM30C) may aid the presumptive identification of OXA-48.

**98% sensitivity and 93% specificity for KPC producers and 100% sensitivity and specificity for NDM producers (ref 1)**

Reliable phenotypic KPC or MBL detection minimises the risk of erroneous reporting of borderline carbapenem susceptibility, diminishing any potential serious consequences

## Flexible for multiple applications

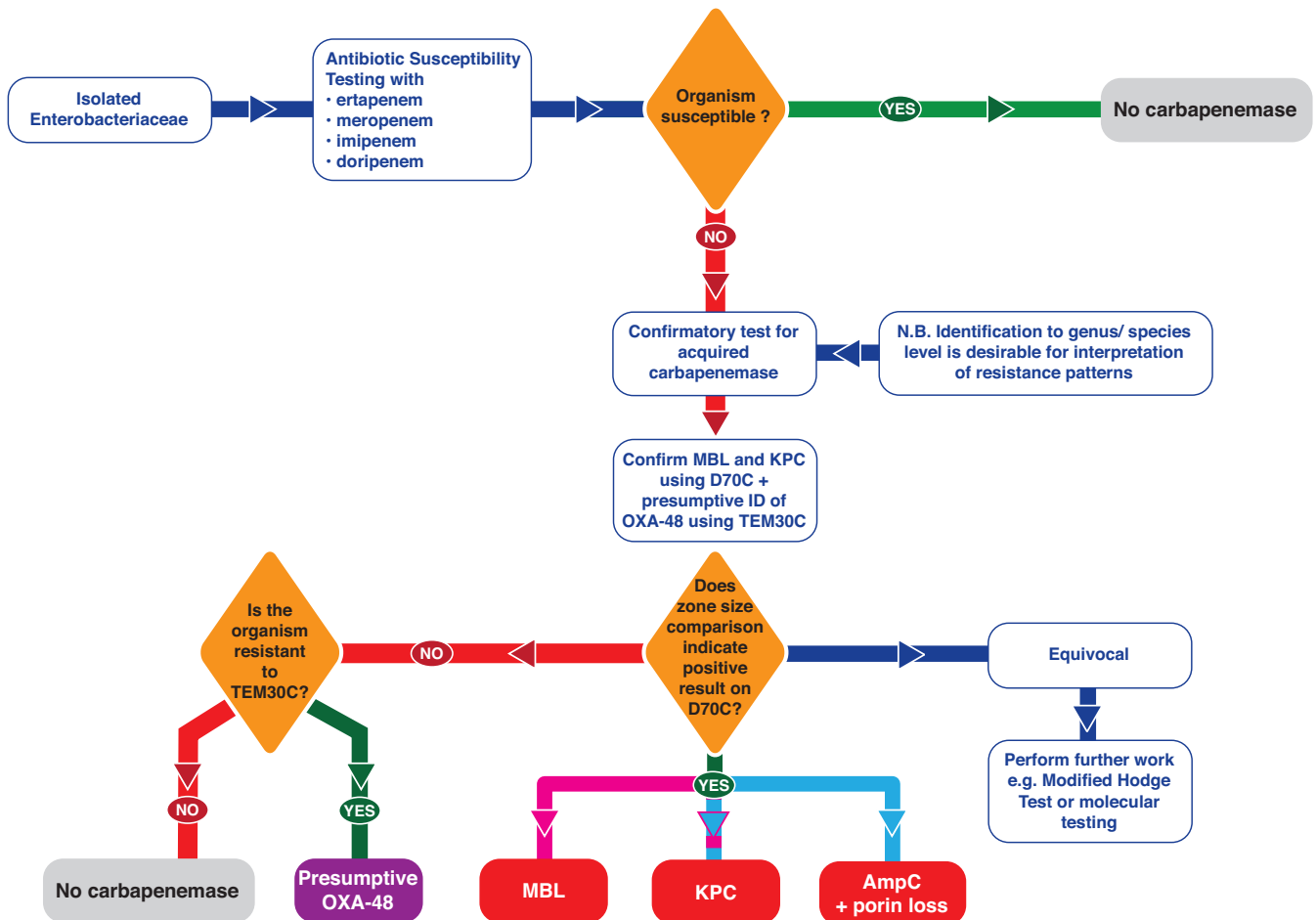
Can be used as a standalone confirmatory test, or may be used in conjunction with Mast's AmpC and ESBL Detection Set (D68C), when isolates show a fully resistant profile.

## Combination discs manufactured in matched pairs

To prevent erroneous results arising from variations in content, the UK Health Protection Agency (HPA\*) recommend using only corresponding antibiotic and antibiotic/inhibitor combinations that have been jointly manufactured and QC tested as matched pairs.

(\*HPA ARMRL, Summer 2005)

## Flow chart for Laboratory use of D70C

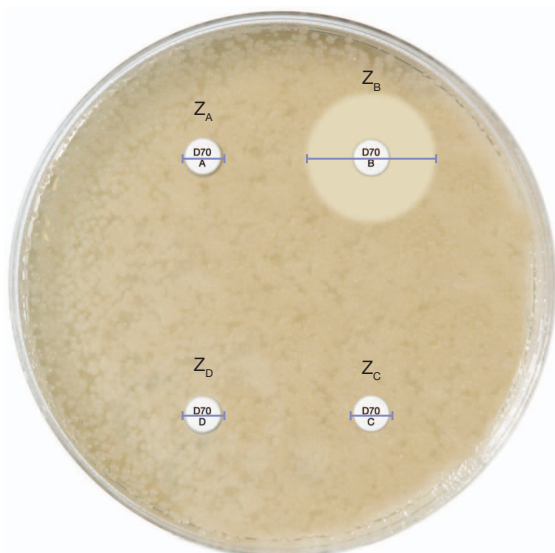


NB. All carbapenemase producing organisms should be sent to a reference laboratory for confirmation



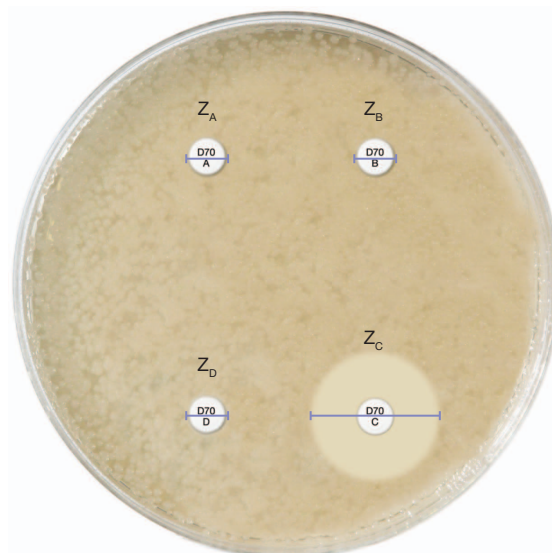
# Interpretation of MBL and KPC positive isolates

**MBL positive**



$$Z_B - Z_A \geq 5\text{mm}$$

**KPC positive**



$$Z_C - Z_A \geq 4\text{mm}$$

**A** Meropenem 10 µg  
**B** Meropenem 10 µg + MBL inhibitor

**C** Meropenem 10 µg + KPC inhibitor  
**D** Meropenem 10 µg + AmpC inhibitor

## Ordering Information

Order Code	Product	Pack Size
D70C	Carbapenemase Detection Set	4 x 50 discs
TEM30C	Temocillin 30 µg Cartridge Disc	5 x 50 discs

## Additional products from Mast's ESBL detection range

Order Code	Product	Pack Size
D69C	AmpC Detection Set	3 x 50 discs
D68C	AmpC & ESBL Detection Set	4 x 50 discs
D52C	Extended Spectrum β lactamase Set	6 x 50 discs
D67C	Extended Spectrum β lactamase Set (CPD10)	6 x 50 discs
D62C	Cefotaxime 30 & Cefotaxime 30/Clavulanic Acid 10	6 x 50 discs
D63C	Cefepime 30 & Cefepime 30/Clavulanic Acid 10	6 x 50 discs
D64C	Ceftazidime 30 & Ceftazidime 30/Clavulanic Acid 10	6 x 50 discs
D66C	Cefpodoxime 10 & Cefpodoxime 10/Clavulanic Acid 1	6 x 50 discs

## References

1. Laboratory Detection of Enterobacteriaceae That Produce Carbapenemases.  
 Diana Doyle, D et al (2012). J. Clin. Microbiol, 50(12):387.

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