BSAC surveillance of Gram-negative bacteria:

… a review of non-susceptibility

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Disclosures

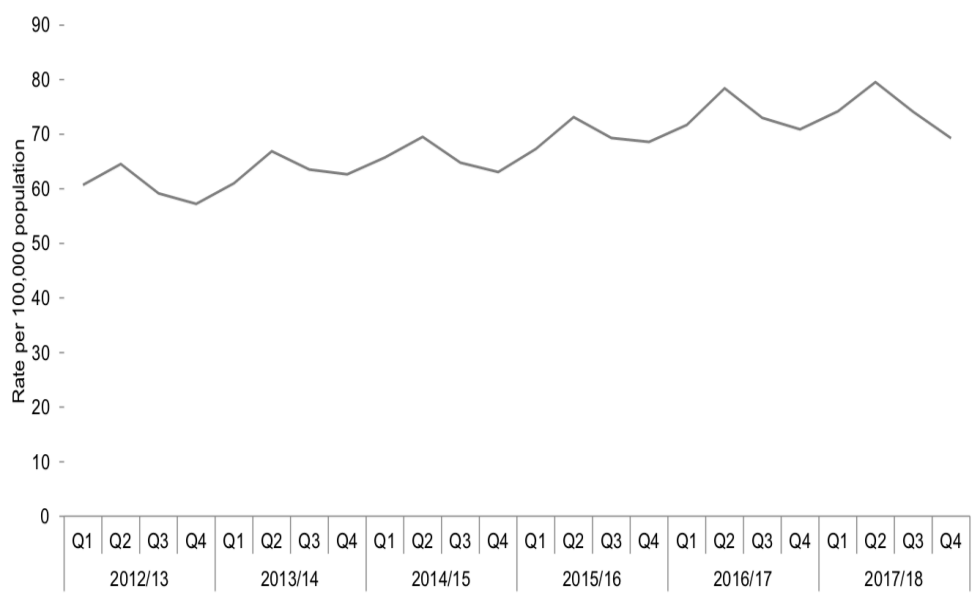
Consult / advisory – Accelerate. Achaogen. Adenium. Allecra.

Credit for the work presented is due to Shazad Mushtaq, Aiysha Chaudhry , Rachael Adkin &Team at PHE

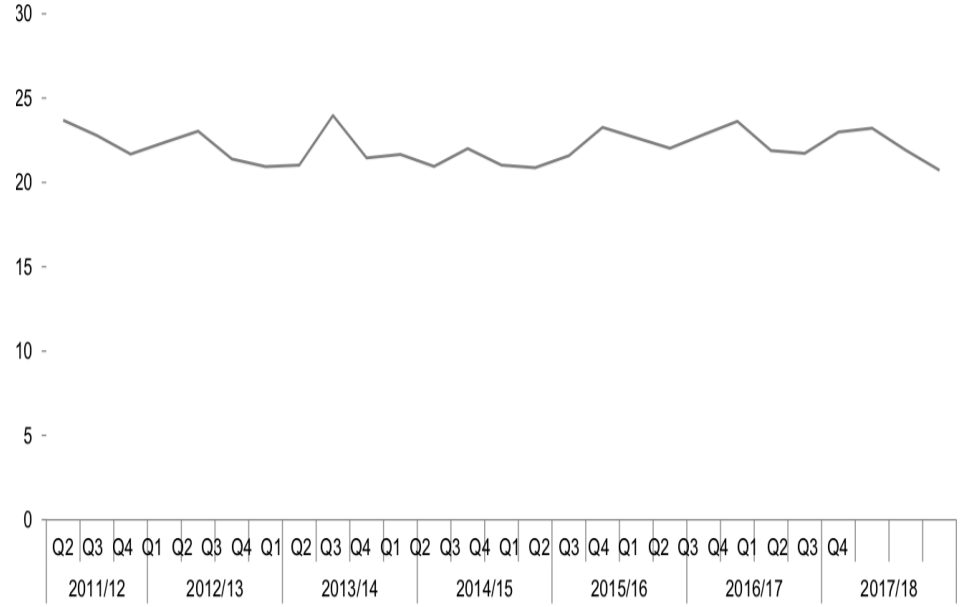
Blame for the presentation is due to me

Ptizer, T.A.Z, comprising <10% of portfolio value

Incidence of *E. coli* bacteraemia, England; mandatory surveillance



All



Hospital-onset

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/726399/Quarterly_Epidemiological_Commentary_June_18_Edit.pdf

% Non-susceptibility among bloodstream *E. coli*

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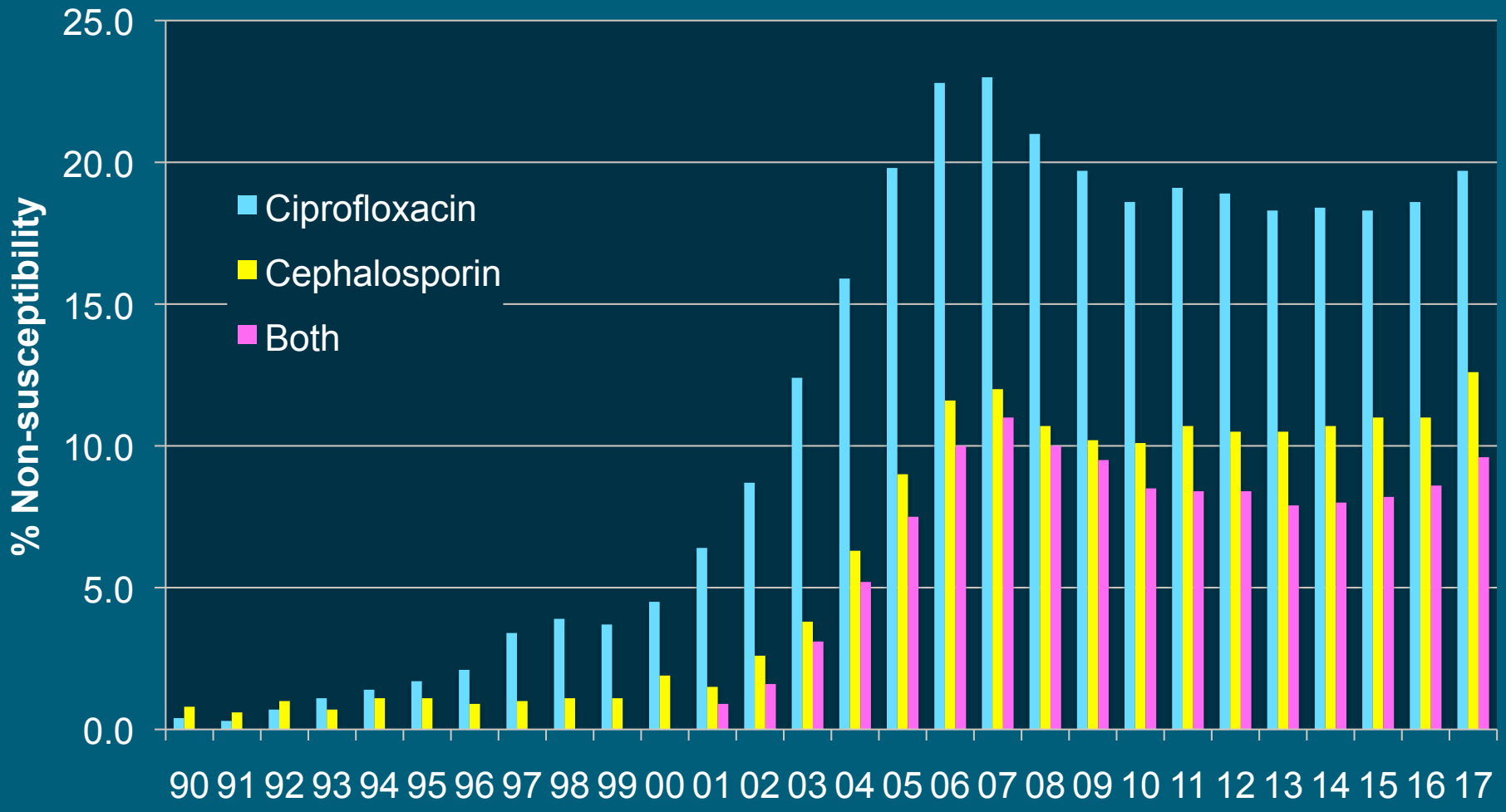

E. coli ciprofloxacin, cefotaxime, gentamicin, % NS over time

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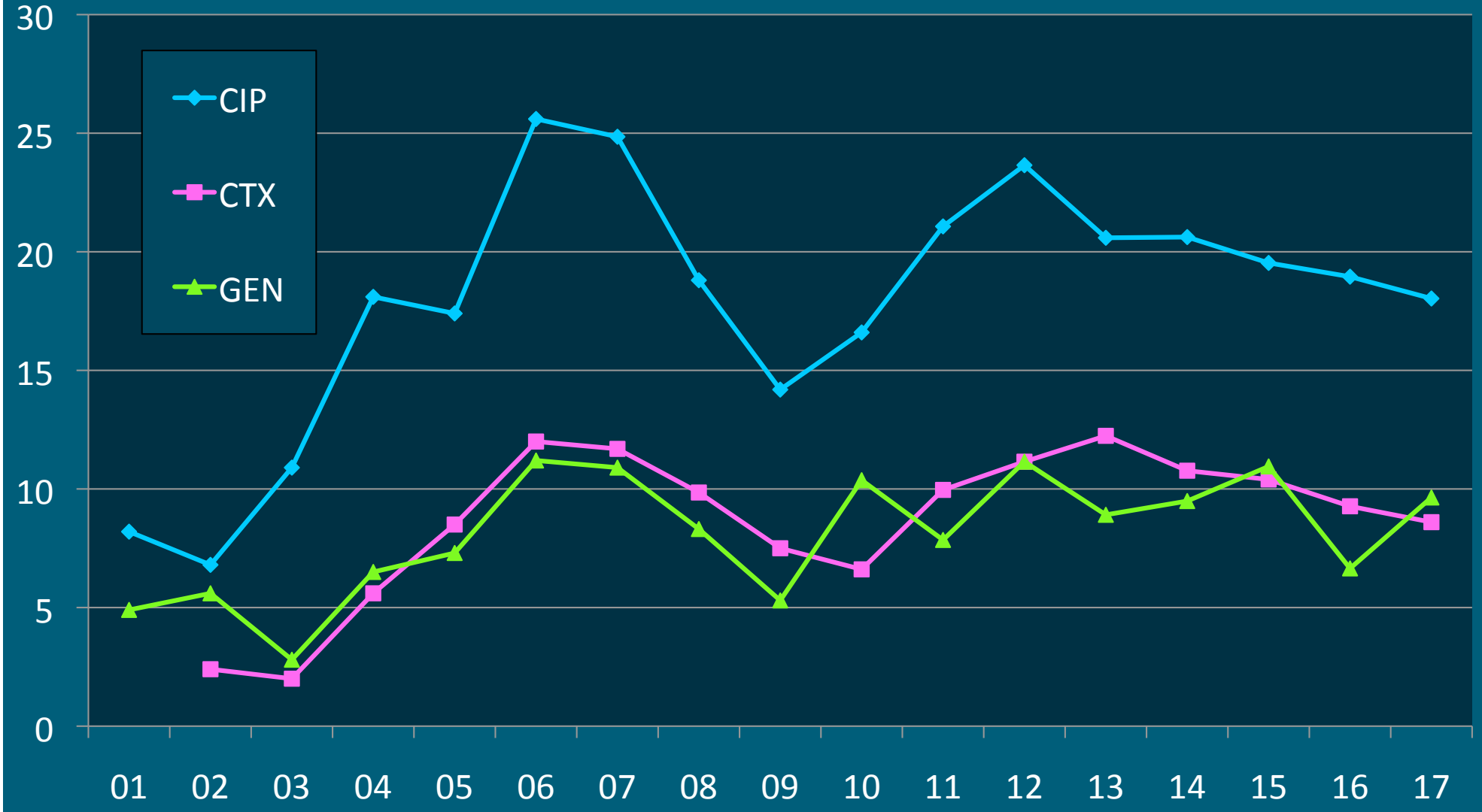

Cephalosporin-R mechanisms % prevalence in *E. coli*

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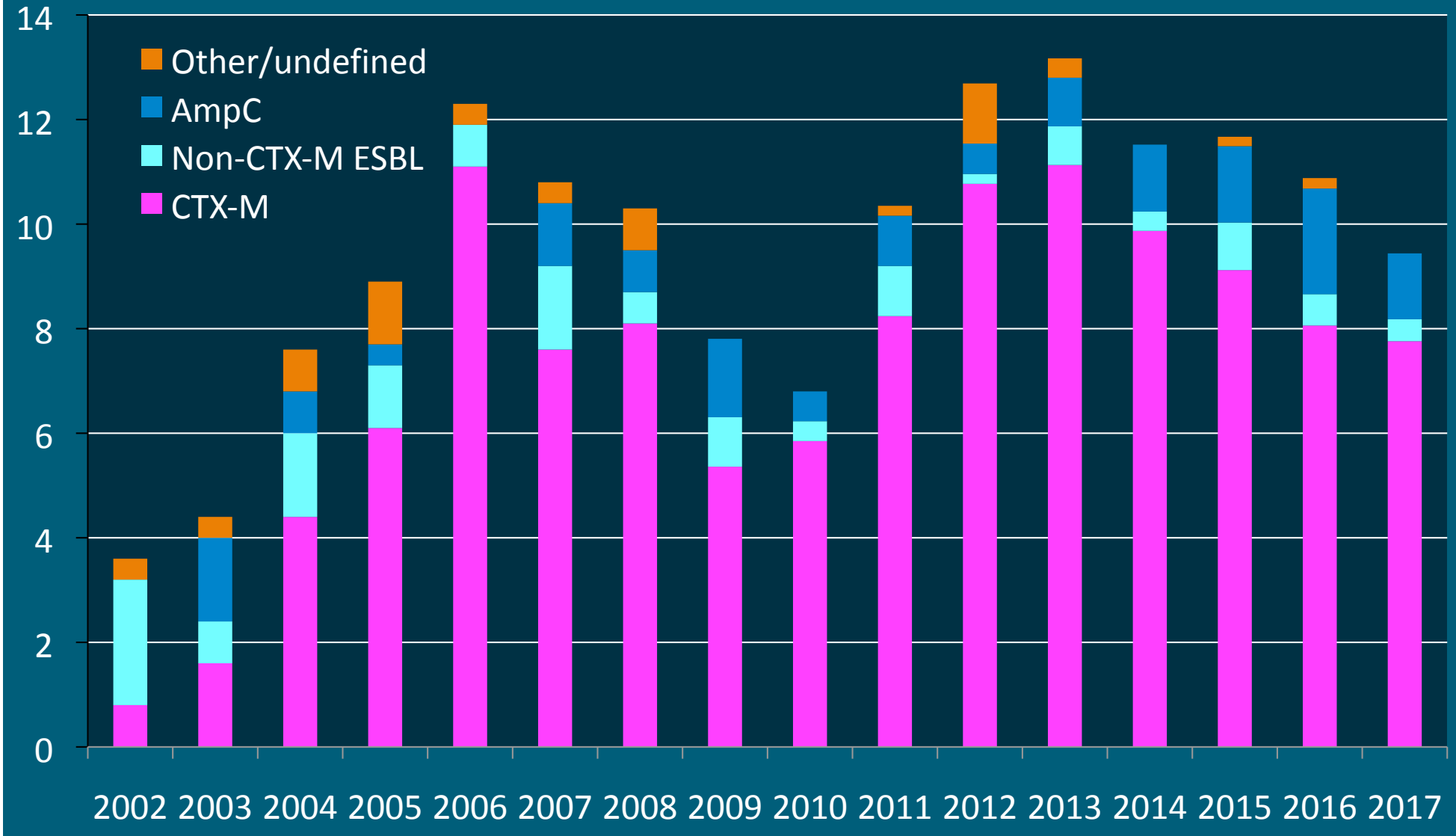

Clonal complexes among bloodstream *E. coli* : BSAC collection

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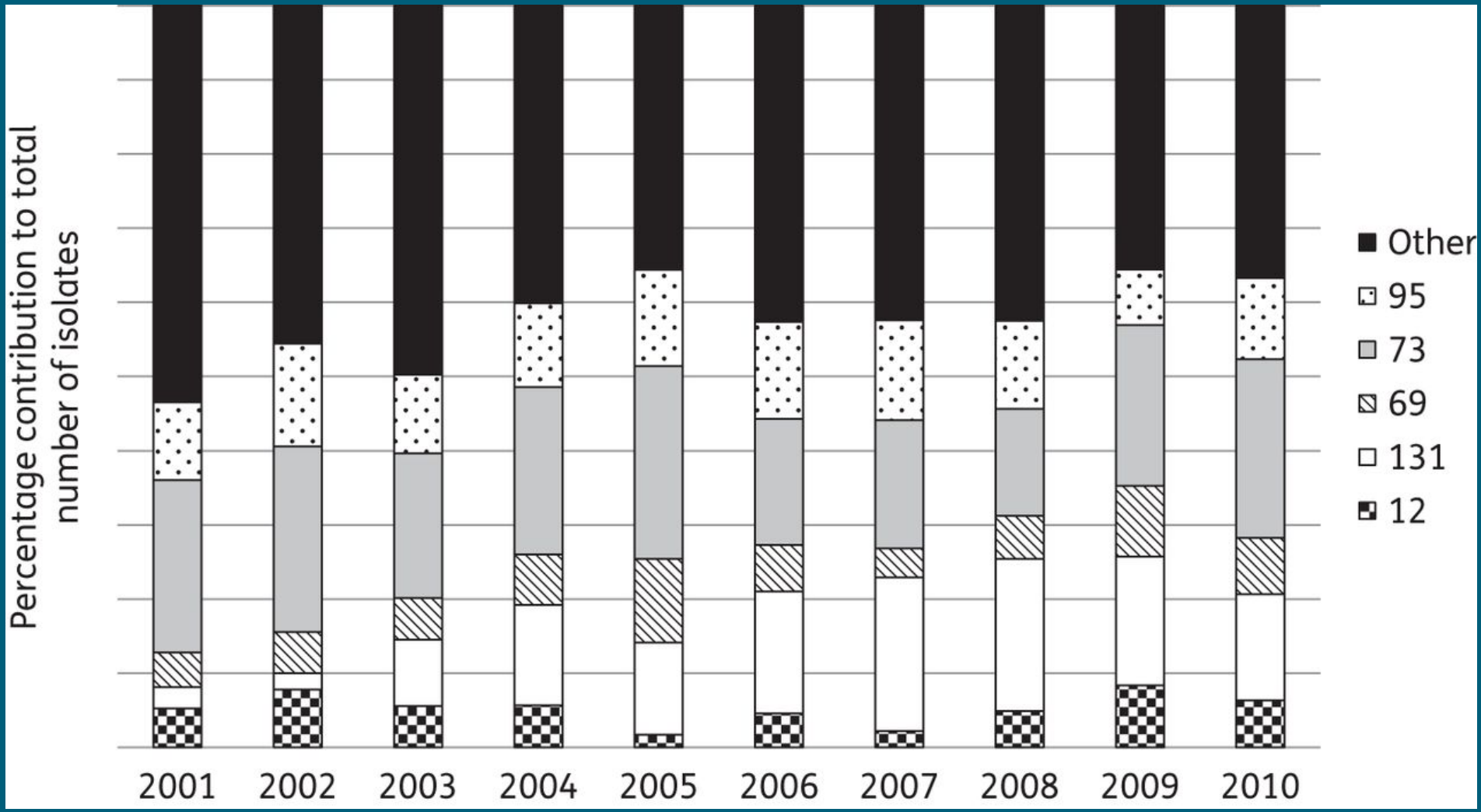

Day *et al. JAC*. 2016;71:2139

Resistance by clonal complex *E. coli* from bacteraemia 2001-10

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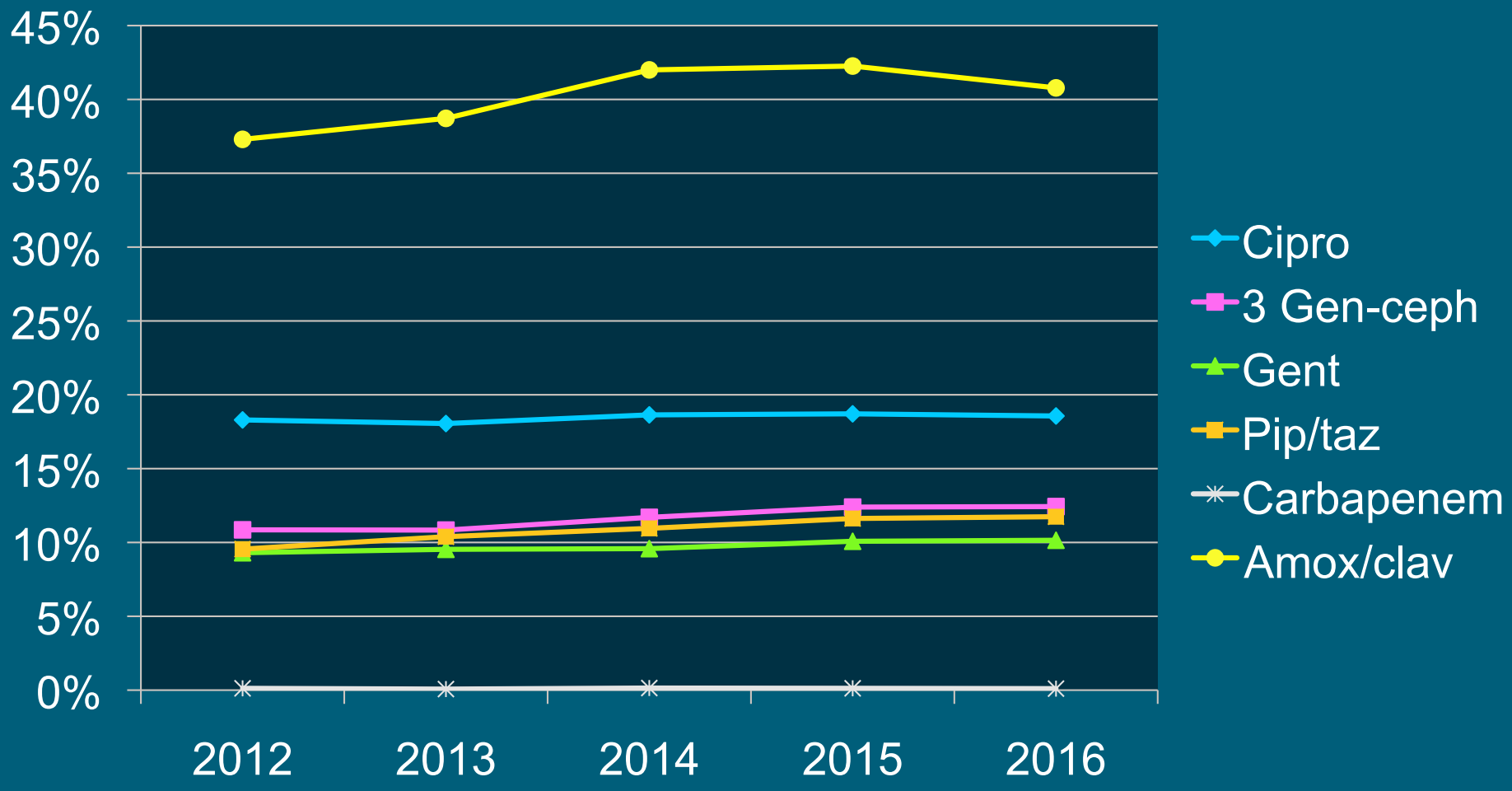
		% Non-susceptible, EUCAST				
	N	Cipro	Cefo-taxime	Pip/taz	Genta micin	% ESBL +ve
CC12	119	0.8	1.8	7.6	3.4	2.5
CC69	149	6.7	1.4	10.1	4.0	0.7
CC73	449	1.3	1.5	9.1	1.6	1.1
CC95	245	0.4	0	2.9	2.4	0
CC131	302	64.2	35.0	22.2	20.2	32.5
Other	902	15.2	5.3	9.3	6.4	3.5
All	2166	16.1	7.9	10.3	6.6	6.6

Day *et al. JAC.* 2016;71:2139

E. coli in bacteraemia, England, ESPAUR



https://www.gov.uk/government/publications/english-surveillance-programme-antimicrobial-utilisation-and-resistance-espaur-report

% *E. coli* non-susceptibility to amoxicillin/clavulanate

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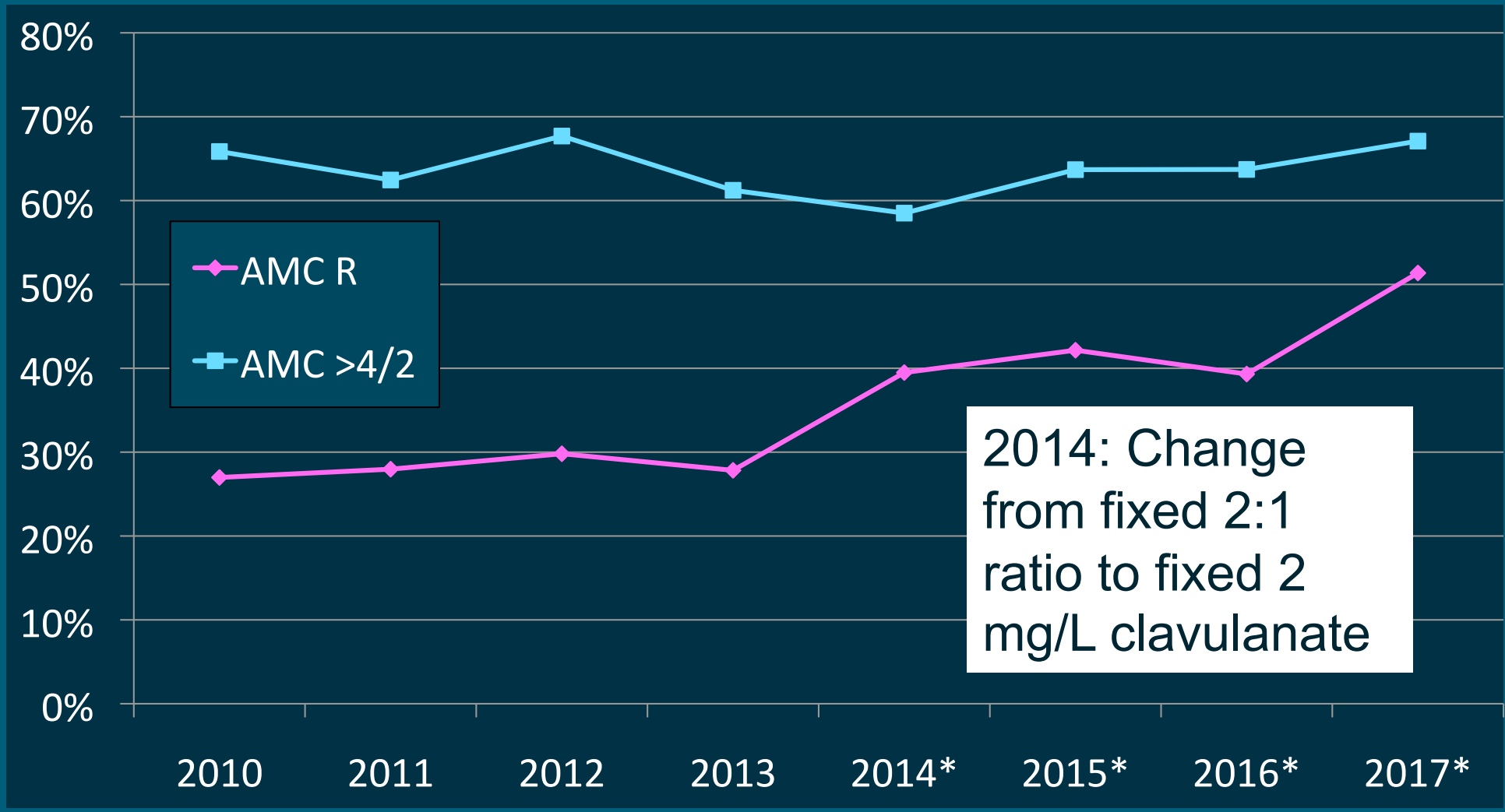
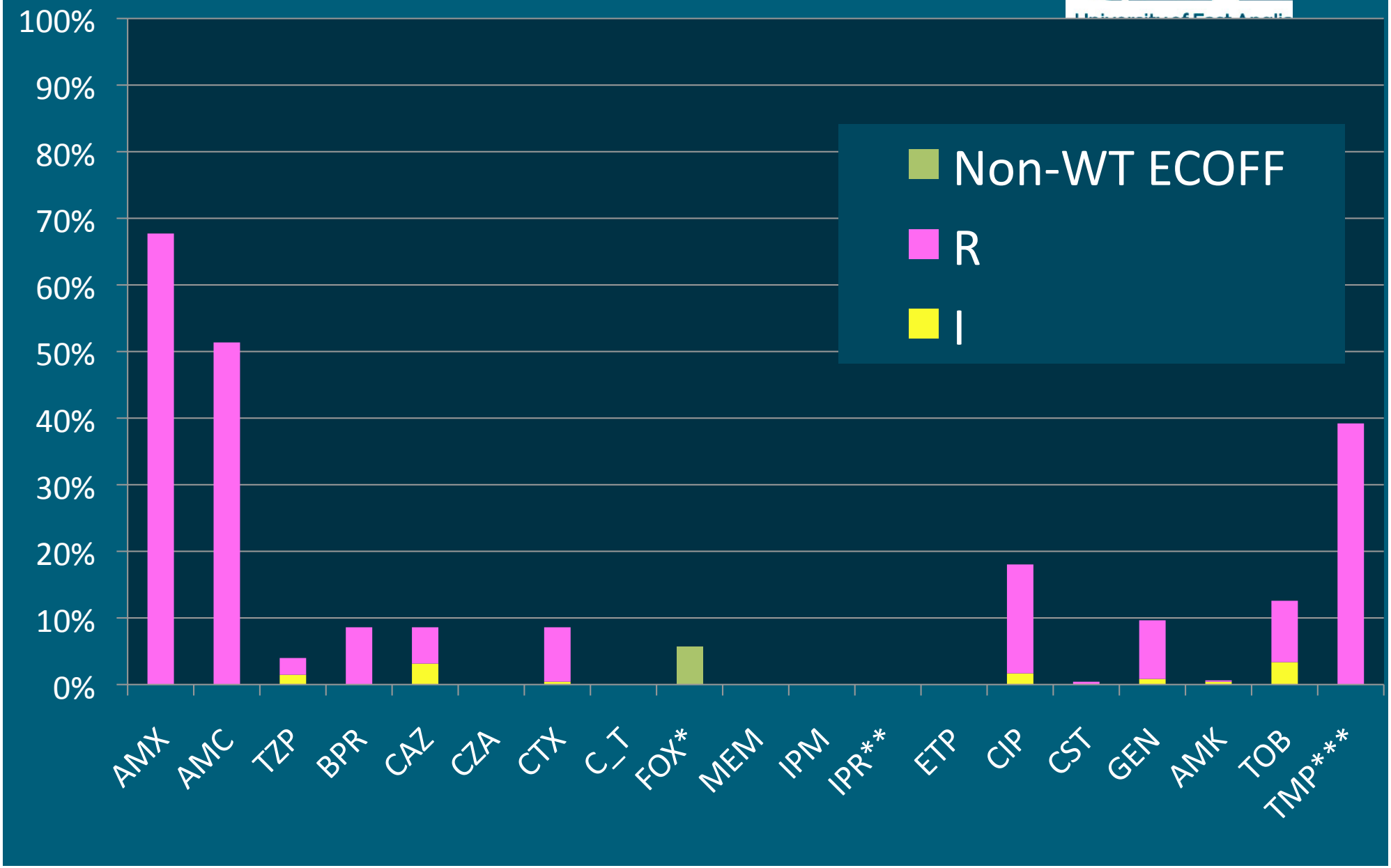
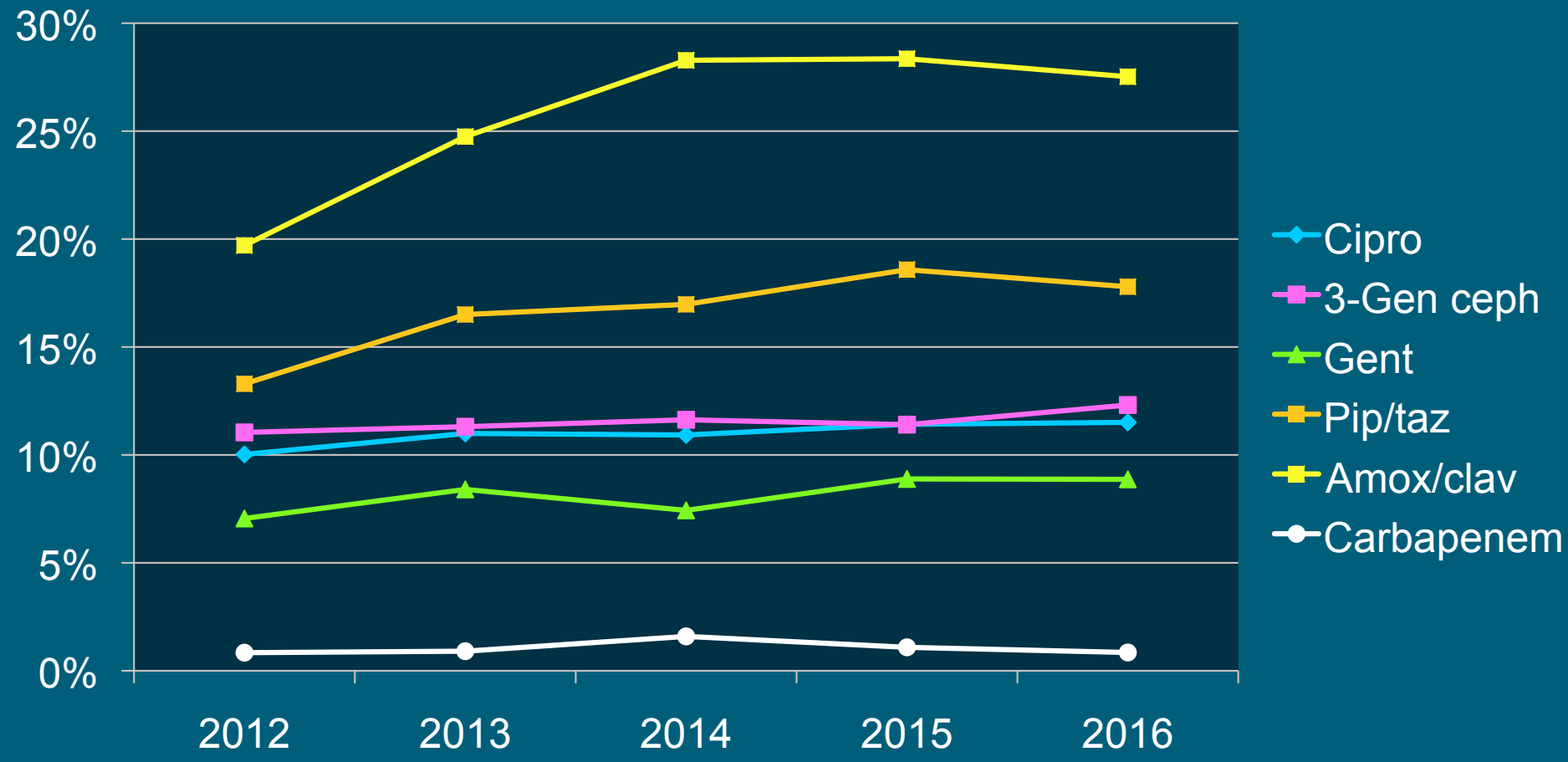


% Non-susceptibility : *E. coli* (n=477)



K. pneumoniae in bacteraemia, England, ESPAUR



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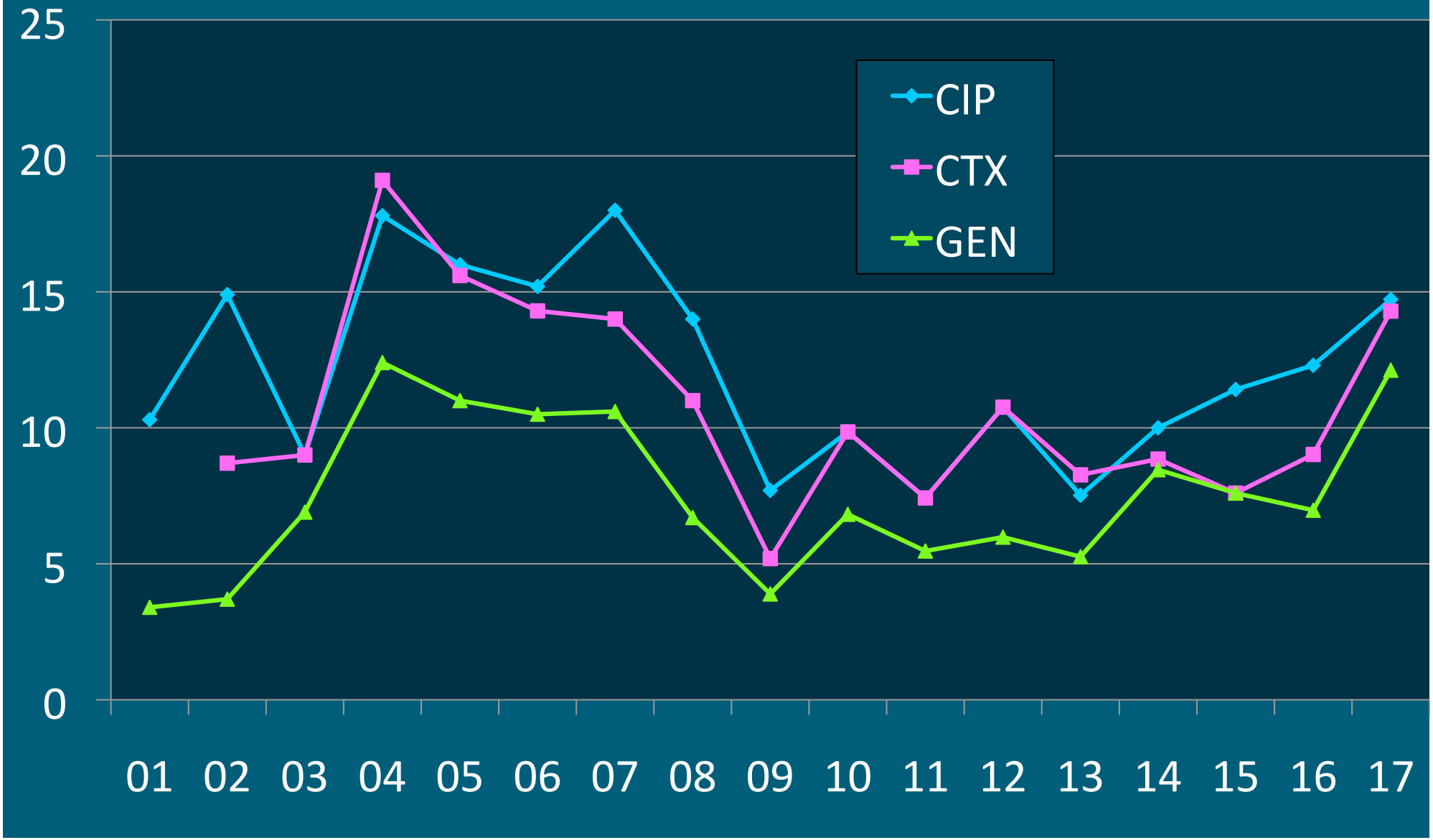
Klebsiella ciprofloxacin, cefotaxime, gentamicin, % NS over time



Cephalosporin- R mechanisms
% prevalence *Klebsiella* spp.

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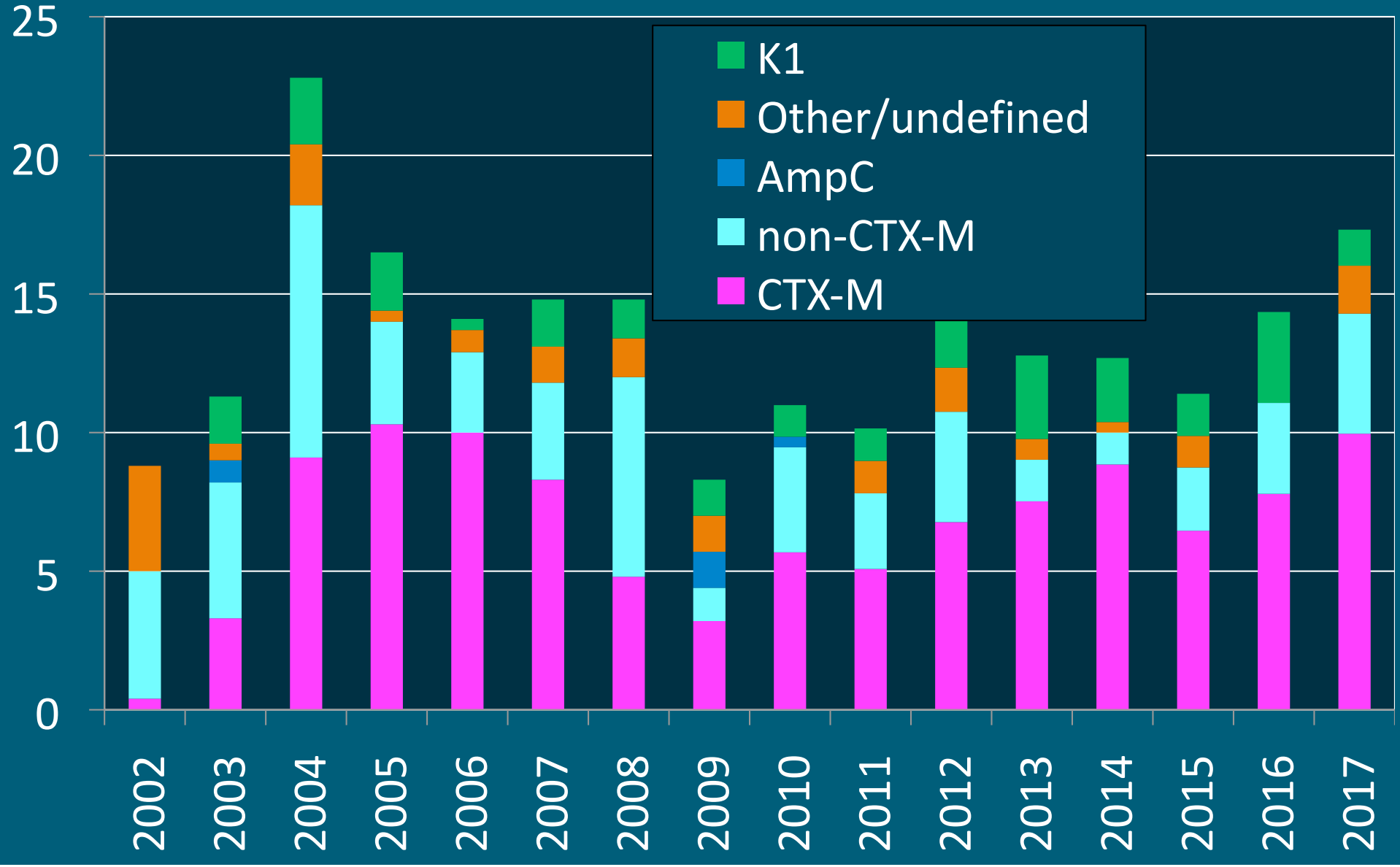
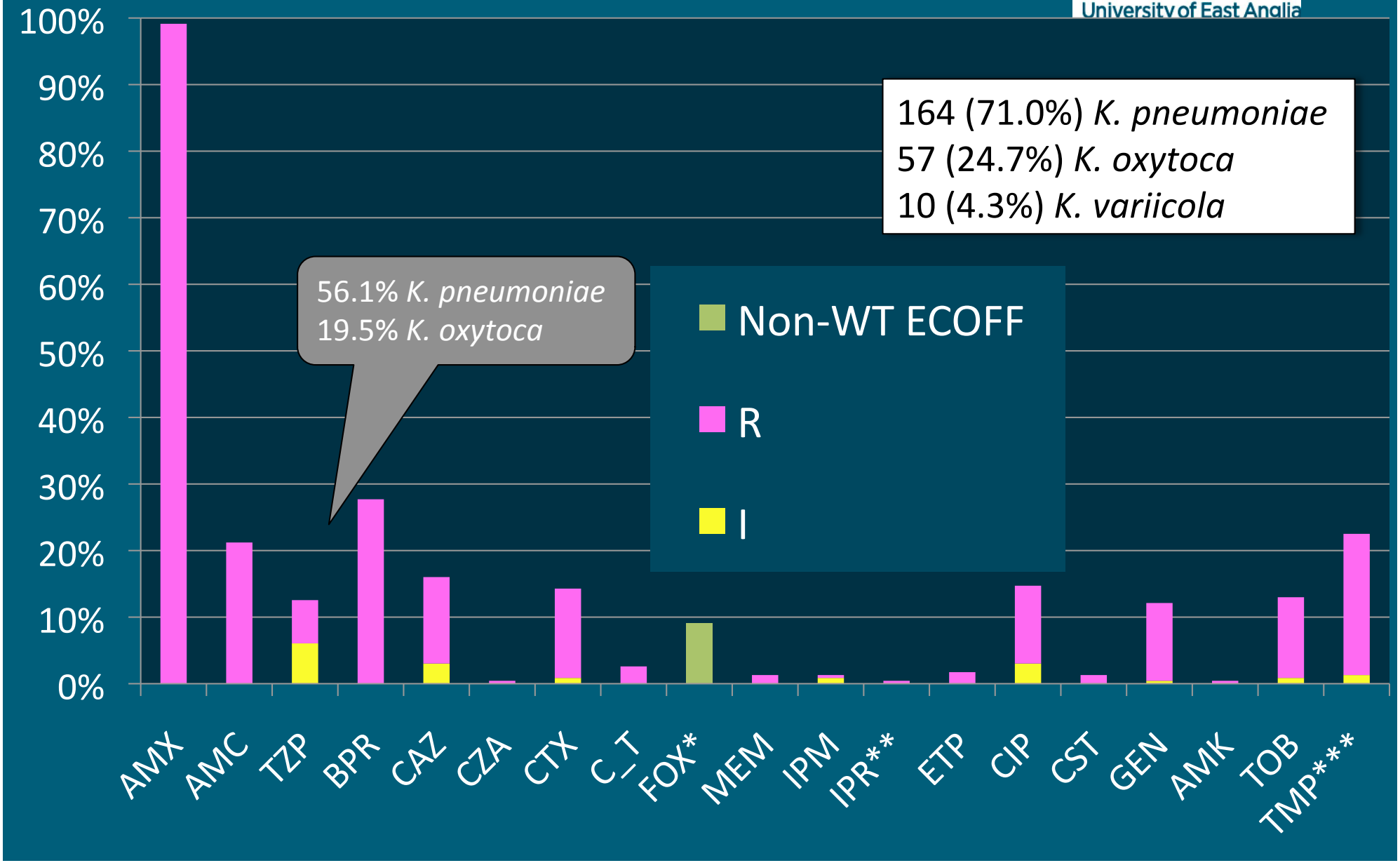
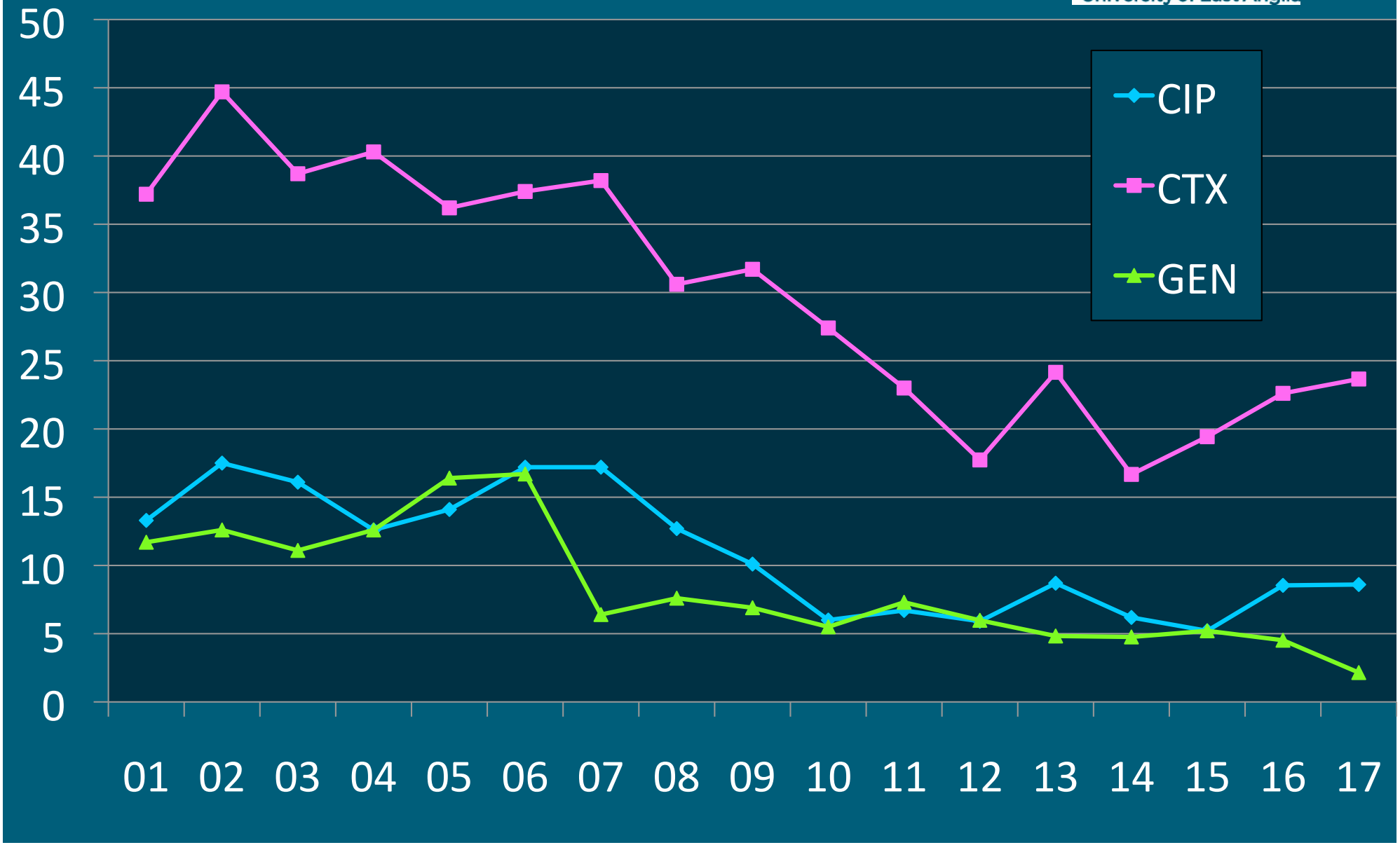


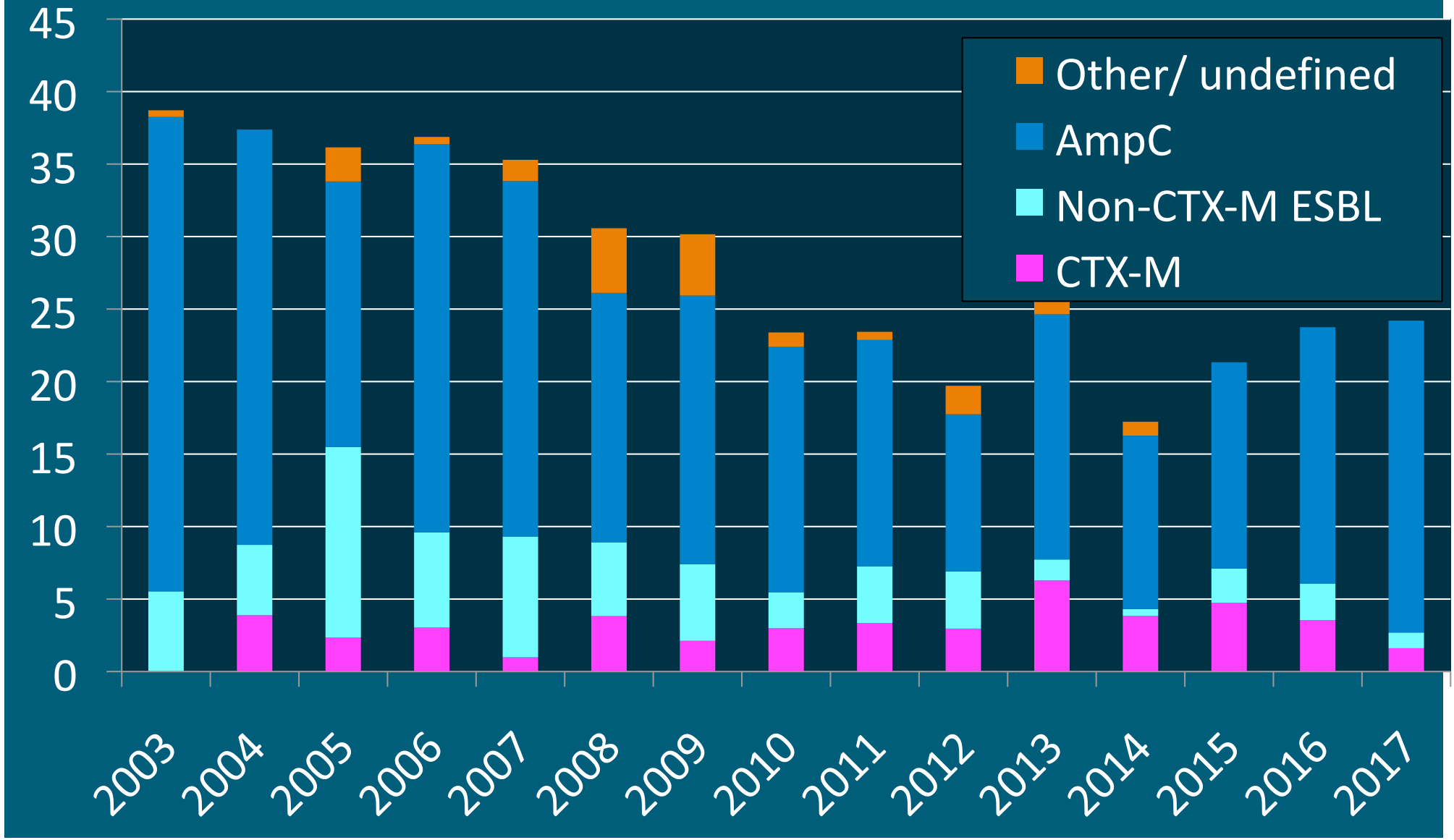
% Non-susceptibility among *Klebsiella* spp. (n=231)



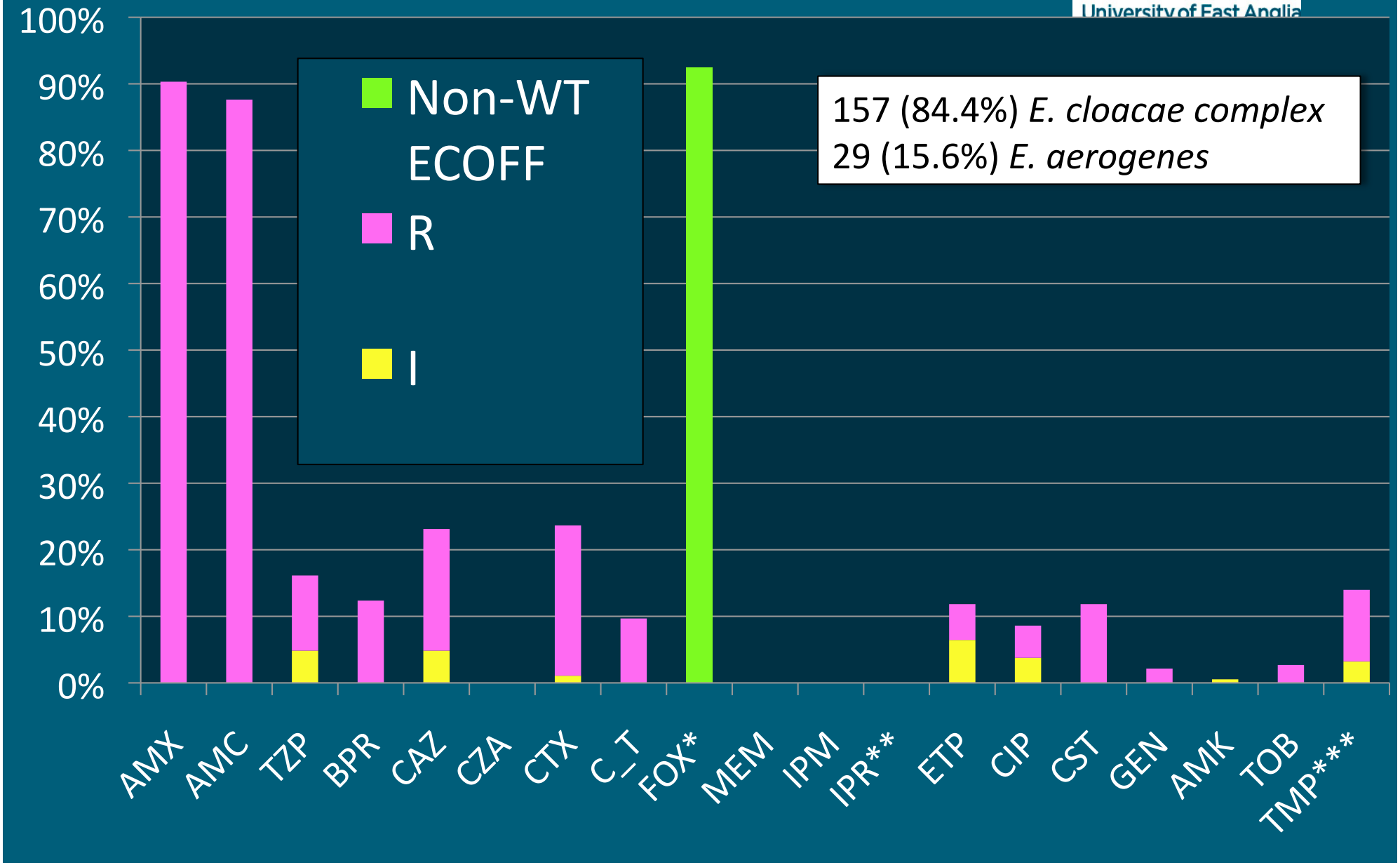
Enterobacter ciprofloxacin, cefotaxime, gentamicin, % NS over time



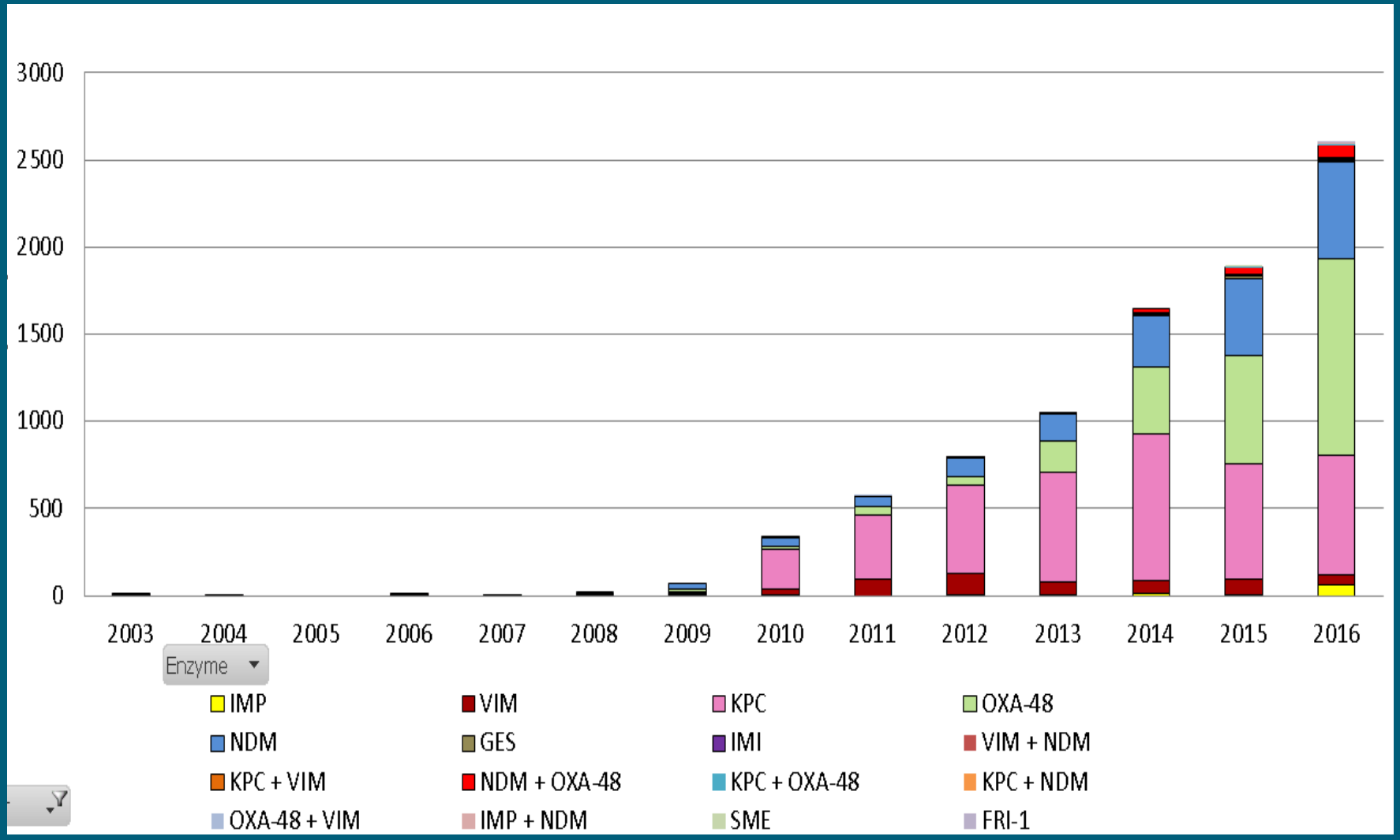
Cephalosporin resistance % prevalence in *Enterobacter*



% Non-susceptibility among *Enterobacter* spp. (n=186)



Carbapenemase producing Enterobacteria referred to PHE



AMRHAI, unpublished data

Carbapenemases in Enterobacteriaceae BSAC bacteraemia

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2003/4 1 *Enterobacter* KPC (same patient both years)

2005-8 None

2009 1 *Enterobacter* IMP & 1 *Klebsiella* NDM

2010 1 *Enterobacter* IMP, 1 *Enterobacter* VIM; 1 *Klebsiella* VIM

2011 *2 Klebsiella* VIM & 2 *Klebsiella* OXA-48

2012 1 *Klebsiella* VIM

2013 1 *Klebsiella* KPC; 1 *Enterobacter* OXA-48

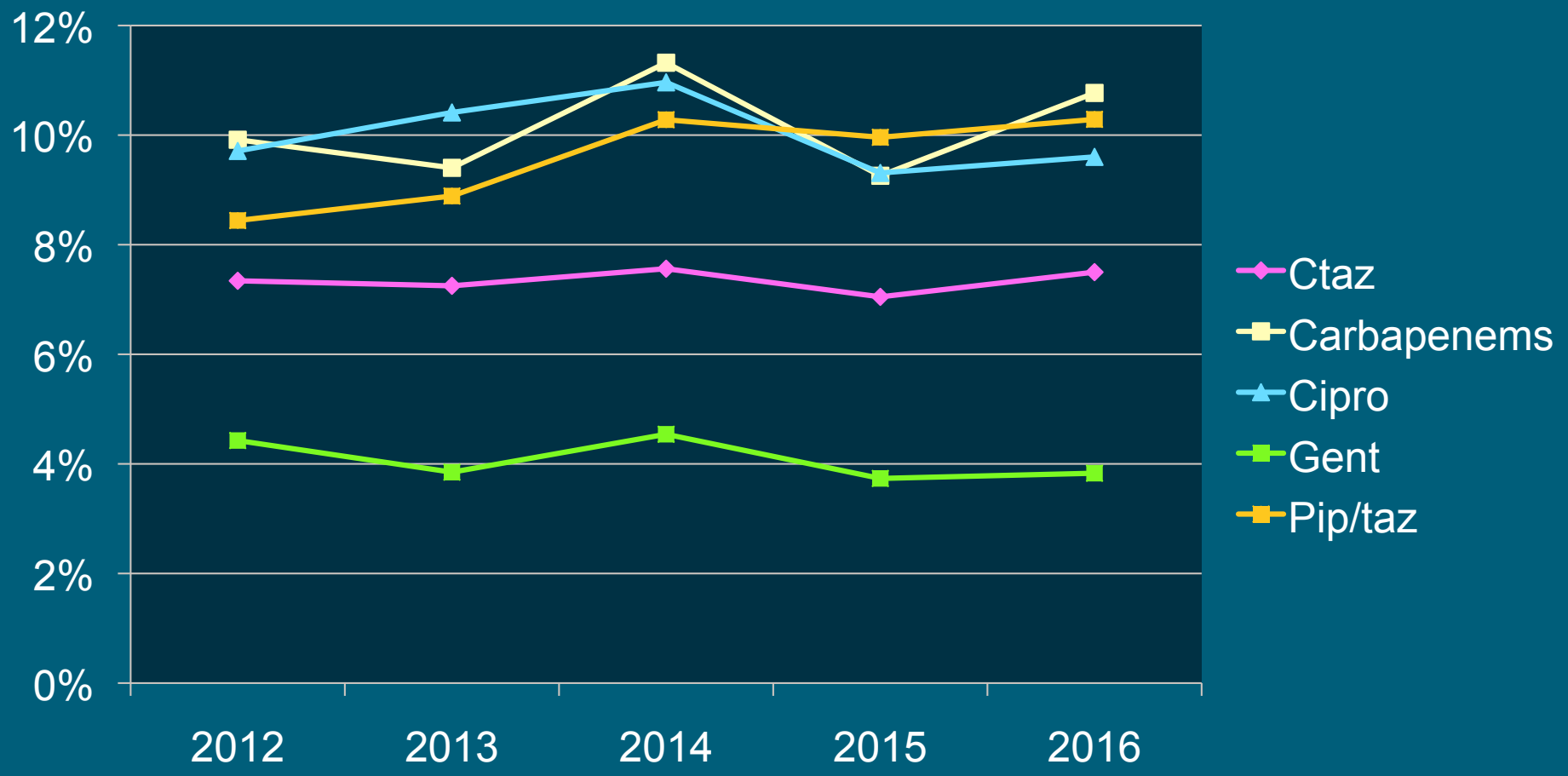
2014 None

2015 1 *Klebsiella* KPC, 2 *Klebsiella* OXA-48, 1 *E. coli* OXA-48; 1*Serratia* OXA-48

2016 None

2017 *2 Klebsiella* KPC^{+}, 1 *Klebsiella* NDM^{+}, 1 *Serratia* OXA-48^{+}

P. aeruginosa in bacteraemia, England, ESPAUR



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% Non-susceptibility among *Pseudomonas* spp. (n=222)

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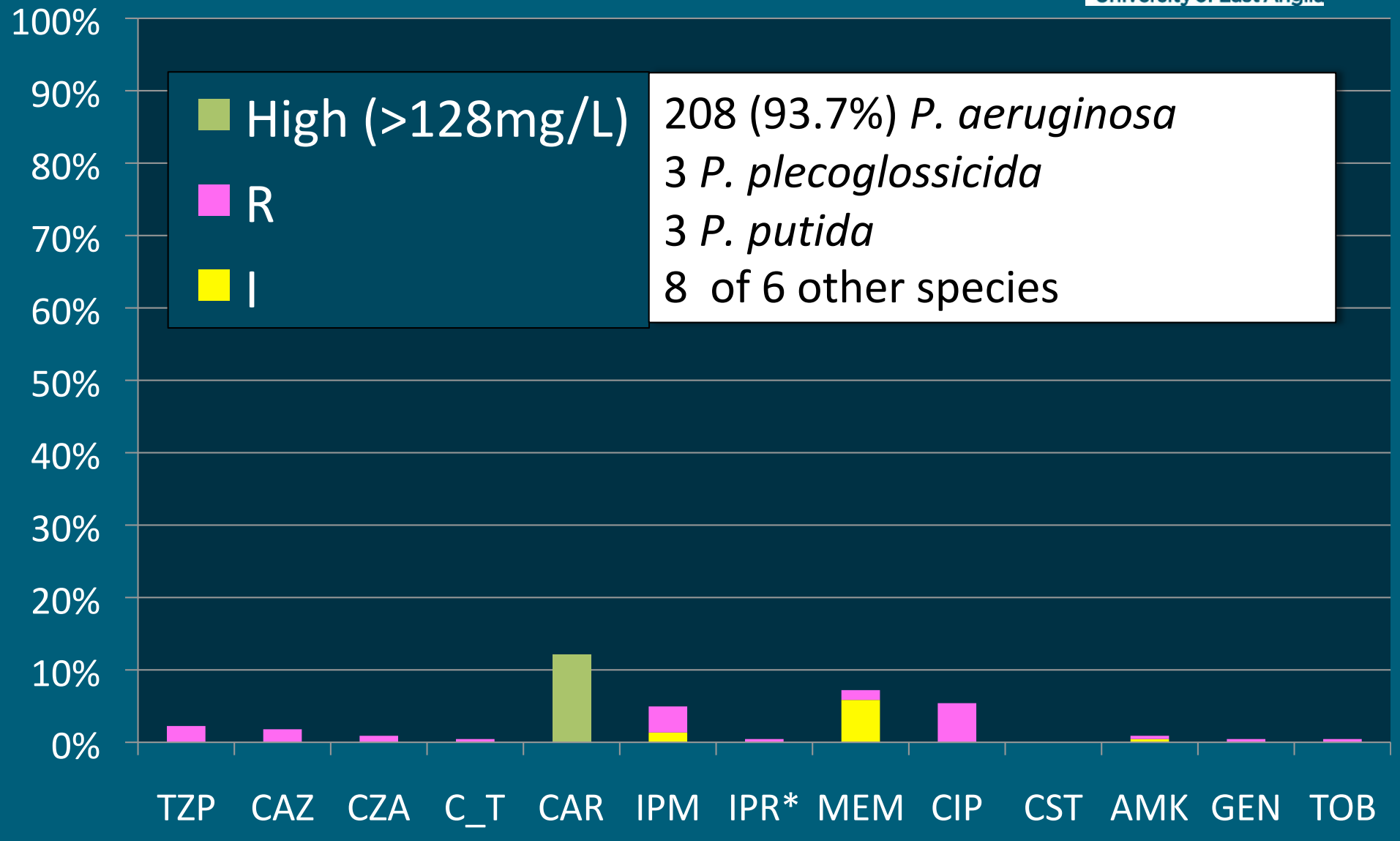

In summary

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- Stable resistance rates in gram-negatives
  - Contrary to perception of worldwide rises
- Declines in ESBLs, cipro-R and gent-R rates have stopped
- History teaches that such stability ends in sudden shifts, e.g.:
  - Global rise in ST131 *E. coli* around 2002/3
  - Rise in ST258/KC *K. pneumoniae* in Italy from 2008
  - Rise in EMRSA from 1992/3
- And, whilst rates are stable, incidence is rising, e.g. for *E. coli*