HIGHLIGHTS

Thailand's One Health Report on Antimicrobial Consumption and Antimicrobial Resistance in 2020

Data on monitoring and evaluation of the Goals of Thailand's National Strategic Plan on Antimicrobial Resistance 2017-2021

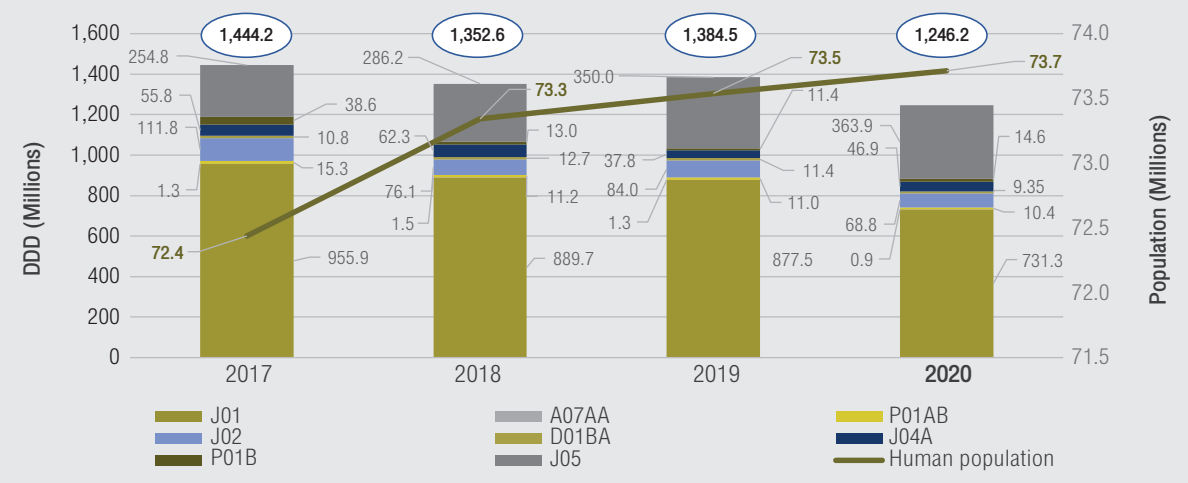
Indicator	Data			
	2017	2018	2019	2020
A. Antimicrobial consumption in humans and animals*				
Antimicrobial consumption in humans (Defined Daily Doses/1,000 inhabitants/day, DID)	54.6 (baseline)	50.5 (↓7.5%)	51.6 (↓5.6%)	46.3* (↓15.2%)
Antimicrobial consumption in food-producing animals (mg/$PCU_{Thailand}$)	658.7 (baseline)	522.0 (↓20.8%)	336.3 (↓49.0%)	421.5* (↓36.0%)
B. AMR in humans and animals				
Percentage of methicillin-resistant *Staphylococcus aureus* (MRSA)				
- AMR in humans, lab-based surveillance (NARST)	9.6	8.1	9.4	6.5
- AMR in patients with hospital-associated Infections	-	33.8	36.0	29.44
Percentage of *Escherichia coli* resistant to 3rd-generation cephalosporin				
- AMR in humans, lab-based surveillance (NARST)	44.0	42.7	43.9	41.4
- AMR in patients with hospital-associated Infections	-	69.4	54.4	71.8
- AMR in chicken caeca**	1.7	1.8	1.0	1.8
- AMR in pig caeca**	9.6	11.1	8.9	13.6
Percentage of carbapenem-resistant *Acinetobacter baumannii* (CRAB)				
- AMR in humans, lab-based surveillance (NARST)	69.8	68.2	69.7	71.6
- AMR in patients with hospital-associated Infections	-	89.8	74.6	87.8
Percentage of carbapenem-resistant *Enterobacteriaceae* (CRE)				
- AMR in humans, lab-based surveillance (NARST)				
○ *Escherichia coli*	2.4	2.8	3.3	3.4
○ *Klebsiella pneumoniae*	10.1	12.3	12.5	12.6
- AMR in patients with hospital-associated Infections				
○ *Escherichia coli*	-	12.2	21.0	27.0
○ *Klebsiella pneumoniae*		36.8	33.0	44.7
C. Public knowledge on AMR (percent)	23.7 (baseline)	-	24.3 (↑ 0.6 percentage point)	-

*Data are under peer review by Working Group on verification of antimicrobial consumption data.

**cefotaxime

I. Antimicrobial Consumption in Humans[1]

Human antimicrobial consumption (Defined Daily Doses, DDDs) and population in Thailand (including migrants) (Millions)

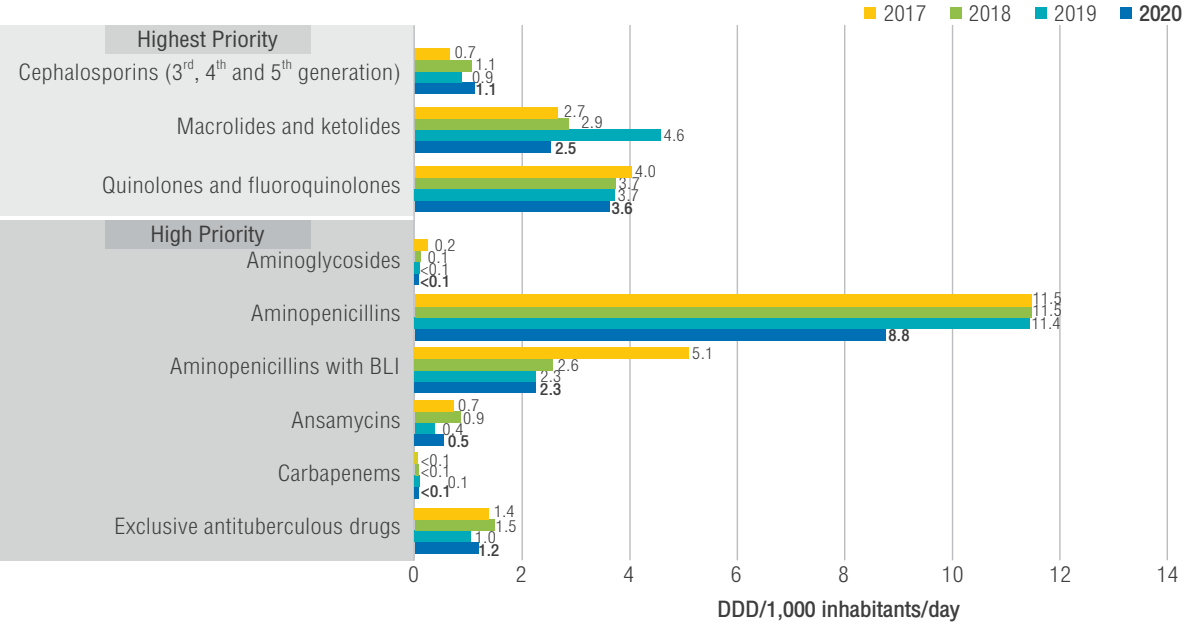


J01, antibacterials for systemic use; A07AA, antibiotics for alimentary tract; P01AB, nitroimidazole derivatives; J02, antimycotics for systemic use; D01BA, antifungals for systemic use; J04A, drugs for treatment of tuberculosis; P01B, antimalarials; J05, antivirals for systemic use

Top 10 antimicrobials for humans in 2020 and their consumption from 2017-2020 (DDDs/1,000 inhabitants/day, DID)

Rank in 2020	Antimicrobial agent	Consumption (DDD/1,000 inhabitants/day)			
		2020	2019	2018	2017
1	Amoxicillin	6.6	9.2	9.3	10.1
2	Emtricitabine, tenofovir disoproxil and efavirenz	2.8	2.5	1.8	1.3
3	Lamivudine	2.5	1.8	2.5	2.6
4	Tetracycline	2.4	2.3	3.7	3.4
5	Amoxicillin with beta-lactamase inhibitor	2.3	2.3	2.6	5.1
6	Ampicillin	2.2	2.2	2.2	1.4
7	Ketoconazole	2.0	2.4	2.1	3.7
8	Tenofovir disoproxil	1.6	1.6	0.2	0.1
9	Norfloxacin	1.6	1.4	1.4	2.0
10	Doxycycline	1.6	2.0	2.2	2.4

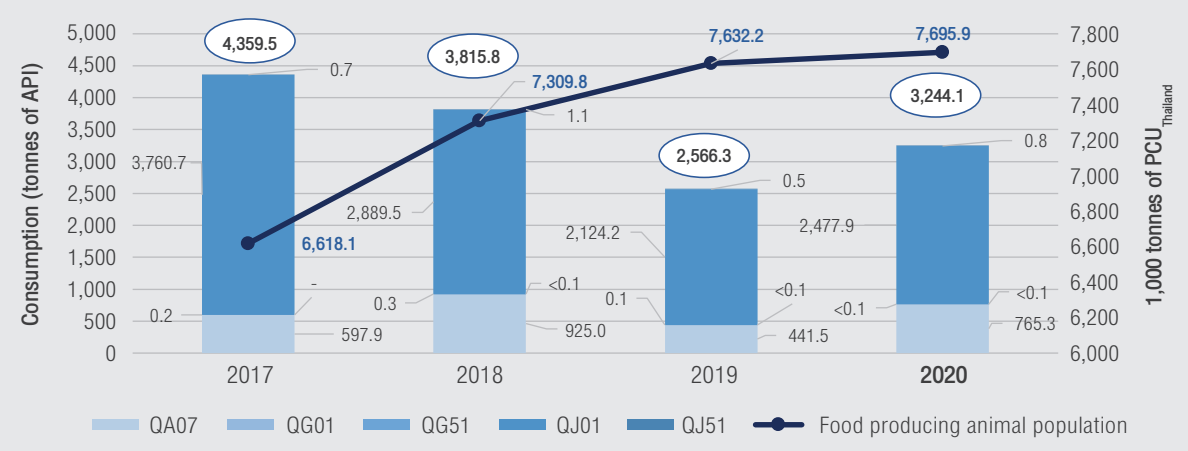
Human Antimicrobial Consumption Classified by WHO Critically Important Antimicrobials (DDDs/1,000 inhabitants/day, DID)



[1] Data source: Thailand Surveillance of Antimicrobial Consumption

II. Antimicrobial Consumption in Food-Producing Animals[2]

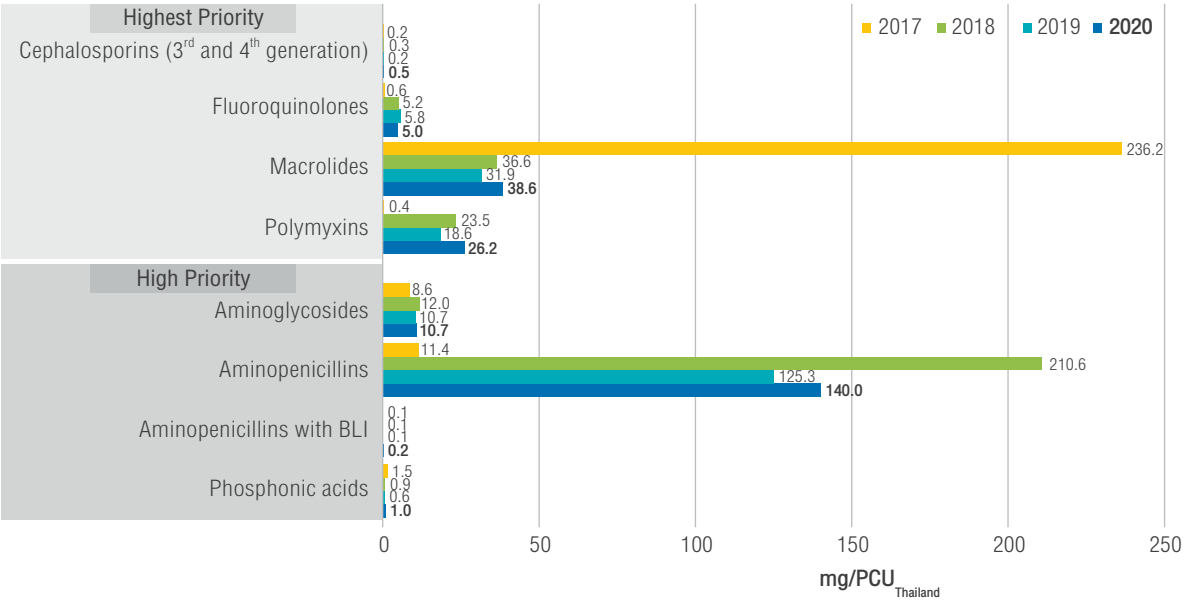
Antimicrobial consumption in food-producing animals (tonnes of active pharmaceutical ingredient, API) and food-producing animal population (1,000 tonnes of $PCU_{Thailand}$)



Top 10 antimicrobials for food-producing animals in 2020 and their consumption in 2017 and 2018 and 2019 (mg/$PCU_{Thailand}$)

Rank in 2020	Antimicrobial agent	Consumption (mg/$PCU_{Thailand}$)			
		2020	2019	2018	2017
1	Amoxicillin	139.8	125.1	210.4	11.4
2	Chlortetracycline	57.1	44.8	42.8	52.9
3	Tiamulin	45.6	36.2	60.2	7.7
4	Bacitracin	45.6	18.4	14.6	10.5
5	Colistin	26.2	18.6	23.5	0.4
6	Tilmicosin	25.6	16.3	16.7	8.9
7	Halquinol	22.2	14.8	80.5	73.3
8	Doxycycline	14.5	13.0	14.6	19.1
9	Tylosin	8.2	8.8	14.3	223.7
10	Neomycin	5.5	6.0	7.8	5.9

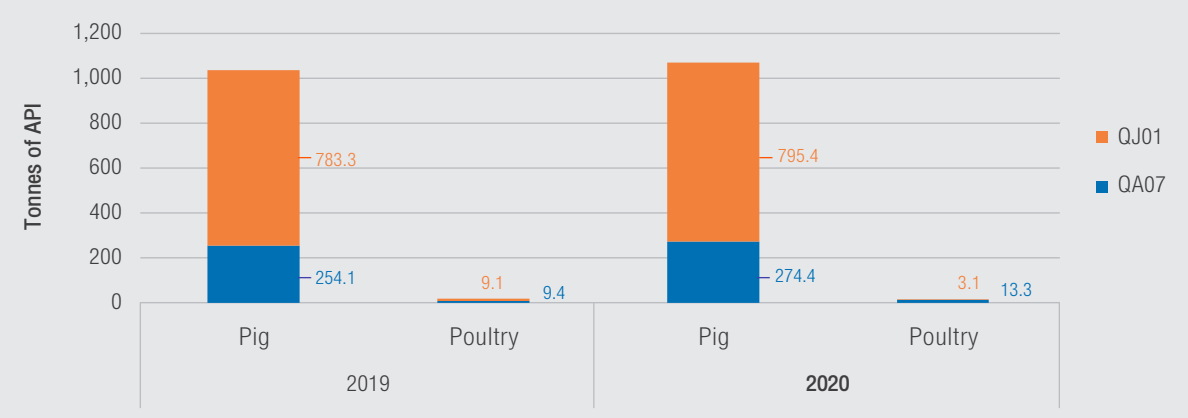
Antimicrobial consumption in food-producing animals classified by WHO Critically Important Antimicrobials (mg/$PCU_{Thailand}$)



[2] Data source: Thailand Surveillance of Antimicrobial Consumption

III. Antibacterial Consumption in Food-Producing Animals (Medicated Feed Produced by Feed mills)[3]

Antibacterial consumption in medicated feed by species of food-producing animals in 2019 (tonnes of active pharmaceutical ingredient, API)

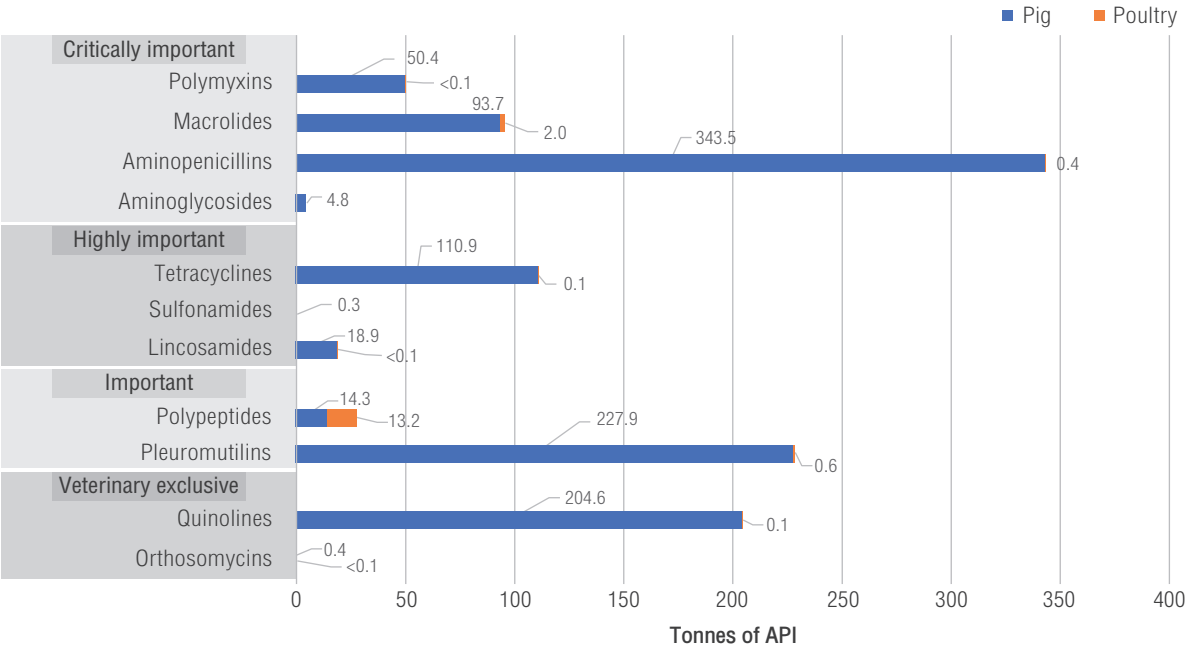


QA07, antimicrobial agents for intestinal use; QJ01, antimicrobial agents for systemic use

Top 10 antibacterials used in medicated feed for pigs and poultry in 2020 (tonnes of API)

Rank	Pigs		Poultry	
	Antibacterial	Tonnes of API	Antibacterial	Tonnes of API
1	Amoxicillin	343.5	Bacitracin	13.2
2	Tiamulin	227.6	Tilmicosin	1.2
3	Halquinol	204.6	Tylvalosin	0.8
4	Chlortetracycline	84.7	Tiamulin	0.6
5	Tilmicosin	83.0	Amoxicillin	0.4
6	Colistin	50.4	Doxycycline	<0.1
7	Doxycycline	21.8	Halquinol	<0.1
8	Lincomycin	18.9	Kitasamycin	<0.1
9	Bacitracin	14.3	Chlortetracycline	<0.1
10	Tylvalosin	4.9	Colistion	<0.1

Antibacterial consumption in medicated feed for pigs and poultry by WHO Critically Important Antimicrobials and chemical class in 2019 (tonnes of API)

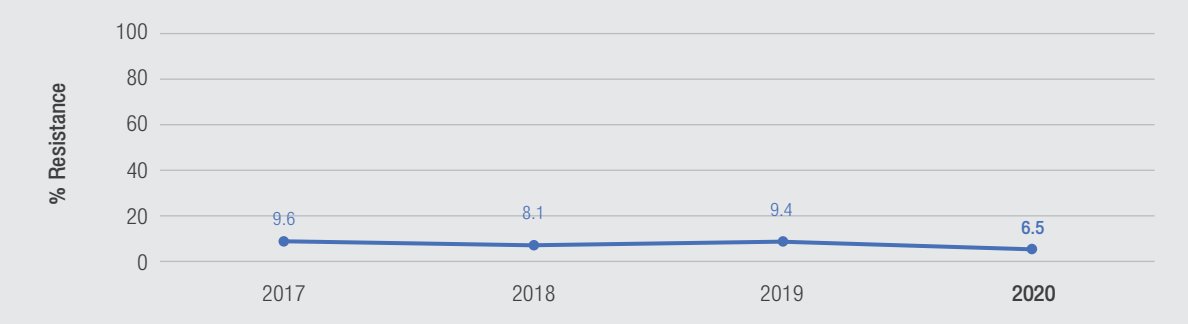


[3] Data source: Thailand Surveillance of Antimicrobial Consumption

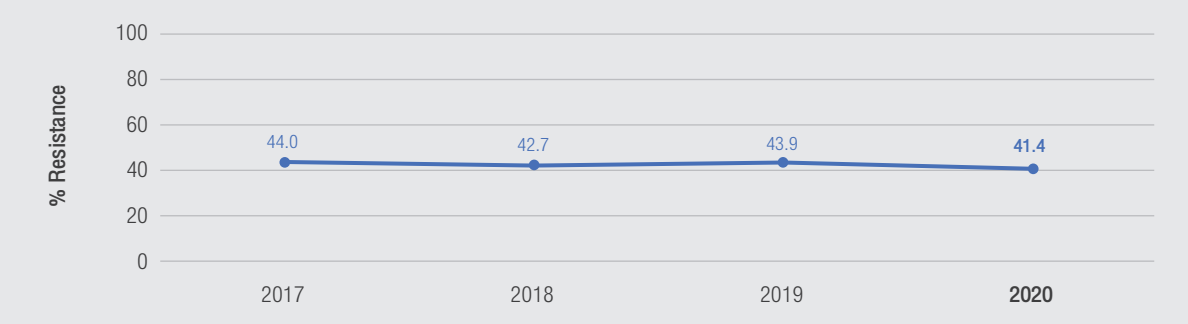
[4] Antimicrobials with less than 0.1 tonnes of API for both pigs and poultry (non-CIA penicillins, phosphoglycolipids and aminoclyclitols) are not shown.

IV. Antimicrobial Resistance in Humans[5]

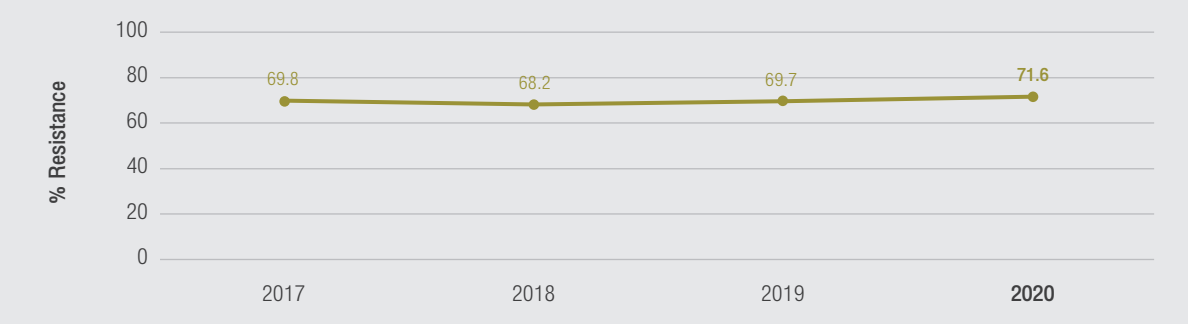
Percentage of Methicillin-resistant *Staphylococcus aureus* (MRSA) in 2017-2020



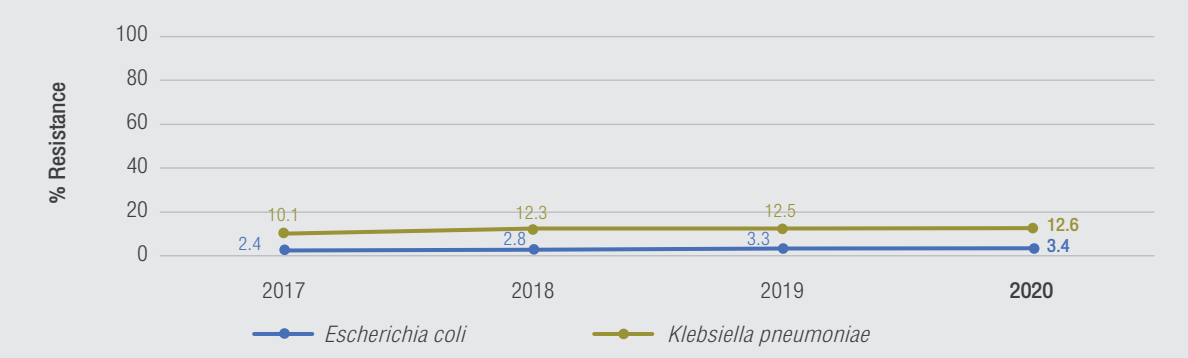
Percentage of *Escherichia coli* with 3rd-generation cephalosporin resistance in 2017-2020



Percentage of Carbapenem-resistant *Acinetobacter baumannii* (CRAB) in 2017-2020



Percentage of Carbapenem-resistant *Enterobacteriaceae* (CRE) in 2017-2020

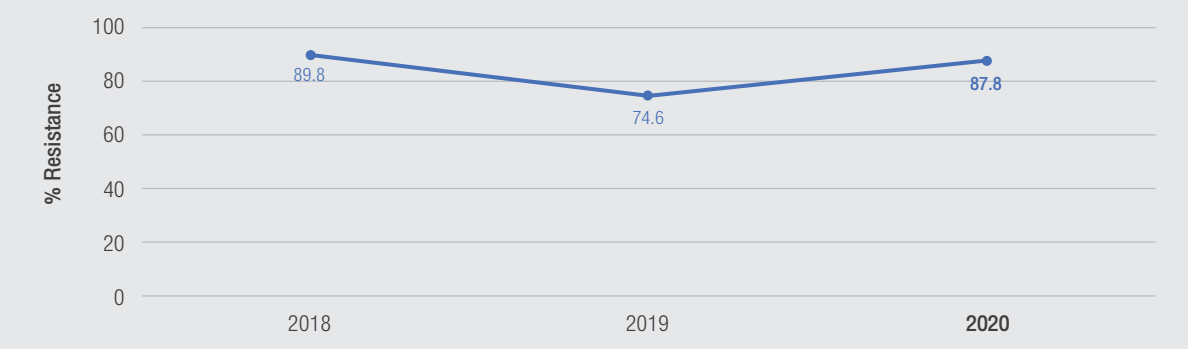


Note: Carbapenem-resistant *Enterobacteriaceae* (CRE) included *Klebsiella pneumoniae* and *Escherichia coli*.

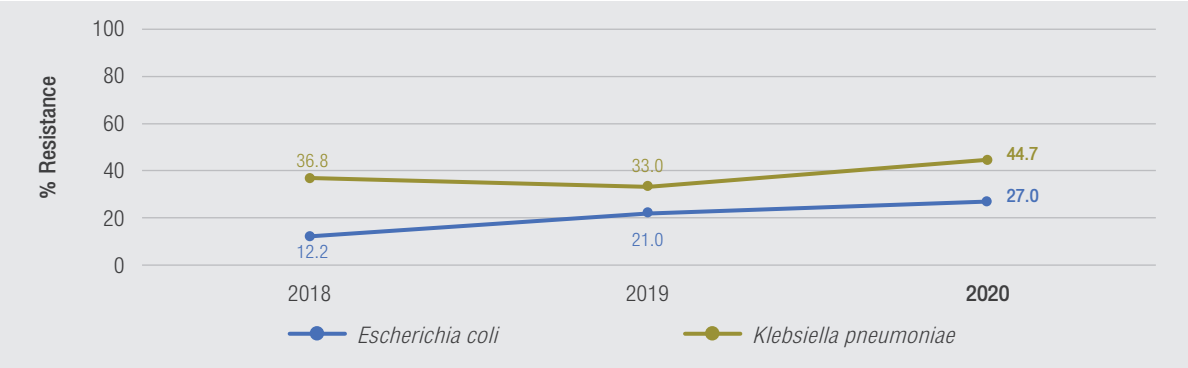
[5] Data source: National Antimicrobial Resistance Surveillance Center Thailand (NARST), National Institute of Health, Department of Medical Sciences, and Department of Disease Control

V. Antimicrobial Resistance in Patients with Hospital-Associated Infections[6]

Percentage of Carbapenem-resistant *Acinetobacter baumannii* (CRAB) in patients with hospital-associated infections in 2018-2020

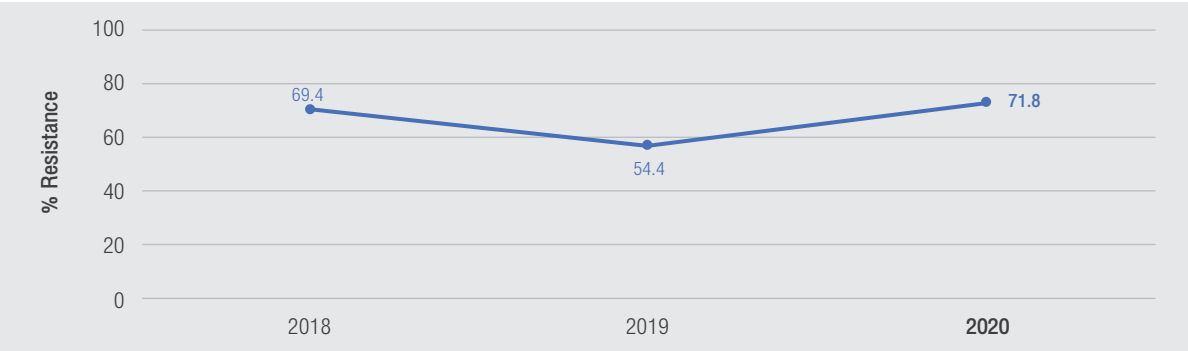


Percentage of Carbapenem-resistant *Enterobacteriaceae* (CRE) in patients with hospital-associated infections in 2018-2020

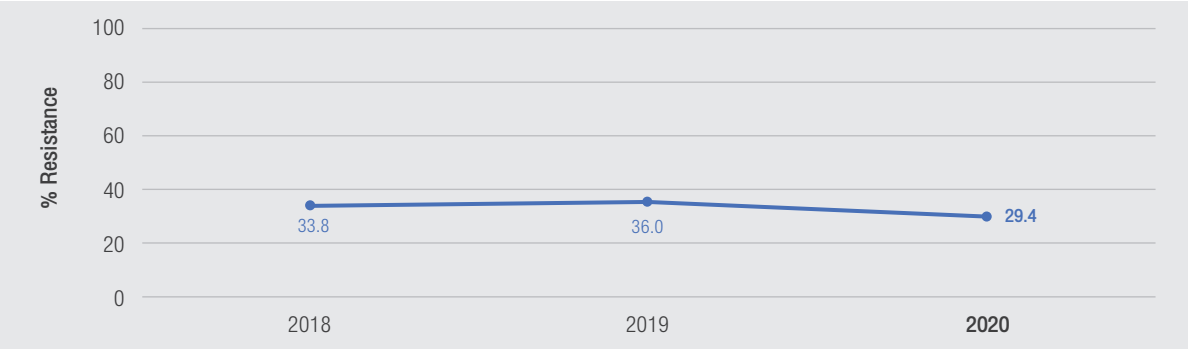


Note: Carbapenem-Resistant *Enterobacteriaceae* (CRE) included *Klebsiella pneumoniae* and *Escherichia coli*.

Percentage of *Escherichia coli* with 3rd-generation cephalosporin resistance in patients with hospital-associated infections in 2018-2020



Percentage of Methicillin-resistant *Staphylococcus aureus* (MRSA) in patients with hospital-associated infections in 2018-2020

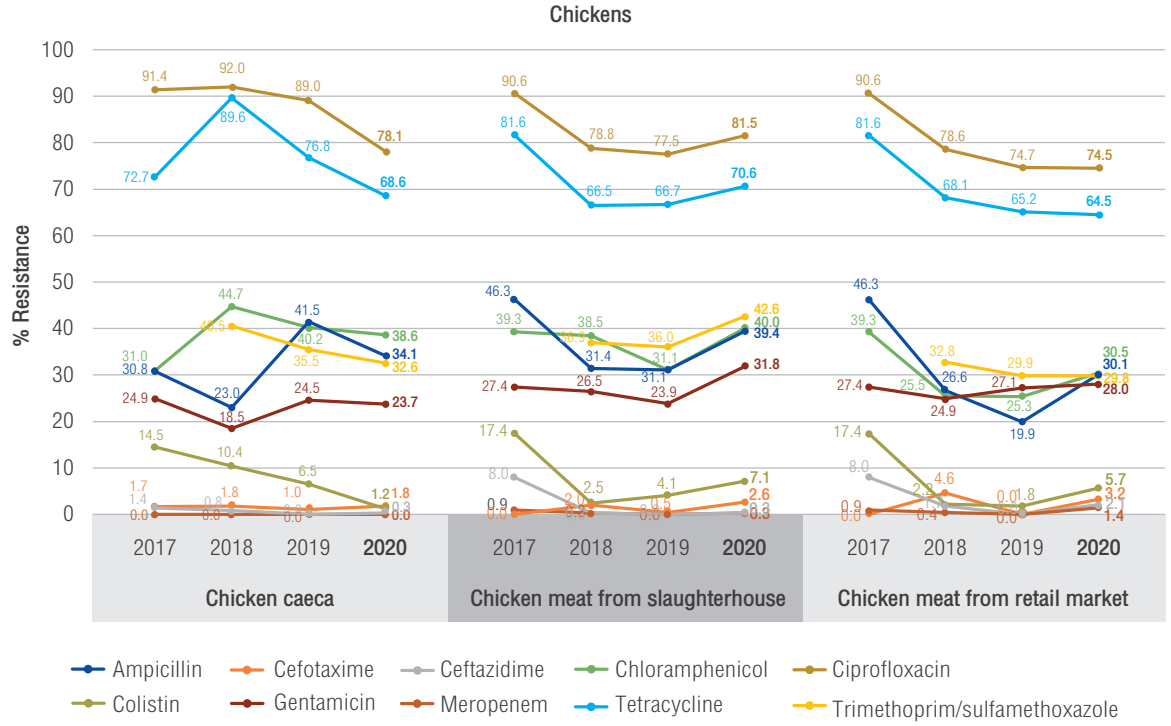


[6] Data source: Surveillance of Hospital-associated Infection, Bamrasnaradura Infectious Disease Institute

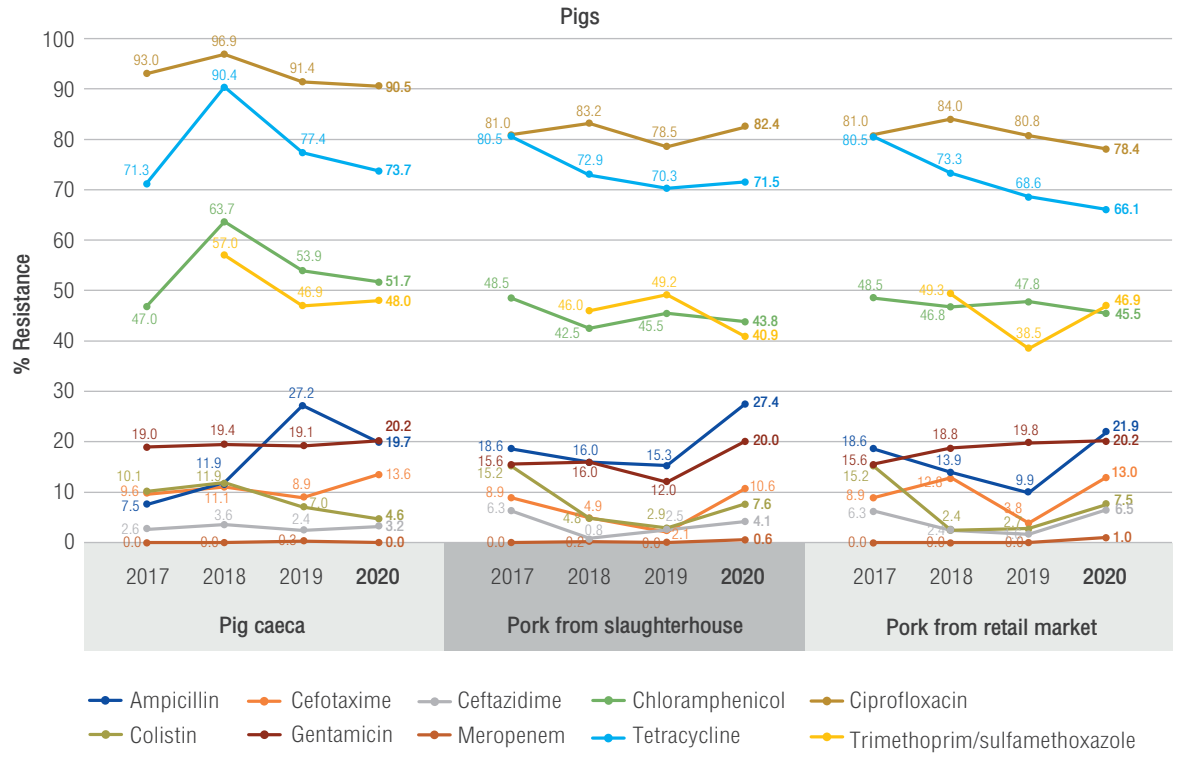
VI. Antimicrobial Resistance in Food-Producing Animals[7]

Escherichia coli

Percentage of antimicrobial resistance of *Escherichia coli* (2017-2020)



Note: Number of isolates differs between source and years

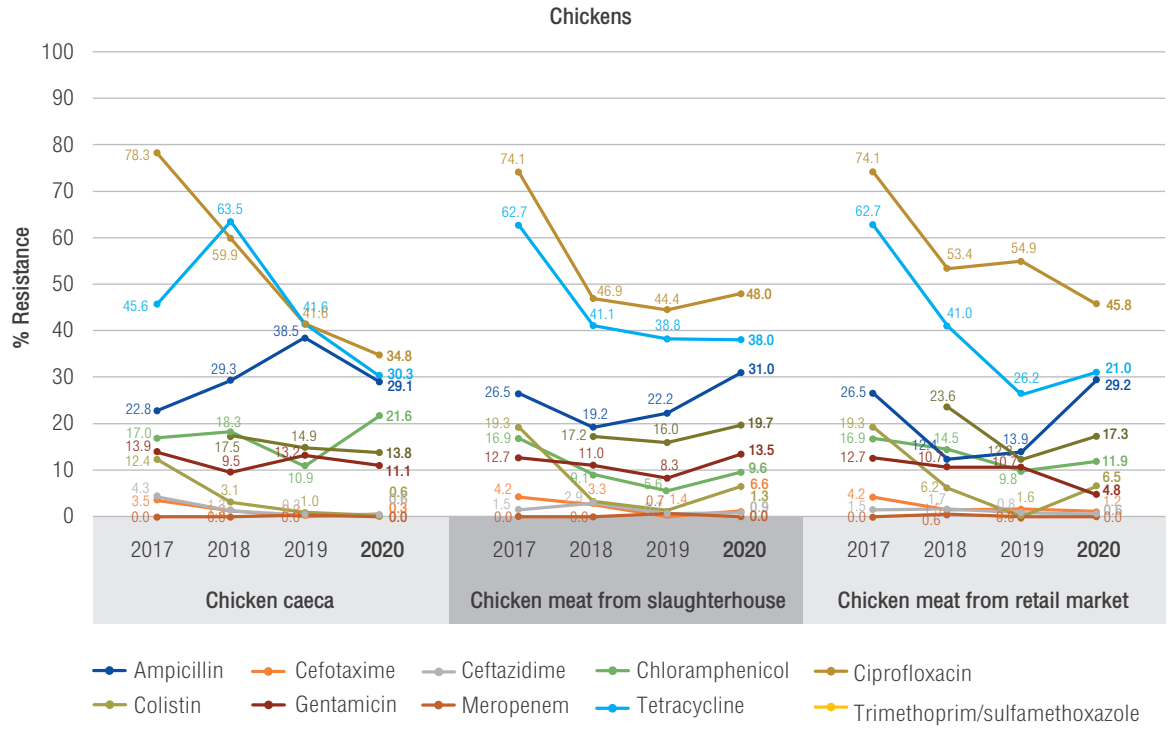


Note: Number of isolates differs between source and years

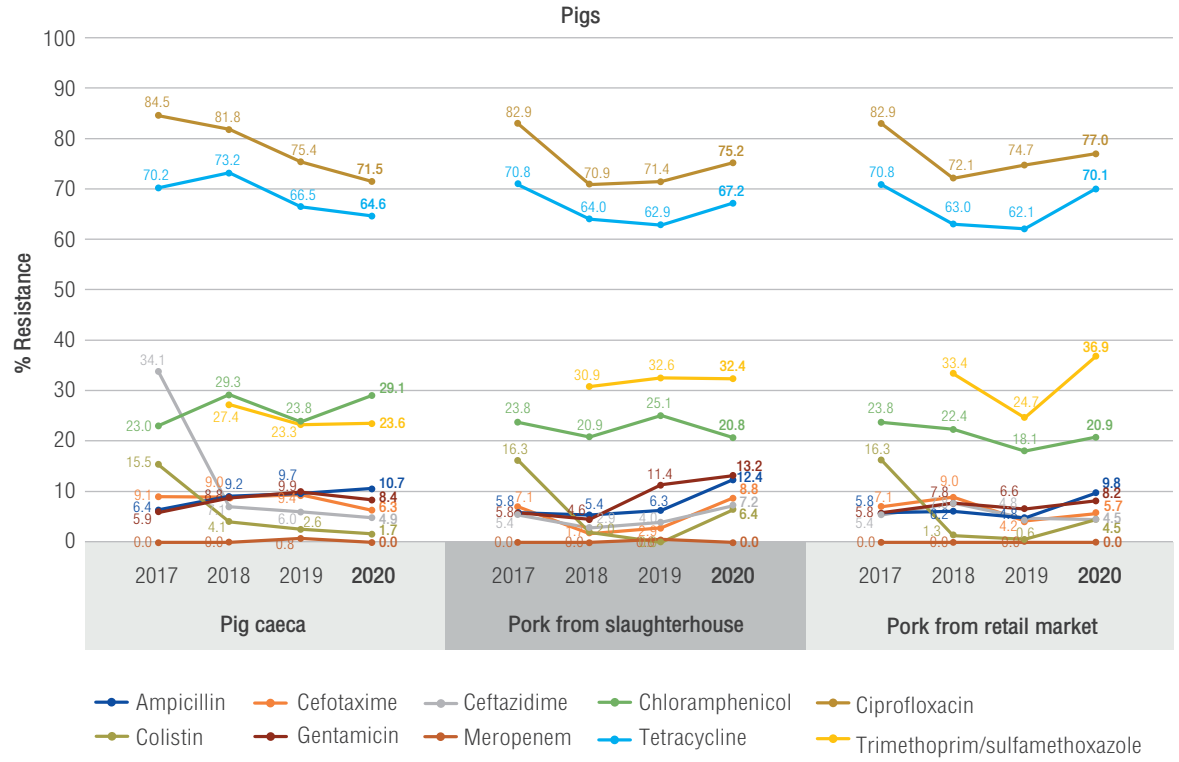
[7] Data source: Department of Livestock Development

Salmonella spp.

Percentage of antimicrobial resistance of *Salmonella* spp. (2017-2020)



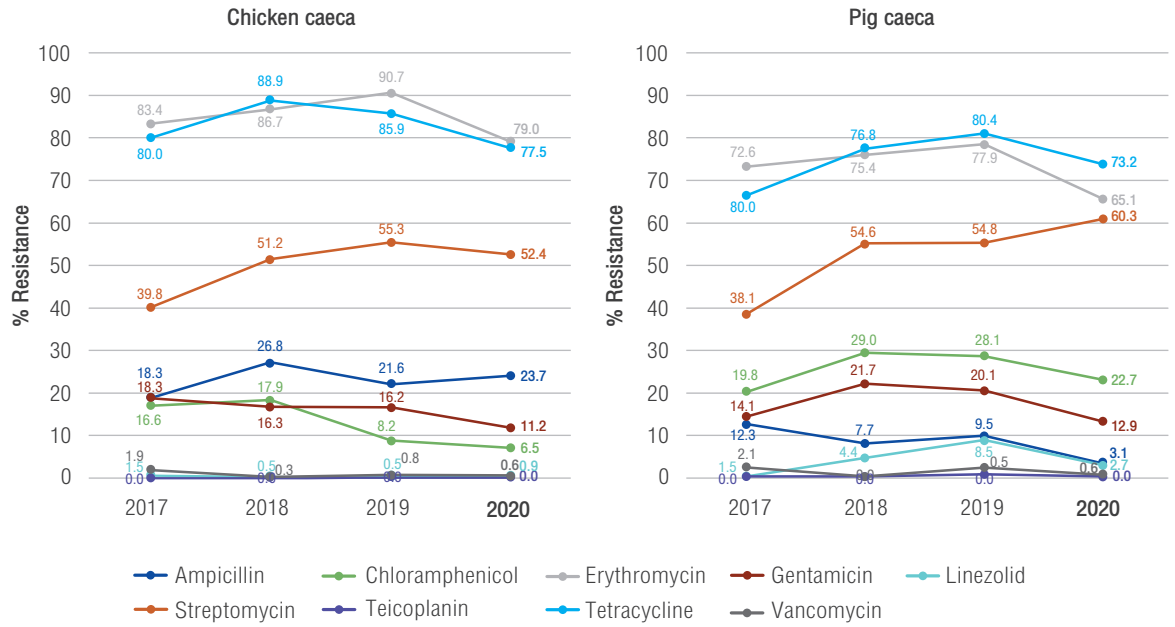
Note: Number of isolates differs between source and years



Note: Number of isolates differs between source and years

Enterococcus spp.

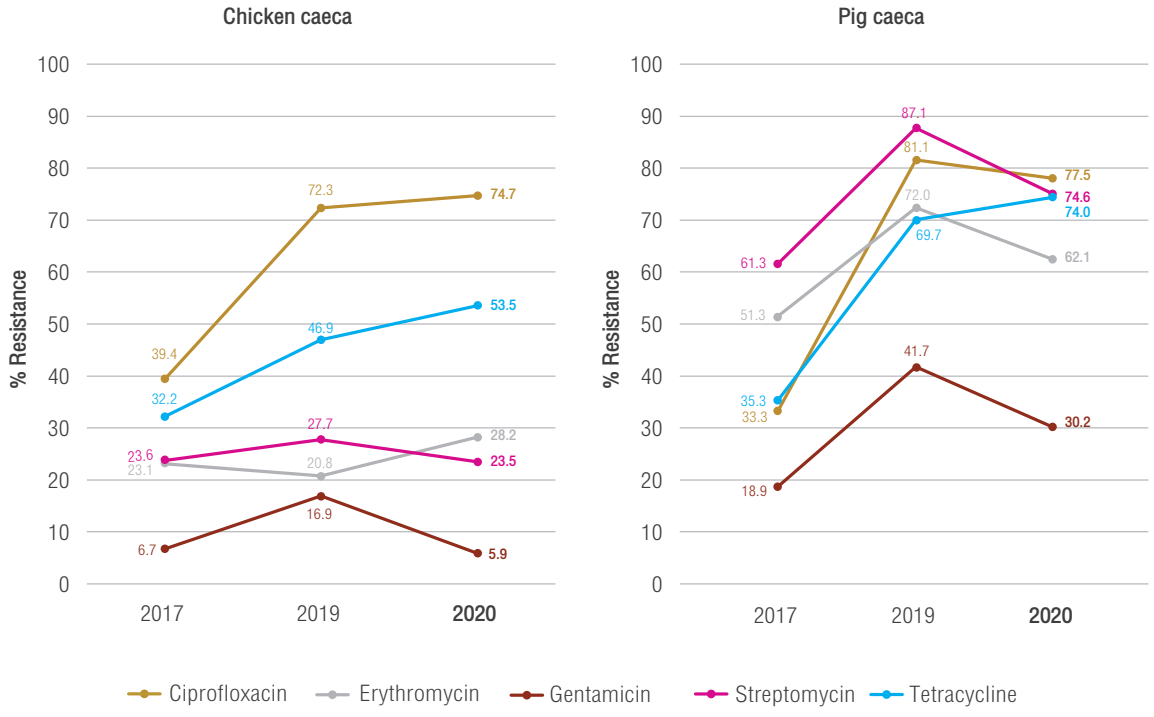
Percentage of antimicrobial resistance of *Enterococcus* spp. (2017-2020)



Note: Number of isolates differs between years

Campylobacter spp.

Percentage of antimicrobial resistance of *Campylobacter* spp. (2017-2020)



Note: Number of isolates differs between years

Note

Note

Produced by:
Health Policy and Systems Research on Antimicrobial Resistance (HPSR-AMR) Network

Published by:
International Health Policy Program, Ministry of Public Health

Address:
Ministry of Public Health, Tiwanon Rd. Nonthaburi 11000, Thailand
Phone: +66 (0) 2590-2366- 7 Fax: +66 (0) 2590-2385