

2020 Antibacterial agents in clinical and preclinical development

Clinical Antibacterial Pipeline



This overview covers traditional (direct-acting small molecules) and non-traditional antibacterial agents in clinical and preclinical development worldwide. It assesses to what extent the clinical pipeline addresses World Health Organization (WHO) priority pathogens, *Mycobacterium tuberculosis* and *Clostridioides difficile*.

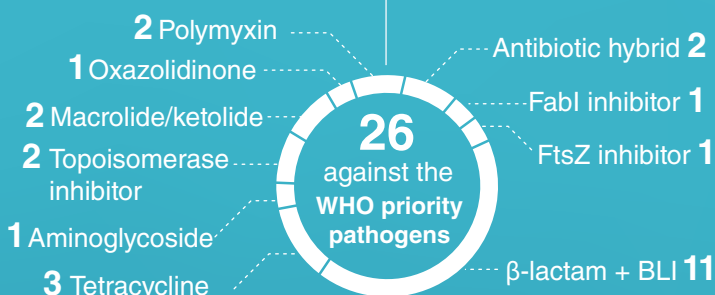
The current clinical antibacterial pipeline contains 43 antibiotics and combinations with a new therapeutic entity and 27 non-traditional antibacterial agents.

43 Traditional

26 against
the WHO priority pathogens

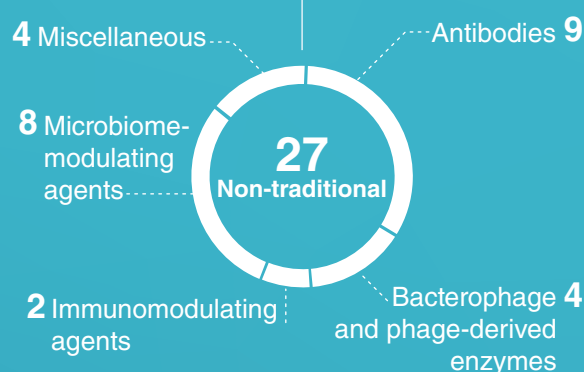
12 against
M. tuberculosis

5 against
C. difficile

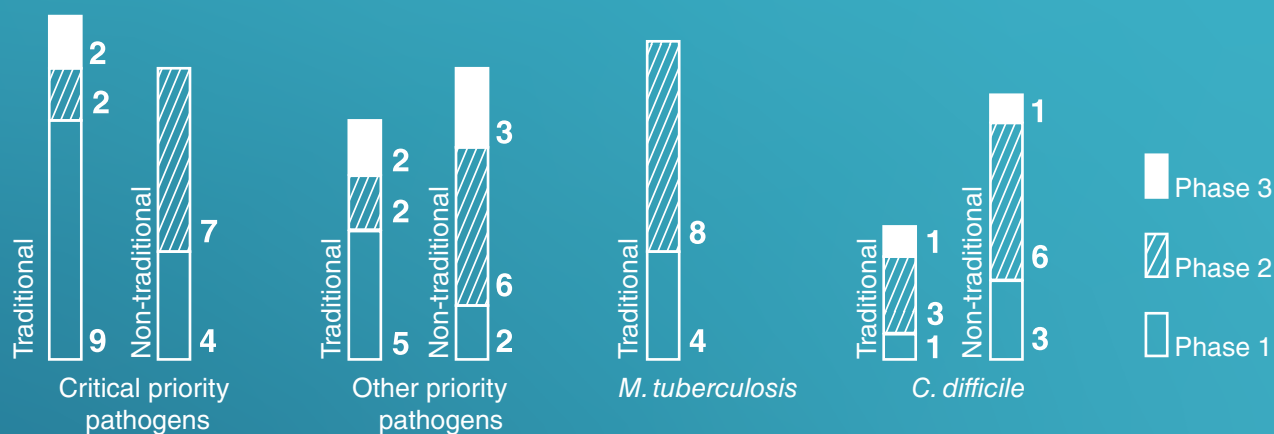


Seven fulfil at least one of the innovation criteria; only two of these are active against the critical multidrug-resistant (MDR) Gram-negative bacteria.

27 Non-traditional



Traditional and non-traditional antibacterials in clinical development (Phases 1–3)



Overall, the clinical pipeline and recently approved antibiotics are insufficient to tackle the challenge of increasing emergence and spread of antimicrobial resistance.

2020 Preclinical Antibacterial Pipeline

Currently there are 162 commercial and non-commercial entities progressing 292 diverse antibacterial agents.

Categorization of preclinical agents



Mode of action and development stages



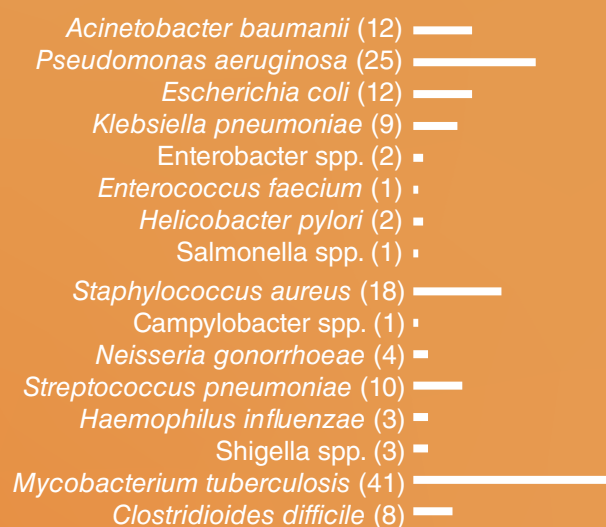
Mode of action	Development stage			Total
	LO	PCC	CTA/IND	
Cell membrane	17	40	5	62
Immunomodulation	18	34	4	56
Cell wall synthesis	9	22	9	40
Protein synthesis	14	9	5	28
Other	12	12	2	26
Anti-virulence	13	5	4	22
DNA replication	10	6	0	16
Cell metabolism	1	4	1	6
RNA synthesis	3	1	1	5
Not disclosed	31	18	10	3

LO=lead optimization; PCC=preclinical candidate; CTA/IND=CTA/IND-enabling studies

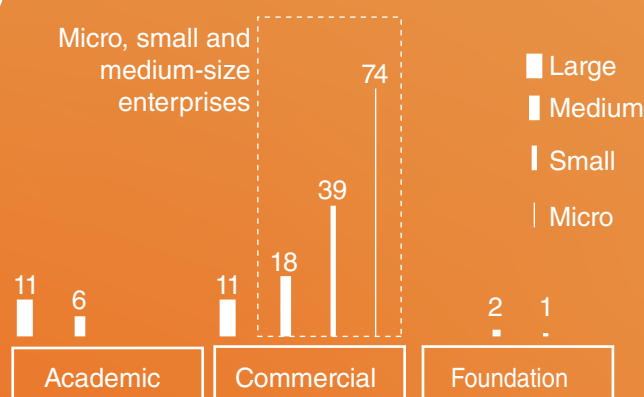
Pathogens targeted by a single pathogen target product



Of the 292 antibacterial agents, 152 (52%) target a single pathogen, of which 60 target the WHO critical priority pathogens



Developers' type and size



The preclinical pipeline is dynamic and innovative, including a wide range of drug development projects that are using different approaches to target the WHO bacterial priority pathogens list.

The preclinical and clinical antibacterial pipeline data is available in an interactive database and downloadable on the WHO Global R&D Health Observatory. Clinical: <https://bit.ly/37B9tHT> Preclinical: <https://bit.ly/2Mvq5Jc>

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