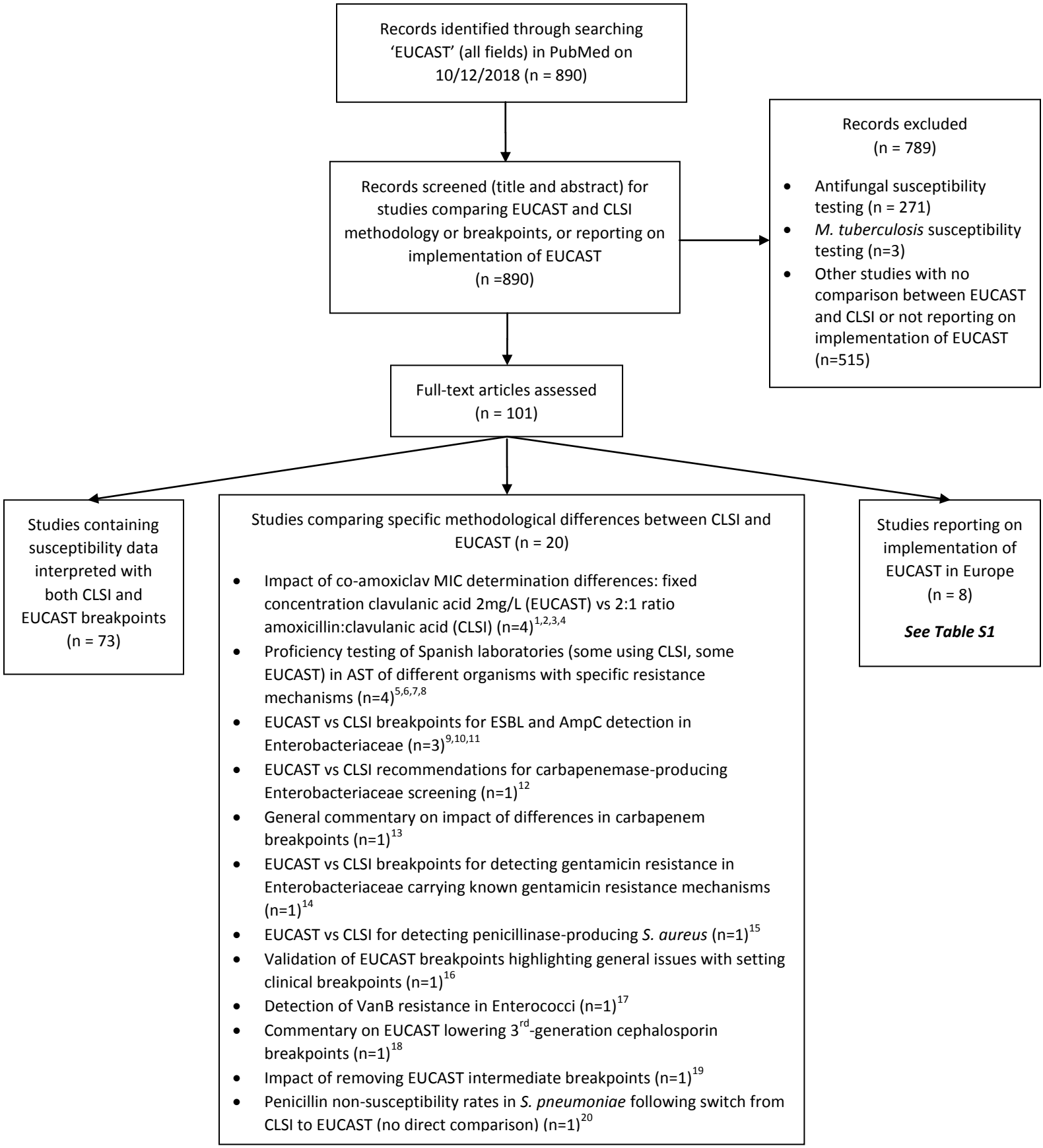
Supplementary Material

Supplementary Figure S1. Literature search flow diagram



Supplementary Figure S1 References

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Supplementary Table S1. Summary of studies reporting on implementation of EUCAST in Europe.

Author and Year (Pubmed ID)	Focus	Key points
Brown 2010 (19996143)	Commentary on rationale behind and process of harmonizing breakpoints in Europe under EUCAST, implications of adopting EUCAST on reporting of intermediate susceptibility in UK	Most breakpoints similar or identical between BSAC and EUCAST but some examples of where discrepancies have significant impact on susceptibility interpretation eg ertapenem-*Enterobacter* spp., gentamicin-*P. aeruginosa*. Highlights one area of potential confusion being more extensive use of intermediate category in EUCAST guidelines compared to BSAC and the rationale behind this (BSAC regarded intermediate category as of limited value previously but greater confidence in the intermediate category with recent approaches to setting breakpoints in the harmonization process). Highlights need for harmonization of EUCAST with CLSI – several barriers to this discussed including differences in organizational structures and funding, relationships with regulatory authorities.
Brown 2015 (25613780)	Review of uptake of EUCAST guidelines in European countries	Rapid implementation of EUCAST breakpoints in Europe over the period 2009-2013
Brown 2016 (26377864)	Short review of history of EUCAST and transition from BSAC to EUCAST in the UK including rationale for switching	Key benefits of switching from BSAC to EUCAST disk diffusion method are its correlation with MICs, more antimicrobial agent/organism combinations covered by EUCAST, standardization across Europe and recognition of EUCAST by European Medicines Agency (EMA) for setting breakpoints for new agents
Kahlmeter 2014 (24836050)	Review of history of EUCAST and its implementation in European countries, rationale for harmonization of breakpoints, breakpoint-setting processes, EUCAST structure and relationship with regulatory agencies	Highlights that until 2002 globally there were at least 7 different interpretive systems for AST, making comparison of AMR rates difficult. Some examples of differences in breakpoints between these systems highlighted (cefotaxime-*E. coli* and gentamicin-*E. coli*).
Kahlmeter 2015 (26089441)	History of EUCAST and its implementation in European countries, organisation of EUCAST and structural differences with CLSI, summary of breakpoint	Several important structural differences between CLSI and EUCAST highlighted as reasons why merging of the organisations and harmonization of breakpoints has not occurred: 1. <u>Funding:</u> EUCAST is funded by national breakpoint committees, the European Centre for Disease Prevention and Control, and the European Society of Clinical

	setting processes	Microbiology and Infectious Diseases, whereas CLSI is supported by member subscription fees and sales of documents 2. Relationship with regulatory agencies: the EMA routinely adopts EUCAST breakpoints, while in the United States the Food and Drug Administration determines breakpoints independently of CLSI 3. Relationship with industry: Industry representatives sit on the CLSI Subcommittee on AST Standards and can vote on breakpoint decisions, but have no formal positions on EUCAST committees.
Larrosa 2018 (30409509)	'Roadmap' for Spanish laboratories to transition to EUCAST from CLSI	10 general recommendations: 1. Anticipate differences in EUCAST breakpoints and rules of interpretation 2. Communicate with commercial suppliers about adapting relevant automated or semi-automated system software to EUCAST criteria 3. Adopt disk diffusion technique to specific EUCAST recommendations e.g. incubation durations 4. Anticipate changes of antibiotic disk contents and media 5. Decide interpretive criteria to be used when EUCAST breakpoints not available 6. Ensure that appropriate control strains are available 7. Make the necessary changes to laboratory documents and information management systems 8. Inform laboratory users of switch to EUCAST and potential differences in susceptibility interpretation 9. Consider effect of introduction of EUCAST breakpoints (leading to a reduction in susceptibility rates) 10. Consult the Spanish National Antibiogram Committee (COESANT) for any transitional issues
Martinez-Martinez 2013 (24269101)	Editorial on harmonization of COESANT with EUCAST – brief history of EUCAST and its adoption in Europe and role of COESANT in implementation of EUCAST in Spain	Organisational and conceptual differences between CLSI and EUCAST highlighted: lack of industry voting in EUCAST breakpoint decisions, all EUCAST breakpoint and technical documents available for free.
Matuschek 2014 (24131428)	Summary of the EUCAST disk diffusion methodology and its development and general guidance points on its implementation in routine microbiology laboratories	Some differences between CLSI and EUCAST methodologies highlighted including differences in disk concentrations, standard incubation times and quality control criteria.

Supplementary Table S1 References

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