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METHODOLOGICAL ANALYSIS OF PHARMACOECONOMIC STUDIES IN CAR-T: A SYSTEMATIC REVIEW

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BACKGROUND AND IMPORTANCE

Chimeric antigen receptor T-cell therapies (CAR-T) are based on the ex-vivo modification of T-lymphocytes for the expression of an antigen receptor that provides the specific union with tumour cells for their consequent destruction. CAR-T introduction into clinical practices present challenges from a clinical and economic perspective. Traditional pharmacoeconomic studies may be limited in their ability to act as a valid decision-making tool in the access management of CAR-T and alternative methodological approaches may have to be considered.

OBJECTIVE

Elaboration of a systematic review of CAR-T pharmacoeconomic studies to determine if traditional pharmacoeconomic studies represent a valid tool for decision-making in the access management of CAR-T.

METHODOLOGY

Systematic search in:
- Scopus
- Pubmed
- Cochrane Library

Using terms related with:
- CAR-T
- Pharmacoeconomics

Quality evaluation by:
- CHEERS
- Drummond

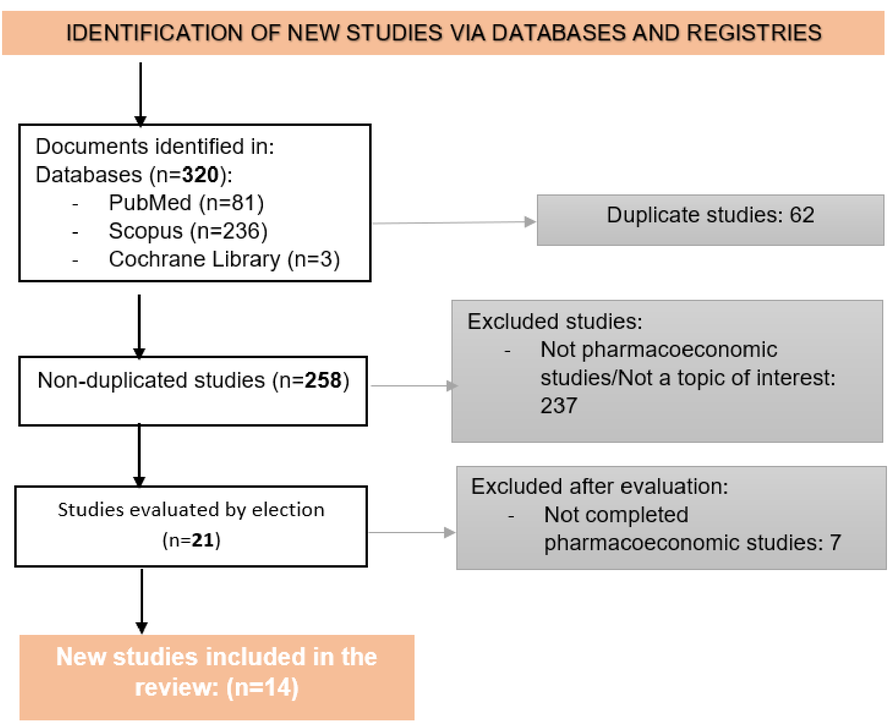
Excluded:
All other scientific documents

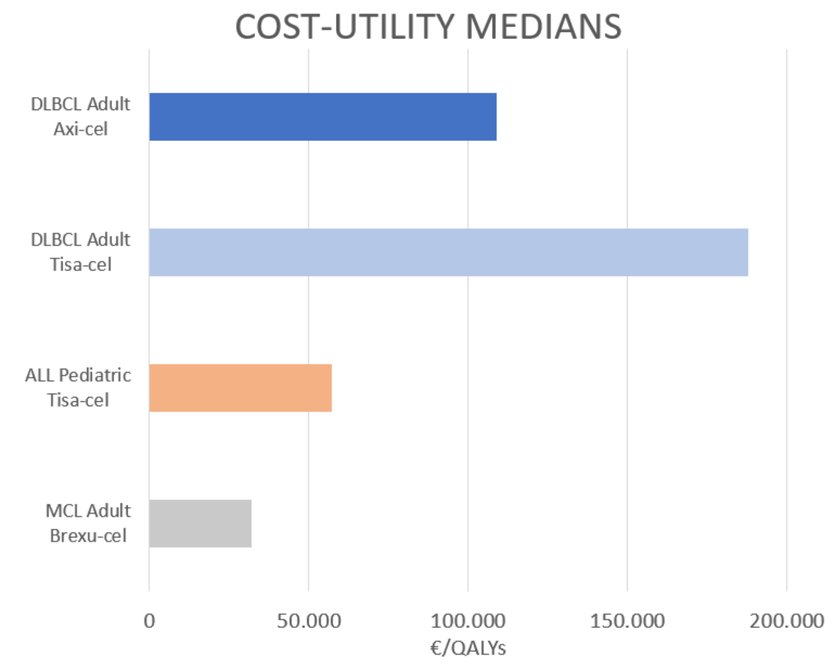
Included:
Published articles and accepted manuscripts written in English or Spanish until 15 August 2021

RESULTS

The most studied CAR-T drug was tisagenlecleucel for diffuse large B-cell lymphoma in adults, with a median cost per QALY of 291924,51€. CAR-T therapies represent a clinically and potentially cost-effective therapeutic alternative. The quality of the identified studies was good according to the quality assessment scores.

AUTHOR YEAR OF PUBLICATION	COUNTRY	CLINICAL INDICATION	POPULATION	CAR-T
Wakase et al, 2021	Japan	ALL r/r	Pediatric and young adult	Tisa-cel
Ribera et al, 2020	Spain	ALL r/r	Pediatric and young adult	Tisa-cel
Thielen et al, 2020	Netherlands	ALL r/r	Pediatric	Tisa-cel
Furzer et al, 2020	Canada	ALL r/r	Pediatric	Tisa-cel
Whittington et al, 2018	United States	ALL r/r	Pediatric	Tisa-cel
Sarkar et al, 2018	United States	ALL r/r	Pediatric	Tisa-cel
Lin et al, 2018	United States	ALL r/r	Pediatric	Tisa-cel
Wakase et al, 2021	Japan	DLBCL r/r	Adult	Tisa-cel
Cher et al, 2020	Singapur	DLBCL r/r	Adult	Tisa-cel
Lin et al, 2019	United States	DLBCL r/r	Adult	Tisa-cel / Axi-cilo
Liu et al, 2021	United States	DLBCL r/r	Adult	Axi-cilo
•Whittington et al, 2019	United States	DLBCL r/r	Adult	Axi-cilo
•Whittington et al, 2019				
•Whittington et al, 2019				
•Whittington et al, 2019				
•Whittington et al, 2019				
Roth et al, 2018	United States	DLBCL r/r	Adult	Axi-cilo
Simons et al, 2021	United States	MCL	Adult	Brexu-cel





CONCLUSION

Cost-effectiveness of CAR-T therapies depends on its long-term results, the duration of the study conducted, and the cure rate used of the clinical study. Because of that, pharmacoeconomic studies in CAR-T exhibit certain limitations and could not be robust tools for decision making solely based on their findings. There is a need to develop pharmacoeconomic methods that can avoid the uncertainty of many assumptions and incorporate more data, including real-life data.

ABBREVIATIONS

QALYs: Quality-Adjusted Life-Year; **MCL Adult Brexu-cel:** Results of brexucabtagene autoleucel for mantle cell lymphoma in adult population; **ALL Pediatric Tisa-cel:** Results of tisagenlecleucel for diffuse acute lymphoblastic leukemia in pediatric population; **DLBCL Adult Tisa-cel**: Results of tisagenlecleucel for diffuse large B-cell lymphoma in adult population; **DLBCL Adult Axi-cel:** Results of axicabtagene ciloleucel for diffuse large B-cell lymphoma in adult population