# Supplementary material

## Table 1. Search strategy for database search

|  |  |
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|  | **Search strategies** |
| #1 | "cell\* therap\*".ab,ti |
| #2 | "gen\* therap\*".ab,ti |
| #3 | innovat\* therap\*.ab,ti. |
| #4 | advanced therap\*.ab,ti. |
| #5 | "advanced therapy medicinal product$".ab,ti. |
| #6 | atmp$.ab,ti. |
| #7 | "cancer vaccine$".ab,ti. |
| #8 | "somatic cell therap\*".ab,ti. |
| #9 | "allogeneic cell$".ab,ti. |
| #10 | "autologous cell$".ab,ti |
| #11 | "CAR-T cell$".ab,ti. |
| #12 | "chimeric antigen receptor T cell$".ab,ti. |
| #13 | "cancer immunotherap\*".ab,ti. |
| #14 | "tumo?r vaccine$".ab,ti |
| #15 | "regenerative medicine$".ti,ab. |
| #16 | "breakthrough therap\*".ti,ab |
| #17 | "stem cell therap\*".ab,ti. |
| #18 | CRISPR.ab,ti. |
| #19 | "Gene editing".ab,ti. |
| #20 | "transformative therap\*".ab,ti. |
| #21 | "curative therap\*".ab,ti. |
| #22 | "one-off treatment".ab,ti. |
| #23 | OR #1-#22 |
| #24 | Limit#23: humans and english |
|  |  |
| #25 | (challeng\*.ab,ti.) and exp Health Policy/ec [Economics] |
| #26 | (hurdle$.ab,ti.) and exp Health Policy/ec [Economics] |
| #27 | "high pric\*".ab,ti. |
| #28 | expensive.ab,ti. |
| #29 | "high cost$".ab,ti. |
| #30 | "market access".ab,ti. |
| #31 | uncertaint\*.ab,ti. |
| #32 | "budget impact".ab,ti. |
| #33 | "cost-effectiveness".ab,ti. |
| #34 | "cost-utility".ab,ti. |
| #35 | affordability.ab,ti. |
| #36 | "health technology assessment".ab,ti. |
| #37 | payer$.ab,ti. |
| #38 | "economi\* analys\*".ab,ti. |
| #39 | "value assessment".ab,ti. |
| #40 | OR #25-#39 |
| #41 | Limit#40: humans and english |
| #42 | #24 AND #41 |

## Table 2: Details of the included articles (N=72)

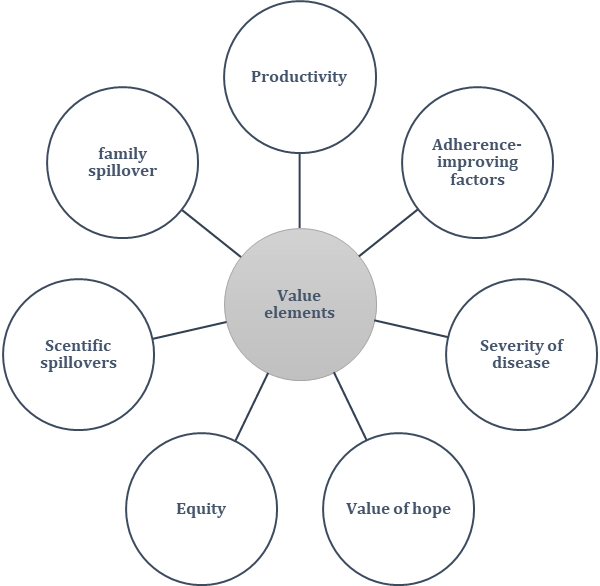
|  |  |  |
| --- | --- | --- |
| **Title** | **Year** | **Publication type** |
| 1. Hampson G, Towse A, Pearson SD, Dreitlein WB, Henshall C. Gene therapy: evidence, value and affordability in the US health care system. J Comp Eff Res. 2018;7(1):15-28. doi:10.2217/cer-2017-0068. | 2018 | Expert opinion |
| 2. Hanna E, Rémuzat C, Auquier P, Toumi M. Advanced therapy medicinal products: current and future perspectives. J Mark Access Health Policy. 2016;4. doi:10.3402/jmahp.v4.31036. | 2016 | Review |
| 3. Lloyd-Williams H, Hughes DA. A systematic review of economic evaluations of advanced therapy medicinal products. Br J Clin Pharmacol. 2020. doi:10.1111/bcp.14275. | 2020 | Systematic review |
| 4. Viriato D, Bennett N, Sidhu R, Hancock E, Lomax H, Trueman D et al. An Economic Evaluation of Voretigene Neparvovec for the Treatment of Biallelic RPE65-Mediated Inherited Retinal Dystrophies in the UK. Adv Ther. 2020;37(3):1233-47. doi:10.1007/s12325-020-01243-y. | 2020 | Cost-effectiveness analysis |
| 5. de Windt TS, Sorel JC, Vonk LA, Kip MMA, Ijzerman MJ, Saris DBF. Early health economic modelling of single-stage cartilage repair. Guiding implementation of technologies in regenerative medicine. J Tissue Eng Regen Med. 2017;11(10):2950-9. doi:10.1002/term.2197. | 2017 | Cost-effectiveness analysis |
| 6. Roth JA, Sullivan SD, Lin VW, Bansal A, Purdum AG, Navale L et al. Cost-effectiveness of axicabtagene ciloleucel for adult patients with relapsed or refractory large B-cell lymphoma in the United States. J Med Econ. 2018;21(12):1238-45. doi:10.1080/13696998.2018.1529674. | 2018 | Cost-effectiveness analysis |
| 7. South E, Cox E, Meader N, Woolacott N, Griffin S. Strimvelis((R)) for Treating Severe Combined Immunodeficiency Caused by Adenosine Deaminase Deficiency: An Evidence Review Group Perspective of a NICE Highly Specialised Technology Evaluation. Pharmacoecon Open. 2019;3(2):151-61. doi:10.1007/s41669-018-0102-3. | 2019 | HTA report |
| 8. Drummond MF, Neumann PJ, Sullivan SD, Fricke FU, Tunis S, Dabbous O et al. Analytic Considerations in Applying a General Economic Evaluation Reference Case to Gene Therapy. Value Health. 2019;22(6):661-8. doi:10.1016/j.jval.2019.03.012. | 2019 | Expert opinion |
| 9. Ribera Santasusana JM, de Andres Saldana A, Garcia-Munoz N, Gostkorzewicz J, Martinez Llinas D, Diaz de Heredia C. Cost-Effectiveness Analysis of Tisagenlecleucel in the Treatment of Relapsed or Refractory B-Cell Acute Lymphoblastic Leukaemia in Children and Young Adults in Spain. Clinicoecon Outcomes Res. 2020;12:253-64. doi:10.2147/CEOR.S241880. | 2020 | Cost-effectiveness analysis |
| 10. Senior M. Rollout of high-priced cell and gene therapies forces payer rethink. Nat Biotechnol. 2018;36(4):291-2. doi:10.1038/nbt0418-291a. | 2018 | Expert opinion |
| 11. Driscoll D, Farnia S, Kefalas P, Maziarz RT. Concise Review: The High Cost of High Tech Medicine: Planning Ahead for Market Access. Stem Cells Transl Med. 2017;6(8):1723-9. doi:10.1002/sctm.16-0487. | 2017 | Review |
| 12. Aballéa S, Thokagevistk K, Velikanova R, Simoens S, Annemans L, Antonanzas F et al. Health economic evaluation of gene replacement therapies: methodological issues and recommendations. Journal of Market Access & Health Policy. 2020;8(1):1822666. doi:10.1080/20016689.2020.1822666. | 2020 | Review |
| 13. Walton M, Sharif S, Simmonds M, Claxton L, Hodgson R. Tisagenlecleucel for the Treatment of Relapsed or Refractory B-cell Acute Lymphoblastic Leukaemia in People Aged up to 25 Years: An Evidence Review Group Perspective of a NICE Single Technology Appraisal. PharmacoEconomics. 2019;37(10):1209-17. doi:10.1007/s40273-019-00799-0. | 2019 | HTA report |
| 14. Goncalves E. Advanced therapy medicinal products: value judgement and ethical evaluation in health technology assessment. Eur J Health Econ. 2020;21(3):311-20. doi:10.1007/s10198-019-01147-x. | 2020 | Expert opinion |
| 15. Qiu T, Hanna E, Dabbous M, Borislav B, Toumi M. Health Technology Assessment of Gene Therapies in Europe and the USA: Analysis and Future Considerations. Cell and Gene Therapy Insights. 2019;5(8):1043-59. doi:10.18609/cgti.2019.112. | 2019 | Review |
| 16. Furzer J, Gupta S, Nathan PC, Schechter T, Pole JD, Krueger J et al. Cost-effectiveness of Tisagenlecleucel vs Standard Care in High-risk Relapsed Pediatric Acute Lymphoblastic Leukemia in Canada. JAMA Oncol. 2020. doi:10.1001/jamaoncol.2019.5909. | 2020 | Cost-effectiveness analysis |
| 17. Jonsson B, Hampson G, Michaels J, Towse A, von der Schulenburg JG, Wong O. Advanced therapy medicinal products and health technology assessment principles and practices for value-based and sustainable healthcare. Eur J Health Econ. 2019;20(3):427-38. doi:10.1007/s10198-018-1007-x. | 2019 | Expert opinion |
| 18. Lin JK, Muffly LS, Spinner MA, Barnes JI, Owens DK, Goldhaber-Fiebert JD. Cost Effectiveness of Chimeric Antigen Receptor T-Cell Therapy in Multiply Relapsed or Refractory Adult Large B-Cell Lymphoma. Journal of clinical oncology : official journal of the American Society of Clinical Oncology. 2019;37(24):2105-19. doi:10.1200/jco.18.02079. | 2019 | Cost-effectiveness analysis |
| 19. Petrou P. Is it a Chimera? A systematic review of the economic evaluations of CAR-T cell therapy. Expert Rev Pharmacoecon Outcomes Res. 2019;19(5):529-36. doi:10.1080/14737167.2019.1651646. | 2019 | Systematic review |
| 20. Prasad V. Immunotherapy: Tisagenlecleucel - the first approved CAR-T-cell therapy: implications for payers and policy makers. Nat Rev Clin Oncol. 2018;15(1):11-2. doi:10.1038/nrclinonc.2017.156. | 2018 | Expert opinion |
| 21. Gavan SP, Lu CY, Payne K. Assessing the Joint Value of Genomic-Based Diagnostic Tests and Gene Therapies. J Pers Med. 2019;9(2). doi:10.3390/jpm9020028. | 2019 | Financial models |
| 22. Johnson S, Buessing M, O'Connell T, Pitluck S, Ciulla TA. Cost-effectiveness of Voretigene Neparvovec-rzyl vs Standard Care for RPE65-Mediated Inherited Retinal Disease. JAMA Ophthalmol. 2019. doi:10.1001/jamaophthalmol.2019.2512. | 2019 | Cost-effectiveness analysis |
| 23. Cook K, Forbes SP, Adamski K, Ma JJ, Chawla A, Garrison LP, Jr. Assessing the potential cost-effectiveness of a gene therapy for the treatment of hemophilia A. J Med Econ. 2020;23(5):501-12. doi:10.1080/13696998.2020.1721508. | 2020 | Cost-effectiveness analysis |
| 24. Whittington MD, McQueen RB, Campbell JD. Valuing Chimeric Antigen Receptor T-Cell Therapy: Current Evidence, Uncertainties, and Payment Implications. Journal of clinical oncology : official journal of the American Society of Clinical Oncology. 2020;38(4):359-66. doi:10.1200/jco.19.01558. | 2020 | Review |
| 25. Nagpal A, Milte R, Kim SW, Hillier S, Hamilton-Bruce MA, Ratcliffe J et al. Economic Evaluation of Stem Cell Therapies in Neurological Diseases: A Systematic Review. Value Health. 2019;22(2):254-62. doi:10.1016/j.jval.2018.07.878. | 2019 | Systematic review |
| 26. Lin JK, Lerman BJ, Barnes JI, Boursiquot BC, Tan YJ, Robinson AQL et al. Cost Effectiveness of Chimeric Antigen Receptor T-Cell Therapy in Relapsed or Refractory Pediatric B-Cell Acute Lymphoblastic Leukemia. Journal of clinical oncology : official journal of the American Society of Clinical Oncology. 2018;36(32):3192-202. doi:10.1200/jco.2018.79.0642. | 2018 | Cost-effectiveness analysis |
| 27. Zimmermann M, Lubinga SJ, Banken R, Rind D, Cramer G, Synnott PG et al. Cost Utility of Voretigene Neparvovec for Biallelic RPE65-Mediated Inherited Retinal Disease. Value Health. 2019;22(2):161-7. doi:10.1016/j.jval.2018.09.2841. | 2019 | Cost-effectiveness analysis |
| 28. Thielen FW, van Dongen-Leunis A, Arons AMM, Ladestein JR, Hoogerbrugge PM, Uyl-de Groot CA. Cost-effectiveness of Anti-CD19 chimeric antigen receptor T-Cell therapy in pediatric relapsed/refractory B-cell acute lymphoblastic leukemia. A societal view. Eur J Haematol. 2020;105(2):203-15. doi:10.1111/ejh.13427. | 2020 | Cost-effectiveness analysis |
| 29. Hettle R, Corbett M, Hinde S, Hodgson R, Jones-Diette J, Woolacott N et al. The assessment and appraisal of regenerative medicines and cell therapy products: an exploration of methods for review, economic evaluation and appraisal. Health Technol Assess. 2017;21(7):1-204. doi:10.3310/hta21070. | 2017 | Expert opinion |
| 30. Raymakers AJN, Regier DA, Peacock SJ. Modelling uncertainty in survival and cost-effectiveness is vital in the era of gene therapies: the case of axicabtagene ciloleucel. Health Policy and Technology. 2019;8(2):103-4. doi:10.1016/j.hlpt.2019.05.009. | 2019 | Commentary |
| 31. Ginty PJ, Singh PB, Smith D, Hourd P, Williams DJ. Achieving reimbursement for regenerative medicine products in the USA. Regenerative Medicine. 2010;5(3):463-9. doi:10.2217/rme.10.13. | 2010 | Expert opinion |
| 32. AMCP Partnership Forum: Designing Benefits and Payment Models for Innovative High-Investment Medications. Journal of managed care & specialty pharmacy. 2019;25(2):156-62. doi:10.18553/jmcp.2019.25.2.156. | 2019 | Expert opinion |
| 33. McGrath E, Chabannon C, Terwel S, Bonini C, Kuball J. Opportunities and challenges associated with the evaluation of chimeric antigen receptor T cells in real-life. Curr Opin Oncol. 2020;32(5):427-33. doi:10.1097/CCO.0000000000000665. | 2020 | Expert opinion |
| 34. Jorgensen J, Hanna E, Kefalas P. Outcomes-based reimbursement for gene therapies in practice: the experience of recently launched CAR-T cell therapies in major European countries. J Mark Access Health Policy. 2020;8(1):1715536. doi:10.1080/20016689.2020.1715536. | 2020 | Review |
| 35. Carr DR, Bradshaw SE. Gene therapies: the challenge of super-high-cost treatments and how to pay for them. Regen Med. 2016;11(4):381-93. doi:10.2217/rme-2016-0010. | 2016 | Expert opinion |
| 36. Schaffer SK, Messner D, Mestre-Ferrandiz J, Tambor E, Towse A. Paying for Cures: Perspectives on Solutions to the "Affordability Issue". Value Health. 2018;21(3):276-9. doi:10.1016/j.jval.2017.12.013. | 2018 | Expert opinion |
| 37. Coyle D, Durand-Zaleski I, Farrington J, Garrison L, Graf von der Schulenburg JM, Greiner W et al. HTA methodology and value frameworks for evaluation and policy making for cell and gene therapies. Eur J Health Econ. 2020;21(9):1421-37. doi:10.1007/s10198-020-01212-w. | 2020 | Expert opinion |
| 38. Retel VP, Steuten LMG, Geukes Foppen MH, Mewes JC, Lindenberg MA, Haanen J et al. Early cost-effectiveness of tumor infiltrating lymphocytes (TIL) for second line treatment in advanced melanoma: a model-based economic evaluation. BMC Cancer. 2018;18(1):895. doi:10.1186/s12885-018-4788-5. | 2018 | Cost-effectiveness analysis |
| 39. Flowers CR, Ramsey SD. What Can Cost-Effectiveness Analysis Tell Us About Chimeric Antigen Receptor T-Cell Therapy for Relapsed Acute Lymphoblastic Leukemia? Journal of clinical oncology : official journal of the American Society of Clinical Oncology. 2018:Jco2018793570. doi:10.1200/jco.2018.79.3570. | 2018 | Expert opinion |
| 40. Fiorenza S, Ritchie DS, Ramsey SD, Turtle CJ, Roth JA. Value and affordability of CAR T-cell therapy in the United States. Bone Marrow Transplantation. 2020;55(9):1706-15. doi:10.1038/s41409-020-0956-8. | 2020 | Expert opinion |
| 41. Machin N, Ragni MV, Smith KJ. Gene therapy in hemophilia A: a cost-effectiveness analysis. Blood Adv. 2018;2(14):1792-8. doi:10.1182/bloodadvances.2018021345. | 2018 | Cost-effectiveness analysis |
| 42. Whittington MD, McQueen RB, Ollendorf DA, Kumar VM, Chapman RH, Tice JA et al. Long-term Survival and Cost-effectiveness Associated With Axicabtagene Ciloleucel vs Chemotherapy for Treatment of B-Cell Lymphoma. JAMA Netw Open. 2019;2(2):e190035. doi:10.1001/jamanetworkopen.2019.0035. | 2019 | Cost-effectiveness analysis |
| 43. Buessing M, O'Connell T, Johnson S, Pitluck S, Ciulla TA. Important Considerations in Modeling the Cost-Effectiveness for the First Food and Drug Administration-Approved Gene Therapy and Implications for Future One-Time Therapies. Value Health. 2019;22(8):970-1. doi:10.1016/j.jval.2018.12.013. | 2019 | Commentary |
| 44. Angelis A, Naci H, Hackshaw A. Recalibrating Health Technology Assessment Methods for Cell and Gene Therapies. PharmacoEconomics. 2020;38(12):1297-308. doi:10.1007/s40273-020-00956-w. | 2020 | Expert opinion |
| 45. Jorgensen J, Servos S, Kefalas P. The potential price and access implications of the cost-utility and budget impact methodologies applied by NICE in England and ICER in the US for a novel gene therapy in Parkinson's disease. J Mark Access Health Policy. 2018;6(1):1500419. doi:10.1080/20016689.2018.1500419. | 2018 | Financial models |
| [46. (ICER) Ifcaer. Adapted Value Assessment Methods for High-Impact “Single and Short-Term Therapies” (SSTs). 2019. https://icer-review.org/wp-content/uploads/2019/01/ICER\_SST\_FinalAdaptations\_111219.pdf.](https://icer-review.org/wp-content/uploads/2019/01/ICER_SST_FinalAdaptations_111219.pdf) | 2019 | HTA report |
| 47. Skinner MW. Gene therapy for hemophilia: addressing the coming challenges of affordability and accessibility. Mol Ther. 2013;21(1):1-2. doi:10.1038/mt.2012.272. | 2013 | Expert opinion |
| 48. Da P, S R. The Limitations of QALY: A Literature Review. Journal of Stem Cell Research & Therapy. 2016;06(04). doi:10.4172/2157-7633.1000334. | 2016 | Systematic review |
| 49. Wolowacz SE, Briggs A, Belozeroff V, Clarke P, Doward L, Goeree R et al. Estimating Health-State Utility for Economic Models in Clinical Studies: An ISPOR Good Research Practices Task Force Report. Value Health. 2016;19(6):704-19. doi:10.1016/j.jval.2016.06.001. | 2016 | Expert opinion |
| 50. White W. A rare disease patient/caregiver perspective on fair pricing and access to gene-based therapies. Gene Ther. 2019. doi:10.1038/s41434-019-0110-7. | 2019 | Survey or interview |
| 51. Sara Silbert GAY, Andrew G. Shuman. How Should We Determine the Value of CAR T-Cell Therapy? AMA Journal of Ethics. 2019;21(10):E844-51. | 2019 | Expert opinion |
| 52. Cho E, Yoo S-L, Kang Y, Lee JH. Reimbursement and pricing of regenerative medicine in South Korea: key factors for achieving reimbursement. Regenerative Medicine. 2020;15(4):1550-60. doi:10.2217/rme-2020-0035. | 2020 | Expert opinion |
| 53. Mahalatchimy A. Reimbursement of Cell-Based Regenerative Therapy in the Uk and France. Med Law Rev. 2016;24(2):234-58. doi:10.1093/medlaw/fww009. | 2016 | Review |
| 54. Garrison LP, Jackson T, Paul D, Kenston M. Value-Based Pricing for Emerging Gene Therapies: The Economic Case for a Higher Cost-Effectiveness Threshold. Journal of managed care & specialty pharmacy. 2019;25(7):793-9. doi:10.18553/jmcp.2019.18378. | 2019 | Expert opinion |
| 55. Spoors J, Miners A, Cairns J, Palnoch D, Summerfield A, McEntee J et al. Payer and Implementation Challenges with Advanced Therapy Medicinal Products (ATMPs). BioDrugs. 2020. doi:10.1007/s40259-020-00457-4. | 2020 | Expert opinion |
| 56. Pearson SD, Ollendorf DA, Chapman RH. New Cost-Effectiveness Methods to Determine Value-Based Prices for Potential Cures: What Are the Options? Value Health. 2019;22(6):656-60. doi:10.1016/j.jval.2019.01.012. | 2019 | Financial models |
| 57. Yeung K, Suh K, Garrison LP, Jr., Carlson JJ. Defining and Managing High-Priced Cures: Healthcare Payers' Opinions. Value Health. 2019;22(6):648-55. doi:10.1016/j.jval.2018.11.012. | 2019 | Survey or interview |
| 58. Husereau D. How do we value a cure? Expert Rev Pharmacoecon Outcomes Res. 2015;15(4):551-5. doi:10.1586/14737167.2015.1039519. | 2015 | Expert opinion |
| 59. Faulkner E, Spinner DS, Ringo M, Carroll M. Are Global Health Systems Ready for Transformative Therapies? Value Health. 2019;22(6):627-41. doi:10.1016/j.jval.2019.04.1911. | 2019 | Expert opinion |
| [60. Towse A, Fenwick E. Uncertainty and Cures: Discontinuation, Irreversibility, and Outcomes-Based Payments: What Is Different About a One-Off Treatment? Value in Health. 2019;22(6):677-83. doi:https://doi.org/10.1016/j.jval.2019.03.013.](https://doi.org/10.1016/j.jval.2019.03.013) | 2019 | Financial models |
| 61. Salzman R, Cook F, Hunt T, Malech HL, Reilly P, Foss-Campbell B et al. Addressing the Value of Gene Therapy and Enhancing Patient Access to Transformative Treatments. Mol Ther. 2018;26(12):2717-26. doi:10.1016/j.ymthe.2018.10.017. | 2018 | Expert opinion |
| 62. Touchot N, Flume M. The payers' perspective on gene therapies. Nat Biotechnol. 2015;33(9):902-4. doi:10.1038/nbt.3332. | 2015 | Survey or interview |
| 63. de Lima Lopes G, Nahas GR. Chimeric antigen receptor T cells, a savior with a high price. Chin Clin Oncol. 2018;7(2):21. doi:10.21037/cco.2018.04.02. | 2018 | Expert opinion |
| 64. Champion AR, Lewis S, Davies S, Hughes DA. Managing access to advanced therapy medicinal products: Challenges for NHS Wales. Br J Clin Pharmacol. 2020. doi:10.1111/bcp.14286. | 2020 | Expert opinion |
| 65. Barlow JF, Yang M, Teagarden JR. Are Payers Ready, Willing, and Able to Provide Access to New Durable Gene Therapies? Value Health. 2019;22(6):642-7. doi:10.1016/j.jval.2018.12.004. | 2019 | Survey or interview |
| 66. Patel N, Farid SS, Morris S. How should we evaluate the cost-effectiveness of CAR T-cell therapies? Health Policy and Technology. 2020. doi:10.1016/j.hlpt.2020.03.002. | 2020 | Expert opinion |
| 67. Rose JB, Williams DJ. The UK relative to other single payer-dominated healthcare markets for regenerative medicine therapies. Regenerative Medicine. 2012;7(3):429-38. doi:10.2217/rme.11.125. | 2012 | Survey or interview |
| [68. Corporation R. Avoiding the Tragedy of the Commons in Health Care Policy Options for Covering High-Cost Cures. 2016. https://www.rand.org/pubs/perspectives/PE190.html.](https://www.rand.org/pubs/perspectives/PE190.html) | 2016 | Financial models |
| 69. Peacock SJ, Regier DA, Raymakers AJN, Chan KKW. Evidence, values, and funding decisions in Canadian cancer systems. Healthc Manage Forum. 2019;32(6):293-8. doi:10.1177/0840470419870831. | 2019 | Review |
| 70. Hanna E, Toumi M, Dussart C, Borissov B, Dabbous O, Badora K et al. Funding breakthrough therapies: A systematic review and recommendation. Health Policy. 2018;122(3):217-29. doi:10.1016/j.healthpol.2017.11.012. | 2018 | Systematic review |
| 71. Yeung K, Suh K, Basu A, Garrison LP, Bansal A, Carlson JJ. Paying for Cures: How Can We Afford It? Managed Care Pharmacy Stakeholder Perceptions of Policy Options to Address Affordability of Prescription Drugs. Journal of managed care & specialty pharmacy. 2017;23(10):1084-90. doi:10.18553/jmcp.2017.23.10.1084. | 2017 | Survey or interview |
| 72. Diana I. Brixner ME, Louis P. Garrison, Bengt Jönsson, Peter J. Neumann and Isao Kamae. Regenerative Medicine and Health Technology Assessment: Vision and Challenges. Jacobs Journal of Regenerative Medicine. 2016;1(13):14. | 2016 | Review |

Note: key articles highlighted in blue colure. The order of articles is not aligned with the order of references in the manuscript.

## Table 3: Details of the excluded articles (N=15)

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| --- | --- |
| **Title** | **Reasons for exclusion** |
| Kirkner RM. Must Sky-High Prices 'Come on Down' Before the Price Is Right? Manag Care. 2018 Jul;27(7):16-19. | Excluded-not related to RMs |
| Bandeiras C, Cabral JMS, Gabbay RA, Finkelstein SN, Ferreira FC. Bringing Stem Cell-Based Therapies for Type 1 Diabetes to the Clinic: Early Insights from Bioprocess Economics and Cost-Effectiveness Analysis. Biotechnol J. 2019 Aug;14(8):e1800563. | Excluded-hypothetical economic models not implemented |
| Pirnay JP, Vanderkelen A, De Vos D, Draye JP, Rose T, Ceulemans C, Ectors N, Huys I, Jennes S, Verbeken G. Business oriented EU human cell and tissue product legislation will adversely impact Member States' health care systems. Cell Tissue Bank. 2013 Dec;14(4):525-60. | Excluded-regulatory perspective |
| Montazerhodjat V, Weinstock DM, Lo AW. Buying cures versus renting health: Financing health care with consumer loans. Sci Transl Med. 2016 Feb 24;8(327):327ps6. | Excluded-not related to RMs |
| Tarnowski J, Krishna D, Jespers L, Ketkar A, Haddock R, Imrie J, Kili S. Delivering advanced therapies: the big pharma approach. Gene Ther. 2017 Sep;24(9):593-598. | Excluded-manufacturing issues |
| Ekmekci PE, Güner MD. Do Fair and Just Systems Require Compensation for the Disadvantages of the Natural Lottery? A Discussion on Society's Duties on the Provision of Gene Therapy. Balkan J Med Genet. 2019;22(1):69-74. | Excluded-not for market access issues |
| Basu A, Subedi P, Kamal-Bahl S. Financing a Cure for Diabetes in a Multipayer Environment. Value Health. 2016 Sep-Oct;19(6):861-868. | Excluded-payment models out of scope |
| Calmels B, Mfarrej B, Chabannon C. From clinical proof-of-concept to commercialization of CAR T cells. Drug Discov Today. 2018 Apr;23(4):758-762. | Excluded-manufacturing issues |
| Salter B, Zhou Y, Datta S. Health consumers and stem cell therapy innovation: markets, models and regulation. Regen Med. 2014 May;9(3):353-66. | Excluded-regulatory perspective |
| Iskrov G, Dermendzhiev S, Miteva-Katrandzhieva T, Stefanov R. Health Economic Data in Reimbursement of New Medical Technologies: Importance of the Socio-Economic Burden as a Decision-Making Criterion. Front Pharmacol. 2016 Aug 17;7:252. | Excluded-not related to RMs |
| Prasad V. Immunotherapy: Tisagenlecleucel - the first approved CAR-T-cell therapy: implications for payers and policy makers. Nat Rev Clin Oncol. 2018 Jan;15(1):11-12. | Excluded-duplicative |
| Cutler D, Ciarametaro M, Long G, Kirson N, Dubois R. Insurance switching and mismatch between the costs and benefits of new technologies. Am J Manag Care. 2017 Dec;23(12):750-757. | Excluded-not related to RMs |
| Hyman DA, Silver C. Pricing and Paying for Cancer Drugs: Policy Options for Fixing A Broken System. Cancer J. 2020 Jul/Aug;26(4):298-303. | Excluded-not related to RMs |
| Waldeck AR, Botteman MF, White RE, van Hout BA. The Importance of Economic Perspective and Quantitative Approaches in Oncology Value Frameworks of Drug Selection and Shared Decision Making. J Manag Care Spec Pharm. 2017 Jun;23(6-a Suppl):S6-S12. | Excluded-not related to RMs |
| Hlávka JP, Mattke S, Wilks A. The Potential Benefits of Deferred Payment for a Hypothetical Gene Therapy for Congestive Heart Failure: A Cost-Consequence Analysis. Appl Health Econ Health Policy. 2020 Oct;18(5):669-677. | Excluded-payment models out of scope |

## Figure. 1 Additional values associated with regenerative medicines



One-off treatments protect patients from frequently hospital visiting for induction or maintenance treatment.

RMs potentially provide a ‘curative’ treatment for life-threatening diseases or individuals near end of life

Severely ill patients may be willing to trade off some survival (e.g., undertaking a risky procedure) for a chance at a “cure”

RMs may bring values to equity issues by targeting rare diseases with high unmet needs, thus those unlucky patients previously suffered from untreatable diseases now become treatable

RMs through its novel mechanism of action may unlock the potential for future generation products and stimulate the future discovery efforts by improving the knowledge about the underlying causes of diseases.

Rare, genetic diseases may have disease onset in the new-born or childhood, thus ‘curative’ RMs could significantly increase their future educational and employment opportunities, and productivity in the workplace

Reduce caregiver burdens and improve the well-being of family members