

Non-Emergency Medical Transportation Special Supplemental Benefits for the Chronically Ill Supporting Bibliography

Introduction

This bibliography represents a comprehensive compilation of research and literature on the impact of non-emergency medical transportation (NEMT) on healthcare access and outcomes. This collection of resources serves as a valuable tool for Medicare Advantage organizations (MAOs) subject to a CMS final rule requiring the production of a bibliography of each special supplemental benefit for the chronically ill (SSBCI) that they offer, pursuant to 42 CFR 422.102(f)(3). CMS regulations allow NEMT to be offered as an SSBCI pathway; however, MAOs typically offer NEMT as a mandatory or optional supplemental benefit pursuant to 42 CFR 422.102(c)(2)(i)(A) or (B). MAOs are not required to compile a bibliography for non-SSBCI supplemental benefits.

Nonetheless, this resource may be useful to other stakeholders aiming to enhance policies and practices surrounding NEMT, ensuring that the benefits of NEMT continue to be explored and evaluated to support improved health outcomes and accessibility for all.

Bibliography

- Adelberg, M., Salber, P., Pruisner, T., Cohen, M., & Dobosenski, A. (2018) Non-Emergency Medical Transportation: Findings from a Return on Investment Study. Medical Transportation Access Coalition. <https://mtaccoalition.org/wp-content/uploads/2018/07/NEMT-ROI-Methodology-Paper.pdf>
Annotation: The study quantitatively assesses how NEMT contributes to cost savings by reducing missed medical appointments and subsequent expensive medical interventions like hospitalizations. Focusing on specific chronic conditions like kidney disease requiring dialysis and diabetic wound care, the study found a significant positive ROI, suggesting that NEMT not only facilitates critical access to healthcare but also results in substantial healthcare cost savings.
- Arcury, T. A., Preisser, J. S., Gesler, W. M., & Powers, J. M. (2005). Access to transportation and health care utilization in a rural region. *The Journal of rural health: official journal of the American Rural Health Association and the National Rural Health Care Association*, 21(1), 31–38. <https://doi.org/10.1111/j.1748-0361.2005.tb00059.x>
Annotation: Access to transportation significantly impacts healthcare utilization in rural areas, with individuals having better transportation options like a driver's license or support from family and friends attending more healthcare visits, highlighting the need for targeted policies to overcome geographic barriers.
- Becerra, X. (2021). Non-Emergency Medical Transportation in Medicaid, 2018-2020: Report to Congress as Required by the Consolidated Appropriations Act, 2021 (Public Law 116-260). U.S. Department of Health and Human Services. <https://www.medicaid.gov/medicaid/benefits/downloads/nemt-rtc.pdf>
Annotation: This report provides a detailed examination of the use and administration of NEMT in Medicaid from 2018 to 2020, highlighting its essential role in ensuring access to healthcare for beneficiaries and identifying key areas for program improvement. T-MSIS Analytic Files data only provide information on the services that Medicaid beneficiaries receive meaning data is not available to assess the amount of unmet beneficiary need for NEMT, missed appointments, or on any foregone care due to lack of transportation.

- Berkowitz, S. A., Ricks, K. B., Wang, J., Parker, M., Rimal, R., & DeWalt, D. A. (2022). Evaluating A Nonemergency Medical Transportation Benefit For Accountable Care Organization Members: Article examines a non-emergency medical transportation benefit for Accountable Care Organization members. *Health Affairs*, 41(3), 406-413. <https://doi.org/10.1377/hlthaff.2021.00449>
Annotation: Participation in the transportation program was associated with a greater number of per person per year outpatient visits (9.2) and higher outpatient spending (\$4,420) than in a comparison group. Qualitative analyses revealed that participants were highly satisfied with the program, reporting that it eased financial burdens and made them feel safer, more empowered, and better able to take control of their health. These findings suggest that although transportation programs are commonly introduced as ways to contain healthcare spending, it may be better to think of them as programs to improve healthcare access for people facing difficult circumstances.
- Chaiyachati, K. H., Hubbard, R. A., Yeager, A., Mugo, B., Shea, J. A., Rosin, R., & Grande, D. (2018). Rideshare-Based Medical Transportation for Medicaid Patients and Primary Care Show Rates: A Difference-in-Difference Analysis of a Pilot Program. *Journal of general internal medicine : JGIM*, 33(6), 863-868. <https://doi.org/10.1007/s11606-018-4306-0>
Annotation: The study by Chaiyachati et al. (2018) evaluated the impact of a rideshare-based transportation service on primary care appointment attendance among Medicaid patients. The pilot program demonstrated a significant increase in show rates at the practice offering the rideshare service, suggesting that rideshare-based medical transportation can effectively improve primary care access for Medicaid patients, although larger studies are needed to confirm these findings. The study noted some limitations and potential drawbacks. The intervention required infrastructure, such as staff to coordinate rides, which may not be available in all settings. There was a low uptake of the service, with only 22% of eligible patients using the rideshare option, indicating potential issues with acceptability or awareness. Additionally, the study highlighted that the increased appointment show rates might partly be due to the more intensive reminder process rather than the rideshare service itself. Furthermore, the intervention did not include patients with mobility challenges or non-English speakers, which could limit its generalizability.
- Chan, K. E., Thadhani, R. I., & Maddux, F. W. (2014). Adherence barriers to chronic dialysis in the United States. *Journal of the American Society of Nephrology: JASN*, 25(11), 2642–2648. <https://doi.org/10.1681/ASN.2013111160>
Annotation: Missed hemodialysis sessions due to barriers like inadequate transportation significantly increase hospitalizations, emergency room visits, and ICU admissions, underscoring the need to address access issues to improve patient outcomes.
- Dugan, K. (2023). Understanding the Role of Non-Emergency Medical Transportation for Medicaid Beneficiaries by Race and Ethnicity. Medical Transportation Access Coalition (MTAC), Faegre Drinker Consulting, & National Opinion Research Center (NORC). https://mtaccoalition.org/wp-content/uploads/2023/01/MTACresearchpaper12.14.22_FINAL-2.pdf
Annotation: The analysis, which includes data from the Transformed Medicaid Statistical Information System (T-MSIS) for the year 2019, explores disparities in access to NEMT services. It highlights how essential NEMT is in providing access to necessary medical care, particularly for those with severe chronic conditions. The findings suggest that

differences in usage rates across demographic groups may indicate underlying disparities in access to healthcare services, prompting recommendations for policy enhancements to ensure equitable access to NEMT.

- Fraade-Blanar, L., Koo, T., & Whaley, C. M. (2022). Going to the Doctor: Rideshare as Nonemergency Medical Transportation. *Rand Health Q*, 9(4), 3.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9519099/#:~:text=The%20authors%20argue%20that%20policymakers,niche%20of%20the%20NEMT%20ecosystem%2C>
Annotation: The authors look closely at rideshare specifically in the NEMT context. They identify key populations for whom, and types of rides for which, NEMT could be an appropriate model, the role of rideshare in NEMT, and the policies that support such a role. The authors conclude by considering how best to support NEMT broadly and optimize rideshare within NEMT specifically through policy and process.
- Graboyes, E. M., Chaiyachati, K. H., Sisto Gall, J., Johnson, W., Krishnan, J. A., McManus, S. S., ... & Yabroff, K. R. (2022). Addressing transportation insecurity among patients with cancer. *JNCI: Journal of the National Cancer Institute*, 114(12), 1593-1600.
<https://doi.org/10.1093/jnci/djac134>
Annotation: This analysis explores transportation insecurity as a major barrier to cancer care. Patients with cancer often face challenges due to frequent appointments, treatment intensity, and financial strain. Limited access to transportation can negatively impact treatment adherence, outcomes, and healthcare disparities. The authors discuss ongoing efforts to identify at-risk patients and propose solutions at various levels.
- Giglierano, V., Adelberg, M., Chaiyachati, K. H., & Murray, T. (2022). Considering the Ideal Role for Non-Emergency Transportation in Addressing Social Determinants of Health in Medicaid and Medicare Populations. Faegre Drinker Consulting & Medical Transportation Access Coalition. <https://mtaccoalition.org/wp-content/uploads/2022/02/Considering-the-Ideal-Role-for-Transportation-2021.12.21-final.pdf>
Annotation: The paper outlines the historical context and recent expansions within Medicare Advantage plans that incorporate NEMT for a diverse range of services, demonstrating the potential for improved health outcomes by addressing transportation barriers. The study finds transportation utilizers tend to be sicker than nonutilizers. This suggests that NEMT expenditures cluster toward members with the greatest medical needs; the greater utilization of primary care physicians by transportation utilizers might also lead to more-complete risk adjustment coding, in turn contributing to a more holistic view of beneficiary circumstances and potential improvement in care management.
- He, Q., Hawkins, G. T., Park, C., Han, S., LaManna, J. B., & Ng, B. P. (2024). Patient attitudes, experiences, and satisfaction with healthcare and office visit utilization among Medicare beneficiaries with type 2 diabetes. *Chronic illness*, 20(1), 64-75.
<https://doi.org/10.1177/17423953231158139>
Annotation: This study found that among Medicare beneficiaries with type 2 diabetes, those dissatisfied with the ease and convenience of getting to healthcare providers from home were less likely to attend regular office visits. Transportation challenges significantly impact healthcare utilization, highlighting the need for improved transportation options to ensure timely and effective diabetes care for older adults.

- Henning-Smith, C. E., Gonzales, G., & Shippee, T. P. (2016). Barriers to Timely Medical Care for Older Adults by Disability Status and Household Composition. *Journal of disability policy studies*, 27(2), 116-127. <https://doi.org/10.1177/1044207316637547>
Annotation: Older adults living alone with disabilities have elevated odds of delayed care for any reason. These findings can help target interventions to improve healthcare access through programs such as NEMT.
- Kumar, D., Zamani, C., Martin, E., Kolevska, T., Payne, J., Sheehan, T. R., Gordon, N. P., Egorova, O., Kroenke, C., Neeman, E., & Liu, R. (2022). Prevalence of social risks among oncology patients in an integrated health care delivery system. *Journal of clinical oncology*, 40(28_suppl), 128-128. https://doi.org/10.1200/JCO.2022.40.28_suppl.128
Annotation: Social risks and needs can affect oncology treatment and outcomes, and some may be amenable to intervention before or during treatment. The authors surveyed Kaiser Permanente Northern California oncology patients to estimate the prevalence of social risks among cancer patients. Approximately 24% said they had no one to help them with daily activities (shopping, cooking, transportation, etc.), 8% reported the need for more help with daily activities, and 8% indicated that lack of transportation made it hard to get to medical appointments.
- Lyons, P. G., Ramsey, B. A., Welker, M., Guinn, M., Ernest, J. K., Kosydor, A., & Maddox, T. M. (2021). Implementation of a non-emergent medical transportation programme at an integrated health system. *BMJ health & care informatics*, 28(1), e100417. <https://doi.org/10.1136/bmjhci-2021-100417>
Annotation: BJC HealthCare's implementation of a single-vendor NEMT solution validates the need for NEMT at large healthcare organizations, the geographical challenges to establishing NEMT organization-wide, and the importance of baseline data and stakeholder engagement.
- MacLeod, K. E., Ragland, D. R., Prohaska, T. R., Smith, M. L., Irmiter, C., & Satariano, W. A. (2015). Missed or Delayed Medical Care Appointments by Older Users of Nonemergency Medical Transportation. *The Gerontologist*, 55(6), 1026-1037. <https://doi.org/10.1093/geront/gnu002>
Annotation: This study identified factors associated with canceling NEMT appointments among older adult Medicaid patients. Over half of the canceled trips were attributed to client reasons (e.g., no show, refusal). Regularly scheduled trips were less likely to be canceled which can be addressed by NEMT.
- National Academies of Sciences, Engineering, and Medicine (2016). *Exploring Data and Metrics of Value at the Intersection of Health Care and Transportation: Proceedings of a Workshop*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/23638>
Annotation: The workshop organized by the National Academies of Sciences, Engineering, and Medicine in June 2016 explored the significant role of transportation in public health and how healthcare organizations are expanding their focus to address social determinants of health, including transportation needs.
- Razon, N. a., Gottlieb, L. M., & Frazee, T. (2023). Essential not Supplemental: Medicare Advantage Members' Use of Non-Emergency Medical Transportation (NEMT). *Journal of general internal medicine : JGIM*, 38(16), 3566-3573. <https://doi.org/10.1007/s11606-023-08321-1>

Annotation: Participants described NEMT as a valued service essential to their ability to access health care. They suggested ways to increase service flexibility and reliability that could inform future NEMT policy and practice. As health systems and payers learn how to best address social risks, particularly as the US population ages, authors' findings underscore the importance of NEMT services and highlight opportunities to advance comprehensive transportation solutions for MA participants.

Ruggiano, N., Shtompel, N., Whiteman, K., & Sias, K. (2017). Influences of Transportation on Health Decision-Making and Self-Management Behaviors among Older Adults with Chronic Conditions. *Behavioral medicine (Washington, D.C.)*, 43(1), 61-70.

<https://doi.org/10.1080/08964289.2015.1065788>

Annotation: This study interviewed 37 older adults with chronic conditions in Florida to examine their perspectives about how transportation influences their chronic care self-management. The data were systematically analyzed for themes. The thematic findings revealed how transportation intersected with participants' everyday experiences with chronic health self-management, how they evaluated transportation as part of the process of making decisions about health, and how creative problem-solving about transportation became an additional health self-management activity for addressing their complex needs. The findings revealed that the context of transportation goes beyond a basic facilitator/barrier for health and enhances understanding of how transportation services and policies may be changed to better address the needs of older adults with chronic conditions.

Shekelle, P. G., Begashaw, M. M., Miake-Lye, I. M., Booth, M., Myers, B., & Renda, A. (2022). Effect of interventions for non-emergent medical transportation: a systematic review and meta-analysis. *BMC public health*, 22(1), 799-799. <https://doi.org/10.1186/s12889-022-13149-1>

Annotation: This systematic review and meta-analysis by Shekelle et al. (2022) found that interventions aimed at reducing barriers to NEMT significantly decreased missed appointments, but there was insufficient evidence to draw conclusions about their impact on costs, overall healthcare utilization, or health outcomes. Only one study addressed non-medical transportation, indicating a need for further research in this area.

Smith, M. L., Prohaska, T. R., MacLeod, K. E., Ory, M. G., Eisenstein, A. R., Ragland, D. R., Irmiter, C., Towne, S. D., & Satariano, W. A. (2017). Non-Emergency Medical Transportation Needs of Middle-Aged and Older Adults: A Rural-Urban Comparison in Delaware, USA. *International journal of environmental research and public health*, 14(2), 174. <https://doi.org/10.3390/ijerph14020174>

Annotation: Among a sample who were eligible for subsidized NEMT and who utilized this service, rural trips tended to be longer and, therefore, higher in cost. Over 50% of trips were made for dialysis highlighting the need to address prevention and, potentially, health service improvements for rural dialysis patients.

Smith, M. L., Towne, J. S. D., Bergeron, C. D., Zhang, D., McCord, C., Mier, N., & Goltz, H. H. (2019). Geographic disparities associated with travel to medical care and attendance in programs to prevent/manage chronic illness among middle-aged and older adults in Texas. *Rural and remote health*, 19(4), 1-9. <https://doi.org/10.22605/RRH5147>

Annotation: While further distances to healthcare providers were found to be a protective factor based on the utilization of community-based resources, rural residents were less likely to attend a program to better manage their chronic conditions, potentially choosing to use long-distance travel to address urgent medical needs rather than focusing on

prevention and management of their conditions. Important policy and programmatic efforts are needed to increase the reach of chronic disease self-management programs and other community services and resources in rural areas and to reduce rural inequities.

Solomon, E. , Wing, H. , Steiner, J. & Gottlieb, L. (2020). Impact of Transportation Interventions on Health Care Outcomes. *Medical Care*, 58 (4), 384-391.

<https://doi.org/10.1097/MLR.0000000000001292>

Annotation: The systematic review by Solomon et al. (2019) evaluated the impact of non-emergency medical transportation (NEMT) interventions on health and healthcare utilization. The review found that, while transportation services can potentially reduce missed appointment rates, the evidence is mixed and most studies are of low quality. Moreover, the review noted that transportation assistance might be more effective when combined with other interventions addressing social and economic barriers.

Thomas, L. V., & Wedel, K. R. (2014). Nonemergency Medical Transportation and Health Care Visits among Chronically Ill Urban and Rural Medicaid Beneficiaries. *Social work in public health*, 29(6), 629-639. <https://doi.org/10.1080/19371918.2013.865292>

Annotation: Medicaid beneficiaries who use NEMT services are significantly more likely to make the recommended number of annual visits for the management of chronic conditions than those who do not use NEMT.

Vandermause, R., Neumiller, J. J., Gates, B. J., David, P., Altman, M., Healey, D. J., Benson, P., Sunwold, D., Burton, G., Tuttle, K. R., & Corbett, C. F. (2016). Preserving Self: Medication-Taking Practices and Preferences of Older Adults With Multiple Chronic Medical Conditions. *Journal of nursing scholarship*, 48(6), 533-542.

<https://doi.org/10.1111/jnu.12250>

Annotation: Common reasons participants did not take medications as prescribed included tolerability, transportation, access to medications, and forgetting.

Varghese, S. A. (2020). Barriers to Transportation: A Study on Patients with End-Stage Renal Disease Receiving in-Center Hemodialysis. *Journal of social service research*, 46(6), 801-812. <https://doi.org/10.1080/01488376.2019.1666080>

Annotation: NEMT through Medicaid and the complementary paratransit services under the Americans with Disabilities Act 1990, were identified as the two major sources of transportation services for end-stage renal disease patients. The results of the study indicated the prevalence of barriers to transportation for patients with end-stage renal disease. The barriers pose a risk of shortening or missing dialysis appointments affecting dialysis patients' health, leading to an increase in hospitalization and mortality rates.

Wolfe, M. K., McDonald, N. C., & Holmes, G. M. (2020). Transportation Barriers to Health Care in the United States: Findings From the National Health Interview Survey, 1997-2017. *American journal of public health* (1971), 110(6), 815-822.

<https://doi.org/10.2105/AJPH.2020.305579>

Annotation: Transportation barriers to health care have a disproportionate impact on individuals who are poor and who have chronic conditions. Our study documents a significant problem in access to health care during a time of rapidly changing transportation technology.