Association of Social Support Source and Size of Social Support Network With All-Cause Mortality in a National Prospective Cohort

To the Editor: We read with great interest the recent study on the influence of social support source and size of social network on all-cause mortality by Becofsky et al[1] published in the July 2015 issue of *Mayo Clinic Proceedings*. Using data from the Aerobics Center Longitudinal Study (mean age of participants, 53.0 years) located in Dallas, Texas, they examined the association of the size of social network (number of friends) and source of social support (spouse/partner, relatives, friends, and overall relationships) with all-cause mortality. They found that those receiving emotional support from relatives or spouse/partner had a 19% lower risk of all-cause mortality; those reporting contact with 6 to 7 friends weekly (vs 0-1) had a 24% lower risk of dying. These findings, and those of other investigators,[2] underscore the importance of initiating and maintaining social support.

As a supportive effort to complement the findings of Becofsky et al,[1] we examined the association of sources of social support and size of social network with all-cause mortality in a nationally representative sample, with emphasis on older adults (aged 60 years and older) and a comprehensive evaluation of sources of social support, uncommon in this literature.

Participants and Methods. Data from the 1999-2008 National Health and Nutrition Examination Survey were employed, with follow-up through 2011. Participants included 7441 adults aged 60 years and older (entry age for social support questions); 150 died during the first year of follow-up, leaving a study cohort of 7291 participants. Participants were asked, "Can you count on anyone to provide you with emotional support such as talking over problems or helping you make a difficult decision?" and "In the last 12 months, who was the most helpful in providing you with emotional support?" Sources evaluated include spouse, son, daughter, sibling, neighbor, co-worker, church member, professional, and friend. Regarding size of social network, participants were asked, "In general, how many close friends do you have?"

Results. The median follow-up was 77 months (range, 12-153 months); 1818 deaths occurred in 593,467 person-months accrued, for an incidence rate of 3.06 deaths per 1000 person-months. In a Cox proportional hazards model (proportional assumption not violated [P=.62]; Harrell C statistic, 0.76) using survey-based procedures, only *spousal* support (3411 participants had spousal support; adjusted hazard ratio [HR], 0.77; 95% CI, 0.68-0.87) was associated with reduced all-cause mortality; covariates included age, sex, race/ethnicity, measured body mass index, total cholesterol level, physical activity (yes/no) in past 30 days, smoking status, and physician-diagnosed congestive heart failure, coronary artery disease, stroke, cancer, hypertension, and diabetes.

Regarding size of social network, compared with those who had 0 close friends (n=302), those with 1 to 2 close friends (n=1285; adjusted HR, 0.67; 95% CI, 0.50-0.90), 3 to 4 close friends (n=1489; adjusted HR, 0.73; 95% CI, 0.55-0.98), 5 close friends (n=961; adjusted HR, 0.70; 95% CI, 0.52-0.93), and 6 or more close friends (n=3254; adjusted HR, 0.62; 95% CI, 0.46-0.83) had a reduced risk of all-cause mortality; results were unchanged when we excluded participants with the aforementioned comorbid illnesses.

Conclusion. These findings among a national sample of older US adults confirm and complement the findings of Becofsky et al that social support and size of social network are associated with all-cause mortality. Our findings specifically highlight that spousal support and a greater size of social network are linked with better survival among this vulnerable population.

Paul D. Loprinzi, PhD
Center for Health Behavior Research
Oxford, MS

Abdulrahman M. El-Sayed, MD, DPhil
Mailman School of Public Health
New York, NY

1. Becofsky KM, Shook RP, Sui X, Wilcox S, Lavie CJ, Blair SN. Influence of the source of social support and size of social network on all-cause mortality. *Mayo Clin Proc*. 2015;90(7):895-902.
2. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: a meta-analytic review. *PLoS Med*. 2010;7(7):e1000316.

http://dx.doi.org/10.1016/j.mayocp.2015.08.019

In reply—Association of Social Support Source and Size of Social Support Network With All-Cause Mortality in a National Prospective Cohort

We greatly appreciate the letter to the editor submitted by Loprinzi and El-Sayed in response to our recent article.[1] In their letter, they present the results of an epidemiological investigation into the influence of social relations on all-cause mortality in a nationally representative sample of older adults from the National Health and Nutrition Examination Survey. They report that perceiving spousal support and having one or more close friends were protective against mortality. These findings

complement our findings from the Aerobics Center Longitudinal Study, as well as those from another recent report from the Netherlands of lower mortality risk among older adults reporting large, diverse social networks.[2] Taken together, these findings serve as a reminder that humans are innately social beings and that social functioning is as important as traditional biological and behavioral risk factors in determining health and well-being.

As epidemiological evidence continues to mount, efforts must shift to clinical assessment and intervention. As documented in both our article[1] and the letter by Loprinzi and El-Sayed, social relations can be assessed with a few simple questions (eg, "Can you count on anyone to provide you with emotional support such as talking over problems or helping you make a difficult decision?" and "How many close friends do you have?"). In order for individuals reporting low levels of support and/or few friends to receive evidence-based "treatment" options, individual-level interventions must be developed and tested. One novel approach that might simultaneously improve both perceptions of support and social integration could be the facilitation of pet adoption because pets can both provide companionship and serve as a catalyst for social interaction.[3,4] This may be one instance in which we can create (rather than improve) an intimate, supportive relationship for individuals with few existing family members or friends while also motivating additional social engagement in the community.

The findings reported by Loprinzi and El-Sayed in their letter to the editor complement our previous findings and contribute to the impressive evidence base on the importance of social relations to survival. We hope this discussion will motivate the establishment of clinical assessment procedures and the development of novel interventions to promote health and longevity.

Katie M. Becofsky, PhD
Weight Control and Diabetes Research Center
The Miriam Hospital/Alpert Medical School of Brown University
Providence, RI

Robin P. Shook, PhD
Iowa State University
Ames, IA

1. Becofsky KM, Shook RP, Sui X, Wilcox S, Lavie CJ, Blair SN. Influence of the source of social support and size of social network on all-cause mortality. *Mayo Clin Proc*. 2015;90(7):895-902.
2. Ellwardt L, van Tilburg T, Aartsen M, Wittek R, Steverink N. Personal networks and mortality risk in older adults: a twenty-year longitudinal study. *PLoS One*. 2015;10(3):e0116731.
3. McNicholas J, Gilbey A, Rennie A, Ahmedzai S, Dono JA, Ormerod E. Pet ownership and human health: a brief review of evidence and issues. *BMJ*. 2005;331(7527):1252-1254.
4. Wood L, Martin K, Christian H, et al. The pet factor—companion animals as a conduit for getting to know people, friendship formation and social support. *PLoS One*. 2015;10(4):e0122085.

http://dx.doi.org/10.1016/j.mayocp.2015.08.018

Risk of Disseminated Varicella Zoster in Immunosuppressed Patients Receiving Zoster Vaccination

To the Editor: The report by Cheetham et al[1] in the July 2015 issue of *Mayo Clinic Proceedings* uniquely addresses the risk of disseminated varicella zoster in patients taking immunosuppressant drugs at the time of zoster vaccination. For those of us providing care to immunosuppressed patients, 2 key questions are (1) whether immunosuppression reduces the efficacy of vaccination and (2) whether there are any risks specifically related to the use of a live attenuated vaccine. The first question is not addressed in the study by Cheetham et al, but the fact that there were no cases of disseminated zoster in this study's 4826 immunosuppressed patients who were vaccinated provides reassuring evidence that the risk of dissemination is low in this population. The results are valuable because prior reports of disseminated herpes zoster following vaccination of immunocompromised patients do not address causality or quantify risk.

The stated conclusion of the current study, however, is perplexing. These data are said to "support the current recommendations for zoster vaccination in that patients should withhold their immunosuppressant drugs for 4 weeks before immunization." Rather, the observation that there were no cases of disseminated zoster among immunosuppressed patients provides no rationale for stopping immunosuppressive therapy before vaccination. In fact, in combination with data presented confirming that immunosuppression increases the risk of herpes zoster even after stopping immunosuppressive therapy, these results arguably support the opposite conclusion—that it would be prudent to vaccinate immunosuppressed patients as soon as possible to minimize the time-dependent risk of herpes zoster. Moreover, the data reported no evidence to support a 4-week delay compared with any other arbitrarily chosen interval before vaccination.

The observation that there is increased risk of herpes zoster during a specific time frame following vaccination in *current* relative to *remote* users of immunosuppressants should not be misunderstood as a rationale for withholding therapy before vaccination. This reasoning is correct only if vaccination is the cause of the increased risk, a result that would be counterintuitive for an intervention intended to prevent herpes zoster, and indeed, there were significantly fewer zosterlike rashes in the vaccine arm relative to placebo arm in the Zostavax Efficacy and Safety Trial during the 42 days post-vaccination.[2] Rather, this observation[1] presumably reflects the difference in background incidence rates for each population,[3] again leading to the