Health Care Utilization Outcomes for LifeCourse Patients

Karl Fernstrom, MPH; Rebecca Prenevost, MPH, PhD; TC Tong; Heather Britt, MPH, PhD; Division of Applied Research, Allina Health, Minneapolis, MN

Allina Health | LifeCourse™ *Listen. Honor. Guide.*

LIFECOURSE

- Builds upon an expanded set of palliative care domains to promote whole person care
- Uses a family-oriented approach to understand needs, leverage strengths, and empower families to effectively support their loved ones
- Asks patients and caregivers to articulate individualized goals and take part in decision making
- Includes a trained lay healthcare worker as the primary contact across settings and over time

BACKGROUND

Health systems in the U.S. are faced with increased utilization for patients in their last years of life. Care for patients with serious illness is complex and requires a greater number of clinicians and care settings. This can contribute to duplicative and unwanted medical procedures. As a large portion of the population approaches retirement, health systems must redouble efforts to better serve patients as they near the end of life.

RESEARCH OBJECTIVE

To evaluate the effects of a late life care model on healthcare utilization and cost in a large healthcare delivery system.

STUDY

LifeCourse is a patient-centered intervention which leverages a layperson care guide to build upon an expanded set of palliative care domains. Care guides meet with patients, their family members and clinicians to help patients articulate goals, take part in decision making, and connect with resources. LifeCourse is a non-randomized prospective study of 450 intervention and 452 usual care patients followed between October 2012 and August 2016. Patients and controls were selected based on diagnosis, disease progression, and comorbidity mix (Table 1).

ANALYSIS

Using zero-inflated negative binomial regression models we tested whether participation in LifeCourse resulted in decreased utilization on three outcomes – ED visits, inpatient days, and ICU stays. A subset of patients with total cost of care claims data available was selected from the full study sample for the cost analysis. Cost controls were selected from within the healthcare system's patient population and matched using propensity scores. To assess the potential impact of the intervention on cost, we examined expenditures in the follow-up period by applying multivariable gamma regression models with a log link to look at the average effect of the LifeCourse intervention on total cost of care compared to usual care.

Table 1. Patient baseline characteristics stratified by study group

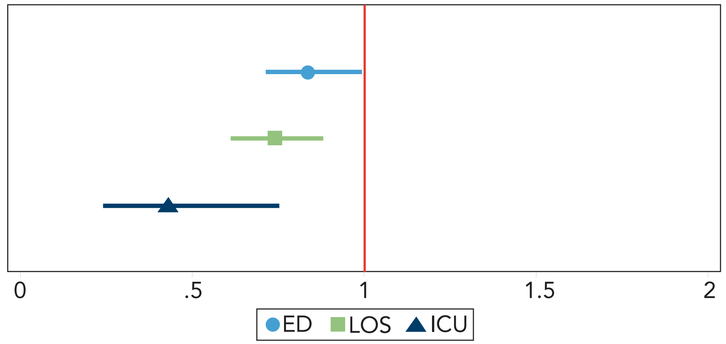
	Intervention (n = 450)	Usual Care (n = 452)	P-Value
Age, mean ± sd	78 ± 12	74 ± 13	<0.001
Comorbidity, mean ± sd	5 ± 2	5 ± 2	0.280
Female	51%	51%	0.843
Caucasian	95%	95%	0.988
Married or Living with Partner	45%	49%	0.181
Highest Level of Education			0.398
Non-Graduate, H.S. or GED	30%	35%	
4-year Graduate	46%	43%	
Graduate or Professional School	20%	18%	
Unknown	5%	4%	
Participant Location			<0.001
Home	71%	90%	
Assisted Living	12%	1%	
Nursing Home	14%	8%	
Unknown	3%	2%	
Primary Diagnosis			<0.001
Heart Failure	57%	69%	
Dementia	27%	14%	
Cancer	16%	17%	

FINDINGS

On average, patients in the intervention group experienced:

- 16% fewer ED visits (IRR = 0.84; 95% CI: 0.71-0.99)
- 27% fewer inpatient stays (IRR = 0.73; 95% CI: 0.61-0.88)
- 57% fewer ICU stays (IRR = 0.43; 95% CI: 0.24-0.75)

Figure 1. Selected utilization metrics for LifeCourse patients compared to usual care



The vertical reference line at 1 indicates no difference between groups. Points (95% CI) left of the reference line indicate lower utilization in LifeCourse patients compared to usual care.

Table 2. Hospice utilization prior to death

	U.S. (N=2.6M)	Allina Health (N=55,276)	LifeCourse (N=173)	Usual Care (N=81)	P-Value
Overall, %	42.8	17.3	48.6	43.2	0.426
Heart Failure		24.9	44.4	38.9	0.514
Cancer		32.8	58.8	56.5	0.863
Dementia		26.3	49.0	25.0	0.613
LOS, median days	18.7	18.0	27.5	17.0	0.041

All data are percent unless otherwise indicated. NHPCO estimates are for the 2013 calendar year. Allina EHR estimates are for patients with any hospice admission and a date of death in 2013 or later.

Table 3: Adjusted costs for LifeCourse participants versus propensity score matched controls

Sub-Group	Matched Payer Control	LifeCourse	Net Change	Mean Fup	Savings PMPM	P ValueFor Treatment
+LTCF (N = 531)	$43,658	$31,643	-$12,015	376	-$959	0.109
-LTCF (N = 427)	$50,194	$33,546	-$16,648	401	-$1,245	0.131

- The average length of follow-up for LifeCourse patients included in the GLM regression analysis was 376 days. Over that period, LifeCourse was associated with average adjusted net savings in total costs of $12,015 per patient (p=.109). This amounts to savings of approximately -$959 per patient per month followed compared with usual care

LIMITATIONS

- Utilization models reflect internal metrics only. Any healthcare utilization at external networks will be unmeasured
- Findings may not be representative of the experience for all patients. As a result, the findings should be interpreted with caution and cannot be reliably extrapolated to the entire population

CONCLUSION

Our findings suggest that when a whole-person approach to care is used and patients' preferences are known there is a beneficial impact on health care utilization and total cost of care in late-life.

ACKNOWLEDGEMENTS

The LifeCourse approach and study are funded by the Robina Foundation.