

# CMS-funded collaborative improved nursing home resident care and created return on investment

From 2015 to 2019, Healthcentric Advisors led the New England Nursing Home Quality Care Collaborative. Through the Collaborative, we engaged 756 nursing homes in all six New England states to help measurably improve the quality of care for their residents. This work, part of the Centers for Medicare & Medicaid Services (CMS) Quality Innovation Network-Quality Improvement Organization (QIN-QIO) contract, included:

- Leading state coalitions, such as the Massachusetts Antipsychotic Reduction Taskforce, as part of the National Partnership to Improve Dementia Care
- Sharing quarterly reports with data on each facility's quality measures and hospital readmissions to help facilities prioritize efforts, including graphical trends over time and comparisons with state and national rates
- Educating on evidence-based interventions and best practices for improving care and associated quality measures
- Providing virtual and onsite technical assistance
- Encouraging overarching quality improvement strategies, such as Quality Assurance and Performance Improvement (known as QAPI) and addressing staff stability challenges
- Engaging with leadership at the facility's corporate level to maintain communication and sustain efforts

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*The variety of educational options acknowledged nursing homes' differing preferences, schedules, needs, and capacities*

- webinars and in-person events
- online learning modules
- monthly calls for affinity groups

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## Quality Measures of Focus

CMS tasked the Nursing Home Quality Care Collaborative with supporting improvement on 13 key quality measures. The following five measures were focus areas of education and support in New England and have clear cost associations based on existing literature:

- Percentage of long-stay residents who got an antipsychotic medication
- Percentage of long-stay low-risk residents who lose control of their bowels or bladder
- Percentage of long-stay residents with a urinary tract infection
- Percentage of long-stay high-risk residents with pressure ulcers
- Percentage of long-stay residents who lose too much weight

## Return on Investment

Based on these measures, we calculated a total cost avoidance of **\$28,684,913** and a return on investment (ROI) of **\$5.68 per \$1 spent** by the funder, CMS, among the participating homes (Table 1). The total spending in 2017 dollars (7% discount rate) was \$5,052,184. See the Methods section below for further details.

**Table 1. Costs avoided among the facilities participating in the Nursing Home Quality Care Collaborative (in 2017 dollars)**

Quality Measure	Annual Cost per Case	Cases Avoided 2016	Cases Avoided 2017	Cases Avoided 2018	Total Costs Avoided (7% discount rate)
Antipsychotic medication	\$3,588	729	951	993	\$8,333,246
Incontinence	\$2,879	-166	-561	-564	-\$3,182,825
Urinary tract infection	\$7,863	704	1,119	1,251	\$20,888,142
Pressure ulcers	\$4,425	178	276	190	\$2,489,155
Weight loss	\$89	676	925	400	\$157,194
<b>Total</b>					<b>\$28,684,913</b>

### **Implications**

The ROI associated with improvement on key nursing home quality measures during the New England Nursing Home Quality Care Collaborative (\$5.68 per \$1 invested by the payer, CMS) demonstrates the value of investing in this work. Even if Healthcentric Advisors' efforts only accounted for half of the quality measure cases avoided from 2016 to 2018, the ROI would still be almost \$3 for every \$1 spent. Therefore, investing in nursing home quality improvement through the QIN-QIO program in New England demonstrated improved care of nursing home residents, improved performance on nursing home quality measures, and avoided costs for CMS.

### **Methods:**

For each measure, based on the Quality Improvement and Evaluation System data (derived from the Minimum Data Set), we:

1. Determined the number of expected cases per year by applying the baseline (1/1/15-6/30/15) rate to the denominator for each measurement period (7/1/16-12/31/16, 7/1/17-12/31/17, and 1/1/18-6/30/18).
2. Subtracted the observed number from the expected number to identify the total number of cases avoided.
3. Multiplied the number of cases avoided by their associated costs (Table 2) to determine total cost avoidance.
4. Adjusted for cost avoidance and spending across multiple years. We adjusted all dollar values (i.e., both avoided costs and CMS investment) for inflation to 2017 dollars. We also discounted all values using a 7% social discount rate, as recommended by the U.S. Office of Management and Budget.
5. We subtracted the total cost (CMS investment) from the cost avoidance and then calculated ROI per dollar spent using the following formula:  $1 + ([\text{savings} - \text{spending}] / \text{spending})$ .

**Table 2.** Estimated costs associated with each nursing home quality measure

Quality Measure	Cost Estimate	Units	Dollar year	Annual Cost in 2017\$	Source
Antipsychotic medication	\$7	per day	2007	\$3,588	Levinson, D.R. Medicare Atypical Antipsychotic Drug Claims for Elderly Nursing Home Residents. Department of Health and Human Services, Office of Inspector General Report (OEI-07-08-00150). Available at: <a href="https://oig.hhs.gov/oei/reports/oei-07-08-00150.pdf">https://oig.hhs.gov/oei/reports/oei-07-08-00150.pdf</a>
Incontinence	\$2,353	per patient per year	2010	\$2,879	Xu X, Menees SB, Zochowski MK, Fenner DE. Economic Cost of Fecal Incontinence. <i>Diseases of the Colon &amp; Rectum</i> 2012;55(5):586-598.
Urinary tract infection	\$7,670	per UTI	2016	\$7,863	Hollenbeak CS, Schilling AL. The attributable cost of catheter-associated urinary tract infections in the United States: A systematic review. <i>Am J Infect Control</i> . 2018;46(7):751-757.
Pressure ulcers	\$3,726	per patient	2011	\$4,425	Padula WV, Mishra MK, Makic MB, Sullivan PW. Improving the quality of pressure ulcer care with prevention: a cost-effectiveness analysis. <i>Med Care</i> . 2011 Apr;49(4):385-92.; CDC, 2009 <a href="https://www.cdc.gov/nchs/data/databriefs/db14.pdf">https://www.cdc.gov/nchs/data/databriefs/db14.pdf</a>
Weight loss	\$87	per capita annual cost	2016	\$89	Goates S, Du K, Braunschweig C, Mrensberg MB. Economic Burden of Disease-Associated Malnutrition at the State Level. <i>PLoS One</i> 2016;11(9):e0161833.

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