

BALLAD HEALTH

Advancing patient-first care with collaboration and advanced predictive modeling

How Ballad Health and Truven partnered to influence change in palliative care

5-minute read



For decades, technological advances have transformed the healthcare industry, from the invention of the x-ray in 1895 to the first organ transplant and modern-day vaccines. Today, healthcare facilities employ data science teams to manage and make sense of the rising amount of data in their systems.

Yet, no matter the innovation, the goals of the healthcare industry remain the same: support care teams and improve patient outcomes.

Such is the case for Ballad Health. Ballad Health is an integrated community health improvement organization serving 29 counties of the Appalachian Highlands in Northeast Tennessee, Southwest Virginia, Northwest North Carolina, and Southeast Kentucky. Ballad Health is striving to become a national role model for rural health and healthcare in its region.

In the world of palliative care, the ability to identify which patients would benefit from these services is an important part of the care journey. Identifying patients too late can result in unnecessary medical procedures, additional patient discomfort and increased costs. Upon investigating the spectrum of services for palliative care, Ballad noticed many entrants into hospice were happening too late.

As a result, a few significant obstacles came to light:

- Manual and time-consuming review process for identifying patients for palliative care
- Misunderstanding of palliative care influenced the patient culture
- Lack of timely information for physicians about which patients qualify for palliative care

As an existing partner and familiar with the expertise and quality of Truven solutions, Ballad Health reached out to Truven to collaborate on a new approach. The result was the Palliative Care Model, a predictive model that surfaces potential patients to be assessed for palliative or hospice care (the other end of the spectrum of end of life services).

“Truven really did a lot of listening. I believe they understood the questions we were asking and I feel, with their experience, they moved quickly. From my perspective, they had it and they ran with it.”

Dr. Shari Rajoo
Chief Medical Officer for Population Health Services,
VP/CMO Population Health, Ballad Health



Working together

Ballad Health and Truven partnered to develop a solution with three goals in mind:

1. Surface candidates eligible for palliative care
2. Increase provider awareness of patients' needs for the services and the number of appropriate referrals to palliative care and hospice
3. Help patients access a broader range of services available under palliative care and hospice care for which they might not otherwise be eligible
4. Support care teams to become more efficient

Previously, Ballad Health relied on manual referrals and used a paper questionnaire for palliative care evaluations. Once processed, clinicians would walk through the questionnaire to determine whether an individual patient was a good candidate for this type of care. It was a slow process and revealed an area that needed improvement, but it provided an important starting point for the solution.

Development of the Palliative Care Model started with a thorough understanding of current processes, goals, and pain points, and continued with collaborative meetings between Ballad and Truven.

The model uses historical data to predict the important factors for identifying potential palliative or hospice care patients.

The publicly available Medicare Standard Analytic Files (SAF) data sets were used to create the initial models. Building upon aspects of the paper screener, clinically explainable features were identified including hospitalizations, indicators of frailty, complications of chronic conditions, problems with social determinants of health, and the complexity of multiple comorbidities. From there, the Ballad and Truven teams were able to add additional identifying characteristics to refine the model further. Once accumulated, the model produces a candidate score that members of the care team can use for further evaluation.

Having worked with Truven in the past, Ballad Health understood the expertise and experience that Truven could offer to the project and knew they needed a partner to help them leverage advanced analytic models for patient care. The fact that the solution lies at the intersection of technology and healthcare is an integral part of pioneering new methods of care for better physical and financial patient outcomes.

“The Palliative Care Model is a much more scalable solution. This algorithm lets us evaluate more patients, more efficiently, at every step along the way. This allows us to align patients with end-of-life services that they can benefit from.”

Jason Carter - Corp Director, Facility Payor Strategy / ISHN Medical Informatics, Ballad Health



Solution details

Identifying patients in need of care earlier and equipping care teams with information they need to begin important conversations.

Palliative Care

Model distinctions:

- Leverage machine learning-based predictive model to surface assessment candidates
- Build the predictive model using CMS Medicare Claims data
- Use the client's historical claims data to validate model performance and use the model on an ongoing basis to identify candidate patients

Benefits:

- Increase provider awareness of potential patient eligibility for services so the provider can make a determination based on the clinical picture
- Increase care team efficiency
- Reduce inappropriate or overly aggressive treatment paths
- Support patients through a treatment journey that aligns with their core values and expectations

Financial impact of timely palliative and hospice

\$14,000

average potential savings when hospice care is received earlier¹

Quality of life improves after

20 days

in hospice for terminally ill patients²

3-3.5%

lower readmission rate for pneumonia and heart failure³



Lessons and insights

For Ballad Health as a community health improvement organization and its accountable care organization (ACO), the solution was essentially two-fold: to develop the right technology and advance the culture around palliative care.

Many in Ballad Health's region have misconceptions about palliative care. Patients don't have a lot of clarity on what these services mean, making it even more important for physicians to obtain timely information about qualifying patients to begin insightful conversations about their care journey.

The beauty of the Palliative Care Model is that it both recovers time for the care team and uncovers the right time for making critical care decisions. It relieves pressure on staff and resources to manage paper documentation while evaluating more patients, more efficiently. It also eliminates the need to clog up provider task lists with the "screeners" to review.

Though the model is still in the early stages of operation, a few notable lessons will carry over into phase two of the project.

1. The x-factor: Social support

Members of the care team found that some patients who surfaced in the model turned down care because they had sufficient social support to help them meet their needs. Although lacking in claims data, social support is influential in determining which patients are in need and which are not. Ballad Health recognizes this important factor and understands that it's between the physician and the patient to determine care once the patient has surfaced as a candidate in the model.

2. The importance of the details

As with any project developing a model, no detail is too small. The lesson, in this case, is learning how to bridge the model's analytics to daily operations—learning how to distribute the data, how it operates in the care team's workflow, and how it operates in the culture of care.



“The algorithm is doing what we’ve asked it to do. It is surfacing eligible patients that could receive palliative or hospice care services. With that data, we can message providers and let the providers lead conversations with the patients to determine what kind of care is appropriate for them.”

Jill Jones
AVP, ISHN Clinical Services, Ballad Health

What's next?

Now is the time for the convergence of digital technology and health care delivery. For organizations like Ballad Health, leveraging technology to improve provider efficiency, positively impact budgets, and provide better care to more people is a big step into the future of healthcare.

Technology plays as much of a role in advancing palliative care conversations as in advancing culture by increasing exposure to services and information.

Partnership and collaboration were leading factors in developing the Palliative Care Model for Ballad Health. In addition, Truven's history and experience with Ballad Health created a launch pad to quickly develop a solution to serve Ballad's patients and community.

For phase two of this project, Ballad hopes to report increased utilization of palliative care for their patient population. As they work to increase provider exposure and buy-in, they anticipate physicians identifying surfaced patients and having conversations earlier and more effectively.

In terms of financial projections, published research shows significant saving opportunities for earlier identification of patients needing hospice care and increased comfort and quality of life. One study by Trella Health highlighted that patients who received hospice earlier in their disease progression saved an

average of \$14,000 in health care costs during the last three months of life compared to patients admitted for a mid-term stay.⁴

Ultimately, Ballad Health's utilization of the Palliative Care Model confronts a relevant truth: most patients who are eligible for palliative or hospice services do not receive these services in a timeframe for them to receive the most benefit. With the correct information from their physician, at the right time, and with consistent exposure, more and more patients can enter palliative care.

Patients expect Ballad Health to give them the information they need to make an informed decision. So, placing this information at the forefront of its providers' minds helps providers remember to present palliative care (or hospice care) as one of the alternative treatment plans. As providers have more of these conversations, Ballad Health hopes to get to a place where patients and providers are more comfortable talking about, and considering, palliative care (or hospice care) as an option for a plan of care.

“Patients and families rely on us to present them with all their options, not just the ones we are comfortable with. It's all part of the evolution of what we provide to our patients and helping them know that palliative care (or hospice care) are available care plan options for them.”

Dr. Shari Rajoo
Chief Medical Officer for Population Health Services, VP/CMO Population Health, Ballad Health

About Ballad Health

Ballad Health is an integrated community health improvement organization serving 29 counties of the Appalachian Highlands in Northeast Tennessee, Southwest Virginia, Northwest North Carolina and Southeast Kentucky. We're dedicated to improving the health of the people we serve.

Our system of 22 hospitals, post-acute care and behavioral health services, and a large multi-specialty group physician practice works closely with an independent medical community and community stakeholders to improve the health and well-being of close to one million people.

By leading in the adoption of value-based payments, addressing health-related social needs, funding clinical and health systems research and committing to long-term investments in strong children and families in our region, Ballad Health is striving to become a national model for rural health and healthcare. Learn more at <https://www.balladhealth.org/>

Solutions used

Truven Flexible Analytics
<https://merative.com/healthcare-analytic>

About Truven

Truven by Merative is a portfolio of healthcare data and analytics solutions, backed by 40 years of deep healthcare expertise. We provide trusted insights and proven expertise to help employers, health plans, life sciences organizations, and government agencies drive better health and financial outcomes. With market-leading solutions like Health Insights and MarketScan, Truven serves 7 of the top U.S. health plans, over 40% of the Fortune 500, and the top 20 global pharmaceutical companies.

Learn more at merative.com/truven.

About Merative

Merative provides data, analytics, and software for healthcare and government social services. With focused innovation and deep expertise, Merative works with providers, employers, health plans, governments, and life sciences companies to drive real progress. Merative helps clients orient information and insights around the people they serve to improve decision-making and performance.

Learn more at merative.com.

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