

Glytec®

eGlycemic Management System®

CASE STUDY

Successfully Transitioning
From Sliding Scale to
Basal Bolus: Truths
Behind the Journey
and the Results



Kaweah Delta
HEALTH CARE DISTRICT

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TABLE OF CONTENTS

- ④ Who is Kaweah Delta Health Care District?
- ④ Creating a Sense of Urgency for Improved Glycemic Control
- ④ Establishing Baseline Glycemic Metrics
- ④ Converting to Best Practice: Where and How to Begin
- ④ Be Prepared for What You'll Hear Before and After Change
- ④ Achieving Best Practice: Operations and Process Improvements
- ④ Achieving Best Practice: Quality and Safety Improvements
- ④ Achieving Best Practice: Cost Improvements
- ④ Final Takeaways and Lessons Learned

Standardization, Systemization and Clinical Practice Change

In 2016, Kaweah Delta Health Care District partnered with Glytec to standardize the care of patients with diabetes through a systems approach to glycemic management.

Central to their goals was adoption of best practice for intravenous and subcutaneous insulin dosing, including the important transition from sliding scale to basal bolus, as recommended by the American Diabetes Association and American Association of Clinical Endocrinologists.

This is their story, as told by Rose Newsom, Director of Nursing Practice, who assumed the lead role in a journey of clinical practice change -- a journey that fostered dramatic improvements in quality, safety, operations and costs.

WATCH VIDEO

“Variation is the enemy of quality, and we had no standardized methodology for monitoring and caring for our patients. Our journey illustrates what it takes to move from all of the research and literature to the hospital setting, where doctors and nurses and pharmacists make it happen.”

Rose Newsom, RN, MSN, NE-BC
Director of Nursing Practice

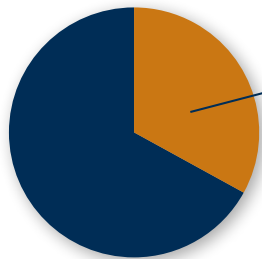
Who is Kaweah Delta Health Care District?

Kaweah Delta Health Care District is comprised of three main campuses and a network of rural health clinics. Its flagship facility is a 581-bed academic medical center with level 3 trauma certification.

The district community healthcare organization has received multiple honors and awards related to quality and safety, including among others:

- Centers for Medicare & Medicaid Services 4-Star Quality Rating
- Leapfrog Hospital Safety Grade A
- American Heart Association/American Stroke Association Get With The Guidelines®-Stroke Gold Plus Quality Achievement Award
- The Joint Commission Accreditation
- Blue Cross Blue Shield Blue Distinction+

Headquartered in Visalia, California, in the heart of the Great San Joaquin Valley, Kaweah Delta serves more than 454,000 people throughout Tulare County and faces the highest rate of diabetes in the state -- a staggering 13.2%.



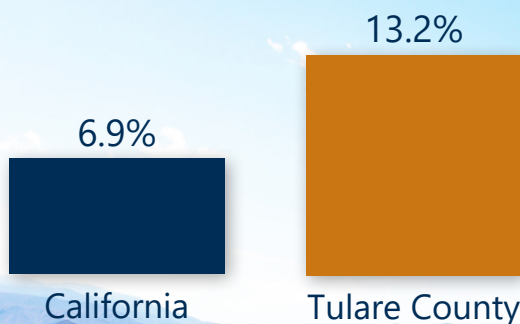
Thirty-three percent of Kaweah Delta's inpatient population has a primary or secondary diagnosis of diabetes, which equates to 650-700 admissions a month.



Agriculture is the #1 industry in Tulare County, California, and many say there are more cows than people!



Prevalence of Type 2 Diabetes





Kaweah Delta provides care to many underserved people who work in the fields for long hours, live in small unincorporated townships and don't have the means to seek preventive care.

Visits to the emergency department for gangrene, stroke, heart attack or kidney failure are commonplace, and often concurrent to an initial diagnosis of diabetes.



“As nurses, we would never feel it's okay to let a patient's blood pressure be out of range, but before we implemented the Glytec system, we allowed that to happen with glucose levels.”

Emma Camarena, DNP, RN, CNS
Advanced Practice Nurse

Creating a Sense of Urgency for Improved Glycemic Control

Prior to partnering with Glytec, Kaweah Delta recognized several issues impacting the quality and safety of care they were providing patients both with and without diabetes.

- Unsatisfactory OHS Outcomes
- Cumbersome Paper Protocols
- Sliding Scale Insulin Use
- Variation in Provider Practice
- No Endocrinologist

They were not achieving the open heart surgery outcomes they desired, due in large part to multi-page paper protocols for intravenous insulin therapy that were extremely cumbersome and rarely followed.

They also knew that sliding scale protocols for subcutaneous insulin therapy were outdated and unsafe, and created tremendous variation in prescribing practices. Transitioning to basal bolus protocols -- as recommended by the American Diabetes Association and American Association of Clinical Endocrinologists -- was imperative to standardizing care and reducing the risks of hyperglycemia and hypoglycemia.

And surprisingly, Kaweah Delta did not and still does not have an endocrinologist.

Establishing Baseline Glycemic Metrics

Kaweah Delta understood that glucose control among its patients with and without diabetes was in need of improvement. However, being able to measure the success of clinical practice change and the impact of using new technology dictated a clear understanding of baseline metrics.

After working with Glytec to harvest and analyze data, Kaweah Delta was able to objectively reconcile the incidence of hyperglycemia and hypoglycemia in its ICU and non-ICU areas of care, as illustrated here. Reducing these numbers was critical to achieving better clinical and financial outcomes.

As well, the medical center was using sliding scale insulin (SSI) for 95% of its subcutaneous dosing in spite of recommendations by the American Diabetes Association and American Association of Clinical Endocrinologists to replace it with basal bolus insulin (BBI).

Did You Know?

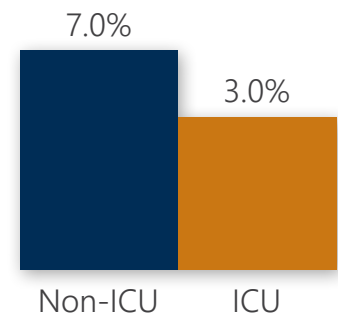
Sliding scale insulin is characterized as a reactive monotherapy that results in widely fluctuating glucose levels, high incidence of preventable hyperglycemia and hypoglycemia, and significant variability in care.

As noted in the *Consensus Statement on Inpatient Glycemic Control*: 'This retrospective form of insulin replacement is inherently illogical and has been associated with increased glycemic excursions. Moreover, in certain settings, such as in patients with type 1 diabetes, it is potentially very dangerous.'

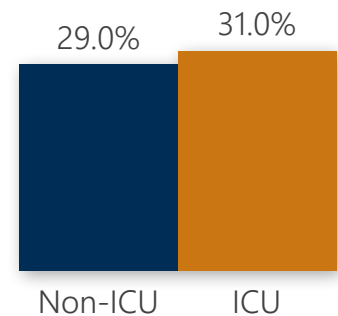
“When you're trying to build a case for change, you have to know your numbers. If you don't have a good handle on your baseline metrics, trust me, you'll have a very difficult time moving forward.”

Rose Newsom, RN, MSN, NE-BC
Director of Nursing Practice

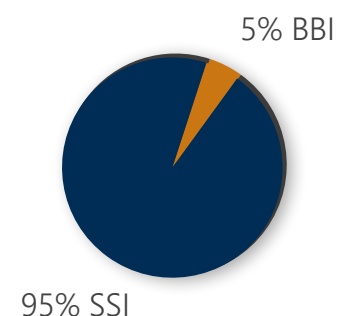
Hypoglycemia <70 mg/dL (% BGs)



Hyperglycemia >180 mg/dL (% BGs)



BBI vs. SSI Utilization



Converting to Best Practice: Where and How to Begin

Moving toward the terminal objective of improving the care and management of patients with diabetes can seem both daunting and overwhelming. So how did Kaweah Delta do it? Where did they begin?

Executive buy-in was absolutely essential, not only as an endorsement of the proposed clinical practice change and standardization of care, but of the partnership with Glytec and implementation of the eGlycemic Management System® (eGMS®).

“We knew we couldn’t do this on our own, we needed an integrated software solution.”

Edward A. Hirsch, MD
VP, Chief Medical and Quality Officer

Kaweah Delta evaluated several products, but felt Glytec’s comprehensive software-as-a-service solution suite coupled with its expertise in guiding healthcare organizations through the transition from sliding scale to basal bolus insulin would serve them best.

“We selected Glytec as our partner because their system is uniquely equipped to support all of our patients and service lines, and they have an impressive array of evidence validating its efficacy and safety. Also, their clinicians have substantial knowledge and experience in diabetes and glycemic management.”

Regina Sawyer, DNP, RN-BC, CPHM, NE-BE
Vice President and Chief Nursing Officer

- Gain Executive Support
- Form Interdisciplinary Team
- Secure Partners From All Areas
- Develop Detailed Plan
- Be Patient

To ensure buy-in extended beyond the healthcare organization’s senior leadership, Kaweah Delta asked all members of the Medical Staff Executive Committee and all department chairs to sign a letter of commitment.

Concurrent to implementing eGMS®, Kaweah Delta formed an interdisciplinary team to provide governance over glycemic management. Securing participation from all areas was vital to this mission:

- | | |
|------------|-----------------------------|
| ✓ Medicine | ✓ Clinical Education |
| ✓ Nursing | ✓ Information Technology |
| ✓ Pharmacy | ✓ Advanced Nursing Practice |
| ✓ Lab | ✓ Dietary |

“You have to be patient. This is not easy, it is not for the faint of heart.”

Rose Newsom, RN, MSN, NE-BE
Director of Nursing Practice

You might say that developing a detailed plan should be obvious, but this crucial step is often overlooked when healthcare organizations embark on a journey of change. Kaweah Delta made sure to draft a comprehensive charter defining who, what, where, when, why and how, including roles, responsibilities, milestones and success measures.



Be Prepared for What You'll Hear Before and After Clinical Practice Change

We've all heard it said, change is hard, and although Kaweah Delta expected staff to be resistant, challenges abound. Among those leading the implementation of Glytec's eGlycemic Management System® and the transition from sliding scale to basal bolus insulin, few would deny it was at times like herding cats.

Kaweah Delta found that cross-functional collaboration and ongoing education, especially on the floors and "in the moment," one patient at a time, was critical to overcoming skepticism and misconceptions, and initiating corrective actions.

“When it comes to managing insulin, fear of hypoglycemia is pretty common, so staff were naturally mistrusting of the Glytec system at first, but after following the recommended dosing adjustments, the results spoke for themselves. We're no longer reactive, we're proactive, and our patients are doing much better. They're getting to their target glucoses faster and staying there more consistently, and we have less interruption of care.”

Christopher Patty, DNP, RN, CPPS
Medication Safety Specialist

“Why are we changing?
We didn't agree to this!”

“I don't have time to ask my patients what they do at home.”

“Sliding scale is easier. We've always managed insulin this way!”

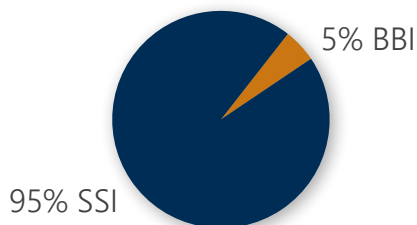
“Best practices aren't always appropriate for every patient.”

Achieving Best Practice: Operations and Process Improvements

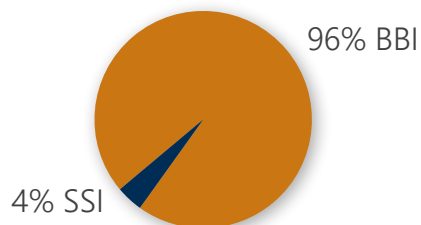
As a result of achieving best practice and standardizing glycemic management processes, Kaweah Delta has virtually eliminated the use of sliding scale insulin for subcutaneous dosing of adult patients. Within the first month of implementing Glytec's eGMS®, the medical center shifted from 95% use of sliding scale insulin (SSI) to 96% use of basal bolus insulin (BBI).

Basal Bolus vs. Sliding Scale Insulin Utilization

BEFORE Glytec eGMS®



AFTER Glytec eGMS®



They also rid of the paper protocols that had been in place for intravenous dosing of open heart surgery patients, and the CVICU now boasts the best glycemic metrics within the medical center.

Prior to their journey of clinical practice change, A1C tests were rarely ordered and few staff understood what purpose they served. Now, the medical center has standardized its admission order sets to ensure optimal glucose control, and have added A1C tests for all patients undergoing insulin therapy.

- Eliminated Sliding Scale Insulin
- Rid of OHS Paper Protocols
- Added A1C Testing
- Standardized Order Sets
- Created Staff Awareness

“ When I hear nurses and physicians and pharmacists talking about diabetes -- A1C, carb intake, basal bolus insulin -- it's so exciting, because they get it! ”

Rose Newsom, RN, MSN, NE-BE

Director of Nursing Practice

One of the most significant improvements has been a new-found level of staff engagement and awareness surrounding diabetes.

“ With the Glytec system, the amount of time patients are on IV insulin is substantially less, we're able to transfer them to step-down sooner, and they aren't returning to the ICU because of elevated blood sugars. Also, transitions from IV to SubQ insulin are much better, and far less complex for our nurses. ”

Erin Miller, RN

CVICU Nurse Manager

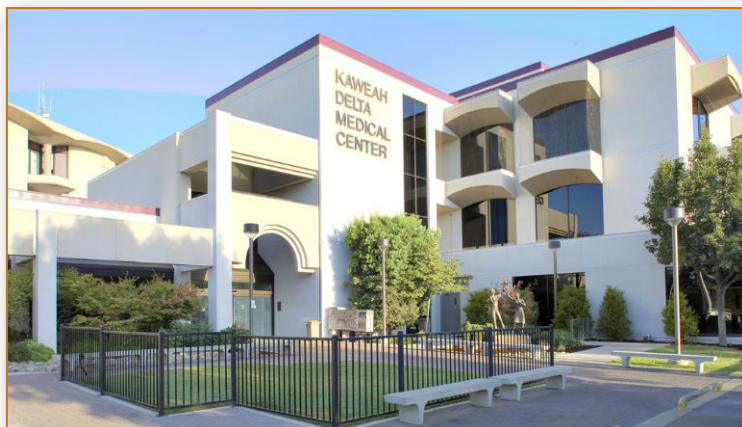
Achieving Best Practice: Quality and Safety Improvements

In addition to operations and process improvements gained by implementing Glytec's eGlycemic Management System®, Kaweah Delta realized dramatic quality and safety improvements, including reductions in hypoglycemia, hyperglycemia and length of stay, and an increase in the percent of in-target blood glucoses, as illustrated here.

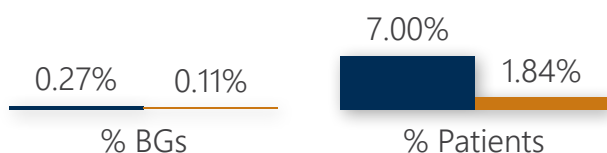
“ We are definitely providing safer care with the Glytec system, and we could not have converted from sliding scale to basal bolus insulin without it. ”

Thomas Gray, MD

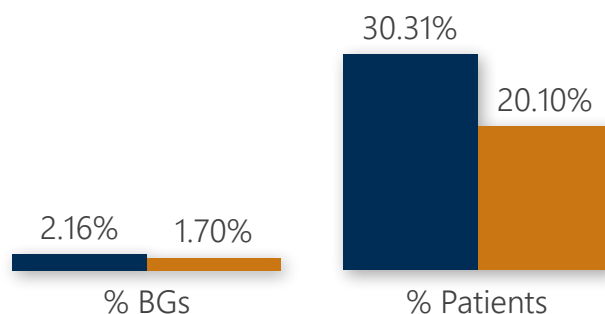
Medical Director of Quality and Patient Safety



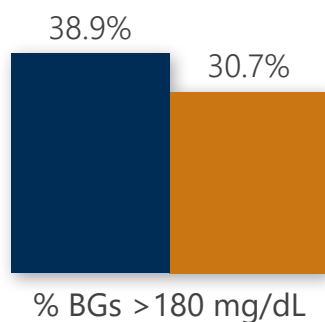
Hypoglycemia <40 mg/dL



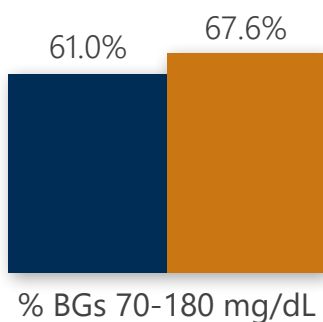
Hypoglycemia <70 mg/dL



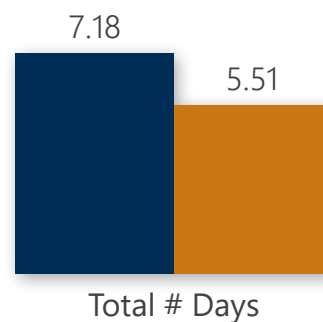
Hyperglycemia



In-Target BGs

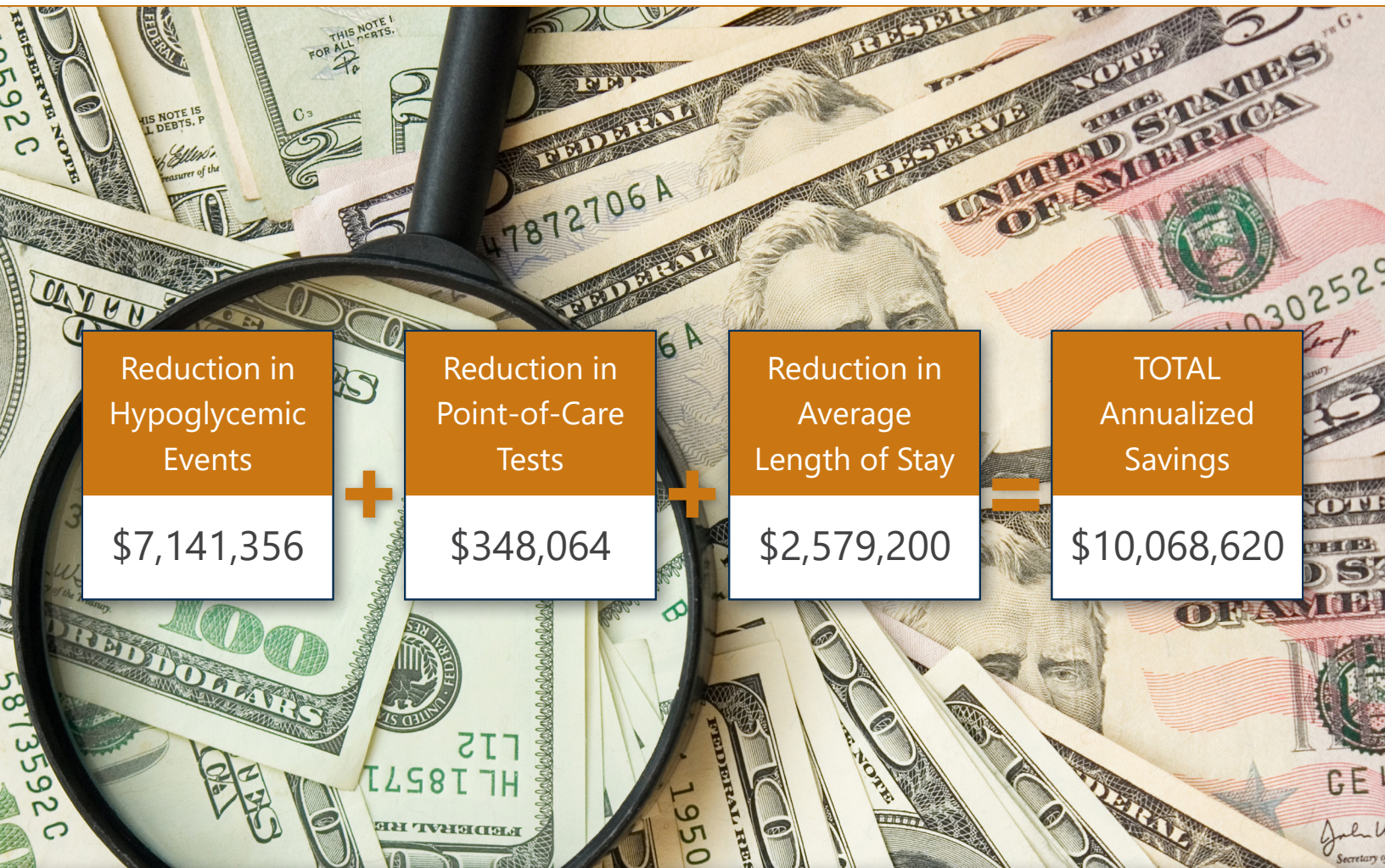


Length of Stay



Achieving Best Practice: Cost Improvements

Reductions in the number of hypoglycemic events and point-of-care tests in addition to reductions in length of stay suggest an annualized cost savings of greater than \$10 million over the first year following implementation of Glytec's eGlycemic Management System (eGMS®).



Hypoglycemic Events: 2,434 fewer events first year with Glytec eGMS® vs. usual care before Glytec eGMS®

Point-of-Care Tests: 138,824 tests first year with Glytec eGMS® vs. 217,380 with usual care before Glytec eGMS®

Average Length of Stay: 1.67 fewer days per patient first year with Glytec eGMS® vs. usual care before Glytec eGMS®

“ There is no mission without a margin, and we all know that. So we needed to ask, what does this mean in terms of dollars, because those dollars are getting harder and harder to find. ”

Rose Newsom, RN, MSN, NE-BE

Director of Nursing Practice

Final Takeaways and Lessons Learned

After leading Kaweah Delta through the adoption of Glytec's eGlycemic Management System® and the transition from sliding scale to basal bolus insulin, Rose Newsom, Director of Nursing Practice, strongly encourages other healthcare organizations to take the leap and do the same.

With 20/20 hindsight, Rose offers some key takeaways and lessons learned:

- Understand Community Challenges and Barriers
- Assume Knowledge Deficits
- Old Habits Are Hard to Break
- Have Executive Leadership
- Be Courageous, You Can Do It!

She reinforces the need to understand the challenges and barriers your community faces, because, as she notes, the care of patients with diabetes must continue beyond the period of hospitalization. Kaweah Delta has structured a chronic disease management center to provide ongoing diabetes education and monitoring, and to help reduce readmissions for high-risk patients.

Rose knows first hand how important it is to address knowledge deficits *before* implementing a change in clinical practice. "Nurses, physicians and pharmacists may think they know the best way to manage patients with diabetes," Rose says, "but it's best to assess that in advance. Don't try to retrofit; don't launch your intervention only to realize you have gaps. That will really set you back."

Rose views this journey as not only a change in clinical practice, but a change in culture, and she recognizes how true it is that old habits are hard to break. "You will be challenged by staff who are deeply rooted in the status quo, and who



don't want to comply," she says. Her advice is to use a variety of tools to help staff think in a different way. Those who struggle at the early stages, in her observations, are more likely to take the cue from others who adapt, succeed and start to share their positive experiences.

Rose also is emphatic about the need for strong executive leadership. She says: "You absolutely have to have senior c-suite administrators and clinicians behind the initiative, who support the need for change, who believe that the organization will benefit from it, and who are willing to step in when the going gets tough."

“You'll get discouraged, you'll want to curl up and grab your blanket and cry in the dark, but if you're committed to your patient population and your community, you can do it, too! ”

Rose Newsom, RN, MSN, NE-BC
Director of Nursing Practice



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