Glytec

# Success Stories

## Continuous Improvement Spotlight Sessions

Sonia Cooper, MSN, RN, NE-BC, Chief Nursing Officer, Sentara Healthcare

Cody Ericson, ANP-C, MSN, Advanced Practice Nurse, Inpatient Diabetes Management, Kaweah Health

10.25.2022

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# Sonia Cooper, MSN, RN, NE-BC

## Chief Nursing Officer

### Sentara Princess Anne Hospital, Sentara Healthcare

- Earned BA from University of Virginia, BS in Nursing from George Mason University and Masters of Science in Nursing from University of Arizona
- Passionate to equip clinical teams with the optimal tools and resources needed to provide excellent care to patients
- Clinical career spans medical and surgical nursing to critical care to trauma
- Began journey with inpatient glycemic management as ICU nurse, recognizing the complexity of the critical ill patient and becoming aware for the continuum of care needs after the patients leave the acute hospital setting
- Super user of Glucommander as an ICU nurse and an active participant on hospital committees
- Serves as co-chair of Sentara Healthcare's Glycemic Management Committee with Dr. Mike Genco, Chief Medical Officer at Sentara Obici Hospital


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## SENTARA HEALTHCARE

Sentara Princess Anne is a part of the Sentara Healthcare system

- Comprised of 12 acute care hospitals across Virginia and North Carolina
- Sentara was named to IBM Watson Health's "Top 15 Health Systems" in 2021
- Early adopter of evidence-based, computer-guided approach to insulin management with the implementation of Glytec's eGlycemic Management System® in 2012

Norfolk, VA

Population: Mixed Rural and Urban

2,700 Bed-Network

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# Sentara Healthcare Glycemic Management Background

## Normalized IV insulin management process and preparing for SubQ improvements across the system

- Early adopters of eGMS®
- Normalized delivery of glycemic management
- Deployed in the Emergency Department, Med/Surg, Intermediate Units, ICU, OB, Pediatrics, Perioperative and Skilled Nursing Units
- Hosted monthly Glycemic Management meetings
- Established nurse-driven protocols allowing for automating insulin order initiation in response to hyperglycemia
- Consolidated order sets from 14 to 1
- Published over 18 studies in collaboration with Glytec
- Treated 2M+ patients on Glucommander since deployment


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# Glucommander IV Background

15 years of automated, computer-guided insulin management with Glucommander IV

October 2020 – September 2022

- 0.12% patient days with severe hypoglycemia (BG<40 mg/dL)
- 35 patient days BG<40 mg/dL out of 28,050 total patient days

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"With the IV program, it automatically calculates the drip rate. There's no more calculations, no more paper calculations, which is fabulous. With the SubQ program, insulin doses are adjusted daily based on blood sugars and carbohydrate intake. This makes things so much easier for the bedside nurse."

Pamela Ellis, RN BSN CDCES, Sentara Princess Anne Hospital


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# PHASED APPROACH


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# Challenges to SubQ optimization

After an almost system-wide rollout in 2019 of SubQ Glucommander, why wasn't it working across all facilities?

- Safety Concerns
- Manual entry was posing risk
- Misreading tool, delivering wrong dosage
- Providers focusing on primary diagnosis
- Physicians preferred to risk hyperglycemia over hypoglycemia
- Inconsistent adoption and oversight
- Acquisitions of new facilities that were not deployed during same intervals that disrupted adoption and utilization
- Need for required education


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# Initial SubQ Success

## SENTARA VIRGINIA BEACH GENERAL HOSPITAL IS OUR PROTOTYPE

- Redeployed Glucommander SubQ at Sentara Virginia Beach General Hospital (SVBGH)
- Integrated with Epic
- CMO Buy-In and Support
- Mandated Programs
    - Nursing Education
    - Usage of Glucommander
- Redesigned order sets

*Results are April to September 2019*

**47%**
Reduction in incidence of hypoglycemia <40mg/dL

**37%**
Reduction in incidence of hypoglycemia <70 mg/dL

**28%**
Incidence of hyperglycemia >300 mg/dL

"The Glucommander usage and the results are in the numbers … the data speaks for itself."

Susan M. De Abate, RN, MSN/ED, CDCES

Diabetes Prevention Program Coordinator, Sentara Hampton Roads

Team Coordinator for Diabetes Program, SVBGH



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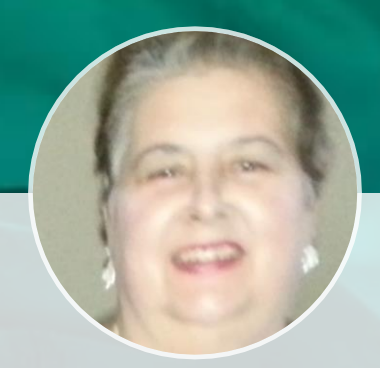

"We truly have been able to sustain a significantly high usage of the SubQ Glucommander. And I will say it's become even more important so that poor glycemic control does not become more of an issue to extend length of stay even further. Especially during our current healthcare situation and crises where beds are at extreme high need. Extending length of stay because we didn't pay attention to the blood sugar levels or glycemic control is certainly one area that we can totally avoid by using the SubQ Glucommander."

Susan M. De Abate, MSN/ED, RN, CDCES, SVBGH


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# Phased Approach to System-Wide Improvement

## Creating the journey for success

- Phase 1 – Redeployment
  - Develop steering committees
  - Upgrade to latest versions of Glucommander
  - Redeploy SubQ to 5 hospitals
  - Review data for utilization and improvement goals

- Phase 2 – Utilization & Optimization **(Current)**
  - Roll out to other divisions and begin higher utilization
  - Maintain leadership oversight
  - Use data to secure additional buy-in and trust to roll out to all 15 facilities

- Phase 3 – Future
  - Approach additional facilities for further education and redeployment
  - Standardize workflows and order sets across the system
  - Develop utilization plan for consistent usage and continuous improvement


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# Driving system-wide buy in

## Using SVBGH data and outcomes, we determined our approach to redeploying SubQ to our additional sites

### SVBGH

- We have a proof-of-concept
- We have success data
- Deploy system-wide:
  - Standardization
  - Cross-functional utilization and buy in
  - Executive support
  - Mandated training

### Opportunities

- Instead of going back to prior state, we had time to evolve and address different levels of comfort
- Glytec's flexibility in starting and pausing due to COVID-19 surges
- IT & Clinical relationship


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# Champions of Steering Committees

Cross-departmental and multi-facility committees allowed for democratization of data, education and productive collaboration

- Identified champions for steering committees
- Clinical Committee Membership:
  - Clinical Co-Leads, which typically included nurse manager and diabetes educator
  - Nursing
  - Pharmacy
  - Clinical Diabetes Educators
  - IT lead
  - Group of providers – for order-set clarification
- IT-specific committees
  - Recognized workflows, order sets, education for all entities
- CNO & CMO Oversight
  - Lift issues that needed executive decision
- **All parties were well-informed and relied on our system strength**


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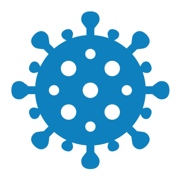
# Challenges



## COVID-19

- Surges
- Steroids and adjusting
- Priority shifts
- IT committee kept meeting throughout the pandemic and clinical was on/off with COVID-19 surges

## Provider Trust

- We needed more provider buy in and data for better usage of tool

## Additional New Technology

- New HR Platform
  - Switching our HR platform which included our education program
  - Delayed computerized-training
- Epic playground



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# Key Takeaways

A collaborative, system-wide reset allowed us to properly address education needs, build trust in new technology and protocols and build the foundation for continuous improvement with SubQ

## Collaborate

- Build steering committees that are representative of your hospital's organization
- Make sure providers, nurses, pharmacy and IT are in sync
- Leadership is bought in and continues to place importance on this program and its outcomes

## Track Outcomes

- Data is the key for seeing how a program or tool is doing
- Outcomes data create cross-departmental buy in
- It is hard to argue with data and it builds trust

## Reset for Success

- Meet hospitals and staff where they are with education, adoption and utilization
- Make a phased approach and check in regularly
- Mandate education
- Its okay to pause and reset as long as there is a plan


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# Thank You!

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# Cody Ericson, ANP-C, MSN

***Advanced Practice Nurse, Inpatient Diabetes Management***

Kaweah Health

- Holds national certification with the American Academy of Nurse Practitioners
- Specializes in inpatient diabetes management
- Member of Glycemic Steering Committee
- Developed as the gold-standard for inpatient diabetes management for Kaweah Health


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## INPATIENT DIABETES MANAGEMENT AT KAWEAH

Kaweah Health includes three main campuses and a network of rural health clinics.

- Centers for Medicare & Medicaid Services 3-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+
- Implemented Glytec's eGlycemic Management System® in 2016

Visalia, CA

Population: Mixed Rural and Urban

581 Beds

Academic Medical Center, Level III Trauma

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# Tulare County's Burden of Diabetes

| Prevalence of Diabetes | Tulare County | California | United States | World |
|---|---|---|---|---|
| | 13.2% | 6.9% | 9.3% | 8.5% |

- Highest prevalence of diabetes in the state (13.2% vs 6.9%)
- Ranks 39th out of 58 counties in death due to diabetes
- 40% of Kaweah Health's inpatient population has a primary or secondary diagnosis of diabetes, which equates to 800-850 admissions a month
- FY21 $25,774,640 in LOS opportunity in diabetes alone, increased from FY20 $15,194,394

| Death Due to: | Tulare | Kings | Fresno | Kern | Goal* | California |
|---|---|---|---|---|---|---|
| **Coronary Heart Disease** | 53rd | 51st | 47th | 55th | n/a | n/a |
| *Age Adjusted Death Rate* | 117.6 | 112.3 | 107.0 | 125.7 | 103.4 | 85.1 |
| **Diabetes** | 39th | 23rd | 48th | 58th | n/a | n/a |
| *Age Adjusted Death Rate* | 22.6 | 18.1 | 27.4 | 38.4 | | |
| **Cerebrovascular Disease** | 46th | 36th | 50th | 29th | | |
| *Age Adjusted Death Rate* | 44.2 | 38.5 | 45.2 | 36.8 | 34.8 | 36.9 |
| **Pneumonia/Influenza** | 53rd | 29th | 44th | 23rd | n/a | n/a |
| *Age Adjusted Death Rate* | 21.3 | 14.2 | 17.4 | 13.4 | | 14.6 |


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**Kaweah Health**
Retrospective Quality Improvement Study
2016-2017

# Using an eGlycemic Management System (eGMS)

## The Journey from SSI to BBI

Newsom R, Patty C, Camarena E, Gray T, Sawyer R, Brown B, McFarland R. Safely Converting From Sliding Scale to Basal Bolus Insulin Across an Entire Medical Center via Implementation of the eGlycemic Management System. American Diabetes Association Scientific Sessions. June 2017.


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# Practice Change

## WHAT WE DID:

- ✓ Implemented Glytec's eGlycemic Management System®
- ✓ Eliminated Sliding Scale Insulin
- ✓ Removed OHS Paper Protocols
- ✓ Added A1C Testing
- ✓ Standardized Order Sets
- ✓ Created Staff Awareness
- ✓ Achieved Clinical Results
- ✓ Realized Cost Improvements

## THE RESULTS:

### $7,141,356

- 2,434 fewer hypoglycemic events (BG<70 mg/dL) with patients treated on Glucommander
- 40,589 fewer hyperglycemic events (BG>180 mg/dL) with patients treated on Glucommander

### $2,579,200

- Cost savings experienced due to LOS reduction by 1.67 days

### 199.5 Minutes

- Time saved per prescriber per patient
- 30 minutes saved per prescriber per shift

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


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# Build a Sustainable Foundation
## Glycemic needs met by eGMS

- Both Glucommander IV and SubQ are utilized throughout the hospital
  - Deployed in the ED, ICU, OB, Skilled Nursing, Stepdown, and Medical–Surgical Units

- Over 12 months: 5194 treated (95%) / 245 untreated (5%)
  - Nursing education and buy-in for utilization of technology-driven insulin management
  - Standardized processes and training
  - Consistent message drives cross-departmental optimization

- Average patients treated per month
  - 78 on Glucommander IV
  - 420 on Glucommander SubQ


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# Kaweah Health Continuous Improvement

## Nurturing a mature technology-driven glycemic management program

### Opportunities:

- Improve the glycemic care of high-risk patients
  - End stage renal disease (ESRD), recurrent hypoglycemia, persistent hyperglycemia, U-500, steroids, prior h/0 difficult inpatient management
- Identify patients in need of glycemic intervention
  - Use GlucoSurveillance
  - Use Glucommander Hyperglycemia and Hypoglycemia reports
- Offer additional clinical support and the services of an inpatient diabetes provider
  - Grow toward 24/7 coverage of inpatient DM program
  - Overall diabetes care model for long-term success
- Provide ongoing staff education on glycemic best practices
  - Improve initial insulin therapy dosing at the time of admission
  - Ensure optimal transition from IV to SubQ insulin


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# Kaweah Health Continuous Improvement

## Nurturing a mature technology-driven glycemic management program

### Inpatient Diabetes Management (DM) Stucture

- Advanced Practice Nurse (APN) is the primary champion of the glycemic management program.
  - Model began February 2022
- The role of the APN
  - Daily review of glycemic excursions
  - Makes insulin adjustments to optimize glycemic control
  - Respond to occurrence reports, reviews cases and provide recommendations
  - Provide education to staff and GME residents
- Active multidisciplinary Glycemic Steering Committee
  - Monthly meetings with data review
  - Develop action plans
  - Goals: raise awareness of Inpatient DM program, reduce time to target (TTT), instances of hypoglycemia


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# 59% of patients on Inpatient Diabetes Management were seen for four days or less.

*Initial Inpatient Diabetes Management consults recorded from 02/8/22 to 05/24/22 with a discharge date entered, 162 records.*

| Days on IPDM Service | 1 Day | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15+ Days |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Patients on IPDM Service | 2 | 33 | 37 | 24 | 12 | 9 | 13 | 8 | 4 | 2 | 3 | 3 | 2 | 2 | 8 |

Cumulative Percentage labels: 1% (1 Day), 22% (2), 44% (3), 59% (4)



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TIME TO TARGET

# Inpatient DM Referrals

## Increased education to all departments around glycemic management has increased referrals from across Kaweah Health to provide better quality of care

**Inpatient Diabetes Management addressed 184 consults between 02/08/22 and 5/24/22 with 78% of referrals received from Hospitalist and CT Surgery.**

CONSULTS

| | Hospitalist | CT Surgery | Resident | Critical Care | Cardiology | RN | Vascular Surgery | NP | Nursing | Intensivist |
|---|---|---|---|---|---|---|---|---|---|---|
| % | 56% | 22% | 14% | 5% | 1% | 1% | 1% | 1% | 1% | 1% |
| Consults | 103 | 40 | 25 | 9 | 2 | 1 | 1 | 1 | 1 | 1 |



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TIME TO TARGET

# Optimize Clinical Support for Complex Cases

Reviewing data to determine what segment of our insulin-requiring population needed clinical oversight from a specialist practitioner

## Process Improvements

- Improve Clinical-Decision Making
- Reduce Risk of Adverse Events
- Improve Transitions in Care
- Reduce Readmissions Risk
- Improve Quality Measures

## Findings : Co-managing with an eGMS system

- Reaching standard of care with IV Insulin
  - Treatment with Glucommander IV reduced the number of non-complex consultations
    - Enabling specialists to address targeted cases
- Resident Group Education Reduces Risk
  - Implementation of process and follow-up with data has clarified transition processes, showing when to discontinue treatment on IV and SubQ



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# Glucommander (GM) Glycemic Outcomes: Patient Day Metrics

Report Time Range
Sep 2020 to Aug 2022

Kaweah Delta Health Care District | KAWEAH DELTA HOSP | All Unit | SubQ

Refreshed
9/2/2022 5:54:23 AM

% Patient Days BG<40
0.24%
(GM Avg. 0.29%)

# Patient Day BG < 40
157

% Patient Days BG<54
0.95%
(GM Avg. 1.37%)

# Patient Day BG < 54
618

Total Patient Days
65,320

% Patient Days BG<70
3.60%
(GM Avg 4.42%)

# Patient Day BG < 70
2,353

## Patient Day Hypoglycemia KPI

<40, <54, <70
6.00%
4.00%
2.00%
0.00%
Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2... Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2...

Measures
<40
<54
<70
--- Average

% Patient Day Weighted Mean BG 70-180
58.85%
(GM Avg. 56.83%)

# Patient Day Mean BG 70-180
38,441 65,320 Total Patient Days

## Patient Day Glycemic Control KPI

70-180
70.00%
60.00%
50.00%
Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2... Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2...

Measures
70-180
--- Average

% Patient Days BG>180
66.75%
(GM Avg. 65.5%)

# Patient Day BG > 1...
43,599

% Patient Days BG>250
30.84%
(GM Avg. 30.62 %)

# Patient Day BG > 2...
20,143

Total Patient Days
65,320

% Patient Days BG>300
15.40%
(GM Avg. 15.64%)

# Patient Day BG > 3...
10,060

## Patient Day Hyperglycemia KPI

>180, >250, >300
100.00%
50.00%
0.00%
Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2... Sep 2... Oct 2... Nov ... Dec 2... Jan 2... Feb 2... Mar 2... Apr 2... May ... Jun 2... Jul 2... Aug 2...

Measures
>180
>250
>300
--- Average


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TIME TO TARGET

# Expanding the Inpatient DM Program

## Using data to continuously improve our program and identify the gaps for opportunities

### Additional Specialty Support

- For complex insulin-requiring cases we have additional dialogue for treatment with our layer of trust in our current processes and data
- 24/7 coverage needed to experience even better outcomes

### Cross-Departmental Referrals

- Any patient being admitted to Kaweah Health with Type 1 or Type 2 diabetes undergoing treatment should be referred to the inpatient GM program to ensure proper insulin management

### Identify Additional Uncontrolled Hyperglycemia

- Utilize GlucoSurveillance for further identification of patients requiring insulin management
- Associated repeat hypoglycemia
- Need for insulin management oversight


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