GLYCEMIC CONTROL SURVEY

Objective: To gain an understanding of the current state of glycemic control (ie, intensive insulin therapy and frequent blood glucose testing) protocol use in hospital inpatients.

Thank you for taking the time to complete this survey!

Please keep in mind the following as you are completing this survey...

1. Your answers will automatically save each time you click "Next", so that you can return to the survey at a later time.

2. If there is someone else in your facility who would be better suited to complete a survey on glycemic control in the inpatient setting or if you have any questions, please email us at tgcsurvey@epsilongroup.com.

3. The survey link is unique to you. Please do not forward it.

The Epsilon Group Virginia, LLC

Demographics

1. Please enter your contact information and hospital information below.

First Name

Last Name

Title

Role in Hospital

Years of Experience

Hospital Name

Address

City

State

Zip Code

Bed Size of Hospital (i.e., Number of Beds)

Hospital Type (e.g., Academic, Urban, Rural)

* 2. Do you work in the inpatient or outpatient setting?

    ○ Inpatient ONLY

    ○ Outpatient ONLY

    ○ Both Inpatient and Outpatient

3. To what extent has your hospital implemented a quality improvement program for monitoring diabetes and/or hyperglycemia care for the following?

	Nothing Planned	In Planning Phase	Planned, Not Yet Implemented	Partially Implemented	Fully Implemented
Critically ill patients (those in the ICU or Stepdown/Intermediate care patients)	○	○	○	○	○
Non-critically ill patients (those NOT in the ICU or intermediate care/stepdown unit)	○	○	○	○	○
Perioperative patients (24 hours prior to surgery through the first 48 hours after surgery)	○	○	○	○	○
Other (specify below)	○	○	○	○	○

Please specify "Other" below.

[   ]

4. To what extent has your facility implemented written policies or protocols for the following?

	Nothing Planned	In Planning Phase	Planned, Not Yet Implemented	Partially Implemented	Fully Implemented
Management of hyperglycemia	○	○	○	○	○
Management of hypoglycemia	○	○	○	○	○
Management of hyperglycemia crisis	○	○	○	○	○
Management of diabetic ketoacidosis	○	○	○	○	○
Inpatient management of insulin pumps	○	○	○	○	○
Frequency of glucose measurement	○	○	○	○	○
Glycemic control protocol	○	○	○	○	○

Other (please specify)

[   ]

5. Please indicate the guideline(s) your hospital uses (if any) to manage diabetes or hyperglycemia. (MARK ALL THAT APPLY)

- ⊜ Currently unfamiliar with any guidelines for managing diabetes or hyperglycemia
- ⊜ JCAHO Diabetes Disease-Specific Guidelines
- ⊜ Society of Hospital Medicine
- ⊜ American College of Endocrinology/American Diabetes Association
- ⊜ Other (please specify)

[   ]

6. What percentage of ALL HOSPITAL PATIENTS would you ESTIMATE have a diagnosis of diabetes or hyperglycemia?

◯ 0 – 20%   ◯ 21 – 40%   ◯ 41 – 60%   ◯ 61 – 80%   ◯ 81 – 100%   ◯ Do not know

7. What percentage of patients in your CRITICAL CARE UNIT(S) would you ESTIMATE have a diagnosis of diabetes or hyperglycemia?

◯ 0 – 20%   ◯ 21 – 40%   ◯ 41 – 60%   ◯ 61 – 80%   ◯ 81 – 100%   ◯ Do not know

8. What percent of patients in your CRITICAL CARE UNIT(S) <u>are on a standardized glycemic control protocol</u>?

◯ Have not implemented glycemic control in our Critical Care Unit(s).   ◯ 0 to 20%   ◯ 21 to 40%   ◯ 41 to 60%   ◯ 61 to 80%   ◯ 81 – 100%   ◯ Do not know

Standardized Protocols

9. In what nursing units has your facility implemented standardized, IV insulin protocols? (MARK ALL THAT APPLY)

- ⊝ None
- ⊝ General ICU
- ⊝ Cardiac Care Unit
- ⊝ Medical ICU
- ⊝ Thoracic Cardiovascular ICU
- ⊝ Surgical ICU
- ⊝ Pre and Postoperative Anesthesia Care Unit
- ⊝ Neurological or Neurosurgical ICU
- ⊝ Designated step-down unit
- ⊝ All step down units
- ⊝ Designated hospital ward
- ⊝ All hospital wards
- ⊝ Other (please specify)

[   ]

10. In what nursing units has your facility implemented standardized, SUBCUTANEOUS insulin protocols? (MARK ALL THAT APPLY)

- ⊝ None
- ⊝ General ICU
- ⊝ Cardiac Care Unit
- ⊝ Medical ICU
- ⊝ Thoracic Cardiovascular ICU
- ⊝ Surgical ICU
- ⊝ Pre and Postoperative Anesthesia Care Unit
- ⊝ Neurological or Neurosurgical ICU
- ⊝ Designated step-down unit
- ⊝ All step down units
- ⊝ Designated hospital ward
- ⊝ All hospital wards
- ⊝ Other (please specify)

[   ]

11. In CRITICALLY ILL patients (those in the ICU or intermediate care/stepdown units), what glucose range do you typically target?

- No targeted glucose level
- 80 – 110 mg/dL
- 80 – 140 mg/dL
- 80 - 180 mg/dL
- <200 mg/dL
- Do not know
- Other glucose level (please specify)

12. In NON-CRITICALLY ILL hospitalized patients (those NOT in the ICU or intermediate care/stepdown unit), what glucose range do you typically target?

- No targeted glucose range
- 80 – 110 mg/dL
- 80 – 140 mg/dL
- 80 – 180 mg/dL
- <200 mg/dL
- Do not know
- Other glucose range (please specify)

13. During the PERIOPERATIVE PERIOD (24 hours prior to surgery through the first 48 hours after surgery), what glucose range do you typically target?

- No targeted glucose range
- 80 – 110 mg/dL
- 80 – 140 mg/dL
- 80 – 180 mg/dL
- <200 mg/dL
- Do not know
- Other glucose range (please specify)

14. Overall, what percentage of your hospitalized patients would you estimate achieve their targeted glucose range?

	Do not know	0 – 20%	21 – 40%	41 – 60%	61 – 80%	81 – 100%
Critically Ill Patients (those in the ICU or intermediate care/stepdown units)	◯	◯	◯	◯	◯	◯
Non-Critically Ill Patients (those NOT in the ICU or intermediate care/stepdown unit)	◯	◯	◯	◯	◯	◯
Perioperative Patients (24 hours prior to surgery through the first 48 hours after surgery)	◯	◯	◯	◯	◯	◯

Comments

[   ]

15. What glucose level does your hospital use as a definition of hypoglycemia?

◯ Do not know

◯ <40 mg/dL

◯ <50 mg/dL

◯ <60 mg/dL

◯ <70 mg/dL

◯ <80 mg/dL

◯ Other glucose level (please specify)

[   ]

16. What is the bedside glucose level BELOW which your hospital requires a confirmatory laboratory glucose measurement?

◯ Do not have a requirement to confirm.

◯ <40 mg/dL

◯ <50 mg/dL

◯ <60 mg/dL

◯ <70 mg/dL

◯ <80 mg/dL

◯ Other glucose level (please specify)

[   ]

17. What is the bedside glucose level ABOVE which your hospital requires a confirmatory laboratory glucose measurement?

- ◉ Do not have a requirement to confirm.
- ◉ >200 mg/dL
- ◉ >250 mg/dL
- ◉ >300 mg/dL
- ◉ >350 mg/dL
- ◉ >400 mg/dL
- ◉ >450 mg/dL
- ◉ >500 mg/dL
- ◉ >550 mg/dL
- ◉ >600 mg/dL
- ◉ Other glucose level (please specify)

  [   ]

18. At what glucose level does your standardized glycemic control program require the start of IV insulin?

- ◉ Do not have a glycemic control program
- ◉ Do not know
- ◉ >110 mg/dL
- ◉ >120 mg/dL
- ◉ >130 mg/dL
- ◉ >140 mg/dL
- ◉ >150 mg/dL
- ◉ >180 mg/dL
- ◉ >200 mg/dL
- ◉ No standard (at the discretion of individual physician)
- ◉ Other glucose level (please specify)

  [   ]

Treatment Methods

19. For patients on an insulin drip, what method do you use to determine the infusion rate? (MARK ALL THAT APPLY)

- ⊝ No standardized method (at the discretion of the physician)
- ⊝ Paper algorithm (e.g., Portland, Yale, Institution-specific)
- ⊝ Electronic algorithm designed by institution
- ⊝ Commerical computer software (e.g., GlucoStabilizer, EndoTool, Glucommander,)
- ⊝ Computerized physician order entry (CPOE)
- ⊝ Other (please specify)

20. If you answered "commerical computer software" in the above question, please specify and describe the computer software here.

21. What initial insulin regimen does your institution employ as part of your glycemic control protocol? (MARK ALL THAT APPLY)

- ⊝ No glycemic control protocol has been implemented
- ⊝ Continuous infusion of IV insulin
- ⊝ Basal/Bolus subcutaneous insulin
- ⊝ Bolus IV insulin
- ⊝ Combined frequent insulin dosing with oral hypoglycemic agents
- ⊝ Frequent bolus/short-acting insulin (e.g. sliding scale)
- ⊝ Other initial insulin regimen (please specify)

22. What point-of-care method do you use most often to track glucose values in your hospital? (MARK ONLY ONE)

- ⓙ Glucose meter with arterial blood sample
- ⓙ Glucose meter with venous blood sample
- ⓙ Glucose meter with capillary blood samples only (fingerstick)
- ⓙ Whole blood/plasma sample processed in CENTRAL laboratory
- ⓙ Whole blood/plasma sample processed in SATELLITE laboratory
- ⓙ Other method (please specify)

23. What data collection tools are available for you to extract and analyze information related to glucose management at your institution? (MARK ALL THAT APPLY)

- ⊝ No data collection tools currently available
- ⊝ Manual data collection and analysis
- ⊝ Non-commercial, in-house software
- ⊝ Commercial computer software
- ⊝ Submit data to an outside source for analysis
- ⊝ Other (please specify)

24. If you answered "commerical computer software" to the previous question, please specify and describe the software here.

25. What outcome metrics does your institution use to monitor the success of its glycemic control/glucose management program? (MARK ALL THAT APPLY)

- ⊝ No metrics in place
- ⊝ Total length of stay
- ⊝ ICU length of stay
- ⊝ Frequency of hypoglycemia
- ⊝ Frequency of hyperglycemia
- ⊝ Average glucose by unit
- ⊝ Average glucose by patient
- ⊝ Other (please specify)

- ⊝ Patient mortality
- ⊝ Post-operative infection rate
- ⊝ Ventilator-acquired pneumonia
- ⊝ Ventilator days
- ⊝ Patient care costs
- ⊝ Infection rates
- ⊝ Calculate percent within, above, or below specified limits

26. Would you or do you find it valuable to have the ability to see glucose statistics (e.g., average, percentage of glucose measurements within target range, etc.) routinely to help monitor your patients and/or your glycemic control protocol(s)?

- ◌ Yes
- ◌ No
- ◌ Do not know

Comments

27. If it could be achieved safely, please provide the LOWER LIMIT of the glucose target range that you believe would achieve the greatest patient benefits for ICU, Non-ICU, and Perioperative patients?

ICU: LOWER LIMIT of Target Range (mg/dL)

Non-ICU: LOWER LIMIT of Target Range (mg/dL)

Perioperative: LOWER LIMIT of Target Range (mg/dL)

Other (please specify the patient population and the LOWER limit of the target range): LOWER LIMIT of Target Range (mg/dL)

28. If it could be achieved safely, please provide the UPPER LIMIT of the glucose target range that you believe would achieve the greatest patient benefits for ICU, Non-ICU, and Perioperative patients?

ICU: UPPER LIMIT of Target Range (mg/dL)

Non-ICU: UPPER LIMIT of Target Range (mg/dL)

Perioperative: UPPER LIMIT of Target Range (mg/dL)

Other (please specify the Other patient population and the UPPER limit of target range): LOWER LIMIT of Target Range (mg/dL)

29. What tools would you choose to safely support your ability to achieve the target ranges? (MARK ALL THAT APPLY)

- ⊝ Do not know

- ⊝ Insulin-dosing calculation software

- ⊝ Automated glucose monitoring system

- ⊝ Reporting system that generates automatic glucose reports

- ⊝ Commercial vendor that summarizes glucose data and provides summary reports to hospitals

- ⊝ None of these

- ⊝ We have everything we need to achieve target ranges

- ⊝ Other (please specify)

30. Please specify the perceived obstacles (if any) to the full implementation and/or expansion of glycemic control at your institution. (MARK ALL THAT APPLY)

◌ No perceived obstacles to implementation or expansion of glycemic control protocols (IF MARKED, PLEASE PROCEED TO THE NEXT QUESTION.)

◌ Lack of familiarity with current hospital inpatient glycemic control guidelines

◌ Lack of standardized institutional policies related to glucose management

◌ Lack of local expertise in inpatient diabetes management and hyperglycemia

◌ Reluctance to have patients endure the pain of frequent fingersticks

◌ Concern about causing hypoglycemia

◌ Not convinced of the benefits of glycemic control

◌ Lack of administrative resources (e.g., quality managers) to implement glycemic control

◌ Lack of clinical resources (e.g., endocrinologists, certified diabetes educator) to deliver the care

◌ Concern about the accuracy of point-of-care glucose meters to guide glycemic control care

◌ Lack of physician endorsement

◌ Lack of nursing endorsement

◌ Lack of financial resources

◌ Other (please specify)

31. Please provide any additional comments on glycemic control implementation, management, or outcomes below.

Automated Blood Glucose Monitoring System

We are currently exploring the development of an automated, glucose monitoring system. The following questions apply to this type of system.

32. If a real-time, automated glucose monitoring system was available, how interested would you be?

- Very interested
- Somewhat interested
- Not at all interested
- Do not know/No opinion

Comments

33. Do you feel having a real-time, automated glucose monitoring system with trend data would help increase your success rate for achieving the targeted ranges?

- Yes
- No
- Do not know

Comments

34. If you had an automated, glucose monitoring system that would allow frequent glucose measurements at the beside how would it affect care for your diabetes/hyperglycemia inpatients? (MARK ALL THAT APPLY)

- Would not effect how we manage our diabetes/hyperglycemia inpatients (IF ANSWERED, PROCEED TO QUESTION #37.)
- Do not know
- Measure more frequently (e.g., hourly, every 2 hours)
- More aggressive with glucose target ranges
- Other

Comments

35. If you had an automated glucose monitoring system that would allow frequent glucose measurements at the bedside, please indicate the <u>LOWER LIMIT</u> of the target range that you would implement?

ICU: <u>LOWER LIMIT</u> of Target Range (mg/dL)

[_____]

Non-ICU: <u>LOWER LIMIT</u> of Target Range (mg/dL)

[_____]

Perioperative: <u>LOWER LIMIT</u> of Target Range (mg/dL)

[_____]

Other (please specify the Other patient population and the LOWER limit of target range) <u>LOWER LIMIT</u> of Target Range (mg/dL)

[_____]

36. If you had an automated glucose monitoring system that would allow frequent glucose measurements at the bedside, please indicate the <u>UPPER LIMIT</u> of the target range that you would implement?

ICU: <u>UPPER LIMIT</u> of Target Range (mg/dL)

[_____]

Non-ICU: <u>UPPER LIMIT</u> of Target Range (mg/dL)

[_____]

Perioperative: <u>UPPER LIMIT</u> of Target Range (mg/dL)

[_____]

Other (please specify the patient population and the UPPER limit of target range): <u>UPPER LIMIT</u> of Target Range (mg/dL)

[_____]

37. Is it your hospital's standard protocol to use a low-dose, (e.g., 2 units of Heparin/1 ml of saline) heparin flush solution in your arterial line pressure bags in order to keep the lines patent?

- ○ Yes
- ○ No
- ○ Do not know

Comments

[_____]

38. Are there any plans in the next 12 months to change this protocol and move to a saline-only flush solution in your arterial line pressure bags?

- ○ Yes
- ○ No
- ○ Do not know

Comments

[_____]

39. What other experts within your hospital helped to gather information for this survey (if any)?

Thank you

40. Please enter the mailing address below of where you would like to receive your Starbucks gift card (if different than the information entered at the beginning of the survey). Thank you!

Hospital Name (if applicable)	
Name	
Address	
City	
State	
Zip	

Thank you for taking the time to complete this survey. Please email us if you have any questions about the material presented at tgcsurvey@epsilongroup.com.

Please click "Done" below to submit your survey results.