Diabetes type II Management in the Acute Settings

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Abstract

The number of people with diabetes mellitus type II has recently increased in the U.S. Therefore, recent studies have placed interest in glycemic control rather than preventive measures. Current guidelines suggest optimization of basal, prandial, and correctional insulin in acute setting and discourage the usage of sliding scales algorithms, however, hospitals in the state of Hawaii are still practicing measures not found efficient for optimal quality of care. Nurse practitioners have the opportunity to play a role in transforming healthcare in becoming better accessible, excellent quality and value-driven environment for patients. The purpose of this paper is to present a plan aiming to change the current management of type II diabetics in non-ICU inpatients over at Straub Medical Center.

Keywords: basal insulin; sliding scale; correctional dose; prandial insulin; diabetes management; hospitals; optimization.

Table of Contents

Diabetes type II Management in the Acute Settings

Introduction and Background

Optimal glucose control is an essential component for the healing process. Some studies have showed significant suboptimal glucose control in hospitals and has been associated with morbidity and mortality secondary to infections, perioperative complications, prolonged length of stay (McCulloch, 2018). These study findings considered facts in healthcare, has generated new strategies such as the development of glucomander software to improve the quality of care in the acute settings. However, despite this advancement, old blood glucose management strategies are still being practiced in some hospitals including Straub Medical Center. This center, also known as Straub hospital, is a prestigious, fully integrated not-for-profit hospital located in Honolulu, Hawaii, and founded by Dr. George F. Straub. It has been providing the finest medical care by “creating a healthier Hawaii” as its mission states since 1921 (Straub, n.d). Dr. Straub vision was to develop a clinic in which patients and family needs were meet under one roof. To improve the health in Hawaii and its diversity, Straub has developed a community health needs assessment. This assessment covers multiple domains such as demographics, race, and needed care conditions such as diabetes (Straub, 2018).

Recently, glucose management has become the subject in research due to the increased in incidence, prevalence, morbidity, mortality, and poor adoption of clinical guidelines in diabetes type II (T2DM) management. In addition, T2DM is considered a complex illness secondary to its multiple etiologies. It is defined as hyperglycemia or glucose greater than 140mg/dl (7.8mmol/l), inadequate insulin secretion, or cellular insulin resistance (Corsino, 2017). This metabolic condition can rise from increase age, genetics, sedentary lifestyle, region, and/or background population. New studies are linking association diabetes type II with low / high birth weight, and prematurity. T2DM can affect vasculature and induce conditions such as hypertension, hyperlipidemia, coronary artery disease, myocardial infarction, stroke, ESRD, retinopathy and foot ulcers. This condition can also arise from medications such as glucocorticoids, oral contraceptives, BB, thiazide, nicotinic acid, statins, HIV, prostate CA, prophylaxis transplant, or antipsychotic agents. Additionally, larger trials along with the Systolic hypertension in Elderly Program Trial, identified association between concurrent hypokalemia and diabetes (McCulloch, 2016).

Diabetes Mellitus type II accounts for 95% of all diabetes cases in the U.S, and affecting more than 415 million people globally (Corsino, 2017). The incidence of this chronic condition has recently increased to 1.5 million with an estimate prevalence of 9.4% in the population. (Center of Disease Control [CDC], 2018). The 2017 National Diabetes Report published an estimate of 30.2 million of diabetes prevalence in 2015, among people aging 18 and older. American Indians/Alaska natives have the highest prevalence for diabetes (15.7%), Hispanics (12.1%), Asian (8.0%), and non-Hispanics white with lowest (7.4%). Most recent data in 2015 reported a total of 1,530 new diabetes (6.7 per 1,000 persons) cases in patients aging 18 years or older, propensity among ages 45 to 64, non-Hispanic blacks (9.0 per 1,000 people), and Hispanics (8.4 per 1,000 people) (CDC, 2018). The CDC estimated the morbidity in adults aged 20 and over diagnosed and undiagnosed as 12.6%, number of death at 79,535, death per 100,000 population is 24.7, and is the 7th leading cause of death (2017). According to the most recent health assessment of Hawaii, poor diet, physical inactivity, low access to healthy food, high diabetes burden and poor preventive care, management, and education, high cholesterol, high rates of chronic kidney disease and end-stage renal disease contribute to T2DM development (Straub, 2016).

At Straub, T2DM care is managed independently. Some methods of management include outpatient oral agents, standard sliding scales and assisted computer-directed software system known as Glucommander. Although this system allows to place the upcoming intake of carbohydrates in grams to individualized care, there is still forms to bypass this significant factor. Glucommander determines the insulin requirement based on a patient's carbohydrates intake and monitored glucose. In addition, this system is not designed for patients eating discrete meals as it does not respond promptly to sudden glucose changes (Joseph et. al., 2018). Although randomized trial had shown benefit in certain patients with T2DM (those in continuous IVF with dextrose or tube feedings), these studies remain to suggest the need of new prospective randomized clinical trials to monitor safety, efficacy and cost of computer based algorithms versus provider as this system is relatively new in the market (Joseph et. al., 2018). New studies have recently discouraged the usage of standard sliding scale insulin in the acute settings as it has revealed greater fluctuations of blood glucose, impairs cognition, and fall (McCulloch, 2018). Not implementing new research into clinical practice over at Straub hospital not only contradict its mission statement and discourage innovation but supports the maintenance of research-practice gap. Furthermore, failing at adopting strong clinical trials recommendations demonstrates breaking the principal of beneficence to the population and negligence to the organization by withholding the potential revenue and returns on investment.

The American Heart Association (AHA) reported diabetes management expenditure is composed of inpatient care, prescription to treat complications of diabetes, anti-diabetic agents, diabetes supplies and physician office visits. It is estimated a total cost $327 billion in the U.S. Diabetic patients has an average medical expenditure of $16,752 per year. These patients have an approximately 2.3times higher medical expenditure to those without diabetes. The cost of diabetes in the U.S. is mostly covered by Medicare, Medicaid and the Military (66%), following by private insurance (60%) and uninsured (2%). This estimated total cost in 2017 has increased by 26% compared to previous estimate of $245 billion in 2012 (AHA, n.d.). Considering the significant percentage in coverage from governmental agencies, following suggested structures are required to maintain Straub Hospital's revenue. Insurance agencies are now opting to reimburse hospitals based on quality care, defined as "better health for population, better care for individuals, lower cost" (Lapointe, n.d.). To accomplish this, agencies such as Medicare have developed valued-based programs as guidelines for prevention. Some of these programs seen in acute setting include Hospital value-based purchasing, hospitals readmission reduction, value modifier, hospital acquired conditions, or end-stage renal disease quality initiative. These valued-based programs have been covering 30% off fee-for-service payment as these are relatively new, however, it is predicted by these agencies an increase in transition by 50% in 2018 (Lapointe, 2017). This transition is now making quality of care not an option, therefore, evidence-based medicine, coordinated care, patient engagement, and data analysis should be the focus for Straub Medical Center. By introducing evidence-based guidelines, it shows loyalty to the organization as this permit to focus on the relationship between achieved benefit and the required investment for future quality improvement interventions.

T2DM has significantly impacted the health of the Hawaiian population leading to numerous hospitalizations. Not optimizing the management of this condition in the acute settings can lead to premature deaths, financial loses, and inaccessible services. Nurse practitioners can reduce the extension of this condition by transforming old patterns of care into new evidence based practice. Previous literature has showed increase in healthcare resource utilization, cost, and cardiovascular disease due to poor adherence to established evidence base recommendations

(Banerji, 2013). Nurse practitioners are essential elements at this transformation due to the frontline exposure and mastering the leadership role. This facilitates the detection of gaps in the whole system, thus, assisting in the structure of practice changes. Therefore, the purpose of this paper is to propose one month pilot study of basal bolus pre-prandial plus correctional insulin order to all non-ICU admitted diabetic type II patients to Straub Medical Center for the month of March 2019 and compare glucose levels with non-ICU admitted diabetic type II patients managed with sliding scale for the month of January 2019.

Review of Literature

An online literature search utilizing *Uptodate*, *CINAHL Complete, Google Scholar,* and *PubMed @ HPU,* via the Hawaii Pacific University's online library, including MeSH with keywords, such as "basal insulin", "sliding scale", "correctional dose", "prandial insulin", "diabetes management", "hospitals", and "optimization" were used. The inclusion criteria selected for these studies included side effect hypoglycemia, effectiveness on basal bolus and basal plus therapy, cost, new basal insulin, and published between 2013-2018. limits included using the articles with downloadable PDF and English as the primary language. A total of four studies were located, reviewed, and discussed in this paper.

Current suggested guidelines

The management of diabetes in the acute setting can be complex due to the presenting level of consciousness, uncertainty of diagnosis in settings of current psychological and physiological stress along with possible medications side effects. Patients who present with T2DM or new hyperglycemia, are not promptly treated with insulin other than diet or oral agents as they are expected to eat a healthy diet during admission. Guidelines suggest continuing outpatient regimen if the glucose is well controlled and no contraindications are present. Providers are to be cautious with metformin and should consider 25-50% dose reduction of any secretagogue since nutritional intake is likely to be restrictive as inpatient. If patients present with poor controlled blood glucose, outpatient agents should be discontinued and insulin should be initiated: these include basal, bolus prandial and correctional (McCulloch, 2018). Returning to the basic of pharmacology, these insulins differ in their definition, mode of action and duration:

- Basal: are absorbed gradually to maintain a constant glucose plasma concentration for 24 hours, it can be found as long-acting or intermediate. Basal tends to show low reproducible pharmacokinetics (University of California, n.d.).
  It is suggested to start with 0.2-0.3units/kg/day (McCulloch, 2018).
- Bolus Prandial: how much one unit can cover carbohydrate, expressed as I:C, the bolus dose is provided as insulin to carbohydrate ratio. It represents how many grams of carbohydrate are covered by 1 unit of insulin. Typically, one unit can cover 12-15 grams, however, due to individual's sensitivity, the range may run from 4-30grams. 1:15 meaning one unit of insulin is needed for every 15 grams of carbohydrate. Someone needing more insulin may have a ratio of 1:10 and someone needing less insulin may have a ratio of 1:20 (University of California, n.d.).
  It is suggested to initiate 0.05-0.1units/kg/meal (McCulloch, 2018).
- Correctional: is an extra dose of bolus insulin based on the difference between pre-meal blood sugar target and the actual pre-prandial glucose. It is believed one unit of insulin will drop blood glucose by 50mg/dl, thus, correction factor is adopted as 50. For instance, a patient pre-meal glucose target is 120mg/dl, and current pre-prandial glucose is

220mg/dl, the difference is 100mg/dl, thus 100mg divided by factor 50 gives two units of rapid acting (University of California, n.d.).

It is suggested when glucose is greater than 150mg/dl (8.3mmol/l) (McCulloch, 2018). For suboptimal glucose control despite the initiation of basal, bolus and correctional at suggested range per guidelines, it is recommended to adjust doses and consider other factors inducing hyperglycemia. For basal insulin, is reasonable to increase 10-20% every 2-3 days, for bolus 1-2units/dose every 1-2 days, and correction 1-2units/dose every 1-2 days (McCulloch, 2018).

Study 1

A prospective multicenter randomized clinical trial compared the safety and efficacy of basal-bolus versus basal plus correction versus sliding scale insulin and concluded treatment with basal plus and basal bolus showed similar results in improvement of glycemic control and lower treatment failures over sliding scale. Both basal bolus and basal plus groups showed low mean daily blood glucose after the first day compared to sliding scale, additionally less unsuccessful treatment was seen in basal bolus and basal plus regimens compared to sliding scale. Of basal bolus patients, 16% experienced 70mg/dl blood glucose, 13% in the basal plus and 3% in the sliding scale. No difference in frequency was observed in setting of severe hypoglycemia for all arms. This study resulted in similar glycemic control for basal plus and basal bolus, however, the study also suggested the usage of basal plus approach as an alternative for basal bolus regimen in general medical surgical patients with T2D. Although this study showed significant lower rate of hypoglycemia incident on patients with sliding scale, it continues to imply for clinical practice to treat with basal-bolus or basal plus regiment patients presenting with poor glycemic control and discourage the usage of standard sliding scale alone as this study showed a third of all patients with significant hyperglycemia along with association of hospital complications (Umpierrez, 2013). This literature supports this proposed project by generating the hypothesis off the recent large RABBIT 2 medical study trial in which patients treated with basal-bolus regimen achieved glucose of less than 140 in comparing with those on sliding scale insulin. RABBIT 2 also reported significant reduction in frequency of hospital complications such as wound infections, pneumonia, bacteremia, renal failure and acute respiratory failure.

Study 2

A post hoc analysis of the RAB-BIT 2 surgery trial over at Emory University Hospital and Grady Memorial Hospital was conducted aiming to monitor for costs per day discrepancy between general surgical patients with diabetes type II who underwent bowel or pancreatic or liver or shunts procedures receiving basal bolus insulin over sliding scale as it has been shown to improve outcomes in randomized control trials. A total of 202 patients were sampled. Statistic data was collected of clinical and hospital billing records and inpatient pharmacy, average was adjusted with general linearized models to reflect hospital day per cost. The resulted adjusted total inpatient cost per day was $5,404 U.S. dollars, along with a reduction of $751 (14%; 95% confidence interval) favoring basal bolus insulin and supporting the RABBIT 2 trial proving significant outcomes during BBI treatment. Although this study suggested hospitals to consider adopting BBI regimen in patients with diabetes type II undergoing surgery, it is also important to acknowledge the selected hospitals (university medical center versus a public hospital) the study was performed may have different structure on base. Another factor is the practiced care each hospital provided (Phillips, 2017). Nevertheless, the results revealing a lower average blood glucose management post procedure (140s) compared to sliding scale (170s) support the project as optimizing glucose control reduces the development of other comorbidities along with unintended infection such as hospital acquired that can interfere with Medicare reimbursement.

Study 3

A 21-day prospective controlled trial from fourteen long term care LTC facilities in the U.S. participated to compare the effectiveness of sliding scale, considered a typical means of insulin treatment in LTC over basal bolus insulin. A total of 64 participants randomized into SSI or control and BBI or intervention. Fasting blood glucose, A1c and chemistries for baseline were initially obtained, each participant underwent pre-prandial glucose monitoring with daily recording. Participants were home residents with 66% females had similar age, gender, race distribution, comorbidities and 3-day average pretrial FBG levels. This study showed a significant lower average fasting blood glucose level compared to the initial testing and the SSI group. Although this study report similar rates in hypoglycemia, hyperglycemia, other adverse events and hospitalization (considered unrelated to glucose control), BBI treatment was found feasible, safe and effective over SSI (Dharmarajan et al., 2016). The selected population (elderly from LTC) in this study along with the feasibility, safety and efficacy BBI showed over SSI, remarks the benefit other facilities caring for the elderly may obtain as these population are more susceptive to other illnesses versus the younger population. Given these findings and the setting for the study, it greatly supports the project as aging population frequent hospitals and often become admitted.

Study 4

A retrospective and prospective study was performed on patients admitted to a tertiary metropolitan teaching hospital for five days aiming to assess the efficacy of dosing accuracy while on sliding scale insulin and its effect on glucose levels. This study collected data retrospectively for the sliding scale arm and prospectively for the BBI arm. The obtained data consisted of omitted, high or low administered doses not ordered. The results of this study showed a 16.3% missed doses in SSL compared to 2.5% doses for BBI. Low doses insulin occurred at rates of 8.7% and 8.8% while high dose was 2.3% and 0%. Patient who received less insulin than prescribed, the subsequent blood glucose was 1.8mmol/l compared to BBI, found higher. Correct administered dose was 2.0mmol/L higher for SSI, one omitted dose was recorded for SSI and two incidents for BBI. This study concluded better accuracy at dosing administration, additionally to the reduced incidence in omitted doses and clearly reports that low administration of appropriate prescribed insulin adversely impacts subsequent glucose control (Roberts, 2015). Missed insulin dose can significantly affect the management of diabetes and further cause diabetes related conditions along with infections. This study supports the project by showing how frequent insulin administration is missed, how omitting these affect future glucoses and how disadvantageous sliding scale is to the hospital system.

Conclusion of studies

Basal bolus was remarkable at stabilizing glucose over sliding scale. Some benefits include lower treatment failure, lower mean daily blood glucose, greatly feasible, less omitted during administration. Although basal plus provided similar results in one study as basal bolus, there was no sufficient data found during the research process covering this insulin management. Basal plus should be considered as alternative when basal bolus is not available. One possible consequence to consider with basal bolus is the risk of hypoglycemia as some studies showed an average of 70 in glucose when treated with basal bolus. On the other hand, hyperglycemia was encountered with sliding scale which could lead into hospital complications. Other consequences to consider when sliding scale is used is the lack of feasibility with the hospital system as multiple omitted doses lead to higher glucose. Though there are not many studies reflecting the effect of insulin on hospital revenue, other studies support by revealing the effect on future glucose which sequentially leads to development of new diseases leading to no reimbursement of care for those patients covered by federal agencies.

Change Theory

Theorist Kurt Lewin and his change theory was selected to this plan as he was considered the “father of social psychology” and his model was found highly influential (Nursing, n.d.). Knowing this, provides reassurance to his work, facilitating the introduction of a change in within Straub society. This approach has found to be successful at making individuals discard old patterns considered counterproductive. The ultimate goal is to bring current suggested insulin guidelines into Straub practice as the 2013 Community Health Need Assessment CHNA identified diabetes as an area of need in the state of Hawaii. One suggested approach utilizing Lewin’s theory is to “unfreeze” the group conformity by increasing the driving force away from the direct behavior which in this settings is identified as mandating one month prescription of basal plus bolus pre-prandial plus correctional insulin to be ordered to all admitted non-ICU diabetic type II patients to Straub Medical Center for the month of March 2019 following by comparing glucose levels data with patients of same conditions managed with sliding scale in the month of January 2019. As this obligation will present resistance from those individuals involved, Lewins suggested to decrease the restraining force. One suggestion is by developing an easy-to-order basal, bolus pre-prandial plus correctional insulin careset on epic in which providers can easily order the medication, thus, preventing confusion and noncompliance. This method prompts equilibrium as Lewin’s dictated in his theory by allowing the pilot study to be ongoing for the whole month. This pilot not only will allow the Straub community to conclude own results but allows to adopt a new level of care and overall stimulating innovation in the organization, thus, reducing uncertain reimbursement from federal insurances (Nursing, n.d.).

As stated previously, multiple randomized trial has showed optimal glucose control in patients who are placed on current suggested guidelines utilizing basal with personalized pre-prandial bolus and correctional versus standard sliding scale. However, due to the research-practice gap, some hospitals have not placed these into practice. Evidence-based practice guidelines are developed in purpose to reflect the best available evidence and to assist clinicians during the decision-making process for specific condition and management. A retrospective medical record audit was performed on cardiac arrest patients again the Australian Resuscitation Council Guidelines for post-resuscitation care and demonstrated multiple gaps between current evidence-based guidelines and the actual care delivered. Although this study demonstrated the variability of post-resuscitation care in these patients, it was clear that adherence to guidelines alone were not sufficient to promote evidence-based clinical care. Therefore, driving forces as presented in Lewin's theory is optimal option (Marshall, 2017). Other reasons to implement this change include the significance of implementing evidence based for improvement in quality of care and to reduce healthcare costs. However, lack of adherence continues to be a problem as showed in a systematic review of 29 guidelines recommendations. Only one third of the research evidence was being routinely adhered (Lau et.al., 2016). In general, practicing evidence based research in practices shows professionalism by maintaining up-to-date knowledge which shows willingness to improve managerial skills as this is considered a transferable skill. Evolving clinical practice based on evidence makes Straub Medical Center and its stakeholders a relevant organization (Aninag, 2014). Evidence based practice has shown less admission recurrence, optimal consistency in care, and lower health cost for patients and annual expenses in organization by reducing medical spending on redundant test and screenings and readmissions (McBeth, 2018). Nurse practitioners can further facilitate research into practice by utilizing nonprofit organizations such as Center for Evidence Based Medicine. This center has developed tools aiding to promote, educate and support the transition process during a change (Center, n.d.). Nevertheless, it is also significant to acknowledge introducing a practice change can create emotional distress for the employees as not all participants can agree with the propose material or just process of breaking old habits. This change can also lead into divides between employees.

Implementation

Now knowing the significance of closing the research-practice gap at Straub Medical Center, the next step is to form a coalition with the community benefit team. This coalition integrated by the Chief Executive Officer, Chief Medical Officer, Director of Quality & Safety, Manager of Health Management, Director of Risk Management, Director of Financial Planning, Director of Business Operations, Vice President of Operations/Chief Nurse Executive, and the Vice President of Clinic Operations will provide visible support within Straub Community. Chart auditors need to be present. This community benefit team not only have access and reporting relationship in Straub but to Hawaii Pacific Health Boards of Directors. The values identified for this proposed closing gap is patients and organizational finances. Stabilizing diabetes in these patients ultimately will provide an optimal and lengthily quality of life, reducing major expenses and maintaining a stable revenue within the organization.

- Stage one: Present plan to the community benefit team. To include the consequences of continuing in performing their current use patterns (Sliding Scale) with research, the suggested guidelines with supporting research and the current problem healthcare is facing in closing the research-practice gap. The benefits for the change with possible consequences. Once this is approved and strongly supported, stage two is proceed.

- Stage two: Develop an easy-to-order physician driven careset using up-to-date diabetes type II management guidelines with the assistance of Carelink ITT services and the Chief Medical Officer to optimize the structure prior to going live. Discourage sliding scale orders with write up.
- Stage three: Provide healthcare leadership mandatory professional dinner on September 2018, have audience of physicians, nurse practitioners, physician assistants, pharmacist, pharmacist tech, house supervisors and nurse managers from each unit. Simplify the change during the presentation to maintain attention, answer all questions and reassure this is a pilot study for the benefit of the community and the organization financial stability. Remind the audience cooperation is necessary, and charts will be audited for compliance.
- Stage four: Assign ITT agent and nurse educators Monday through Friday starting October 1, 2018 educate each healthcare leader (stated in stage three) on the careset and sign consent agreeing understanding of use. Once every healthcare leader has been evaluated for understanding. Last day of education will be on February 25, 2019.
- Stage five: Go live starting March 1st, 2019 at 0000 until March 31, 2018 at 2359.

All healthcare prescribers working at Straub are to order the developed careset composed of the current suggested guidelines for diabetes type II management for every patient admitted to the hospital with type II diabetes. No sliding scale orders should be found during chart reviews. This pilot will be ongoing for the month of March 2019. Nurse manger are to educate their staff on pilot study and to clarify the significance of compliance with BG monitoring and remind staff of upcoming chart review. Pharmacist and techs are to guide clinicians for any misconception in how to order this careset. ITT careset developer is to be accessible any time during March 2019.

Evaluation

To effectively measure this proposed changed of optimizing glucose in patients with T2DM, three areas are to be evaluated. These can be subcategorized by the process, results, and cost-effectiveness. Further exploring these areas allows to identify inefficiencies that may lead to unstable blood glucose (Agency, 2016). The process of this plan can be evaluated by performing a cross-sectional retrospective quality improvement QI study after completing the last day of the pilot study (March 3, 2019). In addition, this QI study should further structure into descriptive and analytical method as this can reveal weak areas that may had induce inappropriate blood glucose control. With the descriptive portion, overall compliance can be monitored: Educators at educating all leader participants at ordering the careset, prescribers concisely ordering the careset in admitted non-ICU diabetic type II patients, nurse management at educating each department staff members including registered nurses and nurses' aides on significance in obtaining blood glucose accurately and timely. The analytical portion allows to associate utilization of current guidelines with optimal blood glucose control in these patients. To support this process, encouraging compliance by the manager of each department whether is verbal, written or during huddles, and reinforcing compliance with glucose monitoring by charge nurses ACHS. This ongoing evaluation is to be initiated every Friday for the month of March 2019.

Evaluating the results can be assessed by measuring the overall health of the type II diabetic patients' prior and post the pilot study by collecting data via chart auditing (monitoring BG levels, omitted insulin administration, compliance with careset order, and hypoglycemia events) with the assistance of nurse managers and chart auditors. Collecting this data retrospectively is beneficial as it requires less time, is less expensive, focus in one exposure (the administration of the insulin careset), present clear results of patient managed with current guidelines versus old pattern of standard sliding scale, allows to calculate the risk difference in glucose management of January 2019 and March 2019 (Boston, 2016). This chart auditing can be initiated after March 31, 2019. Evaluating cost-effectiveness by monitoring the key performance indicators assisted by the reimbursement analyst of Straub is suggested as this method allows to monitor if the revenue cycle system of this organization is being negatively affected by the proposed change. Other forms to evaluate include the net of credit balance of the hospital and comparing profits across other HPH facilities for those diabetes type II patients placed on sliding scale for the month of March 2019 (Lapointe, 2017). Exploring these three areas ensures all previous stated stimulants of this paper (incidence, prevalence, morbidity, mortality, organizational revenue, healthcare cost, and compliance with care) can be accurately evaluated. It also assists identify areas where the system failed to success. This propose change of optimizing blood glucose control by adopting current allow via implementing a pilot study provides multiple suggestions whether this approach is the most beneficial for the community of Hawaii and Straub Medical Center or whether new research study should be encouraged considering the limitations this proposed change encountered.

Conclusion

Optimal glucose control is necessary for healing. Practicing old patterns of care despite evidence-based research not only can affect the patient but the organization and healthcare in the U.S. Fortunately, Straub Medical Center has developed a program focusing in the health care needs of Hawaii Islands. According to its most recent assessment, T2DM is a still considered an area of need secondary to its suboptimal glucose control. This finding is significant due to the increase in its epidemiology, complexity of illness and treatment. New research allowed to develop new guidelines in the management of T2DM utilizing basal, individualized prandial bolus and correctional insulin. However, these studies have also demonstrated the significant consequences in utilizing standard sliding scale and has discouraged its usage. Although Straub hospital has adopted new software such as Glucomander to overcome sliding scale usage, there are still forms to bypass the planned carbohydrates, defeating its individualized purpose. Following recommended guidelines have demonstrated optimal management and less effect in patients and organizations. However, adopting current guidelines has been a problem in hospitals as this requires a system change. To facilitate this change, Lewin theory was applied and structured a pilot study with a cross-sectional retrospective study as evaluation. These results not only allow practitioners to monitor glucose management but supports closing the research-practice gap by disengaging from old practices, along with manifesting loyalty to the principle of ethics and the organization.

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