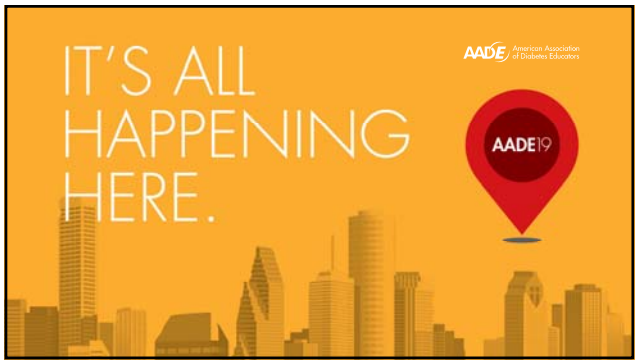

1

Diabetes Education For Inpatient Behavioral Health: What We Didn't Know

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Disclosure to Participants

- Notice of Requirements For Successful Completion
  - Please refer to learning goals and objectives
  - Learners must attend the full activity and complete the evaluation in order to claim continuing education credit/hours
- Conflict of Interest (COI) and Financial Relationship Disclosures:
  - Michelle Magee, MD – No COI/Financial Relationships to disclose relevant to this talk.
    - The research presented is supported by an NIH-NIDDK R34 Grant (DK-109503)
  - Joan Bardsley No COI/Financial Relationship to disclose
- Non-Endorsement of Products:
  - Accredited status does not imply endorsement by AADE, ANCC, ACPE or CDR of any commercial products displayed in conjunction with this educational activity
- Off-Label Use:
  - Not Applicable

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Objectives

- Discuss the methodology for delivery of learner-centered DSSE to inpatients with DM at the bedside within existing workflow on nursing units
- Describe how the rapid cycle design process contributes to effective implementation of programs
- Describe 3 strategies to address barriers to DSSE in an inpatient behavioral health setting

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Setting the Stage

- Overview of the current state of inpatient diabetes education.
- Existing guidance relative to content areas for inpatient diabetes education
- Discussion of existing inpatient diabetes education models and their reported outcomes, when available.

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Diabetes and Behavioral Health

- The scope of the problem
- Diabetes Education for Behavioral Health
- Outpatient Approaches
- Diabetes To Go Inpatient

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Background

- Diabetes self-management education and support (DSMES) improves diabetes-related outcomes including hemoglobin A1C (A1C), adherence to medications and utilization of acute care services .
- Nonetheless, in the first year after diagnosis less than 7% of patients with private insurance receive DSMES, and only 1.7% of Medicare beneficiaries with diabetes had a Medicare claim for DSMES in 2012 .
- Additionally, 1 in 4 American adults with diabetes are not aware that they have diabetes .

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Making the Case for Inpatient Education

- Adults with diabetes have high hospitalization rates both for diabetes-related and non-related diagnoses and higher rates of 30-day readmissions, when compared to persons without diabetes.
- Readmissions can be partially attributed to deficits in diabetes knowledge and self-management skills
- Therefore, hospital admissions present a critical opportunity not only for appropriate diagnosis and medical treatment but also for providing education to persons with diabetes.

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Does inpatient education impact outcomes

- Traditionally considered a suboptimal environment in which to provide education
- Accumulating heterogeneous body of evidence suggests that inpatient diabetes education, improving communication of discharge instructions and involving patients in medication reconciliation may reduce risk for early readmissions, and improve outcomes

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Inpatient Diabetes Education Models

- Diabetes specialty care
- Diabetes non-specialty care
- Technology-supported diabetes education

Nassar CN, Montero AR, Magee MF. 2019. Submitted - Current Diabetes Reports

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Diabetes Specialty Care Education

Model	Education Provider	Services Delivered	Comments
Multidisciplinary diabetes team	Endos, NPs, CDEs, case managers	DM medical management, education, discharge planning; by referral or in response to pre-designated consult trigger criteria.	Evidence supports impact and business case; not all hospitals have inpatient endo services available; reach may be limited by team size.
Diabetes-specialty NP service	NP, CDE consultation service	DM medical management and education, links to outside resources; by referral or in response to pre-designated trigger criteria.	Evidence supports impact & business case; particularly effective when targeted service, e.g. peri-operative management; broad reach may by limited by NPs availability
Diabetes Education service	CDE (RN, RD, PharmD)	DM education consults; may include DM medication management recommendations; by referral or auto-trigger criteria.	Reach limited by number of inpatient CDEs ; no policy for reimbursement at present

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Inpatient Diabetes Management by Specialized Diabetes Team versus Primary Service Team in Non-Critical Units

- Care by a Diabetes Team (Endo, DNP, nurse CDE and discharge coordinators) versus a primary medical service.
- CDE provided 30 to 60 minutes of education.
- Team treatment - significant 30.5% reduction in 30-day readmissions, decreased inpatient costs, and higher rates of post-discharge follow-up compared to care from primary medical team.
- If referred to Diabetes Team within 24 hours of admission a shorter length of stay at 4.7 vs 6.1 days, $p<0.001$, compared to if seen later in their stay.
- *The impact of the education was not evaluated separately from that of the medical care provided, as is typically the case in reports of care by a multidisciplinary team.*

Bansal V, Mottlib A, Pawar TK, Abbasakoor N, Chuang E, Chaudry A, Sakr M, Gabbay RA, Hamdy O. BMJ Open Diab Res Care. 2018; https//doi.org/10.1136/bmjdrc-2017-000460

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Improvement in HbA1c following a type 2 diabetes treatment and teaching programme on conventional insulin therapy in in- and outpatient settings

- A comparison of the impact of a standardized diabetes education program delivered by diabetes educators and physician assistants to inpatients and to outpatients
- A1C decreased significantly and equally in both groups from baseline (1.3 vs 1.2% respectively at one year from a baseline of 9.3%), regardless of the care setting
- Results support the case that inpatient diabetes education can be impactful.

Kuniss N, Muller UA. Acta Diabetologica 2017.

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Inpatient Diabetes Education is Associated with Less Frequent Hospital Readmission Among Patients with Poor Glycemic Control.

- Retrospective study compared readmission rates among patients admitted to the hospital with an A1C > 9% and whom either received or did not receive diabetes education by CDEs during the hospital stay.
- Those who received the education had lower readmission rates at 30 days (11% vs. 16%, p=0.0001).
- The trend towards lower readmission rates continued at 180 days but was not as strong.

Healy SJ, Black D, Harris C, Lorenz A, Dungan KM. Diabetes Care.2013;36:2960-2967.

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Diabetes non-specialty care education

Model	Education Provider	Services Delivered	Comments
Nursing Unit RNs, PCTs	Unit staff within usual workflow processes	Patient education using tablets, DVDs or written materials. May be augmented by referral to inpatient RD for diet instruction.	Potentially scalable for offering survival skills education to all DM inpatients; competing priorities for staff, particularly in high acuity, high throughput hospital
Pharmacy-based team	Pharmacists, pharmacy interns or students	Patient education. May be augmented by referral to inpatient RD for diet instruction	PharmDs with evidence-based role in outpatient DM meds management and education; interns/students on team requires training
General hospital staff	Medicine and/or Hospitalist Service, hospital RDs, PharmDs	Diabetes education, medication education, diet counseling per usual care protocols	Conflicting priorities limit time to deliver education; often defaults to print materials with limited education at discharge; staff may be uncomfortable with delivering DM content.
	Ancillary staff	AA, CNA, MA, LPN, CHW, PCT, etc.	Deliver education to the bedside & engage patient in content; not a DM content expert; lower cost option; may deliver content for multiple medical conditions & may perform functions to facilitate care transitions

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Interdisciplinary Diabetes Care: A new model for inpatient diabetes education

- Single academic medical center - transition from centralized inpatient diabetes education program (CDEs and specially trained nurses supervised by endocrinologist to an interdisciplinary model (bedside nurses, hospital dietitians and pharmacists)
- Approach informed by implementation science methods,
- Literature review and input from multiple stakeholders (nursing, nutrition, pharmacy, hospitalists and endocrinologists).
- Clinician and patient advisor focus group findings informed program design.
- Consensus to focus teaching on survival skills education provided by bedside nurses and referrals to a dietitian for newly diagnosed patients and for those requesting diet instruction.

Hardee SG, Osborne KC, Njuguna N, Allis D, Brewington D, Patil SP, Hofler L, Tanenberg RJ. Diabetes Spectrum. 2015;28(4):276-282.

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Interdisciplinary Diabetes Care: A new model for inpatient diabetes education

- Resulting model included:
  1) enhanced patient education resources
  2) education for unit nurses and a diabetes education tool kit
  3) EHR modification for documentation of SSE
  4) algorithms for use by the pharmacists when consulted for complex cases
  5) identification of newly diagnosed patients for referral to the dietitian
  6) discharge planning support with referrals to outpatient and community resources.
- No statistically significant differences in length of stay and readmission rates pre- and post- program;
- Substantial cost savings to the hospital in the year it was implemented, compared to the diabetes specialty model.
- Inpatient diabetes education can be effectively decentralized when preceded by careful planning that engages and trains all stakeholders, and if HER technology is leveraged to support the effort.

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Technology-enabled diabetes education

Model	Education Provider	Services Delivered	Comments
Patient Engagement Technologies	SMART TVs	Curated generic DM education content; medical or nursing staff may assign videos to view during hospital stay.	Offers potential to extend the reach of diabetes education, including to augment 1:1 education and when diabetes specialty resources are not available or alternative staff resources are limited
	Tablet computer-based content	Curated DM education content delivered from web by tablet computer (or smartphone) or embedded on tablet	Potential to extend DM education reach; Content may be generic or patient-specific; ability to administer surveys and be interactive [32] . With electronic devices infection control, data security & privacy, physical management of the devices and ergonomic issues must be addressed; not all patients comfortable with navigating tech; often requires staff time to familiarize patient with use

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Inpatient Technology, Patient Education & Engagement

- Systematic review identified 17 papers on inpatient patient engagement technology
- A few identified design requirements
- Most described interventions
- Revealed considerable gaps in knowledge & inconsistency of terminology
- Research limited, especially concerning health outcomes & cost-effectiveness

Prey, et al. J Am Med Inform Assoc. 2014;21:742-750

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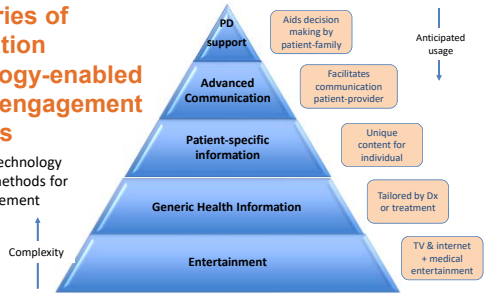
Categories of information technology-enabled patient engagement methods

Advances in technology enable new methods for patient engagement



Prey, et al. J Am Med Inform Assoc. 2014;21:742-750

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Diabetes To Go[1]

- Adults with DM, admission BG >200mg/dl or < 40 mg/dl, and expected LOS > 2 days invited to participate in a SSE intervention delivered at the bedside
- Based on KNOW Diabetes[2] and medication adherence survey results directed to view relevant survival skills video content based on knowledge deficits on a **DVD player**.
- Required 30 to 60 minutes with each participant.
- Contacted by phone post-discharge.
- Significant improvements in diabetes knowledge and medication adherence, as well as a trend towards reduction in hospital admissions in the 3 months post-intervention.
- An important impediment to the spread of this approach was its reliance on research assistants to deliver the intervention

1. Magee MF, Khan NH, Desale S, Nassar CMK. Diabetes Educ. 2014;40(3):344-350.
2. Youssef GA, Ip EH, Magee M, Chen SH, Wallia A, Pollack T, Touma E, Bourges C, Brecker L. Diabetes Ed. 2019;34: 151-157

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Current Guidance for Inpatient DSMES

- ADA suggests that all inpatients receive diabetes self-care education prior to hospital discharge.
- The Joint Commission certification requirements for inpatient diabetes care specify that clinicians involved should have education and training specific to diabetes, and that newly diagnosed patients or those with identified deficits should receive inpatient diabetes education to address survival skills [16].
- The AACE and the ADA state that Certified Diabetes Educators (CDEs) can assist hospitals in meeting the needs of their patients with diabetes, especially as part of the discharge process [13]. In a 2016 position statement,
- AADE recommended that inpatient care teams include a CDE to help improve diabetes patient care [17].
- Inpatient diabetes educators remain rare.
- The 2017 AADE National Practice Survey revealed that only 24% of CDEs were working in an inpatient setting, which is low considering the high rates of hospitalized patients with diabetes [18].

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Diabetes Survival Skills Education

- Diabetes survival skills education (DSSE) is a key component to DSMES
- Defined as the process of facilitating the core knowledge, skills, and ability necessary for safe and effective diabetes self-care in the short term, including:

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Diabetes & Serious Mental Illness

- Persons living with a SMI die earlier than individuals in the general population, living on average 9–32 fewer years of life.[1–3]
- Much of the premature mortality among those with SMI is due to chronic medical comorbidities such as diabetes .
- Chronic disease self-management programs can lead to improved health outcomes in persons living with SMI,[9] nonetheless numerous barriers to self-management of SMI which is coexistent with diabetes exist .

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Behavioral Health Implications

- High incidence of type 2 DM in those with serious metal illness
- Less likely to beware of DM diagnosis or to be screened
- Less likely to receive diabetes education
- Delay in delivery of education while waiting of symptom SMI to resolve

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Diabetes & Serious Mental Illness, cont'd

- Persons with SMI have the same physical health needs as the broader population.
- Addressing acute SMI needs may lead to suboptimal focus on other health issues.
  - e.g. *physical needs and chronic medical conditions including diabetes may be overlooked as interventions focus on the presenting psychiatric illness and stabilizing psychotic symptoms, or symptoms of physical illness being mistaken for aspects of mental illness,* (Mental Health Practice Dec 2005)(*this needs an updated reference but the concept is good*) .
- **Optimizing diabetes care, including SSE, for behavioral health units (BHUs) remains a significant and unmet need for hospitals.** Little evidence guides the best way to deliver DSMES within the inpatient setting on behavioral health units

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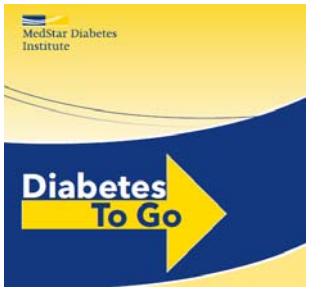

NIH National Institute of Diabetes and Digestive and Kidney Diseases

Diabetes To Go Inpatient Study

NIH R34 DK-109503
PI Magee MF
Co-Is Smith KM, Bardsley JK, McCartney P, Mete M.

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Aims

- To optimize scalable and sustainable solutions for DSME on behavioral health units and for DM-related discharge support. The aims of the study were
- To refine the content and use of a survival skills education model, Diabetes to Go, for use in the inpatient setting
- To integrate the program within usual nursing unit workflow on BHUs in an urban tertiary care hospital.

Hypothesis

- Utilizing robust pre-implementation assessment methods and design with an established implementation effectiveness evaluation framework would help to assess and inform the implementation practices.

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Methods

- Approved by IRB
- Adapted, implemented and evaluated delivery of the DM To Go Program within the BHU setting
- Co designed with nursing staff
- Barriers identified

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Co-design approach

- Focus groups with staff and nursing leadership
- Topics included use of technologies and strategies for education delivery in the BHU patient population
- Advised that all persons on the unit would benefit
  - Food sharing
- Interviews with persons with diabetes on the unit
  - Established education preferences
- Barriers and facilitators of implementation characterized to support adaption

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Methods

- Through the processes of co-design and rapid cycle evaluation and improvement, we sought to optimize D2Go-IN program for delivery by nursing unit staff on BHUs
- We implemented and evaluated the program on two BHUs in a large, urban, tertiary care hospital.

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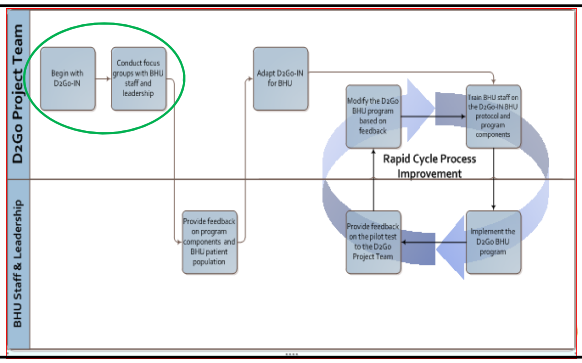

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Redesigning Hospital Diabetes Education: A qualitative evaluation with nursing teams

- During the design phase, focus groups and key informant interviews with nurses and PCTs were conducted
- Staff expressed interest in identifying workable approaches to delivering diabetes education on the BHUs.
- Main concerns were potential patient difficulties in navigating the tablet-based education due to limited technical skills, logistical issues in using the tablets on nursing units including cost, infection control and fear of theft, and the ability to integrate program delivery into existing nursing workflow given workloads and staffing limitations.
- iPad as projectile issue

Smith KM, Baker KM, Bardsley JK, McCartney P, Magee M. J Nurs Care Qual. 2018;34(2):151-157.

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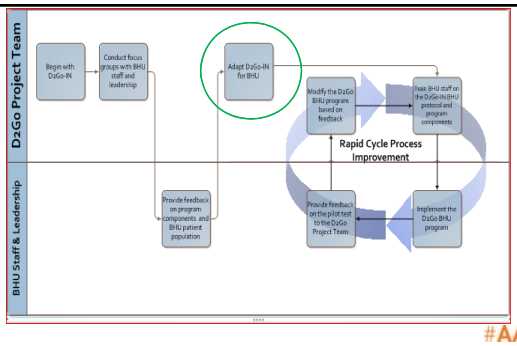

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Delivery Method

- Group setting with combination of video and print content
- Oriented to the DM to Go materials
  - Barrier addressed
- 30 minutes weekly sessions during 16 week intervention period

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Study Surveys

- Demographic survey
- Baseline assessment
  - KNOW diabetes validated 15 item survey
  - Ask12®

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Initial Adaptations

DM2Go-Inpatient	DM2Go-Behavioral Health Units
Individual self-directed education	Group education
Tablet delivered knowledge survey	Paper knowledge survey
Tablet-delivered video modules	TV-DVD delivered education content
Survival skills booklet for all	Survival skills book utilized as facilitators guide
Available to inpatients with diabetes	Available to all patients

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Barriers to Implementation

- Barriers to implementation were identified during implementation, including both operational and patient barriers related to the videos and the knowledge survey.
- Rapid cycle resolutions were developed to enhance adoption during the implementation process

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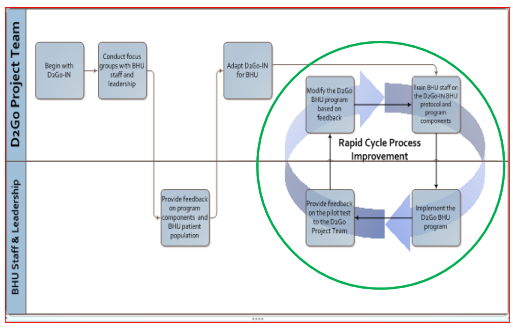

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Operational issues identified	Resolution
Non working DVDs; not able to keep them in open space	Environmental services were enlisted to make available a working DVD which was kept locked in a cabinet near the TV
Education was performed in group settings rather than one on one teachings sessions. There was no formal curriculum	An outline was provided to ensure there was consistency with information

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Patient issues identified	Resolution
Patients were not able or willing to complete the pre-group surveys or knowledge test.	Nurses helped with this task
If the patients spent the time with the survey they did not want to stay for the group session	The nurses stopped administering the surveys and knowledge tests
Patients preferred paper material guide rather than watch videos.	Stopped using videos

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Results

Metric	Result
Groups held	9 out of 16 planned
Total # of participants	86
Total # of participants with diabetes	17
Demographic characteristics obtained	39

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Results

- 39 patients attended a group education session and attempted at least one data collection survey
- Participants were 51% male, and 77% African American
- 35 participants attempted the knowledge survey, and 11 completed it
- On average, patients answered 56% of the knowledge survey questions correctly

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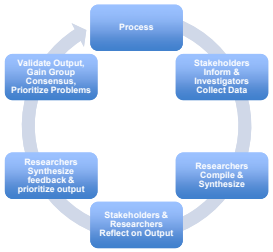
Rapid Cycle Design Process



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Diabetes To Go Inpatient on BHUs: Lessons Learned

- Translation of standardized approaches for patient education from medical units to BHUs requires careful planning with stakeholders to meet the unique needs of BHUs.
- BHU patients and staff are receptive and engaged; however, barriers to implementation exist and adaptations are necessary to support adoption.

Diabetes To Go

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Slide 44

MMF2 This slide seems out of place here?????
Magee, Michelle F, 5/31/2019

Diabetes To Go Inpatient on BHUs: Lessons Learned

- A high proportion of BHU patients have diabetes self-care knowledge deficits with potential to impact self-care behaviors.
- The pilot units have continued providing diabetes survival skills group education beyond the study period, suggesting sustainability.
- Further studies are needed to examine the effectiveness of providing diabetes survival skills education in a group education format on behavioral health units

Diabetes To Go

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Acknowledgements

- Co-investigators Kelly Smith, Kelley Baker, Pat McCartney, Mihriye Mete & their teams with MWHC Nursing, MHRI and MIQS
- Colleagues in the MedStar Diabetes Institute
- NIH-NIDDK for funding

MedStar Diabetes Institute

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Questions & Discussion

Diabetes To Go

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