Improving Diabetes Self-Management Support: Goal-Setting Across the Continuum of Care

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IN BRIEF Goal-setting has consistently been promoted as a strategy to support behavior change and diabetes self-care. Although goal-setting conversations occur most often in outpatient settings, clinicians across care settings need to better understand and communicate about the priorities, goals, and concerns of those with diabetes to develop collaborative, person-centered partnerships and to improve clinical outcomes. The electronic health record is a mechanism for improved communication and collaboration across the continuum of care. This article describes a quality improvement project that was intended to improve the person-centeredness of care for adults with diabetes by offering goal-setting and self-management support during and after hospitalization.

The psychosocial burden of diabetes is significant and can affect outcomes of care, including self-management behaviors (1). Engaging in collaborative goal-setting conversations with patients who have diabetes has been shown to improve outcomes (2–6). Goal-setting is an intentional strategy to achieve person- and family-centered care (7). It not only has the potential to improve clinical outcomes such as A1C (5,8), but, with subsequent clinician support, can also improve patient-provider relationships and patients' perceived competence to manage diabetes (5,9). Studies also demonstrate that collaborative goal-setting increases self-efficacy, promotes goal success, and positively influences patient and clinician satisfaction with care (3,5,10–15).

The multinational Diabetes Attitudes, Wishes and Needs (DAWN) study (16) and subsequent DAWN2 (17) revealed that only 24% of patients reported that their providers asked how diabetes affected their lives (18), despite 44.6% of surveyed patients reporting a high level of diabetes distress (17). The outcomes of the DAWN and DAWN2 studies have prompted a call to action for clinicians to develop collaborative, person-centered partnerships with patients by asking about their priorities and concerns and by understanding how diabetes affects their daily lives.

Indeed, the American Diabetes Association's (ADA) *Standards of Medical Care in Diabetes—2017* (19) includes recommendations that specifically address person-centered strategies to support those with diabetes. These recommendations align with the joint position statement from the ADA, the American Association of Diabetes Educators (AADE), and the Academy of Nutrition and Dietetics that promotes improved communication and collaboration between care teams and with patients (2). The widespread use of clinical documentation systems affords this opportunity, but only if documentation tools within electronic health

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record (EHR) systems are optimized and used.

A lack of communication between clinicians across settings about patients' goals and priorities can lead to patients' dissatisfaction with the patient-provider relationship, limit behavioral goal-setting, and negatively influence clinical outcomes (5,18) such as hospital readmissions. Evidence-based strategies for reducing 30-day readmissions include inpatient diabetes education, post-discharge support, and follow-up clinic visits within 30 days of hospital discharge (20). There is broad support from national organizations to optimize care transitions, continuity, and collaboration through electronic communication of person-centered goals, plans, and preferences (2,7), including integration of care plans into the EHR (21,22).

Rationale for Project

At this academic medical center in the midwestern United States, inpatient diabetes educators provide care to hospitalized patients with diabetes. These educators do not follow up with patients after hospital discharge, but rather encourage patients to follow up with a diabetes or primary care provider after discharge. Before this project, the inpatient diabetes educators were not establishing explicit patient-stated goals and therefore were not documenting such goals in the EHR. Nurses in the diabetes clinic and primary care clinics were often unaware that patients had received diabetes education during hospitalization. These challenges with transitions of care and organizational support for goal-setting across the continuum of care were the triggers for this evidence-based project.

The purpose of this project was for nurses to improve the person-centeredness of their care for hospitalized adults with diabetes by offering goal-setting and support across the continuum of care. Project aims were:

1. To implement goal-setting and communication in the EHR by inpatient diabetes educators, with subsequent assessment of goal progress by outpatient diabetes educators.
2. To understand self-reported involvement in collaborative goal-setting by inpatient diabetes educators and awareness of outpatient diabetes educators about EHR documentation specific to diabetes care in the hospital.
3. To evaluate goal-setting outcomes, including patient-stated goal details, patients' perceptions of goal support and person-centeredness of care, and proportion of patients with clinic visits within 30 days of hospital discharge.

Design and Methods

This quality improvement (QI) project evaluated the implementation of goal-setting and goal assessment for adult patients with diabetes who were hospitalized during the 6-month study period. Quantitative data were captured for fidelity metrics, diabetes educator outcomes, and goal-setting outcomes through retrospective chart review, nurse surveys, and patient surveys. Qualitative data were gathered from inpatient diabetes educators about reasons goal-setting was not done and from retrospective chart review about patient-stated goals.

Setting

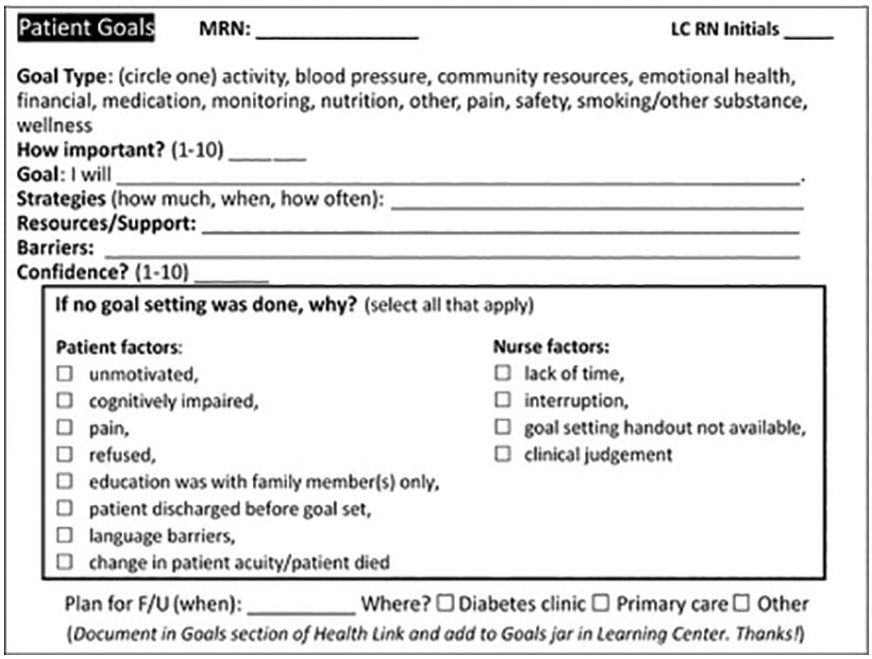
The setting for this project was a 505-bed academic medical center. Approximately 600 patients with diabetes are discharged every month from the main campus hospital. The department that employs inpatient diabetes educators is consulted to provide diabetes education to ~25% of the inpatient population with diabetes. Approximately 93% of these patients receive outpatient care from providers within the health system; the remainder are regional patients or patients from other states and do not receive follow-up care locally. Only 7% of patients follow-up in the outpatient diabetes clinic after hospital discharge. The clinic is an ADA-recognized diabetes education program and employs diabetes educators who only see patients in the outpatient clinic setting.

Sample

Patients were included in this project if they were adults (≥18 years of age with diabetes, regardless of their admission diagnosis or location in the hospital [i.e., medical or surgical unit]). Patients who were seen by an inpatient diabetes educator were included in retrospective chart review to evaluate whether goals were set with the educator in the hospital, whether follow-up care was provided at any clinic in the system, and whether goal progress was assessed. Patients who had been hospitalized and subsequently received care in the adult outpatient diabetes clinic received a Patient Assessment of Chronic Illness Care (PACIC) (23), a validated 20-item survey to assess their perceptions of their care. All nurses working as diabetes educators in the hospital and diabetes clinic were included; 11 inpatient diabetes educators and 6 outpatient diabetes educators participated in the project. This project was reviewed by the health system's institutional review board and the institutional review board of the sponsoring university and approved as a QI project.

Project Description

Inpatient diabetes educators were asked to facilitate goal-setting conversations with inpatients based on motivational interviewing principles. A documentation template reflected a motivational interviewing approach (24,25) to goal-setting, an approach taught to all inpatient diabetes educators before implementation of the project. Although these nurses were generally familiar with motivational interviewing, the improvement team wanted to ensure that nurses had consistent knowledge and skills. Two 4-hour classes were taught by an internal content expert who was not a member of the QI team. Additionally, a patient handout was used to guide the goal-setting conversation and was



Patient Goals MRN: _____ LC RN Initials ____

Goal Type: (circle one) activity, blood pressure, community resources, emotional health, financial, medication, monitoring, nutrition, other, pain, safety, smoking/other substance, wellness

How important? (1-10) ____ ___

Goal: I will _____.

Strategies (how much, when, how often): _____

Resources/Support: _____

Barriers: _____

Confidence? (1-10) _____

If no goal setting was done, why? (select all that apply)

Patient factors:
- ☐ unmotivated,
- ☐ cognitively impaired,
- ☐ pain,
- ☐ refused,
- ☐ education was with family member(s) only,
- ☐ patient discharged before goal set,
- ☐ language barriers,
- ☐ change in patient acuity/patient died

Nurse factors:
- ☐ lack of time,
- ☐ interruption,
- ☐ goal setting handout not available,
- ☐ clinical judgement

Plan for F/U (when): _____ Where? ☐ Diabetes clinic ☐ Primary care ☐ Other

(Document in Goals section of Health Link and add to Goals jar in Learning Center. Thanks!)

FIGURE 1. Data collection form.

TABLE 1. Inpatient Diabetes Educator Involvement in Collaborative Goal-Setting

Survey Questions	Pre-Intervention Mean	Post-Intervention Mean	*P* (two-tailed)
1. I engage in collaborative goal-setting with patients when providing diabetes education.	3.18	3.45	0.512
2. I give patients a written copy of their goals.	2.64	2.64	0.999
3. I document patient-stated goals in the EHRelectronic health record.	2.55	3.91	0.023
4. I encourage patients to receive follow-up care for their diabetes after discharge.	4.73	4.91	0.408

offered to patients before hospital discharge.

Patient-stated goals elicited during these conversations were entered into an existing section of the EHR specifically intended for goal documentation. Patients were encouraged to follow up with an outpatient provider after discharge according to the standard of care before project implementation. Outpatient diabetes educators could then locate these patient-stated goals in the EHR and document patients' goal progress during outpatient clinic follow-up appointments.

Inpatient diabetes educators had limited or no access to computers during teaching sessions with hospitalized patients. Data collection forms (Figure 1) enabled them to take notes about aspects of the goal-setting conversation that needed to be documented in the EHR after the teaching session. Data included goal category, goal statement, goal importance score, strategies, resources/support, goal barriers, and goal confidence score. If goal-setting did not occur with a patient, the inpatient educator was able to note the reason (e.g., patient unmotivated or lack of time) on the same data collection form. Lead author G.E.K. gave feedback to the inpatient educators about how many goals were set each week and examples of patient-stated goals to encourage the new practice.

Outpatient diabetes educators were informed of the project and asked to meet with patients to assess goal progress during clinic visits after hospitalization. Before project implementation, outpatient diabetes educators were rarely included in the clinic visits that occurred after hospitalization; patients generally met with providers only. A new process was implemented to improve involvement of the diabetes educators during this clinic visit by having the medical assistant ask all patients if they had been hospitalized within the previous 6 months. For patients who answered in the affirmative, a message was given to the provider to include the diabetes educator in the visit. At the end of the clinic visit, the clinic staff asked patients to complete a survey to assess perceptions of goal support and patient-centeredness of care received in the previous 6 months, a timeframe that included both the hospitalization and clinic visit.

Methods of Evaluation

Fidelity to Implementation

The first aim of the project was related to implementation fidelity. Weekly counts were completed for the number of patients who set goals or did not set goals compared to the number of patients for whom inpatient diabetes educators were consulted. To standardize response options for not setting goals, nurses were given 12 patient or nurse factors from which to choose (Figure 1). These lists were created by G.E.K. with input from three inpatient diabetes educators. A retrospective chart review was completed for all patients who set a goal in the hospital to determine whether a

TABLE 2. Outpatient Diabetes Educator Awareness of Diabetes Education

Survey Questions		Pre-Intervention Mean	Post-Intervention Mean	*P* (two-tailed)
1.	I know if a patient has been discharged recently from the hospital.	3.33	4.00	0.260
2.	I know if a patient with diabetes has received diabetes education while hospitalized.	2.83	3.50	0.323
3.	I can find patient-stated goals in the electronic health record.	3.67	4.67	0.007
4.	I assess patients' progress toward their goals when they come to a clinic visit.	3.17	4.00	0.196

nurse in any clinic assessed goal progress during an outpatient clinic visit.

Nurse Surveys

Two 4-item surveys were created by G.E.K. and reviewed and approved by the study team and institution's Nursing Research Council's Survey Subcommittee to ensure content validity. The nurse surveys assessed inpatient diabetes educators' involvement in collaborative goal-setting and outpatient diabetes educators' awareness about diabetes education and goal documentation in the hospital (Tables 1 and 2). Both surveys used a 5-point Likert scale (ranging from 1 = Never to 5 = Always). Each item was scored individually.

Goal-Setting Outcomes

Goal-setting outcomes were evaluated by collecting patient-stated goal details (i.e., goal categories, goal statements, goal importance scores, strategies, resources/support, goal barriers, and goal confidence scores) through retrospective chart review. Goal categories in the EHR were initially based on the AADE7™ Self-Care Behaviors (26) but have been modified and expanded over time by committee members at the organization to meet the needs of patients setting goals related to a variety of conditions.

Patients' perceptions of goal support and person-centeredness of care were assessed through the use of the validated 20-item PACIC and a validated PACIC subscale specific to goal-setting (23,27). A PACIC summary score was calculated by averaging the scores of all 20 questions; scores for the goal-setting subscale were calculated by averaging scores from five items that correspond with goal-setting (23). A more comprehensive version of the survey, known as the PACIC+ or PACIC-5As, contains an additional six questions that enables subscale scoring for the "5As" behavior-change model (ask, advise, agree, assist, and arrange) (27). However, because of concerns about the length of the survey, the 20-item survey was determined to be more feasible. (Additional information on the PACIC and PACIC+ surveys can be found online at www.improvingchroniccare.org.) Finally, retrospective chart review was done to determine whether patients attended a clinic visit within 30 days of hospital discharge.

Statistical Analysis

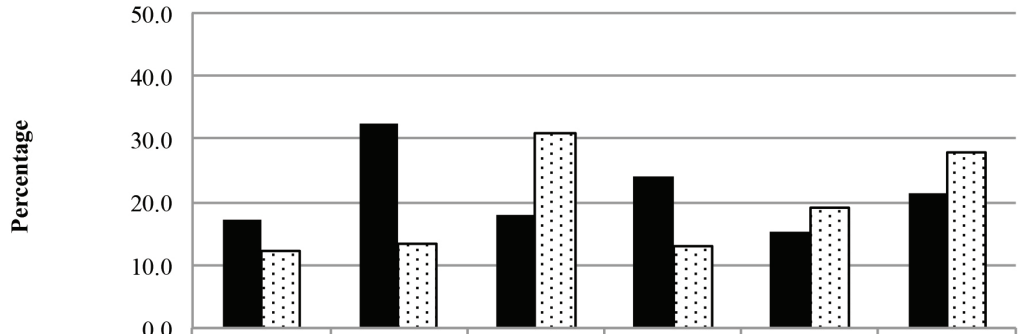
Data were analyzed using descriptive and inferential statistics with IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y.). Frequencies were determined for goals documented, goal types, reasons reported by inpatient diabetes educators for not setting goals, goal progress assessed by outpatient diabetes educators, patients attending an outpatient clinic visit by location, and whether these clinic visits occurred within 30 days of a hospital discharge. χ^2 analysis was used to compare goal assessment outcomes based on the type of outpatient clinic (diabetes clinic, primary care clinic, or specialty clinic). Independent *t* tests were used to analyze differences in means for the Likert-scale responses for nurse surveys (Tables 1 and 2). PACIC survey results, including overall scores and goal-setting subscale scores, were analyzed using a one-way analysis of variance to compare results for patients who set a goal in the hospital, set a goal in the diabetes clinic, or did not set a goal. An alpha level of 0.05 was used for all statistical tests.

Results

Fidelity Outcomes

During the 6-month study period, inpatient diabetes educators set goals with 21.1% of 626 hospitalized patients who needed consultation (n = 132). Monthly rates of goal-setting ranged from 15.2 to 32.3%. Of the remaining 494 patients who did not set a goal, nurses reported reasons for 24.1% of patients (n = 119, range 12.2–31.0%). Figure 2 displays monthly outcomes.

Nurses reported 162 reasons for not setting goals with 119 patients in the hospital, which reflected the selection of multiple response options for some patients. Patient factors accounted for 96 (59.3%) of reported reasons; 66 (40.7%) of reasons were nurse factors. Both patient and nurse factors were reported for 13 (10.9%) patients. The most commonly reported reasons were a nurse's clinical judgment (22.8%), a lack of patient motivation (20.4%), and a lack of time to set goals (14.8%). Table 3 displays the frequencies and percentages of reported reasons. One nurse who selected the reason "clinical judgment" wrote, "His goal is just to survive. Homeless, 18 years old."



	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
■ Patients with goal(s) (%)	17.3	32.3	18.0	24.2	15.2	21.5
□ Patients with reasons for no goal (%)	12.2	13.5	31.0	13.1	19.2	28.0

FIGURE 2. Patients with goals or reasons for no goals, by month.

"Depression" was also noted for a few patients to clarify nurses' choice of "unmotivated."

Goal assessment during clinic visits after hospital discharge varied significantly by clinic location (Table 4). Less than 11% of patients who set a goal during hospitalization followed up in the diabetes clinic after discharge. Of these patients, 57.1% (n = 8) had their goals assessed compared to 13.6% (n = 3) who were seen in a primary care clinic. Forty-five percent of patients were seen in specialty clinics other than the diabetes clinic (e.g., transplant, orthopedic, or pulmonary clinic) after hospitalization. No evidence of goal assessment was found for these patients (n = 60). There was a statistically significant difference in goal assessment by location, χ^2 (2, n = 96) = 36.7, P = 0.0001. The large effect size also indicated clinical significance (Cramer's V = 0.62).

Nurse Surveys

Response rates were 100% for the inpatient (n = 11) and outpatient (n = 6) diabetes educator surveys. Inpatient surveys reflected no significant changes over the course of the project related to involvement in collaborative goal-setting (P = 0.512), provision of written copies of goals (P = 0.999), or encouragement of follow-up care (P = 0.408). There was a statistically significant difference related to documentation of patient-stated goals in the EHR (t = –1.36, df = 20, P = 0.023) (Table 1). Outpatient diabetes educator surveys reflected an increased awareness of recent hospitalization, education during hospitalization, and goal assessment in clinic, but changes were not statistically significant (P >0.05). Nurses did report a statistically significant change over time in being able to find patient-stated goals in the EHR (t = –3.354, df = 10, P = 0.007) (Table 2).

TABLE 3. Nurse-Reported Reasons for Not Setting Goals During Hospitalization

	Frequency	Percentage
Patient factors		
Unmotivated	33	20.4
Cognitively impaired	13	8.0
Refused	13	8.0
Pain	9	5.6
Education with family only	9	5.6
Patient discharged before goal set	9	5.6
Language barriers	6	3.1
Change in acuity/patient died	4	2.5
Total	***96***	***59.3***
Nurse factors		
Clinical judgment	37	22.8
Lack of time	24	14.8
Interruption	5	3.1
Goal-setting handout not available	0	0.0
Total	***66***	***40.7***

Goal-Setting Outcomes

One hundred and forty-eight goals were set by 132 patients during hospitalization. Goals were categorized by the nurse and/or patient to be entered into the EHR. The most commonly selected goal categories included monitoring (n = 65, 43.9%) and medication (n = 27, 18.2%). Other goal categories selected included other (n = 21, 14.2%), nutrition (n = 20, 13.5%), wellness (n = 6, 4.1%), activity (n = 4, 2.7%), emotional health

TABLE 4. Goal Assessment by Outpatient Clinic Location (*n* = 132)

Follow-Up Location After Hospital Discharge	Patients Who Set Goal(s) in Hospital (*n*)	Patients Seen by Location (%)	Goals Assessed by Location (%)
Diabetes clinic	14	10.6	57.1*
Primary care clinic	22	16.7	13.6
Specialty clinic (other than diabetes clinic)	60	45.5	0.0
No clinic visit	36	27.2	0.0

**P = 0.0001.*

(*n* = 3, 2.0%), and smoking/other substances (*n* = 2, 1.4%). An example of a monitoring goal was "I will check my blood sugars three times a day for 2 weeks." One patient set a nutrition goal of "I will change from drinking regular soda to diet soda." A goal categorized as "other" was "I will lose 10 lb by the end of August." One patient chose a wellness goal of "I will look into taking a yoga and/or Tai Chi class in my hometown."

Strategies for goal success, resources and support, and barriers were documented for 135 of 148 total goals (91.2%). These details were not completed for 8.8% of patients. To align with the principles of motivational interviewing (24), patients were asked to rate goal importance and goal confidence on a 1–10 scale. Nurses were asked to coach patients to set goals that patients scored as ≥7 because there is evidence that high-rated goals are more likely to be achieved (23). Patients rated goal importance as ≥7 for 126 goals (85.1%). Goal confidence was rated as ≥7 for 109 goals (73.6%).

Forty-one patients completed the PACIC survey after a diabetes clinic visit. Only 18 of these patients were seen in the hospital by a diabetes educator. Of the 18 patients who did work with an inpatient diabetes educator, four set goals and completed the survey. Ten patients did not set goals in the hospital but did set goals when they met with an outpatient diabetes educator.

A one-way analysis of variance was conducted to explore the relationship between goal-setting and PACIC scores and how that relationship differed between groups. Patients who set a goal with an inpatient or an outpatient diabetes educator were compared to those who never set a goal. Although patients who set a goal had higher overall PACIC scores than those who did not set a goal, this difference was not statistically significant (P = 0.59). Mean scores for the PACIC goal-setting subscale revealed highest scores for patients who set goals in the hospital (mean 4.7, SD = 0.20) and in clinic (mean 3.9, SD 0.93) and lowest for those who did not set goals (mean 3.8, SD 0.81), but these differences were not significantly different (P = 0.18).

Timeliness of outpatient clinic visits after hospitalization was also evaluated. Of the 132 patients who set goals during hospitalization, 36 (27%) did not have a follow-up appointment within our system. Of the 96 patients who did receive care within our system, 81 (84.4%) attended a clinic appointment within 30 days of discharge. The majority of patients had their first visit in a specialty clinic other than the diabetes clinic (*n* = 60, 45%); 22 (17%) were seen in a primary care clinic, and only 14 (11%) were seen in the diabetes clinic (Table 4).

Discussion

The first aim of this project related to the implementation of goal-setting in the hospital setting. Although goal-setting was completed with <25% of patients, we knew there would be many patient and nurse factors that were legitimate reasons for not setting goals. These reasons were captured in part by the data collection form, but also through regular discussions with staff, who most commonly reported the time-consuming nature of the documentation. Evidence of goal-setting was sometimes found within nurses' notes, but these details were not always found in the goals-specific section of the EHR. Unfortunately, goal details in nurses' notes are unlikely to be seen by clinic staff.

Inpatient nurse survey results reflected nurses' beliefs that they were already setting goals with patients before this project. However, those goals were often limited to glycemic targets rather than behavioral goals. Using a motivational interviewing approach improved the patient-centeredness of goal-setting and moved beyond glycemic goals. Anecdotally, nurses also reported improved nurse-patient/family relationships and praise from patients and families when nurses initiated these goal-setting conversations.

A clinically meaningful process outcome of this project was the involvement of outpatient diabetes educators in the clinic visits after hospital discharge. Before this project, diabetes educators were usually not aware that these patients were in clinic; separate appointments were often scheduled for 1–3 months later. During the project, when diabetes educators were involved in the visit, patients' goal progress could be

assessed, education could be reinforced, and support could be given. It is unknown whether nurses in primary or specialty clinics are routinely involved in clinic visits after hospitalization, but this appears to have an impact on goal assessment and support. Anecdotally, nurses in the diabetes clinic reported greater satisfaction with these visits. They did identify that it would be helpful to have more training with motivational interviewing to improve their skills.

Although primary care and specialty clinics other than diabetes clinic were not actively targeted for this goal-setting intervention, some nurses in primary care clinics have been taught about motivational interviewing and goal-setting documentation. As previously described, many patients who set goals in the hospital followed up in these clinics after hospitalization and did not have their goal progress assessed. A notable exception was a patient who set a goal in the hospital related to weight loss and subsequently was seen in a primary care clinic where a nurse assessed goal progress. The patient had lost a significant amount of weight, achieved an A1C reduction of 2%, and was able to discontinue his use of insulin. This success story and others encourage staff to continue their efforts.

Limitations

Despite a 6-month implementation period, only a small number of patients were hospitalized, seen by an inpatient diabetes educator, and followed up on in the diabetes clinic after hospitalization. This limited our understanding of how goal-setting influences patients' perceptions of care specific to goal-setting. The small percentage of patients who did set goals may be realistic, however, since patients' readiness for goal-setting during hospitalization is likely limited by their acute or critical conditions. The quality of goals was not formally analyzed, but often were not considered SMART (Specific, Measurable, Attainable, Realistic, and Timely) goals, despite prompts in the patient handout used to guide the goal-setting conversation. Additionally, goal progress was not assessed for the majority of patients who followed up in primary care or specialty clinics other than the diabetes clinic. It is unclear how this lack of follow-up support affected patients' progress toward their goals or patient-provider relationships.

Another limitation was that clinical outcomes such as A1C, weight, or blood pressure were not evaluated. A longitudinal study with follow-up on such outcomes would be beneficial.

Finally, there are limitations in the knowledge gained from the internally developed survey instruments for nurses, which may not have adequately captured baseline data or the true impact of change on nursing practice.

Conclusions and Implications

Goal-setting has been endorsed as an intentional approach to providing person-centered care. Although it most often occurs in outpatient settings, goal-setting conversations initiated in the hospital by inpatient diabetes educators may be an effective strategy to support patients as they transition from the hospital to home. Documentation of person-centered goals in the EHR increases the opportunity for nurses and other providers in clinics to provide goal support during outpatient clinic visits after hospital discharge. Communication between care settings will continue to be a challenge unless efficient documentation tools are in place. Sustainability of this project and future expansion will depend on increasing clinicians' comfort and skills with goal-setting, as well as improving mechanisms for communication between staff in different settings.

Given that such a large proportion of patients received post-hospital care in specialty clinics other than the diabetes clinic, it may be reasonable to educate nurses in these clinics about goal-setting and documentation. Although this project focused on a diabetes population, there has been interest in expanding the practice to patients with heart failure and other chronic conditions. To support and sustain the expansion to more patient populations and additional staff, automated reports to track patient outcomes, including goal assessment and goal progress, will be crucial to ensure ongoing auditing and feedback.

Duality of Interest

No potential conflicts of interest relevant to this article were reported.

Author Contributions

G.E.K. researched data, contributed to the discussion, and wrote, reviewed, and edited the manuscript. K.M.Y., M.T.B., and A.A.V. contributed to the discussion and reviewed and edited the manuscript. G.E.K. is the guarantor of this work and, as such, had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Prior Publication

G.E.K. presented a poster on this study titled "Diabetes Self-Management Support Across the Continuum of Care: Communicating Person-Centered Goals" at the American Association of Diabetes Educator's annual meeting in Indianapolis, Ind., 4–7 August 2017.

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