Diabetes Care Transitions in the Hospital: Preventing Readmissions

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Discuss successful strategies to prepare patients to return home on a diabetes discharge regimen that is:

• individualized
• safe and effective
• and helps prevent readmission

Goals


Objectives
At the end of this program the participant will be able to:

• Identify hospitalized people with diabetes at high risk for readmission
• List several key strategies known to reduce readmission rates in people with diabetes
• State how to tailor the discharge regimen based on the current A1c and patient ability to learn
Scope of the Problem: Barriers to Planning an Effective Discharge

- Shorter lengths of stay: ~4+ days
- Lack of effective diabetes self-management education during hospital stay
- Impaired ability to learn during acute illness e.g. changes in cognition, anxiety, pain, noise, interruptions
- Family/caregivers not present during education to reinforce teaching at home
- Prescriptions may be incorrect, missing, or not covered in plan


Polling Question

The readmission rate for people with a history of diabetes is about 26%.

A. True
B. False
Hospital Readmission Rates
for People with Diabetes (DM)

**Rubin (2015)**

- ALL Patients: 8.5 – 14%
- DM Patients: 10 – 21%

**Ostling, et. al. (2017)**

- 22% w/o DM vs.
- 26% with DM (n=7763)

**All Adult Encounters:**
inpatient, emergency department (ED), observation

- 17.7% w/o DM
- 24.3% w/DM (n=37,702)

**According to Ostling ...**

- Most common cause for readmission is infection-related
- Direct medical costs for DM inpatients = $75.68 billion for all hospital admissions (2012 data)

Polling Question
Which of the following is NOT a known risk factor for 30-day readmission for people with diabetes?

A. Recent emergency department visit
B. No health insurance
C. African-American or Hispanic
D. History of renal insufficiency, heart failure and asthma
Risk Factors for Readmission

According to the literature:

- Admitted through ED
- Public insurance (Medicare, Medicaid)
- Socio-economic status
- Racial/ethnic minority
- Multiple comorbidities
- Prior hospitalization and/or ED visits
- Prior diabetes diagnosis not known

MORE Risk Factors for Readmission?

What other factors do we suspect?

- A1c > 9%
- Going home on insulin for first time
- Going home on COMPLICATED insulin regimen (e.g. calculating mealtime dose)
- Last minute discharge planning/ teaching
- Poor health literacy/numeracy
- No financial resources for diabetes supplies
- **OTHER:** elderly, no social support, regimen does not match patient, language not accommodated

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Decreasing 30-Day Readmission Rates in High-Risk People with Diabetes:

A Feasibility Study at NewYork-Presbyterian (NYP)/Cornell

• Chart Reviews from Dec 2014 - May 2015 revealed: 64% of Weill Cornell inpatients with diabetes in the medicine service with A1c >9% were readmitted within 90 days

• No standardized transitional care program for high-risk people with diabetes

• Aim: Decrease 30-day readmission rates for high risk people with diabetes in medicine service line using an evidence-based transitional care program of interventions

Polling Question
According to current research, which strategy is most effective in preventing readmission in people with diabetes?

A. Med-to-bed medication delivery
B. Follow-up phone call within 3 days of discharge
C. Sending a visiting nurse to the home
D. Diabetes self-management education

Plan:
• Test feasibility of several key strategies known to prevent readmission in people with diabetes

In Hospital:
• A1c to determine eligibility and diabetes therapy
• Med-to-bed prescription delivery
• Diabetes education

Post Discharge:
• 3 day follow-up phone call
• 7 day outpatient visit
Obtaining A1c at NYP/Cornell Campus

• 80 charts were found to have 2 or more BGs >180 mg/dL (10 mmol/L) in 24 hours, A1c requested by research assistant
• Took 1-3 days with multiple requests to get A1c ordered on 48 of the 80 patients with hyperglycemia
• 32 of the 80 patients never had an A1c ordered prior to discharge
• Lesson learned: Consider auto-selecting A1c order in insulin order set to ‘if A1c not done within past 2-3 months’ to facilitate timely result

Med-To-Bed Medication Delivery

Results: 61.1% (n=22) received medication reconciled to match insurance and delivered to bedside prior to discharge

Barrier: Delays in obtaining prescriptions to send to med-to-bed pharmacy, med-to-bed pharmacy didn’t check for missing prescriptions (e.g. needles, test strips)

Reason for delay in writing prescriptions: Prescriber uncertainty about what meds/doses patient would go home on

Lesson learned: Get prescriptions for current diabetes medications at current dose to check which insulin/devices are covered
78.3% of the 95.9% of people with prescriptions for insulin had no prescription for needles
**Pocket Card for Writing Prescriptions**

**Ordering Insulin & Diabetes Supplies in Electronic Medical Record (EMR): Check edit and free text for all supplies EXCEPT Insulin Pens**

**Drug Search Term**

BOLUS: NovoLog Flexpen® or Humalog KwikPen®

BASAL: Lantus® U100 or Toujeo® U300 Solostar Pen® or Levemir® or Tresiba® U100 or U200 FlexTouch Pen®

PREMIX: NovoLog Mix 70/30 Flexpen® or Humalog Mix 75/25 KwikPen®

NPH: Humulin N Kwik Pen®

BD Nano 4mm or DUO (safety) pen needles

BD Ultrafine 6 mm 1/2 ml insulin syringe
(holds up to 50 units)

BD Ultrafine 6 mm 1 ml insulin syringe
(holds up to 100 units)

Accu-Chek Connect, Bayer Contour Next EZ, FreeStyle Freedom LITE OR OneTouch Verio IQ blood glucose meters

Accu-Chek Connect, Bayer Contour Next EZ, FreeStyle Freedom LITE OR OneTouch Verio IQ test strips and lancets

**Instructions**

<table>
<thead>
<tr>
<th>Take (range, up to) ______ units before meals</th>
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<tbody>
<tr>
<td>Take ______ units at ______ AM/PM</td>
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<tr>
<td>OR</td>
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<tr>
<td>Take ______ units at ______ AM</td>
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<tr>
<td>AND</td>
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<tr>
<td>Take ______ units at ______ PM</td>
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</table>

Dispense #100 (or #200) use as directed

Dispense #100 (or #200) use as directed

Dispense #100 (or #200) use as directed

Dispense: 1 meter, use as directed

Check blood glucose ______ x/day,
Diabetes Self-Management Education

• Results: 77.8% (n=28) received diabetes self-management education prior to discharge
• Diabetes education was often delayed until the day of discharge, not allowing the patient an opportunity to practice new skills
• 75% of the 8 patients who had no diabetes education were readmitted within 30 days

<table>
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<th>No Education n=8</th>
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<td>75%</td>
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<td>25%</td>
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</table>
Can Inpatient Diabetes Education Decrease Readmission Rates and Lower A1c?

- Wexler, D.J., et al., 2012. Impact of inpatient diabetes management, education, and improved discharge transition on glycemic control 12 months after discharge. METHODS: Provided diabetes education, management and transition to outpatient care to adults with T2DM + a1c>7.5%. RESULTS: Improved A1c 1 year post discharge in patients new on insulin (A1c ↓ 2.35%, p=0.04, n=31).

- Healy, S.J., et al., Inpatient diabetes education is associated with less frequent hospital readmission among patients with poor glycemic control. METHODS: Retrospective chart reviews to analyze relationship between inpatient education and readmissions in patients with poorly controlled DM. RESULTS: Patients who received formal inpatient DM education had decreased 30-day readmissions (11% vs. 16%, p=0.0001, n=2265).

- Dungan, K., et al., An Individualized Inpatient Diabetes Education and Hospital Transition Program for Poorly Controlled Hospitalized Patients with Diabetes. METHODS: Patients with T2DM received inpatient diabetes education and discharge support including follow-up calls and communication with primary care physician. RESULTS: Individualized inpatient DM education and transition to outpatient care significantly lowered A1c for patients with T2DM (↓2.8%, p=<.0001, n=82).
Diabetes Self-Management Education
Promote EARLY Diabetes Education

• Teach bedside Registered Nurse (RN) and primary team to educate *high-risk* patients as soon as patient is ready to learn

• Use BG monitoring, insulin administration and meal trays as teaching moments

• Improve RN access to diabetes self-management tools: written survival skills educational material, insulin pen training supplies, and blood glucose meters to take home
Staff Education/Diabetes Champions

- Intensive *then* ongoing additional education for all clinicians that care for people with diabetes: MDs, NPs, PAs, PharmDs, RDs, RNs

- Focus on glycemic management AND patient education and preparation for discharge

- Diabetes Champions serve as *unit based* resource and mentor

- Most impact if champions are house-wide & *interdisciplinary*

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Diabetes Teaching Resources

- Teaching Checklist in EMR
- Practice Pens
- Free Meters
- Handouts in Multiple Languages

Insulin Pen Teaching

Safety

- RN education:
- Be Aware: Don’t Share
- Barcoding insulin type and PATIENT ID
- Pen returned to patient specific drawer IMMEDIATELY after use EVERY TIME

Patient Education

- Generic pen handouts
- Teaching kits
- Label saline pens: “Do Not Inject”
- Beware of patient insulin pen needle errors


Tools You Can Use to Optimize Discharge Planning
Revised Discharge Insulin Algorithm

Choosing a Discharge Regimen

**A1C < 8%**
Restart outpatient treatment regimen (oral agents and/or insulin)

**A1C 8%-10%**
 Restart outpatient oral agents and keep glargine once daily at 50% of hospital dose

**A1C >10%**
Discharge on basal/bolus at same hospital dose.

*Alternative:* Restart oral agents, keep glargine once daily at 80% of hospital dose

## NYP DATAVIS in ALLSCRIPTS

Diabetes Dashboard helps view insulin usage and BG results together for pattern identification to determine inpatient adjustments and best discharge regimen.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time Range</th>
<th>BG Values</th>
<th>Insulin (units)</th>
<th>Insulin Aspart Prandial Scale Pre-Meal 7 (08:29)</th>
<th>Insulin Aspart Prandial Scale Pre-Meal 9 (12:49)</th>
<th>Insulin Aspart Prandial Scale Pre-Meal 5 (17:23)</th>
<th>Insulin Glargine Inj (Lantus) 14 (21:10)</th>
</tr>
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<tbody>
<tr>
<td>10/14/17</td>
<td>10:31A - 3:00P</td>
<td>BG Values: 170 (06:43)</td>
<td>Insulin (units):</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 6 (08:24)</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 6 (12:36)</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 5 (17:29)</td>
<td>Insulin Glargine Inj (Lantus) 16 (20:35)</td>
</tr>
<tr>
<td>10/15/17</td>
<td>3:01P - 7:30P</td>
<td>BG Values: 272 (06:40)</td>
<td>Insulin (units):</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 8 (07:50)</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 9 (12:33)</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 10 (17:35)</td>
<td>Insulin Glargine Inj (Lantus) 20 (21:12)</td>
</tr>
<tr>
<td>10/16/17</td>
<td>7:31P - 4:30A</td>
<td>BG Values: 247 (06:44)</td>
<td>Insulin (units):</td>
<td>Insulin Aspart NPO Correction 5 (07:00)</td>
<td>Insulin Aspart Prandial Scale Pre-Meal 11 (17:33)</td>
<td>Insulin Glargine Inj (Lantus) 17 (21:12)</td>
<td>Insulin Glargine Inj (Lantus) 17 (21:12)</td>
</tr>
</tbody>
</table>

### Summary

- **Lowest BG:** 170
- **Highest BG:** 272
- **# Low (BG<70):** 0
- **# High (BG>180):** 3
- **Lowest BG:** 84
- **Highest BG:** 390
- **# Low (BG<70):** 0
- **# High (BG>180):** 3
- **Lowest BG:** 131
- **Highest BG:** 439
- **# Low (BG<70):** 0
- **# High (BG>180):** 3
- **Lowest BG:** 108
- **Highest BG:** 266
- **# Low (BG<70):** 0
- **# High (BG>180):** 2
Alternatives to Basal/Bolus Insulin Therapy

Discuss Simpler Plans with Patient/Family

• Basal + Fixed Dose Meal Boluses

• Basal Plus (basal once daily + one meal bolus at largest meal)

• Pre-mixed insulin before breakfast and dinner, stress importance of eating meals on time

• Basal insulin once daily + repaglinide with meals

• Basal insulin once daily + DPP-4 inhibitor once daily

• Basal insulin once daily + SGLT-2 inhibitor

• Basal insulin daily and GLP-1 RA daily or weekly to cover prandial needs

• Basal/GLP-1 RA once daily combo: IDegLira (Xultophy 100/3.6) and iGlarLixi (Soliqua 100/33)
Diabetes Discharge Instructions:
University of Pittsburgh Medical Center (Donihi, AC; 2017)

Diabetes Discharge Instructions

Your diabetes provider is ____________________________. He/she can be reached at _________________.

Your follow up appointment is ____________________________ (date) at ________________ (time).

Please call at least 24 hours in advance if you need to change this appointment.

CONTACT YOUR DOCTOR OR DIABETES PROVIDER IMMEDIATELY IF:

• You cannot eat or you are vomiting more than 1 time in a day
• Your blood glucose is above 240 mg/dl two times in one day
• Your blood glucose is less than 70 mg/dl two times in one day
• Your meter states "high"

If you are new to this provider and you do not have a doctor, call ____________________________ if you have questions about your blood glucose or diabetes medications before your follow-up appointment.

The American Diabetes Association recommends that all people with diabetes see a diabetes educator after a hospital stay. You can call ____________________________ to schedule an appointment.

Your A1C result is ________________. The A1C measures your average blood glucose for the past 2-3 months.

Diabetes is diagnosed when the A1C is 6.5% or higher. The goal A1C for most people with diabetes is less than 7%, but your goal may be higher or lower. You should ask your diabetes provider what your goal is.

You should check your blood glucose ________________ times a day at the following time(s): ________________.

Your recommended goal blood glucose range is: ____________________________

When you are ready for hospital discharge, but before leaving the hospital:

1. Make sure you have prescriptions for all new medications that you need to take at home.
2. If you do not have a glucose meter at home, request prescriptions for a meter, test strips, and lancets.
3. Ask your nurse or pharmacist to show you how to use a glucose meter, if you do not know.
4. If going home on insulin, make sure you have a prescription for pen needles or syringes. Ask your nurse or pharmacist to show you how to administer insulin, if you do not know.

Diabetes medications that you will take at home:

<table>
<thead>
<tr>
<th>Name</th>
<th>Dose</th>
<th>When to Take</th>
<th>Possible side effects</th>
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Summary

- Identify high-risk patients
- Optimize insulin therapy during hospitalization to achieve glycemic targets
- Provide individualized diabetes self-management education, allowing for ample time to practice skills
- Develop a discharge plan that includes medication reconciliation of discharge prescriptions that considers patient access
- Consider current A1c, BGs and insulin usage during hospital stay in addition to patient preferences and ability to perform self-care when formulating a discharge regimen
- Consider planned follow-up phone calls and visits to review BG values and adjust medication doses post discharge
Selected References

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