Modern Approaches to Transitions of Care in patients with Hyperglycemia in the Hospital Setting

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Number (in Thousands) of Hospital Discharges with Diabetes as Any-Listed Diagnosis, United States, 1988–2009
Transitions of Care Definition

- **Transitions of Care** refer to the movement of patients between health care locations, providers, or different levels of care within the same location as their conditions and care needs change.
- Occurs at multiple levels
  - **Within settings**
    - Primary care ↔ specialty care
    - ICU ↔ ward
  - **Between settings**
    - Hospital ↔ subacute facility
    - Ambulatory clinic ↔ Long-term care facility
    - Hospital ↔ home
  - **Across health states**
    - Curative care ↔ palliative care/hospice
    - Personal residence ↔ assisted living
Care Coordination Definition

• Care coordination involves deliberately organizing patient care activities and sharing information among all of the participants concerned with a patient's care to achieve safer and more effective care.

• AHRQ
Multidisciplinary Approach to Managing Inpatient Hyperglycemia Across Patient Transitions

Hospitalist/Endocrinologist
Nurse
Patients/Their family
Pharmacist
Care Coordinator
Diabetes Educator/Dietition

Primary Care Physician
Elements of transitions of care

- Medication reconciliation
- Follow-up tests and services
- Changes in plan of care
- Involvement of team during hospitalization, discharge, follow-up, etc.
- Communication
- Transfer of all information when site of care changes
- Education of the patient and family
Transitions of Care AND Provider Payment

• Provider payments are shifting toward the key elements of Care Quality and Care Coordination

• By 2015, providers will be required to document quality improvement indicators or face decreases in reimbursement

• By 2017, Medicare reimbursement will be adjusted based on documented quality outcomes for all physicians

• Capturing those indicator data will aid in either enhancing existing care protocols or developing new ones
Care Coordination Beginning With Admission

Identify hyperglycemic patients and patients with diabetes
- Care coordination team must be prepared for next steps for patients with newly recognized hyperglycemia

Create a collaborative team
- Physicians, nurses, diabetes educators, dietitians, case/care managers, pharmacists, and discharge planners

Fully assess patients
- Learn about patients’ lifestyles; access to health care services; available support; culture; health literacy; knowledge of diabetes and treatment recommendations; and financial stability (including ability to pay for SMBG supplies, medications, and healthful foods)

Develop an individualized plan
- Include family members, adopt a patient-centered approach
- Planning and implementing protocols for BG control are critical steps

SMBG = self-monitoring of blood glucose.
Diabetes “Experts” Play Key Role

Interdisciplinary teams can facilitate
• Comprehensive staff diabetes education
• BG data surveillance
• Hypoglycemia screening and monitoring protocols
• Aggressive hyperglycemia insulin protocols
• Smooth transitions from hospital to home
• Safety of insulin therapy

Use of Glycemic Management Team Improves Outcomes

Impact of a dedicated diabetes team approach to hospital glycemic management and transition to ambulatory care

- Improving inpatient glycemic control before discharge \(^1,^2\)
- Improving A1C levels after discharge \(^1\)
- Decreasing length of stay \(^1,^3\)

Admissions Checklist for Patients With Diabetes

- Clearly identify diagnosis of diabetes in the medical record
- Order BG monitoring
  - Results should be available to all members of health care team
- Establish a plan for treating hypoglycemia
  - Episodes of hypoglycemia should be tracked
- Obtain A1C level if results of testing in previous 2–3 months not available
- Establish BG targets and implement a plan to achieve them using appropriate therapy
- Develop diabetes education plan including “survival skills education”

Ineffective Transitions Lead to Poor Outcomes

- Wrong treatment
- Delay in diagnosis
- Severe adverse events
- Patient complaints
- Increased health care costs
- Increased length of stay

Using Medication Reconciliation to Prevent Errors

Medication reconciliation: process of comparing patient’s current medication orders to medications patient has been receiving

Should be done at every transition of care in which:

- New medications are ordered
- Existing medication orders are rewritten

Transitions in care requiring medication reconciliation include changes in:

- Setting
- Service
- Practitioner
- Level of care

Medication Errors Due to Inadequate Medication Reconciliation

Effective medication reconciliation at each hospital transition point can help reduce errors.

Transition From IV Insulin to SC Insulin
Steps to Transitioning From Insulin Infusion to SC Insulin

Is patient stable enough for transition?
- Contraindications: hypotension, active sepsis, vasopressors, intubation

Does this patient need a transition to scheduled SC insulin?
- **Yes:** all T1DM, T2DM on insulin as outpatient, T2DM with recent mean infusion rate of ≥0.5 U/kg
- **No:** T2DM with insulin infusion rate <0.5 U/kg, stress hyperglycemia or previously unrecognized DM if infusion rate <1 U/hour or A1C near normal

If transition needed, calculate an insulin TDD. TDD is an estimate of 24-hour insulin requirement when patient is receiving full nutrition

Construct a regimen tailored to patient’s nutritional situation, building in safeguards for changes in nutritional intake

Be sure to give SC insulin BEFORE the infusion stops

Calculating the SC Insulin Dose

• Establish the 24-hour insulin requirement by extrapolating from the average IV insulin dose required over the previous 6–8 hours (if stable)

• Take 80% of the total daily dose (TDD) and give one half as an intermediate-acting or long-acting insulin for basal coverage and one half as a short-acting or rapid-acting insulin in divided doses before meal
  — (If patient is not eating, just give intermediate/long-acting insulin.)
SC Insulin Administration

“Scheduled”

Basal + Bolus (Nutritional) + Correction = Total daily insulin needs

Basal

Rapid-acting insulin

Nutritional

Correlation

Long-acting insulin

Results:
During first day ~ half of BG values within target range of 100–140mg/dL before meals and 100–180 after meals

BG <70mg/dL occurred in 7.7% on the first day and in 26.8% on the first 3 days after transition

Perioperative Transitions

- Standard protocols
- Clear instruction re. diabetes therapy on the day prior to surgery
- Dextrose containing IV fluid on the day of surgery
- Frequent glucose monitoring
- IV insulin infusion for prolonged surgeries specially in Type 1 patients

Transition From Hospital to Outpatient Care

• Preparation for transition to the outpatient setting should begin at the time of hospital admission

• Clear communication with outpatient providers is critical for ensuring safe and successful transition to outpatient management

• Collaboration between the patient and/or significant other with entire interdisciplinary team is crucial in successful discharge planning

Hospital Discharge Planning Challenges

- Pressures to discharge patient early
- Shorter hospital stays
- Competing priorities
- Lack of primary care physician
- Nursing workload
- Lack of diabetes specialist educator
- Weekend discharges

Appropriate DMSM Education Improves Outcomes

- Diabetes mellitus self-management education, a component of the chronic care and health promotion models, has been shown to improve:
  - Patient knowledge
  - Self-care behaviors
  - Clinical outcomes
  - Reduce health care costs

DMSM = diabetes mellitus self-management.
### Survival Skills to Be Taught Before Discharge

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
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<tbody>
<tr>
<td>How and when to take medication/insulin</td>
<td>- What to expect from the medication</td>
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<tr>
<td>How/when to test BG (SMBG)</td>
<td>- What are target glucose levels</td>
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<td>Basics on meal planning</td>
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<tr>
<td>How to treat hypoglycemia</td>
<td></td>
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<tr>
<td>Sick-day management plan</td>
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<tr>
<td>Date/time of follow-up visits</td>
<td>- Including diabetes education</td>
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<tr>
<td>When and who to call on the health care team</td>
<td>- What community resources are available</td>
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Why focus on discharge planning?

• Nearly 20 percent of patients experience an adverse event within a month of discharge, of which ¾ could be prevented

• Common complications post-discharge are adverse drug events, hospital-acquired infections, and procedural complications

• Many complications can be attributed to problems with discharge planning:
  – Changes in medicines before and after discharge
  – Inadequate preparation for patients and families
  – Disconnect between information giving and patient understanding
  – Discontinuity between inpatient and outpatient providers
Discharge planning should start on admission

• At initial nursing assessment:
  – Identify who will be at home with the patient
  – Let the patient and family know that they can use the white board in the room to write questions or concerns
  – Elicit the patient and family goals for hospital stay
  – Inform the patient and family about steps toward discharge
What is IDEAL Discharge Planning?

- Include the patient and family as full partners
- Discuss with the patient and family five key areas to prevent problems at home
- Educate the patient and family throughout the hospital stay
- Assess how well doctors and nurses explain the diagnosis, condition, and next steps in their care and use teach back
- Listen to and honor the patient and family’s goals, preferences, observations, and concerns
Day of discharge

- [Identify who] will review reconciled medication list with patient and family
  - Hand the patient the list of medicines her or she needs to take after getting home
  - Go over the medication list with the patient and family
  - Ask them to repeat back what each medicine is and when and how to take each medicine

- [Identify who] will write down followup appointments and give the name and contact information of someone to call if problems arise
Strategies for Successful Transition

• Daily:
  – Educate the patient and family about the patient’s condition at every opportunity
  – Explain medicines to the patient and family
  – Discuss progress toward goals
  – Involve the patient and family in care practices
Potential challenges

• May take more time at first but should be incorporated into the everyday process
• Difficult to identify family members who will be caregivers
  – Patient has no family or other support
  – Family caregiver has not been at the hospital
• Discharge plans change immediately before discharge
• Patient unable to read, write, or articulate questions or concerns
Transition From Hospital to Outpatient Care?

- Preparation for transition to the outpatient setting should begin at the time of hospital admission
- Multidisciplinary team: bedside nurse, clinical pharmacist, registered dietitian, case manager
- Clear communication with outpatient providers is critical for ensuring safe and successful transition to outpatient management

Predischarge Checklist

- Diet information
- Monitor/straps and Rx
- Rx for/supplies of medications, insulin, needles
- Treatment goals
- Contact phone numbers
- “Medi-Alert” bracelet
- “Survival Skills” training
“Survival Skills” to Be Taught Before Discharge

• Basic understanding of what diabetes is
• How and when to take diabetes medications
• Basic knowledge of effect of carbohydrates on glucose levels
• Recognition, treatment, and prevention of hypoglycemia

• Self-monitoring of BG and implication of results
• What to do during illness
• How to dispose of lancets and insulin syringes

Management of Patients With Diabetes after Hospital Discharge

Inpatient Management in non-ICU

- Basal Bolus
- Basal Plus Regimens

What Regimen Should We Use at Hospital Discharge?
Possibilities for Discharge Hyperglycemia Regimen

Based on hemoglobin A1C:

- Home regimen
- Titration of home regimen
- Or new insulin regimen (if last option, simple regimen with aggressive patient education and prompt follow-up)
Recommendations for Managing Patients With Diabetes After Hospital Discharge

Use admission A1C to adjust therapy at discharge

- ADD basal or REPLACE with basal/bolus (10%)
- ADD basal insulin therapy (9%)
- Adjust original therapy, ADD another agent or basal insulin (8%)
- Return to original therapy (7%)

Umpierrez G et al, J Clin Endocrinol Metabol, 2012
Hospital Discharge Algorithm Based on Admission HbA1C for the Management of Patients with T2DM

Clinical Inertia on Discharge Planning

Clinical Inertia of Discharge Planning among Patients with Poorly Controlled Diabetes Mellitus

Percentage of patient with uncontrolled diabetes discharged with no change in medications or follow-up HgbA1c within 60 d

Griffith et al. JCEM. 97:2019–2026 2006
Summary

• Continuity of care is critical to ensure that there are no gaps in care following transition

• Effective discharge planning may improve outcomes for patients with T2DM and reduce their risk of readmission

• An effective discharge plan for patients with diabetes
  – Begins at admission and continues throughout the hospital stay
  – It is tailored to the patient’s needs
  – Emphasis is placed on appropriate communications and follow-up with community-based clinicians
  – Discharge planning also provides an opportunity to provide diabetes self-management education to patients and their caregivers.