



Optimal Rehabilitation of the  
Cardiac Patient with Diabetes

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### Memorial Hospital Services

- Acute Care Facility
- 316 Licensed beds
- Services
  - Cardiology
  - Neurosurgery
  - General Surgery
  - Orthopedics
  - OB/GYN
  - Oncology
  - Primary Care
  - Emergency Department
- Four Cardiac Cath Labs
- Nine Endoscopy/GI Procedure Rooms
- Nineteen Operating Room Suites
- Twenty ICU Beds
- 360+ Physicians

- Magnet accredited hospital April 2008
- Certified Chest Pain Center since April 2008



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### Objectives

- To provide detailed guidelines for the management of patients with diabetes in cardiopulmonary rehabilitation
- To focus on optimizing cardiovascular risk reduction
- To promote self-management of diabetes

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## Triggers

- Two Cardiac Rehabilitation (CR) patients experienced significant hypoglycemia post exercise requiring rapid response
- Absence of local, state, or national guidelines to treat hypoglycemia in outpatient CR setting
- Limited evidenced-based recommendations for optimal care of the cardiac patient with diabetes

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## Evidence Based-Practice

- Collaborated with Memorial's Certified Diabetic Educators (CDE) & Registered Dietitians (RD)
- CR staff conducted a literature review to identify evidence-based recommendations regarding
  - Diet
  - Diabetes medications
  - Impact on exercise
  - Potential for hypo/hyperglycemia
- Initiated a study to determine the appropriate blood glucose to exercise and dismiss patients with diabetes from a monitored exercise program

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## Data Collection

- Data logs:
  - Recorded each patient's visit for 24 months : July 2007-June 2009
- Population: 131 insulin-dependent patients
  - Recorded FBS
  - Pre & post exercise blood glucoses (BG)
- Acceptable target range for exercising : 100-300mg/dl
- Repeated BG < 100 or >300 dL required a staff consultation with attending physician
- BG results provided staff and patients with important information regarding effect of exercise

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## It Is All In The Timing

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- Emphasized meal time and exercise scheduling when taking insulin and/or oral agents with potential hypoglycemic effects
- Consider :
  - Medication type and delivery method
  - Dose time
  - Medication action onset and peak
  - Time of day
  - Time and content of last meal
  - Type and duration of activity




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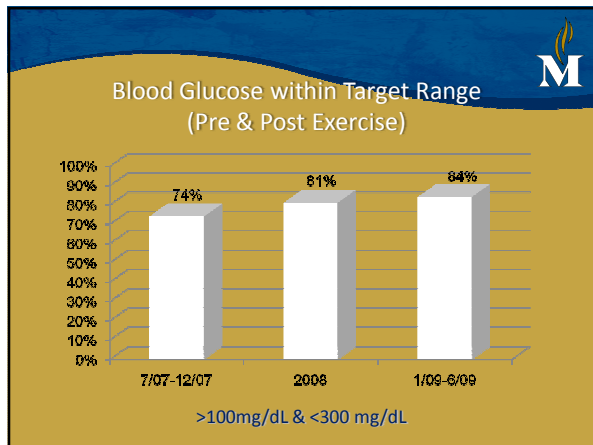
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## The Discovery

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*There are no absolutes when it comes to diabetes.  
Just when you think you have it figured out. . . .*




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## Dissemination of Findings

- Developed a CR policy to guide evidence-based care of CR patients with diabetes
- Shared policy with Outcomes Committee of the Illinois Society of Cardiovascular Health & Rehabilitation (ISCHR)
- Initiated a study with ISCHR for more specific guidelines for patients with diabetes in the CR setting

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## Pathway to Partnership

- Formed a partnership with ISCHR & American Association of Cardiovascular & Pulmonary Rehabilitation (AACVPR) to develop guidelines for optimal care of the CR patient with diabetes
- Collaboratively writing a paper for publication with AACVPR
  - Endocrinologist
  - Nurses
  - Certified Diabetic Educators
  - Dieticians

Goal: To provide the best evidence for the management of CR patient with diabetes

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## Conclusions & Implications

- Providing optimal care of the cardiac rehabilitation patient with diabetes is a complex process which requires interdisciplinary collaboration.
- Safe, high quality patient care requires a partnership with patients to educate them about their disease process, diet, medications and the impact of exercise.
- Cardiac rehabilitation provides an excellent opportunity to assist a patient with diabetes due to the frequent contact and close trusting relationships developed in this setting.
- Physician and patient partnership is essential in achieving the best possible glycemic control.




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