Diabetes in 2011:
So Many Patients, So Little Time

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For Philippine Nurses Association
of Metropolitan Houston
Objectives

- Describe the effects of the explosion of diabetes on the health care system
- Discuss the clinical challenges of glucose management of the patient with diabetes
- Identify strategies that exemplify recommendations for quality care of diabetes.
Diabetes Prevalence Keeps Climbing

- 26 million with diabetes
- 79 million with pre-diabetes
- One in three aged 20 or over has pre-diabetes
- One in four over 65 has diabetes and half have pre-diabetes

CDC.Gov 2011 National Diabetes Fact Sheet
Distribution of Age at Diagnosis, Aged 18-79 United States, 2007

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Number of US Hospital Discharges with DM as Any-Listed Diagnosis


AACE Inpatient Glycemic Control Resource Center
Headline: “Treating Americans with Diabetes Cost Hospitals $83 Billion”
Inpatient Hospital Costs Account for Greatest Proportion of Health Care Expenditures for Patients with Diabetes

Of the $116 billion attributed to excess medical expenditures\(^1\) Hospital Inpatient Days Account for ~50% of Dollars Spent — More than $58 Billion

Annual Costs Due to Diabetes

- Hospital Inpatient: $58.3 Billion
- Outpatient Medication: $5.5 B
- Oral agents: $5.0 B
- Insulin and Delivery Supplies: $7.0 B
- Hospice: $0.5 B
- Home Health Care Units: $3.9 B
- Physician Office: $10.0 B
- Nursing Home: $13.9 B
- Hospital Outpatient: $2.2 B
- Emergency Department: $0.1 B
- Ambulance: $0.1 B


AACE Inpatient Glycemic Control Resource Center
Hospital Stays for Diabetes 2008:

Nearly one in five hospitalizations were related to patients with diabetes.

Hospital stays were longer, more costly and more likely to originate in the ED than stays for other patients.

Mean cost: $10,937 vs. $8,746

Source: Agency for Healthcare Research and Quality
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Diabetes Care in Tough Economic Times

- “Crisis” diabetes care
- Canceling appointments
- Fear of losing job due to frequent medical visits
- Fear of losing benefits and insurance
- Higher co-pays and out of pocket expenses
- Difficulty in accessing outpatient care
Health Care Reform: Affordable Care Act

- Cost Containment
- Improve Quality
Affordable Care Act and DM

- Coverage for children and young adults with diabetes
- Comprehensive care in Accountable Care Organizations
- Emphasis on prevention
- Shift in re-imbursement for quality care instead of quantity care
- EMR
CDC Model for Prevention

- Public Health Infrastructure for Behavioral Change
- Intensive Life Style Intervention
- Research based

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Providers:

Prevention efforts by employers:

Standardization of medications and supplies:

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Medical Home Model for Diabetes

- Patient Centered
- Team Approach
- Includes Care and Education

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<table>
<thead>
<tr>
<th>Change is coming…</th>
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<tbody>
<tr>
<td>Numbers are increasing</td>
</tr>
<tr>
<td>Diabetes is a costly condition</td>
</tr>
<tr>
<td>What is your prediction?</td>
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</table>

Houston Chronicle editorial on March 5th -
“Heavy News: Diabetes toll on our younger generation may be bankrupting our health care system”
Objective 2: Clinical Challenges of Glucose Management

- Controversy
- Use of intensive models...
- Time....

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First Large Randomized Controlled Trial: Effect of Intensive Glycemic Control in Critically Ill Patients--Surgical ICU

1548 patients
AM glucose (mg/dL): 103 versus 153 intensive vs standard
Mortality decreased from 8.0% to 4.6% (only in patients with >5 d ICU stay)
Intervention resulted in decreased multiple-organ failure, sepsis, dialysis, transfusion, and neuropathy
Severe hypoglycemia (≤40 mg/dL): 7.0% vs 1.1% intensive vs standard
1st Inpatient Guidelines for Glycemic Control in 2004 - 2005

- Intensive treatment of hyperglycemia improved hospital outcomes
- Based on evidence from both observational and controlled trials
- AACE, ACE and ADA development
NICE-SUGAR Study

Multicenter-multinational RCT (Australia, New Zealand, and Canada) in 6104 ICU patients, randomized to:

- **Intensive, BG target:** 4.5 and 6.0 mmol/L (81 - 108 mg/dL),
- **Conventional, BG target:** < 10.0 mmol/L (180 mg/dL)

**Primary Outcome:**
- Death from any cause within 90 days after randomization

Mean APACHE II score: ~ 21,
Reason for ICU admission: surgery: ~37%, medical: 63%,
History of DM: 20% (T1DM: 8%, T2DM: 92%)
At randomization: Sepsis: 22%, trauma: 15%, APACHE > 25: 31%

AACE/ADA Recommended Target Glucose Levels in ICU Patients

- **ICU Setting:**
  - Starting threshold of no higher than 180 mg/dl
  - Once IV insulin is started, glucose level should be maintained between 140 and 180 mg/dl
  - Lower glucose targets (110-140 mg/dl) may be appropriate in selected patients
  - Targets < 110 mg/dl or > 180 mg/dl are **not** recommended

AACE/ADA Inpatient Glycemic Control Consensus Panel 2009
1. ACP recommends not using intensive insulin therapy to strictly control blood glucose in non-SICU/MICU patients. (Avoid targets <140 mg/dl)

2. ACP recommends not using intensive insulin therapy to normalize blood glucose in SICU/MICU patients. (Avoid 80 to 110mg)

3. ACP recommends a target of 140 to 200 mg/dl if insulin therapy is used in SICU/MICU patients.
Goal: Achieve glucose targets with less hypoglycemia

- Titration Characteristics of the Protocol
- Patient Characteristics
- Staffing Ratios
- Clinician Acceptance
2007 SCIP – “Save Lives”

- Surgical Care Infection Prevention - Cardiac surgery patients with controlled 6 AM post operative blood glucose
- Hospitals’ report card

http://www.jointcommission.org/performance_measurement.aspx
Diabetes Care in the Hospital

- Inpatient evidence-based care
- Prevention of medical errors
- Survival skill education
PLAN FOR INPATIENT CARE

- Document Diagnosis in Chart
- Check Hemoglobin A1C in all hyperglycemic patients
- Hold Oral Meds for Diabetes
- Have Orders for Hyperglycemia and Diabetes Patients
- Finger stick Blood Glucose qid on all admissions with BG>140
PLAN FOR INPATIENT CARE

- Do Not Use Sliding Scale as the only Diabetes Management
- Diabetes Education Consult
- Instruct patient in monitoring (and insulin if necessary)
- Individualize Specific Program for Discharge
- Arrange Early F/U with PCP
My medicine…

- One in 5 Americans live with some form of disability which may present as lack of adherence

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Diabetes Care is Challenging

- Health Literacy
- Health Numeracy
- Depression
- Limited Resources

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ARE YOU DEPRESSED BECAUSE YOU HAVE DIABETES OR IS DIABETES CAUSING YOUR DEPRESSION?

YES!
Health Literacy Facts

- Low health literacy increases US health care costs by $50 to 73 billion annually
- 26% of patients cannot read their appointment slips
- 42% of patients cannot understand labels on the Rx bottles
- Low literacy means problems with ...

Source: www.healthypeople.gov
Numeracy

- The ability to understand and use numbers and math skills in daily life
- Affects diabetes care
  - Blood glucose results
  - Insulin dosing
  - Carbohydrate counting
What is Your Literacy Level?

- G2g
- L8r
- Ttyl
- WCA
- Cu
- IDK
- (((((H))))
- A1C…
What are the Challenges

Too much to do?

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Objective 3: What Can the Nurse Do?

- Use Your Skills….
- Jean Watson’s Theory of Caring
  - Nurse’s role is to establish a caring relationship
  - Treat patients as holistic beings

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She believes…

- through the nurse’s attitude and competence a patient’s world can become…
  - Larger or smaller
  - Brighter or drab
  - Rich or dull
  - Threatening or secure
Goals for DM: Provider Oriented

- Glycemic Control
- Prevention of vascular complications
- Avoidance of hypoglycemia
- Achievement of normal life expectancy
Patient Oriented Goals for DM

- Help figuring out what might work in his/her daily life
- Skills to do it
- Ongoing encouragement/support
  - It’s for the rest of your life
  - Help when things change
- Community resources
- Tying it all together with good clinical care

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Listen to the Patient’s Answer

- What is diabetes to you?
  - Condition?
  - Disease?
  - “Runs in the family..”
  - “I don’t know”
  - “Can’t have…”
What Can the Nurse Do? #2

- Be Goal Directed
  1. ________________________
  2. ________________________

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Focus: Acute Diabetes Care is Insulin in the Hospital

- **Use of evidence**
  - Know your insulin

- Not true: “Insulin is only prescribed to people who have failed to take care of themselves….” (false belief)
Basal – Bolus Insulin

- Basal insulin – the amount of insulin necessary to regulate blood glucose when completely NPO (approx 0.8-1 unit/hr)
- Bolus insulin – the amount of insulin needed before a meal to regulate blood glucose rise after eating
- Basal and bolus insulin used in combination to provide 24 hour blood glucose control
## Insulin Overview

<table>
<thead>
<tr>
<th>Type</th>
<th>Insulin</th>
<th>Begins</th>
<th>Peaks</th>
<th>Ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid</td>
<td>Humalog</td>
<td>15-20 minutes</td>
<td>30-90 minutes</td>
<td>3-5 hours</td>
</tr>
<tr>
<td></td>
<td>Novolog <em>Apidra</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast</td>
<td>Regular</td>
<td>30-60 minutes</td>
<td>2-6 hours</td>
<td>6-10 hours</td>
</tr>
<tr>
<td>Intermediate</td>
<td>NPH Lente</td>
<td>1-3 hours</td>
<td>4-12 hours</td>
<td>16-20 hours</td>
</tr>
<tr>
<td>Long-Acting</td>
<td>Lantus *Detemir</td>
<td>3-4 hours</td>
<td>No peak time</td>
<td>18-24 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-4 hours</td>
<td></td>
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</tr>
</tbody>
</table>
Rapid-Acting Given Too Late

Early Hyperglycemia

Late Hypoglycemia
Insulin Pump Basics

- Insulin pumps are small pager-size devices that contain a cartridge filled with rapid or fast-acting insulin.

- Insulin pumps have a screen and buttons to program the pump; it is a computer with a motor that pushes insulin through a cartridge into a tube to the patient’s body.
Type 1 Hypoglycemia

- Mild episodes blunt the epinephrine response
- “defective glucose counter regulation”
- Individuals lose clinical warning signs
  - Other factors – sleep, exertion, inadequate CHO, caffeine

“HYPOGLYCEMIA BEGETS HYPOGLYCEMIA”
Type 2 Hypoglycemia

- With increased age, symptoms are less intense
- Symptom profile is modified
- Other factors
  - Treatment with insulin > 10 years
  - Renal impairment
  - Advanced age
Hypoglycemia in Renal/Liver Disease

- Rising serum creatinine can contribute to hypoglycemia
- Liver disease can cause a depletion of glucose reserves for treatment of hypoglycemia
Survival Skill Education Clinical Pathway from Montefiore Med Center NY

- Day 1 – Review hypoglycemia
- Day 2 – Put syringe in patient’s hand to inject
- Day 3 – Have patient draw insulin
- Day 4 – Review previous information and sick-day management
Survival Skill Education Outline

- What is diabetes?
- What can I eat?
- Do I have to monitor?
- Do I have to take insulin?
- Who will help me?
For Memory – Transfer of learning

- Repeat/rephrase
- Summarize frequently
- Stay focused on topic
- Give examples
- Use props

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Insulin Education

- Who
- What
- When
- Where

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Strategies for Medications

- **Spoken** – Rephrase rather than repeat
- **Written** - Provider or patient
- **Visual**
  - Pictures
- **Tactile** – Have patient hold the medication

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Multiple Choices for Monitoring

- Finger stick glucose
- Blood Pressure
- Activity Log
- Feet
- Food Diary
Getting rid of used diabetes supplies

- Use needles and syringes only once. Then throw them away in a safe container.

- Find out if your state has laws about how to dispose of used diabetes supplies.

- Unless your state says otherwise, get a “sharps” container at your local pharmacy.

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What if my glucose goes too low?

- **1st SPEED (MILD)**
  - MILK/CRACKERS
  - APPLE JUICE

- **2nd SPEED (MOD)**
  - MORE APPLE JUICE
  - GELS

- **3rd SPEED (SEVERE)**
  - Call EMS
  - Glucagon Injection

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What if my glucose goes too high?

- 1st Check Symptoms
- 2nd Check Glucose
- 3rd Drink a glass of water and call…
Teaching the Visually Impaired

- More detailed verbal explanations
- Involve other senses
- Handouts
Best Practice Versus Beliefs

- Patients may still have the mistaken belief that: Insulin is only prescribed to people who have failed to take care of themselves....

   Not true!

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Best Practice: “Teach Back” Method

- Tell me what you heard me say
- Show me the foods that make your glucose go up
- Tell me....
Effective Discharge Planning

- Can the patient prepare his or her own meals?
- Can the patient self-monitor as prescribed?
- Can the patient take the medications accurately?
- Is there a family member who can assist with tasks?
- Is a visiting nurse needed to facilitate transition to home?
Web Resources for Diabetes

- www.diabetes.org
- www.eatright.org
- www.ndep.nih.gov
- www.cdc.gov/diabetes
- www.low-vision.org
- www.learningaboutdiabetes.org
Post Hospital Diabetes Care

- Follow Up Plan
- Education
What Can the Nurse Do? #3

- Challenge Yourself to be a Continual Learner
- Know Your Learning Style

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KEEP LEARNING…

- Internet
  - Google.com
  - Specific Web sites
- Face to Face Meetings
  - SLEH 7\textsuperscript{TH} Annual Diabetes Symposium on Aug. 28, 2011
- Journal Clubs
- Other
What’s on the Horizon?

- New oral medications for diabetes
- New insulin
- New insulin patch pumps
You can’t help getting older, but you don’t have to get old.

[GEORGE BURNS]