











### Perform "GAP" Analysis What should we be doing ???

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- Review research, evidenced based practices, best practices for inpatient glycemic management.
- Journals & WEB sites: Hospitalist, Endocrine, Diabetes Care, Pharmacy, Medicine
- Resources: ADA, AACE, Joint Commission, University Healthsystem Consortium, CDC-chronic care, Diabetes Education (AADE), Institute Safe Medication Practices (ISMP), American Society of Health-System Pharmacists (Safe Use of Insulin in Hospitals)

# Perform "GAP" Analysis *What are we doing ???*

- Insulin Ordering Practices
- Blood Glucose Monitoring
- Hyperglycemia
- Hypoglycemic
- Blood Glucose Outcomes
- Food & Nutrition
- Transition of Care Patient Education
- Provider & Staff Education

## Perform "GAP" Analysis What are we doing ??? Insulin Ordering Practices Use of RSSI <u>OR</u> Basal / Bolus, Correction, Meal/Calorie coverage Insulin Sensitive / Insulin Resistant patients Insulin Therapy adjustments Timing of BG, meals & insulin Rx Use of IV Insulin Infusions Special populations: Tube feeding, TPN, NPO (intermittent or as ordered), steroids, immunosuppressives, pregnancy, cystic fibrosis Patient self administration of insulin during hospitalization Continuous Subcutaneous Insulin Induity Induity Induity Continuous Subcutaneous Insulin Induity Induity Formulary – types of insulins, # of choices, limitations Pre-printed insulin orders Insulin delivery mode (vials vs pens), storage, cost Coordination with pharmacy: conflicting orders, documentation Insulin as High Alert Medication, tracking occurrence reports

### Perform "GAP" Analysis What are we doing ???

### Blood Glucose (BG) Monitoring

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- Nursing access to POC glucometers
- Manual vs integrated documentation
- Timing of BG, meals & insulin Rx
- Use of patient's own glucometer
- BG Strip Reagent GDH-PQQ (does not distinguish glucose from maltose, galactose, xylose)

### Perform "GAP" Analysis What are we doing ???

### Hyperglycemia

- What's the number ???
- Types of treatment (ignored none, insulin ordering practices, oral agents)
- Adjustments to glycemic management
- CMS Hospital Acquired Condition. Manifestation of Poor Glycemic Control:
- DKA, HHS, Diabetic Coma, Hypoglycemic Coma
   \*\*\* Careful documentation of POA Present on Arrival



### Perform "GAP" Analysis What are we doing ???

### Hypoglycemia

- What's the number ??? (ADA < 70 mg/dL)</li>
   Value to treat vs critical value
- Types of Rx: D50, oral, glucagon IM
- Re-check BG value ?
- Cause of hypoglycemia
- Adjustments to glycemic management

Recommend standardized orders for BG value, treatment & follow up for all areas of hospital.

	Perform "GAP" Analysis What are we doing ???						
$\square$	Blood Glucose (BG) Outcomes						
	Availability of patient trending & unit based data						
	BG ranges, means, rate of hypoglycemia						
	<ul> <li>All POC &amp; / or lab BG values (monthly/quarterly)</li> </ul>						
	<ul> <li>Patient specific by hospital day (optimal – perhaps eliminate Day 1, DKA/HHS)</li> </ul>						
	<ul> <li>Daily mean BG, "Mean the means" for hospital stay mean</li> </ul>						
	BG outcomes of pre-printed insulin orders						
	- IV Infusion: Maintenance BG (post target)						
	<ul> <li>Subcutaneous: By hospital day</li> </ul>						
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	Perform "( What are we	GAP" Analysis a doing ???							
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	Transition of Care								
	Admission	Hx of DM – documentation & coding A1C results past 60 days Medication reconciliation Oral agents stopped? New to insulin? Rx needs vary from OP to IP							
	Transfers	Medication reconciliation IV to subcutaneous insulin Glycemic management							
	Discharge	Medication reconciliation (changes?) Undiagnosed cause of hyperglycemia Tracking patient education							

### Perform "GAP" Analysis What are we doing ???

### Patient Education

- Up to date consistent patient self management education & documentation
- Availability of Diabetes Educator
- Written materials languages
- Bedside RN knowledge of patient education content









### University of Colorado Hospital Diabetes Program Initiated in Fall 2004 as system wide diabetes / hyperglycemia process improvement project GOAL: To achieve excellence in the care of patients with diabetes & / hyperglycemia through a partnership with the Endocrine Diabetes Practice and project teams, by expanding provider and patient education, and by integrating evidenced-based practices throughout all delivery of care areas of University of Colorado Hospital.

### Goals for Delivery of Care

### Common themes:

- Integrate evidenced based knowledge into practice
- Build from the ground up system wide
- Target "the masses for the greater good"
- Balance IDEAL and REAL
- Support patients on intensive insulin Rx (at home) during hospitalization
- Clinical expertise flows through provider education, decision support, patient education & data
  Optimal glycemic management
- Focus on quality, safety and risk, transition of care issues

















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lan-Dec 2008		Dulu			
	# Pt D/C	UCH LOS	CMS LOS		
Primary Dx DM	284	4.14	5.56		
Secondary Dx DM	3354	5.88	6.62		
Hyperglycemia	592	14.91	10.41		
Pregnancy w/ DM	83	4.93	4.1		
Gestational DM	193	3.54	3.33		
Total:	4506	23% of Inpatient	ent Population		

















































Insulin Risk O IV & Subcutaneou	nsulin Risk Occurrences (PSN) / & Subcutaneous Insulin					
	2005	2006	2007	2008		
# Insulin Reports	64	84	80	43		
% of High Alert	14 %	21 %	17 %	11%		
Panking	#2	#2	#2	#3/4		



### Inpatient Delivery of Care

### Role of IP Diabetes Educator

- Program Development & Implementation
- Provider & Staff Education
- 1:1 Clinical Recommendations
- High Risk Patient Education
- Liaison with pharmacy, nursing, providers



# Subcutaneous Insulin • Glargine & Lispro • NPH & Lispro - \**uses 50/50 calculation, not 2/3 1/3* • 70/30 TPN / Continuous Tube Feedings • Intensive Insulin Therapy VInsulin Infusion • ICU & Floor • L&D Specialty Populations • DKA / HHS • Service admission orders (Card Surgery, NSS, CF)





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Lispro	able	s for in	leal &	Correc			
Blood Glucose mg/dL	d Glacose L BMI 5 S on normal body weight 5 70 Implement Hypodycemia ordens		BM 226 cr ownwight, obse Implement Hypoglycemia orders		_Customized		
≤ 70							
	Receiving Calories	No Calories	Receiving Calories	No Calories	Receiving Calories	No Calories	
71-124	3 units	No Insulin	6 units	No Insulin	_ units	_units	
125-149	3 units	No Insulin	7 units	1 unit	_ units	_units	
150-199	4 units	1 unit	8 units	2 units	_unis	_units	
200-249	5 units	2 units	10 units	4 units	_ units	_unis	
250-299	6 units	3 units	12 units	6 units	_ units	_ units	
300-349	7 units	4 units	14 units	8 units		units	
350-399	8 units	5 units	16 units	10 units	_ units	_ units	
≥ 400	Cal ND Insulin Sensitive 15:1 C:I on 45gm/meal 50:1 Correction BG goal 100		Call MD		Call MD		
			Insulin Resist 10:1 on 60gm 25:1 Correctio BG goal 100	ant /meal on			







Discharge Planning: Hyperglycemia in the Hospitalized Patient Not Known to have Diabetes ٠

### Provider & Staff Education Outcomes

- RN / Pharmacy / RD 575 UCH RNs have attended 8 hr Diabetes course since 2005 Education meetings with Pharmacy / RDs Short CE: "Diabetes Dialogue" approx 300+ attendees

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- RN Skills Lab Train the Trainer: Insulin Orders education ~ 400-500 RNs
- Critical Care Course Endocrine & Diabetes RN Orientation review insulin orders Diabetes Flyer Series Pharmacy Update articles •
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Providers
 Multiple Grand Rounds & conferences (Hospitalists, Surgery, Anesthesia, Orthopedics, Medicine, Cardiology, Family Medicine, Endocrine, Transplant), QI, orientation presentations to housestaff regarding diabetes / hyperglycemia & insulin orders



- patients
- New materials for Gestational DM, Intensive
   Insulin Therapy











# Inpatient Delivery of Care

### POC BG Testing

- Additional glucometers
- Bar Code patient identification
- Documentation interface PENDING
- Limit use of patient's own glucometer
- (Joint Commission home meter should not be used for insulin Rx unless quality checks performed)







