



One pen.  
One patient.

*Strategies for Ensuring the*

# Safe Use of Insulin Pens IN THE HOSPITAL

## Introduction of Insulin Pens in Acute Rehabilitation Hospital

Magee Rehabilitation Hospital  
Philadelphia, Pennsylvania

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One pen.  
One patient.

## Team Members

### Pharmacy

- Richard Pacitti, Pharm.D., M.B.A., FASHP  
Director of Pharmacy Services
- Donna Peterson, Pharm.D.  
Clinical Pharmacist

### Nursing

- Tama Berman, BSN, RN  
Clinical Nurse Supervisor



## Magee Rehabilitation Hospital

### Description of Services

- Provides acute rehabilitation immediately post acute hospitalization
  - Federally designated Spinal Cord Injury Model Systems of Care
- 96 inpatient beds
- Patients served
  - Spinal cord Injury
  - Brain injury
  - Stroke
  - Orthopedics
  - Amputation
  - General rehabilitation
  - Ventilator services
  - Outpatient services

## Background and Description

### Insulin Pen Administration Considerations

- Insulin pens as the primary source for insulin administration
- Recommended as part of a Root Cause Analysis from an insulin-related medication event
- Administration of insulin via pen is a component of the discharge plan for the Magee patient population

## Background and Description

Initiated the Insulin Pen Program at the same time as the initiation of the Mentorship Program **August 2014**

- Gained benefits of collective knowledge at the beginning of the Magee Insulin Pen Program
- Insulin Pen Competency administered to nurses prior to program launch **August/September 2014**
- Surveillance and audit results identified gaps in:
  - Swabs the pen, primes the pen, keeps plunger pressed for 5 seconds, knowledge of time-action profile of different insulins
- Pharmacy developed insulin pen presentation for the Magee Employee Competency Fair to address these issues **October 2014**

## Process Improvements

Focused on gaps identified in Nurse Survey and Surveillance and Storage audits

Poster Presentation: Magee Semi-annual Employee Competency Fair

- Fall 2014 and Spring 2015

Demonstration Booth: Magee Annual Nursing Skills Fair

- February 2015

Reinforced steps for administering insulin with an insulin pen

*Demonstrations, competencies, teach back*

## Process Improvements in Development

Protocol on insulin on administration

Diabetes education to all healthcare providers

### Magee Insulin Workgroup

- Monthly meetings to discuss insulin and diabetes related issues
- Interprofessional
  - Physicians, nurses, dieticians, pharmacists, and representatives from information systems and quality improvement

## Selected Results Insulin Injection Observations

	Baseline %,(n)	Post %, (n)	Change
Plunger pressed and holds against the skin for at least 5 seconds after injection is given	61%(22/36)	89%(33/37)	28 percentage points
Swabs rubber stopper with alcohol swab	78% (28/36)	100%(37/37)	22 percentage points
Pen device to hospital-approved patient-specific storage area in a timely manner	79%(27/34)	100%(23/23)	21 percentage points
Displays use of proper hand hygiene prior to patient contact	83%(29/25)	97%(30/31)	14 percentage points
Primes pen before injection	92%(34/37)	87%(32/37)	-6 percentage points
Performs patient identification (according to hospital policy)	97%(36/37)	77%(27/35)	-20 percentage points

## Selected Results Pen Storage and Labeling Audit

	Baseline %, (n) 73 observations	Post %, (n) 64 observations	Change Percentage points
Active order	93% (68)	100% (64/64)	+7
Storage per policy	95% (69)	100% (64/64)	+5
Properly labeled and stored	90% (66)	95% (61/64)	+5
Properly labeled	97% (71)	98% (63/64)	+1

Properly labeled = pen labeled, label attached to barrel, and expiration date on label.  
Properly stored & labeled = active order, storage per policy, and properly labeled.

Goal is 100% on all elements identified in this audit

## Selected Results Nurse Survey

### Nurse Survey Participation

	Responses Total Nurses = 125	
	Baseline %, (n)	Post %, (n)
Total	20% (25)	36% (45)
Staff nurse	19/25 (76%)	39/45 (87%)
Evening time frame (1P to 1A)	3 (12%)	10 (22%)

More nurses participated in the Post Survey

Increase from staff nurse and evening shift nurse demographics

## Selected Results Nurse Survey

### Nurse Knowledge Assessment Correct Answer Analysis

Question	Baseline	Post	Comment
#5	0%	2%	"Bad" question?
#6	64%	49%	Need for time-action of insulin education
#7	96%	98%	Incorrect choices selected by 20%-80%
#8	67%	62%	Identified all steps as correct selected by 25%-33%
#9	88%	87%	Attached needle to device selected by 12%-22% Identified all steps as correct selected by 8%-11%
#10	46%	59%	All other answers selected by 8%-45%
#11	88%	91%	

## Selected Results Nurse Survey

### Nurse Knowledge Assessment Questions 11-13

Nurses have self-identified need for insulin and diabetes education

- Time action profiles of insulin products
  - Supported by Question #6
- Hypoglycemia risk

Will have ongoing education to reinforce proper insulin pen administration techniques

## Lessons Learned

*Cannot overemphasize that insulin is a high risk medication*

Need for continued and ongoing education on

- The disease state of diabetes
- Characteristics and actions of available insulin products
- Insulin pen administration

## Next Steps

As a result of participation in the Insulin Pen Mentorship Program, the following recommendations have been made by the Magee Insulin Workgroup

- Magee Semi-Annual Competency Fair will always have an insulin-related presentation
- Magee Annual Nurse Skills Fair will always have an insulin-related presentation
- Protocol to be developed on insulin pen administration
- Education will be provided to all Magee Healthcare providers on diabetes and insulin
- Use computer systems to support standardized insulin administration initiatives



## Mentored Quality Improvement Activity: A Broad View

This experience has highlighted the need for ongoing education and information dissemination on diabetes, insulin, and insulin administration.

There is a heightened awareness of insulin-related issues across all disciplines.

Emphasizes the need for an interprofessional approach to the management of this complex disease state.

Will use the Magee Insulin Workgroup as vehicle to work through issues identified by the Mentorship experience.