Preventing Health Care Associated Infections

PJ Brennan, MD
Chief Medical Officer
University of Pennsylvania Health System
August 16, 2011
A COMPREHENSIVE OVERVIEW OF ZOOLOGICAL LANDSCAPES

Editorial: Primum Non Nocere • Nalini Singh, MD, MPH; Patrick J. Brennan, MD; Michael Bell, MD

Introduction: Improving Patient Safety Through Infection Control: A New Healthcare Imperative • Deborah S. Yokoe, MD, MPH; David Classen, MD, MS

SHEA/IDSA PRACTICE RECOMMENDATIONS

Executive Summary: A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals • Deborah S. Yokoe, MD, MPH; Leonard A. Mermel, DO, ScM; Deverick J. Anderson, MD, MPH; Kathleen M. Arias, MS, CIC; Helen Burstin, MD; David P. Calfee, MD, MS; Susan E. Coffin, MD; Erik R. Dubberke, MD; Victoria Fraser, MD; Dale N. Gerding, MD; Frances A. Griffin, RRT, MPA; Peter Gross, MD; Keith S. Kaye, MD; Michael Klompas, MD; Evelyn Lo, MD; Jonas Marschall, MD; Lindsay Nicolle, MD; David A. Pegues, MD; Trish M. Perl, MD; Kelly Podgoryay, RN, MS, CPHQ; Sanjay Saint, MD; Cassandra D. Salgado, MD, MS; Robert A. Weinstein, MD; Robert Wise, MD; David Classen, MD, MS
Gaps in Knowledge?

- Pathogenesis
- Epidemiology
- Prevention Intervention
- Study Design
- Technology

- Infect Control Hosp Epidemiol 2010;31:669-675
# Penn Medicine — Philadelphia, PA

## University of Pennsylvania Health System

<table>
<thead>
<tr>
<th>Hospital of the University of Pennsylvania</th>
<th>#10 <em>US News &amp; World Report</em>/ Magnet</th>
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<tbody>
<tr>
<td>Pennsylvania Hospital</td>
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<tr>
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<td>Good Shepherd Penn Partners</td>
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</table>

- Admissions — 18,000
- Employees — 450

## University of Pennsylvania Medical School

- #3 NIH ranking
  - Faculty — 1,700
  - Med students — 725
  - Grad students — 1,689
  - Residents/ Fellows — 1,000

- Adult admissions — 85,000
- Employees — 15,000
This is the story of a physician/nurse/quality partnership at the top and on the frontline.

Working alliance of the CMOs and CNOs from all three hospitals, homecare, rehab, and physician practice.

Working alliance on each hospital unit — Physician Leader, Nurse Leader and Project Manager for Quality.

CMO/CNO Alliance

Unit Based Clinical Leadership
It started with reports of disrespectful behavior, which led to a professionalism self-study.

INCIDENT REPORTS

- Incident in OR: Physician lashes out verbally at nurse during procedure ...
- ... disruptive argument between nurse and house staff ...

We convened focus groups to uncover work practices that foster professionalism:

- Nurse/physician partnerships
- Interdisciplinary rounding
- House staff orientation, with senior nurses as one of the teachers
- Daily staff huddles
We began on the blue path, but linked up with the red, green & gold to leverage other people’s goals & actions.
We needed to bring UPHS’ clinical strategy to the bedside

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UPHS Blueprint for Quality and Patient Safety

UPHS’ overarching quality goal is to **reduce mortality** and **reduce 30-day re-admissions**.
To bring clinical strategy to the frontline, we established “local leadership” on each hospital unit (more on this later)

Three-Way Partnership Manages Quality on the Hospital Units

Physician Leader and Nurse Leader are paired at the hospital unit level — with a Project Manager for Quality who brings data and project management skills.

We call these trios “UBCLs,” for “Unit Based Clinical Leadership.”
Three-way partnership is Penn’s “Swiss Army knife” for managing quality on the hospital units.

Three-Way Partnership on the Hospital Units

We needed a multi-purpose solution on the units to handle almost any Quality problem.

This isn’t a project, it’s a way of doing things. You can bolt different strategies onto it.

― UPHS CFO

We call these trios “UBCLs,” for “Unit Based Clinical Leadership.”
We started modestly on purpose so the UBCLs could learn to work with each other.

13 pilot units in 2007

The job:
- Weekly operations meeting of the Physician Leader, Nurse Leader, Proj Mgr. for Quality
- Interdisciplinary rounding
- Orienting house staff
- Two improvement projects
Today we’ve covered the house and the UBCLs are ready to take on Transitions, a major system-wide initiative.

Today it’s 34 “official” units — and another dozen who are “operating as.”

The job: Today the trios manage Quality on the unit, drawing in others as needed.

UBCLs are ready this year to shoulder Transitions in Care, a major system-wide initiative.
The UBCLs aren’t the answer to “everything”

<table>
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<tr>
<th>UBCLs HAVE THE MOST IMPACT WHEN ...</th>
<th>HERE’S WHY ...</th>
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<tbody>
<tr>
<td><strong>Interdisciplinary care coordination</strong> makes a difference</td>
<td>With UBCLs, the team is interdisciplinary from the start</td>
</tr>
<tr>
<td><strong>Physician backup</strong> is especially needed</td>
<td>With UBCLs, the nurse leader can count on backup from the physician leader</td>
</tr>
<tr>
<td>The unit needs the <strong>cooperation of another unit</strong> or department</td>
<td>With UBCLs, there’s a leadership team to represent the unit in “negotiations”</td>
</tr>
<tr>
<td><strong>Sustaining the gains over time</strong> will be difficult</td>
<td>With UBCLs, accountability is ongoing</td>
</tr>
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</table>
Today’s story about leadership machinery has three parts:

1. “Speaking with a united clinical voice”
   - The story of the CMO/CNO Alliance

2. “Mobilizing other people’s energies — and keeping the moving parts aligned”
   - Organizational Support

3. “Acting your way to new thinking”
   - The story of local leadership
“Choice within a framework” — we developed targets and worked with each hospital unit to pick theirs.

UPHS Blueprint for Quality and Patient Safety

- **UPHS**' overarching quality goal is to **reduce mortality** and **reduce 30-day re-admissions**.

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**Transitions in Care — FY’11 Targets**

- **Risk stratification** — screening tool and daily review of real-time readmissions
- **Discharge time out**
- **Discharge communication**
- **Med rec** on discharge
- **HCAHPS** medication domain

**Coordination of Care — FY’11 Targets**

- **Interdisciplinary rounding**
- **HCAHPS** likelihood of recommending
## FY’09 Quality Strategies for UPHS

### UPHS Blueprint for Quality and Patient Safety

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| 1. Transitions in care            | • Transition planning  
|                                   | • Medication management                                |
| 2. Reduce unnecessary variations in practice | • Reduce hospital-acquired infections  
|                                   | • Reduce medication errors                             |
| 3. Coordination of care           | • Interdisciplinary rounding                           |
| 4. Accountability                 | • Unit clinical leadership                             |

### Transitions in Care — FY’09 Targets
- **All Units**
  - Increase use of homecare
  - Med reconciliation on admission

- **Selected Units**
  - HUP only: 25% reduction in preventable readmits for CHF, Diabetes & Anticoagulation for patients from HCHS
  - Increase appropriate use of hospice
  - Core measures — heart failure discharge instructions
  - Unplanned readmission to ICU

### Reduce Variations in Practice — FY’09 Targets
- **All Units**
  - Reduce CR bloodstream infections
  - Reduce urinary tract infections
  - Time to admin of STAT antibiotics
  - Decrease rate of DVTs & PEs
  - Decrease falls with injury
  - Decrease pressure ulcers
  - Adherence to hand hygiene

- **Selected Units**
  - Ventilator-associated pneumonia
  - SCIP (Surgical Care Improvement Program)
  - Process improvements for high risk patient populations

### Coordination of Care — FY’09 Targets
- **All Units**
  - “Staff worked together” (Press Ganey)
  - Likelihood of recommendation (HCAHPS)
  - Anticipated discharge by patient (Patient Progression)

### Accountability — FY’09 Targets
- **All Units**
  - Timely launch of Unit Clinical Leadership team
We’re getting out ahead of the budget cycle and negotiating with a united clinical voice

<table>
<thead>
<tr>
<th>The old way</th>
<th>The new way</th>
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<tr>
<td>First step — set margins for each hospital or other entity. Entities are <strong>locked in.</strong></td>
<td>Discussion of system-wide quality initiatives <strong>before margins are set.</strong></td>
</tr>
<tr>
<td>Entities (separately) submit budgets.</td>
<td>CMOs and CNOs submit a <strong>joint budget for system-wide quality initiatives</strong> they all agreed on.</td>
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<tr>
<td>Negotiation — across entities and with Finance — occurs <strong>after budgets are submitted.</strong></td>
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We’re making our job **AND the CFO’s job** easier.
We took advantage of Penn’s flagship leadership development program

Penn Medicine Leadership Forum is targeted this year to the unit-based leadership teams — along with homecare and other partners.

The purpose of Penn Medicine Leadership Forum is to develop leadership skills ...

• Innovation
• Strategic orientation
• Execution
• Relationship mgmt

“Action Learning”

... and apply them to a strategic system-wide initiative

Each hospital unit team — with homecare and other partners — took up a project to improve Transitions-in-Care on their unit.
The leadership skills you’ll need may seem counterintuitive

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<th><strong>INSTEAD ...</strong></th>
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<tr>
<td>Telling and selling</td>
<td>Listening and amplifying</td>
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<td>Pushing people to change</td>
<td><strong>Creating pull</strong> for the changes</td>
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<tr>
<td>Trying to “motivate” or “empower” others</td>
<td>Discovering and <strong>freeing up energy</strong> and passion</td>
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<td>Thinking your way to new actions</td>
<td><strong>Acting your way to new thinking</strong></td>
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Where we’ve been ---
The Four Imperatives of the Blueprint for Quality

UPHS Blueprint for Quality and Patient Safety

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UPHS: Ahead of the curve on quality

- Created the “Blueprint for Quality” in 2007; refined in 2011.
  - Created imperatives for improving quality of care and patient safety
  - Utilize Unit Based Clinical Leadership Teams (UBCLs) to promote quality across the organization
  - Measuring and rewarding excellence

- Quality and Patient Satisfaction measures included in Variable Pay for Performance (UPHS management incentive plans).

- Quality measures included in existing Independent Blue Cross Pay for Performance (IBC P4P) contract.
FY11 HUP quality & safety accomplishments

Across ≈ 40,000 discharges and >1M ambulatory visits:

- Observed to expected mortality improved by 5%, after 40% reduction from 2007-2010.
- Hospital associated pressure ulcers decreased by 40%.
- Urinary Tract Infections decreased by 30%.
- Blood stream infections: 19 (28 in FY10 & >400 in FY06).
- Ventilator associated pneumonia: 8 (19 in FY10).

Created a UPHS-wide health-care acquired infection (HAI) award to recognize units that have gone a significant period (e.g. 1,000 days) of time without:

- Central Line Bloodstream Infection (CLABSI)
- Ventilator Associated Pneumonia (VAP)
- Urinary Tract Infection (CA-UTI)
Quality outcomes at UPHS are moving in the right direction

- Mortality
- Infections
- Length of stay
- Readmissions
- Peer recognition
- Patient & staff satisfaction
- Referrals to post-acute care
- P4P is on track
We measure our mortality improvement by comparing the actual numbers of deaths to the predicted number based on factors such as age, type and severity of illness, co-morbid conditions, etc. Our approach has been multi-dimensional over time focusing on areas such as early sepsis recognition, increased use of palliative care and appropriate documentation of patient complications and co-morbidities.

Actual mortality = 27% better than expected
Translating O/E Improvement to Lives Saved

Since FY09, UPHS has prevented 959 deaths based on a reduction of observed mortality to expected mortality. FY11 reductions are annualized from February, 2011.
The improvement in the number of catheter-associated bloodstream infections means that we have prevented >550 infections in patients since FY08 for HUP alone!

Note: Rate per 1,000 catheter days
Central Line-Associated Bloodstream Infections

Number of BSIs

- First BSI Campaign
- 2nd BSI Campaign
- BSI Task Force
- CHG Sponge Pilot
- TheraDoc®
- New Dressing
- Act 52
- CHG Sponge Hospital-wide
- Active Central Line Surveillance
- P4P Contract
- UBCL Teams
- BSI Definition Changes
- CLC2000® Removed
- Toyota Production System Model
- Public Reporting Implemented
- 1st PHC4 Publication of Hospital Data
- Incentive Plan Target
- Intervention implemented on specific units
- Legislative mandates/external factors
- Implement Public Reporting
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Recognition for Accomplishments

HAI Recognition Award

- Central Line Bloodstream Infection (CLABSI)
- Ventilator Associated Pneumonia (VAP)
- Urinary Tract Infection (CA-UTI)
Increasing Visibility/Recognition for Accomplishments

**HAI Recognition Awards as of May 1st, 2011**

### Blood Stream Infections - 1,000 Days+ Free
- **HUP:** Dulles 6 South from 1/17/2008 -
- **HUP:** Ravdin 9 from 3/20/2008 -
- **HUP:** Silverstein 7 from 4/27/2008 -
- **HUP:** Silverstein 10 from 8/2/2008 -
- **PPMC:** 3 East from 10/4/2007 -
- **PAH:** Widener 3 from 2/6/2008 -
- **PAH:** 7 Scheidt from 7/1/2004 –

### Blood Stream Infections – 500+ Days Free
- **HUP:** CICU from 11/8/2009 -
- **PPMC:** 4 East from 8/9/2009 -

### Catheter-Associated Urinary Tract Infections – 500+ Days Free
- **PPMC:** 5 South from 7/17/2009 -
- **PAH:** 6 Schiedt from 4/28/2009 -
- **PAH:** 3 Cathcart from 10/2/2009 -

### Ventilator – Associated Pneumonia – 500+ Days Free
- **HUP:** CCU from 8/17/2009 -
- **PPMC:** MICU from 9/1/2009 -
Catheter Associated Urinary Tract Infections

Since FY09 when there was a definition change in what constitutes a catheter associated urinary tract infection, there have been >400 urinary tract infections prevented in patients across UPHS

Note: Rate per 1,000 catheter days
Ventilator Associated Pneumonia

Based on current year to date data the projection is that 16 patients will experience a ventilator associated pneumonia in FY11.

Note: Rate per 1,000 ventilator days
Heard During Blueprint Update Conversations

- On the right path
  - 2007 version correctly anticipated the current environment.
  - Need to bring greater value to the care we deliver.

- Peers are focused on the same issues
  - Mortality, HAIs, care coordination are on everyone’s radar.
  - Management and execution will distinguish UPHS.

- Need to engage Penn Medicine more deeply
  - Some segments of Penn Medicine are not conversant in the Blueprint.
  - We will continue to advance objectives through the unit-based clinical leadership (UBCL) structure.

- Goals need to be more audacious
  - Set dates for achievement of targets.
  - “Elimination” of harm, rather than “reduction.”
Overarching Goals Blueprint 2011:

• By July 1, 2014 Penn Medicine will eliminate:
  – Preventable deaths
  – Preventable 30-day readmissions

‘Some is not a number; soon is not a time’
# Penn Medicine Blueprint for Quality and Patient Safety

**Penn Medicine will eliminate preventable deaths and preventable 30-day readmissions by July 1, 2014**

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| **Accountability For Perfect Care**              | “Always” events - strive to provide perfect care  
- Implement clear lines of accountability that span inpatient and ambulatory environments                                                                                                                                 |
| **Patient And Family Centered Care**             |  
- Provide consistent and thorough communication with families & patient regarding plan of care  
- Increase patient and family involvement in UPHS forums that address issues relevant to quality, safety and service excellence  
- Enhance patient-provider partnership through better exchange of information                                                                                                    |
| **Transitions In Care/Coordination Of Care**     |  
- Risk Stratification  
- Interdisciplinary rounds  
- Patient and Family Centered Medication Education  
- Post-discharge Communication                                                                                                                                                |
| **Reducing Unnecessary Variations In Care**      |  
- Eliminate variations in care processes where evidence exists  
- Balance conformity in practice with needs for personalized care  
- Set goals that are positive and proactive                                                                                                                                       |
| **Provider Engagement, Leadership, And Advocacy**|  
- Strengthen organizational capacity and capability for continuous improvement  
- Increase involvement of house staff in quality, safety and service excellence efforts                                                                                       |
Essential Tools Blueprint Version 2.0

- Accountability (from Blueprint 1.0)
- Incentives (from Blueprint 1.0)
- **Education** - UPHS staff and Penn Medicine Trainees
  - Performance Improvement Methods
  - Patient and Family Centered Care
  - Transitions Behaviors
- **Information** – accessibility of data at unit level
  - Unit level real-time dashboarding
  - Clinical decision support
  - Real-time tracking for decision-making