Using FMEA for process improvement in patient safety

Ting Ching Ching
PI Manager
WHAT YOU WILL KNOW:

- What an FMEA is
- The purpose of FMEA
- When to use it
- Understand the steps of the FMEA process
- How to use FMEA for improvement in patient safety
- FMEA in action: An example
What Is FMEA?

- FMEA stands for **Failure Mode Effects Analysis**

- FMEA is a **tool** that helps:
  - Identify the ways that a **process** can fail
  - Why it might fail
  - Determine the effects of that failure
  - Prioritize potential failures for further action

- FMEA is **proactive, systematic, & team-based**

- FMEA **does not** fix failures
WHAT IS THE GOAL OF FMEA?

- Use the prioritized failure/risks to focus our improvement efforts on the most pressing problems
  - Predict possible failures
  - Eliminate the possibility of intolerable errors
  - Minimize the consequences of unavoidable errors

- Makes a system more fail-proof

» Reduce or eliminate risk to the patient
When Do you Use An FMEA?
FMEA is an early part of process improvement.

RCA examines why a specific failure occur.

Use FMEA to improve an existing system.

When do you use an FMEA?
Why Do FMEA in Healthcare?

Historically…

- Accident prevention has been a primary focus of hospital medicine
- Misguide reliance on “faultless” performance by healthcare professionals
- Hospital systems were not design to prevent error; they just reactively changed and were not typically proactive.
HEALTHCARE APPLICATION

- Specimen identification
- Hospital-acquired condition-pressure ulcers, patient falls, wrong-site surgery, etc.
- Medication safety and dispensing
- Fall prevention
- Tests-delays and results
- Infection control
- Facility or new process design
**What will an FMEA give us?**

- A prioritized list of potential failures/risks that include:
  - What will we see when a failure occurs
  - How that failure impacts our “customer”
  - What is likely cause of the failures

- Best for analysis of a **system** not an incident
The FMEA Process
FMEA Process Steps

1. Select a High-Risk Clinical Process
2. Assemble the team
3. Map the Process
4. Brainstorm potential failure modes
5. Identify effects of each failure mode (Severity; Occurrence; Detectability)
6. Prioritize the failure modes (RPN)
7. Develop mitigation strategies and redesign process
8. Implement and evaluate the redesign
**Step 1: Select a High-Risk Process**

- Select processes with high potential for having an adverse impact on the safety of individuals served

<table>
<thead>
<tr>
<th>High Risk Process</th>
<th>Healthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Variable inputs</td>
<td>• Humans</td>
</tr>
<tr>
<td>• Complex</td>
<td>• Many processes</td>
</tr>
<tr>
<td>• Non-standardized</td>
<td>• Many lacks standard</td>
</tr>
<tr>
<td>• Heavily dependent on human interaction</td>
<td>• High degree of human interaction</td>
</tr>
<tr>
<td>• Hierarchical (not team) based</td>
<td>• Very hierarchical</td>
</tr>
</tbody>
</table>

...are all candidates for consideration
HIGH-RISK PROCESSES - EXAMPLES

- Medication administration
- Surgery
- Transfusion
- Restraints
- Isolation
- Emergency or resuscitative care
- High-risk population
Step 2: Form a Team

- Team Leader
- FMEA Facilitator
- Recorder
- Experts on the process examined:
  - If clinical at least 1 nurses & 1 doctor
- Include all areas involved in the process
- Hospital leader with decision-making power
- “Outsider” – objective, “naïve”
- 6 to 10 members ok
**Step 3: Map the Process**

- Pick a manageable portion of the process
- Make sure the topic is narrow enough of a **focus** (don’t try to cure world hunger)
- **Define beginning and end of the process**
  - If process is complex, identify the area to focus on
- **Chart the process** as it is normally done, using the collective process knowledge of the team.
- **Number each step**
Cardiac Cath Lab First Case Start Process Flow:

1. Phone Call Made to Patient Day Before
2. Patient Arrives to Lobby for Registration
3. Patient Is Moved to Wait and Play Area
4. Nurse Brings Patient into Exam Room
5. Does Patient Need Anesthesia?
   - Yes: Anesthesia Examination
6. Cardiology Assessment and Consent
7. Patient Changes Clothes
9. Patient to Procedure Room

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**PROCESS FLOWCHART – AN EXAMPLE**
**Steps 4-6: Use The FMEA Worksheet**

<table>
<thead>
<tr>
<th>Failure Mode</th>
<th>Effect</th>
<th>Severity</th>
<th>Potential Cause</th>
<th>Occurrence</th>
<th>Detectability</th>
</tr>
</thead>
<tbody>
<tr>
<td>What you observed when a failure occurs</td>
<td>How the failure impacts the customer</td>
<td>How severe is the effect to the customer</td>
<td>The most likely causes of the failure—this line must always be filled in</td>
<td>How often does the cause or FMEA Mode occur?</td>
<td>How likely are you to be able to detect the failure or cause?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPN</td>
<td>Rank</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
STEP 4: BRAINSTORMING POTENTIAL FAILURE MODES

3 Things:

A. What will we observe when something fails?
B. How will the failure impact our “customer”?
C. What do we think might cause this failures?
4A. What Errors or Failures we can see?

- For each step in the process, list all the failure modes - all the ways the process could break down or go wrong.

- could have multiple failures for each process step.
4B. What are the Effects?

- What are the consequences of the failure?
- Review each failure mode and identify the potential Effect(s) for each one
- Try not to overlook any Effects -> results will impacts the risk ratings done later

If failure mode occurs, then what are the consequences?
4C. What Causes the Failure?

- What causes this failure mode?
- Is the reason or source of problem straightforward?
- If the root of the problem is not obvious, do Root Cause Analysis (RCA)
  - Use appropriate root-cause analysis tools, e.g.
    - Fishbone
    - OR “5-Why’s”
**STEP 5: START RATING S, O & D**

- **S, O, D**: Severity, Occurrence, Detectability
- Need to have a scale to reference (1 – 10)
- 1 is best and 10 is worst
- Rate 1 through 10 to each of Severity, Occurrence, & Detectability
- Customize the scale to your organization
RATING SEVERITY – AN EXAMPLE:

<table>
<thead>
<tr>
<th>ATTRIBUTE</th>
<th>Negligible (1)</th>
<th>Minor (2)</th>
<th>Moderate (3)</th>
<th>Major (4)</th>
<th>Extreme (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Patient Safety</td>
<td>No obvious injury/harm</td>
<td>Minor non-permanent injury/harm</td>
<td>Semi-permanent injury/harm (up to 1 year) E.g.:</td>
<td>Incidents involving major permanent injury/harm or any of the following:</td>
<td>Death E.g.:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Medication error due to wrong drug, wrong patient, wrong dose, wrong route, wrong time, wrong frequency, wrong diluent or wrong infusion volume/rate</td>
<td>• Infant Abduction</td>
<td>• Death resulting from ‘medical error’</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Adverse drug/blood reaction e.g. any untoward reaction to the blood transfused or correct drug administered such as allergic/anaphylactic reactions, skin rash, nausea and vomiting, etc.</td>
<td>• Infant Discharged to Wrong Family</td>
<td>• Death following adverse outcome of procedure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Equipment failure e.g. cylinder runs out of oxygen while transporting patient; laser or diathermy burns; etc.</td>
<td>• Mismatch (Haemolytic) Blood Transfusion</td>
<td>• Any fatal cardiac or respiratory arrest that occurs intra-operative or in recovery room</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Patient falls e.g. from bed; stretcher; chair; toilet; etc.</td>
<td>• Rape or serious assault</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Adverse outcome of procedure, e.g. perforation of bowel following peritoneal dialysis catheter insertion</td>
<td>• Surgery on Wrong Patient or Wrong Body Part</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Wrong radiological or laboratory results causing wrong treatment or procedure being carried out when it is not necessary or may even cause morbidity to the patient</td>
<td></td>
</tr>
<tr>
<td>2 Patient Experience</td>
<td>No significant impact on patient experience</td>
<td>Unsatisfactory patient experience related to treatment/ care given, e.g. inadequate information or not being treated with honesty, dignity and respect - auditory residue</td>
<td>Unsatisfactory patient experience related to poor treatment/care resulting in short term effects (less than 1 week)</td>
<td>Unsatisfactory patient experience related to poor treatment/care resulting in long term effects</td>
<td></td>
</tr>
</tbody>
</table>

• **Occurrence:**
  How often does it happen?
  1 – Never happens
  5 – 50% of the time, the failure happens
  10 – 100% of the time, the failure happens

• **Detectability:**
  How often can the system detect the failure?
  1 – Can never detect at all
  5 – 50% detection
  10 – 100% detection (fool-proof)
GET THE RISK PRIORITY NUMBER (RPN)

- Severity X Occurrence X Detectability
- The risk Priority Number determines where our greatest danger lies
STEP 6: PRIORITIZE BY RPN

- Prioritize your efforts and improvement resources according to RPN

- **High RPNs** are more serious, should be addressed first, and deserve more effort and resources

- Note that functions with **low RPN’s might often have “none”** as the recommended action unless the action were particularly easy and low cost
- Use the RPN to determine where to focus your limited resources
- We are looking for failures that are most severe, occur often, & are hard to detect.

<table>
<thead>
<tr>
<th>Failure Mode</th>
<th>RPN</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegible handwriting</td>
<td>168</td>
<td>3</td>
</tr>
<tr>
<td>Look alike drug name ordered</td>
<td>360</td>
<td>1</td>
</tr>
<tr>
<td>Used felt pen on form</td>
<td>54</td>
<td>4</td>
</tr>
<tr>
<td>Non formulary drug ordered</td>
<td>210</td>
<td>2</td>
</tr>
</tbody>
</table>
**How to Prioritize Potential Failure Modes?**

All failure modes are important, yet **give priority attention & efforts on major failure modes**.
STEP 7: REDesign THE PROCESS/DESIGN CONTROLS

- Brainstorm action that could address the failure modes with the highest Risk Priority Number (RPN)
  - Eliminate risk if possible
  - Minimize/mitigate risk if it cannot be eliminated
  - Look for opportunities to “failure proof”
To reduce risk is to reduce the Risk Priority Number (RPN)

- Can I make this failure less severe?
- Can I make this failure occurs less often?
- Can I make this failure easy to detect?
REDUCE SEVERITY – EXAMPLES:

- Protection- gloves, masks, face shields
- Emergency shut-offs, fail-safe operation
- Sprinkler system, fire doors
- Patient positioning
- Alternative material, e.g., safety glass, Pyrex
- Warning and message
- Backup and redundant systems
- Patient and family awareness and education
- Expanding supplier base, multiple sources
- Shared design with vendors
Prevent Occurrence – Examples:

- Continual improvement, problem-solving teams
- Increasing process performance (capability)
- Address multiple causes
- Move checks earlier in the process
- Staff education & training
- Error-proofing
- Better data collection, publish data
- Protective storage, inventory management
- Supplier evaluation and monitoring
**Improve Detectability – Examples:**

- In-process checks instead of post-process
- Automated checks and early warnings
- Barcodes, wristbands, asking name/DOB
- Better measuring devices, calibration checks
- Verification & double-checks
- Use colors, shapes to identify materials
- Statistical process control (SPC)
- Equipment & process validations
- Audit, system testing & monitoring
STEP 8: IMPLEMENT & EVALUATE THE NEW PROCESS – KEY STEPS

- **Important:** Assign a person responsible for each action item, and a due date completion
- Follow-up on assigned actions
- Verify actions taken have intended results
EVALUATE NEW PROCESS WITH 1 MORE FMEA

After implementation:
- Determine what actions were taken-different than proposed?
- Collect data on the new process
- Calculate new RPNs based on actions taken
- Reassess RPNs and determine next actions (on same item if RPN is still high, or new high RPN)
STEP 9: MONITOR EFFECTIVENESS OF PROCESS

- At regular intervals, re-assess to ensure the new process remains in place and effective
TIPS FOR FILLING OUT AN FMEA

- **Words first** (Failure Mode, Effects, Cause)
- **Number second** (Severity, Occurrence, Detectability)
Failure Mode Effects Analysis (FMEA) is an effective proactive risk reduction technique.

Doing it right result in reducing patient harm & improving patient outcomes.
Infection Prevention Approaches

Speaker: Lau Leh Ming
Objectives:
1. Definition – Healthcare Associated Infection
2. Background
3. Infection Control Program
4. Standard Precautions
5. Bundle Care Approach
6. Conclusion

References: CDC Guidelines
Institute of Health Improvement (IHI)
Healthcare Associated Infection (HAI):

- Infection that appeared 2 days/48hrs following admission, the infection was not present or incubating at the time of admission.

- Also includes infection that appear within 2 weeks of hospital discharge, 30 days post surgery, within 1 year with implant use and occupational infections among hospital staff.
Background
- Estimates that 1.7 million HAIs occurred in U.S. hospitals in 2002 and were associated with approximately 99,000 deaths.
- About 5 - 10% admitted to hospitals develop infections
- Usually related to procedure or treatment, inappropriate patient – care practices
- About 25% can be prevented by taking proper precautions when caring for patients

Study of the Efficacy of Nosocomial Infection Control (SENIC):
• Significant proportion of HCAI can be prevented and the quality of infection control program makes a difference
• Hospitals with comprehensive infection Control program were able to reduce the rate of HCAI by 32% over a period of 5 years
• Hospitals with poor or non-existent infection control program, the rate of HCAI increased by 18% over the same period
Impact of HAI

- Leads to functional disability & emotional stress
- Disabling conditions reduce the quality of life
- One of the leading cause of death
- The increased economic cost are high: extra investigations, increased length of hospital stay (SSI – 8.2 days), extra health care effort by doctors & nurses
Important Types of HAIs
- Use of invasive devices and procedures to treat patients and to help them recover
- Infections can be associated with the devices used during procedures, such as catheters, ventilators.
- These HAIs include:
  • Central line-associated bloodstream infections – A small portion of HAI, approx. 5%, but case fatality rates are high
  • Catheter-associated urinary tract infections - 40% of total HAI
  • Ventilator-associated pneumonia - the leading cause of death among HAIs.
  • Surgical site infections - 0.5 – 15%, a significant problem which limits potential benefits of surgical interventions. The impact of hospital costs & post operative length of stay is considerable.

cont.
Antibiotic Resistant Microorganisms

• Resistant to multiple antibiotic - MRSA, VRE, MDRO, TB
• Overuse & inappropriate use of antibiotic
• Reduce options for treatment
• Require isolation precautions

• Solutions: appropriate antibiotic use, better infection control & prevention

CDC works to monitor and prevent these infections because they are an important threat to patient safety.
Microorganisms
Common pathogens:
• Bacteria – Commensal bacteria, Pathogenic bacteria
• Virus – HIV, HBV, HCV transmitted through blood & body fluid
  - Respiratory syncytial virus, Rota virus, Ebola, Influenza, Herpes Simplex virus
• Fungi – opportunistic organisms and cause infections during extended antibiotic treatment & severe immuno suppression

Bacterial Survival times on hands:
• Acinetobacter spp 60 min
• E. coli 6 min (mean)
• Klebsiella spp 2 min (mean)
• VRE 62 min
• Pseudomonas spp 30 min; 180 in sputum
• Rotavirus 16% survive 20 min
  2% survive 60 min
Patient Susceptibility

• Age – Infants & old age have lower resistance to infection
• Immune status – Patient with chronic illness such as malignancy, leukemia, diabetes mellitus, renal failure or AIDS have higher susceptibility to infection
• Immunosuppressive drug, irradiation

• Where do infection transmission come from?
  - Endogenous infection: normal flora change to pathogenic due to change of habitat, damage of skin & inappropriate antibiotic use
  - Exogenous cross infection: Mainly through hands of healthcare workers, visitors & patients
Environmental Factors

- Healthcare environment where both infected persons & persons at high risk of infection congregate
- Crowded conditions within hospital – patient, family members, visitors, HCW
- Microbial flora may contaminate objects, devices & materials which subsequently be in contact with susceptible body sites of patients.
- Several types of microorganism survive well in hospital environment: Acinetobacter, Pseudomonas, Mycobacterium – in damp areas, detergent & disinfectant, equipment & supplies, in fine dust & droplet nuclei
- Some procedures that save life may increase risk of infection e.g. urinary catheter, intravenous therapy, inhalation therapy
- Inappropriate use of antibiotics
Transmission is easier to control than the source / host
Infection Control

- Prevention of HAI is the responsibility of all individuals & services provided by healthcare settings

- To practice good Asepsis, one should always know what is dirty, what is clean, what is sterile and keep them separate

- Hospital policies & procedures are followed to prevent spread of infection in hospital
Infection Control Program

- A comprehensive, effective & supported program is essential for reducing infection risk and increasing hospital safety
Infection Control Team
• The structure varies with hospital types, needs & resources
• Hospital can appoint epidemiologist or infectious disease specialist, microbiologist to work as Infection Control Chairman
• Infection Control Nurse who is interested and has experience in infection control issues

Empowered
• Team should have authority to manage an effective control program
• Team should have direct reporting with Senior Administration
• Team members are responsible for day to day functions of Infection Control & prepare yearly work plan
Infection Control Committee

• It includes representatives from different hospital departments & management, meeting monthly

• It establishes standards for patient care, it reviews & assesses Infection Control reports, identifies areas of intervention
Infection Control Manual

- Every hospital should have an infection control manual compiling recommended instructions & practices for patient care
- This manual should be developed & updated in a timely manner by the infection control team
- It is to be reviewed & accepted by infection control committee

Responsibility

- Role of every hospital department & service units must be identified, documented as manual kept in accessible place
- In job description of every hospital staff, Infection control precautions should be part of the routine work & stressed for that, details of his duties must be discussed before employment
- Infection Control Program should include surveillance, preventive activities & staff training
Surveillance Activities
- Operative procedures
- Critical Care Units
- Targeted Surveillance
- Outbreak Investigation

HAI Surveillance:
- HAI rate in a hospital is an indicator of quality & safety of care
- Surveillance to monitor HAI rate is essential to identify problems & evaluate control activities
- The ultimate aim is reduction of infection rate & their costs
- Surveillance implies that observational data are regularly analyzed
Surveillance results dissemination

Feedback & dissemination

- Prompt, relevant to target group
- Meetings & discussions
- Dissemination by committee
Surveillance data analysis & results dissemination

Uses:
• Improve patient outcomes by – modifying patient care practices
  - reducing length of stay
• Identify education needs
• Evaluate new products
• Identify new opportunities for improvement
• Results disseminated to target group
Scope of Infection Control
Aiming at preventing spread of infection: practice Standard Precautions
• Treating every patient as potentially infectious, regardless of the infectivity status
• Use of appropriate Personal Protective Equipment whenever there is contact with or exposure risk to blood, body fluid, mucous membrane or non intact skin

Components:
• Hand Washing
• Appropriate use of Personal Protective Equipment
• Cleaning, disinfection & sterilization
• Waste disposal & Sharp handling
• Environmental Management
• Linen handling
• Specimen handling
• Patient Placement
• Cough Etiquette
Hand Washing

- The single most important measure in Infection Control
- Hand washing with soap & water removes soil & transient bacteria
- Alcohol hand rub kills transient microorganism
- 5 Moments of Hand Hygiene
• Compliance to the 6 steps of hand hygiene to ensure effective hand hygiene
• Gloves cannot substitute hand washing which must be done before putting on & after their removal
• Vigorous, brief rubbing & lathering of all surfaces, followed by rinsing under running water, dry thoroughly
• Jewelry must be removed
Appropriate use of Personal Protective Equipment

- Gloves: must be used when
  - contact with blood, body fluid is anticipated
  - contact with mucous membrane, non intact skin
  - working with contaminated instruments or equipments
  - HCW has skin cut or lesion
  - sterile gloves are used for invasive procedures
  - no reuse of gloves

- Mask & protective eye wear: must be used when
  - engaged in procedures likely to generate droplets or aerosol
  - during procedure to protect wound exposure to HCW respiration
  - mask must be of good quality, properly fixed to cover mouth & nose

cont.
Gowns & apron: must be used when
• spraying or spattering of blood or body fluids is anticipated
• must be impermeable
• sterile gown is used during sterile procedure

• Hand hygiene must be performed prior to use of PPE & after removal of PPE
• Appropriate & correct use of PPE ensures protection
• Correct removal to avoid self contamination
• No reuse of disposable PPE
Cleaning, disinfection & sterilization – medical devices

• Used medical devices, instrument are contaminated, must be contained

• Use appropriate PPE during handling, transporting & reprocessing

• Appropriately reprocessed for safe reuse

• Cleaning must precede disinfection & sterilization

• Spaulding Classification: Critical, Semi Critical & non Critical

• Sterility Maintenance until use on patient
Waste Management & Sharp Handling

• Appropriate use of PPE on handling of waste

• Containment for disposal begins at the place of waste generation

• Contain waste in colour coded, leakage proof bag which is secured/tied on ¾ full

• Dispose used needle / sharps immediately in puncture resistant & leak proof sharp box
  • Sharp box must be easily accessible, not overfilled

• Never recap needles, use tray / kidney dish for needle & syringe

• Needle stick & sharp injury must be reported & notified; injury carries the risk of blood born infection
Environmental Management

• Routine cleaning of Housekeeping surface: table, chair, bed, locker, wall, door, door handle, call bell, light switches, privacy curtain...

• Medical device surface: drip stand, infusion pump, stethoscope, B/P set, X-Ray machine, Dialysis machine, dressing trolley

• Cleaning from clean to dirty, rinse cleaning cloth/mop frequent, basin & bucket kept clean & dry

• Spillage must be attended to immediately – remove soil, clean & disinfect
Linen Handling
• Soiled linen handling - appropriate PPE
• Contained for transportation in colour coded bag
• Use of alginate bag
• Segregate linen from SCBU, labeled linen bag
• Clean linen handling to avoid contamination – clean hands, containment during transport
Specimen Handling

• Use of PPE
• Avoid contamination during specimen collection
• Contain specimen in biohazard bag with label
Patient Placement

• Transmission based isolation:
  - Air-Borne
  - Contact
  - Droplet

• Protective isolation

"Let me guess...it's contagious!"
Cough Etiquette
• Offer mask, tissue
• Advise on waste disposal, hand hygiene
• Advise/arrange sitting away from crowd, 3 feet apart
Staff health promotion & education

- HCW are at risk of acquiring infection, they can also transmit infection to patients & other employee

- Up-to-date with immunization

- Release from work if sick, occupational injury must be notified

- Continuous education to improve practice
  - new staff
  - student
  - patient & family member
Evidence-Based Care Bundles

- IHI developed the concept of “bundles” to help health care providers more reliably deliver the best possible care to patients undergoing particular treatments with inherent risks.

- A bundle is a structured way of improving the processes of care and patient outcomes: a set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes - ALL or NONE.

- Bundle practices are not new, they are well established best practices, but they are often not performed uniformly, making treatment unreliable.
HAI Prevention Care Bundle

1. Catheter-Associated Urinary Tract Infections

Components:

i) Avoid unnecessary urinary catheters

ii) Insert urinary catheters using Aseptic Technique

iii) Maintenance & care of urinary catheters

iv) Review urinary catheter necessity daily & remove promptly
i) **Avoid unnecessary urinary catheter – exception:**

- Selected surgical procedures
- Urine output monitoring in critically sick
- Urinary retention or obstruction management
- Enable pressure ulcer healing
- For comfort of terminally ill patient
ii) Insert urinary catheters using Aseptic Technique

- Catheter is inserted only by the trained personnel following Aseptic Technique - use of sterile glove, sterile drape & set, antiseptic solution for cleansing the urethral meatus, sterile lubricant gel.

- Appropriate Hand Hygiene before the procedure.

- Appropriate catheter size.

- Competency assessment is important for those who do not insert catheters frequently.
iii) Maintenance care of catheters bundle

- Hand Hygiene & Standard Precautions before & after patient care activity e.g. manipulation of catheter, emptying urine bag, taking urine specimen

Routinely:
- maintain sterile, continuous closed free drainage
- keep catheter properly secured to avoid movement or traction
- avoid catheter from being kinked
- keep urinary cath. bag below the level of the bladder, but not touching floor
- empty urine bag to avoid overfilling, using a patient designated clean jug, avoid urine bag outlet from touching the jug
- daily catheter hygiene performed by cleansing the meatal surface during daily bathing using soap & water
- Aseptic technique must be followed on collection of urine sample, use a sterile needle & syringe, antiseptic to clean the sampling port
- avoid disconnecting the catheter from the drainage tubing
iv) Review urinary catheter necessity daily & remove promptly

- The duration of catheterization is the most important risk factor for development of infection, the strategy is to remove the catheter as soon as it is not needed

- With a catheter in place, the daily risk of developing a urinary infection ranges from 3% to 7% (ref. CDC guidelines)

- Nurse reminding Doctor on reviewing catheter necessity daily has reduced catheter duration from 7 to 4.6 days - study done in Taiwan shows

- Include catheter necessity in daily nursing assessment, with the aim of catheter duration of not more than 48 hours
2. Central Line-associated Bloodstream Infections

Components:

i) **Hand Hygiene**

ii) **Maximal barrier Precautions** – strict compliance with hand hygiene, wearing of a cap, mask, sterile gown & gloves, and use of sterile drape.

iii) **Chlorhexidine skin antisepsis** – chlorhexidine 2% in 70% alcohol provides better skin antisepsis.

iv) **Optimal catheter site selection** - with subclavian vein as the preferred site for non-tunneled catheters, avoid femoral vein.

v) **Daily review of line necessity** - prompt removal of unnecessary line, the risk of infection increases over time as the line remains in place.
3. Ventilator Associated Pneumonia

VENTILATOR BUNDLE ELEMENTS

1. Head of bed > 30°
2. *Daily* assessment of readiness to extubate & “sedation vacations”
3. Peptic Ulcer Disease Prophylaxis
4. Deep Venous Thrombosis Prophylaxis
4. Surgical Site Infection (SSI)

SURGICAL SITE INFECTION
Help to reduce avoidable harm to your Patients

- PROPHYLACTIC ANTIBIOTICS
- MAINTAIN NORMOTHERMIA
- GLYCAEMIC CONTROL (Diabetics)
- HAIR REMOVAL

SSI BUNDLE

All our patients should be protected from the risk of SSI
We all have a role in providing this care
Is your patient in the loop?

Surgical Site Infection (2008) NICE Guideline 74
i) Appropriate use of prophylactic antibiotics

• Choose prophylactic antibiotic consistent with national guidelines
• Timely administration of prophylactic antibiotic - within one hour prior to incision
• Timely discontinuation – single dose
• Duration of Antibiotic Prophylaxis
  - Increased use of antibiotics promotes antibiotic resistance.
ii) Appropriate hair removal

- No hair removal at all
- Clipping
- Razors – cause small cuts and nicks to skin, not visible

iii) Controlled 6 a.m. postoperative serum glucose in cardiac surgery patients

- Hyperglycemia and Risk of SSI post Cardiac surgery
iv) Immediate postoperative normothermia

Hypothermia

- Reduces tissue oxygen tension by vasoconstriction
- Reduces leukocyte activity
- Increases bleeding and transfusion requirement
- Increases duration of hospital stay even in uninfected patients
Preoperative:
• Reduce preoperative hospitalization
• Preoperative shower
• Avoid shaving
• Use appropriate antiseptics for skin prep
• Treat infection, control blood glucose level
• Preoperative warming
• Antibiotic Prophylaxis
• Hand antisepsis for surgical team

Intra-operative:
• Ventilation & Air Filtration in O.T.
• Surgical attire & drapes
• Instrument & equipment
• Environmental cleanliness in O.T.
• Aseptic technique

Postoperative:
• Protect with sterile dressing for 24 - 48 hours postoperatively
• Hand Hygiene & sterile technique if incision dressing must be changed
• Educate patient & family regarding proper incisional wound care
Conclusion

• Transmission of pathogenic organism creates a major healthcare burden

• Multifaceted interventions are needed for high level control & prevention of HAI

• Proper hand hygiene is the cornerstone of prevention efforts

• A well planned & organized Infection Control Program is essential to curb HAI in a hospital

• Bundle Care is evidence-based practices, performed collectively and reliably (all or none), have been proven to improve patient outcomes
THANK YOU
THANK YOU
THANK YOU
Inserting Nursing anecdotes – Promoting Quality of Care

Presented by Daisy Segie
Nurses prospectus
Nurse in the nightingale era
Nursing experience yesterday

No infusion pump... count the drops
Nurses of today
Talking about change?

- How often do we change in our daily lives?
- Our looks?
- Our style?
- Is it necessary?
Challenges
Nursing today
Medications
New technology -

• Means learning new things

• Very dependable on machines
Just sharing some nursing anecdotes that requires serious thinking?

- Care of intravenous fluids

- What are the dangers / complications of intravenous therapy?
Intravenous infusion

• What to do if the infusion is under run? Or over run?

• How to document?
Pain – subjective

- Pain is whatever the patient says it is pain.

- Role of the nurse when the patient is in pain.

- A
- P
- I
- E
Safety at child birth?

• Childbirth should be the most enjoying and happy experience for every mother.

• Psychological, Physical support.

• Prevent psychological trauma

• Avoid verbal harassment.
• Frequency of vaginal examinations during childbirth by the midwife / doctor.

• "Fundal aid" posed dangers to both mother and baby

• Uterine prolapse and tear.
Novices transferring of patients

- A patient is attached to numerous tubes and drains eg: IVF with the syringe pump
- Redivacs
- Under water seal drainage
- Urinary catheter with full urine bags
- Nasogastric tubes
• What would be your feelings when you were still a novice expected to handle this type of client?
Lewis identifies the following bullying acts in UK Nursing...

- Undermining of work
- Disadvantaging the target
- Physical abuse (rare)
- Verbal abuse
- Isolating individuals
- Interfering in work practices
- Continual criticism
- Sarcasm
- Demeaning
- Destroying confidence
- Fabricating complaints
- Setting up to fail
Extract from the MNB...

• GOAL
• Deliver safe and quality nursing care

• All nurses from novice to expert should have sufficient knowledge and skill to demonstrate their competencies.
Extract from the MNB...

• 100% : Implementation of the 10 S PRINCIPLES in daily practice:
  
  • Sensitive, polite, greet, prompt, liveliness, touch, gracious, supervise, smile and investigate.
Extract from the MNB...

• Provides nursing care and practices within an ethical framework and a socio-cultural context.

• Nursing Practice is guided by the Code of Professional Conduct.
• Involves in ethical decision-making with

• respect to own professional
• responsibilities or where ethical issues
• arises.
• Perform comprehensive assessment to formulate nursing diagnosis, coordinate and manage care holistically according to patients’ needs: eg

• - Administration of medication

• - Care of pressure areas
Extract from the MNB...

• Follow ward rounds and verbalize patient conditions

• Inform immediately when patient’s general condition deteriorates

• Communicate with other healthcare professionals for continuity of care
Practical wisdom

• An additional to the rules.

• The desire to do the right thing and to be able to do the right thing that is morally right....
Ingredients of practical wisdom

1. Knowing the *telos* of a role or objectives

2. Perception (Aristotle) or intuition (Benner)

3. An informed intellect – sound knowledge
4. Experiences

5. Deliberative skills - Which is the best course of actions?

6. Action – it’s not enough to know what the wise or correct thing is but you must do it. “Turun padang”
Nursing is not only a job, but a way of life.
Thank you for your commitment every day
Thank You for listening...
EVOLUTION

PREPARED BY: FRANKENSTEIN VIA
NMSC

9th Annual Nursing Conference 2014 | Normah Medical Specialist Centre, Kuching Sarawak | 18-10-2014
The Evolving Standards of Care In Nursing
• Do we know her?

• Do we admire her?

• She create history in Nursing profession
WHAT IS EVOLUTION?

- the process of developing or being developed.

- synonyms: evolution, growth, maturing, expansion, enlargement, spread, build out, progress, success, blossoming, blooming, burgeoning, headway
Understanding evolution is critical for understanding biology. As the preeminent scientist Theodosius Dobzhansky stated, “Nothing in biology makes sense except in the light of evolution.” Evolution is the only scientific explanation for the diversity of life. It explains the striking similarities among vastly different forms of life, the changes that occur within populations, and the development of new life forms.
Why evolution??

- Improve life?
- Improve relationship?
- Improve image?
- Improve career and etc?
- Improve care to the patients and etc?
“Successful initial implementation and ongoing maintenance of process improvements requires overcoming the resistance to change....J Delayne Stroud 2010”
Write down what is your dream???
“What the mind of man conceives and he believes, he can achieve.” - Napoleon Hill
Change is important because it is a way of learning. You can find a better way of doing things by trying different ways of doing things instead of doing them the same way. Change can make things easier, more beneficial and also in general help people to gain more education on how things work and be able to adapt to different environments.
“The only way that we can live, is if we grow. The only way that we can grow is if we change. The only way that we can change is if we learn. The only way we can learn is if we are exposed. And the only way that we can become exposed is if we throw ourselves out into the open. Do it. Throw yourself.”

— C. JoyBell C.
- Game 1
- Game 2
- Game 3
“You cannot push anyone up the ladder unless he is willing to climb himself.” - Robert Schuller
“Be the change that you wish to see in the world.”

— Mahatma Gandhi
"I believe that everything happens for a reason. People change so that you can learn to let go, things go wrong so that you appreciate them when they're right, you believe lies so you eventually learn to trust no one but yourself, and sometimes good things fall apart so better things can fall together."

~ Marilyn Monroe
“Everyone thinks of changing the world, but no one thinks of changing himself.”

— Leo Tolstoy
“The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking.”

— Albert Einstein
“When we least expect it, life sets us a challenge to test our courage and willingness to change; at such a moment, there is no point in pretending that nothing has happened or in saying that we are not yet ready. The challenge will not wait. Life does not look back. A week is more than enough time for us to decide whether or not to accept our destiny.”

— Paulo Coelho, *The Devil and Miss Prym*
How do you score 100% in life????????

E.g.

- A b c d e f g h l j k l m
  1 2 3 4 5 6 7 8 9 10 11 12 13

- N o p q r s t u v w x y z
  14 15 16 17 18 19 20 21 22 23 24 25 26

- L O V E
  12 + 15 + 22 + 5 = 54%
- **MONEY**
  \[13 + 15 + 14 + 5 + 25 = 72\%\]

- **ATTITUDE**
  \[1 + 20 + 20 + 9 + 20 + 21 + 4 + 5 = 100\%\]
Tips to change

- **Stop focusing on yourself.** A lot of pessimism arises from false or unreasonable expectations, especially when those expectations involve yourself.

  - Make an effort to reach out and help at least one person every day without expecting anything in return. Over time, you may find more joy in giving rather than receiving.
Face your flaws. We all have something upon which we can improve, so whether you're at work, at home, or anywhere else, be open to learning more.

- Make a list of all your weaknesses and flaws. At the beginning of every week, take one of those listed flaws and think about what you could learn concerning that weakness. Use the remainder of the week to learn even more.
Look on the bright side. In every undesirable circumstance, there is always a way to look on the brighter side. This isn't to say that you should live your life dishonestly, always ignoring the bad in favor of a fake smile. Instead, accept the bad things but also think about how much worse it could have been.

For example, maybe you just got into a car accident and need to pay a lot of money for reparations and medical bills. One way to look on the bright side is to be grateful that you are still alive without permanent damage to your body or your brain.
Count your blessings. Post up a blank sheet of paper on your wall, or use a journal. Every morning, as soon as you've woken up, think of one blessing in your life that hasn't already been written on the paper and write it down. Counting your blessings will help you see that your life isn't all doom and gloom, that you have reasons to be happy and joyful.
Find a life coach. These professionals make a living helping people find success in many forms, including successful attitude adjustments. They have the experience of knowing what methods work best for the majority of people.

- You can contact a life coach in person, attend workshops and seminars, or study their methods online.
Befriend optimistic people. Sometimes a poor attitude is a result of being surrounded by others with poor attitudes. As it has been said, "Bad company corrupts good character." Consider befriending new people, especially people who are optimistic and have a healthy attitude towards life.
Ask your friends to point out when you are negative or pessimistic in the future. This will help you to see how often your pessimism arises and in what situations it tends to arise.
Ask the right questions. When you're in a situation where you feel your unwanted attitude forcing its way through, take the time to ask a few questions of yourself to help you change your outlook. Some examples of questions that may help change your attitude include:

- What can I do to change the way I feel?
- Is there another meaning I can discover from this situation?
- What could I do to make this situation more interesting or appealing? What could I do to benefit from this?
- What is that person's story? How did they come to behave like this? Could that be me, or someone I love?
Seek help from others. Try asking your friends what they hate or dislike about you and try asking them if they could help you change these things.
Our attitude towards life will determine what we get from life. Our attitude towards work and learning will determine what we can do well.

William James a Harvard professor said "the greatest discovery of my generation is that human beings can alter their lives by altering their attitude of mind"

First let's look at our attitude towards ourselves. We take ourselves for granted. we believe that other people can do things that we cannot. Many people oppose change yet change in life is the one thing on which we can absolutely count.
- A positive attitude is something everyone can work on, and everyone can learn how to employ it. Joan Lunden
THANK YOU
The theory of Multiple Intelligence was developed by Prof Howard Gardner, the American developmental psychologist & Professor of education at Harvard University.

According to Prof Howard Gardner, our culture has been associating high intelligence with academic, being smart only in the reading & math areas.

However, intelligence is the ability to respond successfully to new situations and the capacity to learn from one’s past experience.

Prof Howard Gardner suggests that there are different ways to be smart.
Table 1: Description of each intelligence & the preferred careers

<table>
<thead>
<tr>
<th>Type of Intelligence</th>
<th>Description</th>
<th>Preferred Careers of People with this Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAIN SMART</td>
<td>- Brain Smart refers to <strong>mathematical</strong> &amp; <strong>scientific abilities</strong> (logic and reasoning) or <strong>linguistic</strong> (verbal) skills</td>
<td>Writers, Scientists, Doctors, Researchers, Accountants</td>
</tr>
<tr>
<td>BODY SMART</td>
<td>- Body Smart is the ability to control one’s body <strong>movements</strong> with expertise and the capacity to handle objects skillfully</td>
<td>Ballet dancers, Athletes, Coaches, Actors</td>
</tr>
<tr>
<td>PEOPLE SMART</td>
<td>- People Smart is the ability to <strong>connect</strong> with others and make <strong>fine distinctions</strong> in the intentions, motivations, moods, feelings and thoughts of other people</td>
<td>Political leaders, Nurses, Sales people, Psychologists</td>
</tr>
</tbody>
</table>
Prof Howard Gardner believes that most of us have some developed intelligences, with the rest remain moderate or underdeveloped.

No matter what kind of ability you are given, you can explore, grow and develop it!

A combination of encouragement, enrichment and good instruction can enhance their strongest intelligences, as well as develop their moderate and underdeveloped intelligences.
Observation
• Lutein may act in the retina of the eye as an antioxidant and as a filter of blue light to protect developing eyes.

Mental Development
• AA and DHA help to support cognitive and visual development in toddlers as the brain growth spurt continues.
• Alpha-lactalbumin protein is rich in tryptophan and cysteine, the essential amino acids that are important for brain and nervous system development.
• Choline plays a role in memory development, an important aspect of learning.
Physical Growth

- Intake of high quality protein during young childhood is critical for proper development as these are periods of exceptionally rapid growth.\textsuperscript{8}

- Cow’s milk-based formulas typically have higher protein concentrations but this does not assure a high quality protein.\textsuperscript{9,10}

- \textbf{Alpha-lactalbumin} is a high-quality whey protein that provides an amino acid profile which includes both essential and non essential amino acids for growth and tissue maintenance.\textsuperscript{11,12}

- Alpha-lactalbumin protein is also readily digested, absorbed, and tolerated.\textsuperscript{12}
Immunity

- **Nucleotides** are basic units in deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). They serve as building blocks for cells.\(^{13}\)

- It is found to have more than just 4 nucleotides in human and studies shown that nucleotide supplementation results in improvement in antibody responses and may enhance immunity. \(^{13-16}\)

- Prebiotic **Oligofructose** is a soluble dietary fiber that helps support the growth of health gastrointestinal (GI) bacteria. It helps to improve digestion and reduce the risk of constipation.\(^{17,18}\)
CELEBRATING
MULTIPLE INTELLIGENCE

BECAUSE YOUR CHILD IS SMART IN MORE THAN ONE WAY
References