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# Management and Communication of the Infection Prevention Program

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Long-Term Care Certification in Infection Prevention (LTC-CIP) Preparation Series

# Sources

- Content of this module was informed and used with permission from the Association for Professionals in Infection Control and Epidemiology resources:
  - APIC LTC-CIP™ Learning System
  - APIC Text Online

Association for Professionals in Infection Control and Epidemiology (APIC). APIC LTC-CIP™ learning system, book 1. Washington, DC: APIC; 2023.

Association for Professionals in Infection Control and Epidemiology (APIC). APIC text online [Internet]. Washington, DC: APIC; 2023 [cited 2024 Feb 14]. Available from: https://text.apic.org/

# Exam Content

1. Long-Term Care Settings (15 items)
2. **Management and Communication of the Infection Prevention Program (16 items)**
3. Identification of Infectious Diseases (18 items)
4. Surveillance and Epidemiologic Investigation (24 items)
5. Prevention and Control of Infectious and Communicable Diseases (24 items)
6. Environment of Care (18 items)
7. Cleaning, Disinfection, Sterilization of Medical Devices and Equipment (15 items)
8. Antimicrobial Stewardship (11 items)
9. Employee/Occupational Health (9 items)

# Learning Objectives

In this review session, the main topics that will be covered are:

1. Infection prevention and control (IPAC) plans for a long-term care home (LTCH) that incorporates regulatory requirements, emergency preparedness, and risk assessments
2. The principles of implementation science as they apply to best practices and policies and procedures that inform IPAC practices
3. The characteristics of high quality scientific research
4. The role of performance concepts and indicators and product and process evaluation in quality improvement

# Infection Prevention and Control Program

# Need for an IPAC Program

- High proportion of health care-associated infections (HAIs) are attributed to a lack of standardized infection definitions, surveillance and IPAC program in general.
- In US there are requirements from Centre of Medicare and Medicaid Services (CMS) to establish an IPAC program and have written IPAC policies and procedures.
- In Canada, we have similar requirements from the Ministry (e.g. LTCH Act which is now Fixing LTC Act section 23 for IPAC).

# Goals of an IPAC Program

- There are three principal goals for IPAC programs in LTC:
  - Protect the resident
  - Protect the health care worker (HCW), visitors, and others in the health care environment
  - Accomplish the previous two goals in a cost-effective manner whenever possible

# Components of an IPAC Program

- Practices that reduce HAIs and infection risks to HCWs, visitors, and others.
- An IPAC plan based on community-wide, facility-wide, and IPAC risk assessments.
- Policies and procedures that address surveillance of communicable diseases and infections, Routine Practices and Additional Precautions, respiratory etiquette, occupational health, and linen and waste management.
- An antimicrobial stewardship program.
- Processes for cleaning and disinfecting, maintaining, and evaluating the physical environment.
- Evaluation of products and related processes.
- Emergency preparedness.
- Education of HCWs, residents, caregivers, visitors, and the community.

# Infection Prevention Committee (IPC)

- Multidisciplinary: medical director, infection control practitioner (IP*) or IPAC lead, administration, environmental services, occupational health, public health representative.
- Meets regularly (e.g. monthly).
- Purpose:
  - Refines and supports ideas/initiatives of the IPAC team
  - Dissemination of information from the meeting
  - Advocates for prevention and control of infections in the facility
  - Reviews and approves IPAC policies
  - Advocates for IPAC principles and resources for the IPAC program

*IP in USA is called Infection Preventionists (IP)

# Responsibilities of the IP (1/2)

- Data collection and analysis (surveillance)
- Evaluation of products
- Development and review of policies and procedures
- Consultation – risk assessment, prevention and control strategies

  e.g. occupational health, construction
- Education and training
- Outbreak management

# Responsibilities of the IP (2/2)

- Implementation of changes related to regulations, accreditation requirements, etc.
- Application of epidemiological principles
- Research
- Developing, implementing and evaluating IPAC action plan against it's goals and objectives
- Continuous quality improvement activities related to HAIs and IPAC activities

# IPAC Plan

- Outlines evidence-based IPAC activities to reduce the infection risks identified by Infection Control Risk Assessment (ICRA).
- Includes a surveillance plan to monitor outcomes and control measures/processes in place.
- ICRA is based on risks associated with the geographical region (community) and the facility (population, services provided).
  - Risks are potential unwanted outcomes resulting from events, as determined by the likelihood (chances) of it happening and consequences (impact)

# Risk Assessment Process

- Conducted by a multi-disciplinary team: IPAC, finance, administrative and clinical leadership.
- Gather data and information (i.e., research community and facility risks).
- Meet to discuss all the risks and their potential effect and prioritize.
- Develop IPAC program goals, objectives, policies and activities (i.e. IPAC plan) based on priorities.
- Update risk assessment at least annually or more frequently when there is a significant event (e.g. COVID-19 pandemic) or change in services.

# Community Risk Assessment

- Community (local region) characteristics that contribute to infection risk:
  - Demographics, level of immunity, and epidemiology of communicable diseases in the community affects risks to the residents of the LTCHs.
  - Risk is from staff, visitors, family members, and residents transferred from local health care facilities.
  - Information may be provided by local government or public health agency (e.g. demographics, epidemiology of diseases, history of outbreaks and diseases).
- Hazard identification and risk assessment (HIRA) tool is helpful
  - This tool helps in identifying other risks beyond infectious diseases such as natural calamities, or factors such as no other health care facility in the area.
  - This information is also useful for emergency preparedness and planning.

# Facility (or organizational) Risk Assessment

Facility characteristics that affect risks of infectious disease transmission:

1. Facility physical structure – Is it supportive of IPAC measures?
2. Demographics – Are there residents with higher medical/care needs?
3. Potential for infections – Does the facility have a history of frequent infections (e.g. antibiotic resistant organisms (AROs)) or outbreaks?
4. Staff and resident compliance with IPAC practices
5. Environmental services and cleaning/disinfection of medical equipment
6. Emergency preparedness, including stockpiles of IPAC resources (e.g. personal protective equipment (PPE), alcohol-based hand rub (ABHR) etc.)
7. Antimicrobial stewardship program

# Assessing Facility's Risk: Failure Mode Effect Analysis (FMEA)

- Helpful tool for assessing facility wide risks.
- Score is assigned to the probability of infection transmission occurring, the impact if transmission occurs, and the effectiveness of IPAC measures to control it. Final score is the product of the three scores.
- The results from these analyses are used to assist in prioritizing the needs of the program and to strategically align with organizational priorities. This is a dynamic process that is flexible enough to respond to evolving organizational needs.

| Risks for Infection Transmission | Risk Probability (3-high, 0- Never) | Risk Impact (clinical, financial, resources) (3-high, 0- No impact) | IPAC Control Measures (3-poor, 0-Excellent) | Score (product of the three scores) |
|---|---|---|---|---|
| Facility acquired AROs (Methicillin-resistant *Staphylococcus aureus* (MRSA), etc.) | 2 | 2 | 3 | 2x2x3=12 (high priority) |
| Failure to comply with hand hygiene practices | 2 | 2 | 2 (means ABHRs placed, staff trained and low compliance) | 2x2x2=8 (medium priority) |

# Assessing Facility's Risk: Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

- The SWOT analysis points out what the organization should plan for, and how to use resources and guide efforts within a formal framework

**Strengths** – What does the program do best?

- Includes internal factors, e.g., experienced staff, collaborations, diverse staff, strong leadership support, resources.

**Weaknesses** – What strategies can help overcome some barriers?

- Includes internal factors, e.g., limited IT support, old infrastructure, high staff turnover.

**Opportunities** – What opportunities are open to you? Drawn from existing strengths, along with any external initiative that could strengthen your IPAC practices.

- E.g., providing incentives and mechanism for staff feedback (e.g., for staff retention), participating in UTI prevention program, networking and collaborating with other Infection Preventionists (IPs) in the region.

**Threats** – Different from weaknesses, threats are external and out of your control.

- E.g., global pandemic, budget cuts.

# IPAC Program Implementation

- An IPAC program should be founded in evidence-based best practices, regulatory requirements and guidance documents.
- It is based on risk assessment priorities, goals and objectives and uses multi-modal strategies to achieve those goals (such as policies and procedures, resources, IPAC education, surveillance).
- Examples of a few implementation strategies can be found at:
  - Summary of Recommendations for Best Practices for Infection Prevention and Control Programs In All Health Care Settings.
- Participants can learn about implementation science which is not covered here.

# IPAC Policies and Procedures

- It is the duty of LTCHs to provide a safe environment to their residents as well as staff as care is being provided.
- **Policies** are overarching guidelines governing HCWs day-to-day activities.
  - They change infrequently and have some flexibility.
- **Procedures** are detailed specific steps for achieving a task.
  - There is less flexibility but can change more frequently.
- IPAC policies and procedures are developed by IPs and approved by the IPAC committee.
- General policies apply to whole LTCH but there can be area or service specific policies.

# Governing Bodies and Associations: Evidence-Based Policies and Procedures (1/3)

- **APIC** – Association for Professionals in Infection Control and Epidemiology Professionals organization to promote education, evidence-based practice and professional standards.
- **CBIC** – Certification Board of Infection Control and Epidemiology

  Administers certification process for professionals in infection control and epidemiology
- **The Joint Commission** – United States of America (USA) government regulatory and accreditation agency to set standards for health care facilities. Infection control is part of the requirements.

# Governing Bodies and Associations: Evidence-Based Policies and Procedures (2/3)

- **CDC** – Centers for Disease Control and Prevention

  US government agency providing scientific and technical recommendations and guidelines in public health (not only infection control).

- **CMS** – Centers for Medicare and Medicaid Services

  US government program setting conditions for certification and participation in Medicare and Medicaid programs

- **FDA** – Food and Drug Administration, US government agency responsible for implementing, monitoring and enforcing standards for drugs and biologicals, including medical devices and blood products

# Governing Bodies and Associations: Evidence-Based Policies and Procedures (3/3)

- **OSHA** – Occupational Safety and Health Administration

  US government agency setting standards and requirements for organizations on occupational health including infection control

- **NIOSH** – National Institute for Occupational and Safety Health

  US federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness

# Canadian Governing Bodies and Agencies Providing Best Practice Advice

- In Canada refer to:
- Canadian Standards Association (CSA)
- Public Health Agency of Canada (PHAC)
- Health Canada
- Accreditation Canada
- Public Health Ontario- Evidence based best practices such as, Provincial Infectious Diseases Advisory Committee (PIDAC) documents and other resources
- Infection Prevention and Control Canada (position statements, practice recommendations)

# Discussion/Knowledge Check


# Emergency Preparedness

# Role of IP in Emergency Preparedness (1/2)

- Participate in planning, response and recovery.
- Develop alternate IPAC policies for use during emergency event. May include:
  - Screening/triage protocols
  - Outbreak investigation
  - Surge capacity for infectious disease containment (such as, sudden increase in cases of acute respiratory illness among residents and staff)
  - Alternate means for hand hygiene and PPE (e.g., extended use of PPE, similar to experiences during the COVID-19 pandemic)
- Conduct surveillance to monitor residents' infectious illness to prevent transmissions.

# Roles of IPs in Emergency Preparedness (2/2)

- Control impact of infectious disease events such as ensuring that transmission based precautions are instituted, as indicated.
- Manage the physical environment
  - PPE supply
  - Waste management
  - Environmental cleaning and disinfection
- Educate and train critical health care staff and potential respondents on IPAC strategies.
- Report updates both internally and externally (e.g., Public Health Unit, Ministry of Health)

# Emergency Management Plan (1/4)

LTCH emergency operations or management plan is a plan that a health care facility would implement during or after a mass casualty event.

## A. Pre-emergency Planning Phase:

- Completing a facility wide risk assessment is a first step in developing an emergency management plan.
- Plan must ensure that all information of LTCH's operations and contacts for public health unit and local emergency management is accurate.
- Personnel and resources:
  - Update inventory (e.g., PPE stockpiles), identify key people who will execute the plan, identify staff (number and role) and equipment necessary for critical functioning of the LTCH.

# Emergency Management Plan (2/4)

- Communications:
  - Designate a command centre, ensure residents and family members have emergency contact information at the facility and know how they will be relocated if needed. Test reliability of emergency phone tree for contacting emergency personnel and activating emergency procedures.
- Emergency education and training:
  - Community-based exercises and individual facility-based exercises as relevant
  - Conduct unannounced drills
  - Take corrective actions
- Resident evacuation and relocation preparation:
  - Define triggers for evacuation
  - Identify residents who need special transportation
  - Identify facilities who would receive residents in case of an emergency

# Emergency Management Plan (3/4)

## B. Preparedness Phase:

- Upon receipt of an internal or external warning of an emergency, LTCH administrator should:
  - Activate phone tree
  - Notify staff in charge of emergency operations to initiate emergency operations plan
  - Notify other key agencies (e.g., public health unit and emergency services) of any developing situation and LTCH's protective actions
  - Prepare designated command centre for operations
  - Fill the appropriate incident command functions and confirm that emergency staff are available
  - Assess resources and transportation as planned for residents' safety.

# Emergency Management Plan (4/4)

Following are last two phases of the plan when an actual emergency is detected, how to respond to it, and how to recover once it has passed:

## C. Response Phase:

- Activate the emergency operations plan and open the command center.
- Fill the incident command roles and coordinate actions and requests for assistance with local emergency services. Ensure communication with residents' families.
- Resident management will be the biggest focus.

## D. Recovery Phase:

- Coordinate recovery operations with local emergency management operation centres (e.g. local public health units, ministry) to restore normal operations.
- Include crisis counseling, listing losses, update staff, volunteers, and residents.
- Surveillance plays a key role in this phase to identify new infectious cases.

# Discussion/Knowledge Check

# IPAC Research and Analysis

# Research Study Design

- IPs need to stay up to date with the changing requirements and recommendations as well as new scientific literature and guidelines
- Critical evaluation of published literature is necessary to assign value to the conclusions of the authors
- Understanding advantages and disadvantages of various study designs helps IPs in critical evaluations

To learn about types of epidemiological studies, please refer to the Surveillance and Epidemiologic Investigation module

# Systematic Reviews

- Systematic reviews are done to identify, collect, analyze, and summarize empirical evidence related to a specific research question.
- Using a critical review methodology, articles are selected based on inclusion and exclusion criteria and quality data is abstracted.
- Meta-analysis is a type of systematic review in which results of several studies are integrated and interpretation is provided in a clinical context.
- Systematic reviews provide the best evidence and tend to be more reliable, valid, and high quality than a single study.

# Systematic Review: Steps

- Conduct a literature review.
- Critically appraise the literature (e.g., p value, peer review).
- Develop and implement a plan to incorporate the applicable research findings into practice using implementation science and practices.
- Identify opportunities for research related to performance improvement (e.g., effectiveness studies, product trials).

# Evaluating Published Literature (1/2)

- Articles are published after editorial and experts have reviewed them, but their quality still varies. It is up to each IP to critically review articles based on their merits, and consider the following:
- **Abstract** – a brief summary of the purposes of the study, methods, main findings and conclusions (confirm if this is the right study to review for your research question).
- **Introduction** – justification and purpose of the study (Are the research questions clearly stated?).
- **Materials and methods** – description of study population (including selection criteria), methods of sample size selection or data analysis (Is the study design and research population appropriately selected, are there any biases?).

# Evaluating Published Literature (2/2)

- **Results** – address research questions, data presented in the text and tables/figures, statistical analysis including measures of association, relative risk, odds ratio and confident intervals (Are the statistical tests and sample sizes appropriate?) – See the following section on basic statistics for more information.
- **Discussion** – interpretation of major findings, state study limitations and suggestions (Are conclusions reasonable and justifiable? Could there be alternate explanation for the results?).

# Discussion/Knowledge Check

# Basic Statistics

# Statistics

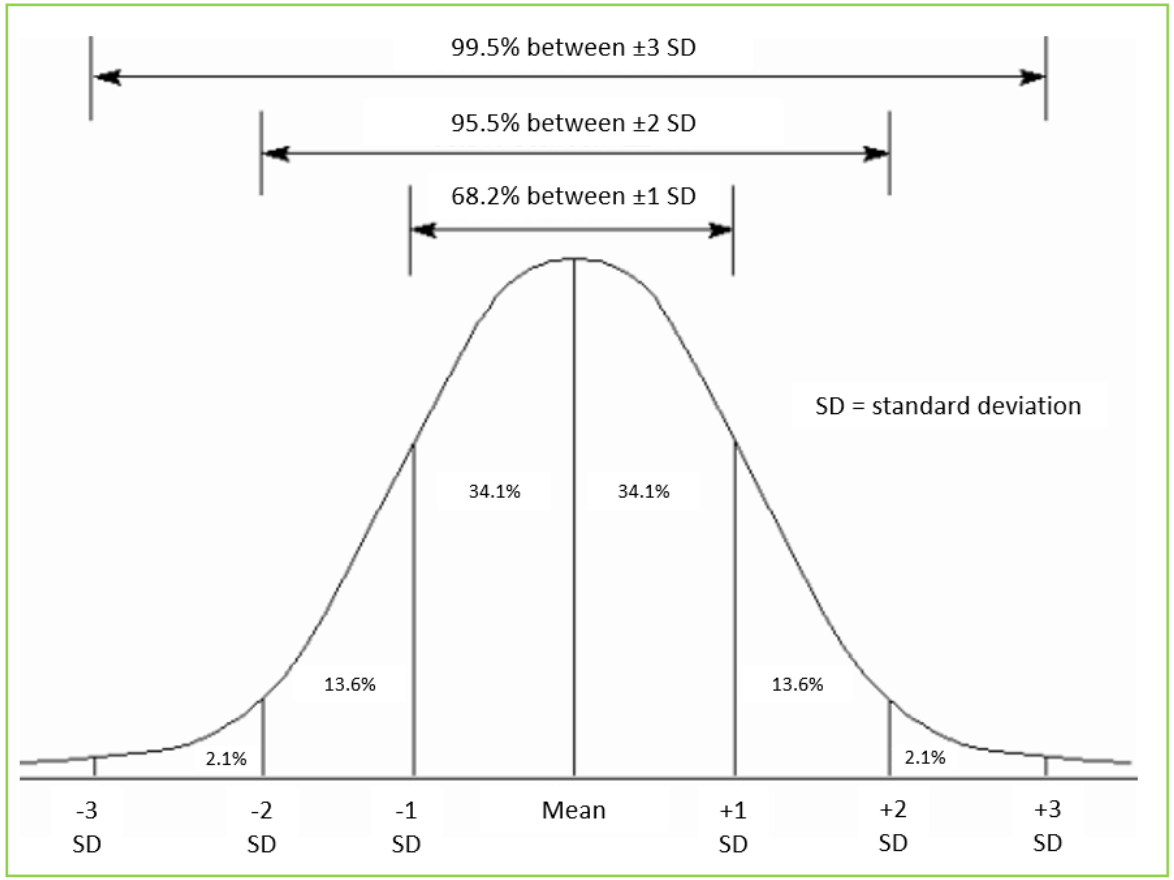
- Helps to make inferences about the data and communicate findings to others.
- Interpreting study results is done by checking:
  - Confidence Intervals
  - Interpretation of p-values
  - Null vs alternative hypothesis
  - Bias, confounding and random error
  - Type I and Type II errors

# Confidence Interval (1/2)

- It is a range calculated to compensate for a margin of error.
- A calculation can be performed in order to identify a range of possible values the population mean might fall within:
  - 2 values (a,b)
  - One value less than the mean and one greater
- To calculate a confidence interval the data must have a normal distribution.
- Researcher determines what level of confidence to select
  - Most commonly 95% (+/- 1.96 x standard error from the mean)
- It may be calculated for a mean, odds ratio, risk ratio or proportion.
- Used in inference to generalize study results to the broader population.

# Confidence Interval (2/2)

- The 95% confidence interval is a range of values that you can be 95% confident contains the true mean of the population.
  - If repeated samples were randomly drawn from a population, 95% of the time the true population value would fall within the calculated range, OR (to put it differently…) you can be 95% confident the observed result didn't occur by chance.
- Add and subtract two standard deviations from the mean in order to obtain the 95% confidence interval (95.5% to be exact).




Standard deviations around the mean

# P-values (1/2)

- Provides evidence for or against a null hypothesis.
- Measures the probability that a given result could have happened by chance alone.
- Most researchers use 0.05 (5%) or 0.01 (1%) to determine whether the null hypothesis can be accepted or rejected.
  - e.g., a p-value <0.05 means a <5% chance (or 1/20 chance) that the result could have occurred by chance alone.
- A non-significant p-value (usually p≥0.05) does not provide evidence against the null hypothesis and the null hypothesis can be accepted.

# P-values (2/2)

- A significant p-value (usually $p<0.05$) provides evidence against the null hypothesis and the null hypothesis is rejected.
- The presence of statistical significance (i.e. $p<0.05$) does NOT:
  - Guarantee the presence of a true difference between groups
  - Prove a null hypothesis
  - Imply clinical significance

The researcher can **only** conclude that the findings are statistically significant and there is sufficient evidence to reject the null hypothesis (i.e. evidence against the null hypothesis of no association).

# Hypothesis Testing

- Hypothesis testing estimates the likelihood or probability that a result did not occur by chance.
- Null Hypothesis ($H_0$)
  - No difference between the groups
    - E.g. there is no difference in measles incidence between vaccinated and unvaccinated children
  - Can be rejected if a p-value is significant
- Alternative Hypothesis ($H_A$)
  - States the alternative explanation to be tested
  - E.g. there is a difference in measles incidence between vaccinated and unvaccinated children.

# Interpreting Study Results

Study results may be actually true, or they may appear so due to:

- Bias (an error in the design or conduct of a study that results in a conclusion that is different from the truth)
- Confounding (an observed association may be due to differences between study groups instead of the exposure)
- Random error (chance)

This may lead us to think that there is a valid statistical association between an exposure and outcome, when one does not actually exist (or vice versa) (i.e. we may commit a Type I or Type II error)

# Type I vs. Type II Errors

- Type I Error (α) – failing to accept the null hypothesis - showing a relationship when there isn't one (also called a false positive finding).
- Type II Error (β) – failing to reject the null hypothesis – showing no relationship when there is actually a relationship (a false negative).

# Reliability Tests: Sensitivity vs Specificity

- Used to describe diagnostic tests or the presence of disease.
- Sensitivity:
  - Is a probability of a positive test in persons with disease
  - Controls the rate of false negatives (type II errors)

$$\text{Sensitivity} = \frac{\text{True Positive}}{(\text{True Positive} + \text{False Negative})} \text{ X } 100$$

- Specificity:
  - Is a probability of a negative test in persons without disease
  - Controls the rate of false positives (type I errors)

$$\text{Specificity} = \frac{\text{True Negative}}{(\text{True Negative} + \text{False Positive})} \text{ X } 100$$

# Sensitivity and Specificity

| | | True disease state | |
|---|---|---|---|
| Test | | Disease | No disease |
| | Positive | **a** (true +) | **b** (false +) |
| | Negative | **c** (false -) | **d** (true -) |

$$\text{Sensitivity} = \frac{\text{True Positive}}{(\text{True Positive} + \text{False Negative})} = a / (a + c) \times 100$$

$$\text{Specificity} = \frac{\text{True Negative}}{(\text{True Negative} + \text{False Positive})} = d / (b + d) \times 100$$

# Predictive Value (1/2)

- **Positive Predictive** value (PPV) is the probability that someone with a positive screening test truly has the disease.

$$\text{Positive Predict value} = \frac{\text{True Positive}}{(\text{True Positive} + \text{False Positive})} \text{ X } 100$$

- **Negative Predictive** value (NPV) is the probability that someone with a negative screening test is truly disease negative.

$$\text{Negative Predictive value} = \frac{\text{True Negative}}{(\text{True Negative} + \text{False Negative})} \text{ X } 100$$

# Predictive Value (2/2)

True disease state

| Test | Disease | No disease |
|---|---|---|
| Positive | a (true +) | b (false +) |
| Negative | c (false -) | d (true -) |

$$PPV = \frac{\text{True Positive}}{\text{(True Positive + False Positive)}} = a / (a + b) \times 100$$

$$NPV = \frac{\text{True Negative}}{\text{(True Negative + False Negative)}} = d / (c + d) \times 100$$

# Measures of Association: Relative Risk (RR)

- Ratio of the probability of an event or disease occurring in an exposed group to the unexposed group.
- Used in cohort studies and experimental studies.

| | Disease | No disease |
|---|---|---|
| Exposed | a | b |
| Unexposed | c | d |

$$RR = \frac{[a / (a + b)]}{[c / (c + d)]}$$

# Relative Risk Example

| | Pneumonia | No pneumonia |
|---|---|---|
| Ventilation | 15 | 10 |
| No ventilation | 5 | 20 |

$$RR = \frac{a / (a + b)}{c / (c + d)}$$

$$RR = \frac{15 / (15 + 10)}{5 / (5 + 20)} = \frac{15 / 25}{5 / 25} = \frac{0.6}{0.2} = \frac{3}{1} = 3.0$$

- Interpretation – relative risk of developing pneumonia is 3 times higher in people on ventilation compared with people without ventilation.

# Relative Risk

A general rule:

- **RR = 1, there is no significant association**
- **RR > 1, there is a positive association (worse outcome)**
- **RR < 1, there is a negative association (protective)**

Remember **relative risk** is a measure of association between exposure to a risk factor and the disease.

# Measures of Association: Odds Ratio (OR)

- Represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.
- Used for case-control or cross-sectional studies

| | Disease | No disease |
|---|---|---|
| Exposed | a | b |
| Unexposed | c | d |

$$OR = \frac{(a \times d)}{(c \times b)}$$

# Odds Ratio Example

| | Bloodstream infection | No bloodstream infection |
|---|---|---|
| CVC used | 10 | 15 |
| CVC not used | 5 | 20 |

$$OR = \frac{(a \times d)}{(c \times b)}$$

$$OR = \frac{10 \times 20}{5 \times 15} = \frac{200}{75} = 2.66$$

- Interpretation – the odds of having a bloodstream infection was 2.66 times higher among those who had a central venous catheter (CVC) compared to those without a CVC.

# Discussion/Knowledge Check

# IPAC Education and Training

# IPAC Education and Training

- IPs need to be up to date with current IPAC guidelines and regulations.
- Staff IPAC education is provided upon hire and after that based on a needs assessment or when:
  - Procedures change
  - New equipment is introduced
  - Gaps are identified through a risk assessment or audit
  - There are new directions from the regulatory authorities (like Ministry of Health and Ministry of LTC)
- Modalities: Online education (e.g. IPAC modules available from Public Health Ontario), webinars, one-one, demonstrations, just in time.
- Attendance at any educational program should be documented and also include any evaluations such as post-test, return demonstration and auditing (such as PPE donning and doffing).

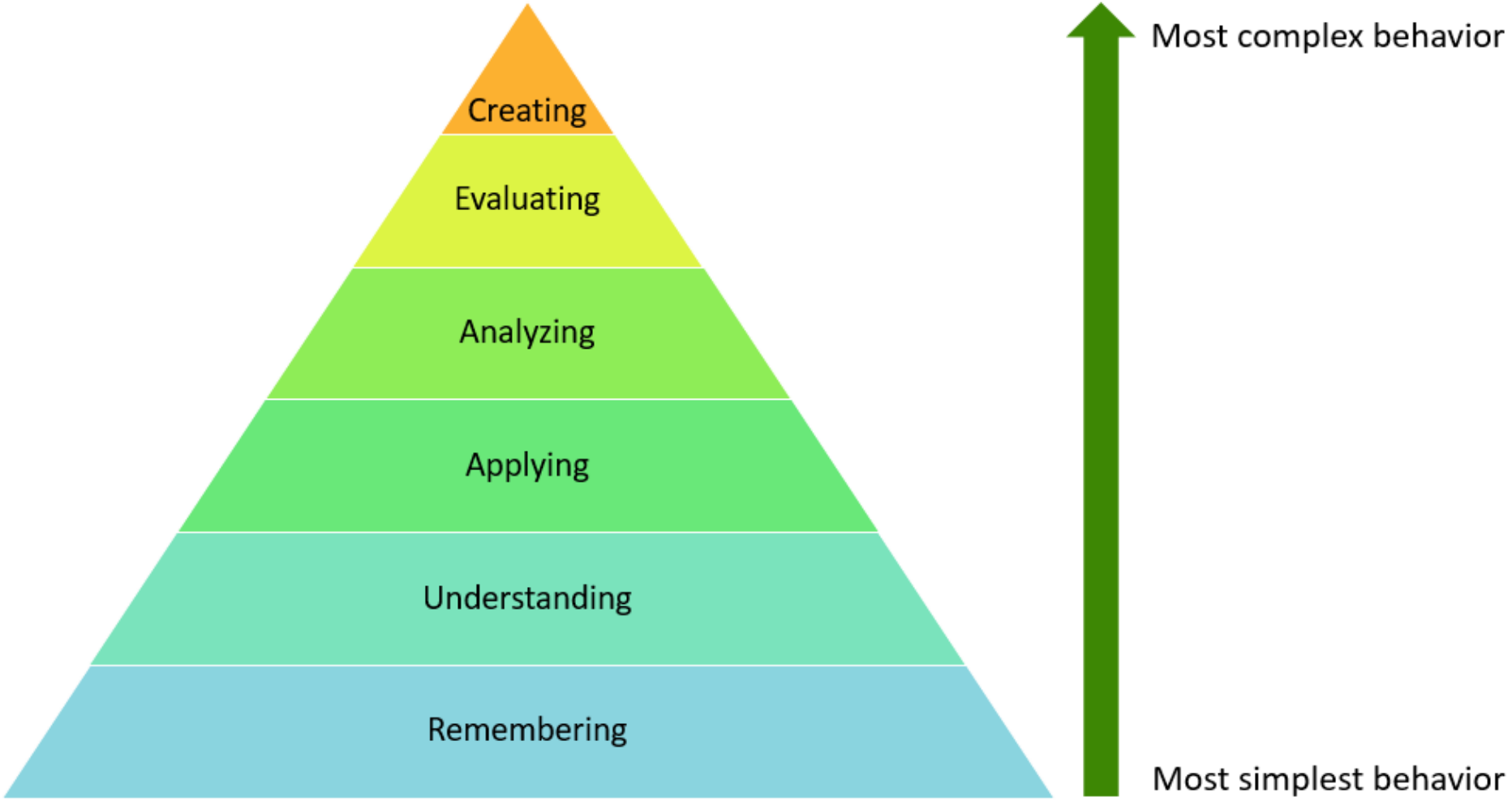
# IPAC Education in Health Care

- Education is unique in a health care environment because of the complexity of care and diversity of its population.
- Educational activities should be informed by learning theories and educational needs of the learners.
- Educational activities should have a purpose, goals, objectives and expected measurable learner outcomes.

# Three Domains of Learning

- Bloom's taxonomy was created under Dr. Benjamin Bloom in order to promote higher forms of thinking in education rather than just remembering facts.
- Committee identified three domains of educational learning:
  - **Cognitive**: mental skills (Knowledge)
  - **Affective**: growth in feelings or emotional areas (Attitude or Self)
  - **Psychomotor**: manual or physical skills (Skills)

# Goals of Learning Process – Bloom's Taxonomy

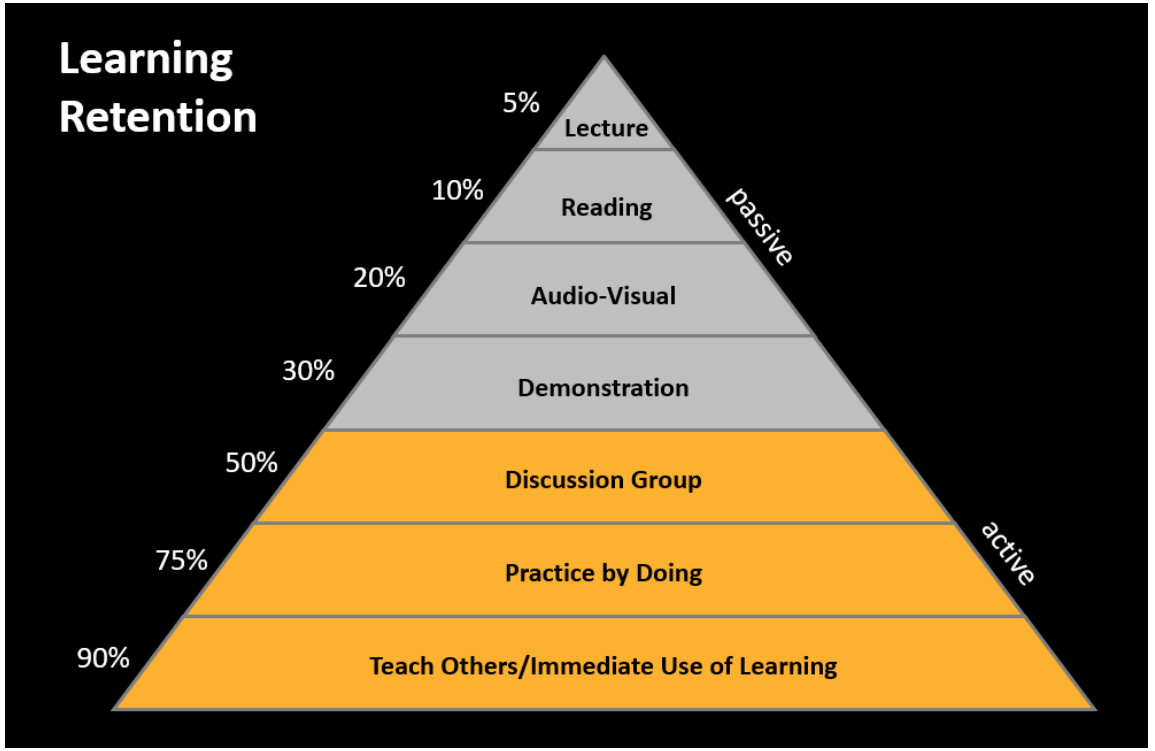


# Principles of Adult Learning

- Providing education to adults should take into account that adults:
  - Are autonomous and self-directed
  - Have life experience and knowledge
  - Are goal-oriented
  - Are practical and relevancy-oriented
  - Need to be shown respect

# Learning Retention

- Active Learning: Involving learners to do and think about the things they are doing
  - Debates, simulation, guided design, small group problem solving, role playing, quizzes, games, etc.
- Enhance education with experiential learning and reflective dialogue
- Most of us learn best when we're actively involved in the learning process (e.g., discussion groups, practice)



# Learning Styles

- Knowing a learner's learning style will assist both the adult learner and IP to maximize the learner's learning experience.
- Learning style assessment tools can be used to determine the best teaching modality:
  - Kolb learning style inventory: Places learner in one of the four learning styles: accommodative, assimilative, divergent, and convergent
  - The Dunn, Dunn and Price Productivity Environmental Preference Survey (PEPS)
  - Assesses four categories that impact learning style: environmental, sociological, physical, emotional
  - The VARK inventory is an online assessment for visual, auditory, read/written or kinesthetic preferences in learning

# Assessing Educational Needs (1/2)

- There are different strategies to assess education needs in adult learners
  - Learner self-assessment: The learner develops a self-achievement model and compares the present situation to the standard.
  - Focus group discussion: Learning needs are assessed in small groups with members assisting each other to clarify needs.
  - Interest-finder surveys: These are data-gathering tools, such as checklists or questionnaires.
  - Test development: Tests can be used as diagnostic tools to identify areas of learning deficiencies.
  - Personal interviews: The educator consults with random or selected individuals to determine learning needs.

# Assessing Educational Needs (2/2)

- Job analysis and performance reviews: These methods provide specific, precise information about work and performance.
- Observational studies: Direct observation of personnel working can be performed by quality management analysts or IPs (e.g., hand-washing study in critical care units).
- Review of internal reports: Incident reports, occupational injury and illness reports, and performance improvement studies can be reviewed to determine specific learning needs of healthcare providers.

# Instructional Methods

- Positive deviance
- Computer-based training
- Mass training delivery systems
- Role-play
- Mentoring
- Educational cart
- Self-instruction module
- Lectures
- Games
- Train-the-Trainer
- Case studies
- Simulation
- Video
- Distance Learning

# Evaluation of Education

- Include appropriateness of program design, adequacy of teaching and resources, knowledge, skills and attitudes learned by participants.
- Representative sample of data.
- Formative (throughout education) and summative (at the conclusion) evaluation.
- Methods:
  - Pre-test and post-test
  - Direct observation
  - Exit questionnaire
  - One-on-one interviews
  - Supervisor observations

# Discussion/Knowledge Check

# Quality Assurance and Performance Improvement

# Quality Assurance and Performance Improvement

- Quality Assurance is the process and assurance of meeting quality standards.
- Performance Improvement is improving the quality of the resident's stay, focusing on preventing exposure to infectious agents.
- IPs have a responsibility to perform broad continuous quality improvement studies using systematic programs and tools and to determine outcomes.
- Tools for a quality toolbox include elements such as a gap analysis, root cause analysis, failure mode effects analysis (FMEA), assessment of strengths and weaknesses in the program and control charts, as well as checklists and guiding documents.

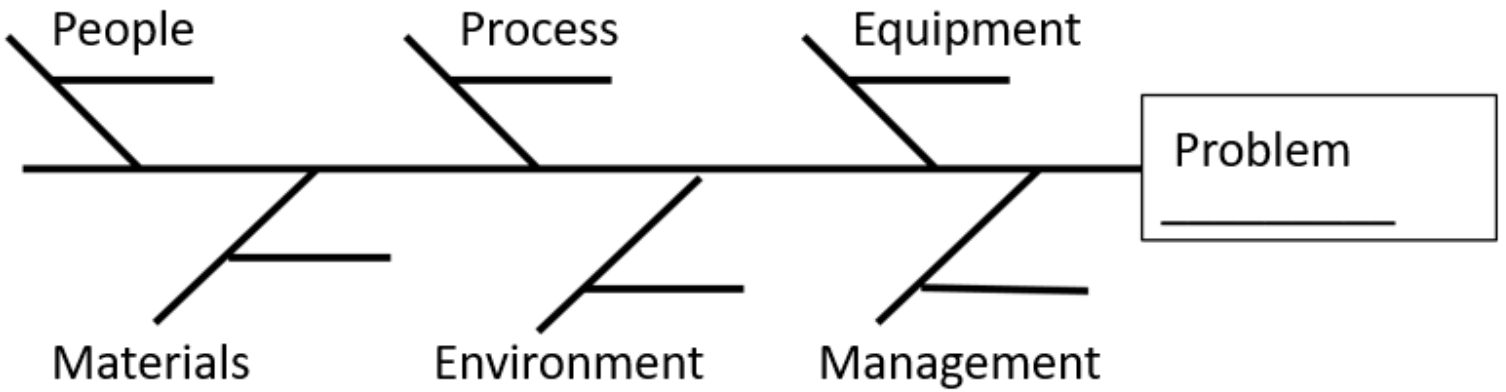
# Gap Analysis

- Is a technique to compare best practices with the current processes and determine the steps to take to move from a current state to a desired future state.
- Simply put, it has three parts:
  - What is the current state? (practice, competencies, or performance levels)
  - What is the desired future state?
  - What is required to fill the gap to meet standards or the desired goal?
- Usually a standard checklist may be used to help find gaps (e.g. IPAC Checklist for Long-Term Care and Retirement Homes from Public Health Ontario).

# Root Cause Analysis (RCA)

- Retrospective look at adverse outcomes and determines what happened, why it happened and what can be done to prevent it again.
- Good for major incidents, sentinel events or errors in healthcare delivery.
- A multi-disciplinary team collects data (interviews, reviews, observations).
- Contributing factors are categorized and drilled out to identify causes of a problem.
- A fishbone (a.k.a Ishikawa diagram) may be used to organize the information.

Example of Ishikawa diagram

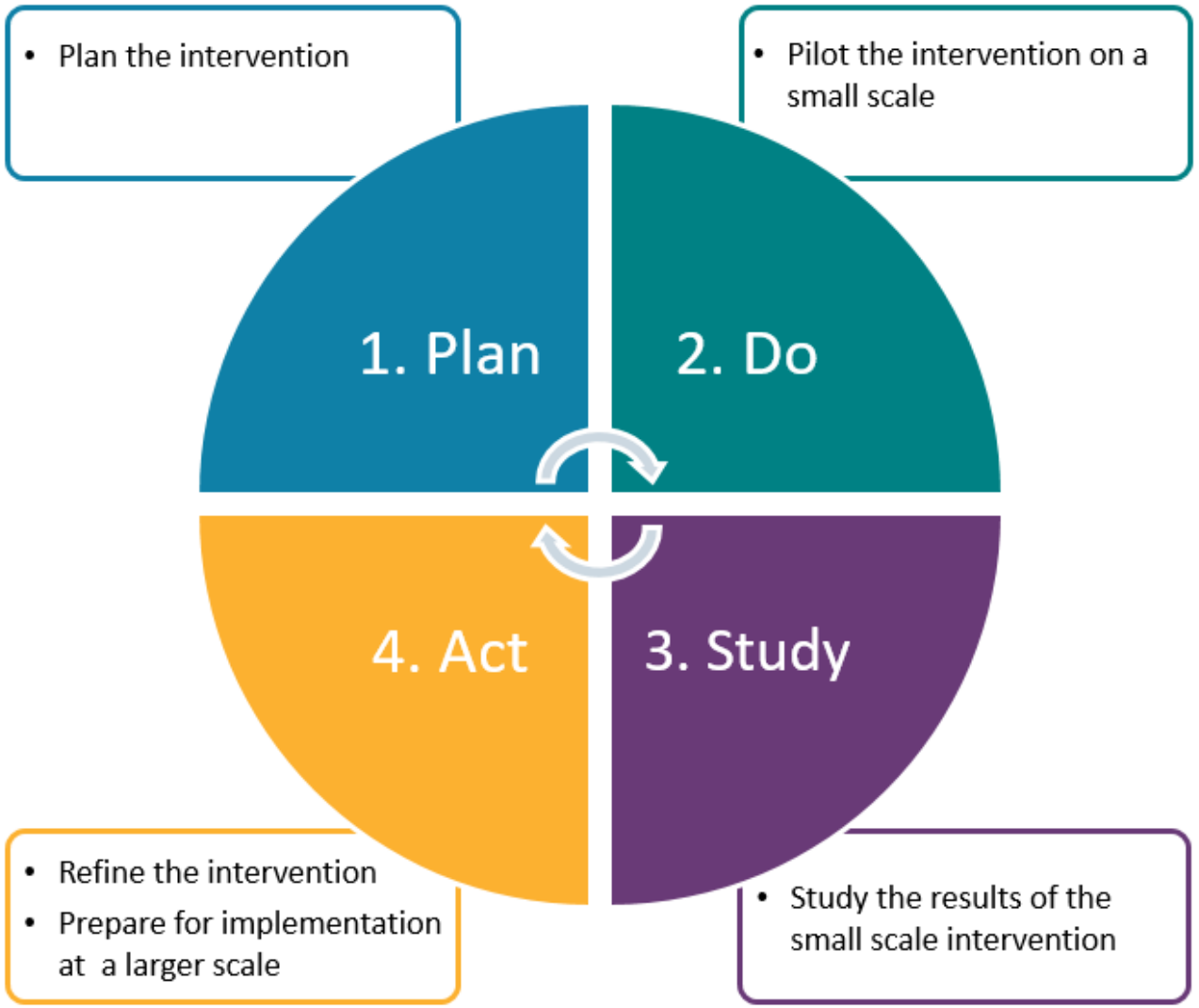


# FMEA and SWOT Analysis

- These are proactive tools that can help to develop a plan to mitigation or improvement.
- The FMEA tool helps identifying potential failures and opportunities for error (e.g. if staff fails to comply with hand hygiene practices).
- The SWOT analysis points out what the organization should plan for, and how to use resources and guide efforts within a formal framework
- Both of these tools where previously discussed on slide 16 and 17 (risk assessment and IPAC plan).

# Plan Do Study Act (PDSA)

- IPAC program's main goal is to reduce the risk of transmission of infections.
- Plan  Includes risk assessment, establishing goals and objectives based on priorities, planning for interventions (e.g. education), planning surveillance activities to monitor  processes and outcomes.
- Do- Implementation of IPAC activities
- Study-Evaluate and review the results, share with process owners.
- Act- Make adjustments, add interventions and implement again.




PDSA Cycle

# Performance Measures

- Qualitative indication of an organization's performance in relation to a specified process or outcome.
- Performance indicators need to be valid and reliable and facilities need to set minimal performance thresholds.
- Three types of performance indicators:
  1. Structural Measures: if structures are conducive to process, then process will lead to favorable outcomes.
  2. Process Measures: if steps of processes are executed well then there is higher probability of achieving desired outcomes. Such as aseptic technique in wound care bundle (process).
  3. Outcome Measures: these are results of the performance, functions, or processes. (e.g., clinical outcomes (e.g. HAIs), cost-benefit analysis, resident satisfaction).

# Leadership

- Executive leadership need to show ongoing support to IPAC program.
- Be champions and aware of issues and provide input to initiatives.
- They ensure that IPAC program is resourced and the right amount of staff is allocated.
- They create a culture of openness: healthcare providers are comfortable in reporting errors.
- There is a multi-disciplinary performance improvement team- leader, subject matter experts, technical advisors all come together to solve problems.

# Leadership Styles

- **Directive leaders:** Top down approach, fewer collaborations, use of punishment or rewards. Shows consistency, but no flexibility and consultations with experts.
- **Authoritative leaders:** Also top down but lead by example. Roles relate to organization's vision. Empowerment is hard and ideas are not promoted unless coming from the top.
- **Transformational leaders:** Inspires new ideas, provides higher purpose and aligns teams to organizational needs that leads to higher productivity.
- **Servant leaders:** Support healthcare providers by enabling them and not blocking. Leads to trust and empowerment.
- **Participative leaders:** Democratic culture, embrace compromise and collaboration. Actively seeks perspectives of the team members.

# Discussion/Knowledge Check

# Disclaimer

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