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Running head: ENHANCING PRECAUTIONS KNOWLEDGE

Utilizing Pre-education Assessment and a Targeted Education Module to Enhance Nurse
Knowledge of Standard and Transmissible Precautions

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Abstract

The aim of this project was to protect patient safety and prevent healthcare acquired infections by improving nurses' knowledge of infection prevention practices. A second practical benefit was creating a pilot for an RN education program.

I propose that the reason compliance with hand hygiene is low at any facility can be explained by Rosenstock's Health Belief Model. Nurses may not believe that 1) There is a high chance of spreading or themselves contracting infectious illness, 2) That the illnesses they are exposed to would be just as serious in them as they are seeing in patients, 3) They have been told but may not actually believe that the simple act of hand hygiene protects everyone and 4) That barriers of time and memory can be overcome. Rosenstock's is the behavior change model for the individual nurses to change their behavior based on knowledge that I will give them that addresses each of those four points.

The team was created from RN volunteers—16 of them—who liked that they were being assessed and recognized for what they knew and were not getting the same style of “education” that they had gotten from other facilities—cut and dried one size fits all. Vision and communication for buy-in was easy from the RN team, support in this project was also offered readily from Administration.

The short term win was the post test score increases which showed that the RNs improved their test scores on all three components of infection prevention, standard precautions, transmissible precautions and organism specific knowledge.

Clinical Leadership Theme

This project aims to improve the safety of patients and reduce the likelihood of Healthcare Acquired Infections (HAIs) by improving point of care nurses' knowledge of infection prevention in both of the hospital's acute care units and the emergency room. The project's Clinical Nurse Leadership theme is Clinical Outcomes Management, focused jointly on the roles of Outcomes Manager and Educator (AACN, 2013).

The process begins with an assessment test of each nurse's knowledge of three key elements of infection prevention; standard precautions, transmissible precautions and information about the facility's two main threats, Clostridium difficile and Methicillin Resistant Staphylococcus aureus (MRSA) as identified by the facility's annual risk assessment. The process ends with the same test administered to these nurses two weeks after each completes an education class designed to address pre-test identified knowledge deficiencies.

By improving the point of care nurses' infection prevention knowledge, we expect to see at least a 90% test score for each RN in the second test of infection prevention knowledge, and ultimately to observe an increase in RNs' standard precautions compliance as well as a reduction in HAIs within the facility. It is important to do this now because nurse hand hygiene and transmissible precautions compliance is lower than the facility's benchmark, there have been post-operative infections in the last 90 days and education in infection prevention has not been provided to these RNs though mandated by the hospital's accreditation agency, the state of California and the Centers for Medicare Services (Det Norske Veritas DNV, 2014) (California Department of Public Health, Title 22, 2016), (Centers for Medicare Services CMS, 2014).

.Statement of the Problem

Not only do nurses' lack of infection prevention knowledge place patients at increased risk of healthcare acquired infections, a recent encounter with Ebola in Texas brought to national attention

that unfamiliarity with basic infection prevention knowledge increases a nurse's risk of transmissible illness. One of the two nurses caring for that patient developed Ebola and the lack of basic infection prevention knowledge and personal protective equipment was cited as factors in what should have been an avoidable exposure (Dawson, 2014).

Non-compliance of nursing staff in infection prevention and standard precautions has been studied. In 2014, Mitchell, Say, Wells, Wilson, Cloete, and Matheson, studied the behaviors and attitudes of newly graduated Australian nurse in regard to standard precautions in a cross sectional study. What they found was that despite being taught about infection prevention, it was not often practiced. Rosenstock's Health Belief Model holds that unless a person perceives either a danger from not changing behavior, or a benefit from changing behavior, no change will happen (1974). What this may imply is yes, information was given to the new grad RNs, but not information that they saw as relating to themselves.

During a MERS outbreak in Saudi Arabia, Stirling, Harmston and Alsobayel, (2015). followed an educational programme for a local nursing college to quickly teach the staff and students how to avoid spreading MERS. There was not a great deal of time and nursing students were deemed at high risk not only for contracting the disease but for carrying it to other parts of the campus or neighborhood because they did not know about standard precautions (Stirling, et al 2015). The team assessed first what the students *did* know and then addressed what they did not know—then focused on what information the students needed in a very short period of time to help prevent the outbreak from spreading (Stirling et al, 2015).

In 2010, the Institute of Medicine published *The future of nursing: Leading change, advancing health*. This paper stated that the future of medicine depended on nursing to change,

for nurses to gain higher levels of education and to practice at that level. This was actually the impetus for the American Association of Colleges of Nursing to publish their White Paper establishing the Clinical Nurse Leader Role, a master's prepared generalist (AACN, 2013).

Education is not only the key to redefining nurse's role in medicine, but it is also needed on a much more subtle way—to keep both nurse and his/her patients safe. The focus of my project is nursing education in infection prevention.

Will a pre-assessment of RN knowledge of infection prevention practices followed by an education module designed to target identified deficits, improve nurse knowledge of infection prevention?

Project Overview

This project will take place in a small community hospital, the only one in its healthcare district. The facility recently opened and has an emergency department (ED), a five bed intensive care unit (ICU) and a twenty bed medical-surgical unit (MS). There are no obstetric services and pediatric services are limited to older children and adolescents—infants and younger children are transferred to other facilities when more than basic emergency interventions are needed.

The hospital does do abdominal surgeries and has a modest orthopedic joint replacement program. Due to severe budget constraints, it's own clinic was closed three months ago and throughout the ten months since the hospital's opening, there have been several waves of layoffs affecting both staff and leadership as well as individual employee attrition. A total of 47 registered nurse employees work in the hospital, including those working part time. At any given time, there are usually an additional 10-15 registry nurses and travelers.

This project's microsystem is the point of care registered nurses in the emergency department, the intensive care unit, and medical-surgical unit. For this project, I did not include contract nurses, only regular staff.

Twenty infection prevention knowledge assessment tests will be distributed to day and night shift RNs from the ICU, ED and MS units. The test results will be analyzed and deficiencies in infection prevention knowledge identified. An education presentation/module will be created based on test answers and the format of the education intervention will be based on what the nurses collectively listed as their preferred style of learning, e.g. "hands on", "verbal or auditory", or "visual" per the Pennsylvania Higher Education Assistance Agency's (PHEAA) learning styles, (2011). Fourteen out of the fifteen responding nurses listed "visual" and one listed "hands on".

Two weeks after nurses complete the training created to address the knowledge deficiencies, the written test is to be re-administered and the results examined. The project will start November 8, 2016 and end December 2, 2016.

This project aims to improve point of care RN's knowledge of infection prevention by implementing an education intervention based on knowledge deficiencies identified by a pre-test; retesting the RNs two weeks after the education intervention; and increasing to at least 90% post-test knowledge scores in standard precautions, transmissible precautions and organism specific information.

Rationale

Safe patient practice mandates exist through all hospital regulatory agencies and accreditation authorities and not the least of these requirements is the prevention of healthcare acquired infections (HAI). A critical component of HAI prevention is the ongoing training of healthcare workers in infection prevention, yet compliance with standard and transmissible precautions is not near the benchmark of 80%. Rosenstock's Health Belief Model maintains that change in behavior will only occur when at least one of four belief components are satisfied: perceived susceptibility to an adverse event, perceived severity of the event, perceived benefit of avoiding the event and perceived barriers to compliance (Rosenstock, 1974). Three of these components require education as to the type, likelihood and severity of an acquired infection by either the RN or his/her patient and the steps necessary to avoid the infection as in the use of standard and transmissible precautions (Rosenstock, 1974).

The hospital accreditation agency, Det Norske Veritas (DNV) as well as this facility's own Survey Readiness Committee identified a need for ongoing, structured staff education in standard precautions and infection prevention. The Survey Readiness Committee specifically identified a structured staff education program in infection prevention as not only a requirement of DNV, but also a condition of participation in Medicare and a requirement for California Title 22. This required education and ongoing training is also requirement of both point of care hospital staff and physicians with hospital practice privileges (CMS, 2013). The education requirement is specified for compliance in the Conditions of Participation in Medicare Section 1.D.11; in DNV's NIAHO Accreditation Requirements and Sec IC.1 SR 6; and in the State of California's Division 5, Title 22, §70214.

Shortly after the DNV conferred accreditation a part time nurse educator was hired. However she left after creating and delivering an orientation for newly graduated RNs. No systemic employee or provider education program was initiated. The education that she had completed with new grad RNs, unfortunately, was not based on hospital policy nor best practices and considerable misinformation was taught. The hospital infection preventionist has since been giving general infection prevention education to new employees but only as part of the new hire orientation, with no other infection prevention education nor general or departmental competencies yet approved by administration. These competencies must be defined, deficiencies identified and an ongoing and sustainable education program put in place prior to the expected visits of the three agencies. All three agencies are expected to survey at any time from October 2016 through January 2017.

Also, the hospital's *Infection Prevention Plan and Risk Assessment for 2017* calls now for a benchmark of at least 90% monthly hand hygiene and standard precautions compliance and 100% compliance with transmissible precautions observance.

The risk assessment noted that during March of 2016 there was an outbreak of norovirus or norovirus-like symptoms in point of care staff with three RNs ill. This corresponded with the admission of two norovirus patients from a local skilled nursing facility that was subsequently quarantined for three weeks by the local public health office. Norovirus is extremely contagious, needing only a viral load of 18 viruses to cause disease (Centers for Disease Control, 2016). Containment of this organism is similar to that of *C. difficile* as both require immediate recognition that Enteric Precautions must be initiated and both require strict hand washing to st

stop the transmission. Per the hospital's policy, any RN may initiate and transmissible precautions on a symptomatic patient but RNs have not been educated as to that policy.

My project is a pilot for an education program in infection prevention for all staff though for the pilot we included only point of care RNs in the ED, ICU and Medical-Surgical units.

The cost incurred for this project includes two hours of paid time for point of care registered nurses, though not all RNs will be needed for this pilot project. My cohort consists of 15 nurses with representatives from all three units. At a rate of \$60.00 per hour x 2 hours x 15 = \$1800.00 There will be a cost of printing the pre/post-test of approximately \$.02-.04 per page, for a nine page pre/post test using two tests for each RN = \$2.70 to 5.40. There will be no cost of education materials as the module will be via a PowerPoint. The personal protective equipment used for hands on donning and doffing of gowns, gloves, masks and goggles is also already available in materials management.

Lack of compliance with any condition of participation could endanger the hospital's ability to bill Medicare until corrected. Currently the average monthly inpatient billing by this hospital to CMS is \$9,000,000 per hospital financial data records. The project's cost of \$1855.40 would protect a monthly income of nine million for a total potential benefit of \$8,998,144.60. Costs of a hospital acquired infection depends on the type of infection and could range from \$400 for additional discharge oral antibiotics to \$75,000 for a deep surgical site infection (Opperman,, Liebig, Bowling, Johnson, & Harper, 2016). The hospital cannot be reimbursed by any insurance or Medicare for any treatment given to a patient for a HAI caused by the hospital.

Methodology

The change theory that I've identified is Kotter's Eight Steps to Change. This model suits both the project and this brand new hospital well. The first step is increasing urgency which was certainly already in place with surveys imminent, followed by "build a team and "get the right vision" (Kotter, 1996). My team was all volunteer—the nurses on these three units. The right vision was improving hand hygiene and standard precaution compliance and was embraced by these nurses. Creating short term wins was the next major hurdle (Kotter, 1996), and that was accomplished by the increased test scores the nurses received after the education intervention.

The last part of the theory, "implementing and sustaining change", will be the most difficult. The facility has many challenges, many needs and voicing the need for education of staff in infection prevention is just one of dozens. Rosenstock's Health Belief Model holds true for organizations as well as individuals and the task after the completion of this pilot will be to satisfactorily address all four components on the facility level up to and including administration.

The hospital already has an ongoing "secret shopper" surveillance of staff compliance with hand hygiene, a major component of standard precautions, and transmissible precautions and though below the facility's targeted benchmark of 80%, nursing staff have consistently averaged at least 75% compliant. The "secret shopper" surveillance began shortly after the hospital opened and will be part of ongoing assessment of the effectiveness of both this pilot and subsequent infection prevention education. The current indicator for this project are the post education intervention test scores of the participating nurses.

The post-test is the exact same test as the pre-test, done in the same format except the order of the questions is different. Fifteen of 20 pre-tests were completed and returned by the deadline which established the test group of RNs. The nurses were instructed to answer the pre-test

questions without looking up the answer anywhere including the hospital's own policies though they were permitted to consult with each other. This was because the purpose of the pre-test was to assess RN knowledge overall, not each specific RN's knowledge.

The specific change measured was the increase between the nurses' pre-education and post education scores of infection prevention knowledge. A rise in the test results should also reflect a rise in "Secret Shopper" standard precautions compliance although that data will not be available before the end of this project. For the previous three months, the average RN standard precautions compliance for each unit was: M/S 76%, ICU 73%, ED 78%. I would expect to see these rise to at least the current facility benchmark of 80% +.

The pre-education assessment test is based partially on the hospital's infection prevention policies regarding hand hygiene, standard and transmissible precautions, methicillin resistant *S. aureus* (MRSA), bloodborne pathogens and risk of exposures, which were all written within the last year using either current best practice references or legal mandates. The remainder test questions came from either *Johns Hopkins Nursing* continuing education courses for the C. difficile component, or *Medscape Nurses* for the MRSA component (see reference section for pre/post test sources).

Twenty pre-education assessment tests were distributed to RNs in ICU, ED and M-S with the instructions that although they cannot look up the answers in either policy or reference texts, they could discuss the answer among themselves. I allowed this as I was assessing the nurse knowledge of each unit, not of the individual nurses. Fifteen tests were returned within my time deadline. The tests were all anonymous, the only identifying data was what unit the RN was from, how long he/she had been with the hospital and how long that he/she had been an RN.

Data Source and Literature Review

My PICO statement was: In three acute units of a small community hospital, can pre-education test assessment and the creation of an education module based on identified needs increase nurse knowledge and compliance with standard and transmissible precautions?

The foci data of my study is the existing secret shopper observations of standard and transmissible precautions from the previous three months on each of the respective units. This data establishes a baseline percentage of compliance. To establish a baseline of knowledge, I created a pre-education test to identify what nurses already knew about infection prevention including standard and transmissible precautions. To create the education module, I analyzed what clusters of questions were missed most, both overall and per each unit. There were three question types: standard precautions, transmissible precautions (isolation), and organism specific questions. There were fourteen questions that all nurses answered correctly and these made up the core of standard precautions. My focus for the education module was thus focused on what they missed most: transmission based precautions and organism specific information.

The 50 question pre-education assessment test and the post test are the same except for the order of the questions. The tests contain true/false, multiple choice and “matching” type questions and took the nurses reported that it took about 30 minutes to complete.

There were four main types of reference resources. The first source was literature based on change theories related to organizational improvement. The second type was actual studies of RN compliance with infection prevention, most notably standard precautions. The third type was the facility’s own infection prevention policies, specifically the hand hygiene, transmissible and standard precautions, and methicillin resistant *S. aureus* policies. The last source was the

actual survey documents and worksheets from Medicare conditions of compliance, California Department of Public Health Title 22 or Det Norske Veritas.

To date, my reference sources range in date from 2009 to 2016 . Searches were done through FUSION, CINAHL, Research Gate, Pub-Med, Medscape and Google Scholar using the key PICO phrase: **P** registered nurse, **I** education about standard precautions, **C** no education about standard precautions, **O** negative outcomes or noncompliance. I received additional resources by a search of some of the article's references or "cited by" lists.

In the article, "Measuring return on investment for professional development activities", (2016) Opperman,, Liebig, Bowling, Johnson, and Harper listed not only the benefits of staff development on patient outcomes, but created an extensive list of the costs of adverse events ranging from ventilator associated pneumonia, to catheter associated infections, to the highest listed one, a deep tissue infection following surgery. This team also listed everything you would need to figure out the costs of doing education including the average hourly wages of various licensed professionals as in respiratory therapists, nurse practitioners, registered nurses. The article also gave formulas for benefit to cost ratio, and "return on investment".

In the article, "Historical Origins of the health belief model."(1974). Rosenstock introduced the four components of this model used now extensively as a guide to assess needs and predict the likelihood that a particular group or individual will change their behavior. The four components are; perceived susceptibility as in does the person believe that the adverse event could actually happen to them; perceived severity as in is the event actually something that is bad enough to warrant change; perceived benefits as in either a change that avoids a bad outcome or

a change that causes a good one; and perceived barriers as in does the individual actually believe that they could accomplish this change (Rosenstock, 1974).

In the mandate, from the California Department of Public Health, “Title 22 article 3 § 70214 nursing staff development” (2016) the state of California specifies that for all nursing staff, including temporary and registry staff, there shall be a structured and ongoing education component beginning in orientation and ongoing and it will be based specifically on best practices. No nursing staff is to take an assignment at any hospital until competencies have been assessed and passed and the nurse has been completely oriented (CDPH, 2016). This is only one section referring to “education” of nurses, there are several sections that dictate what a nurse can and cannot do within his/her scope of practice.

In the article, “Lessons learned from the 2014 Ebola epidemic”, (2015) Dawson stated that the results of exposure to an infectious disease as grave as Ebola pointed to the lack of knowledge nurses and point of care providers have in standard and transmissible precautions. She stated that although the two nurses exposed to the source patient may have known about standard precautions, they did not use them and were exposed, requiring hospitalization and are still suffering even now from the sequelae of that disease (Dawson, 2015). It is one thing to present information, but it is another to present it effectively. The Ebola encounter spawned a revamp of the CDC website to include updated formation on donning and doffing of personal protective equipment and teaching that standard precautions are for all patients all of the time (Dawson, 2015).

In the study, “An educational programme for nursing college staff and students during a MERS- coronavirus outbreak in Saudi Arabia” Stirling, Harmston and Alsobayel, (2015)

followed nursing students and staff at a local nursing college. There was a MERS outbreak and nursing students were identified at the highest risk only for contracting the disease but also for carrying it to other parts of the campus or neighborhood because they did not know about standard precautions (Stirling, et al 2015). The team did not have much time and used it wisely—they first assessed what the students knew about spreading MERS then addressed what they didn't know in an education intervention.

Timeline

The project actually started planning in October, 2016 as it was originally planned for another free standing healthcare district hospital. Research had begun in mid October but problems at the site necessitated a change to another hospital. Fortunately, the need for infection prevention education of staff RNs was considerably stronger at the new site and progress caught fire very quickly. On November 8, an MOU was approved by the university and site specific data was collected from November 9 to the 10th, including the secret shopper program. Also a review of literature including the hospital's own policies was completed. The pre-assessment test was written on November 10 and buy-in from RNs on the three units was sought and enthusiastically given. The first tests were distributed on both day and nights shifts on November 12 to 13 and returned within a day due to the diligence of the graduate student. Prompt return of the tests allowed analysis of question clusters. By November 14th the initial draft of the education powerpoint was done and an "ok" received from hospital administration to allow the RNs to come to the education module's "work shop" estimated to take 70-80 mins. Education was with three separate groups of RNs because of space constraints in the one room, was given Nov 15, 17 and 21. The surveillances of the secret shoppers has been ongoing

throughout this project and will continue. The first post-tests were given on November 28 and will continue till November 30th. On December 2, 2016, I will review the project and give recommendations for standardization and sustainability.

Expected Results

I expected to see several trends in this project. The first trend was that post-testing within a week showed high scores above the target of 90%. I expect that the secret shopper surveillance of standard precautions compliance will also rise. Nursing staff have already established a baseline of compliance with point of care standard precaution compliance between close to 80% which is actually median range for the hospital—physicians being very low compliance and housekeeping, dietary and phlebotomists in the higher end ranges.

Nursing Relevance

Too often education of healthcare staff involves repetition of the same items over and over. Nurses are given a prepackaged “module”, often a printed packet or a Health-Stream sort of platform, that satisfies some mandate. Be it infection prevention, an OSHA requirement or the dull hum of an administrator telling new hires the company’s vision, it’s all considered *teaching* but unless you know what your pupils already know and build on it imaginatively, it’s not *learning*. Those new hires might remember the company’s prospectus better if instead of “The Lecture” the CEO asked what they already knew about the company. That starts a dialog where there is an exchange of ideas or information, identifies what needs to be presented and if the pupils are lucky, it will be “taught” it in a way that they can embrace and recall when life isn’t so cut and dried.

My education was designed around the nurses preferences of type of learning, most of them being visual learners, and was focused on what they did not know, not what was pre-package for them. I also utilized lecture, discussion and story telling with pictures to teach them about infection prevention.

Summary Report

This project successfully aimed to improve the safety of patients and reduce the likelihood of Healthcare Acquired Infections (HAIs) by improving point of care nurses' knowledge of infection prevention in both of the hospital's acute care units and the emergency room.

The RNs who volunteered for this pilot range in age from 27 years to 58, all hold ADN degrees and have been licensed registered nurses from 6 months to 35 years. These RNs are from the hospital's emergency department, intensive care unit and the medical-surgical unit. The project site facility is a small, community hospital that is the sole hospital in the healthcare district and had opened less than a year ago. Many of the RNs have been with the hospital since the planning stages before opening.

Beginning with an observation that hand hygiene and standard precautions compliance is lower than the benchmark set for the hospital, I used Kotter's 8 Steps for Change as a model to enlist assistance in a plan to change the compliance rates and increase knowledge of infection prevention practices of RNs at the facility. Assistance was also readily offered as the project was a pilot that would address deficiencies identified both by the hospital's own Survey Readiness Committee as well as requirements of the hospital's accreditation organization, the State of California's Title 22 mandates and the Centers for Medicare Services conditions of participation.

After identifying nurse knowledge deficits in infection prevention by the administration of a pre-test based in part on the hospital's own infection prevention policies as well as questions from Johns Hopkins Nursing continuing education and Medscape Nurses, I created an education module that incorporated Powerpoint, nursing discussion, storytelling and case studies and hands on donning and doffing of personal protective equipment. After the education was completed by the 16 volunteer nurses, I waited seven days to re-administer the same test anticipating that test scores would go up for the test to at least 90% in all three areas tested; standard precautions, transmissible precautions and organism specific knowledge.

All three areas did re-test to at least 90% and I also anticipate that the Secret Shopper surveillances for hand hygiene and standard precautions compliance will also rise though it is too soon to view that data.

Of interest, the accrediting entity, DNV did survey the hospital during the project, immediately after the education intervention and nurses answered the surveyors' questions about infection prevention correctly. This will make continuing the education project and expanding it to other staff much more sustainable as the benefit has been observed by administration early.

I would like to continue education of staff by creating "mini" modules and sending them out in email twice a month with a website address for the employee to log into and the test attached to the message. The mini modules will be 5-6 minute voice over powerpoints with items that staff will need to know in regards to specific organisms, changes in policy or general infection prevention learning.

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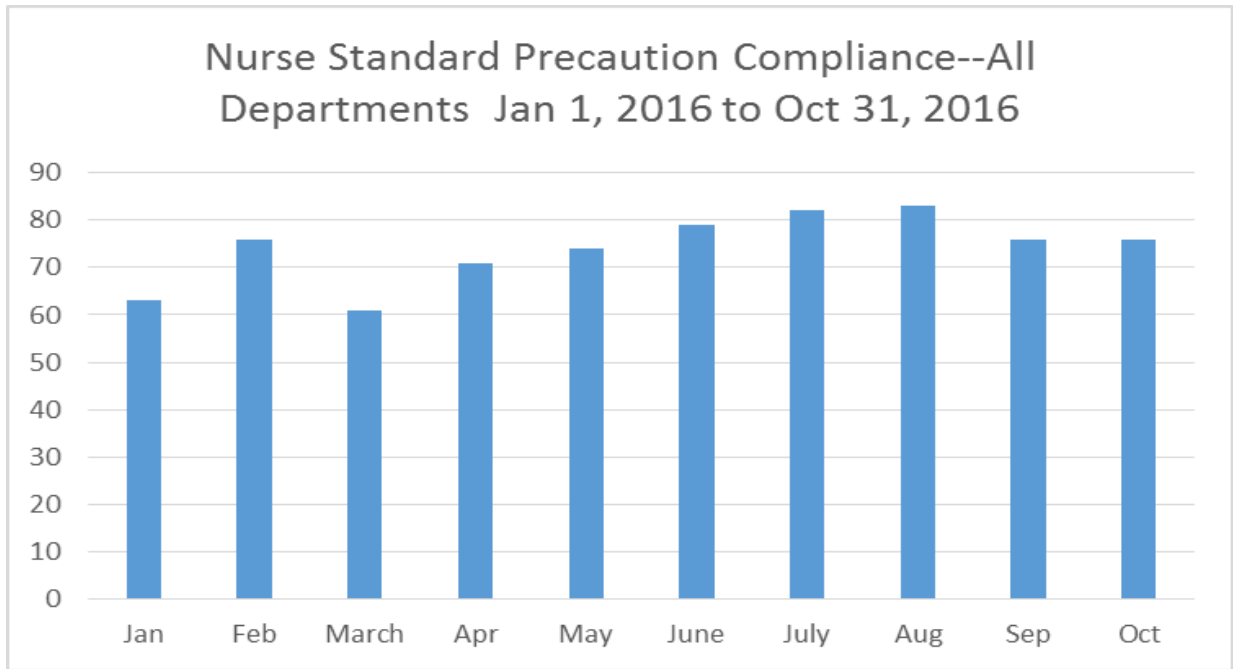
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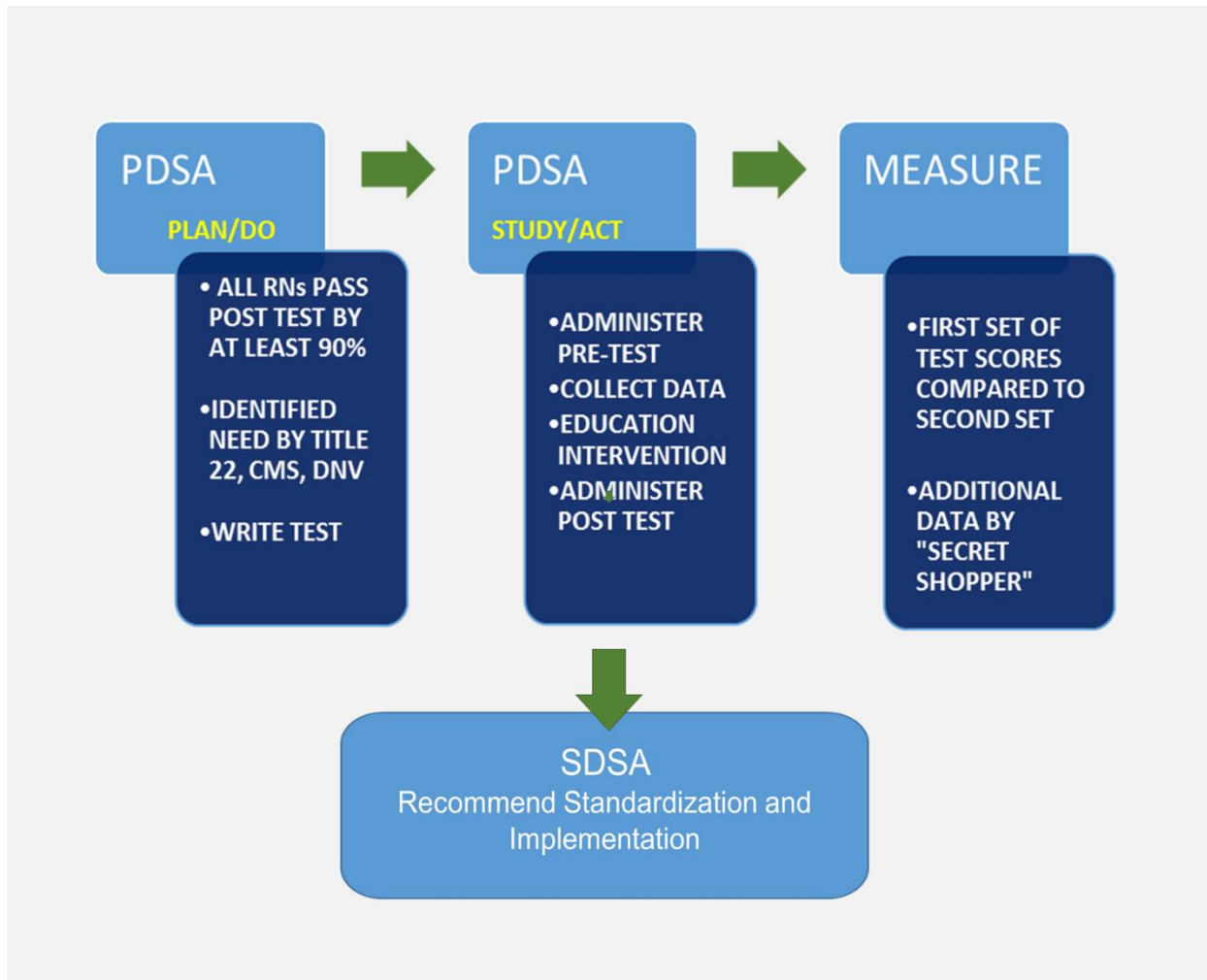
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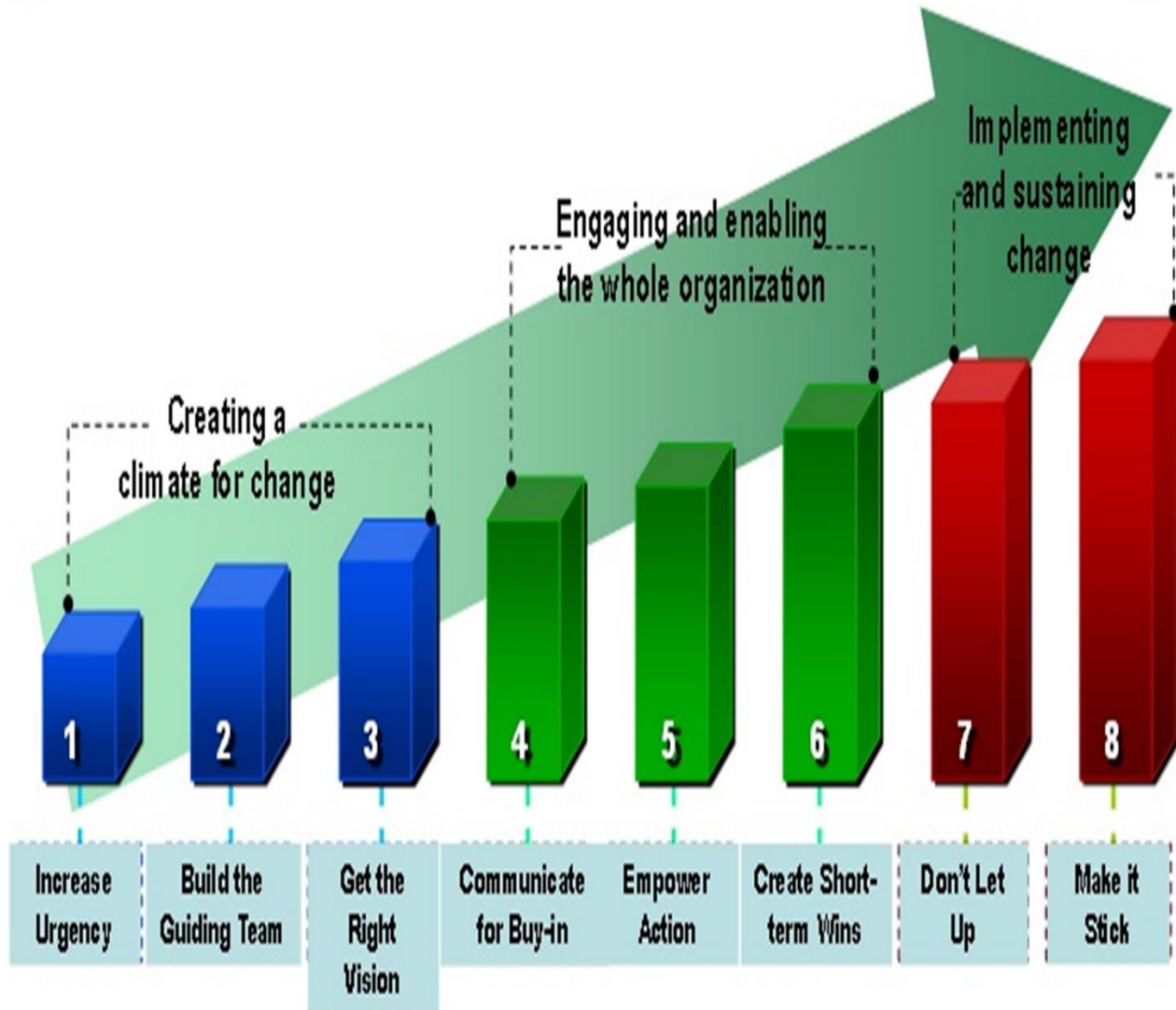


Projected Cost Analysis

Costs	Potential Benefit	Net
Cost of printed tests, \$5.40	At risk if losing <u>one month</u> of Medicare inpatient billing due to any violation of CoP \$9,000,000.00	
Cost rate of 15 RNs at \$60 per hour X 2 hours \$1800	Savings when avoid each management meeting needed to write “plans of correction” for Title 22, CMS or DNV.(averaged from last six months) \$300.00 per meeting X 5 meetings (usually takes five to get plan of correction drafted) = \$1500.00 saved on each.	Net Project Value: \$8,999,694.60
Total Costs: \$1805.40	+ \$9,001,500.00	



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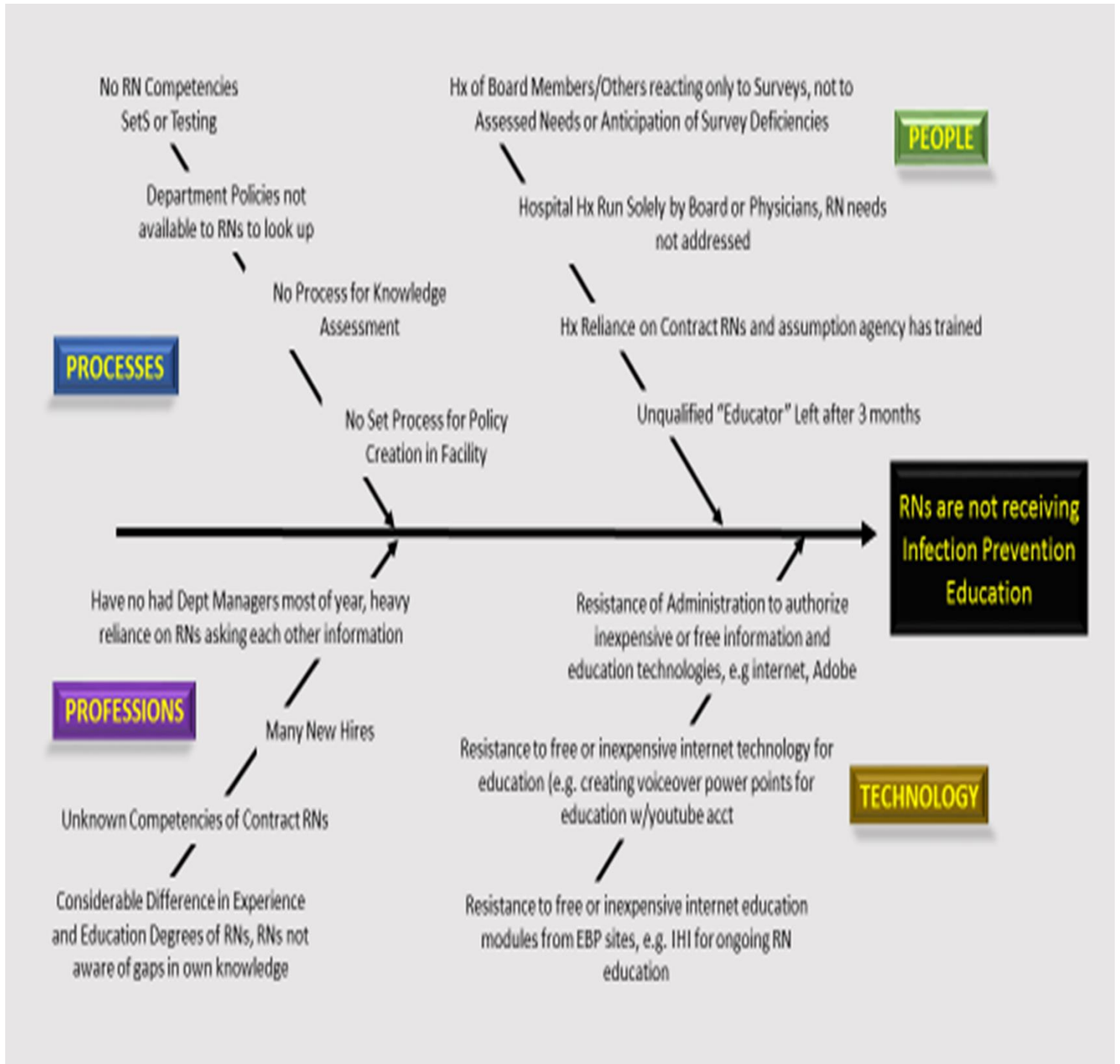
EDUCATING POINT OF CARE NURSES IN INFECTION PREVENTION

<p>Strengths</p> <p>Very easy to do, data is already here</p> <p>Can show an improvement in scores within the time frame</p>	<p>S</p>	<p>W</p>	<p>Weaknesses</p> <p>Timeframe limitations</p> <p>Available nurse cohort will be small—understaffed, difficult to test-educate-retest with so many schedules</p>
<p>Opportunities</p> <p>Three agencies coming in the next two months and this will address mandates</p> <p>The Hospital is hiring managers for ICU/ED and a Quality Risk can use this for competency improvement</p>	<p>O</p>	<p>T</p>	<p>Threats</p> <p>Initial costs for this project, budget very tight</p> <p>Project may not be carried as permanent due to time constraints, and no manager of Med-Surg, the largest dept</p>

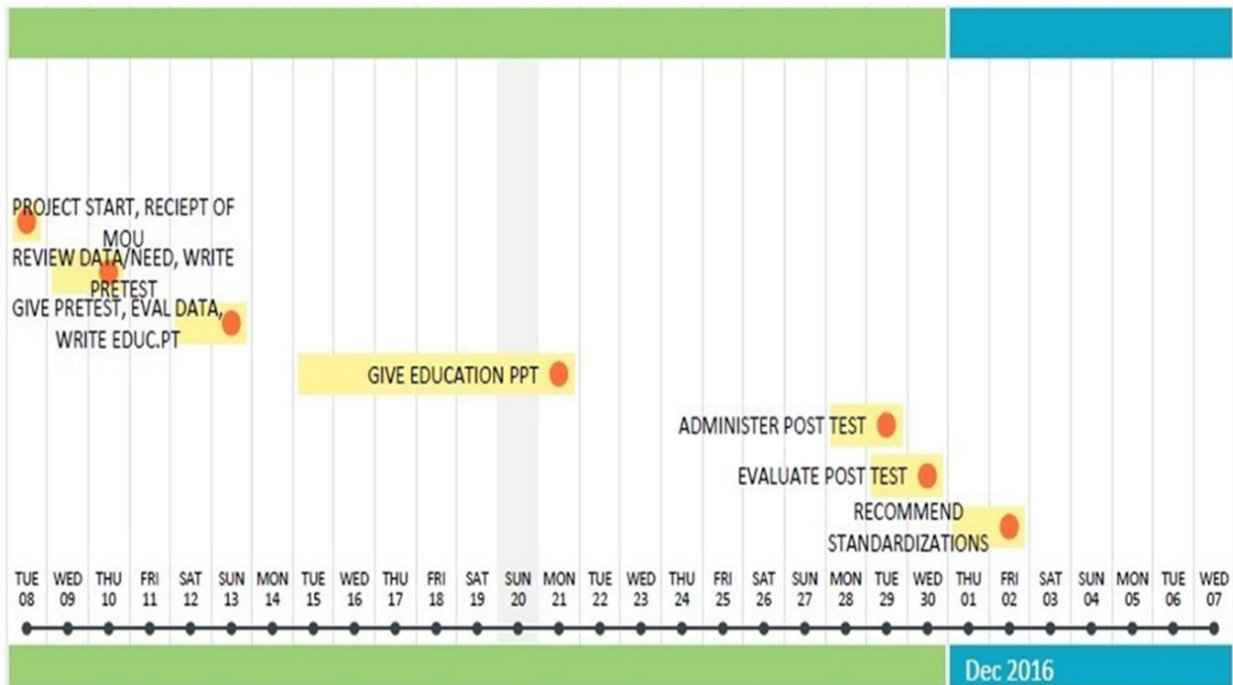
SWOT ANALYSIS

STAKEHOLDER ANALYSIS		
HIGH P O W E R LOW	ADMINISTRATION	CNO/COO
		INFECTION PREVENTIONIST/GRAD STUDENT POINT OF CARE RNS
	LOW	INTEREST HIGH

FISHBONE CHART ANALYSIS

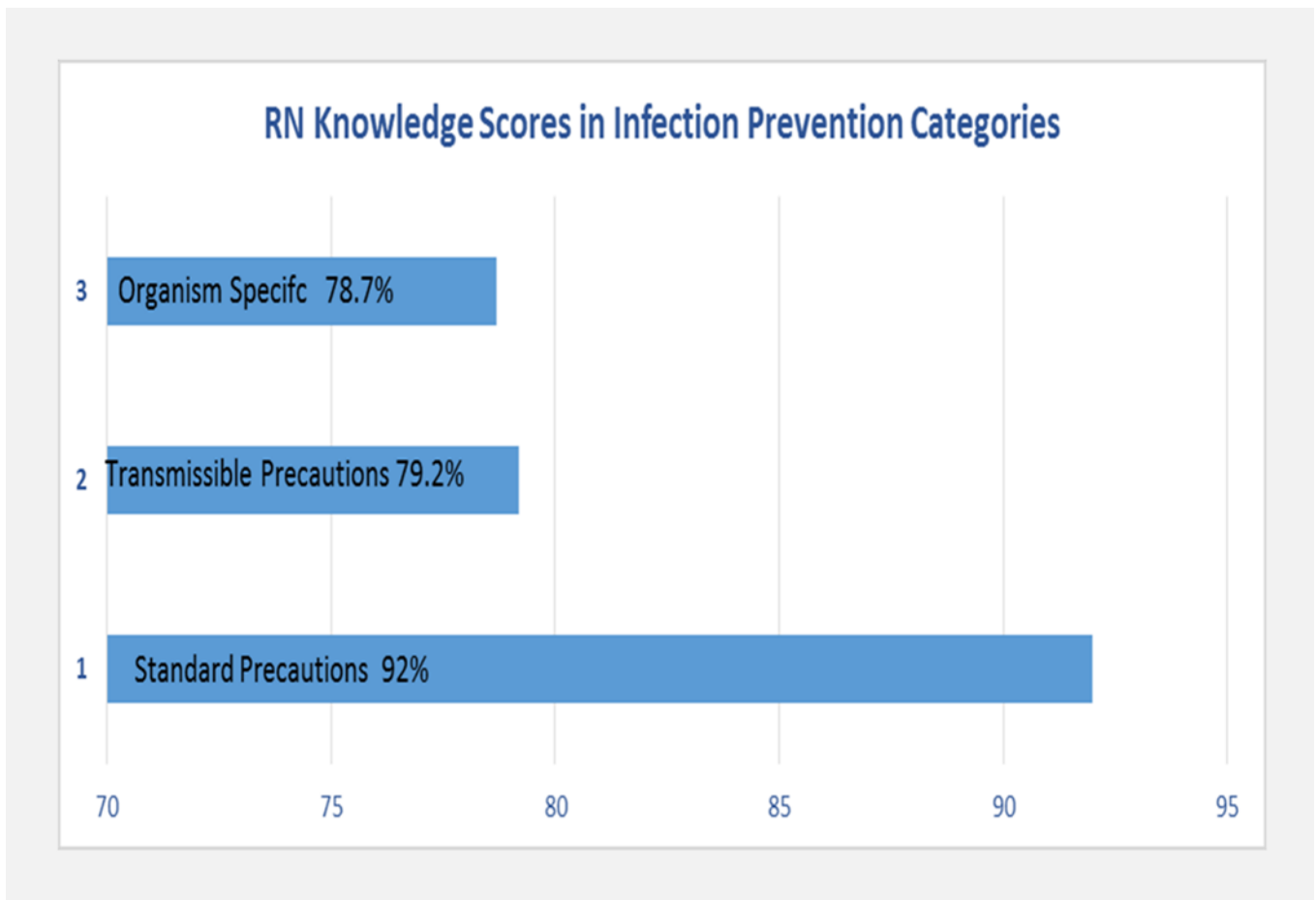


PROJECT TIMELINE



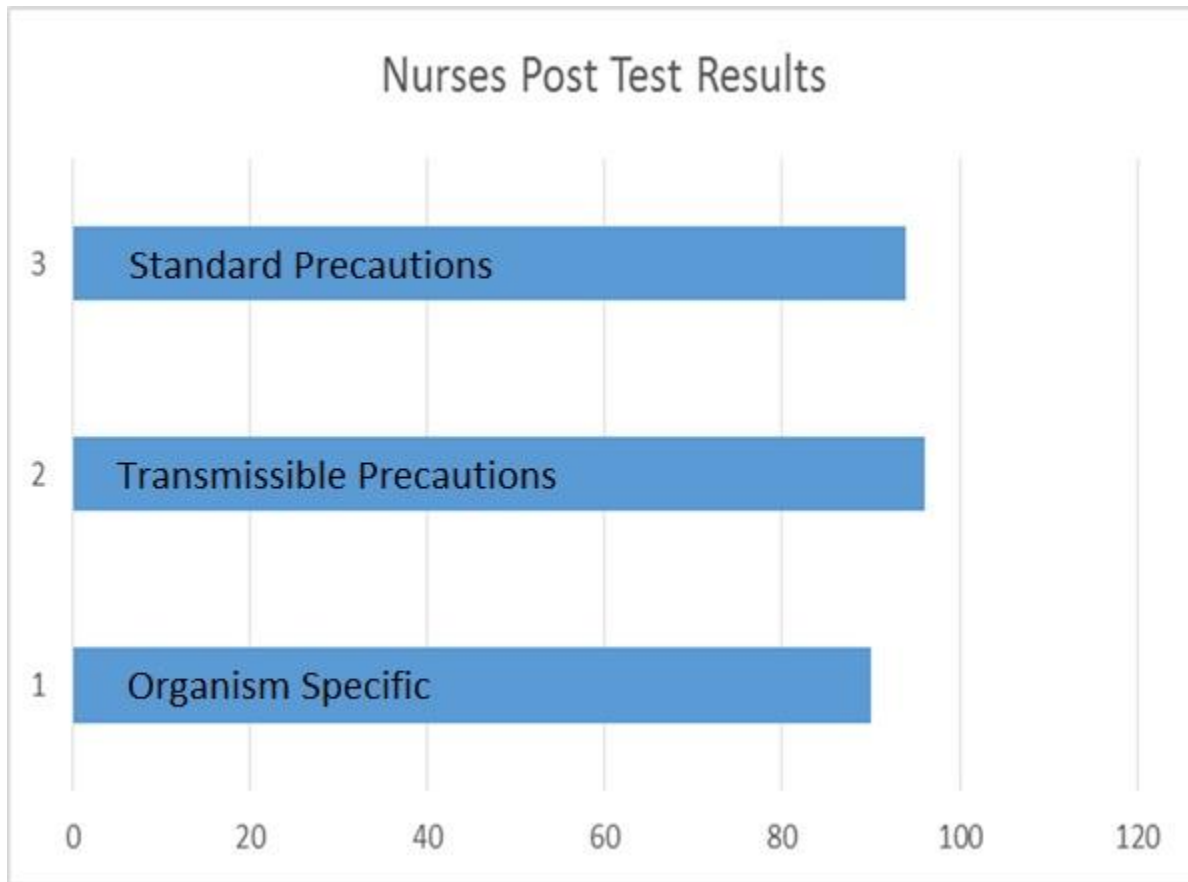
ACTIVITY	START	END	NOTES
Project Start, Recept of MOU	11/8/2016		
Review data/need, write pretest	11/9/2016	11/10/2016	
Give pretest, Eval data, Write Educ.P	11/12/2016	11/13/2016	
Give Education PPT	11/15/2016	11/21/2016	
Administer Post test	11/28/2016	11/29/2016	
Evaluate Post test	11/29/2016	11/30/2016	
Recommend Standardizations	12/1/2016	12/2/2016	

Pretest Scores



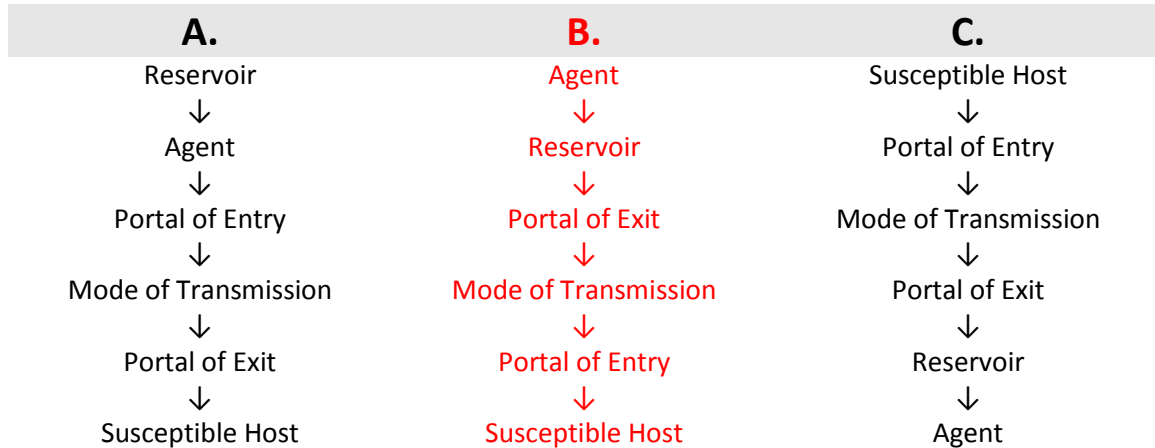
Project Steps/Flow





Pretest Content for Standard Precautions, Transmissible Precautions, Personal Protective Equipment, MRSA, Clostridium difficile

1) The order of the Chain of Infection is: (Circle One)



2) Standard Precautions include: (Circle One)

- A. Hand Hygiene and cough etiquette
- B. Cleaning and disinfection of patient care equipment and the environment
- C. Safe injection and sharps handling work practices
- D. The use of personal protective equipment (PPE)
- E. Correct handling of textiles and laundry
- F. A & D
- G. All of the above**

3) A set of basic infection prevention practices intended to prevent transmission of infectious diseases from one person to another is called: (Circle One)

- A. Isolation Precautions
- B. Standard Precautions**
- C. Community Precautions
- D. None of the above

4) _____ are bacteria and other microorganisms that are resistant to one or more classes of antimicrobial drugs. (Circle One)

- A. Multi Bacteria Resistant Organisms

- B. Organism Resistant Bacteria
 - C. Multi-Drug Resistant Organisms
 - D. None of the above
- 5) What is the minimum time you wash your hands with soap and water? (Circle One)
- A. 15 seconds after you've wetted hands and added soap
 - B. 30 seconds after you've wetted hands and added soap
 - C. Two minutes after you've wetted hands and added soap
 - D. None of the above
- 6) True or False: You may use masks, gloves, gowns, face shields any time that you believe that you may encounter blood or body secretions regardless of the patient's diagnosis.
- 7) True or False: Respiratory Etiquette means protecting other people by sneezing or coughing into your sleeve or use a tissue and perform hand hygiene immediately afterwards.
- 8) Name a time you would perform hand hygiene; (Circle One)
- A. When you enter a patient's room
 - B. When you remove gloves
 - C. When you leave a patient's room
 - D. All of the above
- 9) The correct order of putting on (donning) personal protective equipment (PPE) is: (Circle One)
- A. Gown, Mask/Respirator, Face shield/Goggles, Gloves
 - B. Gloves, Face shield/Goggles, Gown, Mask/Respirator
 - C. Mask/Respirator, Gown, Gloves, Face shield/Goggles
 - D. The CDC does not recommend a correct way of donning PPE, only of taking PPE off
- 10) The correct order of removing (doffing) personal protective equipment (PPE) is: (Circle One)
- A. Gown, Gloves, Face shield/Goggles, Mask/Respirator, hand hygiene
 - B. Gloves, Face shield/Goggles, Gown, Mask/Respirator, hand hygiene
 - C. Face shield/Goggles, Mask/Respirator, Gown, Gloves, hand hygiene
 - D. The Centers for Disease Control (CDC) does not recommend a correct way of doffing as it depends on the organism causing the infection
- 11) True or False: All Curo caps on both peripheral and central lines are used once then discarded.

- 12) **True** or False: The initial positive preliminary and final positive results of MRSA or any other microbiological screen or culture is considered a Critical Lab Value and conveyed to the physician immediately
- 13) **True** or False: We re-swab the nares of patients just prior to discharge if they tested negative for MRSA on admission AND were in the ICU at any time during their current stay
- 14) **True** or False: A history of MRSA infection or previous colonization means placement on Contact Precautions on admission
- 15) Standard Precautions apply to (Circle One)
- A. Only patients diagnosed with HIV or Hepatitis.
 - B. Only patients who have been placed on transmission based precautions.
 - C. All patients, all the time, receiving care in the hospital, regardless of their diagnosis or presumed infection status.**
- 16) True or **False**: Because family members of a patient on Contact Precautions will not be in contact with any other hospitalized patients, they are not required to comply with the Contact Precautions personal protective equipment (e.g. gown, gloves)
- 17) True or **False**: When caring for the patient on Contact Precautions, you may label your gown at the beginning of the shift, hang it inside the patient's room when not in use and re-wear it throughout your shift.
- 18) Which is the most effective hand hygiene way to kill germs on your hands? (Circle One)
- A. Hand Washing
 - B. Alcohol based foam/gel**
 - C. Wear gloves during possible exposures
- 19) Why must you wash your hands with soap and water when exiting an Enteric Precautions room? (Circle All That Apply)
- A. Soap and water are the only way to get rid of enteric based organisms**
 - B. Alcohol causes some enteric organisms (C. difficile) to form spores which can only be killed with a hypochlorite solution (bleach)**
 - C. Alcohol causes some enteric organisms (C. difficile) to form spores that then become "sticky" and then you can carry the organism all over the hospital and back home with you**
 - D. None of the Above, you must use alcohol based hand sanitizers in Enteric precautions

rooms

20) Which of the following are risk factors for a Clostridium difficile ("C. diff") infection? (Circle One)

- A. Recent use of antibiotics
- B. Proton pump inhibitor exposure
- C. Patient has a history of C. difficile infection
- D. Patient has had three loose stools within 24 hours and there is no other likely cause (e.g. use of bowel care medications within last day)
- E. Patients on current or recent chemotherapy
- F. Prolonged tube feeding
- G. GI Comorbidity (e.g. toxic megacolon)
- H. Any recent surgery
- I. Neutropenia
- J. Prolonged inpatient status in an acute or long term care facility
- K. History of C. difficile infection
- L. A, B, D, J
- M. All of the above
- N. None of the above

21) Which of the following are risk factors for MRSA colonization (Circle All that apply)

- A. Admission to the ICU at any time during current hospital stay
- B. Admission from a skilled nursing facility
- C. History of a MRSA infection
- D. Discharge within the last 30 days from an acute facility, including SWMC
- E. Current or past dialysis patient

22) Match the personal protective equipment (PPE) and other requirements with the type of transmissible precaution room.

 D Droplet Precautions

A. Hand hygiene, any PPE you believe you need based on risk of exposure to blood or body secretions

 F Contact Precautions

B. Hand washing, gown, gloves, bleach based disinfectant cleaners

___E___ Airborne Precautions

C. Hand hygiene, simple mask, gown, patient immunocompromised, door shut, may be in positive pressure room

___B___ Enteric Precautions

D. Hand hygiene, simple mask, possible gloves, gown if secretions spray, door can be open

___A___ Standard Precautions

E. Hand hygiene, in Negative Pressure Room, staff use either N95 mask or a PAPRS, door shut

___C___ Neutropenic Precautions

F. Hand hygiene, gown, gloves, door can be open

23) What is a “wet time” or “dwell time” in regard to EPA approved hospital disinfectants? (Circle One)

A. The time that the disinfectant must remain wet on a surface to effectively kill the organisms listed on the label

B. The time that the disinfectant will take to dry after killing the organisms listed on the label

24) Which of the following is the name of an inanimate, non-living source of an infectious agent?

A. Vector

B. Fomite

C. None of the Above

D. A & B

25) **True** or False: All patients on transmissible precautions (droplet, contact, airborne, enteric) require a care plan and teaching about the organism and the precautions.

26) **True** or False: Visitors to precautions rooms must also be taught the importance of adherence to precautions. The hospital supplies written materials to facilitate this teaching care plan by the RN.

27) **True** or False: An RN or an RT may place a patient on Transmissible Precautions (e.g. Droplet, Contact, Airborne, Enteric) at any time a patient presents with symptoms of an infection and the RN or RT suspects a transmissible pathogen may be present.

28) **True** or False: When transporting a Transmissible Precautions patient within the hospital for a procedure, contact the receiving department BEFORE sending the patient and advise them of the precautions needed (Droplet, Contact, Enteric, Airborne).

29) **True** or False: The label of all EPA hospital rated disinfectants and disinfectant cleaners states the wet time for killing specific pathogens and there may be multiple wet times depending on organism.

- 30) **True** or False: When transporting a Contact or Enteric precautions patient within the hospital, dressings or adult ATTENDS must contain the wound drainage or feces
- 31) **True** or False: When transporting a Droplet precautions patient within the hospital, ask the patient to wear a simple mask and the transporting attendant must wear a simple mask.
- 32) True or **False**: Intravenous Vancomycin is the treatment of choice for C. difficile when treatment with metronidazole is not effective.
- 33) **True** or False: You should not treat asymptomatic C. difficile carriage as treatment can cause relapsing disease
- 34) **True** or False: A toxic megacolon or pancolitis on a CT scan may indicate severe C. difficile infection
- 35) True or **False**: Sudden cessation of diarrhea in a suspected C. difficile infected patient means that the diarrhea was not caused by C. difficile but by another source.
- 36) **True** or False: C. difficile and norovirus cannot be killed by alcohol based hand sanitizers so you must wash your hands with soap and water upon doffing personal protective equipment and leaving Enteric Precautions rooms.
- 37) You have a patient who has been placed on Enteric Precautions and is confirmed with an infection of C. difficile. You would be alarmed if the patient: (Circle One)
- A) Developed a WBC of over 15,000
 - B) Abdomen became distended
 - C) Developed abdominal pain, N/V and had no bowel sounds, hypotension (<- most alarming)**
 - D) Any/all of the above**
- 38) **True** or False: Soap and water are the preferred incontinence cleaning agents for anyone with C. difficile infection because pre-packaged wipes can seal in spores.
- 39) True or **False**: Lomotil or any anti-motility agent is safe to use with C. difficile or norovirus
- 40) **True** or False: The only cleaning and disinfecting agent that can be used in any Enteric Precautions room is a hypochlorite (bleach) wipe or solution.
- 41) **True** or False: A patient who is considered "at risk" for MRSA colonization (from a SNF, discharged from an acute hospital including SWMC within the last 30 days or admitted to the ICU) MUST be nasal screened within 24 hours of admission.
- 42) **True** or False: Removal of dietary trays from a Transmission Precautions room requires two persons, one in complete personal protective equipment at the door and the second wearing gloves outside

the door who receives the tray and immediately takes it to the dirty dietary cart.

43) When a patient has completed treatment for C. difficile and diarrhea has subsided, what is the best practice recommended next step? (Circle One)

- A) The patient may be taken off of Enteric Precautions, Standard Precautions now suffice
- B) The patient may be taken off of Enteric Precautions, Standard Precautions are now sufficient and the patient is moved to a clean room. Terminal cleaning with a hypochlorite bleach cleaner/disinfectant will be done to patient's old room.
- C) The patient must remain on Enteric Precautions for one week after the completion of treatment and only if the C. difficile antigen is no longer present in stool at that time
- D) The patient must remain on Enteric Precautions, C. difficile spores are still shed for sometime after completion of recommended treatment

44) True or False: All patients colonized with either MRSA, VRE or other resistant pathogen must have their hospital medical records flagged in order to alert point of care personnel in future hospital admissions or procedures per California Law.

45) The cleaning agent for the electronic tablets is 70% alcohol, yet the manufacturer will not recommend any cleaning other than "a soft cloth". What precedent is SWMC's use of alcohol for tablet cleaning is based on? (Circle One)

- A. The recommendation by manufacturers of glucometers, an electronic patient care device
- B. The use of 70% alcohol wipes as prep for the insertion of intravenous peripheral lines
- C. 70 % alcohol is universally accepted as a high level disinfectant
- D. 70 % alcohol is recommended by the manufacturers of mammography equipment which is also used patient to patient and is too sensitive for harsh cleaners
- E. Both A and D
- F. None of the Above

46) True or False: You may take the electronic tablets into any precautions room as long as you clean them with 70% alcohol when exiting

47) Which of the following is the most common CT finding in patients with C difficile colitis? (Circle One)

- A. Marked colonic wall thickening
- B. Ascites

- C. Pericolonic stranding
- D. Irregular bowel wall

48) Antibiotic exposure is associated with “C. diff”, which of the following antibiotic classes is most commonly associated with C difficile colitis? (Circle One)

- A. Macrolides
- B. Aminoglycosides
- C. Cephalosporins**
- D. Penicillins

49) Respiratory therapists and registered nurses with SWMC may place a patient on transmissible precautions at any time they believe a transmissible pathogen is involved. Use choices A-D to match the patient presentation or pathogen with the precaution(s):

- A. Airborne Precautions
- B. Enteric Precautions
- C. Contact Precautions
- D. Droplet Precautions

Symptoms	Suspected Pathogen	Transmissible Precaution?
Acute diarrhea, likely with a likely infectious cause	Multiple	___ B ___
Vesicular rash	Varicella (chicken pox)	___ A ___ and ___ C ___
Cough, fever, upper lobe infiltrate, jail inmate or homeless (risk population)	Tuberculosis	___ A ___
Acute diarrhea in a patient with a history of recent antibiotic use	C. difficile	___ B ___
Paroxysmal or persistent cough	Pertussis	___ D ___
Rashes that are itchy or secondarily infected from scratching	Scabies	___ C ___
Draining lesions in an immunocompromised patient, or disseminated lesions, or severe primary case	Herpes Zoster	___ A ___ and ___ C ___
Asymptomatic	History of MRSA	___ C ___

50) Circle the One that sounds most like you: (All Answers are Correct)

A. I seem to learn faster and remember better when the content presented is mostly by hearing—like a lecture on a radio or a recorded book.

B. I seem to learn faster and remember better when the content presented is mostly visual—like reading a book or seeing photographs.

C. I seem to learn faster and remember better when the content presented is something I can take into my hands and take apart or put it back together to see how it works.

Presenter: Deborah Ard RN, MSN

Date _____

Topic: Infection Prevention Education for RNs

Please indicate your impressions of the items listed below.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The training met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I will be able to apply the knowledge learned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The training objectives for each topic were identified and followed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The content was organized and easy to follow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The materials distributed were pertinent and useful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The trainer was knowledgeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The quality of instruction was good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The trainer met the training objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Class participation and interaction were encouraged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Adequate time was provided for questions and discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What aspects of the training could be improved?

Was there anything specific that you learned today?

Do you have any suggestions for future discussion?