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Emergency Department Staffing and Overcrowding

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Contents

Acknowledgements

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Executive Summary

Hospital Emergency Rooms/Departments (ER & ED used interchangeably) around the country, as well as around the world have been experiencing an overcrowding problem for many years for a variety of different reasons. "ED crowding occurs when the need for services exceeds the departments available resources for timely patient care" (Stone et al., 2017, p.1). The overcrowding issue in ED's has caused a strain on hospital resources and staff, as well as creating a public health crisis putting patients at risk for negative outcomes. “ED overcrowding can result either from a lack of resources such as beds (indirectly involved in care delivery) or from a shortage of resources such as physicians, nurses, or other medical professionals (directly involved in care delivery), or it can be due to inefficiencies in process like obtaining laboratory and radiology results, admitting patients to impatient floors or triage” (Paul, 2012, p.1120). By completing this change project, and continuing a process of evaluation and analysis of practices, adjustments to patient flow practices can improve care and patient outcomes, as well as patient satisfaction. "A positive patient experience has been shown to be strongly correlated to improved patient outcomes, profitability, and a decrease in the frequency of both patient complaints and lawsuits" (Stone et al., 2017, p.3). Therefore, addressing ED overcrowding should be at the forefront of every hospital administrator's decision-making process.

The ER is a unique and challenging practice environment, and as such, the ability to provide consistent patient satisfaction in this environment can be equally challenging. However, it is a challenge that must be met if a healthcare organization is to remain at the forefront of safe cost-effective patient care, and customer satisfaction.

1. Rationale for the Project

People seek treatment at the emergency room (ER) for many different reasons. Some for treatment of life-threatening illnesses, others for traumatic injuries, some for primary care, others for mental health issues, among others. Many times, people view the ER much like a convenience store, they want to run in, get a prescription or quick treatment, and be in and out in 30 minutes or less. All of these reasons and many more such as nurse and provider staffing can result in overcrowding in the ER. "Important predictors of patient satisfaction were waiting room time, the providers who treated them, and the patients age. Timeliness is one of the most important drivers of patient satisfaction with nonurgent care" (McCarthy, et. al, 2011, p. 683). As the old saying goes: "you never get a second chance to make a first impression – unknown." The hospital is a business, and without patients, you don't have a business. Nice new buildings, and expensive marketing campaigns cannot overcome negative reviews on social media that can spread within minutes of a negative event.

Overcrowding in the emergency room (ER) is a decades old problem that can be caused by factors both internal and external to the (ER). The ripple effects from this problem can be seen throughout the hospital. "Unless an emergency department can optimize flow efficiency, it will continue to struggle in its performance, despite gains in other areas" (Baker, Shupe, and Smith, 2013, p. 481). The speed and quality of care that patients receive can be affected by overcrowding and have a negative impact on the patient's treatment outcome and perception. Increasingly now for many years, hospitals and healthcare leaders have been trying to solve this issue because reimbursement can be tied to patient satisfaction. "Patient experience in the United States has been codified by the Centers for Medicare and Medicaid Services Value-Based Purchasing Program, which ties a percentage of hospital reimbursements to performance,

including patient satisfaction ratings. Patient satisfaction is measured by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a 29-question survey that assesses patients' experiences of their recent hospitalization" (Trotta, et al., 2019, p. 568). Many times, a patient's visit to the ER is their first contact or experience with your facility, and their entire perception of your healthcare facility can be based on this one experience. From a business and ethical standpoint, it is important that we get every patient experience at our respective facilities right every single time.

Collectively, the healthcare system in the United States is a multi-trillion-dollar industry. Our patients are consumers and much like other industries, they have expectations that need to meet or they will seek care elsewhere and business at our respective institution will suffer. This project seeks to understand how factors such as patient flow and nurse staffing can be better employed to have a positive impact on patient satisfaction and outcomes. If this can be accomplished, everyone wins as the old saying goes.

1.1 Project Goals

This change project seeks to identify and find solutions to patient flow problems that occur in the emergency room (ER) in order to: decrease patient wait times, reduce ER overcrowding, reduce costs, and to increase patient satisfaction and overall outcomes. One major aspect to accomplish this task is to identify low acuity, non-urgent patients who come to the emergency room (ER) for treatment who could otherwise be seen by their primary care provider, mid-level provider, or in a clinic.

2. Literature synthesis and discussion to support the project

A search of the of the Cochrane, CINAHL, MEDLINE, and PUBMED electronic databases was conducted from Spring of 2015 until the Spring of 2021. Articles considered for this project were from 2011 to 2021. The following search terms were utilized in the search: emergency department, emergency room, boarding, overcrowding, nurse practitioner, emergency nurse practitioner, mid-level provider, fast track, urgent care, patient flow, rapid assessment zone, and bottleneck.

The search identified numerous current journal articles and studies regarding this subject as well as many well before 2011. A total of 17 resources were identified for review ranging from 2011 to 2019. The 17 resources included: one randomized controlled trial, two systematic reviews, two journal articles, two intervention reviews, one editorial, two position statements and four process analyses.

"Efficient patient flow is a key driver for quality, safety, and positive patient perception of care" (Baker, 2013, p. 481). "To diagnose flow challenges, key questions are asked to determine challenges in 3 throughput segments: front-end flow (door to bed), middle flow (bed to disposition), and back-end flow (disposition to discharge or admit)" (Baker, 2013, p. 481). This change project looks to influence all 3 segments of the process by utilizing additional nurse staffing and/or the use of mid-level providers such as Nurse Practitioners' (NP's) and Physician Assistants (PA's) to treat and move low acuity patients through the ER process in a faster and more cost-efficient manner. The goal is to increase patient satisfaction, reduce costs, and increase positive patient outcomes. When the ER is overcrowded with non-urgent patients, it "diminishes the ability of the ER to provide immediate access and stabilization to those patients who have an emergency medical condition" (Paul, 2012, p. 1119).

Overall, the review of the literature on this topic suggested that the use of mid-level providers and increased staffing, as well as the implementation of alternate treatment areas can positively impact patient satisfaction, and overcrowding. "Important predictors of patient satisfaction were waiting room time, the providers who treated them, and the patients age. Timeliness is one of the most important drivers of patient satisfaction with nonurgent care" (McCarthy, et. al, 2011, p. 683). "Emergency nurse practitioner services do impact patient satisfaction and waiting times positively. Cost effectiveness of emergency nurse practitioner service was shown to be equal to that of other health care professionals in regards to soft tissue management and overall quality of care was higher within emergency nurse practitioner service" (Jennings, et. al., 2015, p. 433). In regards to alternate treatment areas such as fast track waiting areas, rapid treatment pods and vertical treatment areas, "patient feedback indicated high levels of satisfaction with the new process that was implemented. The staff's concerns regarding increased patient complaints and patient confidentiality compromise were not echoed by the patients" (Pink, et. al., 2019, p. 149). "Crowding in the ED continues to be an ongoing challenge, as the number of visits continues to steadily increase. Fast track (FT) may be a necessary part of the solution to solving crowding issues, administering quality and timely care, and meeting the needs of at-risk challenging populations" (Celona, et. al. 2018, p. 202). By utilizing mid-level providers such as NP's and PAs to handle low acuity patients, crowding in the ER can be reduced, freeing up space for the higher acuity patients that arrive in the ER at only a moment's notice.

Two potential problems and limitations were identified in the literature. The first is that: "the nationwide trend toward ED and hospital overcrowding has left many hospitals with inadequate space for a steadily increasing patient census. Development and construction of a

new ED or extension of physical space in the existing ED is time-consuming, expensive, and can underestimate the growth of patient volume by the time of its completion" (Wallingford, et. al., 2018, p. 352). Second, "several studies note that the root cause of overcrowding is 'boarding' of patients. To improve service and quality in the ED, hospitals must realize and confront the institutional, systemic problem of boarding to free the ED of the boarding burden" (Baker, et. al. 2013, p. 484).

3. Project Stakeholders

"Because various healthcare professionals seldom function alone, their decision to change a clinical practice cannot be made in isolation of healthcare administrators and other practitioners," as well as your own nursing colleagues (Melnyk & Overholt, 2005, p.205). The ED is reliant on every other area of the hospital for support, and any change to the ED services would also entail coordination with these external services. These external services include: laboratory services, radiology services such as x-ray, CT, MRI scans, consultation with specialty physician services and providers, local EMS services, food services, the surgery department, inpatient hospital services, and case management among others in the hospital.

The main stakeholders for this benchmark program are; the community the hospital serves, and the patients themselves. The central theme of this benchmark program is to streamline the ED visit experience, provide high quality care in order that patients have a positive experience and visit outcome. Additional stakeholders include the ED and entire hospital staff as well as hospital administration and management.

4. Project Implementation

Due in large part to the continuing COVID-19 global pandemic, this project will be conducted as a benchmark project. In order for this project to be successful, it will take a significant investment in time, money, and personnel by the hospital. Something many organizations are not be willing to do at during a global pandemic as most hospital organizations resources are stretched to capacity.

Utilizing the PICOT question: In emergency departments (P), how do nurse staffing levels (I) compared with alternate treatment areas and or the use of mid-level providers (C) influence overcrowding (O) over a 3-month period (T) in the emergency department. For the purpose of this PICOT question, nurse staffing includes: Registered Nurses (RN), Licensed Vocational Nurses (LVN), as well as ancillary nursing staff to include ED technicians and aids. Alternate treatment areas will include vertical treatment areas, urgent care clinics, ED fast track areas, retail clinics, and mid-level providers that can provide treatment for non-emergency conditions among others.

The change project will be carried out and managed by the ED manager with additional oversight by the ED medical director, chief nursing officer, and hospital administrator.

5. Project Timetable/Flowchart

Due to the COVID-19 pandemic, this study is presented at a benchmark project and will Not be implemented at this time. However, ideally, this change project would be conducted in three phases. First phase would be a pre-implementation phase of putting together the change team, gathering historical data, performing an analysis of the current patient flow model, and

establishing the new patient flow process. Second would be the implementation phase in which we actually implement the change in the ED, and start gathering data related to the changes that were made in the ED. The third and final phase of the project would be a post implementation and analysis phase. In this phase the data will be evaluated and a determination will be made if the project was successful, and if any additional adjustments need to be made to the process.

Refer to the appendix of this document for the proposed flowchart for this benchmark project.

6. Project Data Collection Methods

Various different existing data sources would be utilized for this benchmark project. Data sources would include historical and current data from: Press Ganey patient satisfaction surveys, data collected from the in-house computer system regarding: length of stay (LOS), registration time to the time seen by the providers or door to provider time (DTP), Emergency Severity Index (ESI) triage level for acuity level, data regarding patients who left without being seen (LWOBS), demographic information and data regarding patients leaving against medical advice (AMA). Additionally, patients would be asked to complete a brief one-page survey prior to leaving the hospital regarding their perceptions of the care they received that are specific to this change project.

"In order to make a statistical estimate about the difference between two population parameters, we need to have a sample from each population" (Brase & Brase, 1995, p. 489). To evaluate the outcomes of this project, pre and post project data needs to be collected, as well as ongoing data during the project. "Dependent samples and data pairs occur very naturally in 'before and after' situations where the same object or item is measured twice" (Brase & Brase,

1995, p. 490). Data regarding the length of stay (LOS) of patients, those who left without being seen (LWOBS), and patient acuity level are just some of the information that needs to be collected from the in-house computer prior to beginning the project. The same information will be collected both during and after the project and compared against the pre-project information in order to judge and evaluate the outcomes of the interventions that are put in place. "Monitoring, or ongoing data collection, assists the change agent to recognize and correct process problems early" (Yoder-Wise, 2007, p. 329). "Continual monitoring of the environment and outcomes is necessary for implementing EBP" (Melnyk & Fineout-Overhold, 2005, p. 438).

Adequate sample size is always a concern when conducting research. "In the design states of statistical research projects, it is a good idea to decide in advance on the confidence level you wish to use and to select the maximum error of estimate *E* you want for your project. How you choose to make these decisions depends on the requirements of the project and the practical nature of the problem" (Brase & Brase, 1995, p. 481). This benchmark project would be conducted in a small rural ER that sees approximately 40 or more patients per day. "Statistical theory and empirical results show that if a distribution is approximately mound-shaped and symmetrical, then when the sample size is 30 or larger, we are safe, for most practical purposes" (Brase & Brase, 1995, p. 444). The acuity level of the patients can vary considerably from hour to hour, day to day, and from month to month. Regardless, the sample size for pre and post project data should be more than adequate to make a reasonable determination of success or failure for this project. The longer that data is able to be collected for this project, the better estimate of the value of the data collected as "the law of large numbers states that as the sample size increases and increases, the relative frequencies of outcomes get closer and closer to the theoretical (or actual) probability value" (Brase & Brase, 1995, p. 187).

7. Project Cost/Benefit Discussion

"The cost of medical care is increasing at an alarming and unsustainable rate worldwide" (Mozammel & Mapa, 2011, p.58). The speed and quality of care that patients receive can be affected by overcrowding and have a negative impact on the patient's treatment outcome and perception. Increasingly now for many years, hospitals and healthcare leaders have been trying to solve this issue because reimbursement can be tied to patient satisfaction. "Patient experience in the United States has been codified by the Centers for Medicare and Medicaid Services Value-Based Purchasing Program, which ties a percentage of hospital reimbursements to performance, including patient satisfaction ratings. Patient satisfaction is measured by the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a 29-question survey that assesses patients' experiences of their recent hospitalization" (Trotta, et al., 2019, p. 568).

Hospital administrators and managers tend to consider staffing levels in the ER much the same way as they do for other areas of the hospital; based on daily census. However, the ER is the one area of the hospital in which the census varies considerably from minute to minute, and day to day. One major contributor to overcrowding in the ER is low-acuity, non-emergency patients who seek treatment in the ER. The patients with non-emergent conditions frequently tie up resources and personnel, and could easily be screened-out to a clinic, or seen by an advanced practice provider such as a physician assistant (PA), or nurse practitioner (NP).

For an ER, the emergency medical treatment and labor act (EMTALA) provides a significant legal guideline for patient's access to emergency services offered by a hospital. EMTALA was enacted by the United States Congress in 1986 and was created "to ensure public access to emergency services regardless of ability to pay. Section 1867 of the Social Security Act imposes specific obligations on Medicare-participating hospitals that offer emergency

services to provide medical screening examinations (MSE) when a request is made for examination or treatment for an emergency medical condition (EMC), including active labor, regardless of an individual's ability to pay. Hospitals are then required to provide stabilizing treatment for patients with EMCs. It the hospital is unable to stabilize the patient within its capabilities, or if the patient requests, an appropriate transfer can be implemented" (Centers for Medicare & Medicaid Services, 2020).

The costs of implementing a change project in healthcare organization can be the largest challenge to implementing any change project. Nothing is free, especially in healthcare. There are always known and hidden costs in every project. Other costs might be found in repurposing space for patient treatment by the mid-level provider. Finally, hidden costs might be found in seeking administrative and corporate approval of the project, as well as training staff in the proposed changes could also be an anticipated cost to implementation.

No additional resources will be needed for this change project other than staff (nurses and midlevel providers), and space for examination treatment. All other needed equipment needed for this change project is already available in the ED. Due to the fact that implementing this change project only involves adding additional staff (nurses and mid-level providers), the risk of a major loss in money is minimal. However, if the program is successful, and patient satisfaction and outcomes increase the hospital could experience an increase in reimbursement and an increase in returning satisfied customers.

Collectively, the healthcare system in the United States is a multi-trillion-dollar industry. Our patients are consumers and much like other industries, they have expectations that need to meet or they will seek care elsewhere and business will suffer. This project seeks to understand how factors such as patient flow and nurse staffing can be better employed to have a positive

impact on patient satisfaction and outcomes. If this can be accomplished, everyone wins as the old saying goes.

8. Project Overall Discussion of Evaluation Results

There are multiple internal and external factors that can contribute to overcrowding in the ER. One major contributor to overcrowding in the ER is low-acuity, non-emergency patients who seek treatment in the ER. The patients with non-emergent conditions frequently tie up resources and personnel, and could easily be screened-out to a clinic, or seen by an advanced practice provider such as a physician assistant (PA), or nurse practitioner (NP).

Success for this project would include: increased patient satisfaction and outcomes, increased staff job satisfaction, decreased patient wait times, decreased patient LOS, decreased LWOBS, decreased door-to-provider time, and increased Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey results. "Patients continue to expect competent, safe, and quality care, and in addition, also desire a higher level of 'service'. Safe, quality care has been quantified using three type of indicators: clinical outcomes, cost-effectiveness, and service delivery" (Gurney, et. al, 2014). One of the greatest strengths of this project is, if these benchmarks are met, it could mean significant increases in financial reimbursement for a hospital, which could lead to better as well as more services being offered by the hospital.

Conclusion and Recommendations

Many times, the ED is an individual's first time to enter the hospital as either a patient, family member, guest, or friend of a patient. Regardless if the visit is a true emergency or a non-

urgent condition, the patient felt the need to seek treatment at the ED. In the age in which almost every individual has a 'smart' cell phone that contains a high-quality camera, video recorder, and internet access, as well as an age of massive social media platforms whereby the perception of your institution can be negatively impacted in a matter of minutes by one or more negative patient experiences, hospital administrators should pay close attention to ED patient satisfaction. Ultimately, a hospital is a business, and the ED is a major part of that business. As such it must pay “more attention to reforming the delivery mechanisms that are so crucial for health care systems’ overall performance” (Denis, 2012, p. 633).

Each ER should take time to identify frequent and high-volume ER users and make attempts to educate them and find primary care for those individuals as another way of reducing ER patient volume. Finally, every ER has different challenges and issues such as physical space, lack of financial support, staffing difficulties etc., that must be overcome in order to effect positive change in their environment. However, it is recommended that ER staff and managers attempt to identify small, simple inexpensive areas of their respective ER and take advantage of the opportunity to make positive changes. Then build upon the successes, or learn from any mistakes made, and try again. A good tool to utilize in working through a change project would be the steps outlined in the Lean Six Sigma program, and adapt them to your specific department as applicable.

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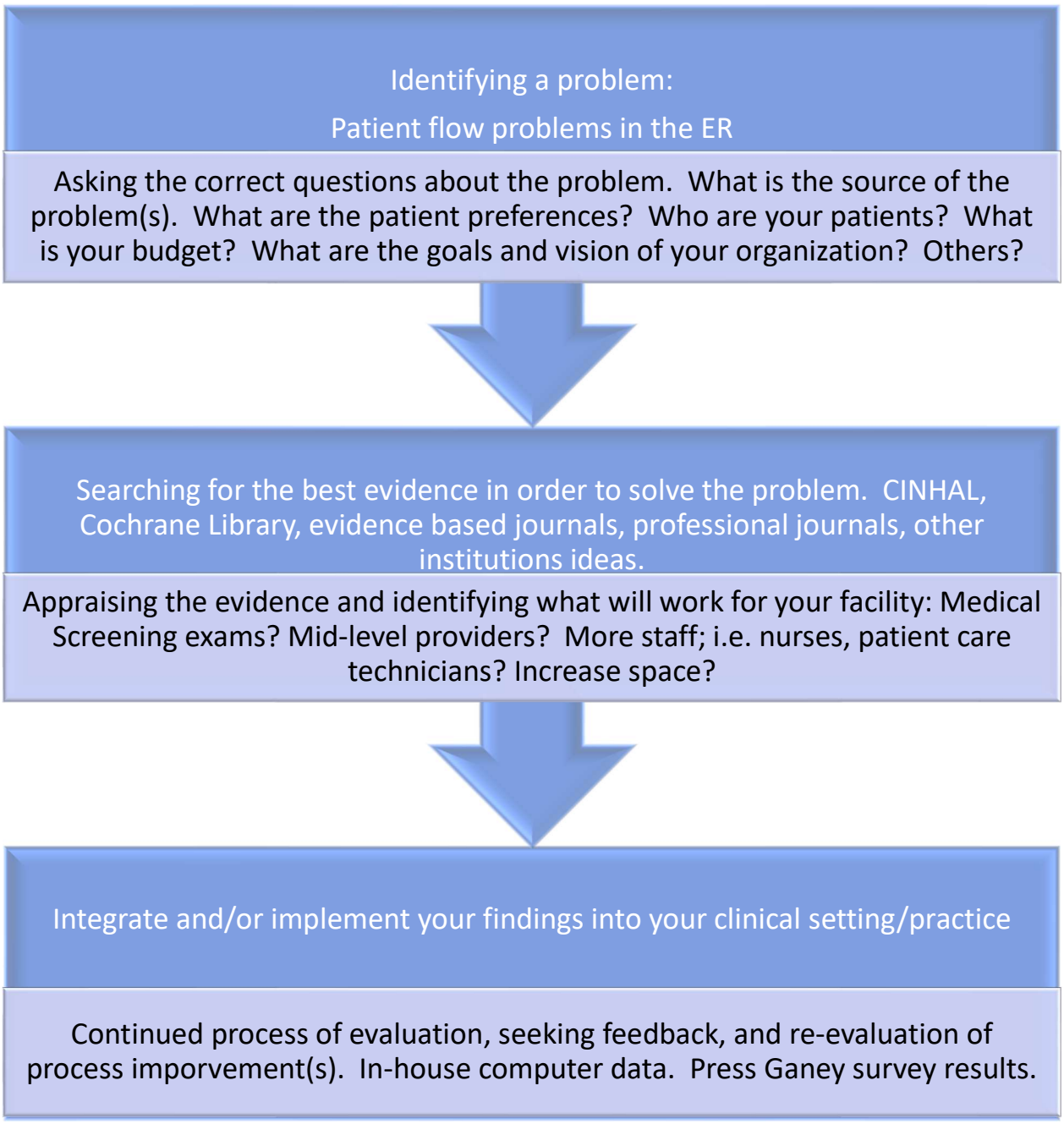
Appendix

Legend:

APP	Advanced Practice Provider
DTP	Door to Provide
ED:	Emergency Department (used interchangeably with ER)
EMS:	Emergency Medical Service - ambulance
ER:	Emergency Room (used interchangeably with ED)
ESI	Emergency Severity Index, triage level that ranges from a score of 1-5, where 1 is the most severe patient requiring the the most recourses, and 5 is the least, requiring the least number of resources.
FT	Fast Track: an area of the ER for patients with non-life-threatening medical conditions, assigned ESI level of 4 or 5.
LOS:	Length of Stay, also referred to as LOSDep in some studies
LVN:	Licensed Vocational Nurse
LWBS:	Left Without Being Seen
NP	Nurse Practitioner
PA	Physician Assistant
PIA	Physician Initial Assessment
RME	Rapid Medical Evaluation
RN	Registered Nurse
TR	Treat and Release time
VBP	Value Based Performance
VS	Vital signs

Flowchart:


Identifying a problem:
Patient flow problems in the ER
Asking the correct questions about the problem. What is the source of the problem(s). What are the patient preferences? Who are your patients? What is your budget? What are the goals and vision of your organization? Others?
Searching for the best evidence in order to solve the problem. CINHAL, Cochrane Library, evidence based journals, professional journals, other institutions ideas.
Appraising the evidence and identifying what will work for your facility: Medical Screening exams? Mid-level providers? More staff; i.e. nurses, patient care technicians? Increase space?
Integrate and/or implement your findings into your clinical setting/practice
Continued process of evaluation, seeking feedback, and re-evaluation of process imporvement(s). In-house computer data. Press Ganey survey results.