

Implementation of a High-Risk Alcoholism Relapse Scale Post-Liver Transplantation

by

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Abstract

Background: Transplantation will reverse the complications of end-stage liver disease, but it does not treat underlying alcoholism or reduce the risk of relapse after transplant.

Local Problem: In the United States, relapse rates are 20-50% among liver transplant recipients. Relapse after transplant has been identified as a problem among liver transplant recipients at a large urban academic transplant center. The purpose of this quality improvement project was to implement and evaluate the effectiveness of a High-Risk Alcoholism Relapse scale to screen and identify patients at high-risk for alcohol relapse post-transplant.

Interventions: The scale was used to screen new adult liver transplant recipients prior to hospital discharge. The scale is a predictive tool designed to determine severity of alcoholism and risk of relapse after transplantation. The scale consists of three variables identified as having the highest predictive power for early relapse, including daily number of drinks, history of previous inpatient treatment for alcoholism, and the number of years of heavy drinking.

Results: Descriptive statistics revealed 33 patients were screened with the scale. Forty percent of patients ($n=13$) were identified as being a high-risk for relapse and 60% low-risk ($n=20$). Fifty-four percent reported drinking nine to 17 drinks per day, and zero patients consumed fewer than nine drinks per day. Fifty-four percent reported drinking more than 25 years. One third of high-risk patients received inpatient treatment for alcoholism at least once.

Conclusions: Early identification and close monitoring of alcohol relapse is an essential determinant of long-term outcomes after liver transplantation. Findings validate the effectiveness of the scale to screen and identify patients at high-risk for post-transplant relapse. Results support the scale as a more efficient method to identify heavy alcohol use than other screening methods. Recommendations for future studies include performing a follow-up study to compare HRAR results with relapse rates, and modifying the scale to appropriately capture and identify young adults at high-risk for relapse after transplant. Recommendations to help maintain post-transplant sobriety include starting a transplant support group within the organization for all high-risk patients.

Keywords: Alcoholism, liver transplant, quality improvement, relapse

Implementation of a High-Risk Alcoholism Relapse Scale Post-Liver Transplantation

Background and Overview

Alcoholism is the leading cause of liver-related mortality worldwide (Marroni, 2015). According to the World Health Organization [WHO] (2018), three million global deaths each year are due to alcohol abuse. The effects of alcoholism can cause irreversible liver damage, liver cirrhosis and subsequent liver failure. Liver transplantation is considered the only curative treatment for patients with end-stage liver disease (ESLD) because chronic liver damage is irreversible. The United States Department of Health and Human Services (2019) estimated 25% of patients on the national liver transplant waiting list experienced liver failure due to heavy alcohol use. Liver transplantation will reverse the complications of ESLD, but it does not treat underlying alcoholism or reduce the risk of relapse after transplant (Marroni, 2015). Alcohol relapse after transplant occurs in 20-50% of patients, and increases the risk for recurrent cirrhosis, organ rejection, graft failure and death (Lim, Curry, & Sundaram, 2017). Assessing the likelihood of relapse after transplant is a challenge for many transplant centers (Onishi et al., 2017). According to Boniface, Kneale, and Shelton (2014) patients underreport or do not fully disclose their drinking history. Oftentimes, degree of alcohol use is not fully disclosed due to fear of not being a candidate for transplantation. Heavier drinkers are frequently the ones underreporting, which further complicates provider assessment.

Approximately 20% of liver transplant recipients at a large urban academic transplant center reported high rates of alcohol use after transplantation (Sacco et al., 2018). These patients often have poor support systems, low socioeconomic status, psychiatric disorders, concurrent substance abuse, history of incarceration, nicotine dependence and a long history of alcoholism. Given the potential for relapse after transplant, ethical concerns over allocation of a liver

transplant to an alcoholic patient remains a controversial issue for this population (Ursic-Bedoya, Faure, Donnadieu-Rigole, & Pageaux, 2015). In comparison to patients who were transplanted from other causes of liver disease, individuals with alcoholism have significant survival rates after transplantation, provided they are capable of maintaining sobriety (Lim et al., 2017). Multiple risk factors have been identified as predictors for relapse after transplant. Having one risk factor increases the risk of relapse to 20%, whereas having two or three risk factors combined increases the risk of relapse to 60% (Rustad, Stern, Prabhakar, & Musselman, 2015). Risk factors include a family history of alcoholism, prior inpatient alcohol treatment, duration of pretransplant sobriety, years of heavy drinking, non-acceptance of having an alcohol problem and a high relapse score on a standardized High-Risk Alcoholism Relapse (HRAR) scale (Marroni, 2015).

The purpose of this Doctor of Nursing Practice (DNP) quality improvement (QI) project was to implement and evaluate the effectiveness of a HRAR scale to screen risk of relapse after liver transplantation. The short-term goals were to implement the HRAR scale among liver transplant recipients, as well as to identify and document the number of patients at high-risk for relapse. Long-term goals were to promote the identification of all high-risk patients and reduce the rate of alcohol relapse after transplantation in order to help maintain post-transplant sobriety.

The HRAR scale is a predictive tool designed to determine severity of alcoholism and risk of relapse after transplant. To develop the scale, Yates, Booth, Reed, Brown and Masterson (1991) studied relapse rates among United States (U.S.) veterans after having received inpatient alcohol treatment. Three variables were identified as having the highest predictive power for early relapse, including the daily number of drinks, a history of previous inpatient alcohol treatment and the years of heavy drinking. The simplicity of the tool permits ease of use by

providers and facilitates application in different healthcare settings, including inpatient and outpatient environments (Zhou, Wagner, Diflo, & Naegle, 2015). A standardized clinical screening tool can assist providers at a large Mid Atlantic liver transplant center to better identify patients at risk for alcohol relapse after liver transplantation.

Prior to the implementation of the HRAR scale, the transplant center in this project did not utilize a structured screening tool to help guide questions related to the individuals' drinking history, or in identifying patients at high-risk for relapsing after transplant. Integration of a structured clinical tool, such as the HRAR scale, would provide a focused assessment of the drinking history to better assist the interprofessional team to identify high-risk patients. Targeted interventions such as addiction counseling, attendance to Alcoholics Anonymous (AA) or other support groups, pharmacological treatment and a structured post-transplant management plan, could be implemented to help maintain post-transplant sobriety once an individual is identified as being a high-risk for relapse.

The transplant center in this project, like many other transplant centers, rely on an interprofessional transplant team throughout the pre and post-transplant process. The interprofessional team consist of transplant specialists, surgeons, advanced practice providers, coordinators, social workers, dietitians and pharmacists. Despite maintaining independent roles and professions, the interprofessional team work together to collectively provide patient-centered care. They help manage the psychosocial, medical and emotional needs of the patients throughout the transplant continuum. During the pre-transplant process, an initial comprehensive medical and psychosocial evaluation is conducted by the interprofessional transplant team to determine if the patient is a good candidate for transplantation. Duration of pretransplant sobriety is part of the psychosocial evaluation, however, it is not an exclusion for

transplantation. A transplant candidate may remain on the national transplant waiting list for several years before receiving a transplant. During the intra-transplant process, advanced practice providers, nurses and coordinators provide inpatient care seven days a week, and work together to help the new transplant recipient discharge home and transition to post-transplant care.

Advanced practice specialists, coordinators, pharmacists, social workers and nutritionists provide lifelong post-transplant management. During the post-transplant phase, new transplant recipients are routinely evaluated and prompt referrals are made to mental health or substance abuse specialists if alcohol use is suspected or relapse reported.

Theoretical Framework

The Plan-Do-Study-Act (PDSA) cycle is a model for continual process improvement and provided a good framework for implementation of the proposed DNP project (Figure 1).

According to the Institute for Healthcare Improvement (2018), the PDSA model originated in 1939 when Walter Shewart developed the Shewart Cycle for process improvement. In the 1950s, William Deming determined that business production processes should be in a continuous cyclical loop so that administrators could identify and modify parts of the process that needed improvement. Deming described the cycle as being “A flow diagram for learning, and for improvement of a product or a process” (Moen, 2009, p. 7). Deming modified the cycle several times until its completion in 1994 after three questions were added to supplement the cycle.

The PDSA model has two separate components which include the PDSA cycle and three fundamental questions for process improvement. Application of the PDSA model was centered around three questions: what were we trying to accomplish; how would we know that a change was an improvement; and what change could we make that would result in an improvement? The first question established an aim and identified the problem. The second question identified

measurable outcomes and goals, which helped determine if the changes were improvements. The third question identified the intervention.

The second component in the model was the PDSA cycle which consisted of four phases. The plan phase listed action steps, roles, responsibilities and established a timeline. The do phase allowed the plan to be implemented and data to be collected. The study phase evaluated data, results and determined if the changes resulted in expected outcomes. The final step, the act phase, described changes that needed to be made to plan for the next cycle. A significant advantage of the PDSA model is the ability to repeat the cycle until desired outcomes are achieved and successfully sustained over time. This framework helped direct the steps needed to appropriately identify patients at high-risk for relapse after transplant.

Framework Application

The PDSA model was chosen for this DNP project because it provided a structured framework for implementation of the HRAR scale. First, the problem of a high rate of alcohol relapse among liver transplant recipients was identified. Then, a plan was made to identify all patients at high-risk for relapse at a large urban academic liver transplant center. After reviewing the evidence-based literature, an opportunity for improvement in the post-transplant psychosocial evaluation process was identified. It was determined that integration of the HRAR scale, a structured clinical screening tool, would be utilized to guide the drinking history portion of the evaluation. A decision was made to use the HRAR scale to determine severity of alcoholism and risk of relapse in patients after liver transplantation.

The PDSA cycle began with the plan phase, where the project leader developed a timeline for the project and established an interprofessional team of transplant social workers and managers that would be involved in the implementation process. The team received one-on-one

education on the use of the HRAR scale and reviewed the project goals and timeline. Roles and responsibilities were identified and defined for each team member. A project check sheet was developed to assist in data collection of patient gender, total HRAR score, high or low-risk for relapse, and scores for each variable on the scale, including years of heavy drinking, number of drinks per day and number of inpatient treatments for alcoholism (Table 1). The project leader met with Information Technology (IT) personnel to coordinate the additions of the HRAR scale to the “Transplant Discharge Phase Assessment Note”, located in the electronic medical record (EMR) (Figure 2). During the do phase of the PDSA cycle, the HRAR scale was implemented. Chart audits were performed once a week during 13 weeks to evaluate staff compliance in using the HRAR scale, to determine if the scale was appropriately used and if high-risk patients were properly identified. For the study phase, findings were analyzed and summarized to determine if the expected outcomes were achieved, and to identify barriers and facilitators to implementation. During the act phase, necessary changes were made to the process to successfully implement the HRAR scale into practice, e.g., data collection was extended by two weeks to ensure a larger sample size, and potential weekend discharges were screened with the HRAR scale on Fridays to capture all new transplant discharges.

Literature Review

The focus of this literature review was to identify an evidence-based screening tool to detect patients at high-risk for alcohol relapse after liver transplantation. The review began broadly with evidence supporting the risk factors associated with alcohol relapse after transplant. The discussion was followed by a review of the use of screening tools to help predict alcohol relapse after transplant. Finally, the review concluded with current evidence regarding the use of the HRAR scale to improve early identification of patients at risk of relapsing after transplant.

A retrospective study conducted by Sacco et al. (2018), studied risk factors in 67 liver transplant recipients in the U.S. Four main variables were identified as risk factors, including tobacco dependence (75%), prior drug use (61%), co-occurring psychiatric disorders (30%), and duration of sobriety (mean was 26 years). Thirty-four percent of patients reported having less than six months sobriety pre-transplant, and a total of 21% of patients relapsed. This was a retrospective cohort design relying on self-reported behaviors. One hundred and two cases were evaluated for transplant in Japan by Onishi et al. (2017). Five psychosocial variables were identified as risk factors for post-transplant relapse, indicating a longer, more severe drinking history. The variables included psychiatric comorbidity, poor social support, unemployment, high score on the HRAR scale and a history of noncompliance with medical treatment. Strengths to the study were a long-term retrospective data collection period and the use of a validated screening tool to identify relapse risk post-transplant. A retrospective study by Rodrigue, Hanto, and Curry (2013) utilized a clinical screening tool to predict relapse risk as well as psychosocial risk factors for post-transplant relapse. One-hundred and eighteen patients were screened at a transplant center in the U.S., and the screening tool correctly identified 34 of 39 patients whom they predicted would relapse. The tool had a positive predictive value of 87%. In addition, nine reliable predictors for relapse were identified, including no prior history of liver cancer, tobacco dependence, continued alcohol use despite diagnosis of liver disease, lack of motivation to receive treatment for alcoholism, poor stress management skills, no prior history of inpatient alcohol rehabilitation, poor social support, lack of behavioral consequences, and continued engagement in social activities where alcohol was present. Despite there being variations in risk factors, the authors determined psychosocial variables coexisted with alcoholism and increased the likelihood of relapse. Duration and severity of drinking history was the most common risk

factors, followed by lack of social support, presence of psychiatric comorbidities and tobacco dependence. Strengths to this study were a highly predictive clinical screening tool for identifying risk of relapse after transplant and a long retrospective data collection timeframe.

Wigg, Mangira, Chen, and Woodman (2017) studied outcomes and predictors of harmful relapse after transplantation among 87 patients in Australia. This retrospective review utilized a combination of 21 variables, as well as a predictive diagnostic risk assessment by an addiction psychiatrist or social worker, to evaluate risk of relapse. Twenty-one percent relapsed and 16% were identified as being a high-risk for relapse. Findings revealed poor diagnostic accuracy of providers to predict harmful relapse. A validated screening tool was found to be a more efficient screening method than expert opinion alone when identifying patients at risk for relapse.

Strengths to the study were a long follow-up period and detailed statistical analysis of multiple clinical risk factors. Limitations to this study were a retrospective study of a single transplant center. A systematic review of 113 qualitative and descriptive articles by Parker, Armstrong, Corbett, Day, and Neuberger (2013) recommended using a standardized tool to routinely evaluate transplant candidates and recipients, rather than relying solely on self-reporting or family disclosure. The studies in the review were from the U.S. and Europe. Results emphasize the importance of integrating a structured risk assessment tool to identify risk of relapse in transplant patients.

Altamirano et al. (2016) performed a retrospective cohort study, and evaluated 142 hospitalized patients who were recently diagnosed with alcoholic hepatitis in Barcelona, Spain. Upon admission to the hospital, the HRAR scale was used as a predictive variable for relapse. Findings correctly identified 60% of patients who later relapsed, based on high scores on the HRAR scale. A limitation of this study was a retrospective design; however, the study included

high quality evidence and the use of a validated screening tool to identify risk of relapse post-transplant. Rustad et al. (2015) performed a systematic review of 71 articles and recognized the effectiveness of the HRAR scale when identifying patients more vulnerable to relapse. The HRAR scale was particularly useful when combined with a psychosocial evaluation by healthcare providers.

A quality improvement initiative by Zhou et al. (2015), utilized the HRAR scale to determine risk of relapse in 35 patients at a post-transplant liver clinic in a single transplant center in the U.S. Four patients (11%) were identified as high-risk for relapse, and six patients (17%) relapsed. A strength to the study was the use of a clinical screening tool to identify relapse risk.

The literature review validated the effectiveness of utilizing a HRAR scale to identify patients at high-risk for relapse after transplant. Despite there being variations among various risk factors, psychosocial variables coexist with alcoholism and increases the likelihood of relapse. Several screening methods were utilized to document risk of relapse, including a professional evaluation from a specialist, a structured clinical interview and clinical screening tools. The HRAR scale, however, was found to be the most reliable screening method for identifying relapse risk, particularly when used in combination with a comprehensive psychosocial clinical assessment.

Project Implementation

Description of Project

A QI project that focused on identifying patients at high-risk for alcohol relapse after transplantation was implemented among liver transplant recipients during the fall of 2018 at a high-volume urban academic transplant center. Inclusion criteria for the population was patients

18 years and older who were newly transplanted and discharged from the hospital during the 13-week implementation phase. Exclusion criteria was patients younger than 18 years and any liver transplant recipients who were readmitted to the hospital during the 13 weeks. Total 33 of 35 patients were within the inclusion criteria and screened with the HRAR scale during the implementation phase.

Procedures and Timeline

The QI project took place over 16 weeks starting August 27 to December 15, 2018. The first week (August 27 to September 1, 2018) the education and training phase was begun; weeks two and three (September 2 to 15, 2018) the trial implementation phase was initiated; and weeks four to sixteen (September 16 to December 15, 2018) was the full implementation phase.

During the education phase, the project leader provided an hour-long educational session for two liver transplant social workers. An informational handout was provided as part of the training session (Appendix A). The educational session reviewed the process of identifying high-risk patients using the HRAR scale as well as the project timeline and goals. The project leader also demonstrated how to navigate the EMR to appropriately document HRAR scores in the “Transplant Discharge Phase Assessment Note” (Figure 2). In addition, the project leader met with transplant coordinators and was added to the daily discharge email. The email was a summary of potential liver transplant discharges for the day and included a list of patients who were recently discharged and required a 24-hour follow-up call. Emails were sent to the interprofessional transplant team by the inpatient transplant coordinators every Monday to Friday. Friday emails included all potential weekend discharges. Emails were reviewed once a week by the project leader to capture all hospital discharges for the week. In preparation, a project check sheet was developed to assist with data collection (Table 1).

Weeks two and three were the trial implementation phase (September 2 to 15, 2018). Liver transplant social workers used the HRAR tool to screen for risk of relapse post-transplant. At the end of each week the project leader met with the social workers to receive feedback and to discuss challenges and facilitators to implementation. The project leader performed chart audits once a week to collect data and to monitor staff compliance in using the HRAR scale. Data included patients who were screened with the HRAR scale during the two weeks of the project's trial implementation phase.

The implementation phase occurred during weeks four to sixteen (September 16 to December 15, 2018). During the 13 weeks, social workers continued to screen all new liver transplant recipients with the HRAR scale prior to hospital discharge, and responses were documented directly in the EMR. The project leader maintained weekly meetings with the social workers and performed weekly chart audits to monitor staff compliance and for data collection. Drink of choice and alcohol content were verified for each patient to ensure accuracy of results. Data was independently verified by comparing HRAR scores and preexisting data from the EMR, including substance abuse notes and pretransplant psychosocial evaluation notes. Results were documented in the project check sheet (Table 1).

Data Collection

The HRAR scale was used by the liver transplant social workers on an inpatient transplant unit to assess severity of alcoholism and risk of relapse after transplant. Weekly chart audits were completed to collect patient data and to assess staff compliance. These included patient gender, total HRAR score, high or low-risk for relapse, and scores for each variable on the scale, including years of heavy drinking, number of drinks per day, and number of inpatient treatments for alcoholism. Data was documented in the project check sheet (Table 1).

Measures to Protect Human Subjects & IRB Approval

This DNP project was a QI project and falls within the standard of care and aimed to maximize benefits to human subjects. There were no associated risks or possible harm to human subjects. Patient data was stored in a password protected computer, and no personal identifiers or private information were collected. A project description was submitted to the organization's Institutional Review Board (IRB) for a Non-Human Subjects Research (NHSR) determination. Approval for the project was obtained by the transplant organization and the IRB committee.

Results

The effectiveness of the HRAR scale was determined by analyzing the data. A report was generated by the DNP project leader for data coding. Coded data were entered into Microsoft Excel and analyzed through descriptive statistics. Data analysis included the mean, standard deviation, intercorrelation of variables, and percentage of patients identified as high-risk (0). During 13 weeks, a total of 35 patients with ESLD received a liver transplant and were discharged from the hospital, 33 of which were screened with the HRAR scale. Two patients were not captured by the HRAR because they were discharged on the weekend, therefore, they were excluded from the study. Corrective measures were made and all potential weekend discharges were screened on Fridays. This practice change resulted in 100% staff compliance in using the HRAR scale during the 13 weeks of implementation (Figure 3). As demonstrated in Table 3, the scale consists of three variables identified as daily number of drinks, history of previous inpatient treatment and years of heavy drinking (Yates et al., 1991). A zero to two ordinal score was ranked for each variable, and the total score ranged from zero to six. High-risk scores were between three to six (Zhou et al., 2015). Findings revealed 40% of patients ($n=13$) were identified as being a high-risk for relapse, whereas 60% were identified as low-risk ($n=20$)

(Figure 4). For the low-risk patients, 75% ($n=15$) scored zero on the scale and 25% ($n=5$) scored one or two, indicating a moderate-risk for relapse, however, they were excluded from the sample as they were not identified as being a high-risk for relapse. For the high-risk patients, 77% ($n=10$) were male and 23% ($n=3$) were female (Figure 5). The daily number of drinks were determined by alcohol content (one drink = 12g of ethanol) and number of drinks per day. Fifty-four percent of patients reported consuming nine to 17 drinks per day, 46% consumed more than 17 drinks per day, and 0% reported drinking less than nine drinks per day (Figure 6). For the years of heavy drinking, 54% reported drinking more than 25 years, 39% reported drinking 11 to 25 years, and 7% reported drinking less than 11 years (Figure 7). For the number of inpatient treatments for alcoholism, 46% reported never receiving inpatient treatment, 39% received treatment one time, and 15% receiving treatment more than once (Figure 8).

Discussion

This QI project provided initial support regarding the feasibility of implementing a HRAR scale to screen and identify patients at high-risk for alcohol relapse after liver transplantation. The desired short-term goals of screening 100% of new liver transplant recipients and identifying high-risk patients were achieved. The three variables that comprise the HRAR scale were consistent in delineating between high and low-risk by identifying heavy alcohol use pretransplant. Although the project had a small sample size and limited to one transplant center, relapse rates after transplantation bear similarities to literature findings reported by Sacco et al. (2018), Rodrigue et al. (2013) and Wigg et al. (2017), where high relapse risk was identified in almost half of the patients screened with the HRAR scale. Similarly to studies reported by Wigg et al. (2017), Zhou et al. (2015) and Onishi et al. (2017), the combination of the HRAR scale and an evaluation by social workers to assess for additional

psychosocial risk factors, was found to be the most reliable and efficient screening methods for identifying relapse risk post-transplant. Findings reported by Rustad et al. (2017) validated the usefulness of the HRAR scale in the pre-transplant setting, and this project demonstrated the feasibility of implementing the scale among post-transplant patients.

The PDSA framework allowed steps in the implementation process to be repeated until desired outcomes were achieved and long-term sustainability accomplished. This DNP project resulted in the standardization of the HRAR scale to screen all new liver transplant recipients, as well as the identification of all patients at high-risk for alcohol relapse after transplant.

Facilitators to implementation were minimal resistance conversations from transplant staff, a small number of team members to educate and train, and simplicity of the screening tool and ease of use by team members. Senior leaders and project mentor were present throughout the project development and helped facilitate the process change. No unintended failures occurred because of this project, and its success was highly due to supportive and committed team members. No unforeseen costs occurred during the implementation. Efforts to help high-risk patients maintain post-transplant sobriety resulted in an unexpected benefit. Due to the implementation of this project, the institution is starting a post-transplant support group for all high-risk patients.

Conclusion

Early identification and close monitoring of alcohol relapse is an essential determinant of long-term outcomes after liver transplantation. Priority should be on post-transplant management of the addictive disorder rather than pretransplant abstinence (Berlakovich, 2014). These findings were consistent with the project's long-term goal to improve long-term outcomes after transplantation by maintaining post-transplant sobriety. Results from this QI project

validate the effectiveness of the HRAR scale to screen and identify patients at high-risk for post-transplant relapse. Recommendations for future studies include performing a follow-up study to compare HRAR results with relapse rates, and modifying the scale to appropriately capture and identify young adults at high-risk for relapse after transplant. Recommendations to help maintain post-transplant sobriety and project sustainability include starting a transplant support group within the organization for all high-risk patients, and dissemination at regional, national and international conferences as well as abstract and journal publication.

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Table 2. Descriptive Statistics Summary Table for High-Risk Patients ($n=13$)

Variable	Count	%	Mean	Mode	Standard Deviation	Min	Max
Gender							
Male	10	77%					
Female	3	23%					
High-Risk HRAR Scores			3.62	3	1.0	3	6
3	8	61%					
4	3	23%					
5	1	8%					
6	1	8%					
Years of heavy drinking			11-25	>25	0.66	<11	>25
<11	1	7%					
11-25	5	39%					
>25	7	54%					
Daily number of drinks			>17	9-17	0.52	9-17	>17
<9	0	0%					
9-17	7	54%					
>17	6	46%					
Number of Prior Inpatient Treatment for Alcoholism			1	0	0.75	0	2
0	6	46%					
1	5	39%					
2	2	15%					
Risk for Relapse*							
Low-Risk	20	60%					
High-Risk	13	40%					

Note: *The variable for risk of relapse includes the total number of patients in the study sample ($n=33$). All other variables only include high-risk patients ($n=13$).

Table 3. High-Risk Alcoholism Relapse Scale

Item	Score
Duration of heavy drinking in years	
<11	0
11-25	1
>25	2
Daily number of drinks	
<9	0
9-17	1
>17	2
Prior number of inpatient treatments for alcoholism	
0	0
1	1
>1	2

Note: 1 drink = 12g of ethanol

Figure 1. The Plan-Do-Study-Act Cycle

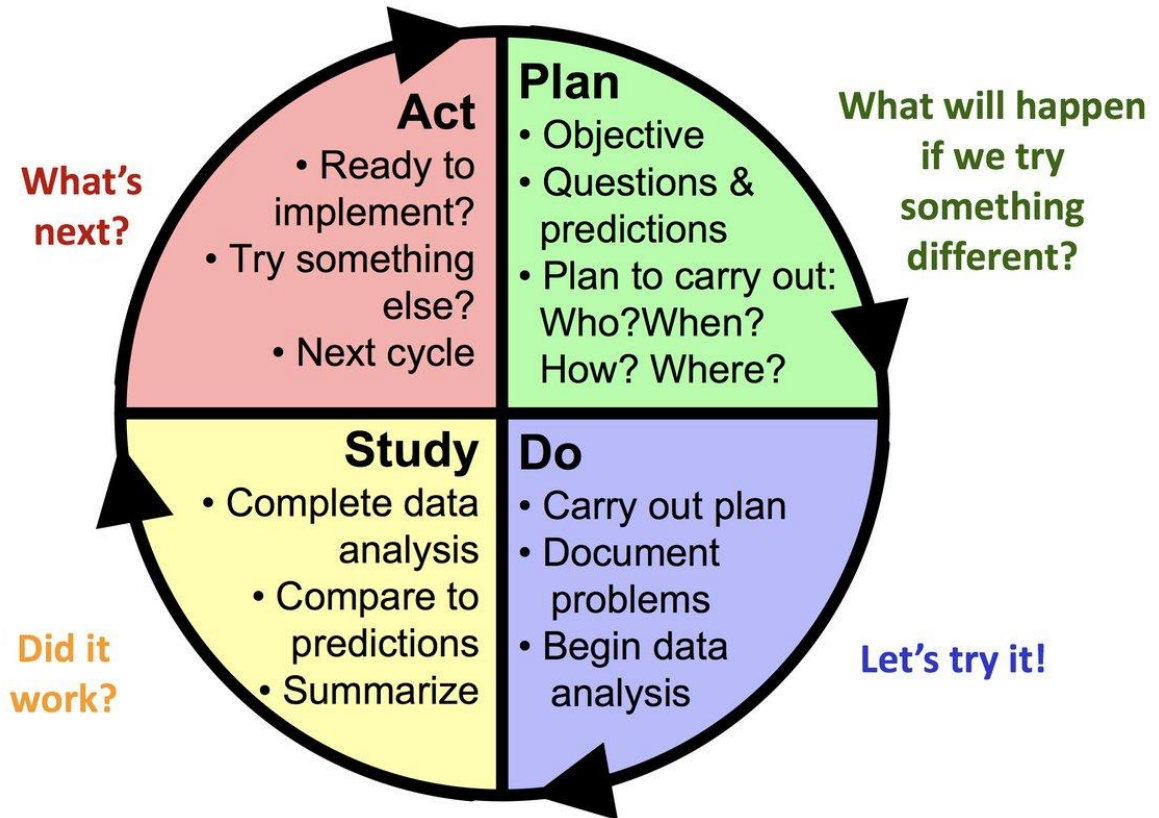


Figure 1. The Plan-Do-Study-Act Cycle for process improvement was used as the framework for this DNP quality improvement project (Institute for Healthcare Improvement, 2018)

Figure 2. Transplant Discharge Phase Assessment Note

SmartPhrase Editor

Name:

Content | Owners & Users | Synonyms ☑ Rich text (bold, italics, etc.)

⚠ Do not include PHI or patient-specific data in SmartPhrases.

★ | **B** | + | abc | ↶ | ? | + Insert SmartText | 📄 | ↶ | ↷ | ☰

1 2 3 4 5 6 7 8

Transplant Discharge Phase Assessment Note

I am acting in the capacity of an Independent Living Donor Advocate {Yes/No:21047}

Post-Transplant Lifestyle:

Recipient competency/Understanding Regarding Transplant D/C Treatment Plan:

Ability to Adhere to Treatment Protocol:

Psychosocial Readiness for Discharge:

High-Risk Alcoholism Relapse Scale:

Item	Score	Comments

Figure 2. Liver transplant social workers are required by institutional policy to meet with each new liver transplant recipient prior to hospital discharge. The HRAR scale was added to the social workers discharge note located in the Electronic Medical Record to facilitate compliance in using the scale

Figure 3. Compliance Rates for Completion of the High-Risk Alcoholism Relapse Scale

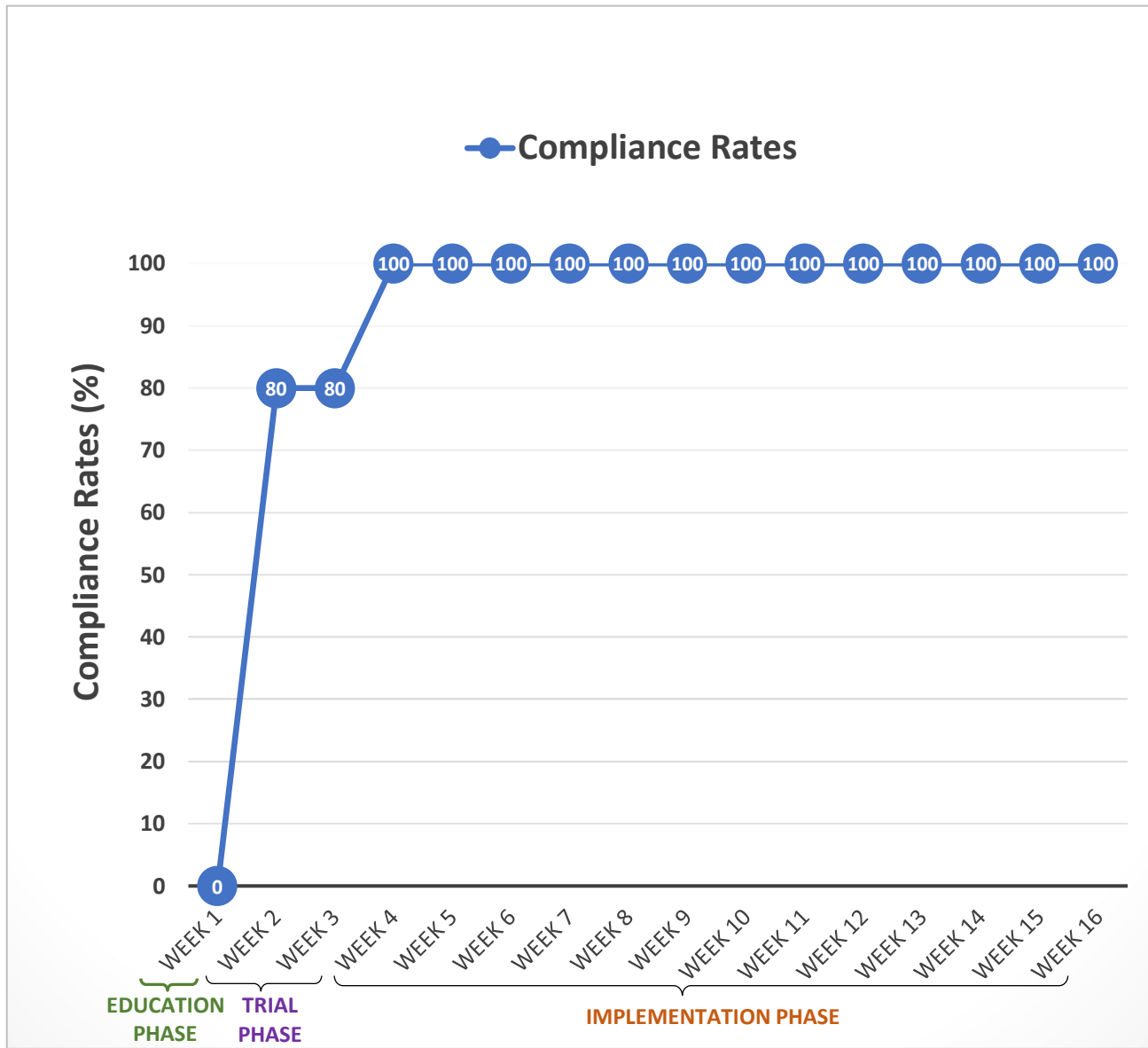


Figure 3. This figure shows weekly compliance rates (%) for completion of the HRAR scale by liver transplant social workers. During the 13-weeks of the implementation phase (weeks 4 to 16), the HRAR scale was used to screen all new liver transplant recipients for risk of post-transplant relapse

Figure 4. Total Percentage of Patients Identified as Low or High-Risk for Relapse

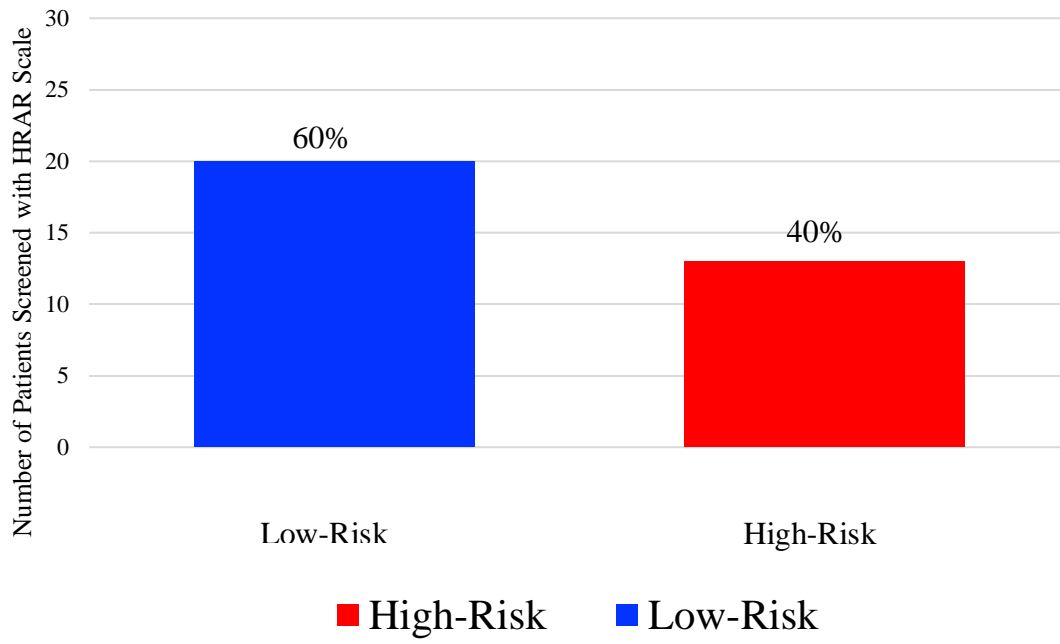


Figure 5. Gender for High-Risk Patients

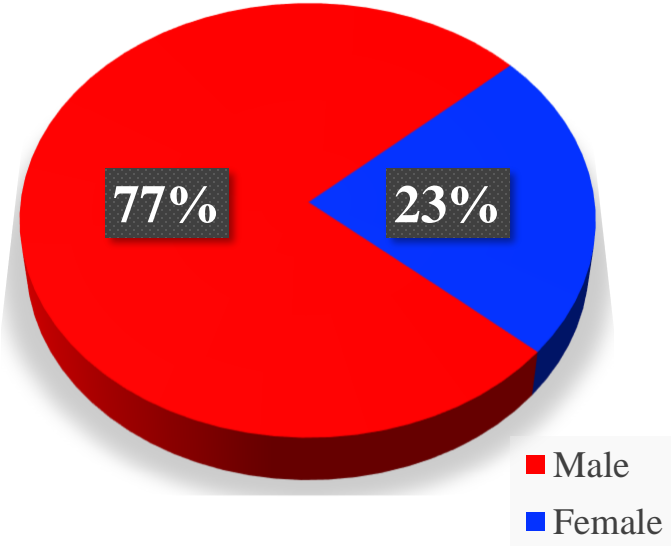


Figure 5. Gender for patients identified as being a high-risk for alcohol relapse post-transplant

Figure 6. Total Number of Alcoholic Drinks Consumed Daily Pre-Transplant

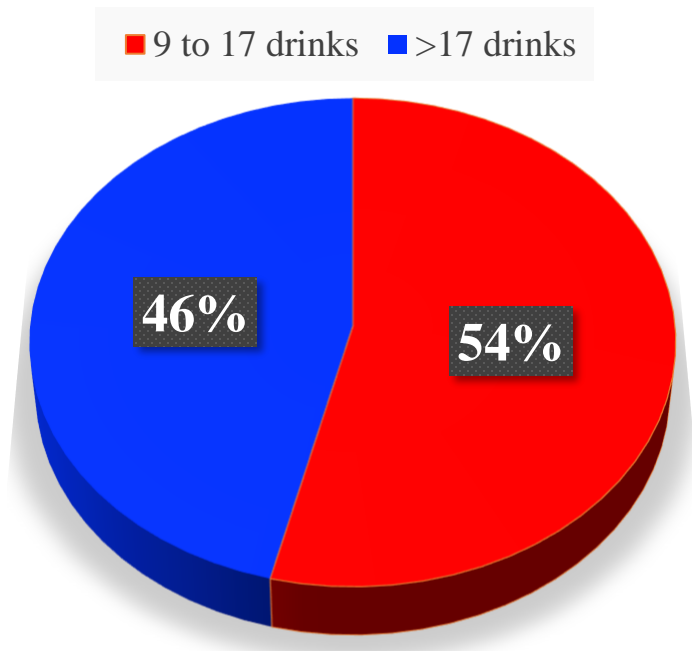


Figure 6. Zero patients reported drinking less than 9 drinks per day pre-transplant

Figure 7. The Total Number of Years Drinking Pre-Transplant

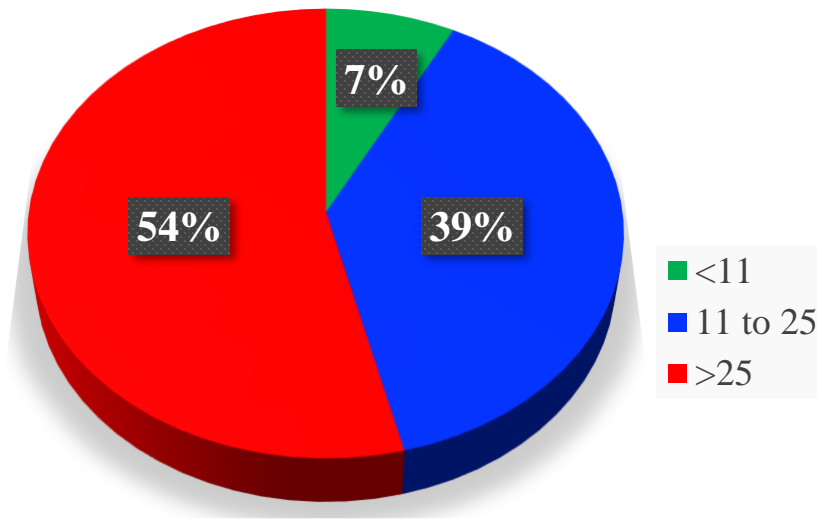


Figure 7. Number of years the patient has been consuming alcoholic drinks pre-transplant

Figure 8. Number of Inpatient Treatment for Alcoholism Pre-Transplant

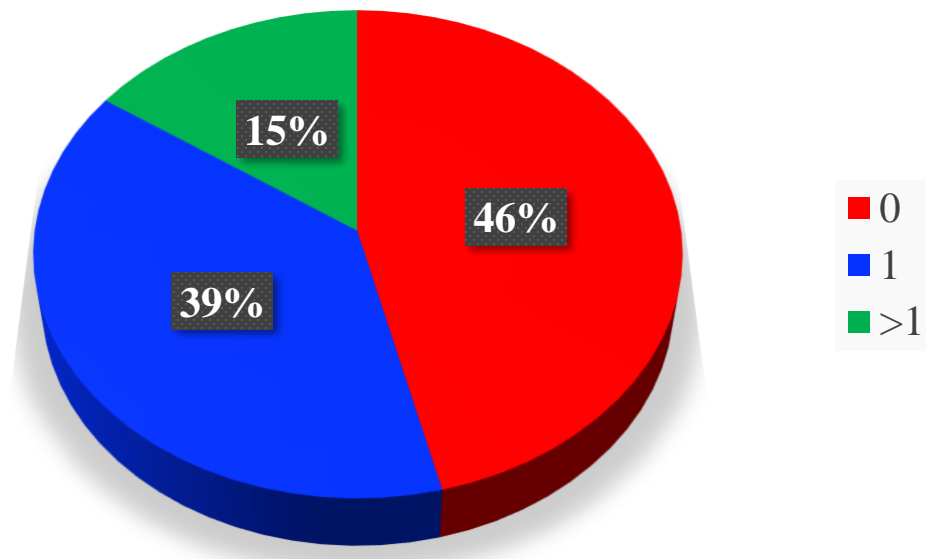


Figure 8. Number of times the patient was admitted to an inpatient institution for alcohol treatment pre-transplant. Higher values indicate a higher severity of alcoholism

Appendix A
Process for Utilizing the High-Risk Alcoholism Relapse Scale

1. Is the patient over the age of 18? If yes, proceed to #2.
2. Is the patient a new liver transplant recipient? If yes, proceed to #3.
3. Is the patient being discharged from the hospital? If yes, proceed to #4.
4. Ask the patient each question on the scale. Check the box that corresponds to the patient’s answer and score. For the daily number of drinks, check the box for drink preference.
5. If the total score is between 0 to 2, check the box for low-risk.
6. If the total score is between 3 to 6, check the box for **HIGH-RISK**.

High-Risk Alcoholism Relapse Scale:		
Item	Score	Comments
Duration of drinking (years) <input type="checkbox"/> ≤ 11 <input type="checkbox"/> 11 - 25 <input type="checkbox"/> ≥ 25	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2	
Daily number of drinks (*One drink = 12g of ethanol) <input type="checkbox"/> ≤ 9 <input type="checkbox"/> 9 - 17 <input type="checkbox"/> ≥ 17	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> Beer <input type="checkbox"/> Wine <input type="checkbox"/> Liquor
Prior number of alcoholism inpatient treatment <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> ≥ 1	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2	
Total Score: <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> Low Risk <input type="checkbox"/> High Risk		

Appendix B
Evidence Review Table

Author(s), year	Study Objective	Study Design	Sample Size	Outcomes Studied	Results	Level and Quality rating
Altamirano et al., 2016	To utilize the HRAR scale to assess its effectiveness in patients with alcoholic liver disease.	Retrospective Cohort Study	N= 142 patients with alcoholic liver disease	Clinical records, HRAR scale	Patients were screened with the HRAR scale upon admission to the hospital after being diagnosed with alcoholic liver disease. The HRAR scale effectively identified 60% of patients who showed higher scores on the scale and later relapsed.	IV A
Parker et al., 2013	To study alcohol and substance abuse in solid-organ transplant patients.	Retrospective Review	N=113	Chart review, AUDIT & CAGE questionnaire	Substance abuse and alcoholism is common among solid-organ transplant recipients. Screening patients with a structured standardized clinical tool to identify high-risk patients is important in order intervene early on.	V B
Onishi et al., 2017	To assess psychosocial risk factors in alcohol use after liver transplantation.	Retrospective Cohort Study	N= 102 with ALD referred for LT	HRAR scale & clinical records	Of 102 patients with ALD, 7 underwent LT. 14% of LT patients relapsed. Psychiatric comorbidity; HRAR >3 were main factors associated with relapse risk. The HRAR score is useful and effective when used in combination with other evaluation criteria.	IV A
Rodrigue et al., 2013	To develop a scoring system to classify risk of alcohol relapse after liver-transplantation.	Retrospective Medical Record Review	N= 118 transplant recipients	Alcohol Relapse Risk Assessment (ARRA)	Alcohol relapse rates are moderately high after LT. In this study 34% of patients relapsed. The ARRA is a screening tool for identifying patients with history of alcohol abuse at risk for relapse after LT.	IV B
Rustad et al., 2015	Identify factors that predict risk of relapse to alcohol or medication nonadherence following liver transplant in patients with alcoholic cirrhosis, and interventions used to address these factors.	Systematic Review of articles and prospective studies	N= 1,329 LT recipients reviewed in multiple studies	HRAR scale	Pre-transplant screening is an effective method of identifying patients at risk for alcohol relapse post-LT. Early targeted interventions help prevent relapse in these high-risk patients. Interventions include, a structured program led by an addiction psychiatrist, social worker and coordinator; and a 12-step program pre-transplantation. The main predictor of alcohol relapse was length of sobriety.	V A

Sacco et al., 2018	To identify psychosocial risk factors in liver transplant recipients and compare results to patient outcomes.	Retrospective Review	N=67 transplant recipients	Chart review	Despite good survival rates post-transplant (82.5%), several risk factors identified pre-transplant can significantly impact psychosocial function and increase risk of relapse. Risk factors include, psychiatric disorder, tobacco dependence, drug use, and duration of sobriety.	V B
Wigg et al., 2017	To determine the association between alcoholic relapse and patient survival and examine factors during the pre-transplant evaluation phase associated with relapse.	Retrospective Review	N= 87	Chart review and patient questionnaire	The majority of relapse occurs within the 1 st year post-LT and is associated with increased mortality rates. Relapse rates were consistent with literature (20%-50%). Integration of a validated risk assessment tool may be a more reliable predictor of relapse than an expert opinion.	IV B
Zhou et al., 2015	To improve assessment of recurrent alcohol use after liver transplantation by transplant providers using the HRAR scale.	Quality Improvement Case Study	N= 35 transplant recipients	HRAR scale	The HRAR tool is an effective tool for identifying heavy alcohol use. A structured clinical interview that includes a relapse risk assessment with the HRAR screening tool was identified as the best method for identifying post-transplant relapse. Additional psychosocial factors should be considered when evaluating risk for relapse.	V B

Note. LT = Liver Transplant; HCC = Hepatocellular Carcinoma; HRAR = High-Risk Alcoholism Relapse Scale; ALD = Alcoholic Liver Disease; AUDIT = Alcohol Use Disorder Identification Test

Rating System for Hierarchy of Evidence

<u>Level of the Evidence</u>	<u>Type of the Evidence</u>
I (1)	Evidence from systematic review, meta-analysis of randomized controlled trials (RCTs), or practice-guidelines based on systematic review of RCTs.
II (2)	Evidence obtained from well-designed RCT
III (3)	Evidence obtained from well-designed controlled trials without randomization
IV (4)	Evidence from well-designed case-control and cohort studies
V (5)	Evidence from systematic reviews of descriptive and qualitative studies
VI (6)	Evidence from a single descriptive or qualitative study
VII (7)	Evidence from the opinion of authorities and/or reports of expert committees

Melnyk, B.M. & Fineout-Overholt, E. (2014). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed.). New York: Lippincott, Williams & Wilkins.

Rating Scale for Quality of Evidence

A: High – consistent results with sufficient sample, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific literature

B: Good – reasonably consistent results; sufficient sample, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C: Low/major flaw – Little evidence with inconsistent results; insufficient sample size; conclusions cannot be drawn

Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. *Journal of Nursing Administration*, 36(7-8), 337-40.