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**Education and Implementation of the Clinical Opiate Withdrawal Scale (COWS) in the
Acute Care Setting for Care Providers**

by

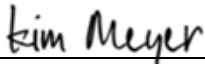
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Paper submitted in partial fulfillment of the
requirements for the degree of

Doctor of Nursing Practice

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July 30, 2020



Signature DNP Project Chair

7/30/2020
Date



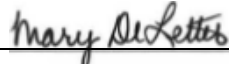
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Abstract

The opioid epidemic is a growing crisis, the US consumes a majority of the worlds opioid supply. There are an estimated 100,000,000 opioid dependent persons and according to the National Institute of Health (NIH) over 7 million of those individuals also have an overlapping mental illness which further complicates treatment for this population. In the inpatient setting there is a great need to assess the opioid dependent patient and identify withdrawal signs and symptoms. There are many challenges especially within the ICU when recognizing these patients. Patients can require mechanical ventilation and intravenous sedation and pain medication which consist of opioids. This can have grave consequences on the health of these patients as well as the ability of the healthcare provider to provide appropriate, adequate and affordable care. Recognizing the need for an accurate and targeted tool for the healthcare provider has become vital in the management of these very complex individuals. The clinical opiate withdrawal scale (COWS) assessment tool which has been previously recognized as a reliable tool of opiate withdraw was introduced to the staff of various ICUs. Staff were surveyed both before and after the introduction of this tool and analysis was performed to assess both understanding of the tool as well as comfort level utilizing the tool.

Keywords: Opioid dependence, COWS, opioid withdrawal, withdrawal education, intensive care management for opioid dependence, withdrawal scale, opioid scales.

Education and Implementation of the Clinical Opiate Withdrawal Scale (COWS) in the Acute
Care Setting for Care Providers

Executive Summary

Over the past decade, the opioid epidemic has transformed healthcare, creating a new challenge for healthcare providers. These challenges are especially prominent within the acute care setting where providers are likely to encounter patients over a limited or episodic period of time. Utilization of a reliable assessment tool can aid in detection of the earliest signs and symptoms of withdrawal and can be useful when assessing the opioid dependent population, therefore affording the opportunity for prompt intervention. In the United States, there are an estimated 100,000,000 opioid dependent persons, of which an estimated 7.7 million that also have a concurrent mental illness, further complicating detection and treatment of this population (National Institute of Health, 2018). Compared to other countries which also have a growing opioid epidemic, in the United States the population consumes 90% of the world's hydrocodone supply (Canamo, Tronco. 2019). Evidence has indicated that the number of patients at risk for opioid withdrawal continues to increase and further intervention will need to take place to manage this specific population. Hospitalization of opioid dependent patient often incites acute discontinuation of opioid use, initiating the withdrawal process and further complicating treatment and care. The physiology of acute withdrawal renders this specific population complex as they may be admitted for a particular disease process however, they may present with additional features which mimic other diseases or inaccurately portray their specific disease process. Utilization of the Clinical Opiate Withdrawal Scale or COWS for those with opioid

dependence is an evidence-based tool that can serve to identify these individuals in a timely and reliable manner.

Management of withdrawal in the acute care setting can be taxing on valuable resources. Often this requires utilization of additional nursing and ancillary staff, increased physician time to manage symptoms and complications, as well as other hospital resources that must be utilized to care for this complex patient. According to the World Health Organizations standard of care for withdrawal management, the area in which the individual is being managed should be quiet and calm (WHO, 2009). Most often this is an impossibility in the ICU due to the high acuity of the patients and their requirements for vigilant and high-tech monitoring. Additionally, there tends to be a unique hurried and high intensity pace that coincides with care in the ICU environment. Alarms of various machines such as IV pumps, ventilators, and monitor alarms to name a few can cause further anxiety in the withdrawing patient.

The purpose of this project is to educate care providers in the acute care setting on utilization of the COWS scale for the identification of withdrawal in patients with opioid dependence and iatrogenic opiate withdrawal. The specific aim of this project is to improve assessment and recognition of acute opiate withdrawal symptoms using the COWS scale for patients in the medical intensive care unit. Within the ICU setting there exists the tendency for the patient's condition and treatment modalities to change rapidly and transpire at a quick pace, rendering the prompt assessment and interventions of acute opioid withdrawal even more critical.

Description of Problem

There are an estimated 2.1 million people in the United States that had a substance use disorder related to the use of prescription opioid pain medicines in 2016 (NIDA, 2018). According to data from the CDC, the number of opioids that are prescribed have increased almost five times since 1999 without an existing increase in reported pain amongst the population. Those that have dependence to opioids will experience acute withdrawal symptoms which are best described as flu-like symptoms in as little as three hours after discontinuing opioids. The symptoms of withdrawal can mimic other diseases which makes it crucial to recognize which symptoms are related to withdrawal, and which are related to the reason for admission. The state of Kentucky carries one of the deadliest per-capita opioid-related death rates which continues to rise. In 2016 the average number of individuals with death related to drug overdose was 33.5 per 100,000 individuals (CDC, 2016), and in 2017 37.2 per 100,000 individuals (CDC, 2019). Health care providers play a substantial and critical role in this current epidemic and the future of these patients. Providers must continue to seek the most critical and up to date evidence to support our practice and to work towards a better solution of identification and management of withdrawal in this population.

PICOT Question

In acute care providers, specifically nurses (Population), how does the education and implementation of the COWS scale in the opioid dependent patient (Intervention), change how withdrawal is assessed in the acute care setting (Outcome)?

Literature Review

The COWS scale is commonly used in clinical trial and practice settings to assess withdrawal. The scale is a combination of eleven objective and subjective items that are rated by

both the clinician and the patient. Scoring of the COWS is separated by the total cumulative collection of each of these possible 11 items. Categories fall into mild withdrawal scoring 5-12, moderate withdrawal 13-24, moderately severe 25-36, and severe withdrawal greater than 36. According to Ziedonis et al., 2009, the COWS has been used to accurately measure opioid withdrawal severity. Additionally, a direct correlation was noted between the reduction of higher baseline scores as interventions were implemented. Also of note, within the same study, the importance of the clinician-rated items were found statistically significant and crucial in identifying opiate withdrawal symptoms. The COWS scale may be assessed repeatedly due to changes in patient conditions or treatments and also, to track success rates over time.

In a study done by Tompkins, 2009, the validity of the COWS scale was tested in correlation with the Clinical Institute Narcotic Assessment (CINA). In a sample of opioid-dependent individuals in a mild withdrawal condition, the study revealed the COWS to have discriminant validity. This conclusion was largely based on the finding that the scale did not correlate in individuals that had been provided the placebo versus intervention. Furthermore, validity was demonstrated with a Chronbach's alpha value of 0.78 which translates into reliable sensitivity of the COWS to detect opiate withdrawal. Schroeder and Yu, 2018 evaluated the accuracy and reliability of the scale when it is completed by physicians' and nurses. Four patients were evaluated using comparative statistics and yielded comparable median scores for both physicians with a median score of five and nurses with a median score of four and a p-value = 0.03. The precision of the scale is in question due to the varying ranges of scores of physicians versus the nurses, unfortunately statistical data for this specific information was not provided. It was found that the scale can have scores that vary depending on the experience level and observational data of clinicians. The COWS is a valid tool with sufficient sensitivity & validity

as assessed by Chronbach's alpha and Pearson's correlation, to detect withdrawal symptoms in the opioid addicted patient (Bigelow, Harrison, Johnson, Strain and Tomkins, 2009).

Search Methodology. The PICOT question guided a comprehensive literature search using the search terms *COWS*, *opioid withdrawal*, *opiate abuse*, *acute withdrawal*, *withdrawal scales*, and *nursing scales* in the following databases: CINHAL, PubMed, Cochrane Database of Systemic Reviews. Articles published in English between 2008-2019 were selected. The search was conducted August 2018 and was updated in November 2019

Description of the Conceptual Framework

The theory of symptom management or SMT, originated in 1994 by faculty at the University of California at San Francisco School of Nursing (UCSF School of Nursing Symptom Management Faculty Group 1994). The development of this middle-ranged theory focused on three components of symptom management which include experience, strategies, and outcomes. The theory was updated in 2001 and included the process of symptom management within the framework of nursing science: the person, environment, and health and illness. In 2008 the model was updated once more and was renamed to Symptom Management Theory (SMT; Carrieri-Kohlman, Donesky-Cuenca, Faucett, Humphreys, Janson, Puntillo. 2008).

The primary aim of SMT is to improve provider practice and improve individuals' symptom outcomes. This can be further disseminated into not only the patient-provider rapport, but also the family, friends, employers, and media influence on an individual. Maintenance of positive communication between the patient and provider is essential in regard to the provider fully comprehending without bias what the patient states he is experiencing and deploy the appropriate interventions. Delaying negative outcomes by prompt intervention or by promoting

self-care strategies can improve an individuals' quality of life as well as improve an individual's functional status.

The three concepts of the framework are continuously influenced by one another, the diagram (<https://nursing.ucsf.edu/sites/nursing.ucsf.edu/files/rcsm-mod2.gif>) shows multi-directional arrows amongst the concepts to indicate this. What this means is that the experience of a symptoms can be influenced by and can also influence other concepts. Once an individual becomes aware of a symptom and what interventions have been used and, the outcome of the intervention they form a new perception and therefore there is a change in the expectations. Management strategies and outcomes can be influenced by one another in terms of symptom management adherence. If the intervention is too lengthy of a process, costly, and demanding, it is less likely to be adhered to. Other factors that play a role in symptom management and symptom outcomes are family support, environment, and resources available to an individual.

The theory has aided in the development of this project in relationship to an individuals' assessment of self, and the providers clinical judgement and assessment of the patient. It is crucial that providers listen to patients and families not only to hear what signs and symptoms are reported but, to also fully comprehend the perception of what someone is experiencing. The opioid addicted patient is especially vulnerable to experiencing unwanted symptoms. Prompt identification from the individual and the care provider along with thoughtfully planned interventions and symptom outcomes following intervention can improve patient and provider overall experience.

Setting and Organizational Assessment

The aim of this quality improvement project was to improve assessment and recognition of acute opiate withdrawal symptoms using the COWS scale in the stroke ICU and the CVICU at University of Louisville hospital. This was accomplished by educating and assessing pre- and post-education of the COWS scale during initial presentation and via handout information which included the educational power point, followed-up by staff survey results. The state of Kentucky continues to be in the spotlight of the opioid-epidemic, this has created a need for tailored education and tools that can assist in managing this specific population. The COWS scale can be a viable aid in the recognition and treatment of acute opioid withdrawal and improve patient management techniques, decrease length of ICU admission, improve provider satisfaction, and improve patient and family satisfaction.

Purpose

The purpose of this quality improvement project was to provide education and a resource for providers at the University of Louisville Hospital stroke ICU and 7W/CVICU about the COWS and implementation of the scale. to assist in managing those patients with acute opioid withdrawal. The educational plan was intended to inform and prepare clinicians to utilize the COWS in current practice, thereby increasing the frequency of assessment of withdrawal using the COWS. The COWS scale is commonly used in clinical trial and practice settings to assess withdrawal. A combination of eleven objective, and eleven subjective items are rated by both the clinician and the patient and a sum of the scores is completed. Nurses and patients are affected the most since they are providing and receiving care. It is part of the facilities vision to be a national leader of patient and family-centered advocacy, teaching, research, and care. UofL Hospital is the only Level I Trauma Center in the region. The Trauma Center admits more than

3,000 patients each year, including 1,500 patients a year who live outside Jefferson County and its surrounding counties, making it a resource not only for Louisville residents, but also for people throughout Kentuckiana (UofL Health, 2017). Additionally, the facility is a designated comprehensive stroke center, providing aggressive stroke care to patients as young as 16. Illicit drug use, including opioids, is a known risk factor for stroke, especially in younger patients.

There were two phases to this project. First, initial education was placed in a mandatory educational read and sign folder containing the power point education that will be presented at the staff meetings and an URL link to a pre-education survey. A brief presentation was recorded and made available via a YouTube link followed the initial introduction of the material for both day and night shift. The presentation consisted of a short power point which was made available as handouts for the staff to be able to follow along and ask questions. The information that was handed out is identical to that in the read and sign folder and aided in reinforcing the material. Due to the nature of staffing for nurses it was necessary to have the read and sign folder and a presentation to ensure that everyone will have consistent education on the subject.

Phase two included implementation of the scale and measurements of nurse satisfaction after utilization of the scale, and a post-implementation survey completed by the nursing staff.

Ethics

This proposal has been submitted to the University of Louisville IRB for approval. Approval from the University of Louisville Hospital has been obtained and can be viewed in the appendix A.

Key Stakeholders

There were several key stakeholders identified for this DNP project including the faculty of the DNP program at the University of Louisville, my DNP committee chair Dr. Kimberly

Meyer, co-committee member Dr. Elizabeth Burkhardt, the nurse manager of the stroke ICU at the University of Louisville Hospital, the staff of the stroke ICU, and the patients of the stroke ICU. The stakeholders were very supportive of this quality improvement project and welcomed the opportunity to bring best practices to the program.

Intervention

The purpose of this quality improvement project was to provide education and a resource for providers in the acute care setting to assist in managing those patients with acute opioid withdrawal. The educational plan was intended to inform and prepare clinicians to utilize the COWS in current practice, thereby increasing the frequency of assessment of withdrawal using the COWS. The COWS scale is commonly used in clinical trial and practice settings to assess withdrawal. A combination of eleven objective, and eleven subjective items are rated by both the clinician and the patient and a sum of the scores is completed.

A Survey created using Survey Monkey® was used to obtain baseline knowledge of the COWS. The survey is nine questions in length and was able to be accessed by smart-phone, tablet, and computer via URL or QR code. Education also included a power point presentation that will be printed for the staff with further information and explanation on opioids and the assessment tool. A post-education survey was given after implementation of the project and was also nine questions in length and assessed knowledge gained after the completion of the project.

It can be predicted that in the current state of addiction that use of the scale should increase in the inpatient setting and more data should become available. According to Ziedonis et al., 2009, the COWS has been used to measure opioid withdrawal severity with an emphasis placed on the clinician-rated items which are critical in the identification of opiate withdrawal.

The COWS scale may be assessed repeatedly due to changes in patient conditions or treatments and also, to track success rates over time.

There was no funding given or necessary for this project. Any supplies needed for this QI project were provided by the department as part of regular facility operations. The consulting time provided for this was not charged as it is part of a requirement for education of the University of Louisville Doctor of Nursing practice program.

Measurement

The primary outcome of this project was nursing knowledge related to the appropriate use of the COWS. The measurements also included the comparison of the utilization of the COWS both pre-education as well as post-education.

Instruments

There was an initial read and sign folder that contained the power point presentation that was completed prior to completion of the presentation. In addition, there was also a link to a survey that was completed prior to any further education. A short presentation was recorded and uploaded to YouTube and was accessible via a private link. The COWS scale was the primary instrument utilized by nurses in this quality improvement project.

Analysis

Measurement strategies included a qualitative analysis and comparison of pre-education surveys to post-education surveys.

All data were analyzed and presented descriptively including means, percentages, and other counts as appropriate for the following, pre-education knowledge of COWS (preknow), pre-education confidence level assessing withdrawal (preconfid), pre-education comfort level

assessing withdrawal (precawd), pre-education not needing to use a scale to measure withdrawal (prenoscale), pre-education years as a nurse (preyrasRN). There was a total of 21 participants that completed pre and post-intervention surveys. The average number of years as a nurse was three years, the range was 0-44 years. Prior to the educational intervention 64% of the participants felt comfortable with their ability to assess withdrawal in patients. Only 45% of individuals were knowledgeable of the COWS but, 50% of those surveyed felt that they did not need to use a scale to assess withdrawal, and 54.5% were confident in assessing withdrawal.

After the intervention a second survey was completed by 21 individuals with calculated frequencies and percentages of the following variables. Post-education knowledge of COWS (postknow), post-education confidence level assessing withdrawal (postconf), post-education comfort level assessing withdrawal (postycawd), post-education not needing to use a scale to measure withdrawal (postnoscale), and post-education years as a nurse (postyrasRN). Many of the percentages stayed the same except the confidence level assessing withdrawal, which showed an increase from 54.5% pre-intervention, to 63.6% post-intervention.

Responses for each question were graded on a likert-style scale with responses ranging from dissatisfied to extremely satisfied, and extremely disagree to extremely agree. The first two survey questions were assigned a number when organizing the data. Dissatisfied = 1, somewhat dissatisfied = 2, somewhat satisfied = 3, satisfied = 4, no answer = 0. Questions five through nine were also assigned a numeric number to aid when organizing the data. Extrermely disagree = 1, somewhat disagree = 2, somewhat agree = 3, extremely agree = 4, no answer = 0. Table 1 shows the frequency of the observed responses for each category. Data analysis was performed using Intellectus statistics, 2019 [Online software].

Table 1

RN Suvey Responses

Variable	n	%	
<u>precawd</u>	Response	1	4.55
	0	0	0
	1	4	18.18
	2	3	13.64
	3	14	63.64
<u>postycawd</u>	Response	1	4.55
	0	0	0
	2	1	4.55
	3	14	63.64
	4	6	27.27
<u>prenoscale</u>	Response	1	4.55
	0	0	0
	1	8	36.36
	2	11	50
	3	2	9.09
<u>postnoscale</u>	Response	1	4.55
	0	0	0
	1	15	68.18
	2	6	27.27
<u>preknow</u>	Response	1	4.55
	0	0	0
	1	6	27.27
	2	5	22.73
	3	10	45.45
<u>postknow</u>	Response	1	4.55
	0	0	0
	1	2	9.09
	2	4	18.18
	3	5	22.73
	4	10	45.45
<u>preconf</u>	Response	1	4.55
	0	0	0
	1	4	18.18
	2	4	18.18
	3	12	54.55
	4	1	4.55

<u>postconf</u>	Response	1	4.55
	0	0	0
	1	1	4.55
	2	1	4.55
	3	8	36.36
	4	11	50
<u>preyrsasRN</u>	Open-ended responses	1	4.55
	0	1	4.55
	1	1	4.55
	2	3	13.64
	3	3	13.64
	4	2	9.09
	5	3	13.64
	6	2	9.09
	7	2	9.09
	8	2	9.09
	9	1	4.55
	35	1	4.55
	44	1	4.55
<u>postyrsasRN</u>	Open-ended responses	1	4.55
	0	1	4.55
	1	1	4.55
	2	3	13.64
	3	3	13.64
	4	2	9.09
	5	3	13.64
	6	2	9.09
	7	2	9.09
	8	2	9.09
	9	1	4.55
	35	1	4.55
	44	1	4.55

Note. Due to rounding errors, percentages may not equal 100%.

A students t-test was done using Intellectus Statistics, 2019 [Online computer software], comparing pre-education knowledge of the COWS scale (preknow), to post-education knowledge of the COWS (postknow). The results are presented in Table 2.

Table 2

t-Test for the Difference between preknow and postknow

Variable	<i>M</i>	<i>SD</i>	μ	<i>t</i>	<i>p</i>	<i>d</i>
preknow	2.09	0.97	0.05	9.85	< .001	2.10
postknow	2.95	1.21	0.05	11.22	< .001	2.39

The mean score of the preknow survey prior to intervention was 2.09, while the mean of the survey postknow was 2.95 which suggests that the intervention was successful in increasing the knowledge of the COWS scale to the population surveyed. The t-test showed statistically significant differences between pre-education and post-education knowledge of the COWS scale $p < .001$.

Figure 1

Pre-education Knowledge of COWS

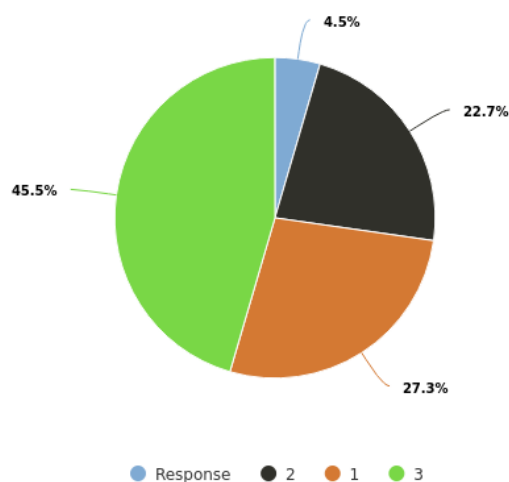
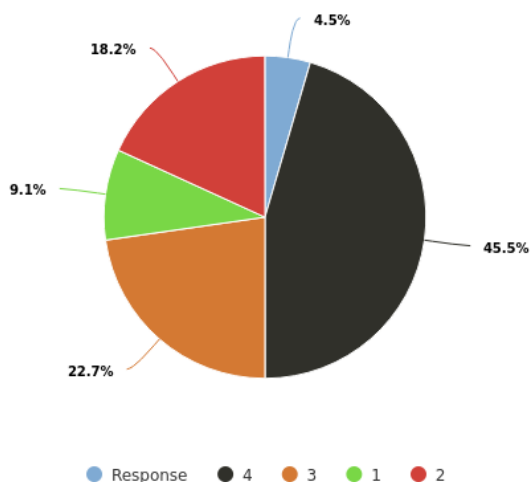


Figure 2*Post-education Knowledge of Cows*

Section IV. Discussion

Interpretation

During the project period, a total of 21 staff members were surveyed pre and post intervention. Demographic information was obtained from the individuals completing the surveys and included the number of years as a nurse. The average years of experience as a nurse was 7.75 years ($n=7.75$), with the range of 0-44 years of experience. The primary outcome of the project, confidence levels of ability to assess withdrawal were measured with a pre-education confidence level of 54.5% and post-education confidence level of 63.6% with an increase of 9.1%. The survey created yielded a Cronbach's alpha of less than 0.05 suggesting unacceptable reliability. Likely, this level of unacceptable reliability is attributed to the use of a non-validated survey tool. Assessment of individuals using a standardized survey tool is recommended for more accurate reliability testing in the future.

Limitations

In February 2020, the Covid-19 pandemic struck the United States. In response to the pandemic, restrictions were imposed which greatly limited implementation of this project. These restrictions resulted in limitations such as decreases in the number of patients available for inclusion into the study. These decreases were direct results of COVID related changes such as the conversion of certain Intensive Care units into COVID only units which only housed confirmed positive COVID-19 patients. In addition, there was a decline in overall hospital admissions as well as an imposed reduction in elective surgical cases resulting in fewer ICU admissions. Limitations were also imposed as hospital wide no visitation policies were placed in effect which included restrictions for non-essential visitors such as visiting students or those conducting and or collecting data for this study. Additionally, this eliminated the opportunity to hold in person staff meetings to introduce and educate about the study and the data collection tool which greatly diminished the number of participants as well as potentially reduced the knowledge of those who did participate. In attempts to circumvent this limitation, an instructional video was created and was made available on a social media page and this was well advertised on the units.

Limitations of this project also include the inability to provide education to a broader range of clinicians in multiple ICU's. This would have greatly impacted the sample size and increased the chances of the scale to be recognized for use on identified individuals. Other limitations include the number of individuals in the stroke ICU for whom this educational project was aimed towards, with such a small sample this study lacked validity. Aggregate pre and post test scores were used for comparison as there was difficulty getting the same nurses to complete

the tests at each time point. Additionally, it was uncertain of how many individuals would have been admitted to the units that will also be withdrawing from opioids due to abuse or iatrogenic in nature.

The survey utilized did not allow for respondent specific identifiers, which prohibited the ability to perform a paired t-test which would have potentially produced a greater statistically significant result. Due to the nature of this project and other limitations it was not possible to have a set group of individuals taking the pre and post-survey. The sample size was also affected because of the change of unit identity of the CVICU into a COVID-19 specific ICU during the intervention period. Therefore, individuals that would have otherwise been admitted to this specific unit were unable to be placed there due to the pandemic and the need for a dedicated space to care for those who tested positive and requiring hospitalization for COVID-19. As a result, only the Stroke ICU which contained 10 beds was the only unit that participated in the project. The participation of other units in the project would have increased the number of participants and patients that could have been assessed using the validated COWS tool. Had there been multiple units involved the number of participants could have been substantially more, and increased chances of providing care for individuals experiencing withdrawal.

Conclusions

When providing evidence-based care, it is important to seek ways to educate health care providers in order to rapidly identify and treat individuals experiencing withdrawal whether it is iatrogenic or due to abuse. This study suggests that while the confidence level increased after the intervention, further investigation will be necessary on larger groups of individuals will be

needed with those who are providing care for the patient experiencing iatrogenic or self-induced withdrawal, as this will always be something that effects healthcare.

Opioid use has been an ongoing and uprising issue for many years. With an increased focus on evidence-based practice, there is an obligation to educate and inform health care providers on the most up to date care methods to specific populations. Follow-up after any implementation of practice change is vital for the future of health policy as this is the only way to ensure that individuals continue to receive the highest level of quality care and, the credibility of evidence-based care.

This project directly aligns with the community health assessment completed by the University of Louisville. The top health need that was identified by the Louisville community in the Community Health Assessment includes addiction to opioids, this also aligns with data on a national level. The Joint Commission implemented the standard LD.04.03.13 which requires all major health care systems to appropriately manage patients who use opioids. This standard of care is crucial in the current opioid epidemic and should continue to be recognized by nurses, nurse leaders, and anyone else who is involved or is affected by the opioid epidemic. With no signs of recession of the opioid epidemic, there will continue to be a need for accurate assessment of opioid withdrawal. The impacts of opioid addiction and withdrawal extend further than the patient. Family members, caregivers, medical professionals, and community resources will all continue to be affected by the opioid epidemic for the foreseeable future.

Section V. References

- Andenaes, R., & Krokmyrdal, K. (2015). Nurses' competence in pain management in patients with opioid addiction: A cross-sectional survey study. *Nurse Education Today*, 35, 789-794. <https://doi:10.1016/j.nedt.2015.02.022>
- Barbosa-Leiker, C., Burns, G., Layton, M., Ling, W., Mamey, M., McPherson, S., & Roll, J. (2015). Examining the factor structure of the Clinical Opiate Withdrawal Scale: A secondary data analysis from the National Drug Abuse Treatment Clinical Trials Network (CTN) 0003. *Drug and Alcohol Dependence*, 152, 218-223.
- Bigelow, G., Fudala, P., Harrison, J., Johnson, R., Strain, E., & Tompkins, A. (2009, November 1). Concurrent validation of the Clinical Opiate Withdrawal Scale (COWS) and single-item indices against the Clinical Institute Narcotic Assessment (CINA) opioid withdrawal instrument. *Drug Alcohol Dependence*, 105(1-2), 154-159. <https://doi:10.1016/j.drugalcdep.2009.07.001>
- Biswas, S., Gorodetzky, C., Gullo, K., Martin, P., Saxon, A., Walsh, S. (2017). A phase III, randomized, multi-center, double blind, placebo controlled study of safety and efficacy of lofexidine for relief of symptoms in individuals undergoing inpatient opioid withdrawal. *Drug and Alcohol Dependence*, 176, 79-88. <https://doi:10.1016/j.drugalcdep.2017.02.020>
- Bonica, J., Compton, p., Hobelmann, J., & Tompkins, D. (2017). Providing chronic pain management in the "Fifth Vital Sign" era: Historical and treatment perspectives on a modern-day medical dilemma. *Drug and Alcohol Dependence*, 173, 11-21. <https://doi:10.1016/j.drugalcdep.2016.12.002>
- Bosman, R., Rijkenberg, S., Stilma, W., Van Der Meer, N., & Van Der Voort, P. (2017). Pain measurement in mechanically ventilated

- patients after cardiac surgery: Comparison of the Behavioral Pain Scale (BPS) and the Critical-Care Pain Observation Tool (CPOT). *Journal of Cardiothoracic and Vascular Anesthesia*, 31, 1227-1234. <https://doi: 10.1053/j.jvca.2017.03.013>
- Casper, D., Kirsh, K., & Passik, S. (2008). Addiction-Related Assessment Tools and Pain Management: Instruments for Screening, Treatment Planning, and Monitoring Compliance. *Pain Medicine*, 9(2), 145-166. <https://doi:10.1111/j.1526-4637.2008.00486.x>
- Chou, R., Dowell, D., & Haegerich, T. (2016). CDC Guideline for Prescribing Opioids for Chronic Pain. *Reccomendations and Reports*. U.S Department of Health & Human Services, 2016. *Morbidity and Mortality Weekly Report (MMWR)* https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fmmwr%2Fvolumes%2F65%2Frr%2Frr6501e1er.htm <https://doi: 10.15585/mmwr.rr6501e1er>
- Clinch, T., Gorodetzsky, C., Gullo, K., Reinders, S., Vernon, M. (2016). Psychometric evaluation of the 10-item short opiate withdrawal scale-Gossop (SOWS-Gossop) in patients undergoing opioid detoxification. *Addictive Behaviors*, 60, 109-116. <https://doi: 10.1016/j.addbeh.2016.03.028>
- Coggins, C., Compton, P., Hagan, S., Marie, B., Matteliano, D., Oliver, J., Turner, H. (2012, September). American Society for Pain Management Nursing Position Statement: Pain management in patients with substance use disorders. *Pain Management Nursing*, 13, 169-183. <https://doi:10.1016/j.pmn.2012.07.001>
- Community Health Needs Assessment: University of Louisville Hospital. (2019, April). Community Health Needs Assessment and Implementation Strategy Reports

<https://uoflhospital.org/community-health-needs-assessment>.

Cox, F., & Quinlan, J. (2017, July). Acute Pain Management in Patients with Drug Dependence Syndrome. *Pain Reports*, 2(4). <https://doi:10.1097/PR9.0000000000000611>

Dodd M, Janson S, Facione N, Faucett J, Froelicher ES, Humphreys J, Lee K, Miaskowski C, Puntillo K, Rankin S, Taylor D. (2001). Advancing the Science of Symptom Management. *Journal of Advanced Nursing*, 33(5), 668-67

Elswick, R., Ferguson, P., Grap, M., Joseph, P., & Rahu, M. (2015, November). Critical care evaluation validity and sensitivity of 6 pain scales in critically ill intubated adults. *American Journal of Critical Care*, 24, 514-523. <https://doi:10.4037/ajcc2015832>

Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: model and guidelines*. 3rd ed. Indianapolis, IN: Sigma Theta Tau International.

https://www.hopkinsmedicine.org/evidence-based-practice/ijhn_2017_ebp.html

Fabian, A., Kim, K., & Thanner, M. (2014). Pain Assessment and Treatment Guidelines Across Addiction Status. *Journal of Addiction Research & Therapy*, 5(2), 1-7.

<https://doi:10.4172/2155-6105.1000182>

George, D., & Mallery, P. (2017). *IBM SPSS statistics 23 step by step: A simple guide and reference*. London: Routledge.

Hall-Lord, M., Sykepleien, F. (2017). The CPOT- a tool for pain assessment for intensive care patients. *Norwegian Nursing Association*. <https://doi:10.4220/Skyepeienf.2016.5966810>

Humphreys, J., Lee, K. A., Carrieri-Kohlman, V., Puntillo, K., Faucett, J., Janson, S., . . .

Donesky-Cuenca, D. (2008). Theory of symptom management. In M. J. Smith & P. R. Liehr (Eds.), *Middle range theory for nursing* (2nd ed., pp. 145-158).

Springer Publishing

Huxstable, C., MacIntyre, P., Roberts, I., & Somogyi, A. (2011, September). Acute pain management in opioid-tolerant patients: A growing challenge. *Anaesthesia Intensive Care*, 39(5), 804-823. <https://doi: 10.1053/j.jvca.2017.03.013>

Joint Commission Enhances Pain Assessment and Management Requirements for Accredited Hospitals. (2017). Jointcommission.org
https://www.jointcommission.org/assets/1/18/Joint_Commission_Enhances_Pain_Assessment_and_Management_Requirements_for_Accredited_Hospitals1.PDF

Kentucky Cabinet for Health and Family Services. Neonatal Abstinence Syndrome in Kentucky: Annual Report on 2016 Births. Frankfort, KY: KY Cabinet for Health and Family Services, Department for Public Health, Division of Maternal and Child Health, 2018.

Newton, R. R., & Rudestam, K. E. (2013). *Your statistical consultant: Answers to your data analysis questions*. Thousand Oaks, CA: SAGE.

Razali, N. M., & Wah, Y. B. (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. *Journal of statistical modeling and analytics*, 2(1), 21-33.

https://www.researchgate.net/profile/Bee_Yap/publication/267205556_Power_Comparisons_of_Shapiro-Wilk_Kolmogorov-Smirnov_Lilliefors_and_Anderson-Darling_Tests/links/5477245b0cf29afed61446e1/Power-Comparisons-of-Shapiro-Wilk-Kolmogorov-Smirnov-Lilliefors-and-Anderson-Darling-Tests.pdf

National Institute on Drug Abuse (2018). Medications to treat opioid use disorder.

Drugabuse.gov

<https://www.drugabuse.gov/publications/research-reports/medications-to-treat-opioid-addiction/overview>

Schroeder, L., & Yu, S. (2018, October). 387 Comparison of physician versus nurse assessment of Clinical Opiate Withdrawal Scale evaluation using video simulation. *Annals of Emergency Medicine*, 73, 152. <https://doi:10.1016/j.annemergmed.2018.08.392>

U.S. Department of Health and Human Services. (2018). *Healthy People 2020 Topics & Objectives: Substance abuse*. HealthyPeople.gov
<https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse>

U.S. Department of Health and Human Services (2018). *State reports from the 2016 National Survey on Drug Use and Health (NSDUH)*. Substance Abuse and Mental Health Services Administration (SAMHSA).
<https://www.samhsa.gov/data/nsduh/state-reports-NSDUH-2016>

Wesson, D. R., & Ling, W. (2003). The clinical opiate withdrawal scale (COWS). *Journal of psychoactive drugs*, 35(2), 253-259.

Westfall, P. (n.d.). Understanding advanced statistical methods. Retrieved from
https://www.academia.edu/24076056/Understanding_advanced_statistical_methods

Section VI. Appendices

Appendix A. Organizational Letter of Support



November 25, 2019

Mandi D. Walker DNP, RN-BC, CCRN-K, NEA-BC
UofL Hospital / Brown Cancer Center
Director, Office of Professional Practice
Nursing Education, Research & Quality; IV Therapy
(502) 217-5258
mandiwa@ulh.org

To Whom it May Concern:

This letter is acknowledging the support of the DNP project plan of Rachel Culwell BSN-DNP student at the University of Louisville in collaboration with UofL Hospital. We support the quality improvement project to implement education of the nursing staff on 7W ICU and Stroke ICU units on the Clinical Opiate Withdrawal Scale (COWS). We support this evidence-based practice change which aims to improve the quality of care delivered and meets Joint Commission standards of care.

Sincerely,

A handwritten signature in black ink that reads 'Mandi D. Walker'.

Mandi D. Walker
Director, Office of Professional Practice

Appendix B. GANNT Timeline

Project Activity	Aug 2019	Sept 2019	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	June 2020	July 2020
Proposal development	Blue	Blue	Blue									
Final proposal submission			Red	Red	Red							
Capstone committee meeting proposal approval	Yellow	Yellow	Yellow	Yellow	Yellow							
Capstone proposal defense					Green							
IRB Submission & approval					Purple	Purple						
Education to nursing staff						Magenta	Magenta	Magenta				
Implement simulation education program						Blue	Blue	Blue				
Analyze data									Pink	Pink	Pink	Pink
Prepare final report										Cyan	Cyan	Cyan
Develop final poster												Black

Appendix C. COWS Scale

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Clinical Opioid Withdrawal Scale (COWS)

Patient's name: _____	Date and time: __/__/__:__
Reason for this assessment: _____	
Resting pulse rate: _____beats/minute Measured after patient is sitting or lying for one minute	GI upset: Over last half-hour
0 pulse rate 80 or below 1 pulse rate 81 to 100 2 pulse rate 101 to 120 4 pulse rate greater than 120	0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: Over past half-hour not accounted for by room temperature or patient activity	Tremor: Observation of outstretched hands
0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness: Observation during assessment	Yawning: Observation during assessment
0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds	0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size	Anxiety or irritability
0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or joint aches: If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored	Gooseflesh skin
0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles	0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arms

4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	5 prominent piloerection
Runny nose or tearing: Not accounted for by cold symptoms or allergies	Total score: _____ The total score is the sum of all 11 items
0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Initials of person completing assessment: _____

Score: 5 to 12 = mild; 13 to 24 = moderate; 25 to 36 = moderately severe; more than 36 = severe withdrawal.

GI: gastrointestinal.

Reproduced from: Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs 2003; 35:253.

Graphic 106994 Version 1.0

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https://www.uptodate.com/contents/image?imageKey=PSYCH%2F106994&topicKey=EM%2F306&source=outline_link

Appendix D. Staff survey education pre-test

COWS EDUCATION Pre-test

1. How comfortable are you when assessing withdrawal?

Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Extremely Satisfied
★	★	★	★

2. How knowledgeable are you on the COWS scale?

Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Extremely Satisfied
★	★	★	★

3. How many times in the past 30 days have you assessed a patient using the COWS scale?

4. How many years have you been a nurse

5. I don't need to use a scale to assess withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely agree
★	★	★	★

6. There has been an increased number of patients in my unit that are going through opioid withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

7. We currently use an evidence-based tool to assess opioid withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

8. Evidence-based research doesn't improve practice it just makes more work

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

9. I feel confident reporting a patient experiencing severe withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

Finish

<https://www.surveymonkey.com/r/6DMKKC5>

Appendix E. Staff survey education post-test

COWS Education Post-test

1. How comfortable are you when assessing withdrawal?

Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Extremely Satisfied
★	★	★	★

2. How knowledgeable are you on the COWS scale?

Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Extremely Satisfied
★	★	★	★

3. How many times in the past 30 days have you assessed a patient using the COWS scale?

4. How many years have you been a nurse

5. I don't need to use a scale to assess withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely agree
★	★	★	★

6. There has been an increased number of patients in my unit that are going through opioid withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

7. We currently use an evidence-based tool to assess opioid withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

8. Evidence-based research doesn't improve practice it just makes more work

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

9. I feel confident reporting a patient experiencing severe withdrawal

Extremely Disagree	Somewhat Disagree	Somewhat Agree	Extremely Agree
★	★	★	★

Finish

- <https://www.surveymonkey.com/r/6DMKKC5>

Appendix F. Education Presentation

Clinical Opiate Withdrawal Scale (COWS)

Rachel Culwell BSN
University of Louisville
2020

Problem Description



2.1 million people in the United States that had a substance use disorder related to the use of prescription opioid pain medicines in 2016 (NIDA, 2018).



Recognizing withdrawal vs recognition of other diseases.



U.S. Population consumes approximately 90% of the world's supply of hydrocone

Kentucky Data

Kentucky mortality
2016 – 33.5 per 100,000
2017 – 37.2 per 100,000

- The number of opioids that are prescribed have increased almost five times since 1999 without an existing increase in reported pain amongst the population

Rationale

Joint Commission Standard

Improve opioid withdrawal management.

Directly aligns with local and national standards of care.

Improve assessment and recognition of acute opiate withdrawal symptoms using the COWS scale for patients in the medical intensive care unit.

COWS

- 11 Items both objective and subjective
 - Resting pulse
 - GI upset
 - Sweating
 - Tremor
 - Restlessness
 - Yawning
 - Pupil size
 - Anxiety/Irritability
 - Bone/joint aches
 - Gooseflesh skin
 - Runny nose or tearing



Patient's name: _____	Date and time: ___/___/___:___:___
Reason for this assessment: _____	© 2019 UpToDate, Inc. and/or its affiliates. All Rights Reserved.
Resting pulse rate: _____ beats/minute Measured after patient is sitting or lying for one minute	Clinical Opioid Withdrawal Scale (COWS)
0 pulse rate 80 or below 1 pulse rate 81 to 100 2 pulse rate 101 to 120 4 pulse rate greater than 120	0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: Over past half-hour not accounted for by room temperature or patient activity	Tremor: Observation of outstretched hands
0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness: Observation during assessment	Yawning: Observation during assessment
0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still 1 for more than a few seconds	0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute
Pupil size	Anxiety or irritability
0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or joint aches: If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored	Gooseflesh skin
0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arms 5 prominent piloerection
Runny nose or tearing: Not accounted for by cold symptoms or allergies	Total score: _____ The total score is the sum of all 11 items
0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Initials of person completing assessment: _____

Scoring

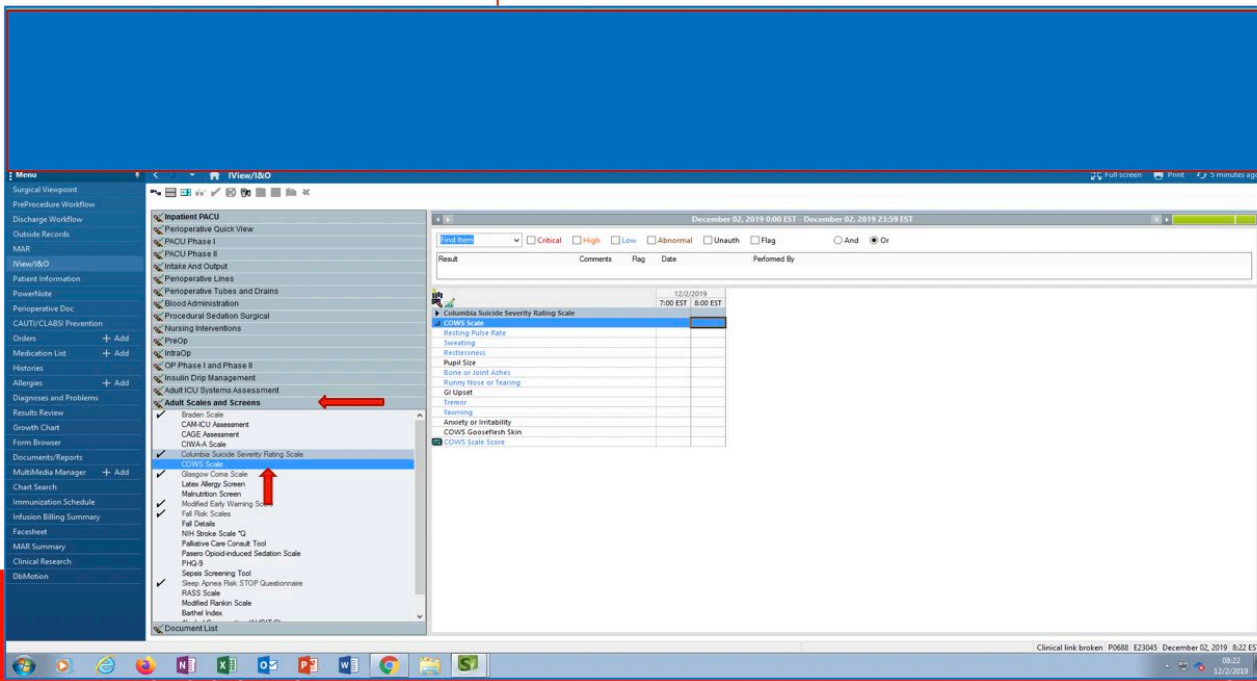
Mild Withdrawal – 5-12

Moderate Withdrawal – 13-24

Moderately Severe – 25-36

Severe Withdrawal - >36

CERNER



The screenshot shows a medical software interface with a menu on the left and a data table on the right. The menu includes categories like 'Surgical Viewpoint', 'Discharge Workflow', and 'Patient Information'. The data table has columns for 'Result', 'Comments', 'Flag', 'Date', and 'Performed By'. A red arrow points to a 'Reference Text' link in the table.

Result	Comments	Flag	Date	Performed By
Columbia Suicide Severity Rating Scale			12/2/2019	
COWS Scale				
Resting Pulse Rate				
Sweating				
Restlessness				
Pupil Size				
Sore or Joint Aches				
Runny Nose or Tearing				
GI Upset				
Tremor				
Twitching				
Anxiety or Irritability				
COWS Goosetech Skin				
COWS Scale Score				

The screenshot shows a medical software interface with a menu on the left and a data table on the right. The menu includes categories like 'Surgical Viewpoint', 'Discharge Workflow', and 'Patient Information'. The data table has columns for 'Result', 'Comments', 'Flag', 'Date', and 'Performed By'. A red arrow points to a 'Reference Text' link in the table.

Result	Comments	Flag	Date	Performed By
Columbia Suicide Severity Rating Scale			12/2/2019	
COWS Scale				
Resting Pulse Rate				
Sweating				
Restlessness				
Pupil Size				
Sore or Joint Aches				
Runny Nose or Tearing				
GI Upset				
Tremor				
Twitching				
Anxiety or Irritability				
COWS Goosetech Skin				
COWS Scale Score				

References

Andenaes, R., & Krokmyrdal, K. (2015). Nurses' competence in pain management in patients with opioid addiction: A cross-sectional survey study. *Nurse Education Today*, 35, 789-794. doi: 10.1016/j.nedt.2015.02.022

Bonica, J., Compton, p., Hobelmann, J., & Tompkins, D. (2017). Providing chronic pain management in the "Fifth Vital Sign" era: Historical and treatment perspectives on a modern-day medical dilemma. *Drug and Alcohol Dependence*, 173, 1121. doi:10.1016/j.drugalcdep.2016.12.002

Casper, D., Kirsh, K., & Passik, S. (2008). Addiction-Related Assessment Tools and Pain Management: Instruments for Screening, Treatment Planning, and Monitoring Compliance. *Pain Medicine*, 9(2), 145-166. doi: 10.1111/j.1526-4637.2008.00486.x

Chou, R., Dowell, D., & Haegerich, T. (2016). CDC Guideline for Prescribing Opioids for Chronic Pain. *Recommendations and Reports*. U.S Department of Health & Human Services, 2016. Retrieved from https://www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fmmwr%2Fvolumes%2F65%2Frr%2Frr6501e1er.htm
doi: 10.15585/mmwr.rr6501e1er

Community Health Needs Assessment: University of Louisville Hospital. (2019, April). Retrieved August 30, 2019, from <https://uoflhospital.org/community-health-needs-assessment>.

Joint Commission Enhances Pain Assessment and Management Requirements for Accredited Hospitals. (2017). Retrieved from https://www.jointcommission.org/assets/1/18/joint_commission_enhances_pain_assessment_and_management_requirements_for_accredited_hospitals1.PDF

U.S. Department of Health and Human Services. (2018). *Healthy People 2020 Topics & Objectives: Substance abuse*. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse>

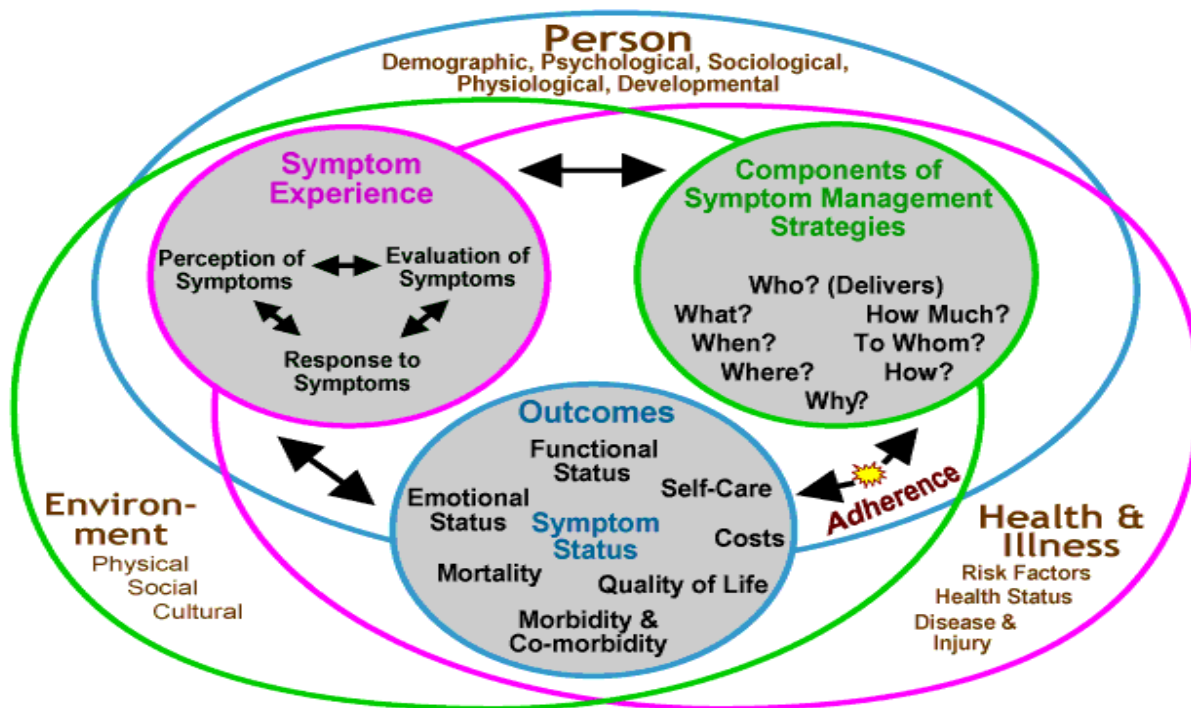
U.S. Department of Health and Human Services (2018). *State reports from the 2016 National Survey on Drug Use and Health (NSDUH)*. Substance Abuse and Mental Health Services Administration (SAMHSA). Retrieved from <https://www.samhsa.gov/data/nsduh/state-reports-NSDUH-2016>

Questions?



- Please take a couple of minutes to take a short survey.

Appendix. G UCSF Theory of Symptom Management Model



Appendix H. Tables

Table 1

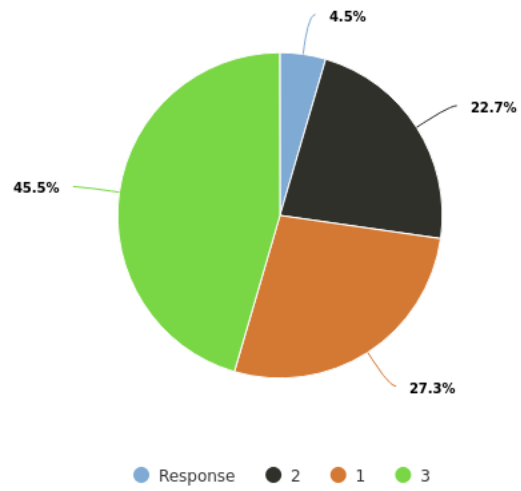
RN Suvey Responses

Variable	n	%	
<u>precawd</u>	Response	1	4.55
	0	0	0
	1	4	18.18
	2	3	13.64
	3	14	63.64
<u>postycawd</u>	Response	1	4.55
	0	0	0
	2	1	4.55
	3	14	63.64
	4	6	27.27
<u>prenoscale</u>	Response	1	4.55
	0	0	0
	1	8	36.36
	2	11	50
	3	2	9.09
<u>postnoscale</u>	Response	1	4.55
	0	0	0
	1	15	68.18
	2	6	27.27
<u>preknow</u>	Response	1	4.55
	0	0	0
	1	6	27.27
	2	5	22.73
	3	10	45.45
<u>postknow</u>	Response	1	4.55
	0	0	0
	1	2	9.09
	2	4	18.18
	3	5	22.73
	4	10	45.45
<u>preconf</u>	Response	1	4.55
	0	0	0
	1	4	18.18
	2	4	18.18

		3	12	54.55
		4	1	4.55
<u>postconf</u>	Response		1	4.55
		0	0	0
		1	1	4.55
		2	1	4.55
		3	8	36.36
		4	11	50
<u>preyrsasRN</u>	Open-ended responses		1	4.55
		0	1	4.55
		1	1	4.55
		2	3	13.64
		3	3	13.64
		4	2	9.09
		5	3	13.64
		6	2	9.09
		7	2	9.09
		8	2	9.09
		9	1	4.55
		35	1	4.55
		44	1	4.55
<u>postyrsasRN</u>	Open-ended responses		1	4.55
		0	1	4.55
		1	1	4.55
		2	3	13.64
		3	3	13.64
		4	2	9.09
		5	3	13.64
		6	2	9.09
		7	2	9.09
		8	2	9.09
		9	1	4.55
		35	1	4.55
		44	1	4.55

Table 2*Two-Tailed t-Test*

Variable	<i>M</i>	<i>SD</i>	μ	<i>t</i>	<i>p</i>	<i>d</i>
preknow	2.09	0.97	0.05	9.85	< .001	2.10
postknow	2.95	1.21	0.05	11.22	< .001	2.39

Figure 1*Pre-education Knowledge of COWS***Figure 2***Post-education Knowledge of Cows*