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Shift Change: Minimizing the COVID-19 Nursing Shortage and Decreasing Nursing Burnout

Suzanne R. Baker
University of Texas at Tyler, suzanne.baker@lsco.edu

Shift Change: Minimizing the COVID-19 Nursing Shortage and Decreasing Nursing Burnout

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Suzanne Baker, BSN, RN

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Contents

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Executive Summary

Burnout and the nursing shortage of the healthcare system is not a new issue for nurses, but the COVID-19 pandemic caused this problem to only get worse (Young, 2021). Most healthcare facilities are severely understaffed. The nursing shortage and symptoms of burnout among nurses working in the Intensive Care Units (ICU) and other high-demand COVID-19 nursing units have been magnified by the COVID-19 pandemic. Inferior working conditions such as increased work times, increased workload, and decreased training in the care of COVID-19 patients magnified nursing burnout and the ongoing nursing shortage (Galanis et al., 2021). Discovering ways to reduce the stress and burnout of the nurses working the frontlines of the pandemic is critical to promoting positive mental health of nurses. Some studies have shown there is a correlation between nursing satisfaction and the shift hours worked. Adverse effects such as stress and burnout of nurses, decreased patient outcomes, and lower patient satisfaction reports are associated with nurses working longer hours (Hoedl et al., 2021). The 2023 National Council of State Boards of Nursing (NCSBN) reported that approximately 100,000 Registered Nurses (RNs) left the workforce because of burnout, stress, or retirement during the COVID-19 pandemic.

A change is needed to address the ongoing nursing shortage. A prudent, manageable, and cost-efficient way to help reduce nursing burnout is by decreasing the nursing shifts from twelve-hour to eight-hour shifts on high-stress and high- demand nursing units. The PICOT question that will be used for the evidence-based change is the following: In ICU nurses taking care of COVID-19 patients (P), how do eight-hour shifts (I) compared to twelve-hour shifts (C) affect nursing burnout (O) within eight weeks (T)?

Shift Change: Minimizing the COVID-19 Nursing Shortage and Decreasing Nursing Burnout

Covid hospitalizations have decreased significantly from what they were during the peak of the pandemic in 2019. Something as simple as a change in shift scheduling can be beneficial for nurses, patients, patients' family, and healthcare team to decrease the effects of burnout. As future pandemic outbreaks continue to happen, hospital administrators can implement scheduling that will strengthen current nursing and interprofessional relationships, decrease mental exhaustion, and reduce nursing burnout (da Silva & Barbosa, 2021).

There was a significant risk for nurses to develop stress, mental health issues, and burnout symptoms from working long hours on the frontlines of the COVID-19 Pandemic in addition to the increased risk of exposure (Sanghera et al., 2020). Many nurses have been adversely impacted by the COVID-19 Pandemic, leaving them feeling inadequate, stressed, and burned out. The COVID-19 Pandemic has contributed to an increase in the nursing shortage of the healthcare system. Burnout is affecting everyone in the healthcare profession. All nurses, doctors, healthcare workers, and even nursing students are being affected by the issue of burnout. Nurses are being made to feel guilty when they are sick and attempt to call in to work because they are sick with COVID type symptoms (Nelson et al., 2021). The quality of patient care can be negatively affected by burnout. A survey was conducted that showed 49% of healthcare workers are suffering from burnout, 43% reported they are affected by work overload, and 61% are terrified of being exposed to COVID while at work (Prasad et al., 2021). There has been a trend of early retirement for some nurses, while others are just quitting because they are suffering from burnout and fatigue (Christ, 2020). Studies have shown that nurse satisfaction is highly impacted by the shift worked (Lishan et al., 2021).

The health of nurses can be negatively affected by burnout. Health problems such as cardiovascular disorders, gastrointestinal issues, hypertension, anxiety, and depression can be caused by burnout. Burnout can be costly for the facilities because it can lead to nursing shortages, higher turnover rates of nurses, and errors that cause poor patient outcomes. Finding ways to decrease the stress and burnout for nurses working on the frontlines of the pandemic is crucial. A safe, simple, and cost-effective way to help decrease nursing burnout is to shorten nursing shifts from twelve-hour shifts to eight-hour shifts on the high stress nursing units. da Silva & Barbosa (2021) found that there is a critical need for strategies that will help prevent mental health issues in the health care professionals caring for COVID-19 patients. One of the most important measures to appraise the usefulness of nurse scheduling is work satisfaction among nurses. There also needs to be some changes implemented within the structure of the organizations that will help deal with the emotional aspects of caring for COVID-19 patients (da Silva & Barbosa, 2021).

Rationale for the Project

Working on the front lines of the COVID-19 pandemic has put nurses at an increased risk of suffering from nursing burnout. Some nurses have revealed that increased stressors from the pandemic such as wearing personal protective equipment (PPE) for prolonged periods, the elevated chance of acquiring an infection, and social isolation are contributing factors to nursing burnout (Jose et al., 2020). Continuing consequences of not implementing evidence-based change for nurses suffering from burnout are they will eventually experience health problems such as cardiovascular disorders, increased blood pressure, gastrointestinal issues, anxiety, and depression. Nursing burnout leads to an escalation of nursing turnover rates, nursing shortages, and costly medical errors that have a negative effect on patient care and outcomes. Negative

patient outcomes, decreased reports of patient satisfaction rates, and careless medical errors from stress and fatigue can also lead to costly medical mistakes for the healthcare facility. Adverse effects such as stress and burnout of nurses, decreased patient outcomes, and lower patient satisfaction reports are associated with nurses working longer hours (Hoedl et al.,2021). Reports show that the nursing turnover rate from burnout can cost a facility $16,736 per nurse per year employed with the company compared to $11,592 per nurse per year employed by facilities that have a burnout reduction program in place (Muir et al., 2022). A change in shift hours worked is a safe and cost-efficient way to incorporate change.

Patients in the practice setting do not care how many hours a nurse is working per shift, but they do expect to always receive quality nursing care during hospitalizations. Nursing burnout negatively affects the quality of patient care along with patient outcomes. Nursing burnout can be decreased while increasing patient outcomes and satisfaction when hospital administrators consider the mental health of their nurses who are staffing these units. Regardless of where a nurse works, it is imperative to diminish the symptoms of burnout so that patient outcomes and nursing job satisfaction will be improved. A prudent, manageable, and cost-efficient way to help reduce nursing burnout is by decreasing the nursing shifts from twelve-hour to eight-hour shifts on high-stress nursing units.

Literature Synthesis

The evidence shows that nursing burnout leads to an escalation of nursing turnover rates, nursing shortages, and costly medical errors that have a negative effect on patient care and outcomes. Negative patient outcomes, decreased reports of patient satisfaction rates, and careless medical errors from stress and fatigue can also lead to costly medical mistakes for the healthcare facility and to the patients (Hoedl et al.,2021; Gordon et al., 2021). A comprehensive literature

search was performed using PubMed, Cochrane, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases to find answers to the clinical question. The search terms used were ICU nurses, COVID-19 patients, burnout, pandemic, mental health, nurses, and health care workers. There were not any randomized controlled trials (RCTs) to be found in the original or updated searches. (see Appendix A).

The research demonstrated that there was a significant risk for nurses to develop stress, mental health issues, and burnout symptoms from working long hours on the frontlines of the COVID-19 Pandemic in addition to the increased risk of exposure (Chigwedere et al., 2021; da Silva & Barbosa, 2021; Dutta et al., 2021; Sanghera et al., 2020; Zhang et al., 2020). Some studies indicate there is a need for adequate support to be provided from administration to decrease the symptoms of burnout in nurses caring for COVID-19 patients (Chigwedere et al., 2021; da Silva & Barbosa, 2021; Sanghera et al., 2020; Gordon et al., 2021). Some level VI evidence cross-sectional study articles were reviewed during the search that supports the need to decrease workload to improve levels of stress and burnout in nurses. Some of the lower-level evidence studies recommend decreased shift length and working in pairs with another nurse (Cadge et al., 2021; Gao et al., 2020; Lishan et al., 2021).

The commonality between all the studies researched is that there is a significant need to find a way to decrease the stress and burnout of the nurses working in high-stress units (Bruyneel et al., 2023; Cadge et al., 2021; Chigwedere et al., 2021; da Silva & Barbosa, 2021; Doleman et al., 2023; Dutta et al., 2021; Galanis et al., 2021; Gao et al., 2020; Gordan et al., 2021; Lishan et al., 2021; Sanghera et al., 2020; Zhang et al., 2020). This will increase job satisfaction and ultimately improve overall patient outcomes. As there continues to be pandemic outbreaks, hospital administration can implement nursing staffing that will strengthen current relationships,

decrease nursing burnout and mental exhaustion. Interventions that an organization can use to improve nursing burnout are to offer support to the nursing staff while making staffing decisions. The hospital administrators should consider the nurses' experiences while caring for COVID-19 patients and how it will affect their mental well-being. Nursing burnout can be decreased while increasing patient outcomes and satisfaction when hospital administrators consider the mental health of their nurses who are staffing these units. Nursing will be positively impacted if we can find a way to increase staffing to decrease the workload of the nurses on these high demand nursing units so that the feeling of nursing burnout can be decreased.

Project Stakeholders

The ICU and COVID-19 nursing units will be the anticipated sites for the nursing burnout shift change project to be completed. The stakeholders affected by the proposed change include unit nurses, facility administration, unit managers, staffing coordinators, the human resources department, patients, and family members of patients. An interprofessional team collaboration consisting of the unit nurses, unit managers, and staffing coordinators will be needed to incorporate a decrease in scheduling the nursing shifts from twelve-hour shifts to eight-hour shifts. The unit managers and human resources department can work together to compile the nursing burnout rates, facility nursing turnover rates, and patient satisfaction survey reports. Permission for scheduling changes will need to be approved by the unit nurses for the scheduling changes to be initiated, and the unit managers and facility administrators to approve the scheduling changes. The gatekeepers are the unit nurses, unit managers, and facility administrators who grant permission for change to occur. Allies and change champions in the facility that can assist with the change project are the unit nurses, unit managers, human resources department, staffing coordinators, and facility administration.

Implementation Plan

The implementation of the nursing shift change project can make a positive impact on the effects of nursing burnout, reduce the nursing turnover rate, decrease the nursing shortage, and improve patient outcomes. The change can be seen with improvement in the MBI assessment scores for the nurses involved who are utilizing a reduced shift change schedule. Nursing burnout is the leading cause of the nursing shortage and costly nursing turnover rates for facilities. Even though the change project was originally planned to be implemented for ICU and COVID-19 nursing units, it would be beneficial to implement it on any high stress, high demand nursing unit. It could make an impact for nursing care of future pandemics.

To begin implementation of the nursing shift change project, a meeting will be held with the hospital administration. During the initial meeting, a PowerPoint on the effects of nursing burnout on nurses will be presented to hospital administrators. Permission to implement the shift changes from twelve-hour shifts to eight-hour shifts for 8 weeks will be requested during this meeting. Once permission is received by the hospital administration, the Maslach Burnout Inventory (MBI) assessment can be administered to the unit nurses during a staff meeting. Handouts will also be presented to the nurses over the adverse effects of nursing burnout. MBI assessment scores of 16-26 are indicative of moderate burnout and scores of 27 or greater reflect high burnout (Kelly et al., 2021). Two cohorts of nurses with scores greater than 16 will be recruited for the change of nursing shifts. One cohort will work eight-hour shifts and the other will remain working the twelve-hour shift for eight weeks. Next, the unit nurses, unit managers, and staffing coordinators will collaborate to incorporate the scheduling of the eight-hour shift cohorts and the twelve-hour shift cohorts. Now the eight-hour shift cohort can be implemented with a 7 am to 3 pm shift, 3 pm to 11 pm shift, and a 11 pm to 7 am shift. The twelve-hour shift

cohort will work 7 am to 7 pm and 7 pm to 7 am. At the end of 8 weeks, another staff meeting will be held to re-administer the MBI assessment and obtain feedback from the cohorts of nurses who participated in the change. Finally, the project director will collect the MBI assessment results. The project director will utilize Microsoft Excel spreadsheet to compare the results of the MBI assessment data from the two cohorts pre and post shift change. These results will be presented to the hospital administration once completed. (see Appendix C)

Timetable/Flowchart

The timeline for the proposed change will be completed in a total of thirteen to fourteen weeks. The initial approval will take place the first week during the initial meeting with the hospital administration. The staff meeting will be held during the second week after approval is obtained from the administration. The MBI Assessment will be completed by the nurses during the staff meeting. At this time, the nurses will be recruited for participation in the two cohorts for the shift changes. During the third week, the unit nurses, nurse managers, and staffing coordinators can collaborate and make the new schedules. The cohorts will work the new schedules for a total of eight weeks. At the end of the eight-week period, another staff meeting will be held. The MBI assessment will be readministered to the nurses during this meeting. The data from the pre and post assessments will be collected and analyzed over the next week. The last week, a follow-up meeting will be held with the administrative team. Results will be reported during the meeting and permission requested for approval of a six-month trial of eight-hour shifts in ICU. (see Appendix B).

Data Collection Methods

My change topic proposes to decrease the length of hours worked from twelve-hour to eight-hour shifts for Intensive Care Unit (ICU) nurses taking care of COVID-19 patients to

reduce nursing burnout, decrease nursing turnover, and reduce nursing shortage. Now that COVID-19 numbers are on the decline, reduced shift hours for any high demand nursing units could be beneficial for the nursing shortage, nursing retention and to decrease nursing burnout. Nursing burnout is a significant and detrimental problem that negatively affects facilities, organizations, patients, and individual nurses (Kelly et al., 2021). The results of the MBI assessments from the pre and post shift change implementation for the two cohorts will be collected by the program director along with post survey results. The post survey will assess variable data from participating nurses of both cohorts such as age, underlying health conditions, most common shift worked, average hours worked per week, the number of patients assigned during the last workday, number of sick days taken during the eight weeks, and if they plan to work in their current position in a year. The program director will input the data collected from the pre and post MBI assessments and from the post surveys into a Microsoft Excel spreadsheet. Pre and post MBI assessment data will be compared to determine the success of the project. The mean, median, and standard deviation of the data results will be calculated and analyzed for success of the program. These calculations will be graphed in a Microsoft Excel spreadsheet using a bell curve graph and presented to the stakeholders for review. (see Appendix C).

Cost/Benefit Discussion

Nursing turnover has serious consequences for healthcare facilities and can lead to consequential financial burdens for healthcare facilities with costs up to $8.5 million dollars related to open nursing positions, training, and orientation of new nurses and an estimated cost of $11,000 to $90,000 per nurse. According to the Texas Center for Workforce Studies (2022), Texas hospitals reported a decline in the numbers of RNs from 81.9% to 76.6% for the first time

during the years of 2019 to 2022. It is projected that Texas will experience a shortage of nurses from 2015 through 2030.

Reports show that the nursing turnover rate from burnout can cost a facility $16,736 per nurse per year employed with the company compared to $11,592 per nurse per year employed by facilities that have a burnout reduction program in place (Muir et al., 2022). A safe and cost-efficient way to incorporate change can begin by reducing the nurses' shifts from twelve-hour to eight-hour shifts on high-demand nursing units. The cost of implementing this project will be minimal compared to the cost of nursing turnover.

Discussion of Results

The proposed change project was implemented as a benchmark project because of the decrease in the COVID-19 hospitalizations. The benchmark change project was originally proposed to be completed in an Intensive Care Unit (ICU) setting with COVID-19 patients. The COVID-19 Pandemic has caused the already rising numbers of the nursing shortage to further increase. Now that the COVID-19 hospitalization numbers are decreasing, this concept can be applied to any high-stress nursing unit so that healthcare can be prepared to battle future pandemics. MBI post assessment scores of less than 16 will indicate decreased nursing burnout. Post assessment scores of less than 16 will determine the project was successful at decreasing the feeling of burnout among the nurses working in the eight-hour cohort.

Conclusions/Recommendations

The ongoing nursing shortage has been reported for many years now and it only worsens as the days continue. The COVID-19 Pandemic caused a significant rise in the number of nursing shortages. Nurse burnout is a growing and serious problem and with the additional COVID-19

pandemic stressors of harsh working conditions, long working hours, and rising mortality rates, the chances of burnout increased significantly (Kelly et al., 2020). Nursing burnout negatively affects the quality of patient care along with patient outcomes. Nursing burnout can be decreased while increasing patient outcomes and satisfaction when hospital administrators consider the mental health of their nurses who are staffing these units. Nursing will be positively impacted if we can find a way to increase staffing in these high-demand nursing units so that the feeling of nursing burnout can be decreased. Many nurses are overworked, stressed, tired, and short-staffed while working in these high-demand units. This simple change in shift scheduling can be beneficial for nurses, patients, their families, and the healthcare team if it decreases the effects of burnout. As future pandemic outbreaks continue to happen, hospital administrators can implement scheduling that will strengthen current nursing and interprofessional relationships, decrease mental exhaustion, and reduce nursing burnout.

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Appendix A

Evaluation Table

Clinical Question (PICOT):

In ICU nurses taking care of COVID-19 patients (P), how do eight-hour shifts (I) compared to twelve-hour shifts (C) affect nursing burnout (O) within eight-weeks (T)?

Citation: Author, Date of Publ. & Title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Worth to Practice: LOE Strengths/Weaknesses Feasibility Conclusion RECOMMENDATION
(Study #1) da Silva (2021). The impact of the COVID-19 pandemic on an intensive care unit (ICU)	To understand the impact that CP is having on CT in ICU and what is being done to decrease the clinical and psychological impacts of the	None	SR 3 databases searched: PubMed, Scopus and Embase. Any type of study on HW in ICU during CP with	N=31 studies Sample size ranged from 31-573 P= 33,062	IV: HW in ICU reporting MH issues after working with CP pts. DV: INTV needed to prevent or reduce MH problems caused by CP in HW in ICU.	DV: LOA, D, SP related to high workloads.	No analysis	IV: ↑ LOA, D, SP	Level I Evidence Strengths: Multiple studies on MH examined. No adverse effects. Limitations: No data analysis. Small number of published studies with SQ. Recommendations: More RS need to be performed on nurses working in ICU with CP.

Legend: ***AC=Acute Care; BO=Burnout; CD=Counting Data; CHP=Chest tightness and palpitations; CL=Cochrane Library; CP=COVID-19 Pandemic; CS=Cross-Sectional; CT= Clinical Team; CV=COVID-19; D=Depression; DE=Direct Exposure; DV=Dependent Variable; E=Education; F=Fatigue; FL=Front Line; GC=General Care; GP=General Population; H=Hour; H1N1=Swine Flu; H7N9= Avian Flu; HA=Headache; HL= Hospital Leadership; HW= Healthcare Workers; I=Insomnia; IA=Isolation areas; ICU=Intensive Care Unit; ID=Identify; INTV= Interventions; ITV=Intention to Leave; IV= Independent Variable; LOA=Level of Anxiety; LT=Long Term; MA=Meta analysis; MBI=Maslach Burnout Inventory; MD=Medical Doctor; MERS=Middle East Respiratory Syndrome; MH=Mental Health; N=Number in Study; NM=Nurse Managers; OB=Occupational Burnout; P=Participants; PES-NWI= Practice Environment Scale of the Nursing Work Index; PO= Physical Overdraft; Pts=Patients; PS= Purposive sampling; QE=Qualitative Evidence; RE=Random Effect; RF=Risk Factors; RS= Randomized Surveys; S=Setting; SARS= Severe Acute Respiratory Syndrome; SB= Selective Bias; SL=Shift Length; SP=Sleep Problems; SQ= Standardized Questionnaires; SR=Systemic Review; SSI= Semi-structured Interviews; SX=Symptoms; V=Vomiting; VAR=Variables; WC=Wechat app questionnaire; WE= Work Environment; WF= White Female; WL=Workloads.***

Citation: Author, Date of Publ. & Title	Purpose of Study	Conceptual Framework	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Worth to Practice: LOE Strengths/Weaknesses Feasibility Conclusion RECOMMENDATION
	experience of this group.		results about MH.						This study can be repeated in any HC setting or situation to improve pt satisfaction.
(Study #2) Lishan (2021). The Effect of Staggered Shift Scheduling Mode on Nurses in the COVID-19 Isolation Ward- A Cross Sectional Study.	To explore rational use of nursing resources in CP by adjusting shift schedules in CP IA.	None	CS: IA of a 5-floor hospital. Method:78 nurses arranged in IA to care for CP working 3 different shifts of 4 + 4H, 6H, and 6H with 1H overlap.	N=78 P P=All Women Age range (21-42)	IV1: 4+4H Shift IV2: 6H Shift IV3: 6H Shift with 1H overlap DV1: ↓ satisfaction, ↓ PO DV2: ↓ satisfaction, ↑ PO DV3: ↑ comprehensive satisfaction, ↑ PO and provided most flexibility.	P self-reported by completing a WC. 78 WC returned completed. PO ↑ for HA, CHP, and V	CD analyzed by Kruskal-Wallis rank sum test. P Value < 0.5 considered statistically significant	IV1: HA 10%, CHP12%, V 8% IV2: HA 20%, CHP 26%, V 18% IV3: HA 10%, CHP 18%, V 12 HA: P=.007 CHP: P=.005V:P=.014	Level VI Evidence Strengths: No adverse effects. Limitations: SB may have occurred, and the sample was only done from nurses at one hospital. Recommendations: This study can be reproduced and randomized to my clinical setting. Further studies can be implemented to decrease nursing burnout from working future pandemics.

Legend: ***AC=Acute Care; BO=Burnout; CD=Counting Data; CHP=Chest tightness and palpitations; CL=Cochrane Library; CP=COVID-19 Pandemic; CS=Cross-Sectional; CT= Clinical Team; CV=COVID-19; D=Depression; DE=Direct Exposure; DV=Dependent Variable; E=Education; F=Fatigue; FL=Front Line; GC=General Care; GP=General Population; H=Hour; H1N1=Swine Flu; H7N9= Avian Flu; HA=Headache; HL= Hospital Leadership; HW= Healthcare Workers; I=Insomnia; IA=Isolation areas; ICU=Intensive Care Unit; ID=Identify; INTV= Interventions; ITV=Intention to Leave; IV= Independent Variable; LOA=Level of Anxiety; LT=Long Term; MA=Meta analysis; MBI=Maslach Burnout Inventory; MD=Medical Doctor; MERS=Middle East Respiratory Syndrome; MH=Mental Health; N=Number in Study; NM=Nurse Managers; OB=Occupational Burnout; P=Participants; PES-NWI= Practice Environment Scale of the Nursing Work Index; PO= Physical Overdraft; Pts=Patients; PS= Purposive sampling; QE=Qualitative Evidence; RE=Random Effect; RF=Risk Factors; RS= Randomized Surveys; S=Setting; SARS= Severe Acute Respiratory Syndrome; SB= Selective Bias; SL=Shift Length; SP=Sleep Problems; SQ= Standardized Questionnaires; SR=Systemic Review; SSI= Semi-structured Interviews; SX=Symptoms; V=Vomiting; VAR=Variables; WC=Wechat app questionnaire; WE= Work Environment; WF= White Female; WL=Workloads.***

Citation: Author, Date of Publ. & Title	Purpose of Study	Concept ual Frame work	Design/ Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Worth to Practice: LOE Strengths/Weaknesses Feasibility Conclusion RECOMMENDATION
(Study #3) Cadge (2021). Intensive care unit nurses living through COVID-19: A qualitative study.	To understand how nurses experience providing care for pts hospitalized with CP in ICU.	None	QE Methods: 6/2020 to 8/2020 SSI were conducted on 16 nurses caring for CP during the first surge. They were selected by PS. P worked in ICU's of a 1,000-bed hospital in Northeast US.	P= 16 nurses. N=8 from ICU + 8 from GC	IV: ICU Nurses were paired with GC nurses to form nurse teams. DV: Nurses turned to each other for support when needed.	When working in pairs, roles and responsibilities need to be clearly defined.	No analysis	It was determined that HL needs to utilize the nursing experiences of caring for CP pts when making decisions regarding staffing.	Level VI Evidence Strengths: the data was coded so that it was generated to answer research questions about the N experience with new staffing models and to find unanticipated findings about the N wanting more recognition by leadership. Limitations: this was a small, exploratory study with mostly WF N at one urban hospital. A larger, more diverse sample is needed to better understand the experiences of our frontline N. Recommendations: This study can be applied to any HC setting to improve nursing satisfaction and decrease burnout.

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(Study #4) Sanghera (2020). The impact of SARS-CoV-2 on the mental health of healthcare workers in a hospital setting-A Systematic Review	To determine the impact of CP on MH outcomes of hospital-based HWs and formulate recommendations for future action.	PRISMA Flow Diagram	SR 2 databases searched: PubMed and Embase This SR demonstrates the prevalence of 6 MH conditions in HWs caring for CP with associated factors, in 44 studies across 15 countries.	P=38 Nurses, 42 MDs, 6 GPS=27 in China, Thailand, Oman, Italy, India, Singapore, UK, Romania, Turkey, Spain, Iran, Jordan, Italy, Pakistan & America	IV: HW reporting MH issues after working with CP pts. DV: The repercussions of CP have far surpassed its predecessors. It has brought new challenges to mental health, and the impact on HWs is likely be present far after the end of CP.	Psychiatric conditions were defined. The use of validated psychiatric scoring tools, differences in prevalence between sub-groups of HWs and independent risk factors associated with these conditions were ID'd.	D 13.5%-44.7%; anxiety 12.3%-35.6%; acute stress reaction 5.2%-32.9%; post-traumatic stress disorder 7.4%-37.4%; insomnia 33.8%-36.1%; and OB 3.1%-43.0%.	DE to CP was the most common risk factor identified for all MH outcomes except OB. Nurses, frontline HWs, and HWs with low social support and fewer years of working experience reported the worst outcomes.	Level I Evidence Recommendations: Hospitals should be staffed to meet service provision requirements and to mitigate the impact on MH. This can be improved with access to rapid-response psychiatric teams and should be continually monitored throughout the pandemic and beyond its conclusion.

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(Study #5) Gao (2020). Nurses' experiences regarding shift patterns in isolation wards during the COVID-19 pandemic in China: A qualitative study	To explore HW experiences regarding shift patterns while providing front-line care for CP in IA.	Colaizzi's method	QE Methods: SSI were conducted on 14 nurses caring for CP in IA.	P=14 nurses S= China	IV: it is essential and urgent to arrange HW SL correctly and use the existing work force resources efficiently. DV: SL must be discussed and organized considering HW perspectives to promote high-quality nursing.	4 themes extracted with subthemes.	Data analysed using Colaizzi's method.This study aligns with the COREQ checklist.	Provide a basis for NM to arrange shifts. HW competency, specialty, workflow, workload and preferences should be considered by nursing managers when arranging teams and shifts.	Level VI Evidence Strengths: HW in different hospitals and IA were selected to ensure the representativeness of the sample and data saturation. They were selected through purposive sampling. Conclusion: Shift patterns should be arranged scientifically and allocate workforce rationally to optimise nursing workforce allocation, reduce nurses' workload, improve nursing quality and promote physical and mental health among nurses during the COVID-19 pandemic.
(Study #6) Dutta (2021) Mental health outcomes among	To synthesize the currently available literature	None	SR & MA 4 databases searched: PubMed, PsycINFO,	N=33 studies Sample size: 88-14,825 P=39,703	IV: HW reporting MH issues after working with CP.	DV:↑ D, LOA, I, and stress in HW caring for CP	Data analyzed using MetaXL software.	↑ in MH sx of HW caring for CP.	Level I Evidence Strengths: Rigorous SR process. Weaknesses: ↑ heterogeneity among study results. Most of these studies were from China.

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health-care workers dealing with COVID-19/severe acute respiratory syndrome coronavirus 2 pandemic: A systematic review and meta-analysis	on the topic to determine the prevalence of MH problems in HWs caring for CP		Scopus & CL. Any study reporting prevalence of MH issues in HW caring for CP from 12/19 to 8/15/20		DV: ↑ in D & LOA for HW caring for CP				Feasibility: Study can be applied to any HC setting. Conclusion/Recommendation- HW needs to practice self-care & HL needs to consider MH consequences during high demand pandemics. This study does not address nursing burnout or shift differences but could still be modified for use.

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(Study #7) Chigwedere (2021). The Impact of Epidemics and Pandemics on the Mental Health of Healthcare Workers: A Systematic Review	To review & synthsize evidence on MH impact of CP on HW.	None	SR Method: 3 databases searched. PubMed, PsycInfo, and Psyc Articles.	76 studies included. 34= SARS, 28=CV, 7=MERS, 4=Ebola, 2=H1N1, 1=H7N9	DV: Stress is the most commonly reported MH sx.	High risk unit= ↑ stress ↑ long hour shifts= ↑ stress ↓ availability of PPE= ↑ stress	Analyzed using PRISMA	HW's working with CP experience wide range of MH sx.	Level I Evidence Strengths: Large # of studies conducted pre and post epidemics and pandemics. Standardized and validated instruments were used for measuring MH sx. Conclusion/Recommendation: FL workers with direct contact reported greater sx of stress and burnout after working long shifts.
(Study #8)	To summarize the evidence and clarify a bundled strategy to reduce BO of MDs and nurses.	None	SR & MA Databases searched: Cochrane, PubMed, Ovid, Scopus, Cinahl, and Google Scholar.	N=22 studies MD: n=9; nurses=6; HW=7.	DV: Bundled strategy of stress mgmt., teamwork transitions, workload or schedule rotation, debriefing sessions.	Highest level of burnout was reported amongst nurses with ↑ in recent years.	PRISMA Guidelines followed	Burnout is complicated and should be dealt with using a bundled strategy.	Level I Evidence Strengths:Included studies in different settings. This article brought up interventions to decrease burnout in MD's and nurses. Conclusion/Recommendation: Urgent need to implement & evaluate LT effects of pandemic.

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Zhang (2020). Interventions to reduce burnout of physicians and nurses An overview of systematic reviews and meta-analyses									
(Study #9) Bruyneel (2023). Association of burnout and	To describe the prevalence of BO and ITL in ICU	None	Cross sectional study PES-NWI & MBI scale used	Nurses in 78 out of 123 Belgium Hospital	IV: SL, ICU E, Pts to Nurse ratio DV: Nurses working in ICU with CP	Work environment plays a key factor in ↑ job satisfaction	RN4Cast survey	2 yrs post CP, rates of ICU nurses in Belgium are ↑ risk of BO from pre-CP.	Level II Evidence Weaknesses: Results are self-reported Conclusion/Recommendation: Study highlighted the importance of monitoring the

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intention to leave the profession with work environment	nurses and analyze relationship of VAR and the WE after 2yrs CP			sites with an ICU. P=2321 nurses out of 4851.					risk of BO among ICU nurses during CP or other stressful events and find ways to implement prevention and management interventions.
(Study #10) Doleman (2023). The impact of pandemics on healthcare providers workloads	To review and synthesize evidence that explores the impact of CP on HW WL in AC settings.	None	SR & Scoping Review	N=55 51 from CP, 1 from 2009 H1N1 Pandemic, 2 from SARS	DV: WL of CP HW	Studies were included if the impact of the HW WL were measured.	PRISMA-ScR checklist	↑ WL can have a Negative impact on pt care, heavy WL=suboptimal care that results in ↓ pt satisfaction.	Level VI Evidence Weakness: this was a scoping review that may have missed some articles. Conclusion/Recommendation: The findings indicate that there is a link to CP and ↑WL having negative consequences but there is no plan for what to do.
(Study #11) Galanis (2021). Nurses' burnout and associated risk factors	To examine nurses' BO & RF during CP.	None	Cochrane criteria for SR & MA	16 studies N=18,935	6 valid & standardized questionnaires were used to measure BO in nurses.	MBI = significant BO during CP	RE model	BO in nurses is a crucial issue for CP.	Level I Evidence Conclusion/Recommendation: There is an urgent need to prepare nurses to cope better with CP & ID RF.

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during the COVID-19 pandemic									
(Study #12) Gordon (2021). the experiences of critical care nurses caring for patients with COVID-19 during the 2020 pandemic	To examine the experience of the ICU nurses caring for CP.	None	Qualitative descriptive design	N=11 ICU nurses who cared for CP were interviewed	DV: MH, A	Physical sx present due to caring for CP	None	ICU nurses are having MH issues related to CP	Level V Evidence Conclusion/Recommendation: Leaders must acknowledge the effects of the CP on nurses.

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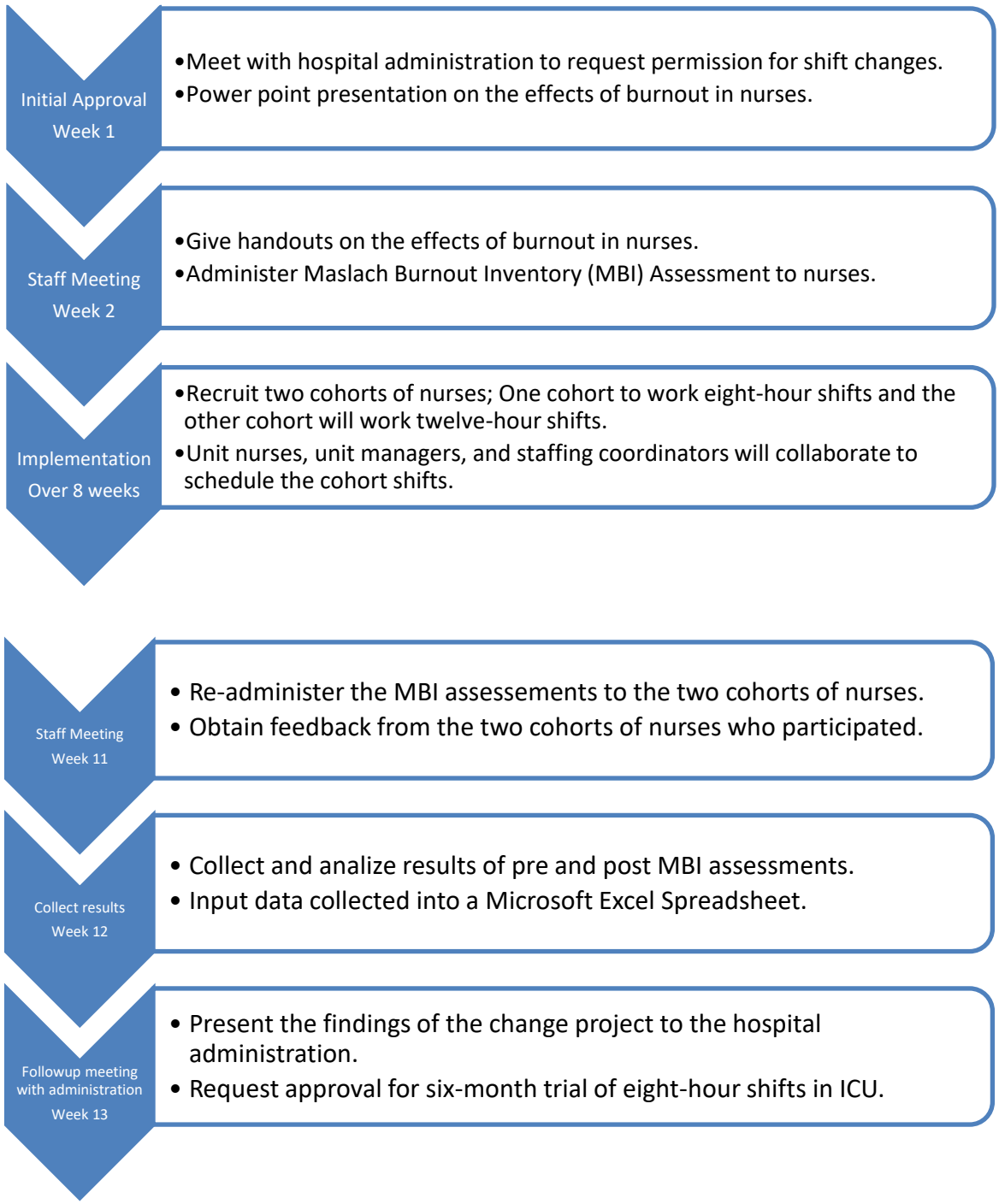
Appendix B

Flowchart



Appendix C

Instrument

Post Survey

Age	Health Conditions	Shift worked	Hours worked/week	# of assigned Pts.	# of sick days taken	Do you plan to work here in one yr?

Appendix C

Maslach Burnout Inventory

How do you perceive your work? Are you exhausted? How capable are you of shaping your relationship to others? To what degree are you personally fulfilled?

Indicate how frequently the following statements apply to you and add the points indicated on top of the respective box:

0 = Never
1 = At least a few times a year
2 = At least once a month
3 = Several times a month
4 = Once a week
5 = Several times a week
6 = Everyday

01 – I feel emotionally exhausted because of my work	0	1	2	3	4	5	6
02 – I feel worn out at the end of a working day							
03 – I feel tired as soon as I get up in the morning and see a new working day stretched out in front of me							
04 – I can easily understand the actions of my colleagues/supervisors							
05 – I get the feeling that I treat some clients/colleagues impersonally, as if they were objects							
06 – Working with people the whole day is stressful for me							
07 – I deal with other people's problems successfully							
08 – I feel burned out because of my work							
09 – I feel that I influence other people positively through my work							
10 –I have become more callous to people since I have started doing this job							
11 – I'm afraid that my work makes me emotionally harder							
12 – I feel full of energy							
13 – I feel frustrated by my work							
14 – I get the feeling that I work too hard							
15 – I'm not really interested in what is going on with many of my colleagues							
16 – Being in direct contact with people at work is too stressful							
17 – I find it easy to build a relaxed atmosphere in my working environment							
18 – I feel stimulated when I been working closely with my colleagues							
19 – I have achieved many rewarding objectives in my work							

20 – I feel as if I'm at my wits'end							
21 – In my work I am very relaxed when dealing with emotional problems							
22 – I have the feeling that my colleagues blame me for some of their problems							

Overall score for occupational exhaustion (EE)

Add together the answers to questions 01. 02. 03. 06. 08. 13. 14. 16. 20

Occupational exhaustion	EE < 17	EE 18 - 29	EE > 30
	Low degree	Moderate degree	High degree

Overall score for depersonalization / loss of empathy (DP)

Add together the answers to questions 05. 10. 11. 15. 22

Depersonalization	DP < 5	DP 6 - 11	DP > 12
	Low degree	Moderate degree	High degree

Overall score personal accomplishment assessment (PA)

Add together the answers to questions 04. 07. 09. 12. 17. 18. 19. 21.

Personal accomplishment assessment	PA < 33	PA 34 - 39	PA > 40
	Low degree	Moderate degree	High degree

<u>Degree of burnout</u>

Beware if the totals of your EE and DP answers are both in the red area, and above all if your personal accomplishment assessment is also in the red!!!

EE	Occupational exhaustion (burnout) is typically connected to a relationship with work that is perceived as difficult, tiring, stressful… Maslach sees this as different from depression, as it is likely that the symptoms of burnout would be reduced during holidays.

DP	Depersonalization or loss of empathy is characterized by a loss of regard for others (clients, colleagues…), and by keeping a greater emotional distance, which is expressed through cynical, derogatory remarks, and even callousness.
PA	The personal accomplishment assessment is a feeling that acts as a "safety valve" and contributes to bringing about a balance if occupational exhaustion and depersonalization occur. It ensures fulfilment in the workplace and a positive view of professional achievements.