

**STATE COMMISSION ON PATIENT SAFETY
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Category D: Implementing Safety Systems in Healthcare Organizations

Codes:

Staffing (18) – use of staffing methods that acknowledge human limitations as part of an organization’s patient safety system.

To improve the safety of patient care and eliminate staff-related patient safety errors due to deficiencies in the quantity and quality of nurse staffing, three key areas must be addressed simultaneously: 1) the nursing shortage, 2) deployment and design of nursing work, and 3) fair compensation to healthcare delivery organizations which improve the safety and quality of nursing services. The content in this report are presented according to these three areas.

Recommendations: D4 Staffing.¹

To improve the safety of patient care and eliminate staff-related patient safety errors due to deficiencies in the quantity and quality of nurse staffing: incentives to increase the supply of nurses should be funded and enacted; staffing principles and practices as recommended by the Institute of Medicine and others should be used; nationally-developed standards and measures to evaluate staffing effectiveness should be implemented; incentives that reward healthcare delivery organizations that meet or exceed nursing-related patient safety measures should be developed and implemented; and statewide data on nurse staffing effectiveness as it relates to patient safety should be made available.

All stakeholders (healthcare delivery organizations, schools of nursing, third-party payers and government health programs, purchasers, regulatory and licensing agencies, professional associations, labor unions and state legislators) should:

Recommendation D4a: Work together to return inactive licensed nurses to nursing practice, retain existing nurses, and produce additional new nurses through novel approaches to partnering and by developing new incentive programs and financial support.

Recommendation D4b: Work together to fund/support:

1. nurse trainee scholarships and tuition reimbursement,
2. additional faculty positions within schools of nursing, and
3. healthcare delivery organizations that serve as clinical learning sites and provide clinical faculty mentors.

All healthcare delivery organizations should:

Recommendation D4c: Plan for and deploy adequate levels of qualified nursing staff for each patient care area by:

- using an explicit and unit-based staffing protocol where baseline staff levels are specified per IOM recommendation² and

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hospital/HCO, regulatory and accreditation rules³ or are legislatively or contractually mandated⁴ and additional staff levels, if any, are determined according to patient needs⁵ and staff credentials.⁶

- involving unit-based staff nurses in unit-level staffing decisions, and
- using unit staffing committees and potentially, self-staffing models and that employ flexible nurse staffing schedules (including shorter shifts) and incentives that reward nurses working in self-staffing units.

All healthcare delivery organizations should voluntarily (unless legislatively or contractually mandated otherwise):

Recommendation D4d: Use staffing practices that acknowledge human limitations and potential for error caused by fatigue-related performance, attention levels and an aging workforce, and consistent with the Institute of Medicine recommendations,⁷ establish policies and practices designed to prevent nurses who provide direct patient care from working longer than a 12-hour shift⁸ in a 24-hour period and in excess of 60 hours per 7-day period except in emergencies such as natural disasters.⁹

All healthcare delivery organizations should:

Recommendation D4e: Adopt and implement nationally-developed standards and measures to monitor and evaluate the effectiveness of staffing practices on:

1. patient safety, health, satisfaction and access to care outcomes; and
2. staff safety, satisfaction, and retention/turnover rates.

All third-party payers and government-sponsored healthcare programs should:

Recommendation D4f: Develop patient safety incentives and other programs which reward in a “pay-for-performance” manner, healthcare delivery organizations that:

1. achieve low nurse vacancy and turnover rates as noted by the Centers for Medicare and Medicaid Services (CMS) and
2. meet or exceed the national consensus standards for nursing-sensitive care as defined by the National Quality Forum which include patient-centered outcome measures such as death among surgical inpatients with treatable serious complications (failure to rescue), nursing-centered intervention measures and system-centered measures.

An appropriate state-level organization(s) should:

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Recommendation D4g: Assist in collection, management and analysis of statewide staffing effectiveness data as it relates to indicators of nationally-recognized and standardized nurse-sensitive patient safety indicators and nurse retention/turnovers.

Testimony Summary:

Testimony on the topic of nurse staffing was submitted by 20 entities representing hospitals (1), providers [not speaking on behalf of an organization] (6), educators (2), consumers and labor organizations (7), insurers (1), professional societies (2), and a non-profit organization (1). The testimony as it relates to the nursing shortage, mandatory overtime, general staffing concerns, nurse-to-patient staffing ratios, and other staffing issues are summarized below.

Nursing Shortage. Although concerns regarding the nursing shortage were infused throughout the testimonies reviewed, five submitters explicitly mentioned the nursing shortage¹⁰ and one suggested developing a voluntary RN corps program composed of retired RNs and use of nursing shift supervisors to serve as “clinical detectives” to discover errors and rescue patients in complicated situations rather than spend time finding beds for patients and finding nurses to care for them.¹¹

Mandatory Overtime. Of the testimony submitted, four raised concerns about the use of mandatory overtime¹² three of which provided explicit recommendations.

- “Michigan must work to eliminate mandatory overtime for nurses.”¹³
- “that you establish a standard regarding the number of hours that hospital staff nurses work, which is no more than 12 consecutive hours during a 24-hour period and no more than 60-hours during a seven-day period”.¹⁴ Additionally, the submitter stated that, “[T]his standard or practice should be voluntarily adopted by both health care institutions and registered nurses”.¹⁵
- The third submitter¹⁶ stated that mandatory overtime should be banned but also noted conditions in which voluntary overtime would be permitted. Specifically, the submitter stated the following:
 1. Set maximum hour limits for nurses, as is done in the transportation industry where public safety is at risk.
 2. Except where a formally declared state of emergency has been declared, employers are prohibited from requiring mandatory overtime of nurses that would exceed:
 - A daily limit of previously determined work schedules or 12 hours in a 24-hour period.
 - 80 hours in a 14 consecutive day period.

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3. Licensed nurses providing direct care may voluntarily work overtime as long as their hours do not exceed:
 - More than 16 hours in a 24 hour period without an intervening 8 hour non-work period; or
 - More than 7 consecutive days without at least one consecutive 24-hour off duty period within that time.
4. Negotiated provisions in union contracts that exceed these protections will prevail.¹⁷

General Staffing Concerns. Although staffing concerns were inherent to all of the testimony, three submitters made the following recommendations:

- “I really think you can keep your nurses and bring some of the -- some back into patient, direct patient care by lightening the patient load”.¹⁸
- “My recommendations are while the nursing staffing is under this constant review that we just need to increase the staffing of licensed registered nurses.”¹⁹
- “The key element to improved resident health and safety is better staffing.”²⁰

Nurse-to-Patient Staffing Ratios. Of the testimony related to nurse staffing issues, 10 addressed the issue of nurse-to-patient ratios. Of these, one submitter made a recommendation against implementation of mandatory minimum staffing levels, “...aspects of nursing other than staffing levels need to be addressed to adequately assure that hospitalized patients are safely cared for, and this researcher is NOT recommending that Michigan follow the example set by other states and mandate minimum staffing levels.”²¹

Of the remaining, six of the nine made a recommendation/suggestion to adopt nurse-to-patient ratios (or some type of specific nurse/patient staffing guideline) but did not state specific numerical ratios. The recommendations are as follows:

- “...but the three things nurses need, you need good nurse/patient ratios,
”²²
...
- “We believe we need guidelines, either agreed upon with the employer, or by legislation, to limit the number of patients each RN is responsible for”²³.
- “...and a patient/nursing ratio should be established at a level that provides an environment for the provision of quality and affordable health care.”²⁴
- “Minimum nurse/patient ratios should be established.”²⁵
- “In Michigan, we cannot wait for federal standards for patient safety and quality care that needs to [sic] establish minimum nurse-to-patient ratios and other staffing levels for all hospitals and other health care facilities.”²⁶

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- “Establish minimum nursing staffing guidelines to appropriately cover patient caseloads in hospital and rehab. settings.”²⁷

The remaining three testimonies that addressed nurse-to-patient ratios made explicit recommendations regarding numerical ratios. The recommendations are as follows:

- [Regarding minimum nurse to patient staffing levels] “And I'm not unreasonable asking for, you know, maybe three or four, like some of the units, but I think five would be the maximum that would be safe, approximately five to one.”²⁸
- “Minimum Bedside Patient/Nurse Staffing Standards. 1. Establish safe staffing standards covering all acute care and psychiatric hospitals, emergency room facilities, and ambulatory and outpatient facilities that receive Medicare funds. 2. Require each health care facility to develop a staffing plan that: Establishes minimum staffing requirements based on number of patients, level of acuity, and intensity of care needed to ensure good patient outcomes.” “A hospital would be required during each shift, except during a declared emergency, to assign a direct care registered nurse to no more than the following number of patients in designated units:
 - 1 patient in an operating room and trauma emergency unit;
 - 2 patients in all critical care units, intensive care, labor and delivery and postanesthesia units;
 - 3 patients in antepartum, emergency, pediatrics, step-down and telemetry units;
 - 4 patients in intermediate care nursery, medical/surgical and acute care psychiatric care units;
 - 5 patients in rehabilitation units; and
 - 6 patients in postpartum (3 couplets) and well baby nursery units.”²⁹
- “...its recommended that Michigan must work to ... and establish minimum registered nurse-to-patient staffing ratios, in order to fix a broken system in too many of Michigan’s hospitals.” “The MNA-proposed solution, as codified in Senate Bill 1190, requires (establish) minimum patient-to-registered nurse ratios in hospitals,...”³⁰ [Note: SB 1190 was introduced during the 2003-2004 legislative session. It appears that this bill has been re-introduced in the 2005-2006 session as SB 169. The data on recommended ratios is drawn from SB 169 as they were not stated in the testimony].
 - Critical Care – Adult or Pediatric: 1 to 1
 - Operating Room: 1 to 1
 - Labor and Delivery:

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- During Second and Third Stages of Labor: 1 to 1
- During First Stage of Labor: 1 to 2
- Intermediate Care Newborn Nursery: 1 to 3
- Noncritical Antepartum Patients: 1 to 4
- Postpartum Mother Baby Couple: 1 to 3
- Postpartum or Well-baby Care: 1 to 6
- Postanesthesia Care Unit: 1 to 2
- Emergency Department:
- Nontrauma or Noncritical Care: 1 to 3
- Trauma or Critical Care Patient: 1 to 1
- One R.N. for Triage
- Stepdown: 1 to 3
- Telemetry: 1 to 3
- Medical/Surgical: 1 to 4
- Pediatrics: 1 to 4
- Behavioral Health: 1 to 4
- Rehabilitation Care: 1 to 5

Other Staffing Issues. A variety of other recommendations and suggestions were submitted through the testimony. The topics covered include: use of patient acuity to determine nurse staffing levels,³¹ use of staffing plans,³² inclusion of bedside nurses in staffing decisions and use of unit-based staffing committees,³³ workforce retention,³⁴ defining what staff count as nursing personnel,³⁵ nurse turnover and vacancy rates,³⁶ use of traveling nurses,³⁷ the need to monitor staffing levels,³⁸ nurse faculty shortages,³⁹ the need to fund nurse education programs,⁴⁰ forming novel partnerships,⁴¹ use of self-staffing models,⁴² and the need for incentives to achieve magnet status.⁴³

Rationale, Evidence, Other State Initiatives :

The material in this section is organized by recommendation as noted in the recommendations section of this report.

General Background. Without question, nurses in all healthcare settings play a critical role in protecting patients from avoidable harm. It is self-evident that at some point, diminished access to high quality nursing care will result in harm to patients. The situation as it relates to nurse staffing, currently and in the future, has been described by many as a crisis which threatens to worsen and undermine the quality and safety of the entire healthcare system. The seriousness of the situation at hand cannot be overstated. A recently released study found that 30 percent of respondents to a survey left their first RN position within the first year of employment and 57 percent left within the first two years.⁴⁴ The respondents cited a number of concerns that caused them to leave their

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positions. “Inadequate staffing” was cited by 79 percent. Clearly, the health care system cannot function effectively under these conditions. Despite the dire circumstances and the need to do something immediately, there is a need to judiciously select and carefully implement potential solutions that simultaneously benefit nurses, patients and all other stakeholders. The challenge is to “unbundle” a very complex and multi-faceted problem and isolate activities that can be implemented and taken as a whole, move the healthcare system toward improving safety.

A number of documents were consulted in preparation of this analysis. Much more could and should be done to properly address the myriad of complex and interwoven issues. Additional work and analyses will be conducted for future versions of this document.

An important contribution to the literature on the work of nurses and patient safety is the report prepared by the Institute of Medicine (2004), *Keeping Patients Safe: Transforming the Work Environment of Nurses*. The basis for some of the recommendations is drawn directly from this work. The IOM identified the critical role that nurses play in patient safety.⁴⁵ In its report, the IOM identified three areas in nurses’ work environments that created threats to patient safety: 1) frequent failure to follow management practices necessary for safety, 2) unsafe workforce deployment, 3) unsafe work and workspace design, and 4) punitive cultures that hinder the reporting and prevention of errors. The IOM identified solutions in four areas and cautioned that simultaneous and bundled solutions, rather than isolated single solutions, were required to improve safety. Solution areas include: 1) transformational leadership and evidence-based management, 2) maximizing workforce capability, 3) design of work and workspace to prevent and mitigate errors, and 4) creating and sustaining a culture of safety. This document and recommendation area (nurse staffing) addresses some of the problems identified by the IOM related to unsafe workforce deployment and unsafe work design and draws upon the solutions developed to maximize workforce capability and design of work to prevent and mitigate errors.

Several major studies and reviews of the literature have demonstrated a strong association, if not a causal link, between nurse staffing levels, measures of patient safety and preventable adverse outcomes.⁴⁶ This document does not attempt to evaluate the evidence for claiming a causal association between staffing and patient outcomes, rather, it takes as an underlying assumption that such a relationship has been established. Thus, the issue is not whether there is a relationship but what quantity of nursing care and what quality of nursing care is needed to produce what kind of patient outcome. The evidence evaluated

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here deals with the issues related to ensuring that staffing is adequate to minimize, if not eliminate, unnecessary harm to patients.

Recommendation D4a and D4b:

All stakeholders should work together to return inactive licensed nurses to nursing practice, retain existing nurses, and produce additional new nurses through novel approaches to partnering and by developing new incentive programs and financial support. All stakeholders should work together to fund/support: nurse trainee scholarships and tuition reimbursement, additional faculty positions within schools of nursing, and healthcare delivery organizations that serve as clinical learning sites and provide clinical faculty mentors.

The issues related to the causes and solutions to the shortage of nurses are complex and provide an unsettling backdrop for all other efforts to improve the working conditions of nurses and the safety of patient care. As noted earlier, perceptions about the shortage and current working conditions affect nurse satisfaction and retention rates.⁴⁷ A recent publication identified and reviewed the reasons and dimensions of the nursing workforce shortage.⁴⁸ The shortage is persistent, growing, and contributes to healthcare errors. By 2020, it is estimated that the gap in the U.S. between supply and demand will be between 400,000 and 800,000 nurses.⁴⁹ Michigan is estimated to be short 18,000 nurses by 2020.⁵⁰

Testimony submitted raised the issue of qualified nursing school applicants being turned away because of faculty and clinical area shortages.⁵¹ This situation was the subject of a recent Detroit News article which was critical of the state's universities for failure to plan for needed faculty.⁵² It was suggested that more affiliations were needed between practicing clinical faculty and academic institutions. Other testimony described a strategic partnership between Munson Medical Center and Northwestern Michigan College.⁵³ The results of the partnership have increased the number of nurses to the point that the hospital's current vacancy rate is "about 2 percent and approaching 0 percent." The turnover rates for hospital nurses is 9.7 percent in Michigan and 18 percent nationally.⁵⁴ Nursing homes as well as hospitals have experienced problems retaining staff and recommendations were made that initiatives to stimulate retention are needed.⁵⁵

It was recommended that a "Volunteer RN Corps" be developed as a means to encourage licensed RNs to re-enter the workforce.⁵⁶ It was suggested that "there is a cadre of retired RNs, many of whom are willing to volunteer in healthcare if only they can do actual nursing care".⁵⁷

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Despite Munson's successes, its testimony indicated that there is still a need for funding schools and scholarships. A national program sponsored by Johnson and Johnson is in place to "raise public awareness of nursing as a career, attract more people into the nursing profession, retain current nurses in practice, and increase the capacity of nursing education programs."⁵⁸ In Michigan, the state established a Michigan Nurse Professional Fund under the Michigan Nursing Scholarship Act of 2002 (PA 591, MCL 390.1181 to 390.1189). The Michigan Health & Hospital Association has recognized that the supply of nurses is jeopardized by nursing faculty shortages and indicated that additional funds are needed to hire nurse faculty and educate nursing students.⁵⁹

It appears that there is agreement that a shortage of nurses exists and that more funding for education is needed. Additionally, there is some evidence that strategic partnerships and novel ideas may help to bridge some of the gap between supply and demand for nurses.

Recommendation D4c:

Plan for and deploy adequate levels of qualified nursing staff for each patient care area by:

- using an explicit and unit-based staffing protocol where baseline staff levels are specified per IOM recommendation⁶⁰ and hospital/HCO, regulatory and accreditation rules⁶¹ or are legislatively or contractually mandated⁶² and additional staff levels, if any, are determined according to patient needs⁶³ and staff credentials.⁶⁴
- involving unit-based staff nurses in unit-level staffing decisions, and
- using unit staffing committees and potentially, self-staffing models and that employ flexible nurse staffing schedules (including shorter shifts) and incentives that reward nurses working in self-staffing units.

Without doubt, this recommendation is likely to be the subject of debate. The content it addresses appears to be at the heart of nurses dissatisfaction with their work environment and a contributing factor to patient safety concerns.

Unfortunately, its successful implementation assumes an adequate workforce from which nurses can be drawn. As has been established, this is not the case at this point in time. This situation leaves hospital administrators in a precarious and difficult situation. Nonetheless, this is a serious situation that needs to be solved if the safety of patient care in Michigan is to be improved. The analysis that follows is a best attempt to make a contribution toward identifying at least an intermediate solution and serves as a basis for beginning discussions.

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To clarify, analytical staff on this project are required to review and synthesize the testimony submitted, derive recommendations, review the available literature on the topic and adjust recommendation content accordingly. In this case, this proved to be an exceptionally difficult task. In the end, the IOM report as well as existing licensure and accreditation requirements served as the evidence basis for developing the content of the recommendation.

As noted in the testimony summary section of this report, there was support for using nurse-to-patient ratios as a way to establish minimum staffing levels from 9 testimony submitters. Some testimony submitters provided specific ratios and others did not. There was also a recommendation from one submitter not to mandate minimum staffing levels.

As for existing regulations related to nurse staffing requirements, there are requirements promulgated within the Michigan Public Health Code for hospitals⁶⁵ and nursing homes.⁶⁶ Additionally, accreditation bodies such as the Joint Commission on Accreditation of Healthcare Organizations have established regulations related to nurse staffing⁶⁷. Additionally, there are institutionally-based rules promulgated by individual healthcare organizations.

One method for determining staffing requirements is to identify specific nurse-to-patient ratios to define minimum staffing needs and then adjust staffing levels up according to patient needs and staff abilities. In 1999, California enacted legislation mandating minimum nurse-to-patient staffing ratios in all patient care units and in all hospitals. The required staffing ratios went into effect in 2004. Since 2004, the American Nurses Association reported that legislation mandating minimum nurse-to-patient ratios has been introduced in Michigan, Hawaii, Iowa, Missouri, Tennessee, Connecticut, Maine, Illinois, Massachusetts, New York, Pennsylvania, and Rhode Island.⁶⁸ Other sources indicate that similar legislation was also introduced in Oregon, Nevada, Montana, Kentucky, Ohio, West Virginia, Virginia, Florida, New Jersey, Maine, and Vermont.⁶⁹

Currently, bills mandating nurse-to-patient ratios are pending in the Michigan House and Senate and in the U.S. House of Representatives. In March 2005, H.R. 1222 – Nurse Staffing Standards for Patient Safety and Quality Care Act of 2005 - was introduced in the U.S. House of Representatives. Rep. John Conyers (D-MI) is a co-sponsor of H.R. 1222. The bill will amend the Public Health Service Act to establish direct care registered nurse-to-patient staffing ratio requirements in hospitals. The bill identifies specific numerical nurse-to-patient ratios for various patient care units. In Michigan, House Bill 4101 and Senate Bill

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169 mandate specific numerical nurse-to-patient ratios for various patient care units.

The effects of staffing ratios on patient safety outcomes, hospital fiscal solvency, and nurse satisfaction and turnover rates are vigorously debated by various stakeholders. Analyses conducted on behalf of the Michigan Nurses Association suggest that there is evidence to support a “business case” for reducing nurse-to-patient ratios and eliminating mandatory.⁷⁰ The mandated ratios in California are not yet fully implemented and as a result, it is too early to have good evidence as to the ultimate effects of this program. A recent Los Angeles Times article reported that 36 percent of hospitals inspected by the Department of Health Services were in compliance with the regulations and that the size of hospitals in compliance ranged from 70 to 350 beds. The article mentioned changes in use of agency nurses, placing staff nurses “on-call”, but did not mention effects on patient safety outcomes.

One of the crucial elements in this analysis is pinpointing the optimal staffing ratio needed to produce particular and desired patient safety outcomes. Assuming that such a relationship can be demonstrated, a second element relates to the usefulness of using this method for determining nurse staffing. As noted previously, there is ample evidence of a strong relationship between levels of nurse staffing and numerous patient outcomes. As demonstrated by a large national study difference in a 1:4 nurse-to-patient ratio, as compared to a 1:8 ratio resulted in 5 fewer deaths among some surgical patients.⁷¹ These findings do not, however, suggest that a 1:4 ratio is the optimal nurse-to-patient staffing ratio. In fact, the current literature does not establish optimal ratios for most patient care units.

There appears to be widespread agreement that research to establish specific minimum nurse-to-patient ratios is lacking for most patient care areas. In 2003, the National Quality Forum concluded that although a demonstrated relationship between nurse staffing and adverse events exists, a specific ratio of skilled nurses to patients that improves patient safety for each care setting or type of patient had not yet been identified.⁷² It did find, however, that healthcare organizations that attracted and retained more skilled nurses per patient and gave “careful thought to appropriate staffing,” were safer institutions based on the fact that such institutions had lower rates of adverse events. As a result, it recommended that healthcare organizations, “Specify an explicit protocol to be used to ensure an adequate level of nursing based on the institution’s usual patient mix and the experience and training of its nursing staff.”⁷³

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In agreement, a paper by Lang et al. published in 2004 reviewed 43 articles on nurse staffing and patient, nurse and hospital outcomes.⁷⁴ They concluded that the literature offers minimal support for specific, minimum nurse-patient ratios for acute care hospitals, especially in the absence of adjustment for skill and patient mix. They did find, however, that total nursing hours and skill mix appeared to affect patient outcomes. The investigators reasoned further to say that “a minimum nurse-patient ratio alone is probably not adequate to ensure quality of care. Patient acuity, skill mix, nurse competence, nursing process variables, technological sophistication, and institutional support of nursing should also be considered when setting minimum staffing requirements.”

Also in 2004, the IOM Committee that examined the evidence on staffing and patient safety came to similar conclusions with a couple of notable exceptions related to staffing nursing homes and ICUs. Specifically, the IOM concluded that, “based on currently available evidence, the use of minimum personnel standards is presently and generally more appropriate for nursing homes than for hospitals...”⁷⁵. In fact, the IOM was critical of using staffing ratios as a sole means of staffing healthcare organizations. Specifically, it offered the following comments:

At the same time, a number of nursing organizations, policy experts and HCOs point out the limitations of staffing ratios. While they may help ensure a baseline level of staffing in HCOs that may be outliers, they are poor instrument for achieving optimal staffing. Depending on the skill mix and expertise of nursing staff and patient acuity, minimum ratios may still not provide the needed levels of safety. Moreover, counts of patients needed to calculate nurse staffing levels consistent with a ratio must be taken at a point or points in time. Yet patient admissions, transfers, and discharges are frequent; therefore, an adequate nurse-to-patient ratio at 7 A.M. may be inadequate at 10 A.M., and an organization that has satisfied a nurse-to-staffing ratio at one point in time may still have inadequate staffing at another point. Thus, while staffing ratios can help protect against the most egregious staffing deficiencies, HCOs will need to employ more sensitive approaches internally to fine-tune staffing levels. (p. 184).

It should not be interpreted that the IOM felt that the use of staffing ratios to at least partly establish staffing was inappropriate. In fact, the IOM made the following statement and subsequently identified staffing ratios for ICUs and nursing homes.

The committee was disappointed that, although higher levels of nurse staffing are clearly strongly related to better patient outcomes and reduced

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adverse events, the research that has produced this evidence has not yet included sufficient studies of staffing levels within specific types of patient care units (e.g., medical-surgical units and labor and delivery units). As a result, with the exception of studies of ICU care, the committee was not able to identify quantitative staffing levels that could be used by hospitals in evaluating the appropriateness of their staffing levels for medical-surgical units, labor and delivery units, or other types of hospital patient care units. (p. 195)

They go even further and then recommend that research be done to better understand the effects of various staffing levels on patient outcomes.

With respect to ICU staffing, the IOM Committee reviewed the literature and highlighted findings by five studies -- Shortell et al., 1994; Blegen and Vaughn, 1998; Spetz et al., 2000; Pronovost et al., 2001; Dang et al., 2002 – and concluded that “nurse staffing levels of 1:2 or better not only are commonly used by large numbers of ICUs, but also have a protective effect on patients” (p. 176). As a result, the IOM recommended that ICUs be staffed with “one licensed nurse for every 2 patients (12 hours of licensed nursing staff per patient day)”.⁷⁶

Given the lack of solid evidence for minimum staffing ratios in units other than critical care and despite the well-documented shortcomings of using patient acuity as a basis for determining nurse staffing levels as reviewed by the IOM Committee, the IOM, nevertheless, indicated that use of such systems in conjunction with other practices could be used to determine nurse staffing in hospitals. Specifically, the IOM recommended the following:⁷⁷

Recommendation 5-2. Hospitals and nursing homes should employ nurse staffing practices that identify needed nurse staffing for each patient care unit per shift. These practices should:

- Incorporate estimates of patient volume that count admissions, discharges, and “less than full-day” patients in addition to a census of patients at a point in time.
- Involve direct-care nursing staff in determining and evaluating the approaches used to determine appropriate unit staffing levels for each shift.
- Provide for staffing “elasticity” or “slack” within each shift’s scheduling to accommodate unpredicted variations inpatient volume and acuity and resulting workload. Methods used to provide slack should give preference to scheduling excess staff and creating cross-trained float pools with the HCO. Use of nurses from external agencies should be avoided.

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- Empower nursing unit staff to regulate unit work flow and set criteria for unit closures to new admissions and transfers as nursing workload and staffing necessitate.
- Involve direct-care nursing staff identifying the causes of nursing staff turnover and in developing methods to improve nursing staff retention.

Other sources recommended use of staffing methods similar to what the IOM recommended. Specifically, the standards specified by the American Nurses Credentialing Center require that “magnet certified” hospitals have a: 1) staffing system [that] adapts and flexes to internal and external factors such as staff illness, unanticipated shifts in workload, and so forth; 2) the staffing system incorporates patient needs, staff member skill sets, and staff mix; and 3) that nurses are involved in a variety of decentralized, shared decision-making processes. Additionally, a number of states have either enacted legislation or have legislation pending that requires various types of staffing plans be used in conjunction with various types of patient needs assessment methods.⁷⁸ Michigan is among the states with pending legislation that addresses not only nurse-to-patient ratios, but use of staffing plans and patient acuity to determine staffing requirements.

The testimony reviewed along with the IOM’s recommendation related to nurse staffing policies and practices provided the basis for the Recommendation D4c. The recommendation incorporates the possibility that legislation may be enacted in the Michigan legislature that would take precedence.

Recommendation D4d. All healthcare delivery organizations should voluntarily (unless legislatively or contractually mandated otherwise) use staffing practices that acknowledge human limitations and potential for error caused by fatigue-related performance, attention levels and an aging workforce, and consistent with the Institute of Medicine recommendations,⁷⁹ establish policies and practices designed to prevent nurses who provide direct patient care from working longer than a 12-hour shift⁸⁰ in a 24-hour period and in excess of 60 hours per 7-day period except in emergencies such as natural disasters.⁸¹

The evidence cited by the IOM Committee and others is unequivocal on the effect of prolonged work hours and commission of errors in nursing and many other industries. In particular, the IOM cited evidence from a 2002 study funded by the Agency for Healthcare Quality and Research which found that, “once shift durations exceed 12 consecutive hours, both voluntary and mandated overtime significantly increase error rates. ...[And,] being mandated to work overtime was

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associated with significant increases in the rate of near-errors for shifts scheduled for 12 hours or more” (p. 233).

In its conclusions, the IOM Committee stated the following:

The committee finds the evidence that prolonged work hours and fatigue affect worker performance to be very strong. We also note that there is no evidence to suggest that any amount of training, motivation, or professionalism is able to overcome the performance deficits associated with fatigue, sleep loss, and the sleepiness associated with circadian variation in alertness. The recent AHRQ-funded study of nurse work hours and health care errors discussed above provides additional compelling evidence of the effect of nurses working long hours on patient safety. (p. 236)

As a result, the IOM made the following recommendation regarding use of mandatory overtime as a staffing strategy.

Recommendation 6-1: To reduce error-producing fatigue, state regulatory bodies should prohibit nursing staff from providing patient care in any combination of scheduled shifts, mandatory overtime, or voluntary overtime in excess of 12 hours in any given 24-hour period and in excess of 60 hours per 7-day period. To this end:

- HCOs and labor organizations representing nursing staff should establish policies and practices designed to prevent nurses from working longer than 12 hours in a 24-hour period and in excess of 60 hours per 7-day period and
- Schools of nursing, state boards of nursing, and HCOs should educate nurses about the threats to patient safety caused by fatigue.

It should be noted that the IOM does not distinguish between voluntary and mandatory overtime. In fact, it clearly states that both should be prohibited. One testimony submitter recommended that 16 hour shifts be permitted if performed voluntarily. This is not consistent with the IOM recommendations.

The IOM recognized that emergencies, such as natural disasters, occur and staff would be required to work excessive hours. In these cases, the IOM recommended that such information be disclosed to the public and that elective admissions be postponed or diverted. The IOM also indicated that the same disclosure and diversion requirements should apply in situations where staff are required to work excessive hours due to nursing shortage situations.

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The American Nurses Association has identified a number of states that have passed legislation that prohibits various aspects of mandatory overtime. These states include: Oregon, California, Minnesota, Texas, West Virginia, Maryland, New Jersey, Maine, Connecticut, and Rhode Island. Michigan, as well as the U.S. Congress, has pending legislation that prohibits mandatory overtime for nurses.

Documents provided by the Michigan Health & Hospital Association indicate that “the hospital community generally views mandatory overtime as an unavoidable situation that is not the preference of either the employer or employee.”⁸² It explains that “[U]navoidable overtime is a symptom of the severe statewide nursing shortage.”⁸³ It also notes that the conditions where employers are forced to require staff to work additional hours includes: unexpected high occupancy levels due to illness outbreaks and accidents, unanticipated staff absences due to personal or family emergencies, unusually high patient acuity levels, weather-related problems, and other unanticipated disasters and emergencies.⁸⁴

As with the previous recommendation that addressed staffing methodologies, reduction of mandatory and voluntary overtime is complicated by the nursing shortage. The necessity to address the shortage is further recognized. Nonetheless, the effects of these unsafe working conditions on patient safety are obvious and should be avoided.

Recommendation D4e. All healthcare delivery organizations should adopt and implement nationally-developed standards and measures to monitor and evaluate the effectiveness of staffing practices on: 1) patient safety, health, satisfaction and access to care outcomes; and 2) staff safety, satisfaction, and retention/turnover rates.

The requirement to assess staffing effectiveness is already a condition of accreditation by JCAHO. Specifically, accredited hospitals are required “to use data on clinical services in combination with personnel resource data to assess their own staffing effectiveness and identify and implement strategies for improvement” (JCAHO, 2003 as cited in IOM, 2004, p. 193).

Other organizations are calling for better assessment of staffing effectiveness. In particular, the American Nurses Credentialing Center require that “magnet certified” hospitals evaluate: 1) nurse satisfaction as measured by valid data collection tools/methods, and 2) that there is ongoing monitoring, evaluation, and improvement of nurse-sensitive outcomes appropriate to the clinical setting(s).

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Similarly, in 2004 the National Quality Forum released a document, National Voluntary Consensus Standards for Nursing-Sensitive Care: An Initial Performance Measure Set, which details 15 NQF-endorsed national voluntary consensus standards for nursing-sensitive care.⁸⁵ The NQF report notes that, This is the first-ever set of nationally standardized performance measures that assesses the extent to which nursing personnel in acute care hospitals contribute to healthcare quality, patient safety, and a profession and safe work environment. ... Viewed together, they provide consumers a way to assess the quality of nurses' contribution to inpatient hospital care, and they enable providers to identify critical outcomes and processes of care for continuous improvement that are directly influenced by nursing personnel. These consensus standards also can be used by purchasers to regard hospitals that have higher performing nursing services (pg. vi).

The NQF measures capture patient-centered outcome measures, nursing-centered intervention measures, and system-centered measures (includes skill mix, nursing care hours per patient day, practice environment scale, and voluntary turnover).

Recommendation D4f. All third-party payers and government-sponsored healthcare programs should develop patient safety incentives and other programs which reward in a "pay-for-performance" manner, healthcare delivery organizations that 1) achieve low nurse vacancy and turnover rates as noted by the Centers for Medicare and Medicaid Services (CMS) and 2) meet or exceed the national consensus standards for nursing-sensitive care as defined by the National Quality Forum which include patient-centered outcome measures such as death among surgical inpatients with treatable serious complications (failure to rescue), nursing-centered intervention measures and system-centered measures.

The foundation for this recommendation comes from a number of successful endeavors in Michigan and elsewhere that have assisted healthcare organizations to undertake new projects and for payers and purchasers to recognize and reward organizations that produce higher quality of care. As it relates to the nurse staffing and patient safety issue, such a program may be needed to encourage healthcare organizations to make needed investments.

This perspective was discussed in a recent paper by Spetz (2005)⁸⁶. It was noted that there are three primary methods by which public policy could be advanced to improve staffing in hospitals: mandate fixed nurse-to-patient ratios, adopt patient acuity-based staffing, and develop "pay for performance" systems.

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Spetz reasoned that even if optimal levels of nurse-to-patient ratios could be identified and the validity and reliability of patient acuity systems could be improved, there is still the possibility that hospitals would not staff at the optimal number because they aren't paid according to the quality of care they provide. Hospitals generally get paid the same amount whether they provide top-quality or moderate-level care. As a result, to some degree, hospitals do not have an incentive to change demand for nurses.

To that end, this recommendation attempts to create programs and incentives for hospitals to use the NQF Consensus Standards for Nursing-Sensitive Care. Such programs could provide healthcare organizations with a means by which they can communicate to purchasers and consumers how nurses in their organizations are performing as it relates to some aspects of patient safety.

Recommendation D4g: An appropriate state-level organization(s) should assist in collection, management and analysis of statewide staffing effectiveness data as it relates to nationally-recognized and standardized indicators of nurse-sensitive patient safety indicators and nurse retention/turnovers.

This recommendation stems from the need to develop a mechanism to evaluate trends in nurse staffing as related to patient safety indicators at a high level of aggregation and provide information back to healthcare organizations so they may make adjustments if needed. Such an effort could facilitate work to identify nursing best staffing practices that reduce errors and other avoidable injury to patients.

The recommendation is consistent with recommendations made by the IOM Committee and others that have called for national and other databases that contain information about nurse staffing and the outcomes produced by various staffing levels and configurations. The IOM recommended that hospitals and nursing homes perform ongoing evaluation of the effectiveness of their nurse staffing practices with respect to patient safety. Some patient safety events are rare and would be more likely to be detected in a larger database.

Pros and Barriers by Recommendation: As discussed in the text and to be more fully developed based on specific recommendations supported.

Additional Comment/Concerns: As cited previously.

Implementation Steps: TBD, depends on recommendation(s) supported.

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Cost: TBD, depends on recommendation(s) supported.

Implementation Target Date: TBD, depends on recommendation(s) supported.

Grade: TBD

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Reference List:

¹ The testimony received addressed almost exclusively nurse staffing issues. Issues related to shortages and staffing of pharmacists, occupational and physical therapists, ICU physicians (Testimony 606W), and nursing home physicians (Testimony 830W) are acknowledged but at this time, the recommendation and evaluation of the literature deals only with nurse staffing.

² Institute of Medicine (IOM), Committee on the Work Environment for Nurses and Patient Safety. (2004). *Keeping Patients Safe: Transforming the Work Environment of Nurses*, Washington, DC: The National Academies Press, page 194. The Institute of Medicine (IOM) recommended that intensive care units be staffed with no fewer than one licensed nurse for every 2 patients (12 hours of licensed nursing staff per patient day) – and that nursing homes, for long-stay residents – one RN for every 32 patients (0.75 hours per resident day), one licensed nurse for every 18 patient (1.3 hours per resident day), and one nurse assistant for every 8.5 patients (2.8 hours per resident day).

³ The number of “baseline staff” per hospital/HCO rules refers to the fewest number of staff required to operate a patient care unit (e.g. one/two registered nurse(s) on the patient care unit) regardless of how few patients have been admitted to the unit. Rules for “baseline staff” may differ according state regulatory/licensure and JCAHO or other accreditation agencies.

⁴ This clause recognizes that there legislation has been introduced at both the state and federal levels in which minimum nurse-to-patient ratios have been identified for a particular patient care units and if enacted, may affect the “baseline staff” number. This clause also recognizes that contractual obligations with labor organizations may also affect the “baseline staff” number.

⁵ The clause “based on patient need” refers to the use of a valid system in which differences in patients needs are used to adjust staffing. The system may be an acuity or patient classification system or a mix of methods such as that developed by Killeen MB. (undated). Staffing Allocation Multi-Method System (SAMMS): A system with many methods to adjust staffing.

⁶ This clause “based on staff credentials” refers to the need to consider differences in staff licensure, education, training and competencies in determining staffing requirements.

⁷ IOM Recommendation 6-1 states: To reduce error-producing fatigue, state regulatory bodies should prohibit nursing staff from providing patient care in any combination of scheduled shifts, mandatory overtime, or voluntary overtime in excess of 12 hours in any given 24-hour period and in excess of 60 hours per 7-day period. To this end: 1) HCOs and labor organizations representing nursing staff should establish policies and practices designed to prevent nurses from working longer than 12 hours in a 24-hour period and in excess of 60 hours per 7-day period and 2) Schools of nursing, state boards of nursing, and HCOs should educate nurses about the threats to patient safety caused by fatigue.

⁸ In this case, a 12-hour shift does not necessarily mean being at the worksite for only 12 hours precisely. Most 12-hour shifts require a nurse to be in the hospital or other worksite for 12 ½ hours due to breaks and meal-times as well as the overlapping time needed to transfer care to a new shift of nurses. The IOM makes a distinction between hours of direct patient care and hours of non-direct activity such as paperwork, documentation, and attending training sessions. The 12-hour clause refers to hours of direct patient care.

⁹ The IOM recognized that emergencies, such as natural disasters, occur and staff would be required to work excessive hours. In these cases, the IOM recommended that such information be disclosed to the public and that elective admissions be postponed or diverted. The IOM also indicated that the same disclosure and diversion requirements should apply in situations where staff are required to work excessive hours due to nursing shortage situations.

¹⁰ Testimonies 204B, 206O, 303O, 408O and 411W.

¹¹ Testimony 303O.

¹² Testimonies 203O, 301O, 419W and 803B.

¹³ Testimony 803B:P5, L38-41.

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- ¹⁴ Testimony 301O:1233-1241
¹⁵ Testimony 301O 1237-1247
¹⁶ Testimony 419W
¹⁷ Testimony 419W:143-159
¹⁸ Testimony 203O :124-126
¹⁹ Testimony 209O:34-37
²⁰ Testimony 830W:34
²¹ Testimony 305W:44-48
²² Testimony 105B:O458-478
²³ Testimony 402B:W92-94
²⁴ Testimony 404B:W47-50
²⁵ Testimony 410O:81-83
²⁶ Testimony 411W:5-8
²⁷ Testimony 416W:12-13
²⁸ Testimony 210O:83-87
²⁹ Testimony 419W:125-132, 171-183
³⁰ Testimony 803B:P5, L38-41
³¹ Testimonies 419W and 803B
³² Testimonies 419W and 803B
³³ Testimonies 105B, 303O, and 419W
³⁴ Testimony 904B
³⁵ Testimony 411W
³⁶ Testimonies 105B and 408O
³⁷ Testimony 404B
³⁸ Testimony 404B
³⁹ Testimony 206O
⁴⁰ Testimony 105B
⁴¹ Testimony 105B
⁴² Testimony 416W
⁴³ Testimony 105B
⁴⁴ Bowles C & Candela L. (2005). First job experiences of recent RN graduates, *Journal of Nursing Administration* 35:130-137.
⁴⁵ IOM, op cit.
⁴⁶ Stanton MW, Rutherford MK. (2004). Hospital nurse staffing and quality of care. *Research in Action Issue* 14. AHRQ Pub. No. 04-0029. Rockville, MD: Agency for Healthcare Research and Quality; Lang TA, Hodge M, Olson V, Romano PS, Kravitz RL. (2004). Nurse-Patient Ratios, *Journal of Nursing Administration* 34:326-337. IOM, op cit.
⁴⁷ Bowles, op cit.
⁴⁸ Buerhaus PI. (2005). Six-part series on the state of the RN workforce in the United States. *Nursing Economics* 23(2):58-60. www.medscape.com/viewarticle/502804 Accessed 5/3/2005.
⁴⁹ Buerhaus, ibid.
⁵⁰ Michigan Health & Hospital Association (MHA). 5.25.04. *Talking Points: Legislatively Mandated Nurse-Patient Staffing Ratios*.
⁵¹ Testimony 206O:92-100
⁵² The Detroit News, *State Must Respond to Nursing Shortage: Good-paying jobs go unfilled because schools failed to anticipate future opportunities*, 5.10.05, <http://www.detnews.com/2005/editorial/0505/10/A10-176407.htm> retrieved 5.23.05.
⁵³ Testimony 105B:O251-258, W182, 188-189, O282-331, O182-205, W100-111.
⁵⁴ Michigan Health & Hospital Association. (undated). *MHA Comments on the Michigan Center for Nursing Survey of Nurses 2004*.

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⁵⁵ Testimony 904B:W67, O22-23

⁵⁶ Testimony 303O:132

⁵⁷ Testimony 303O:126-128

⁵⁸ Buerhaus, op cit.

⁵⁹ MHA, op cit.

⁶⁰ IOM, op cit., pg. 194. The IOM recommended that intensive care units be staffed with no fewer than one licensed nurse for every 2 patients (12 hours of licensed nursing staff per patient day) – and that nursing homes, for long-stay residents – one RN for every 32 patients (0.75 hours per resident day), one licensed nurse for every 18 patient (1.3 hours per resident day), and one nurse assistant for every 8.5 patients (2.8 hours per resident day).

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⁶⁴ This clause “based on staff credentials” refers to the need to consider differences in staff licensure, education, training and competencies in determining staffing requirements.

⁶⁵ Michigan Public Health Code 333.20141(3) “A [hospital] shall have the physician, professional nursing, health professional, technical and supportive personnel, and the technical, diagnostic, and treatment services and equipment necessary to assure the safe performance of the health care undertaken by or in the facility or agency. However, facility-based nurse to patient ratios are not the only element to assure that the individualized needs of patients are adequately met. Other appropriate professional, technical and supportive personnel, physicians, and technical, diagnostic, and treatment services and equipment are also necessary and section 20141(3) of the Public Health Code.

⁶⁶ Michigan Public Health Code 333.21720a - (1) A nursing home shall not be licensed under this part unless that nursing home has on its staff at least 1 registered nurse with specialized training or relevant experience in the area of gerontology, who shall serve as the director of nursing and who shall be responsible for planning and directing nursing care. The nursing home shall have at least 1 licensed nurse on duty at all times and shall employ additional registered and licensed practical nurses in accordance with subsection (2). This subsection shall not take effect until January 1, 1980. (2) A nursing home shall employ nursing personnel sufficient to provide continuous 24-hour nursing care and services sufficient to meet the needs of each patient in the nursing home. Nursing personnel employed in the nursing home shall be under the supervision of the director of nursing. A licensee shall maintain a nursing home staff sufficient to provide not less than 2.25 hours of nursing care by employed nursing care personnel per patient per day. The ratio of patients to nursing care personnel during a morning shift shall not exceed 8 patients to 1 nursing care personnel; the ratio of patients to nursing care personnel during an afternoon shift shall not exceed 12 patients to 1 nursing care personnel; and the ratio of patients to nursing care personnel during a nighttime shift shall not exceed 15 patients to 1 nursing care personnel and there shall be sufficient nursing care personnel available on duty to assure coverage for patients at all times during the shift. An employee designated as a member of the nursing staff shall not be engaged in providing basic services such as food preparation, housekeeping, laundry, or

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maintenance services, except in an instance of natural disaster or other emergency reported to and concurred in by the department. In a nursing home having 30 or more beds, the director of nursing shall not be included in counting the minimum ratios of nursing personnel required by this subsection. (3) In administering this section, the department shall take into consideration a natural disaster or other emergency.

⁶⁷ JCAHO requires that “a system be used for determining adequate staffing” but it does not specify what type of system.

⁶⁸ American Nurses Association (ANA). 2004 Legislation: Staffing Plans and Ratios (Updated 12/04). retrieved 5.21.05 at www.nursingworld.org/gova/state/2004/staffing.htm,

⁶⁹ The Advisory Board. (2004). *State Regulation of Nurse-to-Patient Ratios: Learning from California’s Experience*. Nursing Executive Center, Issue Brief. The Advisory Board Company.

⁷⁰ Public Policy Associates, Inc. (2004). *The Model Case for Reducing Patient-to-Nurse Staffing Ratios in Michigan Hospitals: Two Scenarios*. Lansing, MI: Public Policy Associates, Inc and Public Policy Associates, Inc. (2004). *The Business Case for Reducing Patient-to-Nurse Staffing Ratios and Eliminating Mandatory Overtime for Nurses*. Lansing, MI: Public Policy Associates, Inc

⁷¹ Aiken L, Clarke S, Sloane D, Sochalski J, & Silber J. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*, 288:1987-1993.

⁷² National Quality Forum. (August 2003). *Safe Practices for Better Healthcare: A Consensus Report*. Washington, DC: National Quality Forum.

⁷³ National Quality Forum, *ibid*.

⁷⁴ Lang TA, Hodge M, Olson V, Romano PS, Kravitz RL. (2004). Nurse-Patient Ratios, *Journal of Nursing Administration* 34:326-337.

⁷⁵ IOM, *op cit*.

⁷⁶ IOM, *ibid*.

⁷⁷ IOM, *ibid*.

⁷⁸ ANA, *op cit*.

⁷⁹ IOM Recommendation 6-1 states: To reduce error-producing fatigue, state regulatory bodies should prohibit nursing staff from providing patient care in any combination of scheduled shifts, mandatory overtime, or voluntary overtime in excess of 12 hours in any given 24-hour period and in excess of 60 hours per 7-day period. To this end: 1) HCOs and labor organizations representing nursing staff should establish policies and practices designed to prevent nurses from working longer than 12 hours in a 24-hour period and in excess of 60 hours per 7-day period and 2) Schools of nursing, state boards of nursing, and HCOs should educate nurses about the threats to patient safety caused by fatigue.

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⁸² MHA *Policy Brief*. May 2004. Mandatory Overtime Prohibition Legislation.

⁸³ MHA, *ibid*.

⁸⁴ MHA, *ibid*.

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⁸⁵ National Quality Forum. (2004). *National Voluntary Consensus Standards for Nursing-Sensitive Care: An Initial Performance Measure Set*. Washington, DC: National Quality Forum retrieved 5.20.05 at www.qualityforum.org

⁸⁶ Spetz J. (2005). Public policy and nurse staffing. *Journal of Nursing Administration* 35:14-16.