ARIZONA STATE BOARD OF NURSING

Janet Napolitano
Governor

Joey Ridenour
Executive Director

REPORT TO THE LEGISLATURE

ARIZONA MEDICATION TECHNICIAN PILOT PROJECT

DECEMBER 2008

ARIZONA STATE BOARD OF NURSING

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As Authorized by HB 2256

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Introduction

A sunrise report was filed in 2002 by the Arizona Association of Homes and Housing for the Aging and the Arizona Health Care Association requesting regulatory oversight of a two-year certified medication technician pilot study (Appendix B). The Joint committee of reference approved the pilot study concept outlined in the sunrise report, leading to the introduction and passage of legislation enacted for the pilot to be overseen by the Board of Nursing (Laws 2004 (2nd Reg. Session) Ch. 121) (Appendix C). This law authorized the Board to establish a pilot program "to determine the impact to patient health and safety of allowing nursing assistants…and acting as pilot study medication technicians to administer medications under educational requirements and conditions prescribed by the board (Laws 2004, Ch. 121, section A)." With funding secured from non-governmental sources, the pilot study involved 6 long-term care facilities throughout the state. As directed by the 2004 law, the Board submits this report concerning the pilot study authorized by Ch. 121. As discussed below, the pilot study produced positive results. Although the study included only a small number of participants, the results do suggest that when facilities have properly integrated medication technicians into the care delivery system, resident care improves because the work of the medication technicians frees up nurses to perform higher level tasks.

The legislature enacted House Bill 2256 (2004) to determine the impact to patient health and safety when licensed nurses delegate medication administration to certified nursing assistants (CNAs) with additional education in medication administration. The

bill made the Board responsible for developing protocols, prescribing the education, overseeing the project and preparing this report to the legislature by December, 2008. The legislation limited the pilot study to no more than six facilities. It also incorporated patient safety-related measures including: prohibitions to keep facilities from requiring a nurse to delegate medication administration to medication technicians, prohibitions against medication technicians administering medications to unstable or sub-acute residents, prohibitions against a medication technician administering any medication by needle and other measures incorporated within the study.

Steering Committee

The Board formed a steering committee to oversee the project (Appendix A). Membership on the committee included stakeholders from long-term care facilities, the Arizona Board of Pharmacy, the Arizona Health Care Association, a professional association of skilled nursing facilities, the Arizona Association of Homes and Housing for the Aging, another professional association of residential facilities for the aged, the Arizona Nurses Association, the Southern Arizona Nursing Coalition, and nursing education.

The Steering Committee developed protocols regarding which medications could be delegated to a medication assistant (Appendix D). In addition to the prohibitions in the legislation, the Board approved the recommendations that certain medications and tasks associated with medications could not be delegated to a medication technician. The Board based the decision on whether the task would require the skill of a licensed nurse and whether the task had an increased potential for harm to residents. Tasks that could not be delegated included:

- The first dose of a medication,
- A medication requiring a complex mathematical conversion,
- Inhalant medications,
- Skin patches,
- Vaginal medications,
- Sublingual medications,
- PRN or “as needed” medications with some exceptions for low risk medications.

The Steering Committee then formed three subcommittees: Research, Education and Funding. The research subcommittee determined the research priorities and design of the Pilot Study. The funding subcommittee worked to secure funding to conduct the research. Finally, the education subcommittee developed course guidelines, curriculum, and a legally defensible competency exam. The Steering Committee reviewed all subcommittee actions and in turn, made recommendations to the Board for its approval.

Research

The Research Subcommittee and Steering Committee reviewed various indicators and approaches to research the safety of using medication technicians in order to compare patterns of medication errors before and six months after the use of medication technicians in selected facilities. The original sunrise legislation and HB 2256 identify safety of medication administration by medication technicians as the central issue to be explored by the Board. The Board also believed that participant satisfaction would be an important indicator of acceptance of the medication technician role. Therefore the pilot study was limited to these two indicators. The research subcommittee reviewed various

methods to measure medication error. The subcommittee recommended the Flynn and Barker Naïve Observation Method[2], the method recognized as the most valid and reliable for measuring medication error rates in health care settings. Under this approach, an observer watches and records each medication pass and then compares what the resident received to the medication ordered in the resident's chart with no knowledge of the resident's prescribed medications and without reviewing the administration record (MAR) during the observation. The Board decided to measure satisfaction using structured interviews of pilot program participants including medication technicians, delegating nurses and directors of nursing. .

Funding

At the outset, special note should be made that Kathleen Collins Pagels, Executive Director of the Arizona Health Care Association, proved to be the key in terms of obtaining the funding for this project. Without her leadership and the Arizona Health Care Association's support, the study could not have been accomplished.

The Board estimated that the research cost of the Pilot Study would total approximately $90,000. The Arizona Health Care Association contributed $30,000 seed money to the pilot study. St. Luke's Health Initiatives approved a grant proposal for an additional $30,000. When no other funding option became available, the Board used the fee authorization contained in HB 2256 and collected $5000 from each of the facilities participating in the pilot study.

Education

Education Subcommittee members consisted of RN, LPN and CNA educators. The subcommittee reviewed course requirements in 19 states that allow for the delivery

of medications by unlicensed persons under a licensed nurse's delegation and supervision. The educational setting options considered by the subcommittee included community colleges or facilities participating in the Pilot Study. Given the small number of participating facilities and the possibility of diverse geographic locations, facility-based training proved to be the most feasible model to adopt.

The subcommittee designed a 100 hour medication technician course consisting of 45 hours of didactic instruction, 15 hours of skill lab, and 40 hours of supervised medication administration to residents. The subcommittee created course guidelines (Appendix E) and a curriculum (Appendix F). The curriculum consisted of basic pharmacology information and safe medication administration principles. Members of this subcommittee also wrote approximately 300 multiple-choice item for the state administered competency exam. The subcommittee also established a training program for all instructors.

Scope of Work

After the establishment of the curriculum, research, and funding mechanisms, the Board and the Arizona Health Care Association issued a "Scope of Work" (Appendix G) for a researcher to determine the impact to patient health and safety of allowing nursing assistants, who met requirements prescribed by the Board, to act as pilot study medication technicians and administer medications under specified conditions. In response to the Scope of Work, the Board hired D and S Diversified Technologies (DSDT), the current vendor for the Arizona certified nursing assistant exam, to conduct the research. In turn, DSDT hired Dr. Jill Scott-Cawiezell RN, Ph.D., a nationally recognized expert on medication delivery and error in long-term care facilities to serve as

a consultant. DSDT also developed a standardized competency exam with both written and manual-skills portions based on the approved curriculum.

Site Selection

The steering committee developed criteria to select up to six sites to implement the pilot program (Appendix H). All long-term care facilities were sent invitations to a public meeting on September 20, 2005 to learn more about the project and the criteria for selection including the deadlines and time-frames for gathering data and submitting this report. The Board received seven applications, and of these, the Board approved the six facilities recommended by the steering committee:

- Shadow Mountain (Scottsdale),
- Good Shepherd (Peoria),
- Mountain View (Tucson),
- Heritage Health Care (Globe),
- Copper Mountain Inn (Globe),
- Silver Ridge Village (Bullhead City).

The Board conducted its first training session with instructors in March 2006 with additional training sessions conducted in 2007.

Silver Ridge Village became the first facility to implement training in April of 2006. All facilities had conducted at least one training session by July 2007. One facility (Heritage Health Care) dropped out of the pilot because it was unable to utilize medication technicians by October 1, 2007. Board staff visited all facilities during training, which included a specific education program directed at all delegating nursing staff of the facility.

Testing

With significant contribution from Board staff and the Education Subcommittee, DSDT developed an item pool for a written competency medication technician exam consisting of over 1200 items. The test pool contained 761 total active items with each exam consisting of 50 items distributed according to a Board approved test plan. The Education Subcommittee designed the test plan (Appendix I) based on time allotted in the curriculum for each topic and the importance of each topic in terms of patient safety. Other states that draw from the item pool include Arkansas, Oklahoma, Montana, and Ohio. DSDT also developed a skills competency exam, using check-off lists developed by the Education Subcommittee.

Students in the pilot study received a limited number of chances to pass the test before being required to re-take the course. In total, 21 persons passed both the written and manual skills tests out of 32 total exam administrations. The skills exam proved less challenging than the written exam with 78% passing the skills exam on the first attempt and only 41% passing the written exam on the first attempt. All but one student passed the skills exam on the second attempt and 59% of students passed the written exam on the second attempt.

Implementation by Facilities

All six participating facilities sent representatives to a 2-day "Train the Trainer" session held on March 3-4, 2006 (Appendix I). The training sessions provided needed opportunities for participants in the pilot study to discuss the unique features of the project, reinforce teaching-learning principles, including test construction, and augment the textbook adopted by the Board. Twenty five persons attended at least one of the two

days with 17 persons attending both days. Evaluations were overwhelmingly positive for the training.

Board staff visited all participating facilities during training, with five of the six facilities receiving two visits, one in the classroom portion, and one during the clinical practice. When visiting the training programs, the following observations were made:

- Remedial instruction was needed to help students develop basic algebra skills needed to calculate simple divided dosages (e.g. if a tablet contains 250 mg of a drug, how many tablets would you give if the order were for 500 mg?). Facilities received direction about the need to screen for basic math ability but allowed students who failed testing to enter and continue in the program to encourage interest and participation.
- Board staff discouraged facilities seeking to condense the program into consecutive 8-hour lecture/lab days. Program personnel stated that the students could only attend the classes if such a schedule were offered.
- Nurses on the units, while initially skeptical, enthusiastically embraced the concept once implemented. They also appeared to be reassured by the Board's presentation on "Delegation to Medication Technicians".
- Instructors stated that teaching the course benefited them and updated their knowledge of pharmacology

Several facilities failed to implement the medication technician training within a year of attending the "Train the Trainer" course due to turnover of teaching personnel, lack of qualified CNAs, shortage of CNA coverage, and administrative changes at the facility. The Board offered an additional "Train the Trainer" session on March 1-2, 2007 and has

conducted additional informal training sessions as needed to train new teachers. All facilities implemented training by July 1, 2007. Extensive training sessions will not be necessary in the future as the Board anticipates that textbooks geared to the medication technician role in long-term care facilities will soon be released[5, 6] and statutory and rule requirement for training will be well known. Additional training needs to enhance instruction will be addressed at the Board's annual conference for CNA instructors.

All steering committee participants recommended that the current 80% passing standard for the CNA written exam remain in effect until additional data supports a change in the standard. One DON of a long-term care facility reported that her students did not initially take the exam seriously until the first failure. Once they studied and re-took the exam, most of them passed. One facility trained three persons, however only one person passed the exam and then left the facility before ever practicing as a medication technician. Unfortunately, the Board had to drop this facility (Heritage Health Care) from the project due to their inability to implement the role in time to collect post-implementation data.

The Steering Committee invited all pilot study participants to attend all steering committee meetings and offer their perspective. Some common themes include:

- <u>Difficulty Recruiting CNAs for the Role.</u> Many facilities found that attracting CNAs to the program presented more challenges than anticipated and that they needed to increase hourly wages and offer other incentives to gain participation.

- CNA Shortages. Even with an adequate number of CNAs trained and qualified for the role, shortages of CNAs in the facility necessitated that they work primarily as CNAs rather than as medication technicians.
- Positive Acceptance of Delegation to Medication Technicians. Nurses delegating to CNAs reported very positive results and experiences. In some facilities additional CNAs became attracted to the role after observing their colleagues functioning as medication technicians.
- Positive Impact on Medication Administration by Nurses. The medication technicians discovered and reported unsafe medication practices and RN/LPN medication errors. One facility changed its medication administration schedule in response to a medication technician's concern that resident's medications were inappropriately scheduled.

The Board received a report, late in the project, that one of the participating facilities received a negative federal survey resulting in a sanction. A sanction prohibits the facility from conducting CNA training for two years (OBRA 87). The surveyors cited medication errors by both medication technicians and nurses but also found improper labeling by the pharmacist which contributed to the errors. One error involved a simple math miscalculation by the medication technician. Department of Health officials concluded that the sanction stemmed chiefly from a lack of evaluation for physical therapy services. Based on the recommendation of the steering committee, the Board decided to continue the facility's participation in the project with monthly medication error audit reports to the Board. The facility submitted error-free reports, except for a

single report concerning a medication technician found to have a high error rate. After retraining, the technician had error-free reports.

At present, a total of 21 qualified medication technicians continue to administer medications under the delegation of a licensed nurse in five long-term care facilities. Participating facilities want to continue to use medication technicians, but face the continuing challenge of CNA shortages, high staff turnover, and other fiscal constraints. Offering the program on a state-wide basis will solve some of the challenges that the participating facilities have faced. Further, a state-wide program may lead recognized educational institutions to participate in training with a resultant increase in training opportunities, higher passing rates on the competency exam and less reliance on facility staff for training.

Research Results as Reported by D and S Diversified Technologies[4]

This section contains a summary of the report from the researcher, DSDT. The total report is found in Appendix K.

Medication Error Rates

Pre-implemetation mean medication error rate of 10.4% (LPN, 10.12%; RN, 11.54%) were obtained. These rates are not statistically or clinically different for RN and LPN levels of licensure.

Post-implementation observation revealed a mean medication error rate of 6.6% (LPN, 7.25%; RN, 2.75%; Medication Technician, 6.06%). Again, there were no statistical or clinically significant differences noted among the medication administrators based on credential. There were no statistically significant differences in either rate or pattern of error before or after the utilization of medication technician. While it appears

that there was an actual lowering of the medication error rate, due to limited power of the study, the result is not considered significant.

Staff Satisfaction

Interviews of study participants from the five nursing homes after the post pilot study intervention data collection period allowed some insight into staff perceptions and acceptance of the project. Persons interviewed included Directors of Nursing (DONs), Registered Nurses (RNs), Licensed Practical Nurses (LPNs) and Pilot Study Medication Technician (PSMTs). The majority of respondents worked at least of 35 hours per week and ranged in experience from 1 to 23 years. All nurses interviewed indicated that despite some early misgivings about the new medication technician role, when they were able to partner with a PSMT, they had more time to work directly with the residents. These findings closely align with another study[7] that provides empirical evidence supporting the medication technician role in reducing job stress and increasing satisfaction among licensed nurses. Nurses reported feeling better about their resident care and assessments (p. 4).

> *"The concept is fabulous, I now have more time to assess my residents and work with other staff. In the past, I felt stuck behind the med cart."*
>
> *"…nurses are now more available."*
>
> *"…it is hard when the techs aren't here, they are good partners."*

The medication technicians also reported that it was their perception that nurses were spending more time with residents. Medication technicians also were affected by the delegating nurse's acceptance of the role.

> *"I had a very difficult time in my new role at first. My nurse was constantly looking over my shoulder and making me very nervous. I could not get the pass done. Now, I have a new partner and I love what I am doing. We work really well together. "*(p. 4-5*)*

One facility had a great deal of difficulty in securing adequate staffing to fully and consistently implement the medication technician role. Although nurses could see benefit from the addition of the role, they also reported frustration when medication technicians were not assigned as a partner.

Medication technicians also functioned in additional roles along with their medication administration responsibilities. Some reported tailored shifts to maximize the medication administrations opportunities. All reported that they assisted other staff and residents when not administering medications.

The informants clearly delineated the protocols regarding which medications could be passed by the medication technicians and which were the responsibility of the nurse. Nurses were sometimes challenged by the sharing of medication administration responsibility. However, it was reported that systems to track medications that require administration by a nurse (PRN narcotics, inhalers) were being developed and implemented.

All informants, except one nurse who felt she pampered her residents, reported the residents were very happy with the addition of the medication technician role.

"They miss her when she is gone, the resident keeps asking me where [she] is today."

"Residents are glad for the change; they don't have to wait for their meds."(p.5)

Informants reported minimal changes to the medication administration procedure. Many informants reported they believed there were fewer medication errors and a noticeable improvement in timely delivery of medications. (p.5)

Informants provided recommendations and lessons learned during the pilot medication technician project.

The recommendations include:

- The timeframe for the training was too condensed. The training needs to be more spread out to allow time to study the critical concepts.

- We need more medication technicians and they need to be consistently assigned to the role to improve and build systems.
- Licensed staff would like to review the training so there can be consistent reinforcements for the medication technicians.

The lessons learned include:

- Speed comes with time, the key is being very careful.
- I now understand why blood pressures are so important for the medication pass and I always double check them myself. Now I know why my nurse was always asking me what their blood pressure is.
- PSMT add flexibility to staffing." (p. 5-6)

Conclusions

Findings suggest that the introduction of medication technicians to the medication team in a long-term care facility will not negatively alter the rate or pattern of medication error. Significantly, an AHRQ funded medication safety study (Scott-Cawiezell et al., 2007[1]; 2007[3]) reached similar conclusions. In addition to the safety data presented, health care personnel consistently reported positive results with the addition of the medication technician to the healthcare team. In addition the study found no evidence that facilities replaced licensed nurses with medication technicians and no incidents of drug diversion by medication technicians.

In short, the Arizona pilot study confirms earlier studies which indicate that medication technicians can provide safe medication delivery. However, the Board also recognizes that many factors remain to be addressed. Nursing home residents have many illnesses, take many medications, and therefore are vulnerable to subtle alterations in

their medication regimens. Many of the medications delivered in a routine medication administration do require assessment for potential adverse effects. CNAs and medication technicians lack assessment skills and knowledge to make adjustments or watch for many potential changes that a resident may undergo, including adverse drug effects. Thus, as recognized in the sunrise report and the enactment of HB 2256, the role of the licensed nurse remains critical to the management of the resident's health and medications.

As stated by DSDT in its report:

"Nursing homes have many challenges in the midst of very fiscally constrained budgets to provide safe care. Innovation and evidence must be a critical part of how care is delivered to this ever growing and very frail population. In an ideal world, the frail and vulnerable residents would have RNs providing all aspects of their care. However, in a fiscally constrained world, staff representing many levels of credentialing must be maximized to assure that care can be given. This study provides some initial evidence to suggest that medication technicians can be effectively used for routine medication administration. Understanding the limitations of the CMT/A (medication technicians) and creating medication systems that include the RN and the CMT/A as partners, could provide safe medication administration where residents get the right medication, at the right time, in the right dose, through the right route, and prepared in the right method to assure the most therapeutic result (Scott-Cawiezell, 2007a)" [4] (p. 6).

Based upon their experience with the project and the results of the pilot study the Steering Committee recommends that:

- Legislation be pursued to extend the role of the medication technician state-wide;

- All features of the pilot study remain including protocols, education, setting, and testing;
- The time frame for the training be paced so students can better comprehend the material;
- The role of the RN in delegation and medication management be specifically addressed;
- That the Board collaborate with the Department of Health Services and other licensing boards in crafting legislation.

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Appendix A

APPENDIX A
Persons Contributing to the PMST Project*

Board Member Chairs
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Steve Robertson, LPN
M. Hunter Perry, Public Member

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Lila Van Cuyk, RN, BSN, Education Consultant
Rose Wilcox, RN, M.Ed., Education Consultant
Karen Gilliland, Legal Secretary

Pilot Facility Representatives
Armida Dixon/Karen Truett, Heritage Health Care
Debbie Madrid/Paula Mitchell, Copper Mountain Inn
Sarah Ellis/Cathie Hauf, Good Shepherd
Phyllis Jordan/Pat Collea/Regina Tutor, Silver Ridge Village
Marie Montion/Jackie Arnett, Mountain View
Barbara King/Annie Quarles, Shadow Mountain

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The following persons provided expert advice to the committee and the Board:
Paul Dorrance/Chad Solis—D & S Diversified Technologies
Jill Scott-Cawiezell, RN, Ph.D
Ginny Pepper, RN, Ph.D
Sue Roe, RN, Ph.D

* While we have attempted to be inclusive in this list, we apologize for any inadvertent omissions

Appendix B

Sunrise Report Submitted to Support Regulatory Oversight of a Two-Year Certified Medication Aide Pilot Study in Arizona's Long Term Care Skilled Nursing Facilities

Submitted by:

Arizona Association of Homes and Housing for the Aging
And
Arizona Health Care Association

Glossary

RN – *Registered Nurse* – Any diploma, associate degree, or baccalaureate degree prepared nurse who has successfully past the National Certification and Licensing Examination (NCLEX) for nurses, and currently maintains a valid Arizona nursing license.

LPN – *Licensed Practical Nurse* – Any person who has completed an approved program of study and gained licensure from the state Board of Nursing who practices practical nursing under the supervision of a physician or registered nurse. The LPN is similar to an RN, but with a more narrow scope of practice.

CNA – *Certified Nursing Assistant* – An unlicensed worker who assists licensed nurses (RNs & LPNs) in performing nursing care through the execution of basic care tasks, such as taking vital signs and assisting patients with activities of daily living. Additionally, CNAs have received structured training and passed a competency evaluation to earn certification, which is monitored by the state Board of Nursing.

UAP – *Unlicensed Assistive Personnel* – Any personnel non-licensed personnel who assist licensed nurses in providing nursing care. CNAs fall into this category.

CMA – *Certified Medication Aide* – A proposed UAP position in which CNAs receive training in order to administer limited types of medications to patients of SNFs.

SNF – *Skilled Nursing Facility* – Traditionally labeled as a "Nursing Home", a SNF is any facility providing skilled nursing in-patient care to populations unable to care for themselves without more than minimal assistance.

LTC – *Long Term Care* – A broad general term used to refer to facilities that provide sub-acute, skilled nursing, and assisted living services over a long term basis. SNFs are included within this definition.

ARS 32-3105 Applicants for regulation; factors

Regulatory oversight of a two-year certified medication aide pilot study

1. A definition of the problem and why regulation is necessary:

Problem

Increases in patient acuity, fiscal constraints, and decreased numbers of registered nurses (RN) and licensed practical nurses (LPN) per patient to provide direct care have resulted in significant workplace restructuring throughout United States health care delivery institutions. Arizona is not immune to these changes, and like most states, Arizona health care institutions are relying upon the use of unlicensed assistive personnel (UAP) such as certified nursing assistants (CNA) and others to assist licensed nurses in providing nursing care tasks. The American Nurses Association (ANA), a national nursing professional organization, recognizes the need to utilize UAPs in support of nursing care[1]. To this effect, member institutions of Arizona's long term care (LTC) community propose a two-year pilot study to evaluate the creation and implementation of a UAP position of certified medication aide (CMA). The CMA is a CNA who has received additional training in medication administration, and would be responsible for administering limited types of medications to patients of skilled nursing facilities (SNF). Such a program would follow suit with 9 other states[2] currently utilizing CMAs, and would allow the limited number of licensed nurses in SNFs to focus more time on patient assessment, critical nursing interventions, and coordination of care. During the study, CNAs will be trained in medication administration, will then begin administering medications in LTC SNF units, and finally, outcomes will be evaluated as to the feasibility of such a position in the state of Arizona.

Direct CMA oversight would rest with licensed nurses, and is centered on the concept of delegation of authority and the supervision component that accompanies delegation. Currently however, rule R4-19-813 of the Arizona Nurse Practice Act prohibits the delegation by a licensed nurse to a CNA the task of medication administration. Therefore, the purpose of this sunrise application is to allow the Arizona State Board of Nursing regulatory oversight of this two-year pilot study, which would include: the granting of a waiver of exception to rule R4-19-813, approval authority for the specifics of implementation and evaluation of the pilot study, and for certification of qualified medication aides.

(a). The nature of the potential harm to the public if the health profession is not regulated and the extent to which there is a threat to the public health and safety.

The position of CMA is new to Arizona. This presents several potential problems for those who would implement such a program and potentially for the patients within their care.

By far the greatest potential risk to public safety is the possibility of increasing medication errors, especially within an at-risk population such as the elderly. Recent studies have found that medication errors in the United States account for up to 98,000 deaths annually[3]. Empirical evidence related to CMA utilization outcomes is limited at best. In a literature review on the subject conducted by a graduate student at Arizona State University's School of Nursing, no studies were found which showed that CMAs contributed to increased amounts of medication errors, in reality only one truly empirical study of CMAs and medication errors was found. A study conducted in an in-patient psychiatric unit in a mid-Atlantic state (specific state not given) found that CMAs actually made less medication errors than registered nurses over the course of a year as measured by missed medications and medications given more than an hour early or late[4].

In the face of limited empirical data, Arizona's LTC and nursing communities hope to limit the potential for increased medication errors by initially conducting a two-year pilot CMA study, and by seeking regulatory oversight of the process from the Arizona State Board of Nursing. Therefore, the Arizona State Board of Nursing must ensure that the pilot study addresses the issues of defining and assessing the CMA role (education & training, scope of practice, utilization), patient outcomes (medication errors), and CMA supervision. Poor oversight in any of these issues will most likely result in the potential for increased medication errors and/or non-support of the program by licensed nurses. Additionally, in order to protect the public from incompetent practitioners the Board of Nursing in conjunction with the LTC community must determine what will be required for certification and when and how to take disciplinary actions.

(b) The extent to which consumers need and will benefit from a method of regulation identifying competent practitioners and indicating typical employers, if any, of practitioners in the health profession.

Currently there are no practicing CMAs within Arizona. Once piloted, CMAs will work in SNFs' of Arizona's LTC institutions. SNFs serve stable geriatric populations who require skilled nursing care such as; assistance with daily living, nursing treatments, frequent assessments, and medication administration. Excluded areas for utilization of CMAs would include: acute, sub-acute, and assisted living units. In this role and environment CMAs will come in contact with numerous patients, patients often at risk due to medical and physical conditions associated with advanced age. Certification of this new position of

medication aide through the Board of Nursing provides the consumer with the confidence that CMAs are being held accountable to specific standards of education & training, and of care. Additionally, certification provides a means of oversight in maintenance of competency and a forum for disciplinary actions. Without this regulation through certification, Arizona would not be able to demonstrate consistency in competency standards among individual institutions, and would lose disciplinary oversight.

(c) The extent of autonomy a practitioner has, as indicated by the following:

(i) The extent to which the health profession calls for independent judgment and the extent of skill or experience required in making the independent judgment.

The extent of independent judgment afforded a CMA will be the decision of the supervising licensed nurse (Registered Nurse or Licensed Practical Nurse).

(ii) The extent to which practitioners are supervised.

A licensed nurse is responsible for the delegation of authority to the CMA for administering medications and is thus accountable for supervision. A CMA may not administer medications without a licensed nurse on the nursing unit, and is responsible for reporting to the supervising nurse any abnormal occurrences. CMAs may document medication administration on the medication administration record (MAR), however other specific independent duties by the CMA such as: documentation of medication effectiveness, administration of "as needed" medications, etc. are yet to be determined as part of the pilot study.

2. Efforts made to address the problem, including:

Arizona's LTC institutions are currently struggling to meet the nursing care needs of their elderly patients within their SNFs due to a shortage of registered nurses (RN) and licensed practical nurses (LPN). Coupling the relative stability of their patient population with anecdotal positive reports of CMA programs in other states, Arizona's LTC institutions have approached the Arizona State Board of Nursing and the Governor's Nursing Shortage Task Force advocating the implementation of a two-year pilot CMA study. The Board of Nursing has recognized the need of Arizona' LTC institutions to seek alternative methods of care delivery, and pursuant to this application's approval will amend its policies, procedures and/or rules to allow for the pilot study.

(a) Voluntary efforts, if any, by members of the profession to either:

(i) Establish a code of ethics.

The Board of Nursing is a regulatory state agency not affiliated with the profession. Nationally, CMAs are not affiliated with any professional

organization. Regulatory oversight or certification for states with CMA programs varies, but typically occurs in either the state's Board of Nursing or the state's Department of Health.

(ii) Help resolve disputes between health practitioners and consumers.

Issues of dispute between CMAs and consumers will begin with the institution in which the incident took place, and those institutions are accountable to state regulatory agencies. Individually, RNs, LPNs, and CMAs will be accountable to the Board of Nursing for issues of scope of practice and professional misconduct.

(b) Recourse to and the extent of use of applicable law and whether it could be amended to control the problem.

Currently no law exists which allows for CMAs in Arizona. Pursuant with article R4-19-813 of the Arizona Nurse Practice Act prohibiting the delegation of medication administration to CNAs, legislative change is required in order for the Board of Nursing to allow a pilot study to take place.

3. The alternatives considered, including:

(a) Regulation of business employers or practitioners rather than employee practitioners.

As previously stated the role of CMA currently does not exist, and cannot legally exist without changes to the Nurse Practice Act allowing for nurse delegation of medication administration and for certification of the individual practitioner. If the pilot study does proceed, licensed practitioners will be held accountable for supervision, and the employer will be held responsible for making available, at all times licensed nurses for the purpose of supervision. Certification of the medication aide however holds the employee responsible for their individual actions in accordance with a yet to be determined standard of care and scope of practice. In this manner the licensed nurse is not punished when appropriate supervision was provided, but the CMA chose to act inappropriately.

(b) Regulation of the program or service rather than the individual practitioners.

Arizona SNFs are regulated by Arizona's Department of Health, licensed nurses by the Board of Nursing, both are accountable for supervision of those performing nursing tasks. Certification of medication aides allows the Board of Nursing to bring disciplinary actions against the medication aide when the CMA's actions warrant discipline.

(c) Registration of all practitioners.

The Board of Nursing does not request registration for medication aides, but rather certification.

(d) Certification of all practitioners.

The Board of Nursing proposes that medication aides be certified. Certification will involve: satisfactory completion of a basic curriculum of a program approved by the board; receipt of a valid certificate of satisfactory completion from a training program approved by the board; and satisfactory completion of a competency examination approved by the board. Specific training programs and examinations will be developed by the Board of Nursing in cooperation with those Arizona LTC institutions participating the pilot study.

(e) Other alternatives.

Arizona's LTC community could seek legislation supporting the development and regulation of Certified Medication Aides within another state regulatory agency, such as the Department of Health. However, since the CMAs' duties directly relate to nursing care, and they will be recruited from within the CNA ranks, it becomes prudent to keep regulatory oversight within nursing. Otherwise, for the reasons stated in the above articles (#1 thru 3d) the only other option would be to give the duty to a registered pharmacy technician. The difficulty with this is that the pharmacy technician is accountable to a pharmacist and SNFs do not employ in-house, full-time, around the clock pharmacists, and these are personnel that would have to be hired by participating facilities.

The bottom line is that there is some evidence to support positive patient outcomes with utilization of CMAs, and implementing a pilot program can better evaluate this position and if successful provide Arizona's LTC institutions with needed human resources in the care of our senior citizens.

(f) Why the alternatives specified in this paragraph would not be adequate to protect the public interest.

As previously mentioned, the CMA would be a totally new UAP position. Taking around the clock medication administration out of nursing supervision or regulatory oversight breaks with continuity of patient care, and to conduct a pilot study with unregulated participants (i.e. without certification) attacks consumer trust and provider accountability.

(g) Why licensing would serve to protect the public interest.

The proposed program does not seek licensing, but seeks the aforementioned (3d) certification.

4. The benefit to the public if regulation is granted, including:

(a) The extent to which the incidence of specific problems present in the unregulated health profession can reasonably be expected to be reduced by regulation.

A well-executed pilot program that includes, appropriate competency evaluation of participants will provide the consumer with providers who at least meet minimal standards of competent care. Additionally, by providing the Board of Nursing disciplinary oversight, non-competent participants can be removed from the program and/or barred from future certification. The threat of disciplinary recourse by the Board of Nursing provides incentive for study participants to comply with established guidelines, thus becoming an effective regulatory tool.

(b) Whether the public can identify qualified practitioners.

Facilities taking part in the study will be required to advise all residents and their responsible parties of their participation in the pilot project. Further, all CMAs will be required to identify themselves as such on their name badges or other forms of identification

(c) The extent to which the public can be confidant that qualified practitioners are competent, including:

(i) Whether the proposed regulatory entity would be a board composed of members of the profession and public members or a state agency, or both, and , if appropriate, their respective responsibilities in administering the system of registration, certification, or licensure, including the composition of the board and the number of public members, if any, the powers and duties of the board or state agency regarding examinations and for cause revocation, suspension and non-renewal of registration, certification, or licensure, the adoption of rules and canons of ethics, the conduct of inspections, the receipt of complaints and disciplinary action taken against practitioners and how fees would be levied and collected to pay for the expenses of administering and operating the regulatory system.

The regulation of CMAs will be conducted by an existing state agency, the Arizona State Board of Nursing. The Board of Nursing has the experience, qualified personnel, and existing infrastructure to best support this pilot study. Additionally, the Board of Nursing currently regulates the CNA pool from which CMAs will be derived, and has a vested interest in the delegation of tasks formerly thought as being the sole proprietary domain of nursing (e.g. medication administration). Participating facilities will continue to be regulated by the Department of Health Services. Medication administration review is an important element of the annual licensure and certification survey process for SNFs. Participating facilities must continue to meet the standard prescribed in the federal and state regulations relative to medication administration throughout the term of the pilot.

The Board of Nursing, working with Arizona's LTC and nursing community will determine at the conclusion of the pilot study the specifics of fees, certification, and amendments to the Board of Nursing's statutes and administrative rules needed to accommodate the new position and CMA practitioners.

(ii) If there is a grandfather clause, whether grandfathered practitioners will be required to meet the prerequisite qualifications established by the regulatory entity at a later date.

Since a CMA position or equivalent currently does not exist in the state of Arizona, there exists no practitioners to be grandfathered into the pilot study. Any practitioners with medication aide certification from another state must undergo the same education, training, and certification procedures as any other study participant.

(iii) The nature of the standards proposed for registration, certification, or licensure as compared with standards of other jurisdictions.

Proposed pilot site requirements include: waiver from the Board of Nursing to delegate medication administration to qualified medication aide participants; licensed nursing home in good standing with the Arizona Department of Health; written support of the Chief Executive Officer and Chief Nursing Officer; established policies and procedures to support the CMA role in the study; review of delegation principles and expectations by all participating RNs and LPNs; and an RN within the facility at all times.

Proposed CMA requirements include: age 18 or older; 1-year good standing within their facility and as a CNA (verification of active and good standing status at the Board of Nursing), their facility must be a pilot site participant; and there must be successful completion of a CMA medication administration course. If the role of CMA is continued past the pilot-study then all CMA applicants (study participants and new applicants) will be required to fulfill requirements for certification derived from study results and to be emplaced at study conclusion.

(iv) Whether the regulatory entity would be required to enter into reciprocity agreements with other jurisdictions.

This CMA pilot study is unique to Arizona, therefore no reciprocity agreements with other states is required. Future reciprocity agreements post study completion are unlikely due to a wide variance in education and training of CMAs among states currently with CMA programs.

(v) The nature and duration of any training including whether the training includes a substantial amount of supervised field experience, whether training programs exist in this state, if there will be an experience requirement, whether

the experience must be acquired under a registered, certified, or licensed practitioner, whether there are alternative routes of entry or methods of meeting the prerequisite qualifications, whether all applicants will be required to pass an examination, and if an examination is required, by whom it will be developed and how the costs of development will be met.

The nature and duration of any training curriculum and competency evaluation are yet to be determined. Ultimately, the responsibility for approving training and competency testing programs lies with the Board of Nursing. However, it is understood that the standards for the same will be developed collaboratively by the Board of Nursing, the nursing community, and the long-term care community. These standards will include at a minimum the amount of didactic vs. field experience requirements, testing requirements, clinical supervision requirements, minimum qualifications for CMA and facility participants, and provisions for expelling pilot CMAs or facilities from the study if warranted. Some costs for the project will be borne by the Board of Nursing within the confines of their established budget. (Please note: no new budget dollars will be requested to cover this study.) Other costs associated with the design and implementation of the study will be the responsibility of the participating facilities.

(d) Assurance of the public that practitioners have maintained their competency including:

(i) Whether the registration or certification or licensure will carry an expiration date.

The expiration date for CMAs participating in the pilot-study will be the two-year pilot study completion date. A decision will be made at that time as to whether the program will continue, and if so, the process for certification renewal.

(ii) Whether renewal will be based only on payment of a fee or whether renewal will involve reexamination, peer review, or other enforcement.

These renewal decisions will be made at completion of the two-year pilot study.

(5) The extent to which regulation might harm the public, including:

(a) The extent to which regulation will restrict entry into the health profession, including:

(i) Whether the proposed standards are more restrictive than necessary to ensure safe and effective performance.

Waiver of rule R4-19-813 of the Arizona Nurse Practice Act for this pilot study and Board of Nursing oversight is both appropriate and not restrictive to safe and

effective performance. The central issue is that medication administration, traditionally a licensed nursing task, is being delegated to unlicensed assistive personnel. Board of Nursing oversight ensures that patients and those nurses delegating this authority are protected by mandating a controlled study in which nursing, outside the LTC institutions, have a voice in establishing appropriate benchmarks for study success. Additionally, certification communicates to the public minimal competencies have been set and attained.

(ii) Whether the proposed legislation requires registered, certified, or licensed practitioners in other jurisdictions who migrate to this state to qualify in the same manner as state applicants for registration, certification, and licensure if the other jurisdiction has substantially equivalent requirements for registration, certification, or licensure as those in this state.

Since specific requirements for certification will be determined by outcomes of the pilot CMA study, determination of certification of persons from other jurisdictions cannot be made at this time. Proposals for such exceptions should be made at conclusion of the study.

(b) Whether there are professions similar to that of the applicant group which should be included in, or portions of the applicant group which should be excluded from, the proposed legislation.

There exists two sets of skilled health care workers similar to that of the CNAs to be trained as CMAs. These health care workers are: medical technicians, and emergency medical technicians (EMT). Neither the medical technicians nor the EMTs are currently employed in skilled nursing facilities, and if included would require participating SNFs to recruit and employ additional personnel. This simply is just not feasible. CNAs currently employed by participating SNFs and who meet the criteria outlined in article 4.c.iii are already familiar with skilled nursing patients and the nursing staff. Additionally, they are already regulated by the Board of Nursing and subsequently are in their database. Medication administration by medical technicians and EMTs should be the topic of other feasibility studies.

6. The maintenance of standards including:

(a) Whether effective quality assurance standards exist in the health profession, such as legal requirements associated with specific programs that define or enforce standards or a code of ethics.

Arizona's LTC facilities are held accountable for nursing outcomes through inspections by the state Department of Health. In order for SNFs to participate in the pilot study they must be in good standing with the Department of Health. In order to enjoy this "good standing" facilities must be practicing good quality assurance. Nursing in general enjoys a wide variety of quality assurance

standards. The Board of Nursing refers to rule R4-19-403 of the Nurse Practice Act for defining acts by nurses which might be harmful or dangerous to the health of patients, and rule R4-19-814 for standards of conduct for nursing assistants.

(b) How the legislation will assure quality including:

(i) The extent to which a code of ethics, if any will be adopted.

Codes of ethics typically are derived from shared beliefs of members of a professional organization. As for CMAs they have no national organization in which to adopt a set code of ethics. Therefore, regulatory oversight affects the ethics of the situation by addressing behavior and setting standards through administrative rules and statutes. These rules and statutes then carry the threat of certification restriction or revocation as a means of enforcement of said standards.

(ii) The grounds for suspension or revocation of registration, certification, or licensure.

The Board of Nursing and facilities participating in the pilot study will develop guidelines for grounds for suspension or revocation of medication aide certification based upon existing standards set forth in rules R4-19-403 and R4-19-814 of the Nurse Practice Act as referenced above in 6.a.

7. A description of the group proposed for regulation, including a list of associations, organizations and other groups representing practitioners in this state, an estimate of the number of practitioners in each group and whether the groups represent different levels of practice.

The group proposed for regulation is that of the Certified Medication Aide as described in the previous articles, again as mentioned earlier this is a new entity to the state of Arizona, and therefore no associations or organizations exist to formally represent said practitioners as CMAs. However, as unlicensed personnel who assist nurses in their duties and as employees of Arizona SNFs, CMAs will maintain the representation they enjoy currently as CNAs from the following organizations: Arizona Association of Homes and Housing for the Aging (AzAHA), Arizona Healthcare Association (AHCA) (AzAHA and AHCA are associations which represent facilities who would employ CMAs), the Arizona State Board of Nursing, and the Arizona Nurses Association (AzNA).

The number of participating sites and participating CMAs is yet to be determined, however a minimum of four participating sites will be selected.

8. The expected costs of regulation including:

(a) The impact registration, certification, or licensure will have on the costs and services to the public.

Proposed Budget for Certified Medication Aide Demonstration Project

This Budget was prepared on a rough estimate of the cost to the Board of this Bill as proposed last year.

Consultant Time @ $30 per hour (salary plus benefits)—includes research and meeting time

Action	Hours	Cost
Curriculum development	40	
Applicant qualifications	10	
Supervision requirements	5	
Criteria for facility	10	
Securing valid competency exam and administration site	30	
Site visits to programs	20	
Evaluation methods	20	
Preparing reports	40	
Presentation at meetings	20	
Administering grant	20	
Community education	40	
Total	255	$ 7650.00
Grant for research		$30,000
Clerical Costs	40 @ 16.64	$665.00
Total Cost for Board		$38,315

Additional costs would be incurred if rulemaking were needed

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Appendix C

House Bill 2256 2004

AN ACT PROVIDING FOR A PILOT PROGRAM TO ALLOW CERTIFIED NURSING ASSISTANTS TO ADMINISTER MEDICATION.

Be it enacted by the Legislature of the State of Arizona:

Section 1. Pilot study medication technicians; pilot program

A. The state board of nursing may establish a pilot program to determine the impact to patient health and safety of allowing nursing assistants certified pursuant to title 32, chapter 15 and acting as pilot study medication technicians to administer medications under educational requirements and conditions prescribed by the board.

B. The board may conduct the pilot program in not more than six skilled nursing facilities. Acute and sub-acute patients shall be excluded from this study.

C. Except as provided in this subsection, nursing facilities participating in the pilot program shall not replace existing registered nurse and licensed practical nurse positions with certified nursing assistants or pilot study medication technicians. The department of health services and board may authorize, as part of the pilot program, adjustments to nursing staff mix as necessary to conduct an evidence based study to determine the impact of varying staffing models upon patient health and safety. Facilities participating in the pilot program shall not violate state or federal laws relative to the adequacy of nursing coverage.

D. The pilot program must include delegation and supervision protocols regarding which medications the pilot study medication technicians may and shall not administer and under what conditions. The protocols shall prohibit medication technicians from administering any medication or fluid by needle. The protocols must give registered nurses and licensed practical nurses the authority to refuse to delegate the administration of medication to pilot study medication technicians if a nurse believes that patient health and safety is at risk.

E. The board may adopt policies prescribing the education and training requirements for certified nursing assistants participating in the pilot program as pilot study medication technicians.

F. The board is authorized to charge the participating facilities and pilot study medication technicians an assessment to implement the provisions of this section.

G. The board must complete the pilot program on or before December 1, 2008.

H. For the purposes of this act, the state board of nursing is exempt from rulemaking with regard to adopting policies to assist in the implementation of this act. The board shall hold public hearings to review, discuss and adopt the proposed policies.

I. The board shall submit a written report on or before December 1, 2008 to the governor, the president of the senate and the speaker of the house of representatives regarding the results of the pilot program and recommendations for any administrative or legislative action. The board shall provide a copy of the report to the secretary of state and the director of the Arizona state library, archives and public records.

Appendix D

Delegation of Medications to Pilot-study Medication Technicians

Protocols

(Approved by AZBN 7/20/05)

Introduction:

Delegation means transferring to a competent individual the authority to perform a selected nursing task in a designated situation in which the nurse making the delegation retains accountability for the delegation (ARS 32-1601 (7)). The delegating nurse must make decisions within the context of the five rights of delegation:

- *Right task*—Ensure that the activity may legally be delegated. The activity should not require nursing judgment, should have predictable results and unchanging procedures. Nurses may not delegate assessment or evaluation.
- *Right circumstance*—Assess client, the complexity of the activity, and the nurse's ability to supervise and monitor the client, the activity, and the personnel.
- *Right person*—Identify the competency level of the personnel and the needs of the client on an individual basis.
- *Right communication*—Communicate any specific data to be collected; variations in procedure; timelines; expected results
- *Right supervision/evaluation*-- Monitor performance, provide feedback, evaluate client response

(NCSBN, 1997)

Protocols

The purpose of these protocols is to identify the circumstances for which the nurse is allowed, under the pilot study (HB 2256), to delegate the administration of medications. A licensed nurse may delegate the administration of medications to pilot-study medication technicians (PSMT) who have completed a prescribed curriculum and passed an Arizona State Board of Nursing approved competency test.

May Be Delegated:

Under the pilot study conditions, the licensed nurse, when present and available to the PSMT, may delegate to the PSMT:

- Regularly scheduled medications, including controlled substances, to residents by the following routes: oral, topical, nasal, otic (ear), optic (eye), and rectal
- PRN or "as needed" medications for bowel care or over-the-counter analgesics. The nurse shall assess the need for the medication, evaluate the effect of the medication, and document findings in the resident record.
- If a resident identifies a need for sublingual nitroglycerine and there is sublingual nitroglycerine available for the resident's self-administration, the PMST may assist the resident in self-administration of the medication.

NOT Be Delegated:

A nurse shall not delegate:

- In situations where the delegation would pose an unacceptable risk of harm or jeopardize the health or welfare of the resident in the professional judgment of the nurse or where safe delegation cannot be accomplished.
- The first dose:
    - Of a new medication, or
    - Of a previously prescribed medication when the dosage is changed.
- Checking all new medications that arrive from the pharmacy to assure they reflect the original prescription.
- PRN or "as needed" medications except as noted above.
- The counting of controlled substances at the beginning and end of a shift.
- Any medication delivered by a needle or by intradermal, subcutaneous, intramuscular, intravenous, intrathecal, and intraosseous routes.
- Any medication that must be inserted into a nasogastric tube or gastric tube.
- A change in oxygen settings or turning oxygen on/off.
- Inhalant medications.
- Regulation of intravenous fluids or programming insulin pumps.
- Topical patches, topical medications requiring a sterile dressing or assessment of skin condition.
- Sublingual medications (except as noted above—assisting in nitroglycerine)
- Any medication that requires a mathematical conversion between units of measurement to determine the correct dose. A licensed nurse shall calculate all dosages that involve such conversions and write and initial the correct dosage on the administration record and the pharmacy label before a PSMT may administer the medication. The PSMT should verify that the calculation and dosage is correct before administration.

Appendix E

EDUCATIONAL GUIDELINES FOR FACILITIES

Pilot-Study Medication Technician Education

APPROVED BY THE BOARD September 21, 2005; REVISED March 27, 2007

An entity offering a course to train unlicensed personnel to administer medications shall adhere to the following guidelines.

Admission Requirements:

Admission into the training is limited to currently certified nursing assistants (CNA) who are at least 18 years old and who have:

- Worked at a pilot long-term care facility for a minimum of 3 months as a full time employee in a CNA position and have at least 6 months experience as a CNA;
- CPR certification;
- Earned a high school diploma or GED;
- The ability to succeed in the course, as determined by the Director of Nursing of the facility, utilizing the criteria below. The CNA:
    - Has a good attendance and employment record;
    - Demonstrates excellence and efficiency in performance of CNA skills;
    - Demonstrates ability to calculate simple dosages;
    - Demonstrates ability to read and comprehend a nursing assistant textbook;
    - Requires minimal supervision;
    - Works as a team member;
    - Verbalizes the desire to attend the program and carry out the duties of the medication technician;
    - Demonstrates respect for the process of medication administration;
    - Exhibits organizational skills in determining priorities in nursing assistant care;
    - Describes ability to manage time and resources to attend classes, study, and fulfill other obligations.

Length of the Program:

- The program shall consist of a minimum of 45 hours of didactic study, 15 hours of skills lab practice and 40 hours of supervised clinical following the Arizona State Board of Nursing approved curriculum plan
- The program shall provide15 hours of skills lab experience for the purpose of student practice and competency testing before a student is allowed to administer medication to a resident. Medication administration practice in the skills lab is included in the course syllabus and integrated into the didactic course content. Students must pass a skill lab evaluation utilizing Board-approved criteria before administration of medications to residents.
- There shall be a minimum of 40 hours of clinical practice utilizing the guidelines of progressive clinical practice and principles of supervision as detailed below

Educational Setting

- A long-term care facility chosen as a site for the pilot study may conduct training.
- All course instructors must complete a Board-approved "train-the-trainer" seminar sponsored by the Board consisting of 15 hours of instruction in teaching and curriculum including the specific curriculum of the PSMT course.

Competency Testing

- CNAs who successfully complete the PSMT course shall be eligible to take a Board administered competency exam
- The Board shall develop a competency exam based on established principles of testing and curriculum content with both a written and manual skill portion and establish a passing standard.
- A board representative shall administer the competency examination within 30 days of course completion. During the period between course completion and examination, the graduate may administer medications only under the direct supervision of the instructor.
- Candidates who fail a portion of the competency exam on the first attempt, shall be offered one re-take of the failed portion within 30 days. Candidates who fail two times or both portions of the exam will be withdrawn from the PSMT program.

Instructors

- Instructors shall hold a registered nursing license in good standing.
- Instructors shall have worked at a long-term care facility for a minimum of one year as a registered nurse
- Instructors shall have experience teaching adults
- Instructors shall either complete a "train-the-trainer" course before teaching the PSMT course or otherwise demonstrate the knowledge, skill and ability to provide medication technician instruction:
- Instructors shall deliver all didactic instruction personally and shall not utilize guest lectures or assistants to teach any portion of the course to ensure consistency

Clinical Practice

- Progressive clinical practice of 40 hours to include:
    - One-to-one instructor observed medication passes until the instructor determines that the student is safe to progress, starting with a minimum of 5 residents progressing to 10 residents over a period of 3 days for 4 hours per day (12 hours). The instructor will observe, evaluate, and record student performance for each resident medication pass using a Board-

approved checklist. Students shall perform 30 medication administrations without coaching or missing critical elements to progress.

- One-to-three instructor to student ratio for a minimum of 12 hours. The student may administer medications to10-15 residents. The instructor will utilize a Board-approved checklist to record student performance. The instructor shall observe, evaluate, and record performance of medications administered at a specific time to every 3 residents. Students shall perform 15 documented medication administrations without missing critical elements or coaching to progress. A licensed nurse (RN or LPN) shall check all medications for correct drug, time and dosage before administration and review all medication documentation.
- Upon successful completion of the above, the student may progress to medication passes under the general supervision of the instructor for a minimum of 16 hours to the number of residents determined by the facility to consist of a normal assignment for a medication technician. The instructor-to-student ratio shall be 1:5. The instructor will utilize a Board-approved checklist to record student performance. The instructor shall observe, evaluate, and record performance of medications administered at a specific time to every 5 residents. Students shall perform 15 documented medication administrations without coaching or missing critical elements to progress. A licensed nurse (RN or PN) shall check all medications before administration for correct drug, dosage, and time and review all medication administration documentation.
- Following successful course completion and prior to taking and passing the Board administered competency exam, a PSMT course graduate may continue to administer medications to selected residents under the direct supervision of the instructor.

Principles of Supervision

1. Student supervision is always conducted by the instructor throughout the course and until the student passes the Board administered competency examination. The instructor shall engage in no other duties during the period of supervision.
2. The student will progress in passing medications to progressively larger groups of residents as the student demonstrates consistent, safe, efficient medication administration according to Board-approved criteria.
3. The instructor or a licensed nurse will review all medication documentation. The review will be documented on the medical record.
4. All critical elements in the Board approved criteria must be performed by the student for all medication passes without coaching or cueing from the instructor for the student to progress from lab to clinical, to a larger number of residents, or to general supervision.
5. The instructor may require more practice than the minimum but in no instances shall less practice be required.

Delegating Nurses

All nurses delegating administration of medication must complete a Board-approved training session on delegation. All nurses who delegate medication administration should review the medication administration record at least once per shift for all residents.

Appendix F

MEDICATION ADMINISTRATION
FOR
PILOT STUDY MEDICATION TECHNICIANS

SYLLABUS/CURRICULUM

APPROVED BY THE BOARD September 21, 2005

COURSE OVERVIEW:

This course provides basic background information and routine procedures that are essential for the safe administration of select medications by experienced certified nursing assistants in a long term care facility. Content includes basic principles of medication administration, simple calculations, and categories of medications. Successful completion of the course and a "pass" on both the written and manual skills exam administered by the Arizona State Board of Nursing (AZBN) will meet the qualifications to become a pilot study medication technician (PSMT) and administer medications utilizing Arizona State Board of Nursing protocols at a selected long-term care facility under the supervision of a licensed nurse.

Admission Requirements:

Admission into the training is limited to currently certified nursing assistants (CNA) who are at least 18 years old and who have:

- Worked at a pilot long-term care facility for a minimum of 6 months as a full time employee in a CNA position;
- CPR certification;
- Earned a high school diploma or GED;
- The ability to succeed in the course, as determined by the Director of Nursing of the facility, utilizing the criteria below. The CNA:
    - Has a good attendance and employment record;
    - Demonstrates excellence and efficiency in performance of CNA skills;
    - Demonstrates ability to calculate simple dosages;
    - Demonstrates ability to read and comprehend a nursing assistant textbook;
    - Requires minimal supervision;
    - Works as a team member;
    - Verbalizes the desire to attend the program and carry out the duties of the medication technician;
    - Demonstrates respect for the process of medication administration;
    - Exhibits organizational skills in determining priorities in nursing assistant care;
    - Describes ability to manage time and resources to attend classes, study, and fulfill other obligations.

Length of the Program:

- The program shall consist of a minimum of 45 hours of didactic study, 15 hours of skills lab practice and 40 hours of supervised clinical following the Arizona State Board of Nursing approved curriculum plan.
- The program shall provide15 hours of skills lab experience for the purpose of student practice and competency testing before a student is allowed to administer medication to a resident. Medication administration practice in the skills lab is included in the course syllabus and integrated into the didactic course content. Students must pass skills lab evaluation utilizing Board-approved criteria before administration of medications to residents.
- There shall be a minimum of 40 hours of clinical practice utilizing the guidelines of progressive clinical practice and principles of supervision as detailed below

Clinical Practice:

Progressive clinical practice of 40 hours to include:

1. One-to-one instructor observed medication passes until the instructor determines that the student is safe to progress, starting with a minimum of 5 residents progressing to 10 residents over a period of 3 days for 4 hours per day (12 hours). The instructor will observe, evaluate, and record student performance for each resident medication pass using a Board-approved checklist. Students shall perform 30 medication administrations without coaching or missing critical elements to progress.
2. One-to-three instructor-to-student ratio for a minimum of 12 hours. The student may administer medications to10-15 residents. The instructor will utilize a Board-approved checklist to record student performance. The instructor shall observe, evaluate, and record performance of medications administered at a specific time to every 3 residents. Students shall perform 15 documented medication administrations without missing critical elements or coaching to progress. A licensed nurse (RN or LPN) shall check all medications for correct drug, time and dosage before administration and review all medication documentation.
3. Upon successful completion of the above, the student may progress to medication passes under the general supervision of the instructor for a minimum of 16 hours to the number of residents determined by the facility to consist of a normal assignment for a medication technician. The instructor-to-student ratio shall be 1:5. The instructor will utilize a Board-approved checklist to record student performance. The instructor shall observe, evaluate, and record performance of medications administered at a specific time to every 5 residents. Students shall perform 15 documented medication administrations without coaching or missing critical elements to progress. A licensed nurse (RN or PN) shall check all medications before administration for correct drug, dosage, and time and review all medication administration documentation.
4. Following successful course completion and prior to taking and passing the Board administered competency exam, a PSMT course graduate may continue

administer medications to selected residents under the direct supervision of the instructor consistent with the principles of supervision below.

Principles of Supervision

1. Student supervision is always conducted by the instructor throughout the course and until the student passes the Board administered competency examination. The instructor shall engage in no other duties during the period of supervision.
2. The student will progress in passing medications to progressively larger groups of residents as the student demonstrates consistent, safe, efficient medication administration according to Board-approved criteria.
3. A licensed nurse (RN or PN) shall review all medication documentation.
4. All medications will be checked for right time, dose, and drug before administration;
5. All critical elements in the Board approved criteria must be performed by the student for all medication passes without coaching or cueing from the instructor for the student to progress from lab to clinical, to a larger number of residents, or to general supervision.
6. The instructor may require more practice than the minimum but in no instances shall less practice be required.

Competency Testing

- CNAs who successfully complete the PSMT course shall be eligible to take a Board administered competency exam
- The Board shall develop a competency exam based on established principles of testing and curriculum content with both a written and manual skill portion and establish a passing standard.
- A board representative shall administer the competency examination within 30 days of course completion. During the period between course completion and examination, the graduate may administer medications only under the direct supervision of the instructor.
- Candidates who a fail a portion of the competency exam on the first attempt, shall be offered one re-take of the failed portion within 30 days. Candidates who fail two times or both portions of the exam will be withdrawn from the PSMT program.

COURSE GOALS:

Upon successful completion of the course, the student will be able to:

1. Explain the role of the pilot study medication technician in Arizona including allowable acts, conditions, and restrictions.
2. Discuss principles, terminology, laws, and drug references as they apply to administration of medications.
3. Explain principles of medication action.

4. Explain principles of medication administration and nursing care considerations for geriatric clients receiving medication.
5. Demonstrate application of mathematical concepts when preparing medications for administration.
6. Describe measures to promote safe medication administration in health care facilities.
7. Discuss medication properties, uses, adverse effects, administration, and nursing assistant care of residents receiving the following types of medications:
    a. Vitamins, minerals, and herbs
    b. Antimicrobials
    c. Eye and ear medications
    d. Skin medications
    e. Cardiovascular medications
    f. Respiratory medications
    g. Gastrointestinal medications
    h. Urinary system medications and medications to attain fluid balance
    i. Endocrine/reproductive medications
    j. Musculoskeletal medications
    k. Nervous system/sensory system medications
    l. Psychotropic medications

CLINICAL COMPETENCIES

A. Utilizing the 5 rights of medication administration, administer the following medications to stable residents when delegated and supervised by a licensed nurse:
    1. Regularly scheduled oral, topical, nasal, and rectal medications.
    2. PRN or "as needed" medications for bowel care or over-the-counter analgesics
    3. Regularly scheduled ear and eye medications
B. Demonstrate application of the principles of asepsis when administering medications.
C. Follow principles of delegation when accepting delegation of medication administration.
D. Accurately document medication administration.
E. Perform nursing assistant care associated with medications administered to residents.
F. Report any changes in resident condition to the delegating nurse.
G. Adhere to Arizona State Board of Nursing Protocols during medication administration.
H. Promote resident rights during medication administration.

RESOURCES:
Gauwitz, D. (2005). Administering Medications: Pharmacology for Health Careers. Boston: McGraw-Hill.

Nursing Drug Manual

Delegation Folder

Nursing Assistant Text

ASBN Documents: Nurse Practice Act, Protocols, Research Scope of Work, HB2256

COURSE POLICIES:

ATTENDANCE:

- The PCMT is a fast track course. Students must attend all classes to understand the material presented and function at a quality level in the health care setting.
- Students are required to complete the minimum hours of the course (45 didactic, 15 lab, 40 clinical practice)

PASSING STANDARDS:

Didactic/laboratory:

- There is not a single course grade for the training. Each of the following components must be completed satisfactorily for the student to pass the didactic/lab portion of the course:
  - **Four unit tests:** the student must earn a minimum 75% on each unit test. If a student fails to achieve 75% on a test, an alternate form of the exam may be given for one test only.
  - **Dosage calculation test**: the student must earn 100% on the dosage calculation test. A calculator may be used. Two retakes using alternate forms of the dosage calculation test are permitted.
  - **Comprehensive Course Test**: the student must earn a minimum of 80% on the comprehensive course test. If a student fails to achieve 80% and has passed all unit tests on the first attempt, the student may re-take an alternate form of the comprehensive course test.
  - **Final skills laboratory**: the final skills laboratory exam is Pass/Fail. The student must demonstrate all critical elements of selected medication administration to receive a grade of "pass." If each competency is not met, the student will receive a grade of "fail."
- The student must successfully complete the didactic and skills laboratory portion of the course as described above in order to proceed to the clinical practice portion of the course.

Clinical practice:

- The student must complete the clinical practice within 45 days of completing the didactic and skills laboratory
- The student will receive a "pass" or "fail" grade for the clinical practicum; each competency must be met for the student to pass.
- The instructor will place an evaluation form in the students file indicating that the student has met all competencies for each of the 3 levels of clinical practice. The competencies of the previous level must be met to proceed to the next level.

COURSE COMPLETION:

- The student successfully meets the passing standards of the didactic/laboratory and
- The student successfully completes the clinical practicum.
- Upon successful course completion, the instructor will award a certificate to each successful trainee, which includes the trainee's name, CNA certificate number, date of successful course completion, sponsoring institution, and instructor's signature.
- The training facility will send copies of each student's certificate of completion to the Arizona State Board of Nursing.

RECORD MAINTENANCE:

- Course materials and student records will be retained by the training institution for 3 years.
- Course materials include the following:
  - Course syllabus
  - Course schedule
  - All tests and comprehensive exams
  - Student end-of-course evaluations
- Records for each student include the following:
  - Student name, date of birth, and CNA certificate number;
  - Attendance records including total hours for class, lab, and practicum**;**
  - All scores on tests and quizzes;
  - Skills check lists from clinical practice;
  - Instructor completed competency evaluation forms for each level of clinical practice;
  - Copy certificate of course completion.

GRIEVANCE:

A student may report a grievance related to the training through the established grievance process of the training institution.

CONDUCT POLICY:

The student is expected to conduct him/herself in an ethical and professional manner. A student who commits academic dishonesty and/or acts in an unprofessional manner will be removed from the PSMT training program.

Unit Objectives/Topical Outline/Assignments:

Goal 1. Explain the role of the pilot study medication technician in Arizona including allowable acts, conditions, and restrictions.

Objectives	Content	Learning Activities	Time for Unit
A. Discuss the legislation that led to the role of the pilot study medication technician. B. Explain the delegation process and the information a PSMT would need to accept delegation. C. Describe the Protocols under which a medication technician can administer drugs in Arizona D. Describe Board of Nursing role in the project and research components.	A. Legislation HB 2256 B. Process of delegation/handouts C. Protocols D. Research components/testing	Read: AZBN Protocols Nurse Practice Act—Rules/ Article 8 Legislation HB 2256; syllabus A-D Discussion	Didactic: 1 hours

Goal 2. Discuss principles, terminology, laws, and drug references as they apply to administration of medications

Objective	Content	Learning Activity	Time for unit
A. Define key terms B. List drug sources and uses C. Differentiate between different names for the same drug D. Demonstrate use	A. Key terms: B. Sources and uses of drugs C. Drugs known by different names: chemical, generic and proprietary (trade) name D. Information	Read: pp 1-7, 8-13 Workbook: All B-D. Practice looking up a drug in nursing drug books, and on the internet and	Didactic: 1.5 hours

of drug references E. Discuss drug legislation and how laws protect the public F. Apply legal, ethical, and caring behaviors when administering medications	contained in drug references and types of drug references E. Major drug laws: 1. Food and Drug Act 2. Controlled Substance Act 3. Agencies that enforce drug laws F. Legal-ethical Resident rights, experimental drugs, placebos, caring principles—empathy, listening, hope, placebo effect	discuss the information available E. Demonstrate how the facility complies with the controlled substance act—locked narcotics, wastage etc.	

Goal 3. Explain principles of medication action

Objective	**Content**	**Learning Activity**	**Time for unit**
Objective A. Define key terms B. Describe the processes of drug absorption, distribution, metabolism, and excretion and resident education/care that will support the desired effects of drugs C. List and describe at least 10 factors affecting drug action.	Content A. Key terms p. 18 B. Processes of absorption, distribution, metabolism, and excretion and nursing assistant measures that support appropriate drug action C. Factors affecting drug action: age, size, diet, gender (male/female), genetics, diseases, psychological factors, routes of	Learning Activity Read pp. 18-29 Workbook: All items A. Play "key term" jeopardy where the definition is given and the participant supplies the correct term B-F Lecture; encourage discussion--ask students to: List personal factors that may affect drug actions; describe an adverse reaction from their own experience; Have they ever experienced tolerance, etc	Didactic: 2 hour

	administration, time of administration, drug taking history, environmental effects.		
D. Distinguish between therapeutic effects and side effects of a drug	D. Therapeutic/side effects of drugs Local and systemic action		
E. Describe types of adverse reactions to drugs and nursing assistant responsibilities for each type of adverse reaction.	E. Adverse reactions; signs and symptoms; nurse assistant responsibilities for: 1. Drug allergy 2. Tolerance 3. Cumulative Effect 4. Overdose and Toxicity 5. Drug interactions 6. Other drug related		
F. Differentiate between drug dependence and abuse in residents and staff.	F. Drug dependence and Abuse; nursing assistant responsibilities	F. Discuss risk for abuse among health care professionals	

Goal 4. **Explain principles of medication administration and nursing care considerations for geriatric clients receiving medication.**

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Recall the effects of aging on body systems	A. Effects of aging on body systems	Read pp. 413-422 Workbook: All items	Didactic: 1 hours
B. Discuss pharmacokinetics in the aged	B. Pharmacokinetics in the aged	A-C Lecture/discussion with examples Observation of medication administration	
C. Administer medications to elderly residents applying principles of safe medication administration, resident rights, and knowledge of aging	C. Administration of medications to elderly residents: resident rights, safety principles, caring behaviors, difficult swallowing (thickening)		

changes that may affect ability to take medications.			

Unit test #1

Goal 5. Demonstrate application of mathematical concepts when preparing medications for administration

Objective	Content	Learning Activity	Time for unit
A. Define key terms B. Recall common mathematical operations C. Recognize different systems of measurement and when a licensed nurse needs to be involved. D. Write and define units of measurement for metric and household systems E. State common equivalents among measurement systems and use a conversion table to convert between systems F. Calculate the number of tablets or capsules to give when the available dose differs from the ordered dose. G. Calculate the amount of liquid medication to pour when the dose is ordered in units of mass. H. Verify a dosage	A. Key terms p. 36 B. Review of: 1. Fractions 2. Decimals C/D. Systems of measurement: 1. Metric 2. Household 3. Temperature scales 4. Apothecary (briefly) E-H. 1. Equivalencies metric/household 2. Dosage calculation for oral medications 3. Dosage calculations with conversions—licensed nurse needed to do initial calculation	Read all of chapter except unit on apothecary (go over briefly in class) Workbook: see lab practice A. Key term jeopardy B. Provide safe and unsafe examples of calculations Lab Practice: Use actual examples from your facility and workbook in class; students should complete workbook questions through 120 except the apothecary problems—a calculator may be used.	4 hours theory; 1 hour lab practice with examples (It is recommended that this content be divided into 2 days)

calculation using conversions from one system to another.			

Dosage Calculation Test

Goal 6: **Describe measures to promote safe medication administration in health care facilities.**

Objective	**Content**	**Learning Activity**	**Time for unit**
Objective A. Identify key terms B. Name common abbreviations associated with medication administration. C. List medication forms D. Describe routes for administering medications E. Recognize the routes of medication that may be administered by the PSMT F. Document time using international time (military time) G. Describe the licensed nurses responsibility to check the components of a medication order.	Content A. Key terms p. 62 B. Accepted abbreviations (supplemental JACHO recommended) C. Forms of medication: 1. Liquids 2. Solutions 3. Suspensions 4. Solids/Semisolids D. Routes of administration: Oral routes: sublingual, buccal, oral Topical Rectal Eye drops Eardrops E. Inhalation/Parenteral, sublingual and PRN medications—only licensed nurse gives F. International time G. Medication orders checked by nurse: 1. Order sheet 2. Prescription components a. Name of drug b. Dose	Learning Activities Reading: All sections except vaginal, inhalation, parenteral and sublingual Workbook: Substitute appropriate abbreviations from JACHO list (p 99 #22-36) Do workbook up to and including #107 with substitution of appropriate abbreviations. A. Key term quiz B. Supplemental JACHO abbreviations--quiz C-M. Lecture Discussion/Demonstration Practice procedures: Medication set up—Liquid/Tablet Documentation Incident report	Didactic 5 hours Lab practice 3 hours

	c. Route d. Time/frequency e. Prescriber signature 3. Types of drug orders; routine, standing, PRN, stat 4. Questioning an order		
H. Describe the ordering, packaging, storage and disposal of drugs.	H. Ordering, packaging, storage, and disposal of drugs		
I. Describe documentation used to communicate medication orders	I. Documentation: Medication Record Self-terminating Controlled substances		
J. Pour medications according to accepted procedure	J. Pouring medications		
K. Explain the 5 rights of medication administration	K. The 5 rights of medication administration: Drug, dose, patient, route time		
L. Document medication administration	L. Charting medications MAR, principles of charting, reporting medication errors;		
M. Report and record observations.	M. Other types of observations that require recording and reporting		

Goal 7: Discuss medication properties, uses, adverse effects, administration of, education, and nursing assistant care of residents receiving the following types of medications:

a. Vitamins, minerals, and herbs

Objectives	Content	Learning Activities	Time for Unit
A. Identify Key Terms B. Identify fat soluble and water soluble vitamins, macrominerals, and microminerals C. List one function of each vitamin or mineral D. Recognize the dangers of elevated or lowered amounts of vitamins and minerals E. Discuss common herbal supplements, their uses, and the potential dangers.	A. Key terms p.108 B. Vitamins and minerals 1. RDAs/Food sources 2. Fat-soluble vitamins (A, D, E, and K) 3. Water soluble vitamins 5. Macro and Microminerals C. Functions of vitamins and minerals D. Elevations and lowered levels and effect on health E. Herbs and unsafe herbs	Read: 107-117 Workbook: All items **Key term quiz** Emphasize key points and vitamins/minerals commonly given in the facility—do not require memorization of the charts in the chapter Relate information to their own health and intake of vitamins and diet	Didactic: 1.5 hours

b. Antimicrobials

Objectives	Content	Learning Activities	Time for Unit
A. Identify Key Terms B. Discuss types of infection, immunity and persons at risk for infection. C. Discuss considerations when administering	A. Key terms p. 122 B. Microorganisms, the immune system, risks for infections, the geriatric resident C. Considerations when administering antibiotics	Read pp.122-134 Workbook: #1-34 Handout for Flagyl A. Key term jeopardy B-E. Lecture/discussion with class participation— Include pertinent	Didactic: 2 hour Lab Practice: 1 hour

antibiotics. D. Differentiate major categories of antibiotics and the nursing assistant care and administration considerations associated with each type: penicillins, cephalosporins, tetracyclines, macrolides, aminoglycosides, sulfonimides, and Flagyl E. Discuss antiviral and antifungal drugs and the nursing assistant care associated with each type. F. Demonstrate administration of medications to residents with transmission-based precautions	MRSA, VRE, C-difficile D. Categories, nursing assistant care and administration considerations for: penicillins, cephalosporins, tetracyclines, macrolides, aminoglycosides, sulfonimides, and Flagyl (see handout) E. Nursing assistant care and administration considerations associated with antiviral and antifungal drugs (Flagyl). F. Review of standard and transmission based precautions, emphasis on considerations when administering medications.	information from supplemental articles from the Center for Disease Control (CDC) F. Demonstration/Return demonstration of administration of medications to residents with transmission based precautions—Use materials from CDC in instructor manual instead of book for this portion	

Unit Test #2

c. Eye and Ear medications

Objectives	Content	Learning Activities	Time for Unit
A. Identify key terms B. Describe the structure, function, of the eye and medication administration considerations when administering eye medications C. Describe ear	A. Key terms p 147 B. Structure and function of the eye; administration of eye drops/ointments; effects of aging C. Structure and	Read: pp147-157 Workbook: 1-32 A. Key term matching quiz B-D Lecture/discussion E. Demonstration/return demonstration of ear drops and eye medications	Didactic: 2 hour Lab Practice: 1 hour

structure, function, and the effect of aging on the auditory system. D. Identify common types of ear drops and eye medications E. Demonstrate administration of eye and ear medications (drops/ointments)	function of the ear; effects of aging D. Ear drops/Eye medications E. Procedure for administration of eye and ear medications		

d. Skin medications

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Identify key terms B. Recall structure and function of integumentary system C. Discuss symptoms of skin disorders D. Discuss major categories of topical medications E. Identify those skin medications that should be administered by a licensed nurse.	A. Key terms p 163 B. Structure and function of integumentary system C. General symptoms and specific features of common skin disorders D. Categories of topical medications: Keratolytics, protectives and astringents, antipruitics, anti-inflammatory, antiseptics, topical anesthetics, miticides, transdermal E. Transdermal patches; medications requiring a sterile dressing change; medications requiring assessment of skin condition (Require licensed	Read: pp 163-175 Workbook: #1-32 A. Key term jeopardy B-F Lecture/discussion/possible grand rounds if examples of disorders can be found within facility G. Demonstration/return demonstration	Theory: 2 hours Lab practice: 1 hour

F. Identify general principles for medicating the skin and associated nursing assistant care. G. Demonstrate application of topical medications within PSMTprotocols	nurse) F. Patient considerations; wound preparation; applying the medication; dressings; follow-up G. Principles of topical medication administration		

e. Cardiovascular medications

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Identify key terms B. Recall structure and function of cardiovascular system C. Discuss symptoms and characteristics of cardiovascular disorders D. Identify characteristics of and nursing assistant activities associated with administration of common classifications of cardiovascular medications within	A. Key terms B. Structure and function: heart, blood vessels, electrical conduction; blood pressure, pulse (use new Federal Guidelines for norms). blood, lymph, effects of aging C. Cardiovascular symptoms and disorders: CHF, Dysrhythmias, CAD, Blood vessel diseases, Shock, and anemia D. Characteristics of and nursing assistant activity associated with administration of: Diuretics, antihypertensives, calcium channel blockers, A.C.E. inhibitors,	Read: pp183-202 excluding section on blood/lymph p.193 Workbook: #1-35 A. Key term quiz B-D. Discuss/Lecture/case study E. Demonstration/return demonstration using practice procedure 9.1 substituting an antiarrhythmic (propanolol) for nitroglycerine Propanolol 10 mg p.o. qid. Add take radial pulse and blood pressure and report to nurse before administering—otherwise procedure the same a digoxin.	Didactic: 3 hours Practice: 1 hour

PSMT protocols to administer. E. Administer oral cardiovascular drugs applying principles of safe drug administration specific to the resident and drug being administered.	antilipemics, cardiac glycosides, antiarrhythmics, anticoagulants (oral), and hemateminics E. Principles of safely administering cardiovascular medications (pulse for digoxin; pulse and blood pressure for antiarrhythmics)		

f. Respiratory medications

Objectives	**Content**	**Learning activities**	**Time for Unit**
A. Identify key terms B. Recall structure and function of the respiratory system C. Discuss symptoms of respiratory distress and common diseases of the respiratory tract D. Apply principles of safe drug administration and nursing assistant care specific to the disorder when administering oral and nasal respiratory medications.	A. Key terms p 209 B. Structure and function of the respiratory system C. Symptoms: Cough, sputum, hoarseness, wheezing, chest pain Diseases: pneumonia, emphysema, asthma, tuberculosis, upper respiratory infection (colds; strept throat) D. Principles of administering oral and nasal respiratory medications and associated nursing assistant care.	Reading: pp. 209-219 Workbook: 1-36 A. Matching quiz key terms B-C. Lecture/Discussion/case study D. Demonstration/return demonstration—nasal medications	Didactic: 2 hour Lab: 1 hour

Unit Test # 3

g. Gastrointestinal medications

Objectives	Content	Learning Activities	Time for Unit
A. Identify key terms B. Recall structure and function of the digestive system C. Identify symptoms of digestive disorders and characteristics of common disorders of the digestive tract	A. Key terms B. Process of digestion; Structure and function of the digestive system C. Symptoms: Nausea, vomiting, diarrhea, flatulence, eructation, constipation, pain Common disorders: constipation, tooth and gum disorders, peptic ulcer disease, hepatitis, gallbladder disorders, colitis, diverticulosis, hemorrhoids	Reading: 236-258 (excluding administering medications through N/G tubes Workbook: all except 54-55 A. Key term quiz B-D. Lecture/discussion/case study	Didactic: 2 hours Lab: 2 hours
D. Identify common classifications and characteristics of oral and rectal medications that affect the GI system including drugs used for bowel preparation.	D. Common classifications of oral and rectal GI drugs: antacids, drugs to treat peptic ulcer, antiemetics, anticholinergics/antispasmodics, Antidiarrheals, anti-inflammatory agents, and laxatives (bowel prep.).		
E. Apply principles of drug administration and nursing assistant care including potential drug interactions	E. Administering rectal medications; review of oral medications; nursing assistant care/considerations when administering GI drugs/bowel preparation and medicated enemas.	E. Demonstration of administration of rectal suppository and enema /return demonstration	

when administering oral and rectal drugs that affect the gastrointestinal system			

h. Urinary system medications and medications to attain fluid balance

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Identify key terms B. Recall structure and function of urinary system C. Identify signs and symptoms of common disorders of the urinary system. and imbalances of body fluids, electrolytes and acid-base D. Recall principles of antibiotics and apply knowledge to treatment of urinary disorders E. Discuss properties of diuretics and oral electrolytes including administration of and associated nursing assistant care.	A. Key terms p 267 B. Review structure and function of urinary system C. 1.Common disorders of the urinary system: obstruction, infection, renal failure 2. Imbalances of fluids, electrolytes, and acid-base D. Review antibiotic properties E. Diuretic types: thiazide, potassium sparing, loop, oral potassium; nursing assistant care considerations when administering diuretics and oral potassium	Reading: pp 266-279 excluding bladder instillation Workbook: A. Key term jeopardy B-E Lecture/discussion/case studies	Didactic: 1 hours

i. Endocrine medications/reproductive system

Objectives	Content	Learning Activities	Time for Unit
A. Define key terms B. Identify structure and function of the endocrine glands: pituitary, thyroid, pancreas, and adrenal gland, reproductive system C. Discuss signs, symptoms and nursing care associated with the following endocrine disorders: diabetes mellitus, disorders of the adrenal gland, thyroid disorders, reproductive system disorders D. Identify the purpose of and administer oral endocrine medications demonstrating application of nursing assistant principles: oral diabetic agents (importance of diet/accuchecks), corticosteriods, thyroid replacement drugs; hormone replacement	A. Key terms B. Structure and function of the endocrine glands C. Signs, symptoms and nurse assistant care of: diabetes mellitus, adrenal disorders, thyroid disorders D. Properties and nursing assistant care associated with administration of: oral diabetic agents (diet/accuchecks), corticosteroids, thyroid replacement drugs; hormone replacement drugs	Reading: pp 305-321 pp. 292-299 except administering insulin, p 319 Workbook: #1-16, 25, 27-34 endocrine #15-21 (reproductive) A. Key term matching B-C. Lecture/discussion/ case study examples D. Demonstrate administration/return demonstration (Use oral medication check-off with common endocrine medications in your facility and scenarios)	Didactic: 3 hours Lab Practice oral endocrine medications: 1 hour

j. Musculoskeletal medications

Objectives	Content	Learning Activities	Time for Unit
A. Define key terms B. Recall structure and function of the musculoskeletal	A. Key terms p326 B. Structure and function of the musculoskeletal	Read: pp. 325-336 Workbook: #1-34 A. Key term quiz B-C	Didactic: 2 hour Lab practice: 1

system C. Discuss signs and symptoms, drug treatment and associated nursing assistant principals for the following disorders: Physical injuries, osteoporosis, bursitis, gout, osteoarthritis, and rheumatoid arthritis D. Administer drugs for disorders of the musculoskeletal system applying principles of care of residents with musculoskeletal disorders	system: bones, joints, and muscles C. Signs and symptoms, drug treatment and associated nursing assistant care of residents with: Physical injuries, osteoporosis, bursitis, gout, osteoarthritis, and rheumatoid arthritis D. Drug characteristics and administration principles for common drugs used for muscloskeletal disorders: NSAIDs, Tylenol, methotrexate, antihyperuricemics, muscle relaxants and calcium and other drugs to treat osteoporosis	Lecture/discussion/Case examples D. Demonstration/return demonstration using NSAIDS prn medication order	hour

k. Nervous System/Sensory System Medications

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Define key terms B. Recall structure and function of the nervous and sensory systems C. Discuss characteristics of nervous system disorders, drug treatment, and associated nursing assistant care: Parkinson's disease, Myasthenia Gravis, Multiple Sclerosis,	A. Key terms B. Review structure and function of the nervous and sensory system C. Nervous system disorders, drug treatment and associated nursing assistant care in the following disorders: Parkinson's disease Myasthenia Gravis, Multiple Sclerosis, Epilepsy,	Read: pp. 340-354 Workbook: #1-31 A. Key term jeopardy B-F Lecture/Discussion/Case Study Lab practice: Administering PRN OTC medication for pain	Lecture: 2 hour Lab practice: 1 hour

Epilepsy, and Cerebral Vascular Accident. D. Compare properties of drug classifications that affect the nervous system: Stimulants, Depressants including analgesics, anticonvulsants, antiparkinson agents E. Apply principles of drug administration for drugs affecting the central nervous system when administering medications. F. Discuss principles of administration of medications to treat pain	CVA D. Drug classification properties of Stimulants, Depressants including analgesics, anticonvulsants, antiparkinson agents E. Principles of administering CNS drugs F. Pain control principles Review of observing and reporting resident pain, nursing assistant care to relieve pain, administering medications to relieve pain, reporting response to nurse		

Unit Test #4

l. Psychotropic medications

Objectives	**Content**	**Learning Activities**	**Time for Unit**
A. Define key terms B. Identify the signs and symptoms of major mental disorders:	A. Key terms B. Signs and symptoms of major mental disorders: depression, anxiety,	Read: pp.358-369 Workbook: #1-32 A. Key term jeopardy B-C	Didactic: 2 hour

depression, psychosis, anxiety, bi-polar disorder C. Describe classifications of psychotropic drugs, their uses and associated nursing assistant activities. D. Apply legal, ethical, and nursing assistant caring behaviors when administering psychotropic drugs.	psychosis, bi-polar disorder C. Psychotropic drug classifications: Antidepressants: tricyclic, SSRI's Anti-anxiety agents, sedatives, antipsychotics, and lithium D. Legal-ethical considerations; caring behaviors in administering psychotropic drugs	Lecture/discussion/exemplars D. Role play scenarios that incorporate refusal of medication and legal/ethical principles	

Final Exam—1 hours (add extra questions on psychotropic medications)

Skill Check-off Exam—1 hour

Didactic Instruction: 39 hours

Tests: 6 hours (four unit tests, a dosage calculation test, and a comprehensive final)
Total 45 hours didactic

Lab hours: 14
Check-offs: 1 hour
Total Lab 15 hours
Didactic + Lab=60 hours

Appendix G

PILOT STUDY MEDICATION TECHNICIAN
SCOPE OF WORK
Approved by the Board 7/20/05

1. GENERAL REQUIREMENTS

1.1 The contractor shall provide research services further described in the Scope of Work which allow the Arizona State Board of Nursing (ASBN) to conduct a pilot study under the provisions of House Bill 2256.

1. 2 The contractor shall attend meetings and provide interim reports pertaining to the domain of this Request for Proposal with various ASBN representatives. The meetings may be requested by the ASBN or the contractor.

2. SPECIFIC REQUIREMENTS

2.1 The contractor shall conduct a pilot study under the provisions of House Bill 2256 to determine the impact to patient health and safety of allowing nursing assistants certified by the Board to act as pilot study medications technicians and administer medications under educational requirements and conditions prescribed by the Board. The pilot study shall include the following within the limits of the budget:

2.1.1. Medication error rate

2.1.1.1. Medication error rates shall be measured by a research assistant trained in and utilizing naive observation method as described by Barker and associates (Barker, K., Flynn, E., and Pepper, G. 2002. Observation method of detecting medication errors. *Am.J.Health Syst. Pharm*. Vol. 59, Dec. 1, 2002).

2.1.1.2. The study shall include no more than six skilled care facilities selected by the ASBN.

2.1.1.3. Observers shall gather data utilizing "naive observation" method whereby data collectors are unfamiliar with the residents and their medications for all observations. A minimum of 500 doses shall be observed both before and after the utilization of pilot-study medication technicians at each facility. (Barker, K., Flynn, E., and Pepper, G. 2002. Observation method of detecting medication errors. *Am.J.Health Syst. Pharm*. Vol. 59, Dec. 1, 2002)

2.1.1.4. The collection of medication error rates shall occur before the use of Pilot Study Medication Technicians (PSMT) and 6-12 months after the use of PSMT.

2.1.1.5. The contractor shall train and establish inter-rater reliability for all research assistants utilized in the collection of data.

2.1.2. Collection and analysis of other data to include:

2.1.2.1. Staffing patterns pre and post use of PSMT

2.1.2.2. Description of the role satisfaction of both the PSMT and the nurse through focus groups conducted in each pilot facility .

2.1.2.3. Any instances of diversion of controlled substances by the PSMT

2.1.3. For each category in 2.1.1. and 2.1.2., the contractor shall provide the following deliverables:

2.1.3.1 Measurement tools utilized for data collection, as needed, and the reliability and validity of the tool;
2.1.3.2.Telephone, e-mail and fax access to analysts;
2.1.3.3. Weekly or bi-weekly updates;
2.1.3.4. Electronic access to research findings.

2.1.4. The contractor's research service shall be capable of providing various types of analysis, and reports.

2.1.5. The contractor's research service shall permit the ASBN to reproduce and disseminate desired information in hard and electronic copy format.

2.1.5.1. The ASBN agrees that the service will be for informational purposes only and that it will not publish, broadcast, or sell any material retrieved from the contractor's research files.
2.1.5.2. The ASBN agrees that the service will be for informational purposes only and that it will not use any information retrieved from the service in a fashion that would violate copyrights or proprietary interests of the contractor.

2.2 The contractor shall provide the following advisory services for the ASBN.

2.2.1. Assist in the review of the research study
2.2.2. Assist in the development of any statewide policy changes that arise from the study

2.3. The contractor shall utilize qualified personnel to collect and analyze the data.

2.4. The contractor shall provide a written and electronic copy of a report of study findings and recommendations.

2.4.1. The contractor's report shall include, but not be limited to, the following information

2.4.1.1. An abstract of the study
2.4.1.2. A review of existing literature on the use of unlicensed personnel to administer medications.
2.4.1.3. A demographic description of the population studied
2.4.1.4. A description of the research design and methodology
2.4.1.5. A report of the data with accompanying charts and graphs as needed
2.4.1.6. An analysis of the data using appropriate statistical tests
2.4.1.7. A discussion of the findings
2.4.1.8. Recommendations
2.4.1.9. References

2.4.2. All findings and reports shall be released by the ASBN when deemed appropriate. The contractor shall not release findings and reports directly to other state agencies or the general-public without prior written consent of the Executive Director of the ASBN.

2.4.3 The contractor shall deliver the final report to the ASBN no later than June 1, 2008.

3. INVOICING REQUIREMENTS

3.1. The contractor shall be paid in installments with one-third of the total bid dispersed within 30 days of the award of the contract, one-third during collection of pre-utilization of Pilot Study Medication Technicians (PMST) data but not sooner than 90 days after the first installment, and one third within 30 days of receipt of all deliverables in the contract.
3.2.The contractor shall be paid in installments in accordance with the firm fixed prices stated on the Pricing Schedule.

Appendix H

GUIDELINES FOR PILOT FACILITY SELECTION

(Approved by the Board 7/20/05; amended 10/4/05)

Introduction:

Ideally all selected facilities will meet all the guidelines listed below. However, given the complexity of the health care environment, the Pilot Study Medication Technician Steering Committee and the Arizona State Board of Nursing has the discretion to select facilities that may not meet one or more guidelines if the facility demonstrates that it has the resources and ability to successfully execute all aspects of the project.

1. All applicants must be licensed as long-term care facilities by the Department of Health Services (DHS).

2. Facilities are graded by DHS as either A, B, or C. In order to facilitate broad participation, ideally facilities chosen shall represent at least two of the three grades.

3. No facility will be chosen to participate in the pilot study with a medication error rate above 5% in the past 2 years.

4. No facility will be chosen to participate in the pilot study that received any survey deficiencies in staffing patterns for the last 2 years.

5. Facilities chosen to participate shall be free-standing and not based in an acute care health facility (hospital).

6. Facilities chosen to participate shall agree to the following terms of participation:
   - Agree to pay a participant fee of $5,000 within 10 days of being notified of selection to help offset the cost of the research
   - Provide qualified personnel and financial support for training, and competency testing (approximately $100 per participant) of pilot study medication technicians;
   - Assist in obtaining informed consent of participants and in the collection and compilation of data;
   - Provide assistance to the researcher including space for work, access to resident charts, access to reports, and any other assistance requested;
   - Allow DHS and the ABON to survey the training program and facility with or without notice;
   - Provide all course materials to PSMT students including textbooks, if any, practice medication cart, practice medications, medication administration records, and any other materials needed;
   - Provide a classroom and laboratory for training and practice that includes seating and writing surfaces for all students, and any other AV equipment needed to enhance delivery of course content;

- Provide financial support for instructors to attend a minimum 15-hour training session (approximately $100 per instructor);
- Cover travel, supplies and incidental costs that are incurred by the Board to provide education to nurses on delegation responsibilities (at State of Arizona travel reimbursement rate and for actual cost of supplies).

7. All chosen facilities shall have conducted a Board-approved C.N.A. training for a minimum of 2 years. The program information on file at the Board offices shall not contain any of the following: substantial concerns with the program in a site visit report, letters of concern, notices of deficiency, or letters to the program indicating low results on the written or manual skills exam.

8. If an employee or representative of a pilot facility is a member of the PSMT steering committee, the employee or representative shall resign from the steering committee upon notification that the facility they represent is a pilot facility.

9. A pilot facility seeking to replace a RN or LPN position with additional CNA or medication technician positions shall provide evidence detailing the benefit of such a change in determining how various staffing mixes impact patient health and safety and seek approval from both the Department of Health Services and the Board before initiating the change in staffing.

Appendix I

The Written/Oral Test

The written test proctor will hand out materials and give instructions for taking the written test. You will have a maximum of sixty (60) minutes to complete the 50 question written test. You will be told when fifteen (10) minutes are left. You may not ask questions about the content of the written test (such as "What does this question mean?") Fill in only one (1) oval on the answer sheet for each question. *DO NOT mark in the testing booklet.* Marks in the test booklet will not be accepted as answers. Your answers must appear on the separate scan form answer sheet. You must have a score of 80% or better to pass the written portion of the test.

All test materials must be left in the testing room. Anyone who takes or tries to take materials or information from the testing room is subject to prosecution.

The Written Test consists of 50 multiple-choice questions. Questions are selected from subject areas based on the Arizona medication technician test plan. The subject areas and number of items for each area are as follows:

Role of PSMT in Arizona (6 items)
Underlying principles/laws/geriatric considerations (6 items)
Medication calculations (5 items)
Eye and ear medications (3 items)
Vitamins, minerals, herbs (3 items)
Antimicrobials (3 items)
Medication administration (7 items)
Musculoskeletal medications (3 items)
Sensory / nervous system medications (3 items)
Skin medications (3 items)
Controlled substances (3 items)
Cardiovascular medications (3 items)
Respiratory medications (3 items)
GI medications (3 items)
Urinary system medications (1 item)
Endocrine medications (4 items)
Psychotropic medications (3 items)

The Skill Test

The purpose of the skill test is to evaluate your medication technician abilities. You will find a complete list of skill tasks in this handbook. Two (2) tasks will be randomly selected from the following list for you to perform as your skill test. The steps that are listed for each task are the steps required for a Medication Technician to completely demonstrate the skill task. You must have a score of 80% on each task *without missing any key steps* (the Bolded steps) to pass the skill portion of the test. If you fail a single task you will have to take another skill test with two tasks on it.

What To Expect

- Each of two scenarios associated with your two assigned tasks will be read to you immediately before you do each task.
- After hearing a scenario you will go to and use the MAR to determine what medications to obtain from the locked medication cart and you will administer the medications obtained to a live resident actor.
- Listen carefully to all instructions given by the RN test observer.
- You may request to have either one of the scenarios repeated anytime during your skill test.
- Be sure you understand all instructions before you begin because you may not ask questions once the skill test begins.
- You will be given thirty (25) minutes to complete the two (2) tasks. You must correctly perform both tasks in order to pass the skill test. You will be told when 15 minutes have elapsed.

- If you believe you made a mistake while performing a task, say so and then repeat the task or the step on the task you believe you performed incorrectly. You may repeat any step or steps you believe you have performed incorrectly any time during your allotted 25 minutes or until you tell the RN test observer you are finished with the skill test. Once the skill test has begun, the RN test observer may not answer questions.

Manual Skill Tasks Listing

1. Oral Liquid / Ear Drops Administration

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens container
9) Sets medication cup on level surface
10) Pours correct amount of medication
11) Checks for correct amount of medication at eye level
12) Locks medication cart
13) Greets resident
14) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
15) Introduces self as a medication technician
16) Provides privacy
17) Explains procedure
18) Assists resident to take oral medication
19) Lowers head of the bed
20) Head is turned toward right with left ear upward
21) Holds external ear flap and pulls up and back
22) Instill two drops of medication into the ear
23) Dropper tip does not touch inside of ear canal
24) Tells resident to not move their head for a few minutes
25) Returns medication bottle to the medication cart
26) Locks medication cart
27) Documents administration on the medication administration record on the correct day
28) Maintains interpersonal communications during administration
29) Places call light within reach
30) Candidate uses hand sanitizer to clean hands.

2. Topical Medication / Unit Dose Administration

1) Candidate uses hand sanitizer to clean hands.
2) Greets resident
3) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
4) Introduces self as a medication technician
5) Provides privacy
6) Explains procedure
7) Listen to apical heart rate for 60 seconds with teaching stethoscope
8) Record heart rate on the MAR

9) Recorded heart rate is within 5 beats of the observer's
10) Verbalizes whether or not to proceed with medication administration based upon heart rate obtained
11) Candidate obtains correct medications from the medication cart
12) For each medication verbally identifies the correct drug label for correct resident's MAR
13) Verbalizes right drugs as the candidate obtains the medications from the cart
14) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
15) Medications selected are for the correct time
16) Medications selected are for the correct routes
17) If candidate proceeds with tablet administration, places correct number of tablets into medication cup without touching the medication
18) Locks medication cart
19) If candidate proceeds with tablet administration, gives resident glass of water
20) If candidate proceeds with tablet administration, assists resident to take medication
21) Inspects right forearm skin area where medication is to be applied
22) Instructs resident to turn face away while spraying
23) One spray on area on forearm
24) Returns spray bottle to the medication cart
25) Locks medication cart
26) Documents administration on the medication administration record on the correct day
27) Maintains interpersonal communications during administration
28) Places call light within reach
29) Candidate uses hand sanitizer to clean hands.

3. Topical / Oral Capsule Medication Administration_____

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Puts capsule in medication cup without touching the medication
9) Locks medication cart
10) Greets resident
11) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
12) Introduces self as a medication technician
13) Provides privacy
14) Explains procedure
15) Gives resident a glass of water
16) Assists resident to take medication
17) Inspects right forearm skin area where medication is to be applied
18) Puts on one glove
19) Opens container
20) Applies ointment with gloved hand to forearm
21) Spreads ointment to cover entire area that is to be treated
22) Remove and discards glove
23) Returns ointment tube to the medication cart
24) Locks medication cart
25) Documents administration on the medication administration record on the correct day
26) Maintains interpersonal communications during administration
27) Places call light within reach
28) Candidate uses hand sanitizer to clean hands.

4. Oral Tablet Administration

1) Candidate uses hand sanitizer to clean hands.
2) Greets resident
3) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
4) Introduces self as a medication technician
5) Provides privacy
6) Explains procedure
7) Listen to apical heart rate for 60 seconds with teaching stethoscope
8) Record heart rate on the MAR
9) Recorded heart rate is within 5 beats of the observer's
10) Verbalizes whether or not to proceed with medication administration based upon heart rate obtained
11) Candidate obtains correct medications from the medication cart
12) For each medication verbally identifies the correct drug label for correct resident's MAR
13) Verbalizes right drugs as the candidate obtains the medications from the cart
14) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
15) Medications selected are for the correct time
16) Medications selected are for the correct routes
17) If candidate proceeds with tablet administration, opens container
18) If candidate proceeds with tablet administration, pours one tablet into medication cup without touching the medication
19) Locks medication cart
20) If candidate proceeds with tablet administration, gives resident a glass of water
21) If candidate proceeds with tablet administration, assists the resident to take the medication
22) Gently tilts resident's head back with chin up
23) Pulls down on lower eye lid of the right eye making a pocket
24) Asks resident to look up toward forehead
25) Drops one drop of medication into the pocket
26) Dropper tip does not touch eye
27) Instructs resident to blink eyes
28) Uses tissue to remove any excess fluid from around eye
29) Returns medication bottle to the medication cart
30) Locks medication cart
31) Documents administration on the medication administration record on the correct day
32) Maintains interpersonal communications during administration
33) Places call light within reach
34) Candidate uses hand sanitizer to clean hands.

5. Oral Capsule Administration

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens first container
9) Pours two capsules in medication cup without touching the medication
10) Opens second container
11) Pours one capsule into a medication cup without touching the medication
12) Returns medications to proper place in medication cart
13) Locks medication cart

14) Greets resident
15) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
16) Introduces self as a medication technician
17) Provides privacy
18) Explains procedure
19) Gives resident a glass of water
20) Assists the resident to take the medication one capsule at a time
21) Stays with the resident until the medication has been swallowed
22) Documents administration on the medication administration record on the correct day
23) Maintains interpersonal communications during administration
24) Candidate uses hand sanitizer to clean hands.

6. Oral Liquid / Ointment Administration_____

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens container
9) Sets medication cup on level surface
10) Pours correct amount of medication
11) Checks for correct amount of medication at eye level
12) Locks medication cart
13) Greets resident
14) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
15) Introduces self as a medication technician
16) Provides privacy
17) Explains procedure
18) Assists resident to take medication
19) Inspects right forearm skin area where medication is to be applied
20) Puts on one glove
21) Opens container
22) Applies ointment with gloved hand to forearm
23) Spreads ointment to cover entire area that is to be treated
24) Remove and discards glove
25) Returns ointment tube to the medication cart
26) Locks medication cart
27) Documents administration on the medication administration record on the correct day
28) Maintains interpersonal communications during administration
29) Places call light within reach
30) Candidate uses hand sanitizer to clean hands.

7. Ear Drops / Tablet Administration_____

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR

6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens container
9) Pours one tablet into medication cup without touching the medication
10) Locks medication cart
11) Greets resident
12) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
13) Introduces self as a medication technician
14) Provides privacy
15) Explains procedure
16) Gives resident a glass of water
17) Assists the resident to take the medication
18) Lowers head of the bed
19) Head is turned toward right with left ear upward
20) Holds external ear flap and pulls up and back
21) Instill two drops of medication into the ear
22) Dropper tip does not touch inside of ear canal
23) Tells resident to not move their head for a few minutes
24) Returns medication bottle to the medication cart
25) Locks medication cart
26) Documents administration on the medication administration record on the correct day
27) Maintains interpersonal communications during administration
28) Places call light within reach
29) Candidate uses hand sanitizer to clean hands.

8. Nasal Spray / Tablet Administration_____

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medication bottles from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens container
9) Does not contaminate lid
10) Pours correct number of tablets into medication cup without touching
11) Locks medication cart
12) Greets resident
13) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
14) Introduces self as a medication technician
15) Provides privacy
16) Explains procedure
17) the medication
18) Gives resident glass of water
19) Assists resident to take medication
20) Have resident blow nose
21) Tilts head back
22) Instructs resident to hold head back
23) Administers one spray in one nostril
24) Returns medication bottle to the medication cart
25) Locks medication cart
26) Documents administration on the medication administration record on the correct day

27) Maintains interpersonal communications during administration
28) Places call light within reach
29) Candidate uses hand sanitizer to clean hands.

9. Eye Drops / Tablet Administration

1) Candidate uses hand sanitizer to clean hands.
2) Candidate obtains correct medications from the medication cart
3) For each medication verbally identifies the correct drug label for correct resident's MAR
4) Verbalizes right drugs as the candidate obtains the medications from the cart
5) For each medication verbalizes right doses as candidate compares the labels to right resident's MAR
6) Medications selected are for the correct time
7) Medications selected are for the correct routes
8) Opens container
9) Pours one tablet into medication cup without touching the medication
10) Locks medication cart
11) Greets resident
12) Verbalizes right resident while using appropriate method of identification. i.e. picture, wrist band, or facility appropriate method of identification
13) Introduces self as a medication technician
14) Provides privacy
15) Explains procedure
16) Gives resident a glass of water
17) Assists the resident to take the medication
18) Gently tilts resident's head back with chin up
19) Pulls down on lower eye lid of the right eye making a pocket
20) Asks resident to look up toward forehead
21) Drops one drop of medication into the pocket
22) Dropper tip does not touch eye
23) Instructs resident to blink eyes
24) Uses tissue to remove any excess fluid from around eye
25) Returns medication bottle to the medication cart
26) Locks medication cart
27) Documents administration on the medication administration record on the correct day
28) Maintains interpersonal communications during administration
29) Places call light within reach
30) Candidate uses hand sanitizer to clean hands.

Appendix J

Janet Napolitano
Governor

Joey Ridenour
Executive Director

Arizona State Board of Nursing

Instructors Training Course
Medication Technician Pilot Study

Packet Contents

1. Goals/Agenda/Evaluation For Today's Session

2. Overview of Project
- a. PowerPoint Presentation
- b. House Bill 2256
- c. Scope of Work

3. Protocols
- a. Delegation Protocols

4. Scope of Practice
- a. CNA Minimum Competencies

5. Students: Selection, Supervision and Other Topics
- a. PowerPoint Presentation
- b. Educational Guidelines for Facilities

6. Teaching/Learning
- a. PowerPoint Presentation
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7. Testing

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- a. PowerPoint Presentation
- b. Supplemental Materials

9. Course Overview
- a. Syllabus
- b. Procedure Checklists
- c. Curriculum Supplemental Materials

d. Evaluation Form for Students

Appendix K

ARIZONA PILOT STUDY MEDICATION TECHNICIAN

Submitted by D&S Diversified Technologies, LLP dba HEADMASTER, LLP
Final Report Submitted -- 6-13-08

Executive Summary

Providing safe nursing home care is both a clinical and fiscal challenge that has resulted in the addition of medication technicians to nursing home health care teams in many states. The state of Arizona also faces many of these clinical and fiscal challenges; therefore the State Board of Nursing was authorized by the Arizona Legislature (HB 2256) to conduct a pilot study to explore the impact to patient health and safety if trained and certified medication technicians were added to selected Arizona nursing home care teams. To complete the study, medication administrators across various credentialing levels (LPN, RN, and Medication Technician) were observed for four types of medication error rates (wrong drug, wrong dose, wrong route, wrong time) The Pilot Study Medication Technician (PSMT) project included baseline naïve observation of medication administration in six nursing homes, identification and training of medication technicians, naïve observation six months after the role of the medication technicians was integrated into the medication administration team in five nursing homes; and interviews with selected stakeholders to determine the impact of the addition of CMTs through the perceptions of the team members.

The study sought to determine if the pattern of medication error was different with the addition of medication technicians to the medication administration team at the five nursing homes that completed the study. While the sample size precluded statistically significant inferences, the findings do indicate that the pattern of medication error remained stable with no clinically or statistically significant differences noted among the medication administrators' mean error rates both pre-implementation (LPN, 10.12%, RN 11.54%) and post-implementation (Medication Technicians, 6.08%, LPN 7.25%, and RN 2.75%). Reference a full report of the data in Appendix Two. These findings are similar to a national study funded by the Agency for Healthcare Research and Quality and conducted by Scott-Cawiezell and colleagues (2007a; 2007b). The study also found that members of the medication team were positively impacted by the presence of the medication technician over time.

Based upon the study's findings and the results of larger scale studies in other states, the research team recommends to the Arizona State Board of Nursing that they consider the integration of the medication technician role into the nursing home healthcare provider team within the scope of practice and supervision dictated during this project.

Overview of the Pilot Study of Medication Technicians

Nursing homes have many challenges in the midst of very fiscally constrained budgets to provide safe care. Innovation and evidence must be a critical part of how care is delivered to this ever growing and very frail population. In an ideal world, the frail and vulnerable residents would have RNs providing all aspects of their care. However, in a fiscally constrained world, staff representing many levels of credentialing must be maximized to assure that care can be given (Scott-Cawiezell et al., 2007a; 2007b). Therefore, to meet the needs of the frail and elderly in the state of Arizona the following pilot study was completed in order to systematically assess the impact of adding medication technicians in the state of Arizona.

Board Actions

To implement the provisions of HB 2256, the Board completed the following activities:

- Formed a steering committee that included stakeholders from long-term care, education, Board of Pharmacy, and nursing associations;
- Adopted protocols for the administration of medications by pilot study medication technicians;
- Developed selection criteria for pilot facilities (Appendix Four) and selected six facilities: Good Shepherd (Peoria), Shadow Mountain (Scottsdale), Mountain View (Tucson), Silver Ridge Village (Bullhead City), Copper Mountain Inn (Globe), Heritage Health Care (Globe);
- Developed educational criteria for students and instructors and curriculum;
- Developed research guidelines and, through the efforts of Kathleen Pagels and the Arizona Health Care Association, raised $60,000 to help fund the research;
- Issued an RFP through the Arizona Health Care Association;
- Selected D and S Diversified Technologies to conduct the research with the collaboration of Dr. Jill Scott-Cawiezell
- Assisted D and S Diversified Technologies to develop and implement a legally defensible and psychometrically sound written and manual skills competency exam
- Conducted instructor training and delegation training at each facility;
- Visited each facility during training;
- Twenty one Medication Technicians trained and passed the competency exam to date

Research Design and Methodology

Nursing homes from across Arizona applied and six were selected to participate in the pilot study to determine if the pattern of medication error changed with the addition of medication technicians to the medication administration teams. A seventh nursing home was designated the alternate for the study. Research nurses observed medication delivery pre-implementation and post-implementation (six months after the introduction of medication technicians) using "naive observation" methods initially described by Barker and colleagues. The naïve observation methods assured that data collectors recorded precisely what was observed. This method has been used in several federally funded studies in medication safety (Barker Flynn, & Pepper, 2002; Scott-Cawiezell et al., 2007a; 2007b).

Prior to observing any pre-implementation medication passes, the research team completed nurse observer training and established inter-observer reliability as the first step of the study. D&S DT hired consultant Barbara Sutherlin, RN, to observe and certify four Arizona RN observers using guidelines that were reviewed by the research consultant (see Appendix 1). The classroom portion

of the nurse observer training was conducted March 8, 2006. Subject matter for the training included the method of observation, procedures to follow, using the observation form, categorizing errors by type, resident confidentiality, and using the drug reconciliation method to determine possible scheduled drug diversions. Then two live medication pass observations were conducted during the morning shift and two during the evening shift the afternoon/evening of March 8th, all day March 9th, and the afternoon/evening of March 10th. Each nurse observer was trained (performed their base line observations) individually and their observations were correlated to the trainer who was the constant in all the base line observations. Observations were conducted on separate units; observed subjects were four licensed practical nurses (LPNs). (The facility used only LPNs to pass medications.) The trainer (Barbara Sutherlin, RN) and each nurse observer trainee individually recorded findings gathered during the base line observations on separate medication pass worksheets. The findings of the nurse observer and trainer were not divulged (shared with each other) during the medication pass. Agreements versus disagreements were documented after the observations concluded. The inter-observer reliability coefficient was calculated using the formula described by Alberto and Troutman (1982) which considers agreements divided by agreements plus disagreements. The resulting calculated range of 95% to 99% is recognized as high inter-rater reliability and acceptable for the purposes of this study.

During the second round of data collection for the actual study (post-implementation phase) all observations were completed by the same trained nurse observer and thus inter-observer reliability considerations became a non variable.

Data Analysis
Data was analyzed using tests of group differences including ANOVA, and appropriate post hocs analyses (See Appendix Two). Limitations related to the nested nature of the observations (pre-implementation, n=3039 medications observed in six facilities; and post-implementation n=2,521 medications observed in five facilities) was considered.

Results

Summary of the Naïve Observation of Medication Error Rates

During the pre-implementation naive observations at the six pilot nursing homes 31 LPN's and 7 RN's were observed while delivering 3039 medications. The LPNs and RNs were sampled and observed in proportion to the actual medications delivered in the study facilities by credentialed level. The initial observations resulted in a mean medication error rate of 10.4% (LPN, 10.12%; RN, 11.54%). There were no statistical or clinical differences noted among the medication error rates observed.

A second observation was conducted post-implementation at the five remaining study facilities, observing 16 LPN's, 2 RN's and 7 medication technicians delivering 2521 medications, again sampling was completed in proportion to the actual distribution of credentialed level. The post-implementation observation resulted in a mean medication error rate of 6.6% (LPN, 7.25%; RN, 2.75%; Medication Technician, 6.06%). Again, there were no statistical or clinically significant differences noted among the medication administrators regardless of the credentialed level.

Summary of Key Informant Opinions on the Impact of the Addition of the Medication Technician Role

A total of 22 staff members and leaders from the five nursing homes were interviewed after the post pilot study intervention data collection period. The interviews were conducted in two phases as facilities completed the data collection process after the intervention. The sample included Directors of Nursing (DONs), Registered Nurses (RNs), Licensed Practical Nurses (LPNs) and Pilot Study Medication Technician (PSMTs). The majority of respondents worked a minimum of 35 hours per week. The range of experience was 1 to 23 years in their roles. Those interviewed work a variety of shifts. However, all interviews (with the exception of the DONs) had medication administration as a part of their current role. Of the informants that were routinely involved in passing medications, the current percentage of time that they passed medications ranged from 10% to 90%.

All informants were asked to discuss the changes in their roles with the addition of the medication technician's to the care team. Despite some early misgivings about the new medication technician role, all licensed personnel (RNs and LPNs) reported that when they were able to partner with a PSMT, they did have more time to work directly with the residents. They reported feeling better about their treatments and more complete assessments.

> *"The concept is fabulous, I now have more time to assess my residents and work with other staff. In the past, I felt stuck behind the med cart."*

"…nurses are now more available."

"…it is hard when the techs aren't here, they are good partners."

The PSMTs also reported that it was their perception that their LPN and RN partners were spending more time with the residents. However, they also indicated that the success of the role was also impacted by their licensed partner.

> *"I had a very difficult time in my new role at first. My nurse was constantly looking over my shoulder and making me very nervous. I could not get the pass done. Now, I have a new partner and I love what I am doing. We work really well together. "*

A noteworthy finding was that one facility has had a great deal of difficulty in securing adequate staffing to fully and consistently implement the PSMT role. Although those staff could see benefit from the addition of the role, they also reported frustration in the inconsistencies of having the PSMT as their partner.

The sample of informants shared various additional roles along with their medication administration responsibilities. Some PSMTs reported tailored shifts to maximize the medication administrations that they could be involved in and often they were also involved in related procedures. All reported that they routinely assisted other staff and residents when they were not passing medications.

The informants were consistent in what medications were being passed by the PSMTs and the licensed staff. Licensed staff reported that, at times, the sharing of medication responsibilities was a challenge. However, they were learning systems to keep track of such things as needed (prn) narcotics and inhalers.

All but one informant reported the residents were very happy with the addition of the PSMT role.

"They miss her when she is gone, the resident keeps asking me where [she] is today."

"Residents are glad for the change; they don't have to wait for their meds."

The exception was a licensed person who felt that she had spoiled the residents and they were getting inconsistent time with the PSMT so they had not yet gotten used to the change.

Informants reported minimal changes to the medication administration procedure. They also reported minimal changes to the error reporting. No informants reported any perceptions of more medication errors and many reported they believed there were actually fewer medication errors and they were sure that there was a significant improvement in on time delivery of medications.

Finally, informants shared recommendations and lessons learned during the pilot medication technician project.

The recommendations include:

- The timeframe for the training was too condensed. The training needs to be more spread out to allow time to study the critical concepts.
- We need more PSMTs and they need to be consistently assigned to the role to improve and build systems.
- Licensed staff would like to review the training so there can be consistent reinforcements for the PSMTs.

The lessons learned include:

- Speed comes with time, the key is being very careful.
- I now understand why blood pressures are so important for the medication pass and I always double check them myself. Now I know why my nurse was always asking me what their blood pressure is.
- PSMT add flexibility to staffing.

Discussion & Conclusions

While the sample size and limited scope of the pilot study preclude large scale generalization of the findings; it can be noted that medication errors rates did appear to remain stably distributed among the various levels of credentialing in the medication administration team. These findings would suggest that the introduction of the medication technician did not alter the rate of medication error. Additionally, the findings are in line with both the early and final reports from the AHRQ funded medication safety study (Scott-Cawiezell et al., 2007a; 2007b), again providing further support that the introduction of medication technicians did not negatively impact the provision of care to nursing home residents. In addition to the analysis of medication error rates, key informants consistently reported positive results with the addition of the medication technician to the healthcare team.

While the Arizona pilot study confirms earlier studies which indicate that medication technicians can provide safe medication delivery, many factors remain to be addressed. Nursing home residents have many illnesses, they take many medications, and they are very vulnerable to subtle alterations in their medication regimens. Many of the medications delivered in a routine medication administration do require assessment for potential adverse effects and CMT/As lack the assessment skills and knowledge to make adjustments or watch for many potential ADEs. Therefore, it is imperative as the Arizona State Board of Nursing moves forward that the role of the RN remain critical and clear in the management of resident's medication.

Nursing homes have many challenges in the midst of very fiscally constrained budgets to provide safe care. Innovation and evidence must be a critical part of how care is delivered to this ever growing and very frail population. In an ideal world, the frail and vulnerable residents would have RNs providing all aspects of their care. However, in a fiscally constrained world, staff representing many levels of credentialing must be maximized to assure that care can be given. This study provides some initial evidence to suggest that CMT/As can be effectively used for routine medication administration. Understanding the limitations of the CMT/A and creating medication systems that include the RN and the CMT/A as partners, could provide a safe medication administration where residents get the right medication, at the right time, in the right dose, through the right route, and prepared in the right method to assure the most therapeutic result (Scott-Cawiezell, 2007a).

Based upon the PSMT results and interviews the research team can report the following:

1) There appears to be no reduction in the quality of care for Arizona nursing home residents do to the inclusion of medication technicians on the health care team. Therefore, their addition to the health care team could be implemented state-wide.
2) The time frame for any future medication technician training should be extended to allow the students to pace their learning.
3) The role of any future medication technicians should be consistently implemented to allow for medication processes to be constant from day to day.

4) The role of the RN in medication management should be explicitly clarified to complement the role of the medication technician in any system implemented for the routine administration of medications.

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Appendix One--Observer Training Guide

Medication Errors to be Tracked

- Wrong medication – any medication given that was not ordered by the physician
- Wrong dose – any dose that varies from the written order. Within wrong dose are subcategories: over, under, too strong, and too weak.
- Wrong route – administering a medication by the wrong route, such as giving an oral tablet when a suppository is ordered (note: for the purposes of this research, g-tube, injectibles, inhalers and prn narcotic medications will not be considered since medication technicians are not allowed to give medications by these routes).
- Wrong time – administering a medication at a time other than that ordered by the physician
    - Administering an ac medication with or after a meal or prior to 30 minutes before a meal.
    - Administering a pc medication before or with a meal or longer than 30 minutes after the meal.
    - Administering a medication plus or minus 60 minutes or more from the time that is scheduled

Observational Method

When You Arrive

- Upon your arrival introduce yourself to the NHA, DON or the designee you have been directed to check in with.
- Review the script for goals of the observation.
- Share the procedure you will use to choose a unit for doing the observations after you have obtained the critical demographics about the units (Medicare unit, specialty unit, size of units, who as the largest medication load).
- Review the scope of practice for each level of credentialing of medication administrators. Set up your observations so you will be seeing a proportional sample of RN, LPNs, and Medication Technicians (relative to the facility) as you observe your opportunities for error among the routine medications (excluding g-tube, injectibles, inhalers, and prn narcotics). Therefore, make sure you clarify with the nursing home leadership what percentage of routine medications each level of credentialed medication administrator gives on a typical day. For example, during the initial visit if the nursing home has 80% of the routine medications administered by LPN's and 20% by RN's then you should attempt to observe 80% of the medications passed by LPNs and 20% of your observations with RNs. If the nursing home has the RN only delivering insulin and prns then you will only observe LPN administrators. Subsequently, during your the post observations if 30% of the medications are administered by medication technicians, 60% of the medications are administered by LPN's and 10% of the medications are administered by RN's then you will attempt to approximate this same distribution in your observations.

Getting Started

- Introduce yourself to the medication administrator. Share with the medication administrator that you will try to remain unobtrusive and that your primary goal is to learn from them about the challenges of the medication administration process (take the focus off of individual errors and relieve their anxiety about being watched).
- Ask the medication administrator to try to adhere to their routine as much as possible with the exception of reading out loud necessary information from the medication label as they are placing each medication in the medication cup.
- At no point during the observation will the observer review the MAR except to see the picture of the resident that may be in the top corner. Questions should be held to a minimum and only for clarifications purposes.
- Share with the medication administrator that you will be documenting exactly what you see them do, and you will remain unaware of what they should be doing until you have completed the medication observation and reviewed the medication administration record and the medical record. At that time, if there are consequential errors found they will be shared with the medication administrator and involved staff for immediate correction and then summarized to the DON at the end of the visit. (The

goal is to keep the error disconnected from any individual to maintain confidentiality of the individuals observed.)

- Inform the medication administrator, that while you are naïve to the medications that the resident should receive, there are medication administration principles and if you have concern about the resident's imminent well-being you will ask the medication administrator to come out in the hallway for discussion. This would be a rare exception such as the medication administrator is crushing a large dose of an extended release medication and you know this would be hazardous to the resident.
- For the first observation in the facility or on a new unit, clarify any procedural issues:
    - How to they identify the residents?
    - Do they have pictures and where are the kept?
    - Do they have medications anywhere besides in the resident's medication drawer.
    - How are stock medications managed?

Observing a medication administration

- Prepare to record all aspects of the medication episode (one resident) on the data collection form, using a separate line for each medication administered.
- Note the resident's name and room number, clarifying spelling as necessary to ensure that you can make a match to a medical record later. Note the photo of the resident if available; otherwise confirm that resident identification procedures have been completed (i.e. electronic I button, etc.) (Document on Medication Administration Observation Worksheet Column 1 & 2)
- Record all medications that are prepared to be given to the resident, including medication name, dose, route, and any preparation technique (crushed, in thickened liquids, etc.). (Document on Medication Administration Observation Worksheet Column 3, 4, 5 & 6)
- Walk into the room with the medication administrator and observe the identification process.
- Observe the administration of the medications noting any monitoring or concerns related to technique, resident refusal, or resident concerns such as loose stools etc. (Document on Medication Administration Observation Worksheet Columns 7, 9, 10, 11 & comments)
- Document the time of the administration. (Document on Medication Administration Observation Worksheet Column 8)

Medication Administration Record Review and Medical Record Review

- Review the medication administration record and compare each medication for a match to medication, dose, route, preparation technique, monitoring requirements, and time the medication was to be given.
- Review the medical record for all medication orders written in the last ninety days that related to the medications you have observed as given or which should have been given to the resident and note any additional discrepancies.
- Note any discrepancies on your Medication Reconciliation worksheet (either on a lap top or the provided second worksheet).

Follow up Medication Administration Record Review and Medical Record Review

General follow-up

- Clarify any concerns with relevant clinical staff.
- **DO NOT** divulge any information about your findings to the facility staff.
- Meet with the facility's administrator and/or director of nurses before leaving to thank them for their cooperation.
- If you observe any diversions of scheduled (II-IV) medications record the diversion when observed and report concerns as it relates to the resident and the medication to the facility administrator before leaving. It is the administrator's responsibility to establish the link to the individual staff member.

Additional instructions

- Contact each facility prior to the observations to notify them of the date and time you will arrive and ask them whom you are to contact (we suggest a week before). The arrival time should be 30 - 60 minutes prior to the time of the pass.
- Complete your observations on one facility prior to starting at the next facility to assure that your observations reflect the same time period with consistent administration procedures in place. Establish

the sampling plan based upon the typical proportion of routine medications administered by each level of credentialed administrators. Each the four observers should observe a minimum of 125 medication administrations (opportunities for error). Each observer should be clear as to what level of credential they are to watch and how they will achieve the appropriate proportion for the total facility observation. Observations must be representative of both AM and PM shifts. If two observers are assigned then each observer would observe at least 250 medication administrations at each facility. (If one observer, then at least 500.)

- Discuss with nursing home leadership when the majority of routine medications are given and sample accordingly (major medication administration times are typically 0800, 1200, 1600, and 2000). Schedule the observations during their primary medication administration times. If necessary you may observe more than one administration time during a shift (particularly when administrators work 12 hour shifts, as long as you observe a different administrator doing the medication administration) to ensure at least 500 medications are observed in each facility.
- When the administrator completes her/his entire pass, have that administrator complete the Subject Demographic Information Form.
- Submit the originals weekly of all forms and worksheets to Headmaster LLP by FedEx. To ensure forms/worksheets are received by Headmaster LLP, keep a copy of your data only until you are notified the originals have been received. Your copies must then be destroyed (burned or shredded).

Appendix Two Report of the Data:

Descriptives Pre PSMT Data

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Total Error Rate	**LPN**	31	.1012	.1120	2.012E-02	6.014E-02	.1423	.00	.57
	RN	7	.1154	9.476E-02	3.582E-02	2.773E-02	.2030	.00	.26
	Total	38	.1038	.1080	1.752E-02	6.834E-02	.1393	.00	.57
Wrong Drug	**LPN**	31	2.110E-02	2.737E-02	4.915E-03	1.107E-02	3.114E-02	.00	.10
	RN	7	9.557E-03	1.285E-02	4.857E-03	-2.3276E-03	2.144E-02	.00	.03
	Total	38	1.898E-02	2.558E-02	4.150E-03	1.057E-02	2.739E-02	.00	.10
Wrong Dose	**LPN**	31	4.554E-02	5.407E-02	9.711E-03	2.571E-02	6.537E-02	.00	.20
	RN	7	7.460E-02	6.496E-02	2.455E-02	1.453E-02	.1347	.00	.17
	Total	38	5.089E-02	5.643E-02	9.155E-03	3.235E-02	6.944E-02	.00	.20
Wrong Route	**LPN**	31	5.258E-04	2.057E-03	3.694E-04	-2.2865E-04	1.280E-03	.00	.01
	RN	7	.0000	.0000	.0000	.0000	.0000	.00	.00
	Total	38	4.289E-04	1.864E-03	3.023E-04	-1.8360E-04	1.041E-03	.00	.01
Wrong Time	**LPN**	31	3.285E-02	6.751E-02	1.213E-02	8.087E-03	5.762E-02	.00	.30
	RN	7	3.123E-02	6.729E-02	2.543E-02	-3.1003E-02	9.346E-02	.00	.18
	Total	38	3.255E-02	6.656E-02	1.080E-02	1.067E-02	5.443E-02	.00	.30

Test of Homogeneity of Variances				
	Levene Statistic	**df1**	**df2**	**Sig.**
Total Error Rate	.001	1	36	.973
Wrong Drug	4.498	1	36	.041
Wrong Dose	.473	1	36	.496
Wrong Route	2.053	1	36	.161
Wrong Time	.031	1	36	.861

Statistical inferences regarding Wrong Drug in the pre PSMT data can not be made due to the Wrong Drug Sig statistic falling below a .05 level of significance in the test of homogeneity of variances.

ANOVA

The One-Way ANOVA compares the mean of one or more groups based on one independent variable. A one-way analysis of variance (ANOVA) was conducted on the subjects' pre PSMT error rates. The results in the following table display p values (Sig) for each error type higher than 0.05.

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Total Error Rate	**Between Groups**	1.144E-03	1	1.144E-03	.096	.759
	Within Groups	.430	36	1.195E-02		
	Total	.431	37			
Wrong Drug	**Between Groups**	7.613E-04	1	7.613E-04	1.168	.287
	Within Groups	2.346E-02	36	6.516E-04		
	Total	2.422E-02	37			
Wrong Dose	**Between Groups**	4.822E-03	1	4.822E-03	1.536	.223
	Within Groups	.113	36	3.139E-03		
	Total	.118	37			
Wrong Route	**Between Groups**	1.579E-06	1	1.579E-06	.448	.508
	Within Groups	1.269E-04	36	3.526E-06		
	Total	1.285E-04	37			
Wrong Time	**Between Groups**	1.504E-05	1	1.504E-05	.003	.954
	Within Groups	.164	36	4.553E-03		
	Total	.164	37			

This research data is unable to reject the null hypothesis. In other words, there is no statistically significant difference in medication error rates by level of credential in the pre PSMT observations due to Sig greater than .05 in all instances.

Descriptives Post PSMT Data

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Total Error Rate	**LPN**	16	7.254E-02	5.171E-02	1.293E-02	4.499E-02	.1001	.00	.21
	RN	2	2.750E-02	1.768E-02	1.250E-02	-.1313	.1863	.02	.04
	PSMT	7	6.057E-02	5.072E-02	1.917E-02	1.367E-02	.1075	.01	.15
	Total	25	6.559E-02	4.988E-02	9.975E-03	4.500E-02	8.618E-02	.00	.21
Wrong Drug	**LPN**	16	2.056E-02	2.362E-02	5.905E-03	7.971E-03	3.314E-02	.00	.08
	RN	2	3.750E-03	5.303E-03	3.750E-03	-4.3898E-02	5.140E-02	.00	.01
	PSMT	7	1.196E-02	1.098E-02	4.151E-03	1.800E-03	2.211E-02	.00	.03
	Total	25	1.680E-02	2.026E-02	4.052E-03	8.442E-03	2.517E-02	.00	.08
Wrong Dose	**LPN**	16	3.031E-02	3.221E-02	8.052E-03	1.315E-02	4.747E-02	.00	.12
	RN	2	3.750E-03	5.303E-03	3.750E-03	-4.3898E-02	5.140E-02	.00	.01
	PSMT	7	3.257E-02	4.091E-02	1.546E-02	-5.2629E-03	7.041E-02	.00	.09
	Total	25	2.882E-02	3.355E-02	6.711E-03	1.497E-02	4.267E-02	.00	.12
Wrong Route	**LPN**	16	6.250E-03	2.500E-02	6.250E-03	-7.0716E-03	1.957E-02	.00	.10
	RN	2	.0000	.0000	.0000	.0000	.0000	.00	.00
	PSMT	7	.0000	.0000	.0000	.0000	.0000	.00	.00
	Total	25	4.000E-03	2.000E-02	4.000E-03	-4.2556E-03	1.226E-02	.00	.10
Wrong Time	**LPN**	16	1.543E-02	2.158E-02	5.395E-03	3.926E-03	2.692E-02	.00	.06
	RN	2	2.000E-02	2.828E-02	2.000E-02	-.2341	.2741	.00	.04
	PSMT	7	1.607E-02	2.495E-02	9.432E-03	-7.0072E-03	3.915E-02	.00	.06
	Total	25	1.597E-02	2.195E-02	4.389E-03	6.913E-03	2.503E-02	.00	.06

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Total Error Rate	.672	2	22	.521
Wrong Drug	2.620	2	22	.095
Wrong Dose	1.997	2	22	.160
Wrong Route	1.212	2	22	.317
Wrong Time	.192	2	22	.826

Test of Homogeneity of Variances shows if the groups have approximately equal variance on the dependent variable. If the Levene's Test is significant (the value under "Sig." is less than .05), the two variances are significantly different. If it is not significant (Sig. is greater than .05), the two variances are not significantly different; that is, the two variances are approximately equal. If the Levene's test is not significant, we can assume that the variances are approximately equal. The non-significant result in the above data is good because it shows that the homogeneity of variance assumption was not violated. Any "Sig." value below .05 would be a cause for concern.

ANOVA

The One-Way ANOVA compares the mean of one or more groups based on one independent variable. A one-way analysis of variance (ANOVA) was conducted on the subjects' post PSMT error rates. The results in the following table display p values (Sig) for each error type was higher than 0.05.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Total Error Rate	**Between Groups**	3.852E-03	2	1.926E-03	.759	.480
	Within Groups	5.585E-02	22	2.539E-03		
	Total	5.970E-02	24			
Wrong Drug	**Between Groups**	7.305E-04	2	3.653E-04	.881	.428
	Within Groups	9.119E-03	22	4.145E-04		
	Total	9.850E-03	24			
Wrong Dose	**Between Groups**	1.391E-03	2	6.956E-04	.597	.559
	Within Groups	2.563E-02	22	1.165E-03		
	Total	2.702E-02	24			
Wrong Route	**Between Groups**	2.250E-04	2	1.125E-04	.264	.770
	Within Groups	9.375E-03	22	4.261E-04		
	Total	9.600E-03	24			
Wrong Time	**Between Groups**	3.731E-05	2	1.865E-05	.036	.965
	Within Groups	1.152E-02	22	5.237E-04		
	Total	1.156E-02	24			

The research data is unable to reject the null hypothesis. In other words, there is no statistically significant difference in medication error rates by level of credential in the post PSMT observations due to Sig greater than .05 in all instances.

Post Hoc Tests

The results of the Post-Hoc Comparisons show exactly which pairs of groups may be significantly different.

Multiple Comparisons
Bonferroni

Dependent Variable	(I) DISCIPLI	(J) DISCIPLI	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Total Error Rate	LPN	RN	4.504E-02	3.779E-02	.738	-5.2875E-02	.1430
		PSMT	1.197E-02	2.283E-02	1.000	-4.7192E-02	7.114E-02
	RN	LPN	-4.5044E-02	3.779E-02	.738	-.1430	5.287E-02
		PSMT	-3.3071E-02	4.040E-02	1.000	-.1378	7.161E-02
	PSMT	LPN	-1.1972E-02	2.283E-02	1.000	-7.1136E-02	4.719E-02
		RN	3.307E-02	4.040E-02	1.000	-7.1608E-02	.1378
Wrong Drug	LPN	RN	1.681E-02	1.527E-02	.849	-2.2761E-02	5.637E-02
		PSMT	8.599E-03	9.226E-03	1.000	-1.5308E-02	3.251E-02
	RN	LPN	-1.6806E-02	1.527E-02	.849	-5.6374E-02	2.276E-02
		PSMT	-8.2071E-03	1.632E-02	1.000	-5.0506E-02	3.409E-02
	PSMT	LPN	-8.5991E-03	9.226E-03	1.000	-3.2506E-02	1.531E-02
		RN	8.207E-03	1.632E-02	1.000	-3.4092E-02	5.051E-02
Wrong Dose	LPN	RN	2.656E-02	2.560E-02	.932	-3.9769E-02	9.289E-02
		PSMT	-2.2589E-03	1.547E-02	1.000	-4.2338E-02	3.782E-02
	RN	LPN	-2.6563E-02	2.560E-02	.932	-9.2894E-02	3.977E-02
		PSMT	-2.8821E-02	2.737E-02	.911	-9.9733E-02	4.209E-02
	PSMT	LPN	2.259E-03	1.547E-02	1.000	-3.7820E-02	4.234E-02
		RN	2.882E-02	2.737E-02	.911	-4.2090E-02	9.973E-02
Wrong Route	LPN	RN	6.250E-03	1.548E-02	1.000	-3.3868E-02	4.637E-02
		PSMT	6.250E-03	9.355E-03	1.000	-1.7990E-02	3.049E-02
	RN	LPN	-6.2500E-03	1.548E-02	1.000	-4.6368E-02	3.387E-02
		PSMT	.0000	1.655E-02	1.000	-4.2888E-02	4.289E-02
	PSMT	LPN	-6.2500E-03	9.355E-03	1.000	-3.0490E-02	1.799E-02
		RN	.0000	1.655E-02	1.000	-4.2888E-02	4.289E-02
Wrong Time	LPN	RN	-4.5750E-03	1.716E-02	1.000	-4.9050E-02	3.990E-02

		PSMT	-6.4643E-04	1.037E-02	1.000	-2.7519E-02	2.623E-02
	RN	**LPN**	4.575E-03	1.716E-02	1.000	-3.9900E-02	4.905E-02
		PSMT	3.929E-03	1.835E-02	1.000	-4.3617E-02	5.147E-02
	PSMT	**LPN**	6.464E-04	1.037E-02	1.000	-2.6226E-02	2.752E-02
		RN	-3.9286E-03	1.835E-02	1.000	-5.1474E-02	4.362E-02

Notice that Sig. is greater than .05 in all instances of comparison, therefore no combination of two variances are significantly different for any of the four errors tracked.