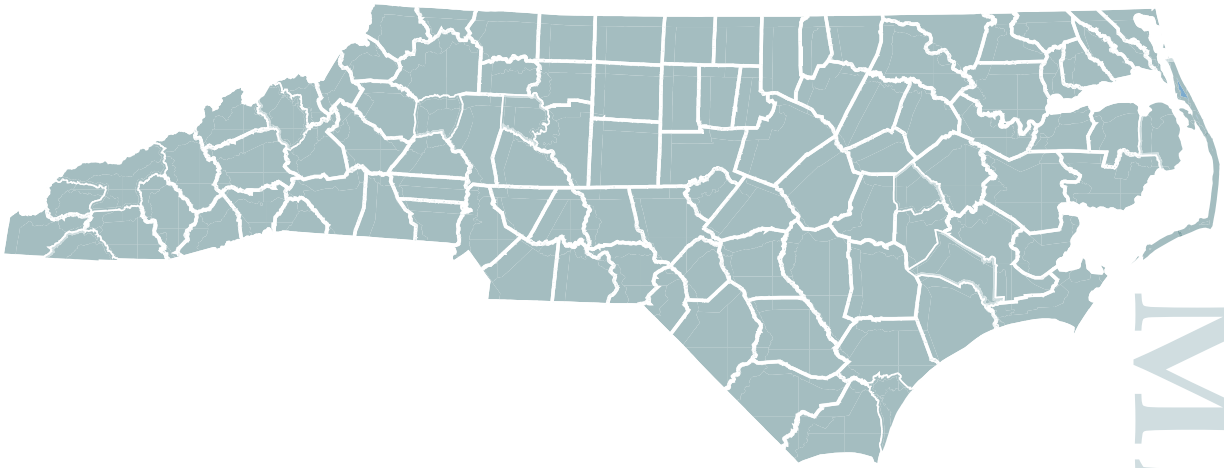
Nursing Home Medication Error Quality Initiative

(MEQI) Report: Year 2

October 1, 2004 to September 30, 2005



MEQI

A report on the second year of mandatory summary reporting of medication errors for all state-licensed nursing homes in the State of North Carolina.

Prepared by:

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Nursing Home Medication Error Quality Initiative (MEQI) Report: Year 2

(October 1, 2004 to September 30, 2005)

A report on the second year of mandatory summary reporting of medication errors for all state licensed nursing homes in the State of North Carolina

I. Background and Program Overview

In 2003, the North Carolina General Assembly passed Senate Bill 1016 addressing medication management in the State's nursing homes and requiring an annual report of medication errors. The bill is entitled: "An Act requiring nursing homes to establish a medication management advisory committee and specifying the duties of the committee and to require nursing homes to do certain things pertaining to the reduction of medication-related errors to increase patient safety." The purpose of the bill is to promote the use of a medication management advisory committee in each nursing home that will oversee the reporting of medication errors and the evaluation of their cause and to provide for annual reporting of errors. Follow-up action by each facility's committee is intended to reduce subsequent errors and enhance patient safety.

In early 2004, the State of North Carolina contracted with the Cecil G. Sheps Center for Health Services Research (Sheps Center) at The University of North Carolina at Chapel Hill to implement a nursing home medication error reporting system as part of Senate Bill 1016. The reporting system, or Medication Error Quality Initiative (MEQI), requires that each nursing home submit an online annual report on medication errors that occur in its facility during the previous year. The Sheps Center developed an individual medication error data collection form. This form was sent to all 386 licensed nursing homes in April 2004 as a suggested tool for tracking individual errors. The Sheps Center then developed an online annual report form for facilities to report their aggregate year-end information. Each September, an annual report packet is mailed to each nursing home with instructions for completion, along with the form website address, and a facility ID number. Sites are given one month to complete data entry. Facilities that do not respond are sent frequent reminders and updates to encourage data entry.

Definition of a Medical Error for purposes of MEQI reporting:

Senate Bill 1016 defines "medication errors" as "any preventable medication-related event that adversely affects or has the potential to affect, a patient in a nursing home and is related to professional practice, healthcare products, or procedures and systems. Procedures and systems would include: prescribing, prescription order communications, labeling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring and use. "

It is to be expected that a nursing home that is being vigilant about detecting and recording errors would have a significant number of errors to report, and we commend this effort. The number of errors reported to MEQI show about 34 errors (including near misses and potential errors) per 100 beds per year in the State of North Carolina. This number is significantly lower than comparison sources. A recent study by Gurwitz, et al.[1] examined adverse drug events, in two academic long-term care facilities, identified by pharmacists' review of medical records. Adverse drug events, as defined by the Joint Commission on Accreditation of Healthcare Organizations (JCAHCO), include any incident in which the use of a medication (drug or biologic) at any dose, a medical device, or a special nutritional product (for example, dietary supplement, infant formula, medical food) may have resulted in an adverse outcome in a patient.[2] The Gurwitz study estimates an incidence of 120 adverse drug events per year in an average facility of 105 beds, which is 3.5 times the number of errors found in the North Carolina reporting.

This is the second annual report and includes data from October 1, 2004 to September 30, 2005. The reporting is mandatory for all nursing homes, but is limited to self-report in summary fashion.

II. Data Collection and Response

During Year 2, the State of North Carolina had 391 licensed nursing homes that were required to report medication errors. We received annual reports from 389 facilities, which is 100% of the nursing homes that were open at the beginning of the reporting period and functional during that time. One site remained closed from hurricane flooding the previous year, and another was in the process of closing its facility during reporting and no longer had phones or fax machines. The high participation rate is a credit to the nursing homes for making a strong effort to complete the annual report process. This report includes only facilities regulated as "nursing homes" and excludes those regulated as part of hospitals or hospital systems, and those that are federally funded and regulated. We have compared these data to Year 1 data in many sections and tables of this report. Year 1 was only nine months long from January 1, 2004 to September 30, 2005, and reflects data from 384 nursing homes. In some cases data have been annualized for comparison purposes.

III. Data Summary and Discussion

All data were provided to the Sheps Center in summary form with no individual or patient level information. The purpose of the legislation and reporting of errors is to encourage the formation of the medication management advisory committee to study errors and address facility processes, not necessarily to focus on particular errors or medications. In most cases, data were entered by the nursing homes themselves through a secure web-link.

A. Total Errors

The total number of errors and potential errors for Year 2 reported by the 389 nursing homes for the 12 month period from October 1, 2004 to September 31, 2005 was 16,106. This number includes errors that actually occurred and potential errors (with the error being caught prior to reaching the

patient). Most of the errors reported cause no harm to the patient. An example of an "error" would be giving a blood thinner, such as warfarin, to a patient, when it was actually ordered for another patient. A "potential error", or "near miss", would be if the warfarin was erroneously ordered for the patient, but the nurse caught the error and did not administer the drug, causing no harm to the patient.

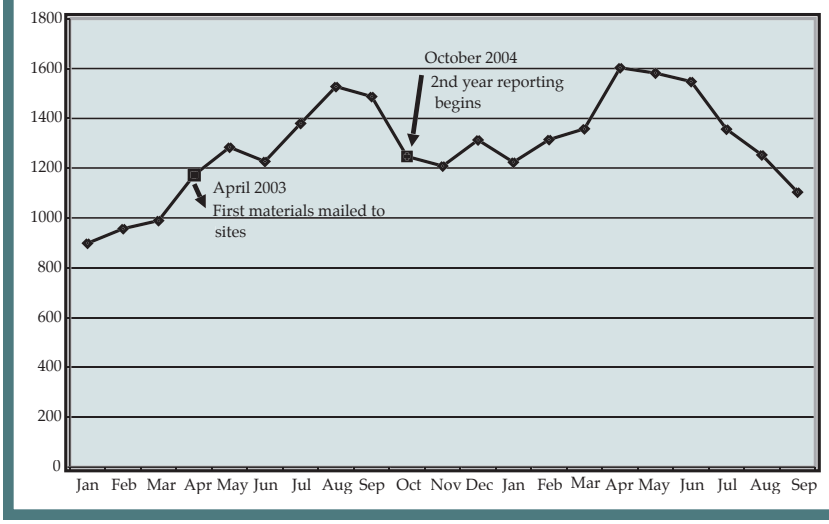
Out of the 16,106 statewide errors and potential errors only 1,694 (4.35 avg. per nursing home), or 10%, led to a situation that required monitoring and/or further intervention; and in only 251 of these error occurrences was where a resident caused temporary harm or harm that required a trip to the emergency room. Only six errors in the entire State contributed to permanent harm to a resident. This means there was on average less than one (.66) error that caused temporary or permanent harm for each reporting facility. There were two reported liability claims related to medication errors during the reporting period, compared to none last year **(Table 1)**.

Table 1: Error Summary Statewide, Year 2

Totals Summary	2004 (9 Months)	2005 (12 months)
Total Errors & Potential Errors	**10,920**	**16,106**
# of Facilities Reporting	385	389
Median	15	22
Average Per Facility (mean)	28	41
Average Number of Errors/100 beds	23	34
Did not reach/harm patient	91.1 %	89.5%
Required Monitoring	8.1 %	8.9%
Temporary Harm/ER	0.7 %	1.6%
Permanent Harm	1 error	6 errors

Figure 1: Number of Errors Per 100 Beds

(January 1, 2004 to September 30, 2005)

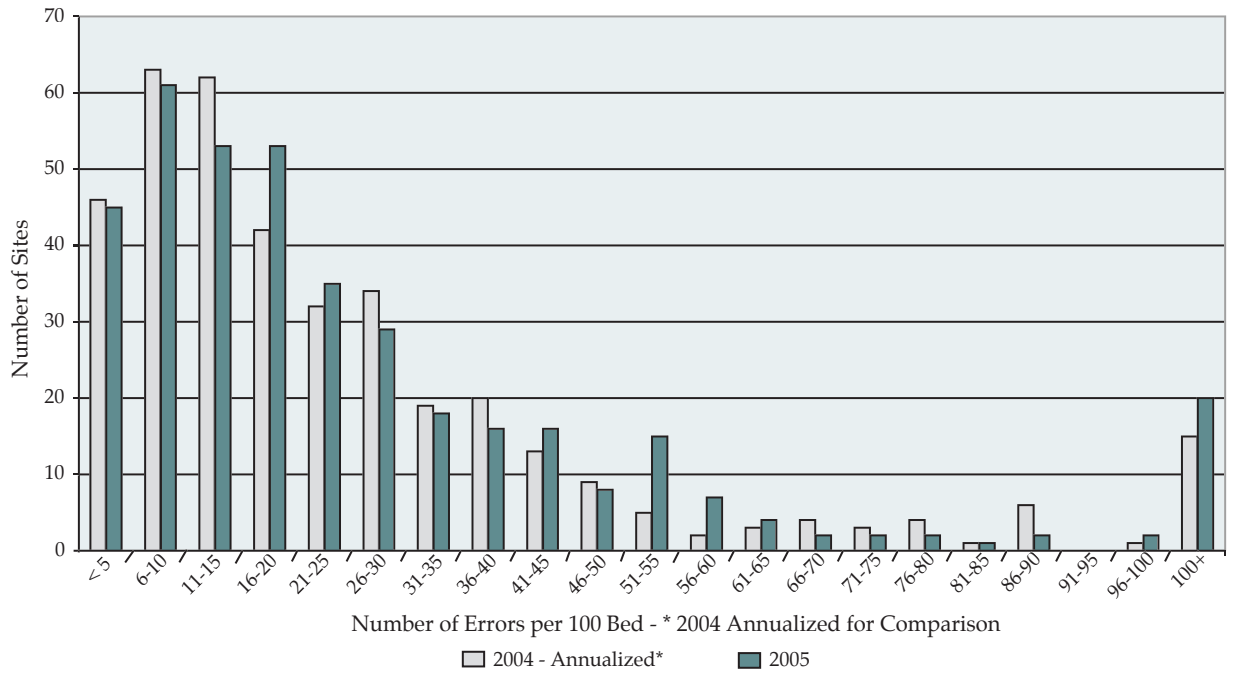


The monthly average of reported errors was 1,342, which is higher than last year's reported monthly average of 1,213. However, if the first three months of Year 1 are removed (this period was prior to materials being mailed) the first year average was 1,345 **(Figure 1)**. We had expected a significant increase in reporting during Year 2, but these monthly figures indicate that reporting is remaining fairly constant.

The mean number of errors and potential errors per nursing home was 41.4, the median was 22, and number per 100 nursing home beds was 34. Most sites (294 or 75%) reported between 0 - 35 errors per bed. Ninety-seven reported 36 or greater errors per bed **(Figure 2)**. The nursing homes in the State of North Carolina range in size from 24 to 360 beds, with an average bed size of 121 beds. A significant range in the number of errors reported per site was observed: nine sites reported no errors while one site reported more than 2,000 errors. Last year only three sites reported zero errors.

Figure 2: Errors Reported By Month

(January 1, 2004 to September 30, 2005)



To put the 16,106 errors and potential errors in context with respect to the opportunities, we estimate the following: The average nursing home resident receives 8.1 medications administered 2.1 times per day.[3] For the approximately 47,000 nursing home beds in the State of North Carolina, this translates to approximately 836,600 administrations of medication per day statewide. Our data have shown an average of 41.8 MEQI errors reported statewide per day, which is a very small percent (only 0.005%) of medication administration opportunities.

B. Cognitive Ability

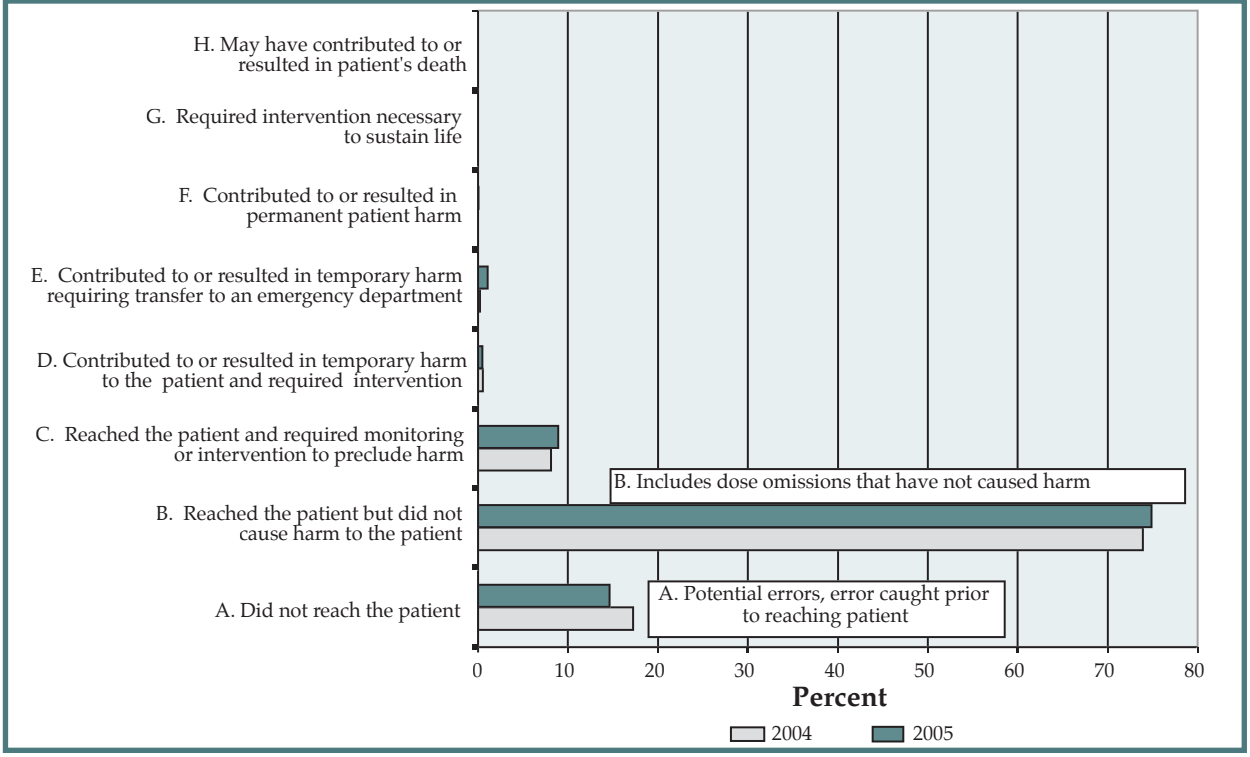
Nursing homes were asked to indicate the number of errors that occurred among residents who were able to direct their own care. The definition provided of those who were unable to direct their own care would include those who are demented, comatose, or seriously vision or hearing impaired. Reports from Year 2 show that 69% of errors occurred in those unable to direct their own care and 31% of errors in those who are able to direct their own care. This is a 10% change from Year 1 when 79% of patients were determined to be cognitively unable to direct their own care, and 21% considered able to direct their own care. At this time, we cannot explain why this change has occurred, as we would not expect a significant population shift in such a short period of time.

C. Patient Outcomes

All errors or potential errors were categorized with respect to the patient's outcome **(Figure 3)**. Most of the errors either "did not reach the patient" (potential error), (N=2,351; 14.6%), or "did not harm the patient" (N=12,061; 74.9%). "Dose omissions" were considered to have a potential impact on the patient, even if no harm occurred, and were placed in the category "did not harm the patient". A total of 1,437 (or 8.9% of the errors) led to a situation where the resident "required monitoring or intervention to preclude harm". An example might be greater monitoring of blood coagulation tests that would follow administration of an extra dose of warfarin given in error. A smaller number of errors (N=75; 0.5%) "contributed to temporary harm to the resident; for example, a patient had a self-limited nosebleed from the administered warfarin. One hundred and seventy-six errors (1.1%) "required a trip to the emergency department". Six errors out of the entire state were described as "contributing to permanent harm to an individual". No errors reported "required interventions necessary to sustain life" or "contributed to a patient's death".

From Year 1 to Year 2 there have been some slight changes in how patient outcomes are reported. Fewer errors were recorded as not having reached the patient. There was also an increase in the number of serious errors reported. This is possibly an effect of sites being more comfortable reporting these errors, rather than an increase in more serious errors, since the overall number of errors reported did not change substantially.

Figure 3: Patient Outcomes
(January 1, 2004 to September 30, 2005)



D. Effects Observed

Respondents also were asked what effects the medication error had on the patient, and could choose multiple responses **(Table 2)**. Effects observed primarily fell in the category that "no injury occurred" (88.6% of responses), with "inadequate effect of product" being the second most common response (7.0%). Dose omission or dose reduction errors would be consistent with this pattern. There is internal consistency in that 88.6 % of errors have "no injury occurred", and 89.5% also fall under the category of "did not reach" or "did not harm the patient". Additional effects most commonly noted were: excessive side effects, cognitive change, change in blood sugar, and allergic reaction. No significant differences between Year 1 and Year 2 data were noted.

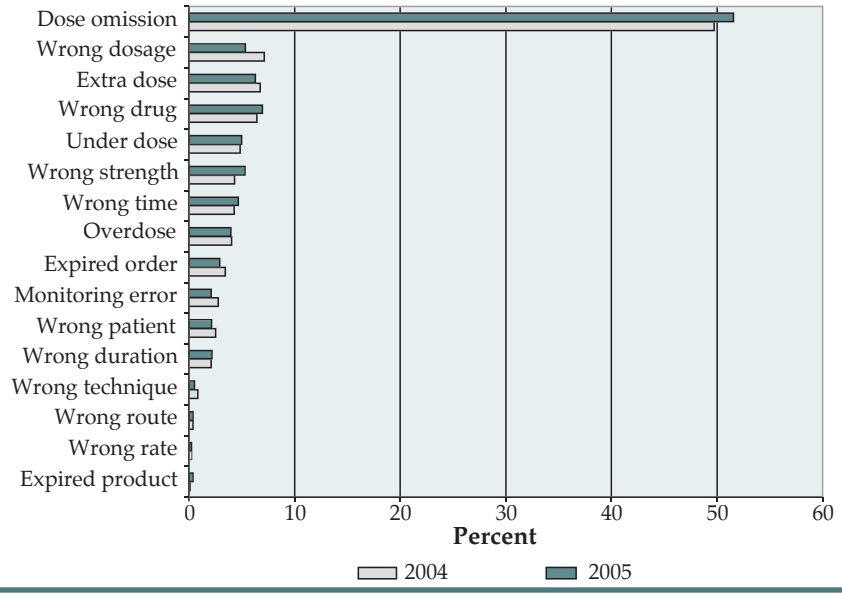
Table 2: Types of Effects
(January 1, 2004 to September 30, 2005)

Effect of Error * able to select more than one	2004 (9 months)			2005 (12 months)		
	# incidents	% incidents	% errors	# incidents	% incidents	% errors
No injury occurred	10,280	94.1	91.1	15,031	93.3	88.6
Inadequate effect of product	609	5.6	5.4	1,191	7.4	7.0
Cognitive change	51	0.5	0.5	181	1.1	1.1
Allergic reaction-Yr 2 only	0	0.0	0.0	144	0.9	0.8
Change in blood sugar	113	1.0	1.0	120	0.7	0.7
Excessive side effects	37	0.3	0.3	102	0.6	0.6
Somnolence	63	0.6	0.6	75	0.5	0.4
Constipation/diarrhea	42	0.4	0.4	40	0.2	0.2
Fall	11	0.1	0.1	19	0.1	0.1
Nausea/vomiting	40	0.4	0.4	18	0.1	0.1
Change in blood pressure-Yr2 only	0	0.0	0.0	14	0.1	0.1
Edema	12	0.1	0.1	12	0.1	0.1
Respiratory distress	12	0.1	0.1	11	0.1	0.1
Visual disturbance	6	0.1	0.1	8	0.0	0.0
Headache	6	0.1	0.1	4	0.0	0.0
Gastrointestinal bleed	3	0.0	0.0	2	0.0	0.0
Aspiration	0	0.0	0.0	1	0.0	0.0
Hearing disturbance	0	0.0	0.0	0	0.0	0.0
Cardiac arrest	0	0.0	0.0	0	0.0	0.0
Death	0	0.0	0.0	0	0.0	0.0
TOTALS	**11,285**	**103.3**	**100.0**	**16,973**	**105.4**	**100.0**

E. Type of Variance

The respondents were asked to categorize the type of variance — what kind of error was made — and were permitted to respond in more than one category (Figure 4). The primary type of variance, with 51.6% of responses, was "dose omission". Another 20.6% of types of variance responses were also related to dosage: "wrong dosage - wrong form of medication" at 5.3%; "extra dose – multiple doses given at one administration point" at 6.3%; "under dose – too little medication given" at 5.0%; and "overdose – too much medication given" at 4.0%. Combining all categories that relate to dosage they account for 72.2% of all responses. In addition, the following categories also had over 4%: "wrong drug" at 7.0%; "wrong strength" at 5.3%; and "wrong time" at 4.7%. No significant differences between Year 1 and Year 2 data were noted.

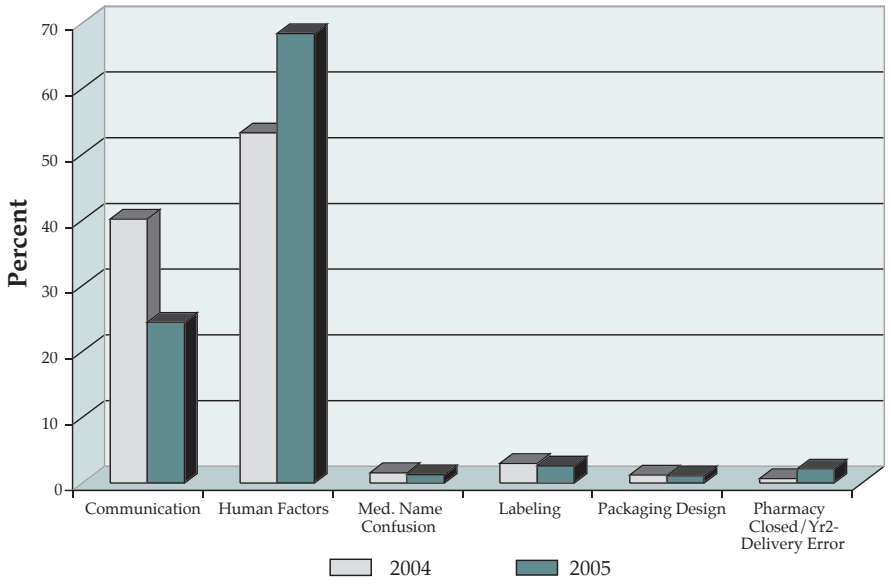
Figure 4: Type of Variance
(January 1, 2004 to September 30, 2005)



F. Possible Causes

The respondents were asked to identify possible causes of the errors, with multiple responses permitted **(Figure 5)**. "Human factors" and "communication" were listed as the two main possible causes for the medication errors, at 68.4% and 24.5% respectively. This accounts for almost 93% of the responses in this category. There was significant reversal in this section from Year 1 to Year 2 between the two highest variables, "human factors" was reported 15% less than in Year 1 and "communication" was reported 15% more, though they account for the same total percentage of errors. This is potentially explained by sites being more aware of error processes and moving beyond calling all errors just "simple human error" and understanding that communication within the various systems are involved in error.

Figure 5: Possible Causes
(January 1, 2004 to September 30, 2005)



A form change was made in this section to better reflect nursing home concerns about pharmacy issues. The "pharmacy closed" variable was changed to "pharmacy delivery error" which included pharmacy closed, pharmacy delivered to wrong facility, and pharmacy delivered wrong medication. This change led to better reporting in this variable and a three-fold increase from 0.7% in Year 1 to 2.1% reported in Year 2.

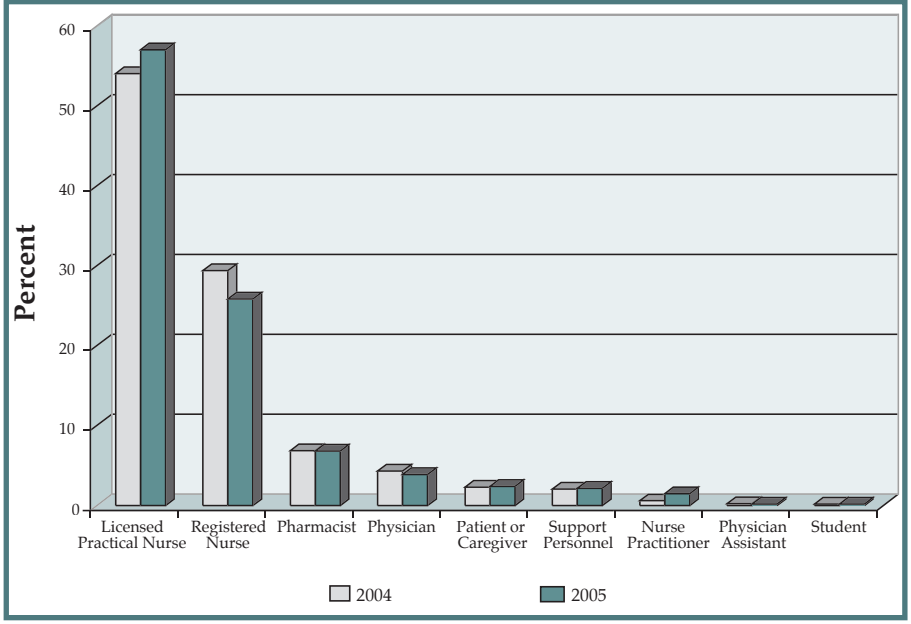
G. Phase In Medication Process

Sites were asked to characterize the phase in the medication use process at which errors occurred: prescribing, documenting, administering, or monitoring. Multiple responses were permitted. Most of the responses were in "administration" at 60.2%, followed by "documentation" at 34.8%. Only 3.1% of errors were attributed to "prescribing", and "monitoring" accounted for only 1.9% of responses. No significant changes in these variables from Year 1 to Year 2 were noted.

H. Personnel Involved

The respondents were asked to identify personnel involved, with multiple responses permitted **(Figure 6)**. The majority of errors involved "licensed practical nurses" (57.0%) and "registered nurses" (25.8%). This is to be expected, as licensed practical nurses (LPNs) and registered nurses (RNs) provide most of the direct patient care and delivery of medications at nursing homes, with LPNs doing the bulk of this care. "Pharmacists" were involved in 6.8% of errors and "physicians" in 3.9% of errors. No significant changes in these variables were noted from Year 1 to Year 2.

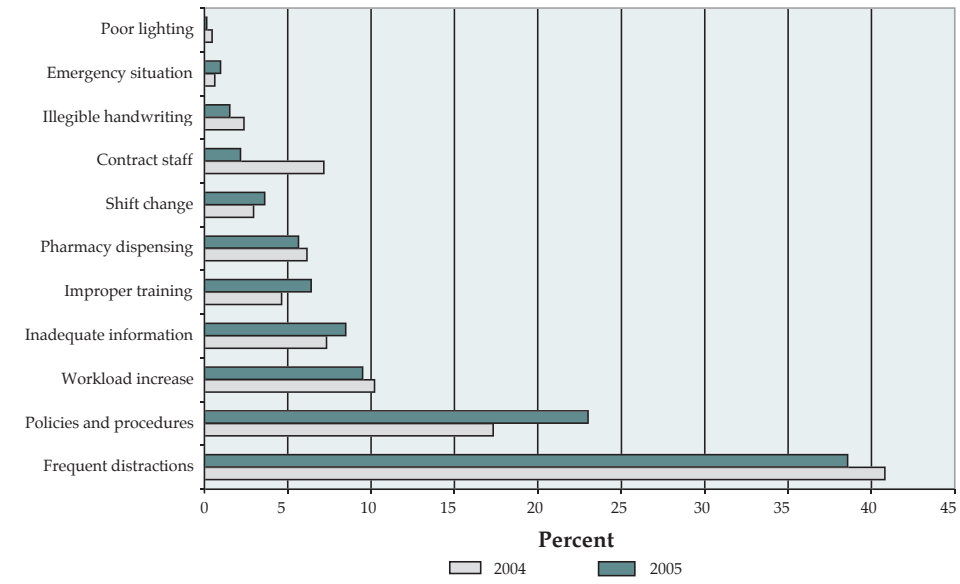
Figure 6: Personnel Involved in Error
(January 1, 2004 to September 30, 2005)



I. Contributing Factors

Nursing homes were asked to provide information identifying all possible factors that contributed to the error or potential error, and again multiple responses were allowed **(Figure 7)**. Responses with the highest percentages under primary contributing factors were: "frequent distractions" at 38.6%; "policies and procedures" at 23.0%; "workload increase" at 9.5%; and "inadequate information" at 8.5%. We noted a slightly higher percentage of responses being recorded under "policies and procedures" from 17.3 % to 23.0% from Year 1 to Year 2. "Contract staff" also were involved in fewer errors. In Year 1, contract staff were implicated in 7.2% of responses, but in Year

Figure 7: Contributing Factors
(January 1, 2004 to September 30, 2005)



2 this number has dropped to 2.2%. We do know that a number of facilities responding to the Year 1 follow-up survey often mentioned increased training and supervision of contract (agency or temp) nurses as one of the changes they were making in response to reporting.

J. Medications Involved

Nursing Homes were asked to list the most frequent ten medications that were involved in errors or potential errors at their site, and the number of error incidents with that medication. If a home observed more than ten incidents, they were asked to list those medications that were repeatedly involved, or that caused the most serious type of errors. This may bias our information toward the drugs causing the most serious errors. The list was limited to ten per site to reduce the reporting burden for nursing homes, and to limit the medication list. Facilities reported more than 8,400 medication incidents, with about 350 different types of medications identified after correcting and combining data so that the different brand and generic names for the same medication were aggregated into one category.

The seven most frequently reported medications involved in errors or potential errors were: lorazepam (Ativan), warfarin sodium (Coumadin), insulin (all types), hydrocodone combinations (Vicodin, Lortab), oxycodone, fentanyl and furosemide **(Table 3)**. All of these medications were in the top eight medications involved in errors from last year. Six of these, lorazepam, warfarin, insulin, furosemide and fentanyl are also listed by MedMarx[4] (a national hospital medication error reporting system) on their 15 item list of the most commonly reported products involved in medication errors that result in harm or fatality at hospitals. The drug with the highest number of errors, lorazepam, was involved in at least one error in 202 different nursing homes or 52% of reporting facilities.

The types of medications involved in errors in North Carolina nursing homes are similar to the types of preventable events observed by Gurwitz, et al. in two long-term care facilities.[1] The Gurwitz study assessed preventable Adverse Drug Events (ADEs) through medical record review of 1,247

residents in two long-term care facilities in the Northeastern US. Over 8 to 9 months, 338 preventable ADEs were identified. Drugs most commonly involved in preventable events were warfarin (12%), atypical antipsychotics (12%), loop diuretics (10%), opioids (8%), and antiplatelets (7%).

Table 3: Most Freqent Medications, Year 2
(October 1, 2004 to September 30, 2005)

Medication Generic Name	# Facilities	# Errors	Brand(s) Examples	Major Drug Class
Lorazepam	203	828	Ativan	Central Nervous System Agent
Warfarin	166	621	Coumadin	Blood Formation and Coagulation Agent
Insulin, all types	106	446	Humulin, Novolin	Hormones and Synthetic Substitute
Hydrocodone combinations	109	376	Vicodan, Norco	Analgesics and Antipyretics
Oxycodone	87	308	Oxycontin, Roxicodone	Analgesics and Antipyretics
Fentanyl	90	269	Duragesic	Analgesics and Antipyretics
Furosemide	90	213	Lasix	Electrolytic, Caloric and Water Balance Agent
Alprazolam	81	195	Xanax	Central Nervous System Agent
Olanzapine	34	134	Zyprexa	Central Nervous System Agent
Prednisolone opth. gtts.*	2	128	Econapred Eye Drops	Ear/Eye/Nose/Rectum/Topical/Vagina/Other
Clonazepam	66	128	Klonopin	Central Nervous System Agent
Potassium Supplements	47	121	NeutraPhos	Electrolytic, Caloric and Water Balance Agent
Phenytoin	32	117	Dilantin	Central Nervous System Agent
Calcium supplements	16	111	Caltrate, Oscal	Electrolytic, Caloric and Water Balance Agent
Morphine	51	111	MS Contin, MSIR	Analgesics and Antipyretics
Zolpidem	55	95	Ambien	Central Nervous System Agent
Metoclopramide	18	89	Reglan	Gastrointestinal Drugs
Mirtazapine	24	88	Remeron	Central Nervous System Agent
Levofloxacin	47	85	Levaquin	Antiinfective Agent
Clonidine	21	82	Catapres	Central Nervous System Agent

** Prednisolone opth. gtts was reported in 128 errors, rating it tenth among the most freqent errors per-medication list. However, all of these errors occurred in only two facilities. This is possibly a repeatedly occuring error that was reported incorrectly .*

The groups or classes of medications observed the most in reported errors include: central nervous system agents, analgesics and antipyretics, hormones and synthetic substances, electrolytic, caloric and water balance agents and cardiovascular agents **(Table 4)**. We compared these percentages to reported medication usage by major drug class in nursing homes from the Medicare Beneficiary Survey and Medical Expenditure Panel Survey – Nursing Home component **(Table 5)**.[5,6] If errors were occurring by usage alone, we would expect to see most errors in those classes of drugs used the most: analgesics and antipyretics, gastrointestinal drugs, electrolytic, caloric, and water balance agents and central nervous system agents (CNS) and antiinfective

Table 4: Major Drug Class in MEQI Errors, Year 2
(October 1, 2004 to September 30, 2005)

Major Drug Class MEQI -2005	# of Medications	Error %
Central Nervous System Agent	2480	29.30
Analgesic and Antipyretic	1405	16.60
Hormones and Synthetic Substitute	876	10.35
Electrolytic, Caloric and Water Balance Agent	754	8.91
Cardiovasular Agent	743	8.78
Blood Formation and Coagulation Agent	689	8.14
Antiinfective Agent	586	6.92
Gastrointestinal Drug	399	4.71
Ear/Eye/Nose/Rectum/Topical/Vagina/Other	185	2.19
Respiratory Agent	181	2.14
Antiallergy Agent	129	1.52
Kidney/Urinary Tract Agent	34	0.40
Anticancer Agent	4	0.05

Table 5: Major Drug Class: MCBS 1998 and MEPS 1996

Major Drug Class [5, 6]	MCBS 1998 usage %	MEPS 1996 usage %
Analgesic and Antipyretic	81.5	81.5
Gastrointestinal Drug	78.6	76.4
Electrolytic, Caloric and Water Balance Agent	73.8	68.9
Central Nervous System Agent	70.2	65.1
Antiinfective Agent	63.5	67.9
Cardiovasular Agent	56.1	59.4
Ear/Eye/Nose/Rectum/Topical/Vagina/Other	49.6	49.4
Kidney/Urinary Tract Agent	46.3	45.1
Hormones and Synthetic Substitute	41.7	39.3
Respiratory Agent	40.9	31.4
Antiallergy Agent	18.3	20.8
Blood Formation and Coagulation Agent	17.3	19.1
Anticancer Agent	4.0	2.1

agents, but this is not the case. We see a higher number of errors than we would expect from usage alone in central nervous system (CNS) drugs (sedatives, antidepressants, antipsychotics). We would expect this number to be fairly high as CNS drugs are used by 70% of residents (on average), however these drugs account for nearly 1/3 of the reported errors, which is double the number of errors for any other type of drug, even though usage rates for other drugs is similar or higher. We also see a higher number in blood formation and coagulation agents (such as warfarin) which are expected to be used by less than 20% of residents but account for the fifth highest number of reported errors (over 8%). We also see more errors than we would expect from usage in hormones and synthetic substances, in large part due to the high error numbers in insulin use. We see very low error numbers compared to usage in gastrointestinal drugs, which are used by nearly 80% of the nursing home population, but account for less than 5% of reported errors.

Previous research has investigated the link between the types of medications involved in medication errors and drugs that are potentially inappropriate for an elderly population. Our first year of data collection found that North Carolina nursing homes reporting a higher error rate were more likely to report an error involving a potentially inappropriate drug. We also found that the errors were more likely to reach the patient in the homes reporting a higher error rate.[7] This provides additional evidence that known potentially inappropriate drugs, such as those on the Beers list, should be discouraged or closely monitored in this population.[8]

MEQI tracking and reporting, in combination with an onsite Medication Management Advisory Committee, has potential to improve medication management systems and eventually prevent errors. Medication Management Advisory Committees should focus some efforts on determining the types of medications involved in most medication errors at their facility, and more specifically looking at the types of medications involved in the most harmful errors. In one example, a large community hospital focused on high-alert medications in an effort to reduce medication-related errors and was able to produce an eight-fold reduction in harmful medication errors.[9]

IV. Conclusion and Future Plans

We have just completed the 2nd year of data collection and now have twenty-one months of data from the Nursing Homes in the State of North Carolina. As a new program using newly-developed tools, data inconsistencies continue to be anticipated. Our data are summary data and are limited.

During Year 2, the Sheps Center developed an informational website to provide an additional resource to all nursing homes. This website has downloadable copies of all forms, answers to frequently asked questions, links to key sites, contact information, and serves as an access point for entry into our online forms.

For Year 3, the Sheps Center is developing and piloting an individual error online reporting system, which will serve as an alternate to summary reporting. This online form will be used by nursing homes to enter information about each medication error or potential error that occurs in their facility, as they occur or in a timely fashion following the error. The data collected will be similar to that in summary reporting. The reporting system will allow participating nursing homes to extract summary reports from the information they have submitted for their facility. This will provide useful information to the nursing home for their Medication Management Advisory Committee to use in its mission to reduce errors and improve patient safety. Twenty-five nursing home facilities will be selected to pilot test the error reporting system. The pilot period will begin May 1, 2006 and last for six months. Pending successful results of the pilot, we expect to make the web-based system available to all nursing homes for use beginning October 1, 2006.

VI. References

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Ten Steps Nursing Homes Can Take To Improve Medication Management and Patient Safety

1. Have a functioning Medication Management Advisory committee that follows the guidelines set out in Senate Bill 1016.

2. Make sure the Medication Management Advisory Committee meets on a regular schedule and has access to all error reports.

3. Create or maintain a consistent, easy-to-use process for completion, submission and storage of medication error report forms. These report forms should not be kept in patient files.

4. Participate in The Carolinas Center for Medical Excellence (formerly Medical Review of North Carolina) ReS-Q Meds Collaborative program that provides training and support in managing medications during transition into the nursing home.
   http://www.mrnc.org/mrnc_web/mrnc/resq.aspx
   (link available on MEQI website)

5. Follow the Five Rights: Right Patient, Right Drug, Right Dose, Right Route and Right time. Have these posted at work stations.

6. Train staff to recognize the most commonly reported products involved in medication errors that result in harm or fatality (examples lorazepam, warfarin, insulin, furosemide, fentanyl and other narcotics), what symptoms of incorrect dosage might be, and how these patients should be monitored.

7. Eliminate use of commonly used abbreviations that can be confusing.
   http://www.jcaho.org/accredited+organizations/laboratory+services/npsg/06_dnu_list.pdf
   (link will soon be available on MEQI website).

8. Maintain a non-punitive atmosphere for reporting of errors. Reporting is an opportunity for learning and change; punishing those who report will limit the number of reported errors and leave faulty systems unchanged.

9. Use your Consultant Pharmacist as a resource when questions arise.

10. Consider participating in the pilot test of the new MEQI Online Individual Error Reporting System. This will give you access to reports on your errors, when you need them. Information on this pilot test will be mailed and emailed in March 2006.

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