ENSURING HEALTH AND SAFETY IN CONNECTICUT'S EARLY CARE AND EDUCATION PROGRAMS:

An Analysis of Department of Public Health Child Care Licensing Specialists' Reports of Unannounced Inspections

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The Child Health and Development Institute of Connecticut (CHDI), a subsidiary of the Children's Fund of Connecticut, is a not-for-profit organization established to promote and maximize the healthy physical, behavioral, emotional, cognitive and social development of children throughout Connecticut. CHDI works to ensure that children in Connecticut, particularly those who are disadvantaged, will have access to and make use of a comprehensive, effective, community-based health and mental health care system.

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EXECUTIVE SUMMARY

Out-of-home child care is a necessity for many families, and, for most parents entrusting their child into the care of others, health and safety of the facility are critical considerations. This IMPACT describes the results of 1,422 routine, unannounced, random inspections conducted by the Connecticut Department of Public Health (DPH) licensing specialists and represents the first comprehensive analysis of health and safety compliance ever undertaken in Connecticut. Connecticut has an extensive network of approximately 4,350 licensed child day care facilities with the capacity to serve approximately 116,000 infants, toddlers, and preschool age children. Of the two types of child day care facilities in the state, this study examined data from 676 child day care center inspections involving 41% of 1,650 centers and 746 inspections of family day care homes involving 28% of 2,700 homes. All facilities are required to meet the state's minimum licensing requirements and are subject to periodic, routine, unannounced inspections by licensing specialists. Although child care health consultants were introduced almost 40 years ago to achieve and support health and safety in child care centers, funding levels to date have constrained the scope and effectiveness of this regulation. This study and IMPACT were made possible by funding from the Children's Fund of Connecticut and the full cooperation of the Connecticut Department of Public Health.

Health and Safety Risks

Using data from recent inspections of both day care centers and family day care homes, the study found that despite high levels of compliance with numerous documentation, supervision, educational as well as some health and safety requirements, inspections revealed an alarming number of significant health and safety concerns. The nature of the health and safety risks documented in the inspection reports ranged from those that are obvious, such as high incidences where health or safety minimums were not met (e.g., 48% of centers had playground hazards, 41% of centers administered medications that did not have written approved orders from a health care prescriber, and 43% of family day care homes did not have current health forms for children from pediatric primary care providers) to less obvious situations where the incidence of non-compliance was low in relative terms but the consequences of non-compliance could be severe (e.g., 12% of child day care centers did not have CPR certified staff and 16% of family day care homes were rated below minimum with regard to poisonous substances accessible to children). On a more positive note, the study found a strong association between increased compliance with regulations and a program's compliance with continuing education for the staff. The examples cited are extracted from a longer list of urgent concerns and improvement imperatives documented in a full report available by request from the authors.

Process Improvement Needs

In addition to raising immediate health and safety concerns, the IMPACT suggests that there is additional value in taking a hard look at the licensing inspection process itself. Findings indicate that Connecticut has strong regulations but weak oversight. Out of 50 states, Connecticut ranks in the lower deciles in terms of the frequency of unannounced inspections to both child day care centers and family day care homes. Also, while many minimum licensing requirements are clear, many are not, and there appears to be no use of commonly understood benchmarks for evaluating the state's aggregate level of compliance performance. Moreover, processes for collecting, aggregating, analyzing and following up on compliance data (e.g., re-inspections or closing a non-compliant center) vary widely. Finally, that outside resources were needed to fund an analysis of inspection data suggests a desire on the part of DPH to fulfill its early child care mission but a lack of resources to do so adequately.

Report Recommendations

The report's four recommendations are confined to immediate health and safety concerns and longer term inspection process issues:

- Program improvement should encompass wider dissemination of health/safety information and resources through DPH, child care health consultants, and the National Resource Center for Health and Safety in Child Care and Early Education.

- A best practice medication administration training program and resources to support dissemination should be available for child care providers.

- Licensing requirements and training of licensing specialists should include more frequent unannounced visits as well as more consistent guidelines, training and measurement designed to enhance inter-rater consistency.

- An electronic data system should be developed to facilitate collection, storage, access and analysis of findings on an ongoing basis as well as an annual report to the Legislature.

Study findings suggest that elements of a solution may already exist in the current system. The regulation requiring health consultants in child day care centers is in place. However, it needs adequate budget support to fulfill its original child day care center mandate, and there may be significant benefits to expanding this regulation further to include family day care homes.

Policy Issues

Analysis of DPH inspection data also raises more fundamental issues concerning the current state of child care and child health in Connecticut. First, raw inspection data observed startling but consistent utilization variances (aggregate attendance on the day of inspection ranged from 39% to 60% of capacity depending on the facility type) that beg the question regarding their cause. If out-of-home child care is a universal need and child care capacity is distributed rationally across the state, is there something about the system that is causing either lack of attendance or consistently high rates of absenteeism? Second, analysis of positive (e.g., continuing education, trained health consultants) and negative associations (e.g., state-funded, facility located in area with low median income) between compliance performance and certain child care program characteristics suggests that there may be systemic disparities in the compliance with regulations and therefore the quality of child day care facilities across the state. Finally, given that family day care homes disproportionately serve lower income children, the inability of family day care homes to access health consultants may be exacerbating disparities in accessing the larger health care system. These and other findings take the report beyond immediate program improvement and practice prescriptions into the broader realm of children's health and safety policy.

The authors recognize that the findings and recommendations in this report involve the need for incremental funding investments as well as a more extensively scoped oversight program. It also calls for decisions regarding the nature and level of regulations governing the overall levels of health and safety in the two types of child day care programs. It should be noted that, rather than provide final answers, the objective of this report is to begin a dialogue based on a solid fact base and sound analysis among the many stakeholders on these important issues.

This publication describes the results of an analysis of 1,422 routine, unannounced, random inspections of child day care centers[a] and family day care homes conducted between January 2006 and March 2008[b] by the Connecticut Department of Public Health (DPH) licensing specialists and specific factors which influence compliance with regulations. DPH child day care regulations set minimum standards for healthy and safe care. This study is the first to analyze the findings of DPH licensing specialists and will be of interest to early care and education providers, pediatric health professionals, researchers, state agencies, and policy makers within Connecticut and nationally. This evaluation was funded by the Children's Fund of Connecticut.

Examining data from 676 child day care center inspections involving 41% of the State's 1,650 centers and 746 inspections of family day care homes involving 28% of the State's 2,700 homes, this study represents the first comprehensive analysis of health and safety compliance ever undertaken in Connecticut. Inspection findings were analyzed on three levels. The study's first level of analysis measured frequency of compliance and non-compliance with each of the almost 200 regulations governing child health and safety across both types of facilities. This basic analysis is comparable to other states, such as Ohio, where capabilities for management and analysis of inspection data are already well developed. The second level review and analysis of these simple frequency distributions involved a two stage data transformation and then further comparative analysis in order to develop more actionable findings. In the first stage, the team transformed child day care center regulations into 14 subscales and family day care home regulations into 13 subscales to enable conceptualizing these regulations into a more meaningful set of categories (e.g., outdoor safety, indoor safety, etc). The second stage employed a statistical technique known as Latent Class Analysis (LCA) to classify compliance levels (high/low/not applicable or not observed) of the two types of day care facilities based on multiple regulations in each of the relevant subscales. The third comparative analysis level used a logistic model to identify characteristics of a given facility (e.g., program funding source, median income of the facility's zip code, health consultant trained, compliance with continuing education and accreditation) that might have a positive or negative influence on compliance outcomes with the appropriate regulation categories developed by the LCA. Both the Latent Class and comparative analyses represent a step beyond the simple descriptive statistics that characterize states regarded as leaders in child care health and safety compliance management.

This IMPACT report is a summary of information contained in the study's final report, which provides in-depth details of the study's methodology and findings.[c]

[a] The term day care rather than child care is the statutory language and is used in this report when referencing child care programs. Child day care centers also include group day care homes.

[b] This report includes child day care center inspections conducted between January 2006-March 2008 and family day care home inspections conducted between September 2007-March 2008. This report does not include inspections in response to complaints to the Connecticut Department of Public Health Child Care Licensing.

[c] The full report is available upon request from the authors.

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BACKGROUND

Attendance in out-of-home child care is a necessity for many children and poses both health risks and benefits. Approximately 60% of children under six years of age both in Connecticut and nationally have mothers in the workforce.[1,2] In Connecticut, about 100,000 young children are cared for in the 1,650 licensed child day care centers and approximately 16,000 children are cared for in the 2,700 licensed family day care homes.[3] When the quality of child care, also called early care and education, is suboptimal, children are at greater risk for infectious diseases, injuries and inadequate nurturing.[4,5] However, high quality early care and education offers several benefits, including fewer illnesses and injuries, greater likelihood of health care access, health screenings, early identification and referral for health, developmental and behavioral concerns, as well as care for children with special health care needs.[6,7] Quality early care and education is a critical component of a healthy trajectory necessary for children's readiness to learn and is associated with long term health and well being.[8,9]

Initiatives to improve health and safety for children in early care and education are driven by parents, state and federal agencies as well as professional organizations. In a national survey, parents reported that the most important goal of child care is to provide a safe and healthy environment.[10] Additionally, as states launch universal preschool initiatives to better prepare children for kindergarten, many are recognizing that children's health status during the preschool years influences their readiness to learn, especially among economically disadvantaged children.[11,8,12,13,14,15] The US Department of Health and Human Services Maternal Child Health Bureau (MCHB) has partnered with the American Public Health Association (APHA) and the American Academy of Pediatrics (AAP) to create national health and safety standards, state grants, and resource centers for information, technical assistance, as well as support for health consultation to early care and education programs.[16,17] Among early childhood professionals, the National Association for the Education of Young Children (NAEYC) has aligned the organization's accreditation standards with the health and safety standards cited in *Caring for Our Children*.[18,16] Finally, health consultation to early care and education programs has been endorsed by MCHB and NAEYC. The role of the child care health consultant is to minimize health and safety risks, promote healthy behaviors, and to link families with community-based health and developmental services. Evidence is emerging that health consultation can improve overall child care quality and school readiness among children.[6]

What is Connecticut Doing?

In recent years, the state of Connecticut has made substantial investments in initiatives to promote access to high quality early care and education. Quality Enhancement grants, which are funded through the federal Child Care Development Block grant and administered through the Connecticut Department of Social Services (DSS), support such

child care services as: School Readiness programs, the Accreditation Facilitation Project to assist centers in achieving NAEYC accreditation, and child care licensing by licensing specialists at the Department of Public Health. In 2008, DSS funding included $4.41 million for School Readiness programs for three to four year old children and $13.59 million for state-funded child day care centers, which serve infants, toddlers, preschool and school aged children. The total DSS and State Department of Education (SDE) budget for Early Care and Education (ECE) amounted to $267.6 million.[19]

The Connecticut Department of Public Health Child Care Licensing regulations require that all centers and group homes have a health consultant who is either a registered nurse, advanced practice registered nurse, a physician or physician assistant. Connecticut is one of the only five states that mandate a specific schedule of health consultation: programs enrolling children under three years of age full-time must document a weekly health consultant visit, and programs enrolling children between two and three years of age part day are required to have a monthly health consultant visit. New regulations require a minimum of quarterly rather than annual health consultant visits to centers and group homes enrolling only preschool age children.[20] When the original child care regulations were developed in 1970, the initial recommendation was to require health consultation for *all* child care facilities. However, the Regulations Review Committee of the Connecticut Legislature proposed less stringent requirements, and the compromise regulation mandated health consultation visits exclusively for programs enrolling children under three years of age.[21] At that time, local public health nurses provided free consultation services to child care centers.[22]

Currently Connecticut child care centers are responsible for funding health consultation. In contrast, 17 states, such as Arizona (46 consultants), Kentucky (80 consultants), Alabama (8 consultants), and North Carolina (100 consultants) are funding child care health consultants as well as a coordinated delivery system through a variety of sources including USDHHS Child Care Development Block Grant (CCDBG), Quality Enhancement grants USDHHS MCHB Title V funds, and state funds.[23]

Health consultant training based on the USDHHS MCHB National Training Institute for Child Care Health Consultants curriculum has been offered annually in Connecticut since 2002. The training was initially funded through the USDHHS MCHB Healthy Child Care Connecticut grant (DSS) and currently through the USDHHS MCHB Connecticut Early Childhood Comprehensive Systems grant (DPH) and a cooperative agreement with the Connecticut Nurses' Association. Additional training support is funded through the Connecticut Head Start State Collaboration office.[24] During the past seven years, approximately 200 nurses, Head Start health managers and other early care and education consultants have participated in early care and education health and multidisciplinary consultation training.[25]

How is Connecticut Doing?

Since each state adapts federal recommendations for licensing regulations, comparing compliance with recommendations across states is difficult. One study compared child day care centers in four states, including Connecticut, using established rating scales and found that although health and safety scores were low in centers in all four states, Connecticut ranked highest in terms of the health and safety items.[26,27] Nevertheless, even in Connecticut only 24% of the classrooms were rated as developmentally appropriate, healthy, and safe. Of note, the environmental rating scales measured only a few health and safety items, which were less rigorous than licensing regulations. Furthermore, the study was conducted only in centers that chose to participate, and there were no unannounced visits. No summary data on the health and safety status of Connecticut child day care centers have been reported since that study, and no comprehensive report of unannounced visits has ever been released. Furthermore, no summary data have ever been reported on family day care homes, which in Connecticut and most states have fewer regulations than child day care centers.[28,29,30] Family day care homes disproportionately serve children from low income families, and therefore, disproportionately more children are at risk for suboptimal health and educational outcomes.[31,32] While health and safety monitoring in family day care homes may have a large impact on children's outcomes, the lack of summary data on the quality of these settings impedes strategic efforts to ensure that these at-risk children are receiving the care that will make a positive difference in their health and development.

States use unannounced licensors' inspections of child care programs to monitor compliance with regulations. Connecticut child care regulations require unannounced, random inspections of child day care centers caring for 13 or more children, and group homes caring for 7 to 12 children to take place every other year. And, for family day care homes, caring for fewer than seven children, such inspections should take place every third year.[20] This frequency of required inspections places Connecticut towards the bottom in rankings of states: Connecticut ranks **41 out of 50** states for day care centers, **29 out of 39** states for group day care homes, and **31 out of 45** states for family day care homes licensing inspections.[33] In 2006 the Connecticut DPH licensing specialists met mandatory inspection visits for centers and exceeded regulatory requirements by conducting unannounced inspections of 50% (greater than the 33.3% minimum requirement) of the family day care homes.[3] Despite the fact that the DPH Child Care Licensing division is diligent in accomplishing and in some instances exceeding statutory requirements regarding unannounced inspections of centers, group and family homes, the frequency of unannounced inspections is low in Connecticut as compared to other states and is far from national recommendations.

Frequency of Unannounced Random Inspections of Child Care Programs

National Association of Child Care Resource and Referral Agencies recommends quarterly inspections[34]

Caring for Our Children recommends at minimum annual inspections[16]

Connecticut ranks

- 41 out of 50 states for child day care center inspections
- 29 out of 39 states for group day care home inspections
- 31 out of 45 states for family day care home inspections

Currently, Connecticut does not have a system for reporting unannounced licensing inspection data in aggregate form. All inspection reports are filed as paper reports, in filing cabinets at DPH. The data are not entered into a database and no aggregate summary reports of all inspections are completed. In 2006, the Connecticut Early Childhood Education Cabinet was selected to participate in a "Ready by 5" Results-Based Accountability (RBA) Implementation to promote Governor Rell's School Readiness initiative.[35] As part of that initiative, DPH Child Care Licensing set forth goals to establish baseline quality, but the recommended enhanced data system to support the licensing system and generate reports was contingent on additional funding, which has not been provided. In collaboration with DPH Child Care Licensing administrators and with the support of the Children's Fund of Connecticut provided through the Child Health and Development Institute of Connecticut (CHDI), this study was undertaken to provide the first aggregate report of the health and safety status of Connecticut licensed early care and education programs and to address the critical need for annual data analysis to monitor and improve the quality of care.

THE CURRENT STUDY

The purpose of this study was to describe the health and safety status and factors that may influence quality of care in early care and education programs of licensed Connecticut child day care centers/group day care homes and family day care homes, including Head Start and pre-K programs licensed by the Connecticut Department of Public Health. Furthermore, the intent was to create a database for analysis and lay the ground work for system development at DPH. This would also include strategic planning efforts to promote high quality, healthy, safe, and developmentally appropriate early care and education in licensed child day care centers/group homes, family day care homes, Head Start, and pre-K programs. The study specifically addressed the following:

1. The frequency of compliance and non-compliance with regulations as determined by unannounced, random inspections of child day care centers, group homes and family day care homes by DPH licensing specialists.

2. The association of compliance with the following factors:[36]

❖ National Association for the Education of Young Children (NAEYC) accreditation

❖ Source of funding: State-funded child care, Public pre-K (School Readiness), Head Start

❖ Access to a trained child care health consultant (CCHC)[d]

❖ Continuing education of child care providers

❖ Median household income of child care program location

Findings from this study identified health and safety strengths and challenges in Connecticut child day care centers and family day care homes. An overview of sample sizes and important findings are outlined below. Critical non-compliance items are then highlighted for each type of facility by summary charts that follow each overview. The IMPACT continues with a more detailed discussion of the significance of these findings and concludes with a set of recommendations.

IMPORTANT FINDINGS

Child Day Care Centers

❖ The centers in this sample (N=676) represent 41% of Connecticut child day care centers and had a:

- Total licensed capacity of 40,569 children
- Total enrollment on the day of inspection of 19, 899 children (49% of capacity)
- Total licensed capacity for infants and toddlers of 8,549
- Total enrollment on the day of inspection of 4,731 infants and toddlers (55% of capacity)

❖ More than 90% of the centers achieved compliance for 64% of the child day care center regulations required for all programs and 83% of the additional regulations required for programs enrolling infants and toddlers (n=302).

[d] A trained health consultant in this study refers to a registered nurse or advanced practice registered nurse who completed a minimum of 30 hours of continuing education, specifically the Healthy Child Care CT/CT Nurses' Association training for Early Care and Education consultants. The continuing education is based on curriculum developed by the National Training Institute for Child Care Health Consultants at the University of North Carolina, Chapel Hill.

❖ The highest frequencies of regulation **compliance** were in the areas of:

- Child Basic Health Needs (e.g., nutrition/rest/space)
- Child Supervision
- Program Documentation
- Educational Program
- Infant-Toddler Outdoor Safety and Development

❖ The highest frequencies of regulation **non-compliance** were in the areas of:

- Outdoor Safety
- Indoor Safety
- Indoor Health
- Documentation of Child and Staff Health Records
- Emergency Preparedness
- Medication Administration

❖ State-funded centers had more regulation **non-compliance** as compared to NAEYC accredited, School Readiness and Head Start programs as well as all centers combined.

❖ 67% of centers reported administering medications at the time of inspection and 74% had a trained child care provider. Non-compliance for the six regulations pertaining to medication administration safety for programs administering medications ranged from 12%-41%.

❖ Characteristics of child care centers that were **positively** associated with compliance with regulations included the following:

- **School Readiness** programs and Outdoor Safety regulations
- **Trained Child Care Health Consultant** in programs enrolling children under three years and Medication Administration regulations
- **Median income of center location** and Indoor Safety, Indoor Health, Child/Staff Health Record Documentation, Infant-Toddler Indoor Safety regulations
- **Staff Continuing Education** and Indoor Safety, Indoor Health, Emergency Preparedness, Child/Staff Health Record Documentation, Medication Administration, Infant-Toddler Indoor Health regulations

❖ Characteristics of child care centers that were **negatively** associated with compliance with regulations were as follows:

- **NAEYC accreditation** and Infant-Toddler Indoor Health regulations
- **State-Funded centers** and Outdoor Safety regulations

❖ The proportions of regulation compliance were different by licensing specialists on four subscales: Outdoor Safety, Indoor Safety, Indoor Health, and Child/Staff Documentations. Specifically, the licensing specialists were not consistent in their appraisal of regulations included in those subscales.

❖ Actual incidence of high frequency, non-compliance items is detailed in the table that follows.

Child Day Care Centers Regulation Non-Compliance	
Outdoor Safety	
Playground Hazards	48%
Shock Absorbing Surface	22%
Peeling Paint Observed	10%
Indoor Safety	
Hazards	38%
Hot Water Maximum 115 degrees	34%
Equipment Non-toxic/Safe	33%
Hazardous Substances Locked	28%
Lighting	24%
Lead Test Water	15%
Approved Safety Outlet	13%
Indoor Health	
Premise: Clean/Good Repair	29%
Wall/Ceiling/Floor Clean	27%
Air Temperature	19%
Required Toilet/Sink/Supplies	19%
Documentation	
Staff Health Records	36%
Child Health Records	22%
Staff Continuing Education	19%
Emergency Preparedness	
Fire Marshall Certificate	23%
First Aid Kit	22%
Emergency Plan	17%
CPR Certified Staff	12%
First Aid Staff	10%

Infant-Toddler Regulation Non-Compliance	
Indoor Safety	
Plastic Bags, Balloons, Styrofoam	28%
High Chair Strap	11%
Indoor Health	
Child Care Health Consultant (RN) Log	15%
Diaper Changing Procedure Posted/Followed	14%
Child's Bottle Identified with Name	13%

Child Day Care Centers Medication Administration Regulation Non-Compliance[e] (n=503)	
Approved Written Order	41%
Original Labeled Container	30%
Trained Person	19%
Training Curriculum Outline	18%
Medication Administration Record Form	16%
Medications Locked	12%

Family Day Care Homes

❖ The family day care homes in this sample (N=746) represent 28% of Connecticut family day care homes. The sample included routine inspections (First Inspection n= 594) and re-inspections

(Re-Inspection[f] n=152). Family day care homes had a:

- Total licensed capacity of 3,554 children
- Total enrollment on the day of inspection of 2,121 children (60% of capacity)
- Total licensed capacity for infants and toddlers of 1,756
- Total enrollment on the day of inspection of 679 infants and toddlers (39% of capacity)

❖ More than 90% of the family day care homes achieved compliance for 87% of the 83 required regulations.

❖ The highest frequencies of regulation **compliance** were in the areas of:

- Outdoor Safety
- Indoor Health
- Child Health
- Child Protection
- Development
- Program Documentation
- Parent Interaction

❖ The highest frequencies of regulation **non-compliance** were in the areas of:

- Indoor Safety
- Child, Staff, Family Documentation
- Emergency Preparedness
- Medications
- Qualifications of Provider

[e] Of the 676 inspections, 74% (503) were evaluated for compliance with medication regulations either because the program was currently administering medications or had a past history of medication administration and a trained provider on-site. For additional details on Medication Administration, please see Discussion section.

[f] Re-inspection findings were included in Family Day Care Home results due to the large percentage (20%) of re-inspections in this sample. Results of first inspections of family day care homes that were re-inspected were not included in the data. Only 5% of the center data included re-inspections and findings were not included in this analysis. According to DPH personnel, re-inspections are conducted based on the discretion of the licensing specialist and/or supervisor and the nature of the violation (generally more serious violations, such as access to water), repeated violations, incomplete corrective action plans or plans submitted previously for the same violation.

Actual incidence of high frequency, non-compliance items is detailed in the table that follows.

- ❖ 21% of Family Day Care Homes reported administering medications. Non-compliance for the two regulations[g] pertaining to medication administration safety for programs administering medications ranged from 11%-12%.
- ❖ Family Day Care Homes in the re-inspection sample were located in areas with lower median household income ($34,715) than the first inspection sample ($57,118).

The proportions of regulation compliance were different by licensing specialists on three subscales: Indoor Safety, Emergency Preparedness, and Documentation for Child, Staff, and Family for inspections but not re-inspections. Specifically, the licensing specialists were not consistent in their appraisal of regulations included in those subscales. Fewer licensing specialists were responsible for re-inspections and their reporting was consistent.

Family Day Care Homes, First Inspection Regulation Non-Compliance	
Indoor Safety	
Hot Water Maximum 120 degrees	35%
No Hazards	29%
No Poisons	16%
Protection from Pets	14%
Documentation for Child, Staff, and Family	
Child Health Records	43%
Immunizations	32%
Staff Medical Statement/TB Test	16%
Enrollment Form	12%
Emergency Preparedness	
Emergency Permission	27%
Fire Drills Quarterly	12%
First Aid Supplies	11%
First Aid Certificate	10%
Medication Administration[h]	
Certification	12%

Family Day Care Homes, Re-Inspection Regulation Non-Compliance	
Indoor Safety	
No Hazards	24%
Working Telephone	15%
Smoke Detectors	15%
Hot Water Temperature, Maximum 120 degrees	13%
Fire Extinguisher	13%
Protection from Pets	11%
Documentation for Child, Staff, and Family	
Child Health Records	37%
Immunizations	30%
Enrollment Form	20%
Staff Medical Statement/TB Test	13%
Emergency Preparedness	
Emergency Permission	32%
First Aid Supplies	16%
First Aid Certificate	11%
Evacuation Plan	10%
Qualifications of Provider	
Awareness/Understanding of Regulations	10%

[g] Family Day Care Homes and Day Care Centers have identical regulations for medication administration. However, the inspection form for Family Day Care Homes includes only two items rather than the six items on the Child Day Care Center inspection form; thus allowing less specificity for analysis.

[h] Of the 584 first inspections, 21% (124) were evaluated for compliance with medication regulations. For additional details on Medication Administration, please see Discussion section.

DISCUSSION

The primary purpose of child care regulations is to ensure a minimum level of healthy and safe care below which programs should not operate.[16] Parents report that healthy and safe child care is their most important goal when entrusting their children's care to providers.[10] Also, frequency distributions and discussion of regulation "subscales" can often mask important, day-to-day realities in child day care centers and family day care homes that are contained in verbatim transcriptions of entries from the individual inspection reports reviewed in this study. Insets are provided with examples of relevant entries in order to lend specificity and urgency to the study's findings.

Healthy Environment

The regulations regarding a healthy environment are critical for reducing the incidence of infectious diseases in child care.[37] Respiratory and diarrheal illnesses are especially common and can lead to acute short term or more serious illnesses requiring hospitalization.[38] Annually, 4-7 million child care related illnesses occur, largely respiratory and diarrheal illnesses, among 7 million children under five years of age enrolled in early care programs; two to three times the rate of children not participating in care. Of those ill children, 400,000 required consultation with a health care provider and/or hospitalization. Moreover, illnesses commonly spread to child care staff, families, and household contacts, which in turn lead to absenteeism and lost productivity. Parents miss an average of one to four weeks per year of work due to children's illnesses or injuries in child care settings.

Regulations related to a healthy environment for the child care centers for which there was high non-compliance include: *staff health records, child health records, premise clean/good repair*, *wall ceilings floors clean,* and *required toilets/sinks/supplies,* and for infants and toddlers: the requirement for a health consultant (*RN log on-site*) and *diaper changing procedure posted/followed*. The presence of a registered nurse (RN), health consultant, or other health professional can improve compliance if the health consultant is trained and funded to deliver services.[39]

Child Day Care Centers

- Staff health records: "3 out of 7 staff health form[s] and TB test not available"
- Child health records: "5 incomplete, 2 without health records, 1 with incomplete immunizations, 2 expired health forms [required annually]"
- Diaper changing procedure: "Staff no handwashing between diaper changing between kids (one wash cloth to wash kids' hands and face)"

Family day care homes have separate regulations and inspection items that differ substantially from child day care center inspection items. For family day care homes the frequency of non-compliance was high for the following regulations *immunizations, child health record and staff medical statement/TB test*.

Safe Environment

Safety includes a broad range of categories including outdoor and indoor safety, medication administration and emergency preparedness.

Outdoor Safety

Playgrounds and outdoor space provide important opportunities for physical activity and learning; however, 90,000 injuries are sustained each year by children under six years of age.[40] Most injuries, such as fractures, concussions, dislocations, and amputations, occur when children fall from playground equipment or are injured due to entanglements, protrusions, hazards and entrapments. Approximately a quarter of child care center injuries occurred in one study due to inadequate playground surface.[41] Regulations related to safe outdoor environment for child care centers for which there was high non-compliance include: *playground hazards* and *adequate shock absorbing surface*. For family day care homes, the single regulation *safe, sufficient outdoor space* had high compliance.

Child Day Care Centers

- "Beehive with bees in basketball hoop; screw ends exposed on gates and fencing; animal feces in under three (years of age) area"
- "Air conditioning units accessible; extremely hot metal slide, tree branches at eye level, rotting apples accessible throughout"
- "See-saw not anchored, slides not anchored, basketball hoops not anchored"

Indoor Safety

Unintentional injuries are common among children under six years of age. Indoor injury risks in child care programs include airway obstruction and poisonings. Young children, particularly infants and toddlers are at high risk of injury because they explore the world by placing any object within reach in their mouth and they have small airways. Sixty percent of deaths from unintentional injury, largely due to suffocation, choking on objects or food, or strangulation, are in children under one year of age.[42] According to the National Safety Council, 50,000 children under four years of age are injured each year through unintentional poisonings, most commonly from medications and household products.[43] According to the American Burn Association, the most common type of burn among children under 5 years is scalds, which accounts for over 5,000 cases annually.[44] Gilliam reported the findings of the Early Childhood Environmental Rating Scale-Revised scores of 123 School Readiness classrooms in South Central Connecticut and found 34% of the classrooms indoors and outdoors having at least one major safety hazard.[45]

Findings in this study revealed that among child day care centers, *indoor hazards* was the second most frequently cited regulation in all programs and more frequent in programs enrolling children under three years. *Hot water temperature maximum 115 degrees* was the third most frequent violation. *Plastic bags, balloons and styrofoam* items potentially causing choking or suffocation and a regulation specific for infant-toddler programs, was the most frequently cited regulation in infant-toddler classrooms.

Child Day Care Centers

- "Plastic bag accessible in infant dresser drawer, cubby, and under diaper sink"
- "Accessible toxic plants, and blind cords"
- "2 dangling electric cords, 2 staff handbags in cubbies accessible to children (handbags may have medications, makeup/poisons, etc.)"
- "Water temp 124-136 degrees"; "water temp in child lavatories 160"
- "TV not secure, computer monitor and tower not secure, 2 shelves not secure"
- "Observed unlocked toxins such as disinfectant spray, Tilex®, paint, etc. in kindergarten, preschool, toddler, infant rooms"

Family Day Care Homes

- "Water temperature 135.5"; "water temperature 143.8"
- "Toxic cleaning supplies accessible"
- "Bookcase/TV not secured"

In family day care homes, *hazards* and *poisons* were among the most frequent indoor safety non-compliance items. *Hot water temperature maximum 120 degrees* was the second most frequently cited regulation.

Medication Administration

The frequency of medication errors resulting in injury and deaths in hospitals has been widely publicized by the Institute of Medicine.[46] Children, whose small size creates a narrower margin of error, and whose limited ability to communicate and question potential errors, are especially at risk. Less is known about medication errors in outpatient settings. A study of pediatric primary care practices, Kaushal, et al reported that adverse drug events occurred in about 16% of children treated with medications.[47] The process of ordering and administering medications has multiple steps: writing the prescription, transmitting the order to the pharmacy, dispensing, administering and monitoring. Administration of the medication accounted for most of the preventable adverse drug events (70%) and was most commonly due to parent error. It can be extrapolated that if parents, who are not trained to administer medications, account for most of the preventable adverse drug events, then child care providers who are not adequately prepared to administer medications may do the same.

Findings in this study revealed high frequencies of medication non-compliance in child day care centers administering medications at the time of the inspection on the following items: *approved written orders, original labeled container, trained person, training outline, medication administration form* and *medications locked.* Programs that were compliant with continuing education requirements had lower rates of non-compliance with medication administration regulations. Programs enrolling children under three years of age that had a trained child care health consultant exhibited lower rates of non-compliance compared to all programs across all items. The frequency of medication administration non-compliance in family day care homes administering medications at the time of inspection was lower than centers. Although regulations for medication administration in family day care homes are identical to child day care center regulations, there are six items on the center inspection form and two items on the family day care home inspection form, thus allowing less specificity in analyzing non-compliance. DPH child care regulations require that a record of all injuries or accidents that result in injury to a child be kept for two years in programs and should include details of the injury and whether a child was transported to a medical facility or physician's office.[28] Medication error is not explicitly listed among injuries, and there is no system in place to validate that all injuries are reported. DPH does reserve the right to halt administration of medications in a program if there is concern about a child's health, safety or welfare. The investigators were unable to determine from these reports if medication errors occurred or if injuries were sustained.

Child Day Care Centers

- "3 Albuterol®, EpiPen® and Motrin® without written orders"
- "Med in infant room not labeled"
- "No EpiPen® trained person with EpiPens® on-site"
- "Controlled drug left out in infant room"

Family Day Care Homes

- "Provider occasionally gives asthma meds – not certified"
- "Child who requires EpiPen® present at day care – not certified"

While Connecticut has strong medication administration child care regulations, Connecticut has not provided the resources to child care programs to ensure safe medication administration practices. In other states, such as New York, Virginia, Colorado, and North Carolina, best practice medication administration training is designated and widely disseminated. In Connecticut, the best practice Healthy Child Care Connecticut (HCCCT)/CNA Medication Administration Training program for Child Care Providers was developed through grants from USDHHS MCHB, through DPH, USDHHS CCDBG through DSS, and CHDI and is available through CNA. However, it has not been widely

disseminated. The program has not been designated as the state approved program as in other states, nor have funds been allocated to support the system and training of child care providers. The trained child care health consultants in this study utilized the HCCCT/CNA Medication Administration Training program to prepare child care staff for medication administration.

Medication administration is critical for inclusion of children with special health care needs, that is, chronic physical, behavioral, developmental, or emotional conditions. According to the National Survey of Children with Special Health Care Needs, 9% of children under six years of age have special health care needs and of those 86% require medications.[48] Findings from this study revealed that 67% of the centers were administering medications at the time of the inspection, and 74% of the centers had a trained person on-site. In contrast, only 21% of the family day care homes were administering medications at the time of the inspection. On average, centers are three times more likely to administer medications than family day care homes. In a telephone survey of 108 Connecticut child care center administrators, Catenzaro reported that 66% of the respondents reported administering some medications, but only 50% elected training in automatic injectable emergency medications for severe food or insect allergies.[49] Furthermore, child care administrators reported several barriers to medication administration training: fear of liability, confusion about child care regulation requirements, and training cost and availability. As children's health status does not vary across settings, more research is needed to explain the findings of this study and uncover potential barriers to medication administration in family day care homes.

Emergency Preparedness

Emergency preparedness is an essential component of child care safety and increases the likelihood of survival in the event of an unanticipated, possibly life-threatening event. Connecticut child care regulations require that providers take a first aid course and at least one person on-site must be first aid and CPR trained.[20] Many states, such as North Carolina, Iowa, and Connecticut, as well as Head Start have developed curriculum to specifically address emergency preparedness for child care providers.[50,51,52,53] Findings in this study revealed non-compliance in centers with *fire marshal certificate posted*, *first aid kit*, *emergency plan posted*, *CPR certified person* and *first aid certified person*. The absence of an emergency plan or one that is not posted are both considered circumstances for non-compliance. In family day care homes, the most frequently cited items pertaining to emergency preparedness were: *emergency permission, fire drills quarterly, first aid supplies, smoke detectors*, *first aid certificate*, and *emergency telephone numbers*.

Child Day Care Centers

- ❖ "No medical and evacuation emergency plans"
- ❖ "No posted plans for fire, weather, evacuation or medical emergencies"
- ❖ "No CPR or first aid certified staff for all operating hours"

Analysis of Program Characteristics and Compliance Performance

To make these findings more actionable, the study performed comparative analysis across not only facility types but also using both characteristics of the programs within the facility and characteristics of the facility's location. Using Latent Class Analysis (LCA) and a logistic model (see Appendix for a summary of the model's predictive values) this analysis was able to identify those characteristics that might have a positive or negative influence on high versus low compliance outcomes.

Program Characteristics and Non-compliance

As noted, the investigators grouped center regulation items within subscales, such as outdoor safety and emergency preparedness, and identified areas of strengths and challenges. A sum total of regulations for which there was ≥ 10% non-compliance for all subscales including medication administration and infant-toddler items revealed that State-funded programs had higher rates of non-compliance with regulations as compared to all others (see Table 1).

Table 1: Total Number of Subscale Non-compliant Regulations ≥ 10% By Category of Regulations and Type of Program

Category of Regulations	All programs (n=676)	Head Start (n=20)	State Funded (n=16)	NAEYC accredited (n=107)	School Readiness (n=61)	Programs-no under 3 yrs (n=366)
Required for all programs including medication administration **All Programs**						
Total	29	29	32	25	23	29
Required for all programs including medication administration **Programs enrolling under 3 yrs**	All programs (n=307)	Head Start (n=7)	State-funded (n=8)	NAEYC accredited (n=55)	School Readiness (n=27)	CCHC trained (n=45)
Total	24	26	34	21	22	22
Infant-Toddler regulations **Programs enrolling under 3 yrs**	All programs (n=307)	Head Start (n=7)	State-funded (n=8)	NAEYC accredited (n=55)	School Readiness (n=27)	CCHC trained (n=45)
Total	5	5	10	4	3	5

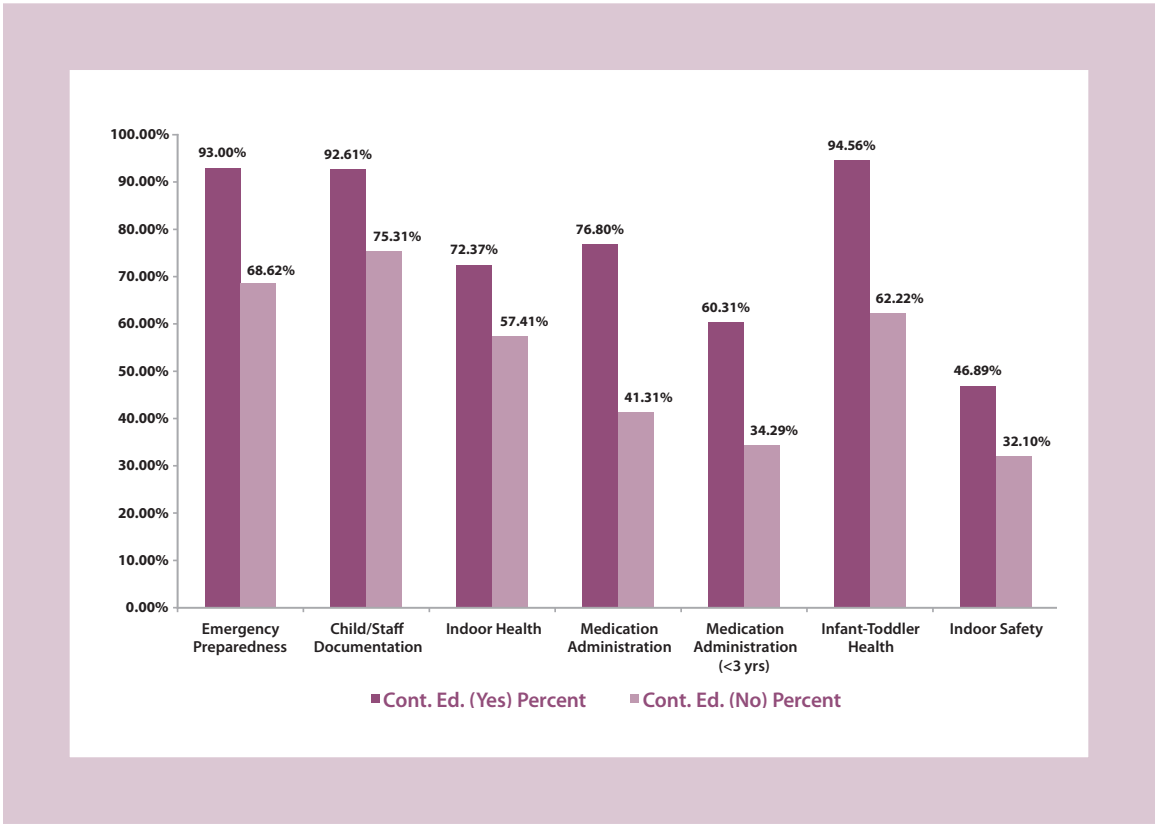
Program Characteristics Associated with Compliance

For centers, the investigators explored a relationship between covariates including Head Start, State-funded, NAEYC accredited, School Readiness, continuing education, a regulatory requirement, and household median income of facility's zip code as well as the likelihood of compliance with regulations through a statistical analysis model. For regulations specific to infants and toddlers, Head Start and State-funded programs were removed because of small cell sizes. Continuing Education and CCHC trained, CCHC (RN log on-site), were added to the model. Nine subscales were included: Indoor Health, Indoor Safety, Child/Staff Documentation,

Outdoor Safety, Emergency Preparedness, Infant-Toddler Indoor Safety, Infant-Toddler Indoor Health, Medication Administration and Medication Administration for Programs Enrolling Children under Three Years.

Findings revealed that Continuing Education was the most frequent predictor overall of compliance with regulations and statistically significant in seven of the nine subscales. Figure 1 shows the relative difference between the percentage of "high compliance" facilities based on the presence of a compliance with continuing education (see Figure 1):

Figure 1: Continuing Education Associations with Selected Subscale Compliance



The clear and consistent positive association between Continuing Education and regulatory compliance for almost all the subscales supports the importance of ongoing training to improve the health and safety of early care and education programs.

As noted above, State-funded tended to have higher rates of non-compliance. This was also true of the important Outdoor Safety subscale whereas the presence of a School Readiness program was positively associated with compliance (see Figures 2 & 3). Some School Readiness programs are located in public schools where more resources may be available to ensure outdoor safety. Additional research is needed to investigate the association between location of School Readiness programs and compliance with Outdoor Safety.

Figure 2: Compliance with Outdoor Safety: State-funded Child Centers

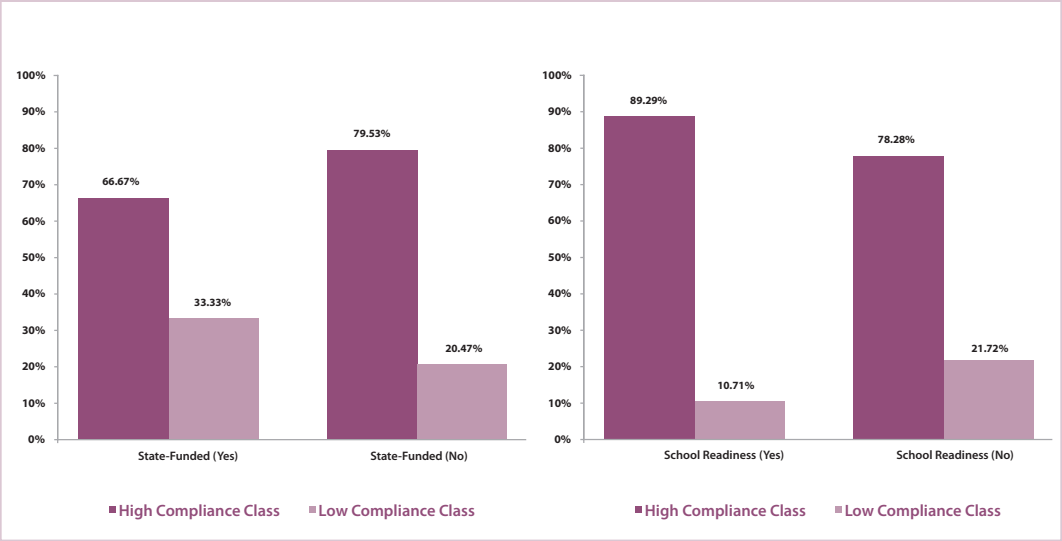
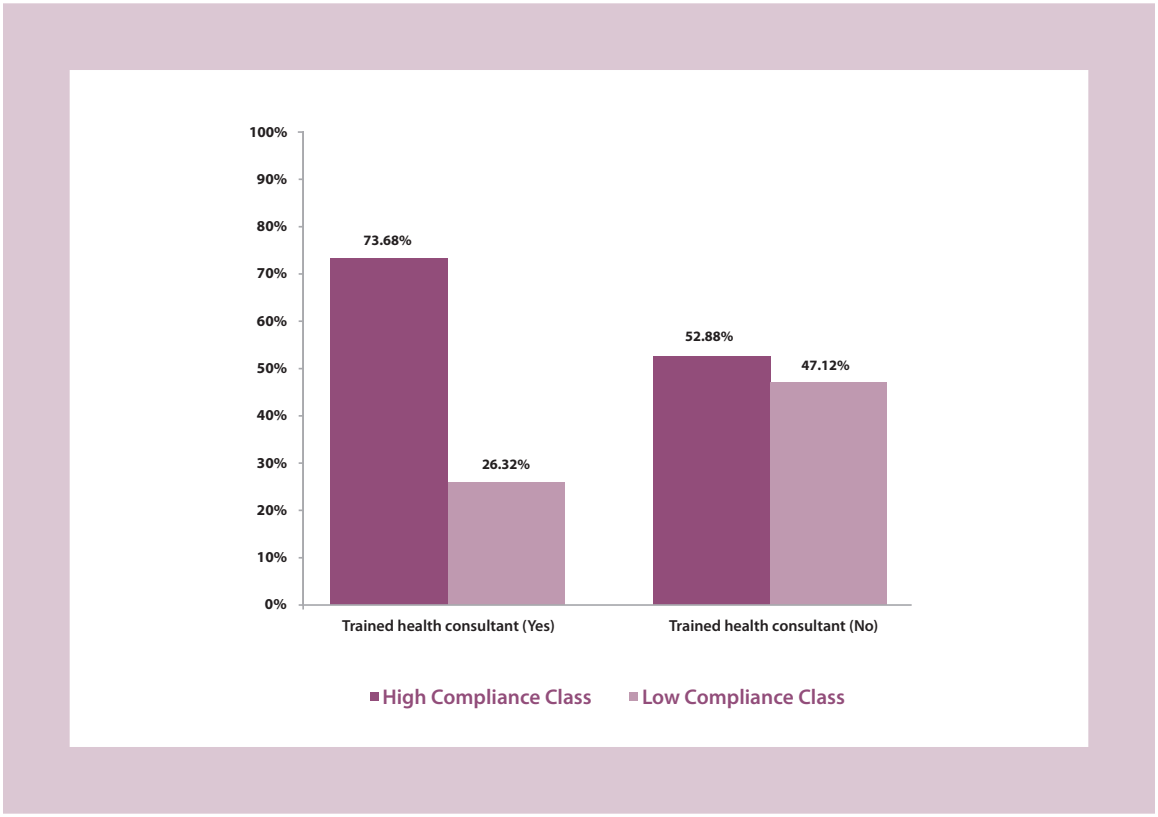


Figure 3: Compliance with Outdoor Safety: School Readiness Program

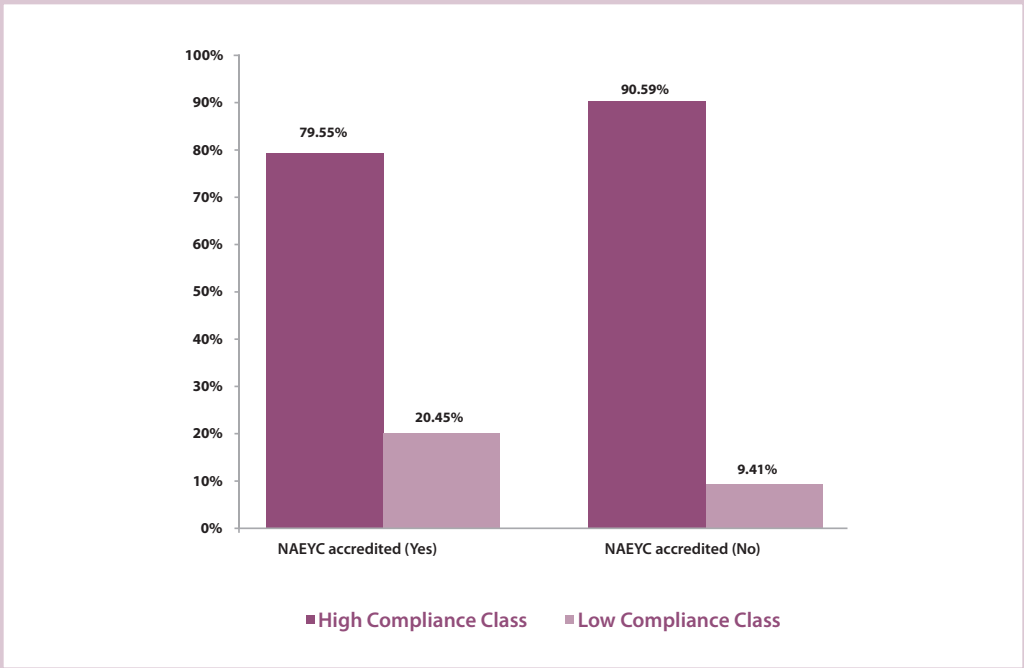
Child Care Health Consultant (CCHC) trained was positively associated with Medication Administration in Programs Enrolling Children under Three Years (see Figure 4). This finding is of particular interest as health consultants were not specifically required by regulations at the time of data collection to review medication practices.[28] Furthermore, as noted previously, Connecticut does not fund health consultation or a coordinated system of consultation. New regulations require greater surveillance of medication administration practices by CCHCs.[20]

Figure 4: Compliance with Medication Administration by Trained Health Consultant: Programs Enrolling Under 3 Years of Age



Finally, NAEYC accredited programs were negatively associated with regulation compliance for Infant-Toddler Indoor Health (see Figure 5). The investigators are unable to interpret this important finding, which requires additional research.

Figure 5: Compliance with Infant-Toddler Health by NAEYC Accreditation: Centers Enrolling Infants-Toddlers



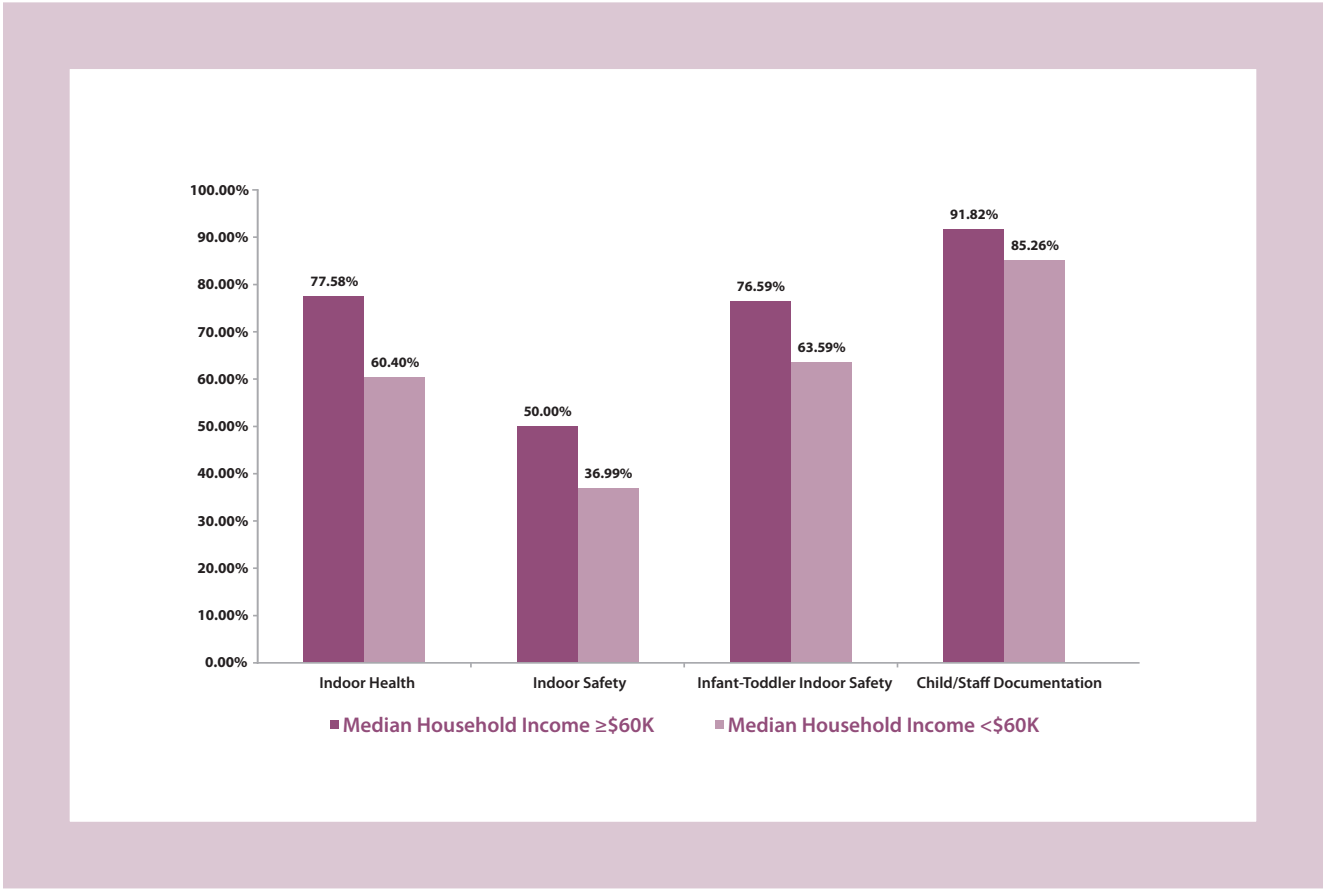
Income Level of Facility Location and Compliance with Regulations

Analyses of income level of facility's zip code for centers and family day care homes revealed that all programs as well as NAEYC accredited centers are distributed across all income levels.[i] This analysis was based on the assumption that zip code is reflective of income. Although the median household income of a facility's zip code is not always reflective of the resources of the facility, the authors thought it a reasonable proxy. As expected, the majority of School Readiness, Head Start, and 43% of State-funded centers are located in areas with the lowest median household income and almost all of these programs are located in first and second quartile median income areas.

[i] See full report for actual distribution of programs by income levels.

Household median income of the facility's zip code was significant for four of the subscales (see Figure 6). The chart comparing the relative percentage of high compliance facilities between zip codes with median annual household income level above or below $60,000 indicates that location in a low income zip code is associated with poor quality.

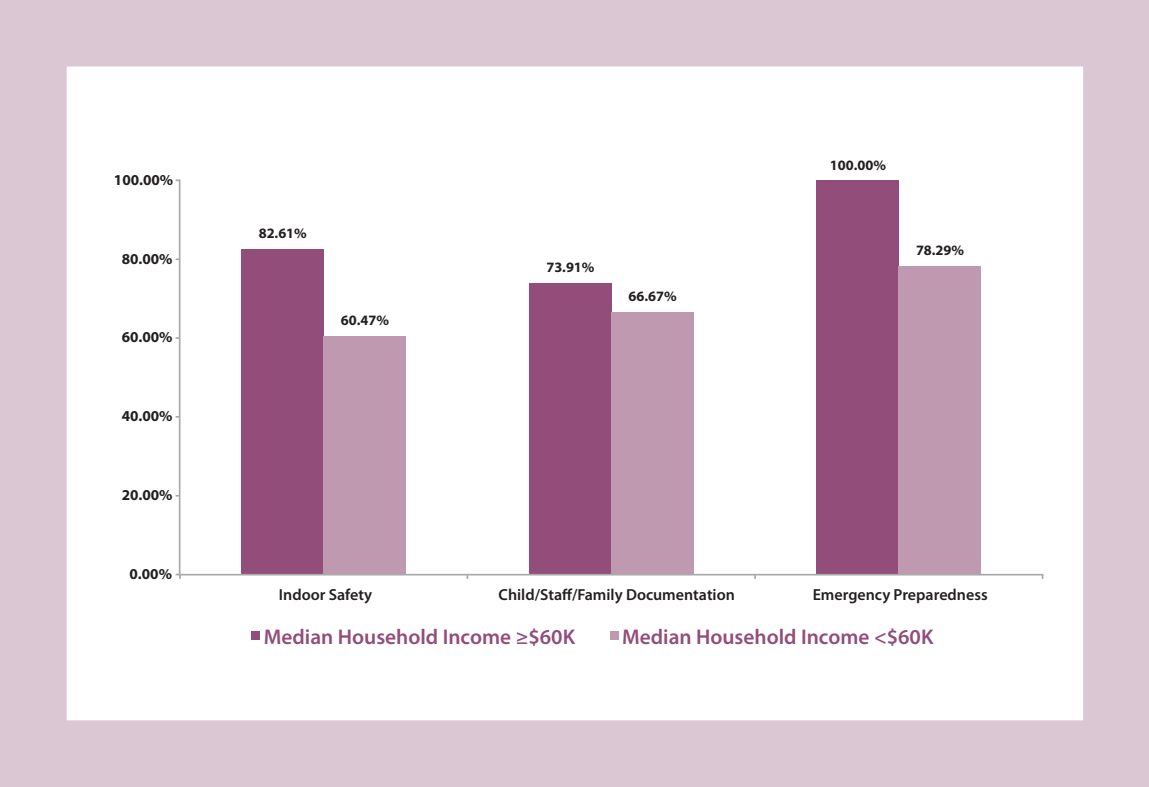
Figure 6: Median Income Levels Associated with Selected Subscale Compliance (Child Care Centers)



More of the family day care homes (80%) included in the re-inspection data were in the lowest quartile of median household income compared to the family day care homes in the first inspections data (27%).

More significantly, re-inspection data of these facilities indicated a clear and consistent association between low income and lower percentages of facilities that were compliant with the indoor safety, child/staff/family documentation and emergency preparedness subscales, with the larger differences evident on the safety and emergency preparedness dimensions (see Figure 7).

Figure 7: Median Household Income Associated with Selected Subscale Compliance (Family Day Care Home Re-Inspections)



Detailed findings in this study also reveal that the re-inspection homes had higher rates of non-compliance with regulations that may be linked to income of the family day care home's household, specifically, a working telephone, smoke detectors and fire extinguishers.

Licensed Capacity and Enrollment

One of the most unexpected findings in this study was the contrast between licensed capacity and children present on the day of inspection. In centers, approximately 50% of all children and 50% of infants and toddlers were present as compared to licensed capacity. In family day care homes, about 60% of all children and 40% of infants and toddlers were present as compared to the licensed capacity of the program. This finding raises many questions. Are the programs filled to capacity? If not, what barriers limit full participation? Are there seasonal variations in enrollment? To what extent do infectious diseases and injuries influence children's attendance? If medications are not administered, are children with chronic illnesses unable to attend due to illness? Do programs intentionally limit enrollment in order to ensure higher teacher to child ratios, that is, more teachers per child, and better quality of care? Further research would be needed to provide the answers.

Variations in Reporting Compliance Across Licensing Specialists

The findings of this study are based on the reports of licensing specialists; however, analyses revealed significant variation among specialists, that is, they differed in their reporting of regulation compliance.[j] Only two subscales, medication administration for programs enrolling children under three years of age and emergency preparedness, did not require controlling for the random effect of the licensing specialist and therefore demonstrated consistency among licensing specialists. Consistency in reporting compliance and non-compliance among licensing specialists is essential to ensure reliability of the data and findings. Further, the more practical implication of consistent reporting is standardized and fair licensing experience for providers.

Inspections and Data Systems

Across the US, states either have developed or are in the process of developing data systems to monitor child care health and safety through inspections and create summary reports for strategic planning. For example, Ohio statute requires an annual child care licensing report that summarizes inspection findings; specifically, regulatory violations and actions taken by the department.[54] In Ohio, centers are inspected at least twice a year and one of those inspections must be unannounced. Inspection information includes routine inspections and complaints and is entered into a mobile software application that allows the

[j] See full report for statistical analyses and details.

licensing specialist to generate a report on-site, which is then entered into a database and analyzed annually. The most frequently cited regulatory violations in Ohio during 2005 and 2006 were in the areas of safe indoor environment, sanitary indoor environment, emergency health care plans, disease management, child abuse prevention training, and medication administration. Findings from this first Connecticut study revealed many of the same violations noted in Ohio. However, Connecticut has no data system, mandatory requirement for annual reporting, or strategic plan to address these serious health and safety risks.

RECOMMENDATIONS

1. Program Improvement

- Given the association between compliance with regulations and continuing education of the child care providers, continuing education in the form of training and technical assistance opportunities, provided by health consultants or others, should be made available to child care staff at all levels.

- Continuing education efforts should capitalize on Connecticut's statute that requires health consultants provide guidance and health education to child care programs and options should be designed to financially support this presently unfunded mandate and support a statewide system of health consultation that includes training and mentoring of health consultants and develops health consultation initiatives.

- Health and safety information and resources from DPH and other reliable sources should be more widely disseminated via licensing specialists, health consultants, child care resource and referral, professional organizations, family provider networks, and state and professional organization websites.

2. Medication Administration Training Program

- DPH Child Care Licensing should designate and support a best practice medication administration training program for all child care providers to improve compliance, reduce the probability of medication errors, and promote access to training and thus inclusion of children with special health care needs.

3. Licensing Requirements and Training of Licensing Specialists

- The frequency of unannounced visits to child day care centers/group day care homes and family day care homes should be increased as recommended by national organizations. At minimum, unannounced visits should be conducted annually to all child care programs.

- The variability of licensing specialists' findings should be decreased through development of explicit written guidelines, increased training, and measurement of inter-rater reliability.

4. Electronic Data System

- An annual report of aggregate findings of both routine and complaint inspections of child day care centers/group homes and family day care homes should be instituted beginning in 2010, be available in the public domain, and easily accessible for parents.

- In order to expeditiously create an accurate annual status report licensing inspection data should be collected electronically or via a digital form.

- The type of program, such as Head Start, State-funded, School Readiness, NAEYC accredited, and other critical variables such as trained health consultants should be entered separately into an electronic database of inspection reports in order to monitor and assess ongoing program performance and associations with performance of regulatory compliance.

- An annual report of findings of routine and complaint inspections of child day care centers/group day care homes and family day care homes should be required in statute to ensure that the annual report will not be subject to fiscal variability.

CONCLUSION

This study is the first to examine the health and safety status of Connecticut early care and education programs including child day care centers, group day care homes, and family day care homes based on routine, unannounced inspections by Connecticut Department of Public Health licensing specialists. In one sense, a comprehensive review of inspection data – despite some alarming findings concerning potentially unsafe or unhealthy conditions – tells a positive story insofar as Connecticut has a process for periodically identifying situations requiring remedial action. However, it is uncertain what the criteria are for re-inspections and the extent to which remedies are put in place.

On a less positive note, a review of how the data are collected, managed, analyzed and acted upon suggests that the inspection process itself would benefit from further examination. According to the National Association of Child Care Resource & Referral Agencies, Connecticut ranks 30th in the nation with regard to child care regulations and oversight.[34] While regulations are strong (ranking 11th) oversight is weak (49th) including inspections less frequently than once a year, inadequate educational requirements for licensing specialists, directors and staff, and reports of routine and complaint inspections not available on-line. Finally, analysis of comparative compliance performance relative to the programmatic or demographic characteristics of the facilities in the study raised a number of policy-level questions regarding equitable allocation of support resources, the adequacy of continuing education investments and the utility of certain accrediting organizations.

The findings in this study revealed strengths and challenges and provide important implications for the Departments of Public Health, Education and Social Services, Head Start, policy makers, providers and parents. To process the findings of this study, an advisory committee of early care and education health experts should be convened by the Connecticut Department of Public Health in collaboration with providers, advocates, parent representatives, the investigators and health

professional organizations including the Connecticut Nurses' Association and Connecticut Chapters of the American Academy of Pediatrics, National Association of Pediatric Nurse Practitioners, and the American Academy of Family Physicians. The Committee should review the findings with DPH Child Care Licensing, SDE, DSS, and Head Start to develop a strategic plan for recommendations and implementation to improve the health and safety of all Connecticut early care and education programs and thus the health and safety of Connecticut's children. Moreover, the level of effort required to aggregate, transform and analyze just over two years' worth of inspection data on a one-time basis strongly suggests that an essential component of any plan is the creation of a usable electronic database if Connecticut hopes to sustain progress on an issue as important as the health and safety of children entrusted to its day care facilities.

Appendix

Summary of Significant Characteristics Predicting Subscale Compliance

Subscale	Significant Characteristics	Odds Ratio	95% CI	P-value
Outdoor Safety	School Readiness	3.11	1.00, 9.63	.0496
	State-funded	0.21	0.04, 1.06	.0589
Indoor Safety	Continuing education	2.35	1.42, 3.89	.0009
	Median Income per $10K	1.14	1.04, 1.25	.0044
Indoor Health	Continuing education	2.32	1.39, 3.88	.0014
	Median Income per $10K	1.24	1.10, 1.39	.0003
Emergency Preparedness	Continuing education	5.52	3.33, 9.13	<.0001
Child/Staff Documentation	Continuing education	4.45	2.39, 8.27	<.0001
	Median Income per $10K	1.21	1.04, 1.40	.0146
Medication Administration	Continuing education	4.32	2.64, 7.09	<.0001
Medication Administration Programs enrolling under 3 years	Trained health consultant	2.41	1.08, 5.35	.0313
	Continuing education	2.88	1.32, 6.29	.008
Infant-Toddler Indoor Safety	Median Income per $10K	1.28	1.01, 1.64	.0422
Infant-Toddler Indoor Health	Continuing education	18.21	6.24, 53.17	<.0001
	NAEYC accredited	0.12	0.04, 0.39	.0005

All characteristics with the exception of State-funded (Outdoor Safety) and NAEYC accredited (Infant-Toddler Indoor Health) were positively associated with compliance.

References

1 Federal Interagency Forum on Child and Family Statistics. (2006). Retrieved May 25, 2007 from: http://www.childstats.gov/americaschildren/pop8.asp

2 Oliveira, P. (2007). *Beyond child day care centers: Infant and toddler child care.* New Haven, Connecticut: Connecticut Voices for Children.

3 Early Childhood Research Council Connecticut Appropriations Committee, (2007). Connecticut Appropriations Committee Results Based Accountability Pilot Project, Phase II. Retrieved on August 27, 2007 from http://www.ecpolicycouncil.org/feb-13-07.php

4 Bradley, R.H. & NICHD Early Child Care Research Network (2003). Child care and common communicable diseases in children aged 37-54 months. *Archives of Pediatrics and Adolescent Medicine, 157 (2)*: 196-200.

5 Waibel, R. & Misra, 2003. Injuries to preschool children and infection control practices in child care programs. *Journal of School Health, 73 (5):* 167-172.

6 Ramler, M, Nakatsukasa-Ono, W., Loe, C., & Harris, K. (2006). *The influence of child care health consultants in promoting children's health and well-being: A report on selected resources*. Newton, MA: EDC & Oakland, CA: CHT Resource Group.

7 Williams, E.G. & Sadler, L.S. (2001). Effects of an urban high school-based child care center on self-selected adolescent parents and their children. *Journal of School Health (71) 2*: 47-52.

8 Dworkin, P., Honigfeld, L. & Meyers, J. (2009). A framework for child health services: Supporting the healthy development and school readiness for Connecticut's children. Farmington, CT: The Child Health and Development Institute of CT, Inc.

9 Reynolds, A.J., Temple, J.A., Ou, S., Robertson, D.L., Mersky, J.P., Topitzes, J.W., & Niles, M.D. (2007). Effects of a school-based, early childhood intervention on adult health and well-being. *Archives of Pediatrics and Adolescent Medicine.* Retrieved on September 20, 2007 from http://archpedi.ama.assn.org/cgi/content/full/161/8/730.

10 National Association of Child Care Resource & Referral Agencies. (2006). Parents' perceptions of child care in the United States: NACCRRA's National Parent Poll. Retrieved on August 28, 2007 from: http://www.naccrra.org/policy_poll.php.

11 Oshyn, K. & Newland, L. (2005) The Century Foundation's Security & Opportunity Agenda: *Promoting school readiness through universal preschool*.

12 Shonkoff, J.P. & Phillips, D. A. (Eds). (2000). *From neurons to neighborhoods: The science of early childhood development.* Washington, D.C.: National Academy Press.

13 Barnett, W.S. (1998). Long term effects on cognitive development and school success. In W.S. Barnett & S.S. Boocock (Eds.), *Early care and education for children in poverty: Promises, programs, and long term results* (pp 421-443). New York, NY: Guilford Press.

14 Campbell, F.A. & Ramey, C.T. (1994). Effects of early intervention on intellectual and academic achievement. *Child Development, 65*, 684-698.

15 Schweinhart, L.J., Barnes, H.V., Weikart, D.P., Barnett, W.S. & Epstein, A.S. (1993). Significant benefits: The High/Scope Perry Preschool study through age 27. *Monographs of the High/Scope Educational Research Foundation, 10.*

16 American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care. (2002). *Caring for our children, National health and safety performance standards: Guidelines for out-of-home child care programs (2nd ed.)*, Washington, DC.

17 AAP. (2004). *Telling the Healthy Child Care America Story*. Retrieved on January 12, 2007 from: http://www.healthychildcare.org/pdf/TellingHCCA.pdf.

18 NAEYC Accreditation Criteria Retrieved on November 19, 2000 from: http://www.NAEYC.org/TORCH

19 Connecticut Voices for Children. (2009). The Early Care and Education Budget in Context: An Analysis of the Governor's Proposed FY 2010 Budget. Retrieved on April 17, 2009 from: http://www.ctkidslink.org/pub_detail_440.

20 Connecticut Department of Public Health. (2009). *Group day care homes and child day care homes: Child day care statutes and regulations.* Retrieved on April 20, 2009 from: http://www.dph.state.ct.gov/dph

21 Connecticut State Department of Public Health. (1970). *Child Day Care Center Guidelines.* Hartford, CT.

22 E. Siker, personal communication, March 24, 1998.

23 Retrieved on October 25, 2009 from http://hscccnsc.jsi.com/states/

24 G. Whitney, personal communication, April 17, 2009.

25 P. Anderson, personal communication, April 20, 2009.

26 Helburn, S.W. (Ed.) (1995). *Cost, quality, and child outcomes in child day care centers: Technical report.* Denver: Department of Economics, Center for Research in Economic and Social Policy, University of Colorado at Denver.

27 Environment Rating Scales. (2007). Retrieved on September 9, 2007 from: http://www.pfg.unc.edu/~ecers.

28 Connecticut Department of Public Health. (2007). *Group day care homes and child day care homes: Child day care statutes and regulations*. Retrieved on September 3, 2007 from: http://www.dph.state.ct.us/daycare/statutes.htm.

29 National Child Care Information Center. (2007). *Threshold of licensed family child day care.* Retrieved on September 3, 2007 from http://nccic.acf.hhs.gov/pubs/cclicensingreq/threshold.html.

30 National Resource Center for Health and Safety in Child Care and Early Education. (2007). *Individual states/child care licensure regulations*. Retrieved on September 3, 2007 from http://nrc.uchsc.edu/STATES.states.htm.

31 Macomber, J. E., Adams, G., & Tout, K. (2001). *Who's caring for our youngest children? Child care patterns of infants and toddlers.* Washington D.C.: Urban Institute.

32 Oliveira, P. (2006). *Beyond child day care centers: The essential role of home-based child care in Connecticut's early care and educational system.* New Haven, Connecticut: Connecticut Voices for Children.

33 National Association of Regulatory Administrators. (2005). *The 2005 child care licensing study*. Retrieved on August 28, 2007 from: http://www.nara.affiniscape.com/displaycommon.cfm?an=1&subarticlenbr=104.

34 National Association of Child Care Resource and Referral Agencies. (2009). We can do better: 2009 update: NACCRRA's ranking of state child care center regulation and oversight. Retrieved on June 14, 2009 from http://www.naccrra.org/publications

35 Early Childhood Research Council (2007). Ready by 5 & Fine by 9: Connecticut's Early Childhood Investment Plan, Phase I. Retrieved on August 27, 2007 from: http://www.ecpolicycouncil.org.

36 See full report for details about sources of data.

37 National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network. (2001). Child care and communicable illnesses: Results from the NICHD study of early child care. *Archives of Pediatric and Adolescent Medicine*, *155*: 481-488.

38 National Foundation for Infectious Diseases (2006). Infectious diseases in child care facilities. Retrieved on June 13, 2009 from: http://nfid.org/facthseets/childcare

39 Crowley, A.A. & Kullikowich, J. (2009). Impact of training on child care health consultant knowledge and practice. *Pediatric Nursing, 35(2)*: 93-100.

40 US Consumer Product Safety Commission. (1999). CPSC staff study of safety hazards in child care settings. Retrieved on June 14, 2009 from http://www.cpsc.gov/library/ccstudy.html

41 U.S. Consumer Product Safety Commission (CPSC). CPSC staff study of safety hazards in child care settings. 1999. Available at: http://www.cpsc.gov/library/ccstudy.html. Accessed November 9, 2009.

42 National Safe Kids Campaign. (2003). Report to the nation: Trends in unintentional Childhood Injury Mortality, 1987-2000. Retrieved on June 9, 2009 from http://www.usa.safekids.org/content_documents/nskw03_report.pdf

43 National Safety Council (2009). Children and poisons. Retrieved on June 9. 2009 from: http://www.nsc.org/resources/issues/poisonpretips/children_poison.aspx

44 American Burn Association (2008). *National burn repository 2009 report.* Retrieved on June 10, 2009 from: http://www.ameriburn.org/2009NBRAnnualReport.pdf

45 Gilliam, W.S. (2000). The School Readiness initiative in South Central Connecticut: Classroom Quality, teacher training, and service provision. Retrieved June 14, 2009 from: http://nierr.org/resources/research/CSRI1999.pdf

46 Institute of Medicine (1999). *To err is human: Building a safer health care system*. Washington, D.C.: National Academy Press.

47 Kaushal, R., Goldman, D.A., Keohane, C.A., Christino, M., Honour, M., Hale, A.S., Sigmont, K., Lehmann, L.S., Perrin, J., & Bates, D.W. (2007). Adverse drug events in pediatric outpatients. *Ambulatory Pediatrics, 7*: 383-389

48 US DHHS, Health Resources and Services Administration. (2006). National Survey of Children with Special Health Care Needs Chartbook 2005-2006. Retrieved on June 11, 2009 from: http://mchb.hrsa.gov/cshcn05/MCO/intro.htm

49 Catenzaro, S.A. (1999). Issues and barriers to medication administration in child care centers. Unpublished manuscript. New Haven: CT: Yale University School of Nursing.

50 North Carolina Division of Child Development. (2007). Emergency preparedness and response in child care. Retrieved on June 13, 2009 from: http://ncchildcare.dhhs.state.us.pdf

51 Iowa State University Extension (2006). Emergency preparedness for child care centers and home care providers. Retrieved on June 13, 2009 from: http://www.extension.iastate.edu/cyfar/cynet.emerg

52 Connecticut Department of Public Health. (2009). *Emergency plans, preparedness, and response.* Retrieved on June 13, 2009 from: http://www.dph.state.ct.gov/dph/cwp/view.

53 US DHHS, Administration for Children and Families. (2009). Emergency preparedness. Retrieved on June 14, 2009 from: http://eclkc.ohs.acf.hh/gov/hslc/resourcesEmergency20%Preparedness

54 Ohio Department of Job and Family Services. (2006). Annual child care licensing report. Retrieved on August 28, 2006 from http://www.odjfs.state.oh.us/cdc/query.asp

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