Findings and Recommendations of the Task Force to Prevent Deaths from Unintentional Drug Overdoses in North Carolina, 2003

Submitted to

Carmen Hooker Odom, Secretary, Department of Health and Human Services
Roy Cooper, Attorney General, Department of Justice
April 2004

N.C. Department of Health and Human Services
Division of Public Health
Injury and Violence Prevention Branch

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The findings and recommendations in this report would not have been possible without the time and expertise that were generously contributed by the 25 members of the Task Force to Prevent Deaths from Unintentional Drug Overdoses and by the Epidemic Intelligence Services and Public Health Prevention Service officers who were assigned to North Carolina for a three-week period in the summer of 2002 by the Centers for Disease Control and Prevention to investigate an epidemic of fatal unintentional drug-related overdoses. Staff and technical support for the Task Force were provided by Catherine Sanford in the N.C.-DHHS Division of Public Health Injury and Violence Prevention Branch (IVPB). The report reflects the tireless editing of Brenda Motsinger, Head of the IVPB, and the production talent of Cathy Daniels, also from the IVPB. Any errors, however, are the sole responsibility of Ms. Sanford.

This report was supported in part by Cooperative Agreement Number U17/CCU419384, Core Capacity Injury Surveillance & Program Development, from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent official views of the Center for Disease Control and Prevention.

Executive Summary

Findings and Recommendations of the Task Force to Prevent Deaths from Unintentional Drug Overdoses in North Carolina, 2003.

BACKGROUND. North Carolina is experiencing an epidemic of poisoning* deaths from unintentional drug overdoses. Since 1997, the number of deaths in North Carolina from unintentional drug overdoses has increased over 100%, and continues to increase annually. Without intervention, there is no reason to believe this trend will spontaneously reverse.

Based on a review of a decade of death certificates for unintentional drug overdoses (1992-2001) and five years of medical examiner cases (1997-2001), the illicit drugs (i.e., illegal drugs defined by the Drug Enforcement Agency as drugs with no accepted medicinal value) most responsible for these deaths were cocaine and heroin. However, the number of unintentional deaths from illicit drugs has decreased over time. In contrast, unintentional deaths from licit drugs (i.e., legal, and mostly prescription drugs) are increasing, and are now responsible for over half of the fatal unintentional poisonings. Over half of the prescription drugs associated with unintentional deaths are narcotics (opioids). And of these licit opioids, deaths from methadone, usually prescribed as an analgesic for severe and intractable chronic pain, have increased seven-fold since 1997. Methadone dispensed from Opioid Treatment Program (OTP) clinics is a negligible source of the methadone that has contributed to the dramatic increase in unintentional methadone-related deaths in North Carolina.

THE RESPONSE. In September 2002, the Injury and Violence Prevention Branch in the Division of Public Health of the N.C. Department of Health and Human Services (NC-DHHS) released preliminary findings documenting the escalating number of unintentional deaths from drug overdoses in North Carolina. In November 2002, NC-DHHS Secretary Carmen Hooker Odom created the Task Force to Prevent Deaths from Unintentional Drug Overdoses (henceforth called "the Task Force") to study this problem and to develop recommendations to identify, reduce and ultimately prevent unintentional deaths from the use of illicit and licit drugs. The Injury and Violence Prevention Branch provided executive, administrative and technical support to the 25-member Task Force. Diverse and broad representation from public health, substance abuse services, law enforcement, medical examiners, physicians and pharmacists afforded a collaborative approach. Dr. Jeffrey Engel, the State Epidemiologist, and Larry Smith, Assistant Director of the State Bureau of Investigation, co-chaired the Task Force.

Through continued investigation, the Injury and Violence Prevention Branch provided the Task Force with the findings that are summarized below and are described in

* Poisoning refers to the damaging physiologic effect of ingestion, inhalation or other exposure to a broad range of chemicals, including pharmaceuticals and illicit drugs, pesticides, heavy metal, gases or vapors, a variety of common household substances, such as bleach and ammonia, and drugs.

detail in the following report. The Task Force met over nine months. After careful deliberation, the Task Force's 20 voting members considered and approved 48 recommendations on the basis of their effectiveness, cost, feasibility, equity and/or universality, and the individual rights of or the stigmatization of the affected person(s). All recommendations received at least a two-thirds majority of the voting membership; most received unanimous approval.

The recommendations are organized into seven categories: (1) leadership; (2) surveillance; (3) law enforcement; (4) legislative initiatives; (5) educational interventions for the general public; (6) educational interventions for health care and law enforcement professionals; and (7) clinical interventions. These recommendations reflect the complexity of identifying the risk factors and circumstances that result in unintentional deaths from licit and illicit drug overdoses. They reflect as well the willingness of the law enforcement, public health, mental health, and medical care communities to discuss unintentional drug overdoses in terms of prevention. They further emphasize the synergy that will be required to implement a comprehensive program of prevention strategies among public and private agencies and organizations within the state that are interested in solving this public health emergency.

DEATH CERTIFICATE FINDINGS. Poisoning is currently the third most common cause of injury death in the United States, exceeded only by deaths from motor vehicle crashes and firearms. In the past decade, the national mortality rate from poisoning has increased. Based on current, population-based data available in North Carolina*, 84% of the unintentional poisoning deaths were from drugs and other medicines. The other 16% were due to exposure to non-medicinal substances, primarily alcohol. Prescribed or diverted (illegally sold "on the street") narcotics and hallucinogens constituted over half (58%) of the fatal overdoses from drugs.

In North Carolina, the poisoning death rate (calculated per 100,000 population) for suicides, homicides and unintentional poisonings doubled from 3.9 deaths in 1992 to 7.7 deaths in 2001. 3,953 North Carolina residents died from poisons in this 10-year period. Over half of these poisoning deaths (n=2,385) were unintentional. A review of North Carolina death certificates indicates that the major cause of unintentional poisonings in the state is from unintended overdoses of licit and illicit drugs. As with most injuries, the majority of these deaths could have been prevented.

INVESTIGATION OF MEDICAL EXAMINER RECORDS. In 2002, medical examiner records between 1997 and 2001 were investigated by epidemiologists from the Centers for Disease Control and Prevention Epidemic Intelligence Service and NC's Injury and Violence Prevention Branch to more fully understand the circumstances that influenced the rapid rise in unintentional deaths from accidental drug overdoses.

Based on the 1997-2001 medical examiner records, the mean age of the 1,096 NC residents who died from an unintentional drug overdose was 39 years. Over half of the decedents had expired prior to the arrival of law enforcement or emergency medical services. Three quarters of those who died

*ICD-10 T-codes assigned to poisoning deaths of unintentional or undetermined intent on death certificates by medical examiners for the combined years of 1999 and 2000; Vital Records, North Carolina State Center for Health Statistics, 2003.

had a history of substance abuse (54%), alcohol abuse (24%), chronic pain (20%) and/or mental illness (20%). The ten drugs identified by the medical examiners that caused most of the unintentional deaths were cocaine (29%), heroin (19%), methadone (19%), morphine (7%), fentanyl (5%), oxycodone (5%), propoxyphene (3%), hydrocodone (2%), acetaminaphen (2%) and amitryptoline (1%). Unintentional fatal overdoses from a prescribed opioid (as identified in post-mortem toxicology reports) increased 300% in this five-year period, accounting for 88% of the overall increase in drug-overdose deaths. The narcotic most frequently identified as increasingly causing these deaths was methadone. The contribution of methadone to the greater number of deaths was dramatic. Between 1997 and 2001, there was a seven-fold increase in unintentional deaths from an overdose of methadone. Methadone alone accounted for 47% of the increase.

The directors of all of North Carolina's OTP clinics were surveyed in the fall of 2002. Based on a 100% response rate, only eight (4%) of the 198 persons listed on death certificates as having died from unintentional overdoses of methadone between 1997 and 2001 were identified as being current or former patients. Although the federal guidelines for dispensing methadone have recently been relaxed, North Carolina rules are more restrictive and supersede the federal rules, particularly for methadone take-home privileges. Although from time to time OTP clinic patients sell (divert) the methadone they receive in the clinic, the Substance Abuse Services in the Division of Mental Health has not identified this as a significant problem in the state's public and private OTP clinics. Study data suggest that patients who are prescribed methadone for pain management and who misuse, abuse, or divert their methadone are a more significant source of the methadone that results in unintentional deaths. Currently, however, we do not have a prescription narcotic/controlled substances monitoring program in North Carolina that can accurately identify the diversion of licit drugs when it occurs. Prescription monitoring systems of controlled substances assist law enforcement and medical care practitioners in reducing diversion and identifying patients in need of referral to treatment.

DEATHS FROM ILLEGAL (ILLICIT) AND LEGAL (LICIT) DRUGS. Unintentional deaths can occur from drugs that are appropriately prescribed by a medical care provider and taken by the patient as directed. These, however, are not considered poisonings and are not addressed in this report.

Fatal unintentional overdoses do occur from the misuse or abuse of both illegal (illicit) and legal (licit) drugs. This report, and these recommendations, consider both types of drugs. The drugs most commonly associated with fatal overdoses are illegal (illicit) narcotics, such as heroin and cocaine. Deaths from heroin and cocaine have decreased in North Carolina since 1997. Less commonly associated with fatal overdoses are legally prescribed and over-the-counter medications. Deaths from prescribed medications have increased in North Carolina since 1997. The definition of an overdose from a licit drug, however, is complex.

Deaths from unintentional drug overdoses can result from licit drugs that are inappropriately prescribed, or appropriately prescribed but unintentionally and/or intentionally misused. In many cases, controlled substances, particularly opioids, that result in unintentional drug overdoses represent some of the best tools available to medical care practitioners to treat addiction

or severe and chronic pain. In trying to prevent these unintentional deaths, great care must be taken not to restrict the legitimate use of controlled substances in the practice of medicine. This could result in increased suffering for North Carolinians who could benefit from such treatment.

DEATHS FROM METHADONE. There are multiple reasons why methadone appears to be more lethal than other legal opioids. In addition to its ability to reduce pain, methadone prevents withdrawal symptoms and helps reduce the craving for narcotics in people who are opioid-dependent. Because of these qualities, methadone has been assumed to be less likely to result in substance abuse. It is long-acting, can be taken orally, has excellent bio-availability, and is very inexpensive. These qualities have been thought to make methadone a more attractive analgesic for treating severe chronic pain than other currently available opioids that produce euphoria and are frequently diverted for non-medicinal uses. However, because its elimination half-life can range from four to 91 hours, and its clearance rate from a patient's system can vary by a factor of almost 100, methadone is a difficult drug to administer in an out-patient setting.

The following is a typical scenario of an unintentional death from an overdose of methadone. Mary Jane Smith had at long last found a doctor who was sure he could really treat her chronic pain. The methadone he would prescribe was different from the others. It was cheap. It would work. And it wouldn't have the side effects that came with all of the other narcotics she had tried. (She had thought that methadone was only for drug addicts, but the doctor had said it wasn't.) She left the office that afternoon with a prescription and a return appointment for two weeks. The doctor said all she had to do was follow the directions: one pill, four times a day. She could do that! But she didn't. She hurt so badly when she got home that she took a double dose of the methadone. After two hours, there was no pain relief so she took another pill. She had a glass of wine with dinner; she was feeling better. She wasn't high, but she was sleepy. She told her husband she was going to bed early. She took one more pill to hold her through the night. She fell asleep snoring. She never woke up.

Any opioid can be misused or abused and result in death from an overdose. But because the physiologic response to even properly prescribed methadone is so different from one person to another, and users (or observers) often do not realize that a lethal dose has been taken, methadone has a higher potential for lethality than do other legal opioids.

RECOMMENDATIONS FROM THE TASK FORCE TO PREVENT DEATHS FROM UNINTENTIONAL DRUG OVERDOSES IN NORTH CAROLINA

1. LEADERSHIP recommendations create a Department of Health and Human Services/ Department of Justice (DHHS/DOJ) leadership structure for oversight of all surveillance, intervention and enforcement activities related to preventing unintentional drug overdoses.

Recommendation 1. The Attorney General of the NC Department of Justice and the Secretary of the NC Department of Health and Human Services should designate a leadership structure within their respective departments that meets at least four times a year to oversee the formulation and implementation of a public health response to the state's epidemic of unintentional deaths from drug overdoses by monitoring drug overdoses in North Carolina. The primary roles of the combined law enforcement, mental health and public health components will be to:

1.a Assure continuous monitoring of the misuse of licit and illicit drugs and deaths resulting from accidental drug overdoses while concurrently promoting the treatment of chronic pain and substance abuse by all appropriate medical modalities, including the use of licit opioids.

1.b Develop evidence-based interventions to prevent accidental deaths from drug overdose (s).

1.c Advise the relevant agencies/bodies of needed policies and regulations to prevent accidental deaths from drug overdoses.

1.d Coordinate among relevant agencies and organizations the implementation of policies and programs to prevent deaths from accidental drug overdoses.

1.e Implement and review independent evaluation(s) of each of the interventions and surveillance activities that are enacted, as recommended by this report, to restructure or eliminate ineffective approaches and minimize unintended negative consequences.

2. SURVEILLANCE recommendations compile and monitor data relevant to unintentional overdose from the Medical Examiner system, emergency medical services (PreMIS), hospital emergency rooms (NCEDD), the Carolinas Poison Center, US Drug Enforcement Agency (ARCOS), and NC State Bureau of Investigation. All reports should be distributed to DHHS/DOJ leadership at least four times a year.

Recommendation 2. The North Carolina Medical Examiner system should identify, track and compile incidence data on deaths from confirmed or suspected unintentional drug overdoses including the type and/or category of drugs causing and contributing to the death and the circumstances surrounding the death.

Recommendation 3. The Office of Emergency Medical Services should identify, track and compile data on persons who receive pre-hospital emergent care for the non-fatal ingestion of drug(s), unintentional drug overdoses and substance abuse in North Carolina, using the North Carolina PreHospital Medical Information System (PreMIS), including information on the

frequency and geographic location of emergency medical service requests to treat and/or transport cases of drug ingestion and overdoses, the type and/or category of drugs, and the emergency department to which the patient was transported.

Recommendation 4. The Division of Public Health should identify, track and compile data on persons with unintentional drug overdoses or with a clinical diagnosis of substance abuse that are treated in North Carolina emergency departments, using the North Carolina Emergency Department Database (NCEDD) or a similar NC hospital ED electronic surveillance system, including information on the prevalence and geographic location of emergency department admissions for drug ingestion and overdoses and the type and/or category of drugs that caused and/or contributed to the emergency department admission.

Recommendation 5. The Carolinas Poison Center should identify, track and compile data on requests from North Carolina residents and health care providers for appropriate responses to exposures to unintentional drug overdoses, using the Poison Center's databases, including information on the prevalence and geographic location of actual substances taken, signs and symptoms of toxicity, treatment given, management sites and clinical outcomes.

Recommendation 6. The DHHS/DOJ leadership structure to monitor the problem of drug overdoses in North Carolina should review at least four times a year the publicly available data from the website of the US Department of Justice Drug Enforcement Agency's Automation of Reports and Consolidated Orders System (ARCOS) on the amounts of controlled substances that are retailed in North Carolina to hospitals, pharmacies, teaching institutions, physicians and mid-level practitioners.

Recommendation 7. The Division of Mental Health, Developmental Disabilities and Substance Abuse Services' (MH/DD/SA) Drug Regulatory Program should identify, track and compile data on the retailing of methadone to the state's certified Opioid Treatment Program Clinics using the US Department of Justice Drug Enforcement Agency's Automation of Reports and Consolidated Orders System (ARCOS).

Recommendation 8. The State Bureau of Investigation (SBI) should identify, track and compile data on the amount (dosage units) of individually identified illicit drugs in North Carolina that are reported by law enforcement to the SBI, including monthly information on the types and amounts of illicit drugs captured in the SBI Crime Laboratory database.

3. LAW ENFORCEMENT recommendations provide infrastructure to prevent illegal distribution and use of controlled medications.

Recommendation 9. The State of North Carolina should provide funding to the SBI to hire, train and deploy eight to 10 additional full-time agents specifically assigned to work drug diversion cases.

4. LEGISLATIVE INITIATIVES recommendations create requirements and regulations necessary to implement surveillance activities, create fines to help finance the system and improve access to treatment services.

Recommendation 10. Hospital emergency departments should be required to obtain and hold a separate seven ml sample of admission-blood from all patients admitted to the emergency department with a diagnosis of suspected or confirmed unintentional drug overdose for a period of at least two weeks in the event the patient dies, and a blood sample is needed by the Office of the Chief Medical Examiner to determine the drug(s) involved in the overdose.

Recommendation 11. Legislation should be sought to facilitate and fund the implementation of a prescription monitoring system of controlled substances in North Carolina with the goals of (a) limiting the access of controlled substances to only those with a legitimate medical need, (b) establishing the ability to identify and track instances in which controlled substances are compromised, and (c) identifying potential controlled substance abusers and steer them into treatment.

Recommendation 12. Legislation should be sought to create an assessment to be levied against persons convicted of manufacturing, selling, obtaining or misusing controlled substances or obtaining drugs for fraudulent purposes, to be paid to the Clerk of Court, and be dispersed according to legislative direction to offset the cost of drug misuse/addiction treatment in North Carolina.

Recommendation 13. Legislation should be sought to adopt mental health and chemical dependency insurance coverage parity.

5. EDUCATIONAL INTERVENTIONS - GENERAL PUBLIC recommendations raise public awareness about the magnitude, risks and signs of unintentional overdose, preventive behaviors and precautions and available emergency, treatment and law enforcement resources.

Recommendation 14. The State of North Carolina should identify and implement educational programs with demonstrated effectiveness that make all residents of North Carolina aware of the dangers of licit and illicit drug misuse.

14.a Promote and evaluate the 911 call-in system as an effective and no-fault way for an informant (person making the call) to obtain medical care for a person thought to be suffering from a life threatening drug overdose(s).

14.b Promote and evaluate the Carolinas Poison Center as an effective no-fault way for an informant (person making the call) to obtain medical care for a person thought to be suffering from the effects of a drug overdose that are not life-threatening.

14.c Promote and evaluate the Carolinas Poison Center as the statewide drug information call-in center.

14.d Encourage implementation and evaluation of educational programs for patients, their families and friends by medical care providers and pharmacists about the signs and symptoms of unintentional drug overdose.

14.e Encourage implementation and evaluation of educational programs for patients and their caregivers by pharmacists and medical care providers on how to securely store opioid medications and other controlled substances in the home.

14.f Evaluate the implementation and effectiveness of educational programs that specifically target parents – particularly parents of pre-teen and teenage children – with the goals of increasing their awareness and understanding of substance misuse and abuse and providing support and information sharing for those parents with children who are experimenting with substance misuse and abuse.

14.g Ensure that educational programs, such as the Healthful Living Curriculum on alcohol and drug use and misuse in current elementary, middle, and high school curricula, are evaluated and promoted only if demonstrated to be effective and used in a manner that is age and culturally appropriate.

Recommendation 15. The State of North Carolina should support educational and social marketing campaigns to destigmatize mental illness and addiction. This should include:

15.a Marketing to the public what treatment resources are available for people who have developed, or think they are developing, abuse problems.

15.b Emphasizing the destigmatization of seeking treatment for mental illness and addiction.

6. EDUCATIONAL INTERVENTIONS – PROFESSIONALS recommendations raise professional awareness of the magnitude, risks and signs of unintentional overdose and create practice guidelines and educational and credentialing requirements for prevention, treatment and enforcement activities.

Recommendation 16. The State of North Carolina should identify and implement educational programs with demonstrated effectiveness that make North Carolina health and medical care professionals, law enforcement, teachers, clergy, etc., aware of the dangers of licit and illicit drug use.

16.a Educate medical providers, teachers, clergy, etc., to recognize signs of addiction and refer individuals for appropriate treatment.

16.b Promote the use and evaluation of educational programs for law enforcement and health care professionals to understand how to differentiate appropriate and inappropriate use of controlled substances.

16.c Promote the use and evaluation of educational programs to medical care providers to counsel patients on the appropriate use and potential adverse effects of all opioids when

they are not used as prescribed, particularly long-acting opioids, such as methadone, controlled released (CR) morphine and oxycodone, and transdermal fentanyl.

16.d Promote the use and evaluation of educational programs for medical care providers and pharmacists by law enforcement on how to securely store opioid medications and other controlled substances in clinical facilities and pharmacies.

16.e Evaluate the implementation and effectiveness of the North Carolina Board of Pharmacy's prescription forgery notification program to medical care practitioners and pharmacists in North Carolina.

16.f Promote and evaluate professional educational programs (to medical schools, to physicians-in-training and in practice, and to other health care professionals) that focus on evaluation and appropriate treatment of the intentional and unintentional misuse and abuse of opioid analgesics and other controlled substances.

Recommendation 17. The North Carolina Medical Board should continue to promote and monitor the application of model guidelines for the use of controlled substances in the treatment of chronic pain, including the use of best practices for mental health and substance misuse screening.

Recommendation 18. The North Carolina Medical Board and the North Carolina Medical Society should continue to promote sanctioned practice guidelines for the appropriate and optimal management of chronic pain.

Recommendation 19. The North Carolina Medical Board should take under advisement adopting a requirement that any practitioner who prescribes controlled substances for the management of chronic pain complete a minimum of eight hours of CME credit in pain management and be in good standing with appropriate state and federal agencies in respect to controlled substance prescribing, administering and dispensing, as a condition of licensure renewal.

Recommendation 20. The North Carolina Medical Board should take under advisement adopting a requirement that any practitioner who prescribes or dispenses opiate agonists to patients for the treatment of opiate addiction complete a minimum of eight hours of CME credit in chemical dependency and be in good standing with appropriate state and federal agencies in respect to controlled substance prescribing, administering and dispensing, as a condition of licensure renewal.

7. CLINICAL INTERVENTIONS recommendations expand forgery notification systems, improve emergency provider preparedness, increase resources for recovering addicts, and broaden the evidence base for implementing new, effective out-patient and in-patient treatment programs.

Recommendation 21. The North Carolina Board of Pharmacy should expand its forgery notification system by opening up participation to all medical care providers, e.g., dentists, physicians, mid-level practitioners and veterinarians; schools of medicine and residency training programs; hospitals; pain management clinics; emergency departments; urgent care facilities, and Opioid Treatment Program clinics in North Carolina.

Recommendation 22. The State of North Carolina should develop a plan for optimizing a person's chance of survival in the event of an [opioid] overdose.

22.a Training and credentialing for emergency services personnel to recognize the signs and symptoms of opioid overdose and to administer naloxone for respiratory arrest from opioid toxicity when it is within their scope of practice, as established by the NC Medical Board.

22.b Promoting current programs to teach and certify proficiency in cardiopulmonary resuscitation (CPR) in the eighth grade Healthful Living Curriculum and in the general community and recommending the repetition of the CPR curriculum one more time for all students in North Carolina high schools.

Recommendation 23. The State of North Carolina should support adequate facilities and resources to provide shelter and medical, mental health, and social support for recovering opioid addicts.

23.a By 2009, the State of North Carolina should increase the number of and easier access to Opioid Treatment Program (OTP) clinics in North Carolina to accommodate 50% of the state population with opioid addiction (7,000 patients).

23.b By 2009, the State of North Carolina should increase by 50% the number of outpatient treatment programs recommended in the 2003 DHHS/DD/Substance Abuse Services' management report.

23.c By 2009, the State of North Carolina should increase by 50% the number of detoxification programs recommended in the 2003 DHHS/DD/Substance Abuse Services' management report.

Recommendation 24. The State of North Carolina should provide resources to pilot test the following approaches with rigorous evaluation in order to determine which are most efficacious:

24.a Easily accessible 24-hour crisis intervention facilities and sobering shelters with nutritional and child care support in metropolitan centers and rural locations.

24.b Housing facilities where off-site substance use does not result in exclusion of the client and where on-site support is provided to help the person make the transition to abstinence in a non-threatening way.

24.c Accessible long- and short-term outpatient counseling and day treatment for substance abuse and mental illness.

24.d Accessible drop-in day programming with outreach workers and nutritional and child care support for substance users in treatment programs.

24.e Access to methadone treatment in prisons with a system for continuing treatment in the community after release, including mandatory alcohol/opioid detoxification, treatment and educational programs for young offenders in conjunction with, or as alternatives to, prison.

LIST OF ACRONYMS

ARCOS	Automation of Reports and Consolidated Orders System (National)
CDC	Centers for Disease Control and Prevention (U.S.)
CME	Continuing Medical Education
CPR	Cardio-Pulmonary Resuscitation
CR	Controlled Release
DAWN	Drug Abuse Warning Network (National)
DEA	Drug Enforcement Agency (U.S.)
DMH	Division of Mental Health (N.C.)
DOJ	Department of Justice (N.C. and U.S.)
DPH	Division of Public Health (N.C.)
E-Codes	External-Cause-of-Injury Codes
ED	Emergency Department
EIS	Epidemic Intelligence Service (CDC)
ICD	International Classification of Disease
MH/DD/SAS	Mental Health/Development Disabilities/Substance Abuse Services (N.C.)
NCEDD	North Carolina Emergency Department Database
NC DHHS	North Carolina Department of Health and Human Services
OCME	Office of the Chief Medical Examiner (N.C.)
OTPC	Opioid Treatment Program Clinics
PreMIS	PreMedical Information System
SAMHSA	Substance Abuse and Mental Health Services Administration (U.S.)
SBI	State Bureau of Investigation (N.C.)

LIST OF FIGURES, TABLES AND MAPS

Figures

Tables

Maps

CHAPTER 1. The Task Force to Prevent Deaths from Unintentional Drug Overdoses

1.1 APPOINTMENT OF THE TASK FORCE.

In September 2002, the Injury and Violence Prevention Branch of the North Carolina Department of Health and Human Services Division of Public Health (NC-DHHS/DPH) released preliminary findings documenting an escalation in the number of deaths in North Carolina residents from unintentional drug overdoses. Deaths from fatal unintentional drug overdoses had increased over 100 percent in the five years between 1997 and 2001. In response to this epidemic, NC-DHHS Secretary Carmen Hooker Odom created the Task Force to Prevent Deaths from Unintentional Drug Overdoses (hereafter called "the Task Force") in November 2002 to study this problem and to develop recommendations to identify, reduce and ultimately prevent unintentional deaths from the use of illicit and licit drugs. The Injury and Violence Prevention Branch provided administrative and technical support to the 25-member Task Force. Diverse and broad representation on the Task Force from public health, mental health, substance abuse services, law enforcement, medical examiners, pharmacists and physicians afforded a collaborative approach. Dr. Jeffrey Engel, the State Epidemiologist, and Larry Smith, Assistant Director for Support Services Division of the State Bureau of Investigation, co-chaired the Task Force.

1.2 CHARGES TO THE TASK FORCE.

The specific charges to the Task Force were to

1. describe the scope and magnitude of the increase in unintentional drug-related deaths in North Carolina that began in 1997;

2. identify the procedures and polices of the agencies/organizations represented on the Task Force that impact the use of illicit and licit drugs resulting in unintentional deaths;

3. identify the factors that contribute to the abuse and misuse of illicit and licit drugs prior to, during, and after the lethal exposure;

4. identify the prevention strategies applicable to each of the factors as they occur;

5. identify areas of collaboration among the agencies/organizations represented on the Task Force;

6. develop recommendations to enhance collaboration of these agencies/organizations in reducing and preventing the use of illicit and licit drugs that result in unintended deaths;

7. develop recommendations to enhance the reduction and prevention of unintentional drug-related deaths;

8. identify mechanisms for implementing these recommendations;

9. request that evaluation program(s) be implemented to ensure that recommended policy and procedures are efficacious; and

10. submit the final report and recommendations to the Secretary of the N.C. Department of Health and Human Services and to the Attorney General of the N.C. Department of Justice.

1.3 TASK FORCE MEMBERS.

The following list identifies those invited to participate on the Task Force in alphabetic order, along with the agency they represented and their voting status on the final recommendations submitted to the Secretary and the Attorney General.

The Task Force to Prevent Deaths from Unintentional Drug Overdoses Membership

Baker, Douglas	Substance Abuse Services, DMH[1]	Voted
Bennett, Dr. Bert	Substance Abuse Services, DMH[1]	Voted
Bridger, Colleen	Gaston County Health Department	
Butts, Dr. John	Office of Chief Medical Examiner, DPH[2]	Voted
Chelminski, Dr. Paul	Department of Medicine, UNC School of Medicine	Voted
Clark, C. Wesley	Governor's Crime Commission	
Davies, Dr. Megan	General Communicable Disease Branch, DPH[2]	Voted
Engel, Dr. Jeffrey*	General Communicable Disease Branch, DPH[2]	Voted
Ford, Dr. Marsha	Carolinas Poison Center, Carolinas Medical Center	Voted
Gainey, Dr. Matthew	Purdue Pharma L.P.	Voted
Garrison, Dr. Herbert	Pitt County Memorial Hospital	
Hatley, Todd	UNC PreMIS, Off. Emergency Med. Services, DPH[2]	Voted
Hoke, Chris	Office of Regulatory and Legal Affairs, DPH[2]	Voted
Hudson, Steven	North Carolina Board of Pharmacy	Voted
Kittrell, Gwen	DEA Diversion Group, North Carolina	Voted
Matthew, Karen	State Bureau of Investigation	Voted
Parker, Timothy	State Bureau of Investigation	Voted
Pratt, Drexdal	Office of Emergency Med. Services, DPH[2]	Voted
Radisch, Dr. Deborah	Office of Chief Medical Examiner, DPH[2]	Voted
Runyan, Dr. Carol	Injury Prevention Research Center, UNC-Chapel Hill	Voted
Smith, Larry*	State Bureau of Investigation	Voted
Stein, Florence	Substance Abuse Services, DMH[1]	
Waller, Dr. Anna	Dept. Emerg. Med. Services, UNC School of Medicine	Voted
Womble, John	Substance Abuse Services, DMH[1]	Voted
Work, David	North Carolina Board of Pharmacy	Voted

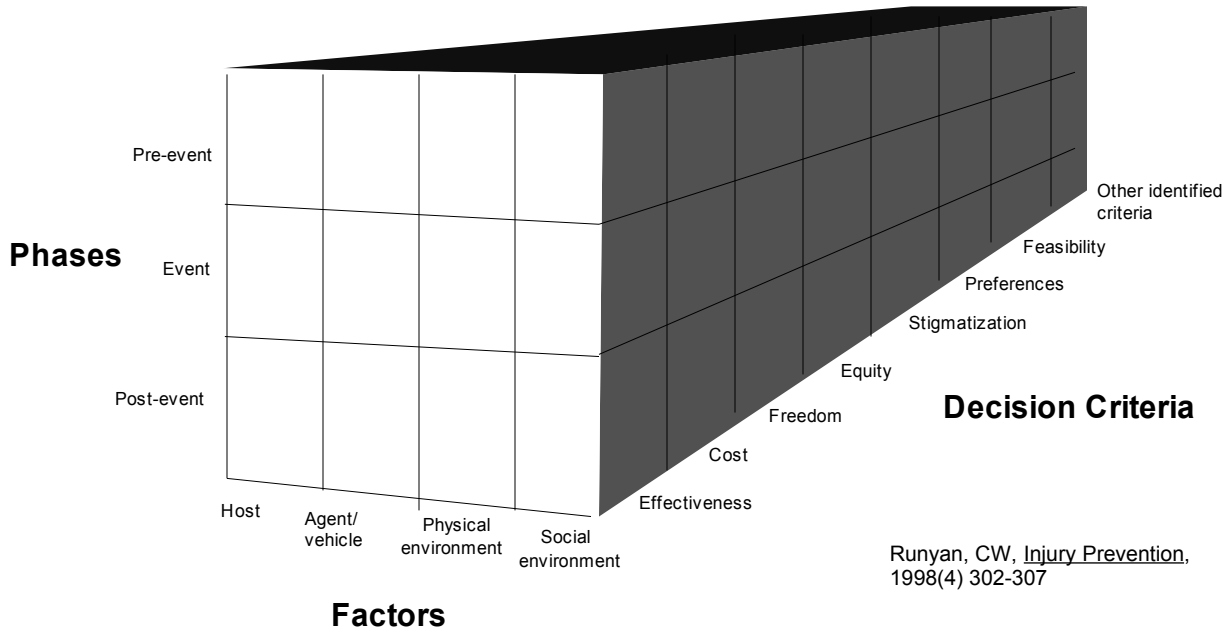
*Co-Chairman

[1] Division of Mental Health, Department of Health and Human Services
[2] Division of Public Health, Department of Health and Human Services
[2]

1.4 DEVELOPING THE RECOMMENDATIONS.

The Task Force began developing its recommendations to prevent fatal unintentional drug overdoses by identifying and discussing known and envisioned intervention strategies that could take effect before, during, or after the overdose occurs. Under the leadership of Dr. Carol Runyan, the Task Force used the Haddon Matrix to begin its deliberations. The current injury prevention model used by the Task Force has been enhanced since its inception to include not only the factors and phases from Dr. Haddon's original model, but new decision criteria (see Figure 1.1) that have been developed by Dr. Carol Runyan[3]. In brief, the *phases* (pre-event, event and post-event) are the rows in the matrix and refer to when the intervention has effect relative to the moment the overdose occurs. The *factors* constitute the four columns: the host (the person at risk of dying from a drug overdose); the agent (the substance abused or misused); the physical environment (the setting in which access and/or exposure to the drug occurs); and the social environment (the social and legal norms in the culture that have an effect on the licit and illicit use of drugs).

Figure 1.1 Three-dimensional Haddon Matrix[1]



Using the matrix, the Task Force identified numerous strategies that in some way could prevent an unintentional drug overdose death, by placing a potential action in the cell that identified the point at which the intervention would become effective. The *decision criteria* (the third dimension of the matrix) by which the Task Force deliberated and selected the final recommendations from all those proposed were based on standard criteria for evaluating policies. These included *effectiveness* (how well the intervention works when applied); *cost* (what will be the monetary effect on the state of implementing or not implementing and enforcing the proposed intervention); *freedom* (whose rights will be infringed and whose will be protected); *equity* (should the intervention apply equally to all or more to those at most risk); *stigmatization*

(would the intervention result in disgrace or reproach); *preference* (should the opinion[s] and desires of the affected community or individual be taken into consideration); and lastly, *feasibility* (is the intervention technologically and politically viable). Over time, these strategies were distilled into seven categories: (1) leadership; (2) surveillance; (3) law enforcement; (4) legislative initiatives; (5) education interventions for the general public; (6) educational interventions for health care and law enforcement professionals, and (7) clinical interventions.

1.5 VOTING.

The Task Force decided that only recommendations receiving at least a two-thirds majority of Task Force members' votes would be submitted to the Secretary and the Attorney General. Members were given the option of approving, disapproving, or abstaining for each recommendation, either in person at the final Task Force meeting on August 26, 2003 or by electronic ballot. Persons not voting or abstaining decreased the denominator from which the two-thirds majority was calculated. Although consensus by the Task Force was not reached on all recommendations, all recommendations taken under advisement by the Task Force received at least a two-thirds majority vote. Because of the diverse representation on the Task Force, this level of unanimity was not a foregone conclusion. Therefore, from the outset of its deliberations, the Task Force felt the voting status for each recommendation should be reported to document the cohesiveness of the decision-making process, and thus are recorded in Appendix I for each recommendation.

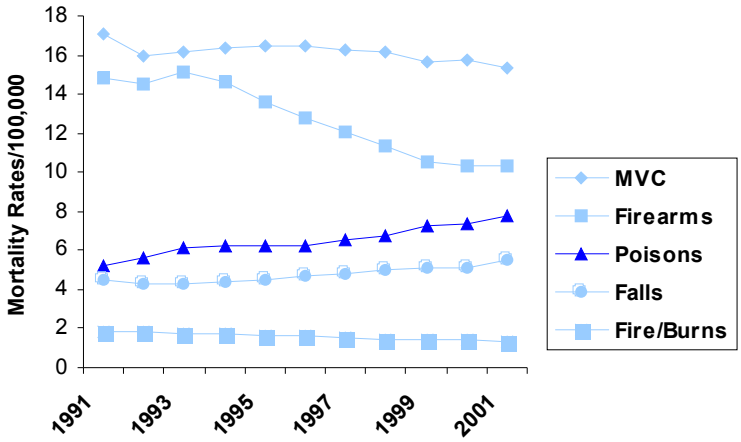
All recommendations taken under advisement by the Task Force received at least a two-thirds majority vote and all are included in this report.

CHAPTER 2. Findings

2.1 POISONING DEATHS IN THE UNITED STATES AND NORTH CAROLINA

Poisoning refers to the damaging physiologic effects of ingestion, inhalation or other exposure to a broad range of pharmaceuticals, illicit drugs, and chemicals, including pesticides, heavy metals, gases or vapors, and a variety of common household substances, such as bleach and ammonia. Poisoning is currently the third most common cause of fatal injuries in the United States, as depicted in Figure 2.1[2]. The age-adjusted mortality rate (calculated per 100,000 population) from poisoning has increased from 5.26 in 1991 to 7.78 in 2001[2]. In contrast, the mortality rates from most other injuries, such as falls, fire/burns, firearms, and motor vehicle crashes, have remained stable or even decreased during this same period of time[2]. This increase in poisoning deaths represents a 39% mortality rate increase over the past decade. Nationally there were 13,232 deaths from intentional (suicides and homicides) and unintentional poisoning in 1991; in 2001, 22,242 deaths from poisoning were reported. The majority of these deaths could have been prevented.

Figure 2.1 Age-Adjusted Mortality Rates of Selected Injuries, United States: 1991-2000



Although the drugs that result in fatal overdoses in North Carolina are frequently different from those that cause deaths in other states, it is clear from the increasing number of fatal unintentional overdoses (Table 1) that the non-medical use of drugs has been escalating over the past decade. At the national level, the percentage of the population using illicit drugs increased from 6.3 percent in 1999 and 2000 to 7.1 percent in 2001[3].

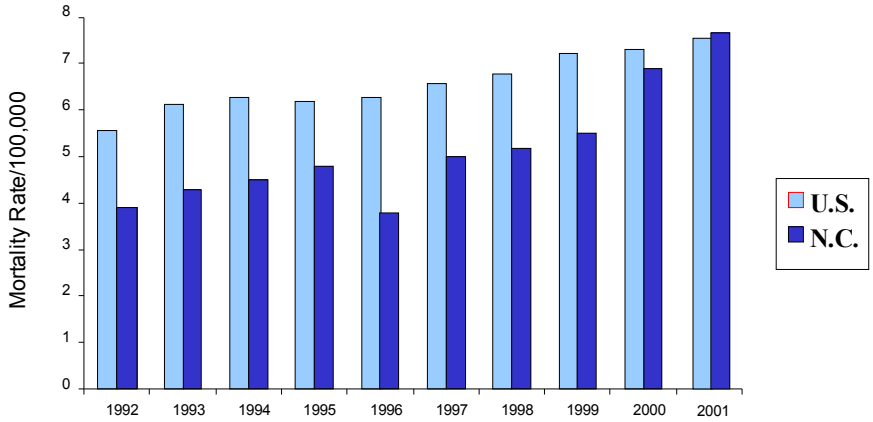
In 2003, the National Drug Abuse Warning Network, a national surveillance system of drug-related admissions to a sample of hospital-based emergency departments (EDs), estimated that nationally there were over 90,000 drug-related ED admissions in 2001, a 117% increase since 1994. For methadone, the prescription drug that has been found to have caused the greatest increase in fatal overdoses in North Carolina, ED admissions in the national data increased 230% from 1994 through 2001[4,5].

Furthermore, U.S. Poison Control Center data document that the number of opioid-related deaths has risen dramatically since the end of the mid 1990s. Many of these cases have involved methadone, hydrocodone and oxycodone[6].

Since 1990, poisoning deaths in North Carolina have increased at a faster rate than was experienced nationwide.

During the past decade, poisoning deaths in North Carolina have increased at a faster rate than was experienced nationwide (Figure 2.2). Except for 1996, the age-adjusted mortality rate for North Carolinians from poisons has increased steadily *each year* over the past decade. The poisoning death rate for North Carolina doubled from 3.9 in 1992 to 7.9 in 2001, as shown in Figure 2.2. All told, 4,607 North Carolina residents died from poisons in this 10-year period; over half of these deaths were unintentional (n=2,835)[2].

Figure 2.2 Age-Adjusted Mortality Rates From Intentional and Unintentional Poisoning in the U.S. and N.C.: 1992-2001



The coding of deaths on death certificates is complex. Death certificates record the poisoning victim's underlying cause of death using International Classification of Disease (ICD) external-cause-of-injury codes. Coding for the contributing causes of death uses both nature-of-injury codes and external-cause-of-injury codes. Nature-of-injury codes identify the medical diagnosis, e.g., poisoning and the type of poison. External-cause-of-injury codes identify the mechanism or cause of the death and the type of poison. These were once known simply as "E-Codes" in the 9th version of ICD, but since the advent of the 10th version of ICD, these codes have many prefixes from the alphabet. For example, in ICD-10 there is a new set of codes that was not available in ICD-9 to identify the type of poison involved in the death. These begin with the prefix "T" and can only be listed in the "contributing cause of death" fields. Because fatal poisonings often involve exposure to multiple substances, there is often more than one T-code listed with each death.

External-cause-of-injury codes also classify the victim's intent, i.e., whether the exposure to the poison is accidental (unintentional) or deliberate (intentional, i.e., suicide or homicide) or unknown (undetermined; i.e., when there is insufficient information available for the medical examiner to determine the victim's intent). Individuals and organizations interested in reducing the number of deaths from poisoning appreciate that the medical examiners in North Carolina identify the intent of a fatal poisoning whenever possible. This provides a rich database from which to assess the incidence and causes of fatal poisonings in the state (Table 2.1). This practice is in contrast to the policy in many other states, where the intent of a fatal poisoning is only classified as intentional when a suicide note is available to the medical examiner. The intent of

all other poisoning deaths reported in these states is, by default, listed as undetermined. This duality in coding practices by medical examiners makes it possible to compare overall poisoning counts and rates at the national level and by states, but it is often difficult, if not impossible, to compare poisoning data *by intent* from death certificates across states. On average, between 1997 and 2001, deaths in which the victim's intent could not be determined constituted less than 5% of poisoning fatalities in North Carolina (Table 2.1)[7].

Table 2.1 Poisoning Deaths[a] by Intent in North Carolina from Death Certificates: 1997-2001[b]

	1997	1998	1999	2000	2001	Total
Unintentional -- Drug Overdoses	187	191	234	319	394	1325
Unintentional -- Other poisons	41	39	45	48	39	212
Intentional (suicides) -- All poisons	126	149	141	169	186	771
Intentional (homicides) – All poisons	3	3	1	2	4	13
Undetermined Intent	23	24	19	22	10	98
Total Poisoning Deaths	380	406	440	560	633	2419

[a] Classification of poisoning deaths is from external cause of injury codes: ICD-9 for 1997-1998 and ICD-10 for 1999-2001. Unintentional drugs (ICD-9:E850-E858; ICD-10:X40-X44); Unintentional other poisons (ICD-9:E860-E869; ICD-10:X45-X49); Intentional poisonings-suicide (ICD-9:E950-E952;ICD-10:X60-X69); Intentional poisonings-homicide(ICD-9:E962; ICD-10: X85-X90); Poisonings – undetermined (ICD-9:E980-E982; ICD-10:Y10-Y19).

[b] Statistics are from the NC-DHHS State Center for Health Statistics, obtained August, 2002.

In North Carolina, between 1997 and 2001, there were more poisoning deaths from unintentional drug overdoses than from all other types of poisonings combined.

During the five-year period between 1997 and 2001, the number of fatal intentional poisonings in the state (771 suicides and 13 homicides) increased 47%. The number of unintentional poisoning fatalities from exposure to non-medical substances (212 deaths) and poisonings of undetermined intent (98 deaths) remained stable. Deaths from unintentional drug overdoses (1,325) constituted over half of all of the poisoning deaths (55%), and increased from 187 deaths in 1997 to 394 deaths in 2001, a 110% increase in five years (Table 2.1). The major cause of these unintentional poisonings was from unintended overdoses of legal (licit) and illegal (illicit) drugs[7]. The increase in poisoning deaths from unintentional drug overdoses appears to explain the dramatic rise in the overall rate and number of poisonings in the state since 1997. The identification of the mechanism/cause and the intent/manner of the poison-related deaths from death certificates, however, is not enough to explain why the deaths are increasing or what could be done to reverse the trend.

This report describes this sharp rise in the number of unintentional deaths from unintentional drug overdoses in North Carolina and the circumstances that may be contributing factors, based on a review of (a) national data, (b) state vital statistics, (c) North Carolina medical examiner data, and (d) U.S. Department of Justice Drug Enforcement Agency (DEA) reports on the retail

distribution (marketing) of licit controlled substances (drugs classified by the DEA that have a high potential for misuse and abuse) in North Carolina. It then sets forth a series of far-reaching recommendations from the Task Force to Prevent Deaths from Unintentional Drug Overdoses (henceforth referred to as ("the Task Force") that was appointed in 2003 by the Secretary of the North Carolina Department of Health and Human Services in response to the findings by the Injury and Violence Prevention Branch[7].

2.2 DRUGS ASSOCIATED WITH UNINTENTIONAL POISONING DEATHS IN NORTH CAROLINA

Many drug-related poisoning deaths from unintentional drug overdoses result from illicit drugs, i.e., street drugs that are only used for recreational purposes, such as heroin or crack cocaine. Other types of these drug-related deaths result from an unintended overdose of licit drugs that could have been inappropriately prescribed, or were appropriately prescribed but, for whatever reason, were misused. Drug-related deaths can also occur from medication that is appropriately prescribed (or conversely, inappropriately prescribed or administered) by a medical care provider and taken by the patient as directed. These, however, are not considered poisonings; they are classified as adverse effects of medical care. Although they are, in fact, injuries, they are not discussed in this report, nor referred to in the subsequent set of recommendations by the Task Force.

The drugs involved in deaths from unintentional drug overdoses in North Carolina are primarily cocaine and heroin (illicit drugs) and prescribed opioids (licit drugs). Opiates are derived from the opium poppy, and include heroin or its medically acceptable derivatives, codeine and morphine. Opioids are natural or synthetic medications with morphine-like action. Narcotics are opioid analgesics (pain killers) that have the ability to cause stupor, such as depression of the central nervous system or the respiratory system[8]. The federal DEA refers to these kinds of drugs as controlled substances, and categorizes them as to their potential for non-medical misuse or abuse. Examples of drugs by category are listed in Table 2.2; a more detailed list of opioids, classified by DEA by controlled substance status, is provided in Appendix II.

Table 2.2 Examples of Controlled Substances by Level[9]

Level I	Level II	Level III	Level IV
China White	Codeine	Anabolic steroids	Alprazolam (Xanax)
Crack Cocaine	Fentanyl (Duragesic Patch)	Codeine combination products	Chlordiazepoxid (Librium)
Ecstasy, XTC, Heroin	Hydromorphone (Dilaudid)	Hydrocodone combinations (Lortab, Vicodin, Hycodan)	Propoxyphene (Darvon, Darvocet)
LSD	Meperidine (Demerol)	Methyltestosterone (Andoid, Oreton, Testred, Virilon)	Diazepam (Valium)
Marijuana	Methadone		Meprobamate (Miltown, Equanil)
MDMA	Morphine (MS Contin)		Triazolam (Halcion)
Methamphetamine	Oxycodone (OxyContin, Percocet, Roxicet)		Zolpidem (Ambien)
	Pentobarbital (Nembutal)		

These controlled substances include drugs that are used as anesthetics or to treat medical conditions such as anxiety, coughs, mental illness, pain or substance abuse. The DEA defines a

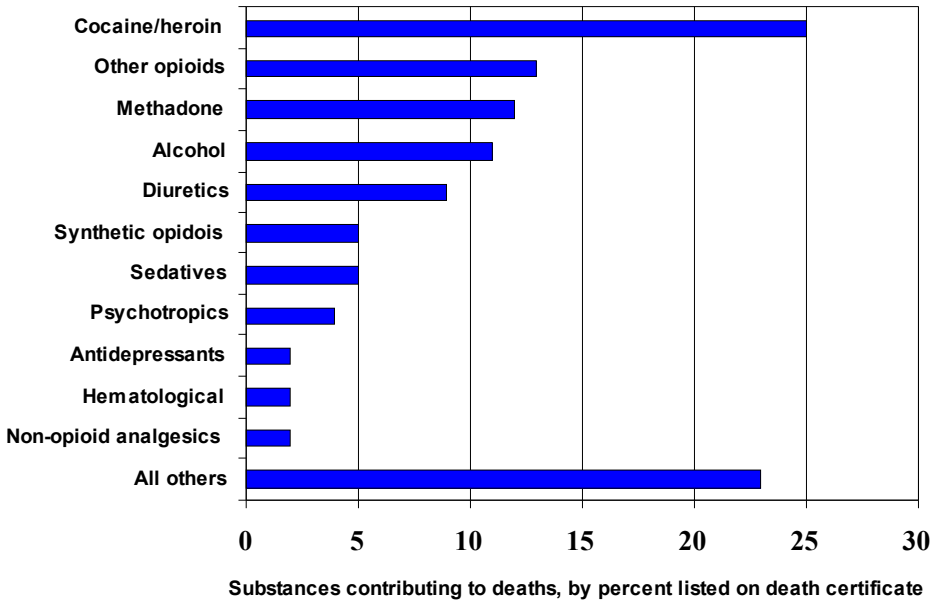
Level I controlled substance as a drug that has no accepted medical use. Level II controlled substances are medically acceptable, but are considered to have a high potential for misuse. Drugs classified as a Category III Controlled Substance have the potential for misuse, but not to the degree that those in Level II have, and so forth through Levels IV and V[9]. The possession of a Level I narcotic is, by definition, illegal. The possession of a drug(s) in Levels II through V can be either legal or illegal, depending on the circumstances.

Based on the current population-based data available in North Carolina from vital records, 84% of the unintentional poisoning deaths in 1999 and 2000 were associated with "drugs, medicaments and biological substances"[10]. Over half of these drugs were identified as narcotics. To a small degree, the drugs involved with these fatal drug overdoses were other prescription and over-the-counter drugs. The remaining 16% of these deaths were due to exposure to non-medicinal toxic substances, primarily alcohol (Appendix III).

In many cases, the controlled substances, particularly the opioids, that result in unintentional drug overdoses represent some of the best tools available to medical care practitioners for treating addiction and severe and/or chronic pain. In trying to prevent deaths from unintended drug overdoses, the Task Force was fully cognizant that great care must be taken not to restrict the legitimate use of controlled substances in the practice of medicine. The inappropriate or unjustified restriction of scheduled substances could result in increased suffering for North Carolinians.

As illustrated in Figure 2.3, narcotics and hallucinogens listed on death certificates constituted over half of the medical and biological substances (58%) that were associated with deaths from unintentional poisonings and those with an undetermined intent in 1999 and 2000.

Figure 2.3 Substances Involved in Unintentional Poisoning Deaths in North Carolina: 1999-2000



The ICD-10 T-code category for "narcotics and hallucinogens" on the death certificates includes cocaine, heroin, methadone, other opioids, and synthetic opioids. Almost half of these (25% of the total) were for the illicit drugs cocaine and heroin, that are only available "on the street." The other large proportion of drugs in this category was licit drugs for pain management, such as "other opioids," primarily codeine and morphine (13% of the

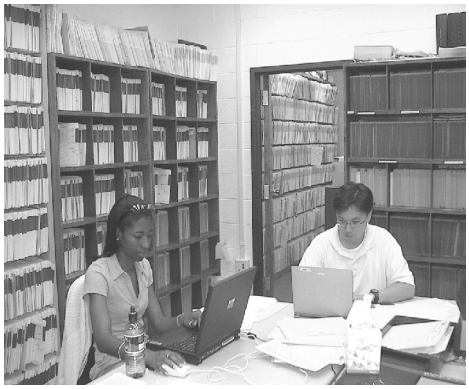
total), methadone (12% of the total) and other synthetic opioids, such as oxycodone and hydrocodone (5% of the total). These drugs are available by prescription but can also be diverted and obtained illegally "on the street." Drugs other than narcotics and hallucinogens were also reported on the death certificates. Diuretics were listed as causing or contributing to 9% of these unintentional deaths. Smaller, but important, proportions of other drugs were also listed as causative or contributing factors to these unintentional deaths. These included anti-epileptic, sedative-hypnotic and anti-Parkinson drugs (5%); psychotropic drugs not elsewhere classified (4%); tricyclic and tetracyclic antidepressants (2%); non-opioid analgesics, antipyretics, and antirheumatics (2%); and primary systemic and hematological agents (2%). Alcohol was listed as the causative or contributing factor in 11% of the deaths[10].

2.3 AN INVESTIGATION OF DEATHS FROM UNINTENTIONAL DRUG OVERDOSES

The information in this section is the result of an investigation of medical examiner records in the North Carolina Medical Examiner system and provides an epidemiologic profile of deaths from unintentional drug overdoses of the North Carolina residents who died between 1997 and 2001 by age (2.3.1), race (2.3.2), sex (2.3.3), health status prior to death (2.3.4), geographic location (2.3.5), cause of death (2.3.6), treatment provided (2.3.7), and source of drugs (2.3.8).

In July 2002, in response to evidence from death certificates that North Carolina was experiencing an incipient epidemic of deaths from unintentional drug overdoses, the State Epidemiologist requested the Centers for Disease Control and Prevention to authorize an Epidemic Intelligence Service (EIS) investigation of unintentional poisoning deaths in North Carolina. The time period between 1997 and 2001 was chosen because it was the time period during which the most rapid increase in unintentional poisoning deaths occurred in the past decade.

During a three-week period in July 2002, three CDC epidemiologists (two EIS officers and a Public Health Prevention Service officer) were assigned to North Carolina. Working with the epidemiologist from the NC-DHHS Injury and Violence Prevention Branch of the Division of Public Health, they reviewed 1,096 medical examiner records as the basis of their investigation into the deaths from unintentional drug overdoses among North Carolina residents that occurred between 1997 and 2001.



North Carolina is fortunate to have a centralized Medical Examiner system with medical examiner coverage in all 100 counties. The vast majority of unintentional poisoning deaths are investigated by a medical examiner, and by policy, the victim's intent (i.e., intentional or unintentional) is determined and recorded on the death certificate when sufficient information is available for the medical examiner to make that determination. All medical examiners complete a standardized report that is filed with the Office of the Chief Medical Examiner (OCME). All medical examiner reports are reviewed and approved by OCME pathologists and toxicologists. Core data collected on all the medical examiner reports are entered into the OCME's centralized

database. The remaining information on the decedent's death is filed in medical examiner folders that are kept on file in perpetuity and are available for epidemiologic investigations.

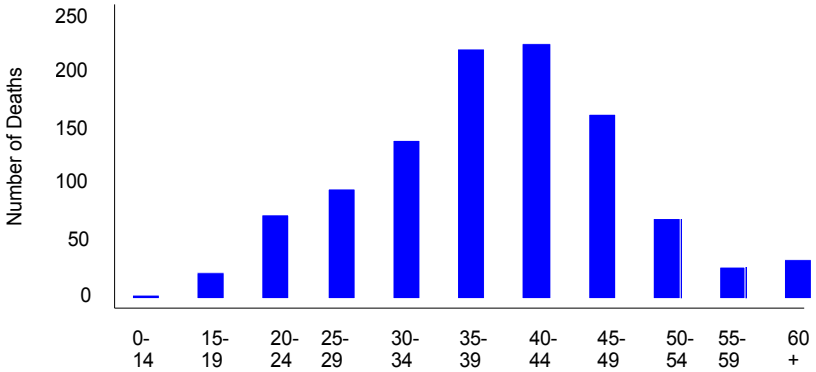
The Medical Examiner database was selected as the primary source for the investigation because it is rich in information that is not available from other sources, such as death certificates. It contains information on decedent demographics and underlying and contributing causes of death. It also contains information on the person's clinical status at the time of death (based on toxicology and autopsy reports), the circumstances surrounding each investigated death, and, if available, detailed information on the decedent's medical history, and the type, amount and source of the drug(s).

To identify the cases for review, the name, date of birth, date of death, and county of death of each decedent identified as a death from an unintentional drug overdose by ICD codes on the state's death certificates between 1997 and 2001 were matched with data during that five-year period on file at the Office of the Chief Medical Examiner. Approximately 83% of the cases were matched, a percentage of the database thought to be sufficient to investigate the kind of drugs and the circumstances that led to the state's rapid increase in unintentional deaths from prescription drugs. The inability to match a more substantial proportion of the death certificates with the medical examiner data is indicative of the urgent need for North Carolina to develop mechanisms to link public health databases.

The 1,096 cases included in the following report met two sets of criteria. First, they had to be state residents who died in North Carolina between 1997 and 2001 with an underlying cause of death due to unintentional drug-related poisoning (external cause of injury codes E850-E858 [ICD-9] or X40-X44 [ICD-10]) with a death certificate on file in North Carolina. Second, the pathologist and/or toxicologist in the Office of the Chief Medical Examiner had to have concluded that the manner of death was unintentional and the underlying cause of death was drug-related, based on reviews of the report filed by the medical examiner and the decedent's medical and social history, and autopsy (when available) and toxicology reports.

2.3.1 AGE. The mean age of the 1,096 victims who died from an unintentional drug overdose from 1997 through 2001 who had records in the Medical Examiner data was 38.9 years. (Figure 2.4). The distribution by age did not vary by sex. The youngest decedent from an unintentional drug overdose was age 9; the oldest was age 94.

Figure 2.4 Unintentional Drug Deaths by Age from Medical Examiner Records (N=1096) in N.C.: 1997-2001

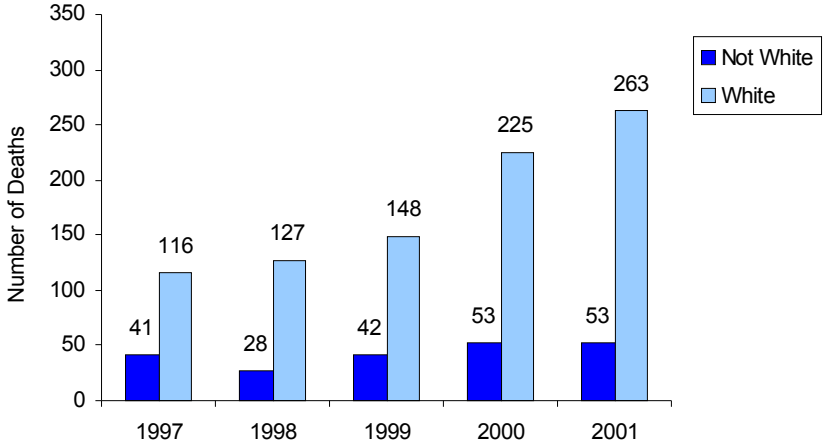


Mean: 38.9 ± 10.6 years
Median: 39 years

Deaths from unintentional drug overdoses appear to occur considerably later in life than do the majority of the other types of unintentional injuries, such as motor vehicle crashes with one or more fatalities[2].

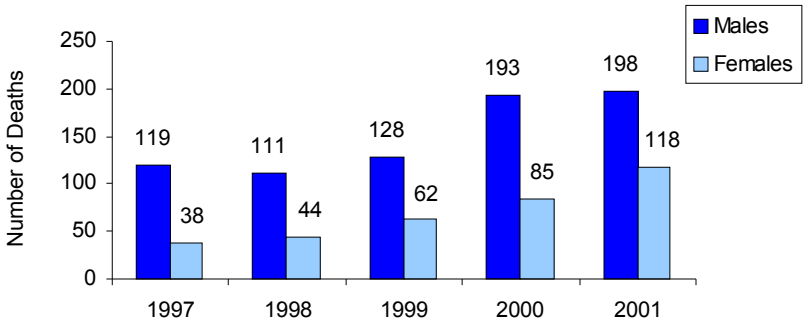
2.3.2 RACE. Eighty percent of the 1,096 N.C. residents who died from unintentional drug overdoses were classified as white (Figure 2.5). The number of fatal unintentional drug overdoses among whites increased 126%, from 116 deaths in 1997 to 263 in 2001. The number of deaths from unintentional drug overdose among the state's non-white residents during this time period was consistent with their demographic proportion and remained stable across the five-year period, in contrast to the pattern seen in white residents.

Figure 2.5 Unintentional Drug Deaths by Race from Medical Examiner Records (N=1096) in N.C.: 1997-2001



2.3.3 SEX. Historically, deaths from unintentional drug overdoses have occurred more often in males than females. Two-thirds (68.3%) of the deaths from unintentional overdoses of licit and illicit drugs between 1997 and 2001 occurred in male North Carolina residents (Figure 2.6). This statistic, however, masks the dramatic increase in deaths from unintentional drug overdoses in women during this five-year period. The number of drug-related deaths in women rose from 38 in 1997 to 118 in 2001, an increase of 210%. In contrast, the number of men who died from unintentional drug overdoses increased 66%, from 119 to 198 deaths.

Figure 2.6 Unintentional Drug Deaths by Sex from Medical Examiner Records (N=1096) in N.C.: 1997-2001



2.3.4 HEALTH STATUS PRIOR TO DEATH. One of the many challenges of this investigation was trying to determine why the decedents had been taking the drug(s) that killed them. The medical examiner data document that three-quarters of those who died from unintentional drug overdoses had a known history of one or more health problems consistent with drug use, misuse and/or abuse at the time of their death, including substance misuse or abuse (53.8%), alcohol abuse or alcoholism (23.8%), chronic pain (20.1%), or mental illness (20.4%).

A history of drug abuse/misuse was similar for both men and women during the five-year period from 1997 to 2001. However, except for 1997, there was a higher prevalence of alcohol abuse or alcoholism among the male decedents than the females (Figure 2.7). In contrast the women had consistently higher frequency of history of chronic pain (Figure 2.8) or psychiatric problems (Figure 2.9).

Figure 2.7 Percentage of Unintentional Drug Deaths by Sex and History of Alcohol from Medical Examiner Records (N=1096) in N.C.: 1997-2001

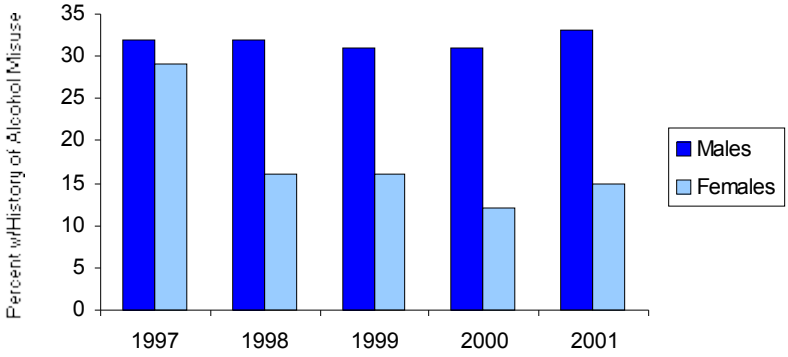


Figure 2.8 Percentage of Unintentional Drug Deaths by Sex and History of Chronic Pain from Medical Examiner Records (N=1096) in N.C.: 1997-2001

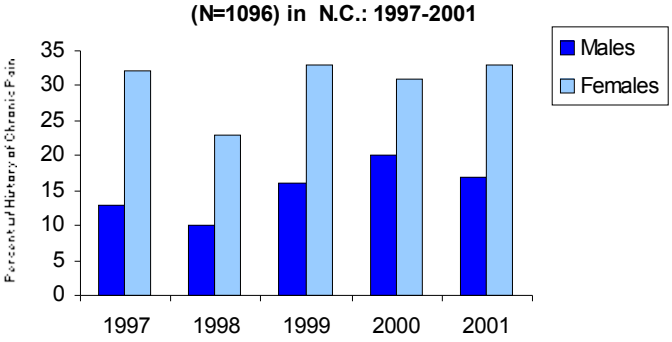
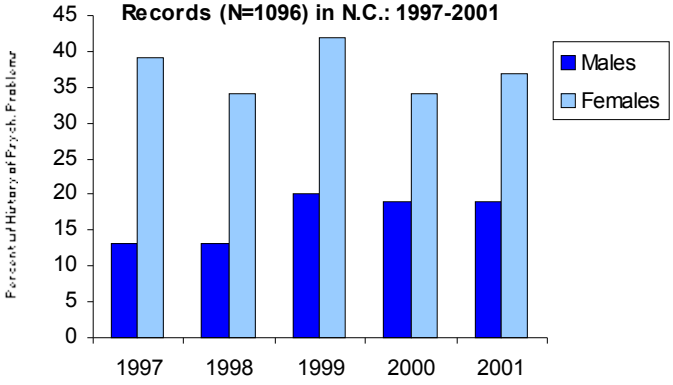


Figure 2.9 Percentage of Unintentional Drug Deaths by Sex and History of Psychiatric Problems from Medical Examiner Records (N=1096) in N.C.: 1997-2001



2.3.5 GEOGRAPHIC LOCATION. Medical examiners record both the county in which a death occurred and the decedent's county of residence. The county of death often serves as a surrogate for the location at which the death occurred, but can also simply refer to the hospital in which the person died. Furthermore, it is unknown how often the decedent's county of death can accurately identify the place where the exposure to the drug took place, as the decedent's body has often been moved. It is customary in the U.S. (and in North Carolina) to track health statistics and mortality data based on the decedent's county of residence. The review of the medical examiner data indicated that, for deaths from unintentional drug overdoses in North Carolina, the decedent's county of death was often the county of residence. As there is uncertainty as to what the decedent's county of death represents and precedence used in reporting the decedent's county of residence, this report uses county of residence to identify the geographic location associated with the death.

The resources of law enforcement, mental health, public health and substance abuse services must be carefully shepherded. Pinpointing the location of deaths from unintentional drug overdoses can assist North Carolina in targeting these resources for the collaborative development, implementation and evaluation of prevention

Investigating the location of death helps in understanding the circumstances that lead up to the death. The location of death, in some instances, can help determine where or from whom the drug(s) was purchased or taken, or even why the drug resulted in an unintentional death. Pinpointing these locations aids in the prevention efforts of law enforcement, mental health, public health and substance abuse workers. Determining what happened prior to the overdose can be particularly difficult to establish when investigating deaths from drugs with a long half-life. (The half-life of a drug is the amount of time it takes for the body to eliminate, through normal biological processes, half of the quantity of the substance that was ingested.) Opioids with a long half-life remain in the body longer than many controlled substances, often resulting in catastrophic biologic consequences when more than the therapeutic amount is consumed. Drugs with long half-lives also often have narrow therapeutic windows. This means that the amount of the drug that conveys the optimal therapeutic benefit is also very close to an overdose. Hence, errors in using a drug with a long half-life can easily result in death. In addition, when opioids with long half-lives are taken in excess, death may occur many hours and even days after ingestion. This makes it difficult to establish or track the process from access of the drug to the overdose and consequent death. The two drugs with long half-lives that most frequently result in unintentional deaths in North Carolina are methadone and OxyContin, the slow-release form of oxycodone (see Table 2.3 on page 18). Tracing the drugs from access to unintentional death is important, as each of those points represents an opportunity for prevention through law enforcement, mental health, public health, and substance abuse workers.

In North Carolina, a review of the deaths from unintentional drug overdoses[7] shows considerable variation in the decedents' county of residence at the time of their deaths (see Map 1). Not surprisingly, Mecklenburg County (a large county, with the state's largest city) had the highest number (84) of drug deaths from unintentional overdoses in the state from 1997 through 2001 (Appendix IV). Guilford, the county with the third-largest population in the state, had the second highest number (79) of drug deaths. The majority of the top ten counties with the highest number of deaths from unintentional drug overdoses were urban; Wake, Durham and Forsyth counties, were fourth, fifth and sixth on the list, respectively, followed by New Hanover (8th) and Cumberland (9th). There is, however, a striking exception to this pattern of high counts of unintentional drug-related deaths in densely populated counties. Gaston County is a rural county without a large metropolitan area. In the five years from 1997 to 2001, Gaston County had the third-highest number (60) of unintentional drug-related deaths in the state.

This high frequency of unintentional drug-related deaths in rural counties becomes more obvious when using crude mortality rates vs. the actual number of deaths. This approach shows that rural counties had a higher proportion of unintentional drug deaths from unintentional overdoses than did the more urbanized counties in North Carolina (Map 2). Between 1997 and

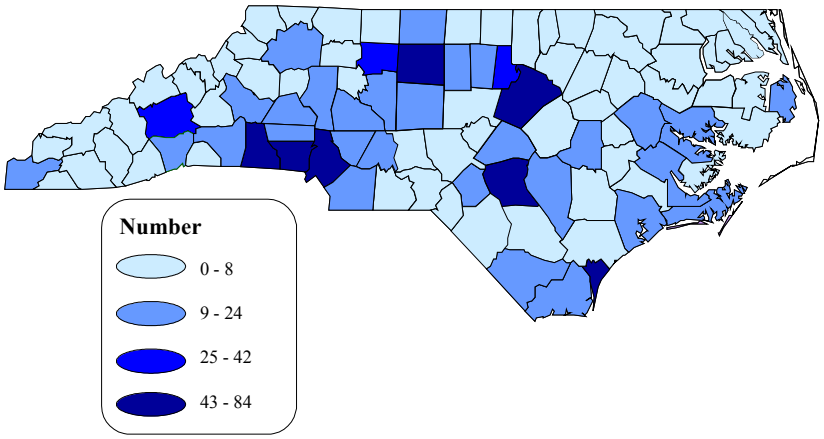
2001, the counties with the highest population densities, (i.e., those with a population of more than 200,000 residents), had some of the lower mortality rates for unintentional drug overdoses: Mecklenburg (2.48/100,000 deaths), Wake (1.86), Guilford (3.82), Forsyth (2.57), Cumberland (2.26), and Durham (3.83). The counties with the 10 highest unintentional poisoning mortality rates were primarily rural (Appendix V): Yancey (9.12 mortality rate per 100,000 population), Mitchell (9.00), Cherokee (8.36), Rutherford (7.06), Gaston (6.36), Dare (6.13), Avery (6.02), Ashe (5.78), Brunswick (5.60) and Polk (5.54). However, rates based on fewer than 10 deaths can be statistically unstable; 8 of these 10 counties had fewer than 10 deaths during this five-year period.

Even though the number of deaths in some of these rural counties is small, in aggregate they create distinct geographic clusters and have similar patterns in the types of drugs that caused the deaths (Map 2). One prominent geographic cluster of counties in the upper quartile of the state distribution of unintentional drug deaths is immediately to the west of Mecklenburg: Gaston (60 deaths), Cleveland (26 deaths), Rutherford (22 deaths), Polk (5 deaths), Henderson (20 deaths) and Buncombe (38 deaths). A second prominent cluster is on the eastern seaboard: Beaufort (10 deaths), Carteret (13 deaths), Dare (9 deaths), Jones (2 deaths), Pamlico (3 deaths) and Pitt (24 deaths). The drugs most often cited as the cause of death are methadone and cocaine. This pattern of drug-related deaths in rural counties has also been reported in other states, such as Maine[11] and Maryland[12].

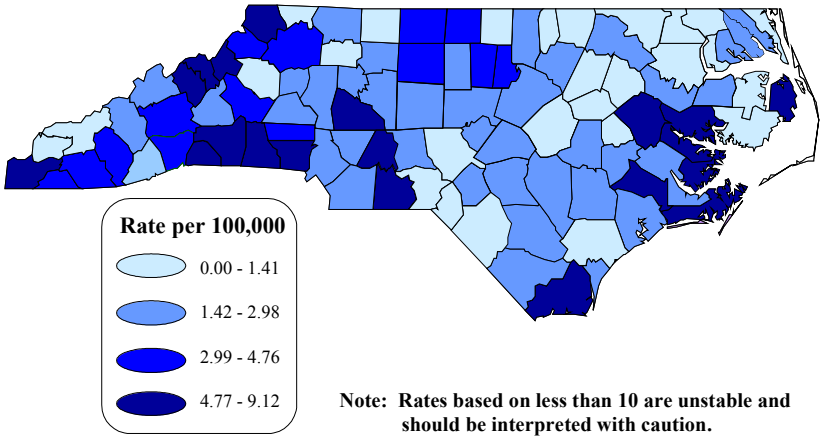
2.3.6 CAUSE OF DEATH. The Office of the Chief Medical Examiner (OCME) determines whether a death from an unintentional overdose is caused by exposure to a toxic level of a single drug (even if other drugs are identified on a toxicology screen) or from exposure to multiple drugs or toxic substances which, by themselves or in combination, could have caused the death. This determination is based on a review of all available information, including the decedent's medical history, the circumstances surrounding the death as described in the report by the medical examiner who does the field investigation, the toxicology reports, and, when available, the autopsy report. This OCME review of many sources of information to determine the number of drugs that can be ascribed to an individual death is critical, as the fatal toxicity level for some drugs can vary greatly across cases. For example, what would be a fatal dose of methadone for a person who had never used the drug (a naïve user) might not be a toxic level for a stabilized patient who had been treated with methadone at therapeutic levels for pain management or for substance abuse. This distinction cannot be made solely on the results of a toxicology report[13].

The recent national data identifying the drugs that are associated with fatal unintentional drug overdoses are controversial, particularly for cases that involve methadone[7,11-16]. To accurately identify the specific drug(s) that is associated with a poisoning death, states need to have standardized investigation and reporting by medical examiners for the entire state; the collection of tissue samples for toxicologic analysis on all poisoning cases whenever tissue samples can be obtained; a centralized toxicology laboratory in which all samples are analyzed, and the availability of a toxicologist(s) and pathologist(s) to review and interpret all of the medical examiner findings for each poisoning-related death. North Carolina and a small number of other states across the country have these resources and can generally determine whether a drug is simply present in the decedent's system, is a contributing factor to the death, or is the

Map 1.
North Carolina
Unintentional Drug-Related Poisoning Deaths 1997-2001



Map 2.
North Carolina
Unintentional Drug-Related Poisoning Death Rates 1997-2001



Note: Rates based on less than 10 are unstable and should be interpreted with caution.

September 2002

State Center for Health Statistics

cause of the death. It has also been suggested that the recent national upsurge in methadone-associated mortality is misleading because it reflects its use with other drugs, especially alcohol, and does not reflect a true increase in deaths from methadone alone[17]. The review of the North Carolina medical examiner data suggests that these concerns and hypotheses may be less relevant to the findings in North Carolina because of the meticulous procedures for investigating drug-related deaths that are followed by the state's medical examiners.

According to a review of 1,096 medical examiner reports on unintentional drug overdoses in North Carolina residents who died between 1997 and 2001, 71% of the deaths were due to an overdose of a single drug. Most of these drugs were legally or illegally obtained prescribed narcotics, and not heroin or cocaine.

For the 1,096 North Carolina medical examiner reports on unintentional drug deaths that were reviewed for 1997 to 2001, the medical examiners concluded that 780 deaths (71%) were due to an overdose of a single drug; the other 316 deaths (29%) were due to excessive exposure to multiple drugs. The "single death" category does not mean that there are no other toxic substances found in the decedent's system, but that only one drug caused the death. In fact, the toxicology reports that were completed on these victims indicated that 55% of the 780 single-drug death decedents had other drugs and/or alcohol in their system at the time of their demise. However, in each case, the pathologist had concluded that the quantity of one drug was at a significant quantity to have caused death, regardless of the presence of other drugs.

2.3.6.1 SINGLE-DRUG DEATHS. During the five-year period from 1997 to 2001 illicit drugs, primarily cocaine (28%) and heroin (19%), and prescription opioids caused 90% of the deaths from an overdose of a single drug (Table 2.3). However, the number and proportion of deaths due to cocaine and heroin declined over time. For example, in 1997 cocaine was the single drug identified in 44% of the cases; by 2001, it caused only 20% of the single-drug deaths, but the actual number of single-drug deaths from cocaine remained stable. Because morphine is a derivative of heroin, and after heroin has been in the body for more than four hours it can no longer be differentiated from morphine in a routine toxicology assay, estimating how many deaths have occurred from morphine is more difficult than determining how many deaths occurred from overdoses of other drugs, such as cocaine and methadone. In other words, after heroin has been in the body for more than four hours, it can no longer be differentiated from morphine in a routine toxicology assay. Therefore, when blood or urine samples are obtained from a decedent many hours after the heroin was used, (a not-infrequent occurrence), toxicology reports identify the presence of morphine and not heroin. Thus, single-drug deaths ascribed to heroin (an illicit drug) may be an underestimation, and those ascribed to morphine (a licit drug) may be an over-estimation. If deaths in North Carolina from unintended overdoses of heroin and morphine are combined, there were 200 such deaths between 1997 and 2001. This represents 26% of the single-drug deaths for this time period.

The other 53% of the deaths from unintentional drug overdoses from 1997 through 2001 in North Carolina were primarily due to prescribed drugs. Most of these prescriptions were for opioids, such as morphine, methadone, oxycodone, hydrocodone, fentanyl, propoxyphene,

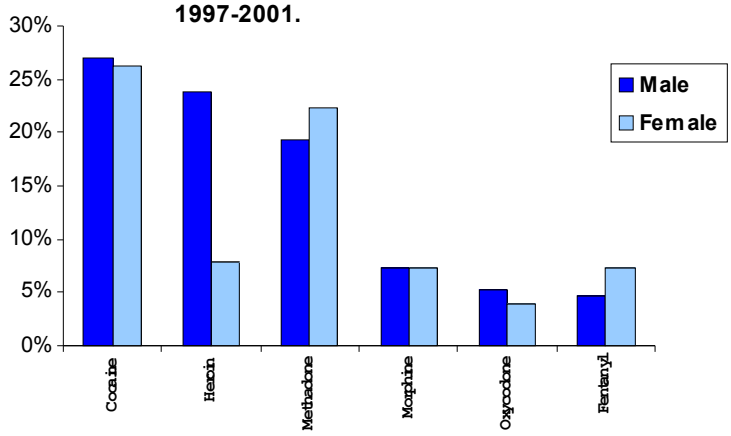
meperidine, codeine, hydromorphone, and butorphanol. Among these, the drug that was identified most often was methadone – a synthetic opioid that is used to treat both pain and substance abuse – followed by an equal number of deaths from heroin. But contrary to the trends seen for cocaine and heroin, the number of single-drug deaths from methadone increased dramatically, from 7 deaths in 1997 to 58 deaths in 2001. In 2001, methadone was the leading cause of mortality from unintentional drug overdoses. During this five-year period there were 147 deaths from methadone, or 19% of the single drug deaths, the same number and proportion of deaths observed for heroin (see Table 2.3).

Table 2.3 The Six Most Common Drugs Causing Unintentional Single-Drug Poisoning Deaths in North Carolina, 1997-2001

1997			1998			1999			2000			2001			1997-2001		
Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%
Cocaine	52	44	Heroin	32	29	Cocaine	44	34	Methadone	56	28	Methadone	58	26	Cocaine	221	28
Heroin	23	20	Cocaine	31	28	Heroin	30	23	Cocaine	48	24	Cocaine	46	20	Methadone	147	19
Morphine	9	8	Fentanyl	7	6	Methadone	19	15	Heroin	31	16	Heroin	31	14	Heroin	147	19
Methadone	7	6	Methadone	7	6	Morphine	5	4	Morphine	15	8	Oxycodone	19	8	Morphine	53	7
Fentanyl	6	5	Morphine	7	6	Fentanyl	4	3	Oxycodone	14	7	Morphine	17	8	Fentanyl	42	5
Propoxyphene	5	4	Propoxyphene	2	2	Hydrocodone	4	3	Fentanyl	11	6	Fentanyl	14	6	Oxycodone	38	5

In North Carolina, methadone has been responsible for the greatest proportion of prescription-related deaths from unintentional drug overdoses since 1997. Figure 2.10 illustrates 6 of the top drugs that were the single cause of deaths from unintentional drug overdoses. Except for heroin overdoses, in which five-times as many men than women died, there is almost no variation by gender for the percentage of deaths from cocaine, methadone, morphine, oxycodone and fentanyl.

Figure 2.10 Unintentional Drug Deaths by Sex from Single Drug Type from Medical Examiner Records (N=1096) in N.C.: 1997-2001.



Deaths from overdoses of traditional street drugs, such as cocaine and heroin, and methadone have received very little media exposure in North Carolina. In contrast, deaths from legal drugs, such as fentanyl, hydrocodone and oxycodone, and from the illegal drugs, such as ecstasy, LSD, and methamphetamines, make the headlines. Fortunately, most of these drugs have not (as yet) played a substantial role in unintentional deaths from drug overdoses in our state. But trends in the drugs associated with unintentional overdoses change quickly, and can vary across states and within states in any one year[10]. Whereas national data suggest that oxycodone and hydrocodone are currently the leading causes of unintentional drug overdoses from prescribed medications[3,4,5,18], the North Carolina data indicate that methadone prescribed for pain management is responsible for the state's most recent spike in drug-related deaths.

The number of unintentional deaths that were attributed to an overdose of methadone increased seven-fold between 1997 and 2001, and accounted for 47% of the overall increase in single-drug deaths.

Table 2.4 illustrates the contribution of all prescription opioids and of methadone to the increase in deaths from overdoses of a single drug. There was a 93% increase in deaths classified as having been caused by exposure to a single drug. The role of methadone was particularly influential in this increase. The number of single-drug methadone deaths increased more than 7-fold over the five-year period, from 7 deaths in 1997 to 58 in 2001 (729% increase). Methadone alone accounted for 47% of the overall increase in drug-related deaths in this five-year period.

Table 2.4 Contribution of Methadone and All Prescription Opioids to the Increase of Single-Drug Deaths* from N.C. Medical Examiner Records, 1997-2001

	1997	2001	Number Change	% change from 1997 - 2001	% of overall increase
All Single-Drug Deaths	117	226	109	93%	----------
Methadone	7	58	51	729%	46.7%
All Prescription Narcotics	32	128	96	300%	88.1%

*Number of single-drug deaths = 780

2.3.6.2 MULTIPLE-DRUG DEATHS. Less than one-third of unintentional deaths from drug overdoses between 1997 and 2001 were classified as due to exposure to more than one drug (i.e., 316 of the 1,096 medical examiner cases in this study). These were cases in which the medical examiner classified the death as having been due to toxicity from a combination of substances, no one of which was present in sufficient quantity to have resulted in death, but which were lethal in combination. Of the 316 multiple-drug deaths, alcohol was the substance identified most often (31% of cases described in Table 2.5) as having contributed to death. Regardless of whether these deaths are defined as single-drug or a multiple-drug deaths, it is clear that many of the victims had been using more than one drug prior to their demise and the drugs most often involved were cocaine, heroin, methadone, morphine, oxycodone, alprazolam, and fentanyl, often in combination with alcohol.

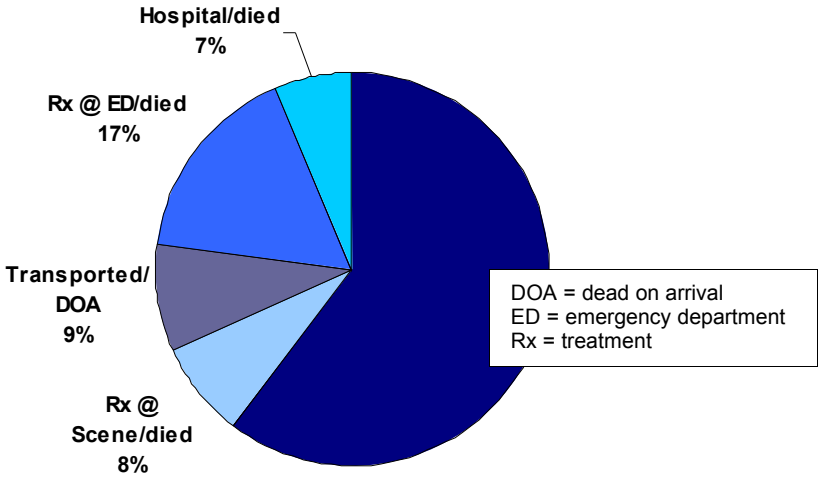
Table 2.5 The Six Most Common Drugs Contributing to Unintentional Multiple-Drug Poisoning Deaths* from N.C. Medical Examiner Records, 1997-2001

1997			1998			1999			2000			2001			1997-2001		
Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%
Alcohol	17	43	Cocaine	18	39	Alcohol	21	36	Alcohol	26	32	Cocaine	25	28	Alcohol	99	31
Cocaine	14	35	Heroin	18	39	Cocaine	14	24	Oxycodone	21	26	Oxycodone	22	24	Cocaine	90	28
Heroin	10	25	Alcohol	14	30	Methadone	10	17	Cocaine	19	23	Methadone	22	24	Heroin	58	18
Hydrocodone	8	20	Morphine	8	17	Oxycodone	6	10	Hydrocodone	12	15	Alcohol	21	23	Oxycodone	52	16
Morphine	3	8	Hydrocodone	5	11	Hydrocodone	6	10	Methadone	11	14	Hydrocodone	19	21	Methadone	51	16
Alprazolam	3	8	Alprazolam	5	11	Alprazolam	6	10	Alprazolam	11	14	Heroin	13	14	Hydrocodone	50	16

*Number of unintentional multiple-drug deaths = 316 (NOTE: because the drugs are not mutually exclusive, there are more drugs listed than the number of deaths.)

2.3.7 TREATMENT PROVIDED TO VICTIMS OF DEATHS FROM UNINTENTIONAL DRUG OVERDOSES. Those who succumbed to an unintentional drug overdose rarely survived long enough for admission to a hospital for treatment (Figure 2.11). Almost 60% of the victims were dead at the scene by the time law enforcement or emergency medical personnel arrived, and 17% expired while being treated at the scene or during transport to an emergency department. A review of the narrative in the medical examiner reports suggests that many victims were often observed by family or friends hours prior to their death, but their condition was not recognized as life-threatening. The victim was often reported last seen sleeping heavily and snoring loudly, unrecognized symptoms of respiratory depression from opioid toxicity.

Figure 2.11 Treatment Provided Prior to Deaths from Unintentional Drug Overdoses, N.C.: 1997-2001



EXAMPLE OF A METHADONE-RELATED DEATH. Mary Jane Smith had at long last found a doctor who was sure he could really treat her chronic pain. The methadone he would prescribe was different from the others. It was cheap. It would work. And it wouldn't have the side effects that came with all of the other narcotics she had tried. (She had thought that methadone was only for drug addicts, but the doctor had said it wasn't.) She left the office that afternoon with a prescription and a return appointment for two weeks. The doctor said all she had to do was follow the directions: one pill, four times a day. She could do that! But she didn't. She hurt so badly when she got home that she took a double dose of the methadone. After two hours there was no pain relief, so she took another pill. She had a glass of wine with dinner; she was feeling better. She wasn't high, but she was sleepy. She told her husband she was going to bed early. She took one more pill to hold her through the night. She fell asleep snoring. She never woke up.

2.3.8 SOURCE OF LICIT AND ILLICIT DRUGS. The information about the source of lethal licit and illicit drugs is often not reported by medical examiners or law enforcement because over 60% of victims are already dead or comatose when found, and witnesses or family members are often unwilling to provide information.

In spite of the inherent difficulties in obtaining information on the source of the drugs, information is available in about two-thirds of the cases investigated by the medical examiners. In those cases, there are some differences in the patterns of acquisition between men and women who die from unintentional drug overdoses. When the source of the drugs was recorded, almost half of the men in which a single drug was identified as having caused the death (n=780 cases) appeared to have obtained their drugs "on the street" (48%), whereas the women were equally likely to have obtained their drugs illegally (28%) or from a physician's prescription written to themselves (32%) or to another person (3%). Obtaining medication by prescription does not, *ipso facto*, mean that the drug was acquired legally. Obtaining medication from a physician under false pretenses, such as requesting pain medication when the intent is to divert rather than to assuage pain, is a crime. This is often referred to as doctor shopping and the patterns for this are discussed below.

2.4 UNINTENTIONAL DEATHS FROM OVERDOSES OF METHADONE

In the five-year period from 1997 through 2001, there were 198 unintentional deaths in which methadone was determined by the medical examiners to be the cause (147) or to have contributed (51) to the death, based on the investigation of the 1,096 medical examiner cases. The majority of the deaths occurred in N.C. residents between the ages of 30 and 49. All but three of these deaths occurred in whites. Two-thirds (64%) of the methadone-related deaths occurred in men. The number of methadone-related deaths increased dramatically after 1997; in 2001 there were seven-times the number of male deaths (50) as in 1997 (7). During the same time period, there was a 66% increase in the number of deaths from all drugs. In women, the number of methadone-related deaths increased five-fold from 1997 (5 deaths) to 2001 (30 deaths); however, during the same time period, the number of all female unintentional drug-related deaths increased 210%.

The medical examiners were able to document the source of methadone in 46% of the cases they investigated. Of these 92 deaths, 73 decedents were found with a prescription for methadone that had been written for them by a physician (79%); 11 had methadone from a prescription that had been written for another person (12%); 3 were known to have obtained their methadone on the street; and 5 were reported as having a combination of prescription and street methadone. Because there isn't a statewide prescription drug monitoring system or statewide law enforcement surveillance of the illicit trafficking of methadone in North Carolina, there is no information from which to document the sources of methadone among the remaining 106 deaths.

Several steps were taken to determine whether or not most of these methadone-related deaths occurred in patients undergoing methadone treatment for substance abuse, and whether they were prescribed or took a lethal dose of the medication or diverted (sold) their methadone to persons who inadvertently took more than their system could tolerate. One of the strongest speculations encountered by the investigators in this study was that the methadone associated with the unintentional deaths from drug overdoses was being diverted by patients at OTP clinics who have methadone take-home privileges. Therefore, the directors of the certified Opioid Treatment Program (OTP) Clinics were surveyed to see if they recognized as patients any of the names of the 198 methadone-related deaths. The staff at the Division of Mental Health who certify and monitor the state's OTP clinics were contacted to obtain a better understanding of the criteria for

receiving treatment and gaining take-home privileges of methadone at one of the state's 24 certified OTP clinics.

The director of Adult Substance Abuse Services in the North Carolina Department of Health and Human Services' Division of Mental Health, who is also the designated State Opioid Treatment Authority (i.e., the person who certifies and monitors the state's OTP clinics), states that the North Carolina State Authority worked for over a year with public and private providers to very carefully design a seven-level schedule for patients receiving treatment for substance abuse in OTP clinics. The schedule is considerably more restrictive than the policies and procedures that would be allowed under the revised federal regulations and that are operative in other states. The levels were approved and adopted into the North Carolina licensure rules by the Commission of Mental Health, Developmental Disabilities, and Substance Abuse Services. Because North Carolina's rules are more restrictive than the federal regulations, they supersede the federal schedule. North Carolina rules allow a patient to progressively earn points for methadone take-home privileges by demonstrating compliance with all program requirements, including clean drug screens, stable home environment, engagement in treatment, and on five additional dimensions. A two-week take-home privilege is only earned with two years in a program at a certified OTP clinic and one year of compliance. A 30-day take-home is only earned with four years in a program and three years of compliance. Compliance in the state's OTP clinics is strictly monitored.

In September 2002, the directors from all 24 certified OTP clinics in North Carolina reviewed a list containing the names, dates of birth, and counties of residence of all 198 decedents whose deaths were linked to an unintentional overdose of methadone. Based on a 100% response rate, the directors identified eight people (4% of the names on the list) as being current or former OTP clinic patients. The individuals, however, were not identified by name, so it was not possible to determine whether a decedent could have been a patient at more than one OTP clinic sometime prior to his or her demise. Had one of the decedents been a patient at two or more OTP clinics, the number of identified persons would have resulted in less than 4% of the decedents having been patients at an OTP clinic.

Except in emergencies (such as when a patient is seen in an emergency department or admitted to a hospital), methadone for the treatment of substance abuse can legally only be administered from a certified OTP clinic. It cannot be routinely prescribed by a private practitioner outside of an OTP clinic to treat substance abuse. Methadone, however, can be prescribed as an analgesic for pain management by any licensed physician with a current DEA license to prescribe scheduled narcotics. Because of the strict controls placed on patients being treated for substance abuse with methadone at OTP clinics, and the concurrent lack of control or oversight of patients being prescribed methadone for pain management, it is much more likely that the diversion of methadone, if and when it occurs, is more likely to be initiated by medical care practitioners and patients being prescribed methadone for pain management, and not those affiliated with OTP clinics who are prescribing or being treated for opioid addiction. OTP clinics appear to be a negligible source of the methadone implicated in unintentional drug-related fatalities in North Carolina.

In May 2003, the Substance Abuse and Mental Health Services Administration (SAMSHA) convened a multidisciplinary working group to evaluate and address the recently reported

increases in methadone-associated mortality in the U.S. Consistent with North Carolina findings, Methadone-Associated Mortality: Report of a National Assessment[13] concluded that OTP clinics and the revised federal regulations for methadone take-home privileges are not significant contributors to methadone-associated mortality:

> Examination of the data available to the National Assessment participants [including representatives from the NC Department of Health and Human Services Divisions of Mental Health and Public Health] indicates that OTPs and the 2001 regulatory changes did not have a significant effect on rates of methadone-associated mortality. … The upward trend in fatalities involving methadone appeared prior to 2001, and thus, preceded SAMSHA's regulatory changes (Kallan, 1998). The trend in methadone-associated deaths parallels death rates associated with other opioid agents (SAMHSA, 2003). In the cases in which the sources of methadone associated with deaths could be traced, OTPs did not appear to be involved. Within OTPs, patient deaths during the start-up (induction) phase - the period of highest risk for in-treatment mortality - are rare due to Federal regulations that impose specific requirements on the induction (loading) dose, as well as improvements in patient care that resulted from the SAMSHA requirements that OTPs must be accredited.
>
> Further, the growth in the number of OTPs administering methadone and in the number of persons receiving methadone treatment has been modest and does not parallel the rate of increase in methadone-associated deaths. Although the data remain incomplete, the National Assessment participants concurred that methadone tablets and/or diskettes that have become available through channels other than OPTS are most likely the central factor in recent increases in methadone-associated mortality. (13, page 22)

The degree of difficulty in establishing the source of the methadone that resulted in these unintentional deaths is also reflected in another parameter documented by the state's medical examiners on their field reports – the level of medical care that could be offered to reverse the effects of the methadone overdose. Eighty percent of the 198 methadone-related deaths were either dead prior to the arrival of emergency medical service personnel, or died at the location – attesting to the significant lethality of methadone in contrast to many other drugs. Nine died in transport to the emergency department; 25 died at the emergency department and 4 died after being hospitalized. (Treatment status was not documented in 3 cases.)

2.5 RETAILING AND DISTRIBUTION OF CONTROLLED SUBSTANCES IN NORTH CAROLINA

To interpret changes in trends in unintentional drug-related mortality, it is helpful to understand the context in which the mortality rates have changed. This is particularly important when trying to understand the abrupt increase in deaths from drug overdoses that has recently occurred in North Carolina.

The DEA routinely provides information on the amounts of controlled substances that are legally retailed to registrants in the U.S. by state and zipcodes[19] on a public website. Unless

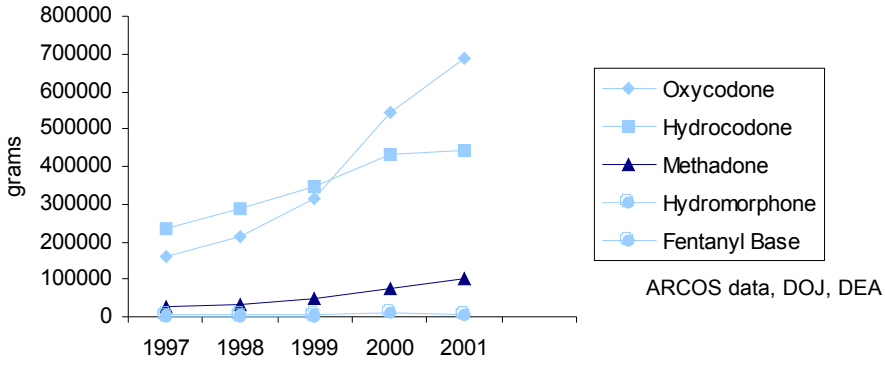
otherwise specified, registrants include retail pharmacies, hospitals, medical care practitioners and teaching institutions. Reports on scheduled narcotics retailed to opioid treatment program clinics are available by special request. The DEA, through its Automation of Reports and Consolidated Orders System (ARCOS), provides each state with an estimate of the amount of legal opioids and other selected controlled substances that were sold to retailers of pharmaceutical products in the state. By default, these reports also provide an insight into the amount of scheduled narcotics that could be available for diversion, misuse or abuse.

Between 1997 and 2001, the ARCOS reports indicate an increase in the amount of most scheduled narcotics that were retailed and distributed to North Carolina. Of the Schedule II opioids (those legal narcotics defined by DEA as having the greatest potential for diversion and abuse), the greatest increases in retailing in North Carolina were reported for oxycodone (a four-fold rise between 1997 and 2001), hydrocodone (a two-fold increase) and methadone (a four-fold increase over the 5-year period). In contrast, the amount of morphine retailed in the state was consistent over time, and the amount of legal cocaine retailed within the state declined.[20]

By mapping ARCOS data, counties and zipcode regions within North Carolina that have legally purchased or obtained more dose units of scheduled narcotics per 100,000 population than the state mean can be easily identified. These area-specific retail profiles can then be compared with the state and region-specific mortality rates for unintentional deaths from unintentional drug overdoses.

One way to test the hypothesis that the availability of a drug contributes to an increase in the number and rate of unintentional deaths from drug overdoses a state experiences is to assess the availability of scheduled narcotics to those who use them. This can be done by comparing the average number of grams of a substance retailed per registrants within a geographic area in a given year, to the number of grams per registrant observed in the nation or to other counties within a state. It can also be done by comparing the number of grams per 100,000 population retailed to a particular state, in contrast to what other states receive and the national average[21].

Figure 2.12 Retail Distribution by Year of Selected Schedule II-IV Narcotics, North Carolina: 1997-2001



ARCOS data, DOJ, DEA

In the five-year period between 1997 and 2001 in North Carolina, oxycodone had the highest increase in its retail distribution compared with all other scheduled narcotics that were reported by ARCOS[20] (see Figure 2.12). One would therefore expect that the highest rate of unintentional drug-related overdoses should have involved oxycodone. This did not happen.

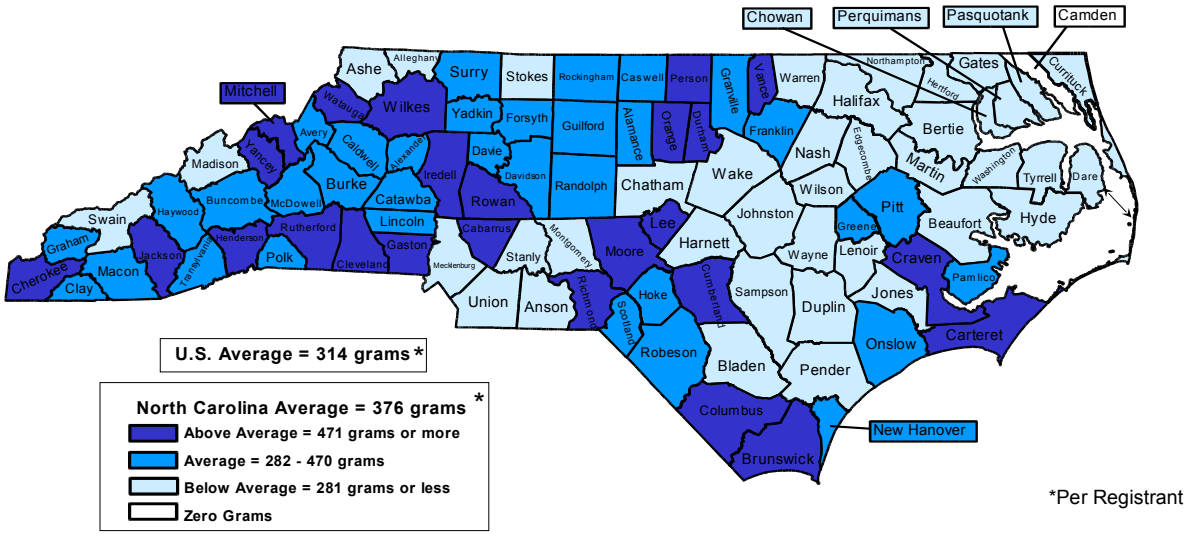
Between 1997 and 2001, the increase in the amount of methadone that was retailed in North Carolina was less than that for oxycodone or hydrocodone (Figure 2.12); nevertheless, methadone had the highest increase in the mortality rate from unintentional drug overdoses (Table 2.3). This pattern suggests that the association between the availability of a drug and the number of unintentional drug-related deaths is much more complex than just the availability of a drug. Other factors that need further investigation, such as the inherent lethality of the drug, may also be important factors that contribute to an excess number of deaths from unintentional overdoses.

A review of the retail distribution patterns of legal oxycodone and methadone in North Carolina, two of the prescription narcotics that have been implicated in the rise of fatal unintentional drug overdoses, illustrates at least one aspect of the complexity involved in understanding how the availability of drugs may or may not affect an increase (or decrease) in fatal drug overdoses.

2.5.1 OXYCODONE. In 2001, the U.S. average of retailed oxycodone per registrant was 314 grams.[20] In North Carolina, the state average distribution of oxycodone per registrant was 376 grams, slightly higher than the national average. The range of grams/registrant of oxycodone within the state during 2001 is more striking than that for methadone, ranging from the highest average (1,003 grams of oxycodone retailed per registrant) in Cleveland County to the lowest average (21 grams per registrant) in Hyde County (Appendix 6). In 2001, there were 22 DEA registrants licensed to retail oxycodone in Cleveland County. Thus, on average, Cleveland County in 2001 reported distributing over 3 times the national average of oxycodone per registrant. In contrast, Hyde County had one registrant, and it distributed less than 7 percent of the national average retail distribution of oxycodone in 2001. Map 3 depicts those counties that

Map 3

State of North Carolina by County 2001 Distribution of Oxycodone

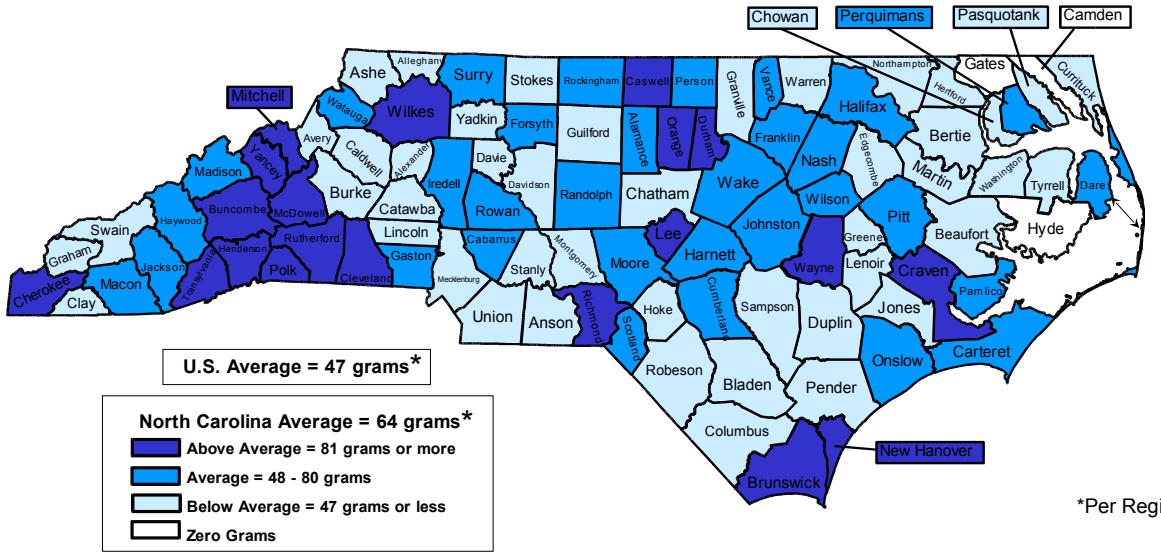


had above-average retail of oxycodone in 2001;[22] retail at the state average; retail below the state average; and those that did not retail any oxycodone.

2.5.2 METHADONE. In 2001, the U.S. average of retailed methadone per registrant was 47 grams. In North Carolina, the state average distribution of methadone per registrant was 64 grams, 36% higher than the national average. As seen for oxycodone, there is wide variation by county of retailing patterns for methadone although at a lower magnitude, ranging from the highest average (469 grams per registrant), again in Cleveland County, to the lowest average (0.43 grams/registrant) in Tyrrell County (Appendix VI). On average, Cleveland County in 2001 reported distributing 10 times the national average of methadone per registrant and had 21 DEA registrants licensed to retail and/or distribute methadone. In contrast, Tyrrell County had one DEA registrant for methadone, and it distributed less than one percent of the national average retail distribution of methadone in 2001. Map 4 depicts those counties that had above-average retail of methadone in 2001; retail at the state average;[22] retail below the state average; and those that did not retail any methadone.

Map 4

State of North Carolina by County 2001 Distribution of Methadone



The 2001 above-average marketing profiles for the retailing of oxycodone and methadone in North Carolina in some geographic areas, such as some of the clusters in the western part of the state, suggest the need for further investigation to determine if there are areas subject to diversion, if there are areas that must rely on other counties to provide needed pain management services, or if there are other reasons for geographic differences in the retail profiles.

It is also important to note that not every county that has retailed oxycodone or methadone above the state average has a concurrently high unintentional drug-related mortality rate

(Appendix V), Orange County for example. Below-the-state-average retailing profile could, in contrast, be indicative of areas in the state in which there is inadequate pain management available to patients with severe pain.

The prominence of Cleveland County should be noted. The disparity in grams per retailer for both oxycodone and methadone between Cleveland County and the state average (Table 2.6) is even greater than the differences between it and the next county on the list (Orange County). The average number of grams per retailer of oxycodone in Cleveland County is over three times that for the state (1003 vs 314 grams/ DEA registrant) for 2001. For methadone, the average grams/registrant is seven-times as great in Cleveland County as in the state overall (468 vs 64 grams per DEA registrant). Because neither medical examiner nor law enforcement data are currently able to identify and link the sources of the drugs that cause unintentional drug-related deaths, it is not possible to discern what proportion of these drugs was obtained fraudulently. A statewide prescription monitoring system could provide this kind of information.

Table 2.6 Upper Quartile of State Retail Distribution of Oxycodone and Methadone by DEA Registrants in North Carolina above the State Average, 2001.*

Top 25% Retailed **Oxycodone**, 2001				Top 25% Retailed **Methadone** , 2001 (Does NOT include Opioid Treatment Centers)			
County	[Aver. Grams]	(grams/DEA registrant)	Mortality Rate	County	[Aver. Grams]	(grams/DEA registrant)	Mortality Rate
Cleveland	[1,003]	(22,066/22)	5.46	**Cleveland**	[468]	(9,840/21)	5.46
Orange	[759]	(26,579/35)	3.61	**Orange**	[160]	(4,794/30)	3.61
Wilkes	[700]	(7,700/11)	3.69	Buncombe	[124]	(6,065/49)	3.73
Vance	[659]	(7,251/11)	1.41	**Yancey**	[119]	(238/2)	9.12
Rutherford	[650]	(8,454/13)	7.06	**Henderson**	[113]	(2,368/21)	4.57
Durham	[645]	(23,245/36)	3.83	**Lee**	[111]	(887/8)	1.65
Lee	[638]	(6,376/10)	1.65	**Durham**	[110]	(3,195/29)	3.83
Rowan	[621]	(14,294/23)	3.42	**Richmond**	[103]	(1,030/10)	1.29
Mitchell	[610]	(4,268/7)	9.00	Wayne	[102]	(1,840/18)	2.30
Brunswick	[604]	(9,678/16)	5.60	Polk	[101]	(402/4)	5.54
Jackson	[567]	(4,534/8)	3.08	**Mitchell**	[100]	(700/7)	9.00
Person	[559]	(3,916/7)	1.14	**Wilkes**	[98]	(885/9)	3.69
Craven	[551]	(11,016/20)	2.86	**Cherokee**	[89]	(715/8)	8.36
Richmond	[548]	(7,126/13)	1.29	**Craven**	[87]	(1,660/19)	2.86
Columbus	[534]	(10,674/20)	3.32	**Rutherford**	[86]	(1,031/12)	7.06
Carteret	[522]	(9,391/18)	4.40	Transylvania	[85]	(679/8)	2.76
Cumberland	[514]	(26,202/51)	2.26	McDowell	[83]	(499/6)	2.40
Henderson	[512]	(11,255/22)	4.57	**Brunswick**	[83]	(1,322/16)	5.60
Cabarrus	[508]	(15,744/31)	2.35	New Hanover	[82]	(3,024/37)	4.68
Moore	[500]	(8,493/17)	1.09	Caswell	[81]	(162/2)	3.43
Cherokee	[496]	(4,463/9)	8.36				
Yancey	[492]	(1,968/4)	9.12				
Iredell	[487]	(15,087/31)	1.50	*Number of counties differ by drug as not all counties have*			
Gaston	[485]	(25,221/52)	6.36	*DEA registrants for both oxycodone and methadone.*			
Watauga	[478]	(6,217/13)	3.30				
N.C. Average	[314]	(688,058/1,831)		N.C. Average	[64]	(102,806/1,600)	

Source: for Average Grams distributed by DEA Registrant and number of grams per number of registrants are from ARCOS Report 2 for North Carolina, prepared by DEA May 2003. Mortality rates are for 5-year data from 1997-2001 for North Carolina from N.C. State Center for Health Statistics (Appendix 6), prepared 09/24/03.

*Counties that are in the upper quartile of retailed oxycodone and methadone are highlighted in bold.

2.6 SUMMARY

North Carolina is experiencing an epidemic of deaths from unintentional drug overdoses. Since 1997, the number of deaths in North Carolina from unintentional drug overdoses has increased over 100% and continues to increase annually. Without intervention, there is no reason to believe this trend will spontaneously reverse. Based on a review of more than a decade of death certificates for unintentional drug overdoses (1990-2001) and five years of medical examiner cases (1997-2001), unintentional deaths from licit drugs are increasing and are now responsible for over half of the fatal unintentional drug overdoses, whereas the number of unintentional deaths from illicit drugs has decreased over time. Although deaths from illicit drugs, mostly cocaine and heroin, continue to occur, the misuse and abuse of prescription medications clearly explain the significant increase in fatal overdoses in North Carolina since 1997. Over half of the prescription drugs associated with unintentional deaths are narcotics (opioids). And of these licit opioids, deaths from methadone, usually prescribed as an analgesic for severe and intractable chronic pain, have increased seven-fold since 1997.

Because of the increasingly high proportion of methadone-associated deaths in the state, the directors of all of North Carolina's Opioid Treatment Program (OTP) clinics were surveyed in the fall of 2002. For over half a century, methadone has been the most successful drug in the treatment of substance abuse. And, based on a 100% response rate from these clinic directors, only eight (4%) of the 198 persons listed on death certificates as having died from unintentional overdoses of methadone between 1997 and 2001 were identified as being current or former patients. Although the federal guidelines for dispensing methadone have recently been relaxed, North Carolina rules are more restrictive and supersede the federal rules, particularly for methadone take-home privileges. Although from time to time OTP clinic patients divert the methadone they receive in the clinic, the Substance Abuse Services in the Division of Mental Health has determined that this is not a significant problem in the state's public and private OTP clinics. In short, state data and the consensus of the Methadone-Associated Mortality Assessment Workshop suggest that methadone dispensed from OTP clinics is a negligible source of the methadone that has contributed to the dramatic increase in unintentional methadone-related deaths in North Carolina and in other states that have recently reported upsurges in methadone-related deaths.

Data from North Carolina and other states suggest that practitioners and patients who misuse or divert prescribed methadone for pain management are a more significant source of the methadone (and other licit narcotics) that results in unintentional deaths, than are patients who are under treatment for substance abuse at OTP clinics. However, this supposition can not be substantiated until all states, including North Carolina, have prescription drug monitoring programs that can accurately identify the diversion of prescribed controlled substances as soon as it occurs. Prescription monitoring systems have been shown to be one of several strategies that can assist law enforcement and medical care practitioners in reducing drug diversion and identifying patients in need of referral to treatment.

Deaths due to unintentional and undetermined poisonings are increasing nationally and in North Carolina. The increase in North Carolina is explained by the escalating misuse of prescription narcotics, especially methadone. Intervention from multiple state and community-based agencies and organizations, such as those from law enforcement, medical care providers,

mental health, public health, and the pharmaceutical industry, could save hundreds of lives and reduce the resultant financial burden to the state every year.

CHAPTER 3. Recommendations from the Task Force to Prevent Deaths from Unintentional Drug Overdoses in North Carolina

3.1 INTRODUCTION

In North Carolina between 1997 and 2001, there were more fatal poisonings from unintentional drug overdoses than from all other toxic substances, including intentional poisonings by suicide and homicide and fatal poisonings of undetermined intent. In this five-year period, the rate (and the number) of deaths from unintentional overdoses of legal drugs increased, whereas the rate of deaths in the state from illegal drugs, such as cocaine and heroin, declined. Diverted, misused and abused prescribed medications are now responsible for over half of fatal unintentional poisonings. Over half of the prescription drugs associated with these unintentional drug deaths are narcotics (opioids). Of these narcotics, deaths from methadone, usually prescribed as an analgesic for severe chronic pain (and not for the treatment of substance abuse), have increased seven-fold since 1997. In North Carolina, methadone-associated deaths have increased more rapidly than deaths due to the misuse and abuse of other commonly prescribed narcotics, such as oxycodone and hydrocodone. The methadone dispensed from Opioid Treatment Program clinics for the treatment of substance abuse is a negligible source of the methadone that has contributed to the dramatic increase in unintentional methadone-related deaths.

Intervening to reverse this epidemic of poisoning deaths from unintentional drug overdoses is complex. The ability of trained medical care professionals to provide prescription medications to people who need treatment for severe pain and substance abuse must not be compromised. At the same time, the diversion, misuse and abuse of scheduled narcotics must be curtailed and ultimately eliminated in order to prevent devastating effects from unintentional drug overdoses. The following recommendations reflect the complexity of identifying the risk factors and circumstances that result in unintentional deaths from licit and illicit drug overdoses. They reflect the willingness of the law enforcement, public health, mental health, and medical care communities to discuss and intervene to prevent unintentional drug overdoses. They further emphasize the synergy that will be required to implement a comprehensive program of prevention strategies among public and private agencies and organizations within the state that are interested in solving this public health emergency.

The recommendations are organized into seven categories: (1) leadership; (2) surveillance; (3) law enforcement; (4) legislative initiatives; (5) educational interventions for the general public; (6) educational interventions for health care and law enforcement professionals; and (7) clinical interventions.

RECOMMENDATIONS FROM THE TASK FORCE TO PREVENT DEATHS FROM UNINTENTIONAL DRUG OVERDOSES IN NORTH CAROLINA

1. **LEADERSHIP recommendations create a state Department of Health and Human Services/ Department of Justice (DHHS/DOJ) leadership structure for oversight of all surveillance, intervention and enforcement activities related to preventing unintentional drug overdoses.**

Recommendation 1. The Attorney General of the N.C. Department of Justice and the Secretary of the N.C. Department of Health and Human Services should designate a leadership structure within their respective departments that meets at least four times a year to oversee the formulation and implementation of a public health response to the state's epidemic of unintentional deaths from drug overdoses by monitoring drug overdoses in North Carolina. The primary roles of the combined law enforcement, mental health, and public health components will be to:

1.a Assure continuous monitoring of the misuse of licit and illicit drugs and deaths resulting from accidental drug overdoses while concurrently promoting the treatment of chronic pain and substance abuse by all appropriate medical modalities, including the use of licit opioids.

1.b Develop evidence-based interventions to prevent accidental deaths from drug overdose (s).

1.c Advise the relevant agencies/bodies of needed policies and regulations to prevent accidental deaths from drug overdoses.

1.d Coordinate among relevant agencies and organizations the implementation of policies and programs to prevent deaths from accidental drug overdoses.

1.e Implement and review independent evaluation(s) of each of the interventions and surveillance activities that are enacted, as recommended by this report, to restructure or eliminate ineffective approaches and minimize unintended negative consequences.

2. **SURVEILLANCE recommendations compile and monitor data relevant to unintentional overdose from the Medical Examiner system, emergency medical services (PreMIS), hospital emergency rooms (NCEDD), the Carolinas Poison Center, U.S. Drug Enforcement Agency (ARCOS), and N.C. State Bureau of Investigation. All reports should be distributed to DHHS/DOJ leadership at least four times a year.**

Recommendation 2. The North Carolina Medical Examiner system should identify, track and compile incidence data on deaths from confirmed or suspected unintentional drug overdoses, including the type and/or category of drugs causing and contributing to the death and the circumstances surrounding the death.

Recommendation 3. The Office of Emergency Medical Services should identify, track and compile data on persons who receive pre-hospital emergency care for the non-fatal ingestion of drug(s), unintentional drug overdoses, and substance abuse in North Carolina, using the North

Carolina PreHospital Medical Information System (PreMIS), including information on the frequency and geographic location of emergency medical service requests to treat and/or transport cases of drug ingestion and overdoses, the type and/or category of drugs, and the emergency department to which the patient was transported.

Recommendation 4. The Division of Public Health should identify, track and compile data on persons with unintentional drug overdoses or with a clinical diagnosis of substance abuse that are treated in North Carolina emergency departments, using the North Carolina Emergency Department Database (NCEDD) or a similar N.C. hospital ED electronic surveillance system, including information on the prevalence and geographic location of emergency department admissions for drug ingestion and overdoses, and the type and/or category of drugs that caused and/or contributed to the emergency department admission.

Recommendation 5. The Carolinas Poison Center should identify, track and compile data on requests from North Carolina residents and health care providers for appropriate responses to exposures to unintentional drug overdoses, using the Poison Center's databases, including information on the prevalence and geographic location of actual substances taken, signs and symptoms of toxicity, treatment given, management sites and clinical outcomes.

Recommendation 6. The DHHS/DOJ leadership structure to monitor the problem of drug overdoses in North Carolina should review, at least four times a year, the publicly available data from the website of the U.S. Department of Justice Drug Enforcement Agency's Automation of Reports and Consolidated Orders System (ARCOS) on the amounts of controlled substances that are retailed in North Carolina to hospitals, pharmacies, teaching institutions, physicians and mid-level practitioners.

Recommendation 7. The Division of Mental Health, Developmental Disabilities and Substance Abuse Services' (MH/DD/SA) Drug Regulatory Program should identify, track and compile data on the retailing of methadone to the state's certified Opioid Treatment Program Clinics, using the U.S. Department of Justice Drug Enforcement Agency's Automation of Reports and Consolidated Orders System (ARCOS).

Recommendation 8. The State Bureau of Investigation (SBI) should identify, track and compile data on the amount (dosage units) of individually identified illicit drugs in North Carolina that are reported by law enforcement to the SBI, including monthly information on the types and amounts of illicit drugs captured in the SBI Crime Laboratory database.

3. LAW ENFORCEMENT recommendations provide infrastructure to prevent illegal distribution and use of controlled medications.

Recommendation 9. The State of North Carolina should provide funding to the SBI to hire, train and deploy eight to 10 additional full-time agents specifically assigned to work drug diversion cases.

4. LEGISLATIVE INITIATIVES recommendations create requirements and regulations necessary to implement surveillance activities, create fines to help finance the system and improve access to treatment services.

Recommendation 10. Hospital emergency departments should be required to obtain a separate 7-ml. sample of admission-blood from all patients admitted to the emergency department with a diagnosis of suspected or confirmed unintentional drug overdose and hold it for a period of at least two weeks, in case the patient dies and a blood sample is needed by the Office of the Chief Medical Examiner to determine the drug(s) involved in the overdose.

Recommendation 11. Legislation should be sought to facilitate and fund the implementation of a prescription monitoring system for controlled substances in North Carolina with the goals of (a) limiting the access of controlled substances to only those with a legitimate medical need, (b) establishing the ability to identify and track instances in which controlled substances are compromised, and (c) identifying potential controlled substance abusers and steering them into treatment.

Recommendation 12. Legislation should be sought to create an assessment to be levied against persons convicted of manufacturing, selling, obtaining or misusing controlled substances or obtaining drugs for fraudulent purposes, to be paid to the Clerk of Court, and be dispersed according to legislative direction to offset the cost of drug misuse/addiction treatment in North Carolina.

Recommendation 13. Legislation should be sought to adopt mental health and chemical dependency insurance coverage parity.

5. EDUCATIONAL INTERVENTIONS - GENERAL PUBLIC recommendations raise public awareness of the magnitude, risks and signs of unintentional overdose, preventive behaviors and precautions, and available emergency, treatment and law enforcement resources.

Recommendation 14. The State of North Carolina should identify and implement educational programs with demonstrated effectiveness that make all residents of North Carolina aware of the dangers of licit and illicit drug misuse.

14.a Promote and evaluate the 911 call-in system as an effective and no-fault way for an informant (person making the call) to obtain medical care for a person thought to be suffering from a life-threatening drug overdose(s).

14.b Promote and evaluate the Carolinas Poison Center as an effective no-fault way for an informant (person making the call) to obtain medical care for a person thought to be suffering from the effects of a drug overdose that are not life-threatening.

14.c Promote and evaluate the Carolinas Poison Center as the statewide drug information call-in center.

14.d Encourage implementation and evaluation of educational programs by medical care providers and pharmacists for patients, their families and friends about the signs and symptoms of unintentional drug overdose.

14.e Encourage implementation and evaluation of educational programs for patients and their caregivers by pharmacists and medical care providers on how to securely store opioid medications and other controlled substances in the home.

14.f Evaluate the implementation and effectiveness of educational programs that specifically target parents – particularly parents of pre-teen and teenage children – with the goals of increasing their awareness and understanding of substance misuse and abuse and providing support and information-sharing for those parents with children who are experimenting with substance misuse and abuse.

14.g Ensure that educational programs, such as the Healthful Living Curriculum on alcohol and drug use and misuse in current elementary, middle, and high school curricula, are evaluated and promoted only if demonstrated to be effective and used in a manner that is age-appropriate and culturally appropriate.

Recommendation 15. The State of North Carolina should support educational and social marketing campaigns to destigmatize mental illness and addiction. This should include:

15.a Marketing to the public what treatment resources are available for people who have developed, or think they are developing, abuse problems.

15.b Emphasizing the destigmatization of seeking treatment for mental illness and addiction.

6. EDUCATIONAL INTERVENTIONS – PROFESSIONALS recommendations raise professional awareness of the magnitude, risks and signs of unintentional overdose, and create practice guidelines and educational and credentialing requirements for prevention, treatment and enforcement activities.

Recommendation 16. The State of North Carolina should identify and implement educational programs with demonstrated effectiveness that make North Carolina health and medical care professionals, law enforcement, teachers, clergy, etc., aware of the dangers of licit and illicit drug use.

16.a Educate medical providers, teachers, clergy, etc., to recognize signs of addiction and refer individuals for appropriate treatment.

16.b Promote the use and evaluation of educational programs for law enforcement and health care professionals to understand how to differentiate appropriate and inappropriate use of controlled substances.

16.c Promote the use and evaluation of educational programs to medical care providers on counseling patients on the appropriate use and potential adverse effects of all opioids when they are not used as prescribed, particularly long-acting opioids such as methadone, controlled released (CR) morphine and oxycodone, and transdermal fentanyl.

16.d Promote the use and evaluation of educational programs for medical care providers and pharmacists by law enforcement on how to securely store opioid medications and other controlled substances in clinical facilities and pharmacies.

16.e Evaluate the implementation and effectiveness of the North Carolina Board of Pharmacy's prescription forgery notification program to medical care practitioners and pharmacists in North Carolina.

16.f Promote and evaluate professional educational programs (to medical schools, to physicians-in-training and in practice, and to other health care professionals) that focus on evaluation and appropriate treatment of the intentional and unintentional misuse and abuse of opioid analgesics and other controlled substances.

Recommendation 17. The North Carolina Medical Board should continue to promote and monitor the application of model guidelines for the use of controlled substances in the treatment of chronic pain, including the use of best practices for mental health and substance misuse screening.

Recommendation 18. The North Carolina Medical Board and the North Carolina Medical Society should continue to promote sanctioned practice guidelines for the appropriate and optimal management of chronic pain.

Recommendation 19. The North Carolina Medical Board should take under advisement the adoption of requirement that any practitioner who prescribes controlled substances for the management of chronic pain complete a minimum of eight hours of CME credit in pain management and be in good standing with appropriate state and federal agencies in respect to controlled substance prescribing, administering and dispensing, as a condition of licensure renewal.

Recommendation 20. The North Carolina Medical Board should take under advisement the adoption of requirement that any practitioner who prescribes or dispenses opiate agonists to patients for the treatment of opiate addiction complete a minimum of eight hours of CME credit in chemical dependency and be in good standing with appropriate state and federal agencies in respect to controlled substance prescribing, administering and dispensing, as a condition of licensure renewal.

7. CLINICAL INTERVENTIONS recommendations expand forgery notification systems, improve emergency provider preparedness, increase resources for recovering addicts, and broaden the evidence base for implementing new, effective out-patient and in-patient treatment programs.

Recommendation 21. The North Carolina Board of Pharmacy should expand its forgery notification system by opening up participation to all medical care providers, e.g., dentists, physicians, mid-level practitioners and veterinarians; schools of medicine and residency training programs; hospitals; pain management clinics; emergency departments; urgent care facilities, and Opioid Treatment Program clinics in North Carolina.

Recommendation 22. The State of North Carolina should develop a plan for optimizing a person's chance of survival in the event of an [opioid] overdose.

22.a Training and credentialing for emergency services personnel to recognize the signs and symptoms of opioid overdose and to administer naloxone for respiratory arrest from opioid toxicity when it is within their scope of practice, as established by the NC Medical Board.

22.b Promoting current programs to teach and certify proficiency in cardiopulmonary resuscitation (CPR) in the eighth grade Healthful Living Curriculum and in the general community, and recommending the repetition of the CPR curriculum one more time for all students in North Carolina high schools.

Recommendation 23. The State of North Carolina should support adequate facilities and resources to provide shelter and medical, mental health, and social support for recovering opioid addicts.

23.a By 2009, the State of North Carolina should increase the number of and easier access to Opioid Treatment Program (OTP) clinics in North Carolina to accommodate 50% of the state's population with opioid addiction (7,000 patients).

23.b By 2009, the State of North Carolina should increase by 50% the number of outpatient treatment programs recommended in the 2003 DHHS/DD/Substance Abuse Services' management report.

23.c By 2009, the State of North Carolina should increase by 50% the number of detoxification programs recommended in the 2003 DHHS/DD/Substance Abuse Services' management report.

Recommendation 24. The State of North Carolina should provide resources to pilot-test the following approaches with rigorous evaluation in order to determine which are most efficacious:

24.a Easily accessible 24-hour crisis intervention facilities and sobering shelters, with nutritional and child care support, in metropolitan centers and rural locations.

24.b Housing facilities where off-site substance use does not result in exclusion of the client and where on-site support is provided to help the person make the transition to abstinence in a non-threatening way.

24.c Accessible long- and short-term outpatient counseling and day treatment for substance abuse and mental illness.

24.d Accessible drop-in day programming, with outreach workers and nutritional and child care support, for substance users in treatment programs.

24.e Access to methadone treatment in prisons, with a system for continuing treatment in the community after release including mandatory alcohol/opioid detoxification, and treatment and educational programs for young offenders in conjunction with, or as alternatives to, prison.

References

1. Runyan CW. Using the Haddon matrix: introducing the third dimension. Injury Prevention 1998;4:302-307.

2. CDC: National Center for Injury Prevention and Control, WISQARS Mortality Reports, 1991-2000. Website: http://webappa.cdc.gov/sasweb/ncipc/output_options_10.html accessed September 2003.

3. Substance Abuse and Mental Health Services Administration. (2002). Results from the 2001 National Household Survey on Drug Abuse: Volume I. Summary of National Findings (Office of Applied Studies, NHSDA Series H-17, DHHS Publication No. SMA 02-3758). Rockville, MD, Chapter 2, Illicit Drugs. Website: www.samhsa.gov/oas/nhsda/2k1nhsda/vol1/toc.htm.

4. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Emergency Department Trends from Drug Abuse Warning Network, Final Estimates 1994-2001 and Detailed Emergency Department Tables, page 2. Website: http://www.DAWNinfo.net.

5. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Emergency Department Trends from Drug Abuse Warning Network, Final Estimates 1995-2002. DAWN Series: D-24, DHHS Publication No. (SMA) 03-3780. Rockville, MD, 2003, page 29. Website: http://dawninfo.samhsa.gov/pubs_94_02/edpubs/2002final/files/EDTrendFinal02AllText.pdf.

6. Watson WA, Litovitz TL, et.al. 2002 Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Amer J Emer Med; 21(5):353-364, 2003.

7. Sanford CP. Deaths from unintentional drug overdoses in North Carolina, 1997-2001: A N.C.-DHHS investigation into unintentional poisoning-related deaths. Injury and Violence Prevention Branch, Division of Public Health, N.C. Department of Health and Human Services, September 2002.

8. Winecker RE. The changing spectrum of drug deaths in North Carolina, 1980-2002. Presentation at MedicoLegal Seminar, N.C. Office of the Chief Medical Examiner, Chapel Hill, NC, June 2003.

9. US Department of Justice, Drug Enforcement Agency, Diversion Control Program. Controlled Substance Schedules - List of Controlled Substances: Schedules I-V. Website: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched1.html.

10. Singleton M et al. Unintentional and undetermined poisoning deaths - 11 states, 1990-2001. MMWR, 2004; 53(11):233-238. Website: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5311a2.htm.

11. Sorg MH, Greenwald M. Maine Drug-Related Mortality Patterns: 1997-2002. Maine Office of the Attorney General and Maine Office of Substance Abuse, December 2002.

12. Sentementes GG. Methadone overdoses increasing in Maryland: Tenfold rise in deaths seen over past 6 years. The Baltimore Sun. January 6, 2004. Website: http://www.sunspot.net/news/local/bal-md.methadone06jan06,0,3191848.story?coll=bal-local-headlines.

13. Center for Substance Abuse Treatment, Methadone-Associated Mortality: Report of a National Assessment, May 8-9, 2003. CSAT Publication No. 28-03. Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration, 2004.

14. Florida Department of Law Enforcement. 2002 Interim Report of Drugs Identified in Deceased Persons by Florida Medical Examiners. November 2002. Website: http://www.fdle.state.fl.us/publications/examiner_drug_report.pdf.

15. Ballesteros M, Budnitz D, Sanford C et al. Increase in deaths due to methadone in North Carolina [research letter]. JAMA. 2003;290(1):40.

16. Belluck P. Overdoses and Deaths from Abuse of Drug Methadone are Up. New York Times, February 2, 2003.

17. Lehder DM et al. Alcohol and Drug-Related Overdose Deaths in Maryland: 1997-2001. An examination of data from the Office of the Chief Medical Examiner. Center for Substance Abuse Research. November 2002.

18. What evidence does the DEA have to support accounts that OxyContin® is being abused to the extent that has been reported by the media? Website: http://www.deadiversion.usdoj.gov/drugs_concern/oxycodone/oxycontin_faq.htm#4.

19. US Department of Justice. Drug Enforcement Agency. Diversion Control Program. ARCOS Background: Automation of Reports of Consolidated Orders System. website homepage. http://www.deadiversion.usdoj.gov/arcos/background.htm.

20. Department of Justice. Drug Enforcement Agency. Diversion Control Program: ARCOS2 - Report 1: Retail Drug Distribution by Zip Code for Each State: Reporting Period 01/01/2001 to 12/31/2001. http://www.deadiversion.usdoj.gov/arcos select "retail drug summary reports". (Accessed September 30, 2003.)

21. U.S. Department of Justice. Drug Enforcement Agency. Diversion Control Program: ARCOS2 - Report 4: Cumulative Distribution in Grams per 100K Population: Reporting Period 01/01/2001 to 12/31/2001. http://www.deadiversion.usdoj.gov/arcos select "retail drug summary reports". (Accessed September 30, 2003.)

22. Howard J. Report on sales of controlled substances (cocaine, heroin, fentanyl, hydrocodone, methadone, hydromorphone and meperidine) to North Carolina, 2001. U.S. Department of Justice, Drug Enforcement Administration, Office of Diversion Control, Drug Operations Section, Targeting and Analysis Unit (ODOT) from ARCOS report #1. Personal communication, November 6, 2002.

APPENDICES

I. Voting Status for Recommendations by the Task Force to Prevent Deaths from Unintentional Drug Overdoses.

II. DEA lists of controlled substances
schedule 1: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched1.htm
schedule 2: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched2.htm
schedule 3: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched3.htm
schedule 4: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched4.htm
schedule 5: http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched5.htm

III. Unintentional and Undetermined Poisoning Deaths -- 11 States, 1990-2001. MMWR. March 26, 2004/Vol. 53/No. 11, TABLE: Number and percentage of selected substances identified from International Classification of Disease and Related Health Problems, Tenth Revision (ICD-10) T-codes involved in unintentional or undetermined poisoning deaths, by state – eight states, 1999-2000.

IV. Frequency and mortality rates of deaths in N.C., 1997-2001, from unintentional single-drug overdoses.

V. Ranking of Single Drugs Causing Deaths from Unintentional Overdoses by N.C. Counties in upper Quartile of All Accidental Drug Related Deaths, 1997-2001.

Types of Single-Drugs Identified by Medical Examiner as Responsible for Fatal Drug Overdose: North Carolina, 1997-2001 (Injury Conference Abstract – April 2003).

VI. Retailed controlled substances per registrant, N.C. 2001. ARCOS, Report #1.

APPENDIX I.

Voting Status for Recommendations by the Task Force to Prevent Deaths from Unintentional Drug Overdoses.

Appendix 1. Voting Status for Recommendations by the Task Force to Prevent Deaths from Unintentional Drug Overdoses

Recommendation #	Approval Status	YES	NO	ABSTAIN
1.a-e	Consensus	20/20	0	0
2.	Consensus	20/20	0	0
3.	Majority Vote	19/20	1	0
4.	Consensus	19/19	0	1
5.	Majority Vote	17/18	1	2
6.	Majority Vote	19/20	1	0
7.	Consensus	19/20	0	1
8.	Majority Vote	18/19	1	1
9.	Majority Vote	19/20	1	0
10.	Consensus	20/20	0	0
11.	Majority Vote	19/20	1	0
12.	Consensus	19/19	0	1
13.	Consensus	20/20	0	0
14.a	Consensus	20/20	0	0
14.b	Majority Vote	19/20	1	0
14.c-e	Consensus	20/20	0	0
14.f-g	Consensus	19/20	0	1
15.a-b	Consensus	20/02	0	0
16.a-f	Consensus	20/20	0	0
17.	Consensus	19/19	0	1
18.	Consensus	20/20	0	0
19.	Majority Vote	19/20	1	0
20.	Majority Vote	19/20	1	0
21.	Consensus	20/20	0	0
22.a-b	Consensus	20/20	0	0
23.a-c	Consensus	20/20	0	0
24.a-c	Consensus	20/20	0	0

APPENDIX II.

DEA lists of controlled substances

schedule 1:
http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched1.htm

schedule 2:
http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched2.htm

schedule 3:
http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched3.htm

schedule 4:
http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched4.htm

schedule 5:
http://www.deadiversion.usdoj.gov/schedules/listby_sched/sched5.htm

Controlled Substance Schedules > List of Controlled Substances > Schedule I

Controlled Substances by Schedule

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

Substance	DEA Number	Non Narcotic	Other Names
1-(1-Phenylcyclohexyl)pyrrolidine	7458	N	PCPy, PHP, rolicyclidine
1-(2-Phenylethyl)-4-phenyl-4-acetoxypiperidine	9663		PEPAP, synthetic heroin
1-[1-(2-Thienyl)cyclohexyl]piperidine	7470	N	TCP, tenocyclidine
1-[1-(2-Thienyl)cyclohexyl]pyrrolidine	7473	N	TCPy
1-Methyl-4-phenyl-4-propionoxypiperidine	9661		MPPP, synthetic heroin
2,5-Dimethoxy-4-ethylamphetamine	7399	N	DOET
2,5-dimethoxy-4-(n)-propylthiophenethylamine	7348	N	2C-T-7
2,5-Dimethoxyamphetamine	7396	N	DMA, 2,5-DMA
3,4,5-Trimethoxyamphetamine	7390	N	TMA
3,4-Methylenedioxyamphetamine	7400	N	MDA, Love Drug
3,4-Methylenedioxymethamphetamine	7405	N	MDMA, Ecstasy, XTC
3,4-Methylenedioxy-N-ethylamphetamine	7404	N	N-ethyl MDA, MDE, MDEA
3-Methylfentanyl	9813		China White, fentanyl
3-Methylthiofentanyl	9833		Chine White, fentanyl
4-Bromo-2,5-dimethoxyamphetamine	7391	N	DOB, 4-bromo-DMA
4-Bromo-2,5-dimethoxyphenethylamine	7392	N	Nexus, 2-CB, has been sold as Ecstasy, i.e. MDMA
4-Methoxyamphetamine	7411	N	PMA
4-Methyl-2,5-dimethoxyamphetamine	7395	N	DOM, STP

4-Methylaminorex (cis isomer)	1590	N	U4Euh, McN-422
5-Methoxy-3,4-methylenedioxyamphetamine	7401	N	MMDA
5-methoxy-N,N-diisopropyltryptamine	7439	N	5-MeO-DIPT
Acetorphine	9319		
Acetyl-alpha-methylfentanyl	9815		
Acetyldihydrocodeine	9051		Acetylcodone
Acetylmethadol	9601		Methadyl acetate
Allylprodine	9602		
Alphacetylmethadol except levo-alphacetylmethadol	9603		
Alpha-Ethyltryptamine	7249	N	ET, Trip
Alphameprodine	9604		
Alphamethadol	9605		
Alpha-Methylfentanyl	9814		China White, fentanyl
Alpha-Methylthiofentanyl	9832		China White, fentanyl
Alpha-Methyltryptamine	7432	N	AMT
Aminorex	1585	N	has been sold as methamphetamine
Benzethidine	9606		
Benzylmorphine	9052		
Betacetylmethadol	9607		
Beta-Hydroxy-3-methylfentanyl	9831		China White, fentanyl
Beta-Hydroxyfentanyl	9830		China White, fentanyl
Betameprodine	9608		
Betamethadol	9609		
Betaprodine	9611		
Bufotenine	7433	N	Mappine, N,N-dimethylserotonin
Cathinone	1235	N	Constituent of "Khat" plant
Clonitazene	9612		
Codeine methylbromide	9070		
Codeine-N-oxide	9053		
Cyprenorphine	9054		
Desomorphine	9055		
Dextromoramide	9613		Palfium, Jetrium, Narcolo
Diampromide	9615		
Diethylthiambutene	9616		
Diethyltryptamine	7434	N	DET

Difenoxin	9168		Lyspafen
Dihydromorphine	9145		
Dimenoxadol	9617		
Dimepheptanol	9618		
Dimethylthiambutene	9619		
Dimethyltryptamine	7435	N	DMT
Dioxaphetyl butyrate	9621		
Dipipanone	9622		Dipipan, phenylpiperone HCl, Diconal, Wellconal
Drotebanol	9335		Metebanyl, oxymethebanol
Ethylmethylthiambutene	9623		
Etonitazene	9624		
Etorphine (except HCl)	9056		
Etoxeridine	9625		
Fenethylline	1503	N	Captagon,amfetyline,ethyltheophylline amphetamine
Furethidine	9626		
Gama Hydroxybutyric Acid (GHB)	2010	N	GHB, gama hydroxybutyrate, sodium oxybate
Heroin	9200		Diacetylmorphine, diamorphine
Hydromorphinol	9301		
Hydroxypethidine	9627		
Ibogaine	7260	N	Constituent of "Tabernanthe iboga" plant
Ketobemidone	9628		Cliradon
Levomoramide	9629		
Levophenacylmorphan	9631		
Lysergic acid diethylamide	7315	N	LSD, lysergide
Marihuana	7360	N	Cannabis, marijuana
Mecloqualone	2572	N	Nubarene
Mescaline	7381	N	Constituent of "Peyote" cacti
Methaqualone	2565	N	Quaalude, Parest, Somnafac, Opitimil, Mandrax
Methcathinone	1237	N	N-Methylcathinone, "cat"
Methyldesorphine	9302		
Methyldihydromorphine	9304		
Morpheridine	9632		
Morphine methylbromide	9305		

Morphine methylsulfonate	9306		
Morphine-N-oxide	9307		
Myrophine	9308		
N-Benzylpiperazine	7493	N	BZP, 1-Benzylpiperazine
N,N-Dimethylamphetamine	1480	N	
N-Ethyl-1-phenylcyclohexylamine	7455	N	PCE
N-Ethyl-3-piperidyl benzilate	7482	N	JB 323
N-Ethylamphetamine	1475	N	NEA
N-Hydroxy-3,4-methylenedioxyamphetamine	7402	N	N-hydroxy MDA
Nicocodeine	9309		
Nicomorphine	9312		Vilan
N-Methyl-3-piperidyl benzilate	7484	N	JB 336
Noracymethadol	9633		
Norlevorphanol	9634		
Normethadone	9635		Phenyldimazone
Normorphine	9313		
Norpipanone	9636		
Para-Fluorofentanyl	9812		China White, fentanyl
Parahexyl	7374	N	Synhexyl,
Peyote	7415	N	Cactus which contains mescaline
Phenadoxone	9637		
Phenampromide	9638		
Phenomorphan	9647		
Phenoperidine	9641		Operidine, Lealgin
Pholcodine	9314		Copholco, Adaphol, Codisol, Lantuss, Pholcolin
Piritramide	9642		Piridolan
Proheptazine	9643		
Properidine	9644		
Propiram	9649		Algeril
Psilocybin	7437	N	Constituent of "Magic mushrooms"
Psilocyn	7438	N	Psilocin, constituent of "Magic mushrooms"
Racemoramide	9645		
Tetrahydrocannabinols	7370	N	THC, Delta-8 THC, Delta-9 THC and others
Thebacon	9315		Acetylhydrocodone, Acedicon, Thebacetyl
Thiofentanyl	9835		Chine white, fentanyl

Tilidine	9750		Tilidate, Valoron, Kitadol, Lak, Tilsa
Trimeperidine	9646		Promedolum

Back to Top

Hot Items
Program Description | Offices & Directories | Drug Registration | ARCOS | Chemical Program | Publications | Reports Required by 21 CFR | Title 21 Regulations & Codified CSA | Controlled Substance Schedules | Drugs and Chemicals of Concern | Federal Register Notices | Electronic Commerce Initiatives | Quotas | Import Export | Meetings and Events | Career Opportunities | Links | FAQ's | What's New | Site Map | Search | Home | On-Line Forms & Applications | NFLIS
Contact Us

Controlled Substance Schedules > List of Controlled Substances > Schedule II

Controlled Substances by Schedule

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

Substance	DEA Number	Non Narcotic	Other Names
1-Phenylcyclohexylamine	7460	N	Precusor of PCP
1-Piperidinocyclohexanecarbonitrile	8603	N	PCC, precusor of PCP
Alfentanil	9737		Alfenta
Alphaprodine	9010		Nisentil
Amobarbital	2125	N	Amytal, Tuinal
Amphetamine	1100	N	Dexedrine, Biphetamine
Anileridine	9020		Leritine
Benzoylecgonine	9180		Cocaine metabolite
Bezitramide	9800		Burgodin
Carfentanil	9743		Wildnil
Coca Leaves	9040		
Cocaine	9041		Methyl benzoylecgonine, Crack
Codeine	9050		Morphine methyl ester, methyl morphine
Dextropropoxyphene, bulk (non-dosage forms)	9273		Propoxyphene
Dihydrocodeine	9120		Didrate, Parzone
Diphenoxylate	9170		

Diprenorphine	9058		M50-50
Ecgonine	9180		Cocaine precursor, in Coca leaves
Ethylmorphine	9190		Dionin
Etorphine HCl	9059		M 99
Fentanyl	9801		Innovar, Sublimaze, Duragesic
Glutethimide	2550	N	Doriden, Dorimide
Hydrocodone	9193		dihydrocodeinone
Hydromorphone	9150		Dilaudid, dihydromorphinone
Isomethadone	9226		Isoamidone
Levo-alphacetylmethadol	9648		LAAM, long acting methadone, levomethadyl acetate
Levomethorphan	9210		
Levorphanol	9220		Levo-Dromoran
Meperidine	9230		Demerol, Mepergan, pethidine
Meperidine intermediate-A	9232		Meperidine precursor
Meperidine intermediate-B	9233		Meperidine precursor
Meperidine intermediate-C	9234		Meperidine precursor
Metazocine	9240		
Methadone	9250		Dolophine, Methadose, Amidone
Methadone intermediate	9254		Methadone precursor
Methamphetamine	1105	N	Desoxyn, D-desoxyephedrine, ICE, Crank, Speed
Methylphenidate	1724	N	Ritalin
Metopon	9260		
Moramide-intermediate	9802		
Morphine	9300		MS Contin, Roxanol, Duramorph, RMS, MSIR
Nabilone	7379	N	Cesamet
Opium extracts	9610		
Opium fluid extract	9620		
Opium poppy	9650		Papaver somniferum
Opium tincture	9630		Laudanum
Opium, granulated	9640		Granulated opium

Opium, powdered	9639		Powdered Opium
Opium, raw	9600		Raw opium, gum opium
Oxycodone	9143		OxyContin, Percocet, Tylox, Roxicodone, Roxicet,
Oxymorphone	9652		Numorphan
Pentobarbital	2270	N	Nembutal
Phenazocine	9715		Narphen, Prinadol
Phencyclidine	7471	N	PCP, Sernylan
Phenmetrazine	1631	N	Preludin
Phenylacetone	8501	N	P2P, phenyl-2-propanone, benzyl methyl ketone
Piminodine	9730		
Poppy Straw	9650		Opium poppy capsules, poppy heads
Poppy Straw Concentrate	9670		Concentrate of Poppy Straw, CPS
Racemethorphan	9732		
Racemorphan	9733		Dromoran
Remifentanil	9739		Ultiva
Secobarbital	2315	N	Seconal, Tuinal
Sufentanil	9740		Sufenta
Thebaine	9333		Precursor of many narcotics

Back to Top

Hot Items
Program Description | Offices & Directories | Drug Registration | ARCOS | Chemical Program | Publications | Reports Required by 21 CFR | Title 21 Regulations & Codified CSA | Controlled Substance Schedules | Drugs and Chemicals of Concern | Federal Register Notices | Electronic Commerce Initiatives | Quotas | Import Export | Meetings and Events | Career Opportunities | Links | FAQ's | What's New | Site Map | Search | Home | On-Line Forms & Applications | NFLIS
Contact Us

Controlled Substance Schedules > List of Controlled Substances > Schedule III

Controlled Substances by Schedule

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

Substance	DEA Number	Non Narcotic	Other Names
Amobarbital & noncontrolled active ingred.	2126	N	Amobarbital/ephedrine capsules
Amobarbital suppository dosage form	2126	N	
Anabolic steroids	4000	N	"Body Building" drugs
Aprobarbital	2100	N	Alurate
Barbituric acid derivative	2100	N	Barbiturates not specifically listed
Benzphetamine	1228	N	Didrex, Inapetyl
Boldenone	4000	N	Equipoise,Parenabol,Vebonol,dehydrotestosterone
Butabarbital	2100	N	Butisol, Butibel
Butalbital	2100	N	Fiorinal, Butalbital with aspirin
Buprenorphine	9064		Buprenex, Temegesic, Subutex, Suboxone
Chlorhexadol	2510	N	Mechloral, Mecoral, Medodorm, Chloralodol
Chlorotestosterone (same as clostebol)	4000	N	if 4-chlorotestosterone then clostebol
Chlorphentermine	1645	N	Pre-Sate, Lucofen, Apsedon, Desopimon
Clortermine	1647	N	Voranil
Clostebol	4000	N	Alfa-Trofodermin, Clostene, 4-chlorotestosterone
Codeine & isoquinoline alkaloid 90 mg/du	9803		Codeine with papaverine or noscapine
Codeine combination product 90 mg/du	9804		Empirin,Fiorinal,Tylenol,ASA or APAP w/codeine
Dehydrochlormethyltestosterone	4000	N	Oral-Turinabol

Dihydrocodeine combination product 90 mg/du	9807		Synalgos-DC, Compal
Dihydrotestosterone (same as stanolone)	4000	N	see stanolone
Dronabinol in sesame oil in soft gelatin capsule	7369	N	Marinol, synthetic THC in sesame oil/soft gelatin
Drostanolone	4000	N	Drolban, Masterid, Permastril
Ethylestrenol	4000	N	Maxibolin, Orabolin, Durabolin-O, Duraboral
Ethylmorphine combination product 15 mg/du	9808		
Fluoxymesterone	4000	N	Anadroid-F, Halotestin, Ora-Testryl
Formebolone (incorrect spelling in law)	4000	N	Esiclene, Hubernol
Gamma Hydroxybutyric Acid preparations	2012	N	Zyrem, GHB, gamma hydroxybutyrate
Hydrocodone & isoquinoline alkaloid 15 mg/du	9805		Dihydrocodeinone+papaverine or noscapine
Hydrocodone combination product 15 mg/du	9806		Tussionex,Tussend,Lortab,Vicodin,Hycodan,Anexsia ++
Ketamine	7285	N	Ketaset, Ketalar, Special K, K
Lysergic acid	7300	N	LSD precursor
Lysergic acid amide	7310	N	LSD precursor
Mesterolone	4000	N	Proviron
Methandienone (see Methandrostenolone)	4000	N	
Methandranone	4000	N	?incorrect spelling of methandienone?
Methandriol	4000	N	Sinesex, Stenediol, Troformone
Methandrostenolone	4000	N	Dianabol, Metabolina, Nerobol, Perbolin
Methenolone	4000	N	Primobolan, Primobolan Depot, Primobolan S
Methyltestosterone	4000	N	Android, Oreton, Testred, Virilon
Methyprylon	2575	N	Noludar
Mibolerone	4000	N	Cheque
Morphine combination product/50 mg/100 ml or gm	9810		
Nalorphine	9400		Nalline
Nandrolone	4000	N	Deca-Durabolin, Durabolin, Durabolin-50
Norethandrolone	4000	N	Nilevar, Solevar
Opium combination product 25 mg/du	9809		Paregoric, other combination products
Oxandrolone	4000	N	Anavar, Lonavar, Provitar, Vasorome
Oxymesterone	4000	N	Anamidol, Balnimax, Oranabol, Oranabol 10
Oxymetholone	4000	N	Anadrol-50, Adroyd, Anapolon, Anasteron, Pardroyd

Pentobarbital & noncontrolled active ingred.	2271	N	FP-3
Pentobarbital suppository dosage form	2271	N	WANS
Phendimetrazine	1615	N	Plegine, Prelu-2, Bontril, Melfiat, Statobex
Secobarbital & noncontrolled active ingred	2316	N	various
Secobarbital suppository dosage form	2316	N	various
Stanolone	4000	N	Anabolex, Andractim, Pesomax, dihydrotestosterone
Stanozolol	4000	N	Winstrol, Winstrol-V
Stimulant compounds previously excepted	1405	N	Mediatric
Sulfondiethylmethane	2600	N	
Sulfonethylmethane	2605	N	
Sulfonmethane	2610	N	
Talbutal	2100	N	Lotusate
Testolactone	4000	N	Teslac
Testosterone	4000	N	Android-T, Androlan, Depotest, Delatestryl
Thiamylal	2100	N	Surital
Thiopental	2100	N	Pentothal
Tiletamine & Zolazepam Combination Product	7295	N	Telazol
Trenbolone	4000	N	Finaplix-S, Finajet, Parabolan
Vinbarbital	2100	N	Delvinal, vinbarbitone

Back to Top

Hot Items
Program Description | Offices & Directories | Drug Registration | ARCOS | Chemical Program | Publications | Reports Required by 21 CFR | Title 21 Regulations & Codified CSA | Controlled Substance Schedules | Drugs and Chemicals of Concern | Federal Register Notices | Electronic Commerce Initiatives | Quotas | Import Export | Meetings and Events | Career Opportunities | Links | FAQ's | What's New | Site Map | Search | Home | On-Line Forms & Applications | NFLIS
Contact Us

Controlled Substances by Schedule

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

Substance	DEA Number	Non Narcotic	Other Names
Alprazolam	2882	N	Xanax
Barbital	2145	N	Veronal, Plexonal, barbitone
Bromazepam	2748	N	Lexotan, Lexatin, Lexotanil
Butorphanol	9720	N	Stadol, Stadol NS, Torbugesic, Torbutrol
Camazepam	2749	N	Albego, Limpidon, Paxor
Cathine	1230	N	Constituent of "Khat" plant
Chloral betaine	2460	N	Beta Chlor
Chloral hydrate	2465	N	Noctec
Chlordiazepoxide	2744	N	Librium, Libritabs, Limbitrol, SK-Lygen
Clobazam	2751	N	Urbadan, Urbanyl
Clonazepam	2737	N	Klonopin, Clonopin
Clorazepate	2768	N	Tranxene
Clotiazepam	2752	N	Trecalmo, Rize
Cloxazolam	2753	N	Enadel, Sepazon, Tolestan
Delorazepam	2754	N	
Dexfenfluramine	1670	N	Redux
Dextropropoxyphene dosage forms	9278		Darvon, propoxyphene, Darvocet, Dolene, Propacet
Diazepam	2765	N	Valium, Valrelease
Dichloralphenazone	2467	N	Midrin, dichloralantipyrine

Diethylpropion	1610	N	Tenuate, Tepanil
Difenoxin 1 mg/25 ug AtSO4/du	9167		Motofen
Estazolam	2756	N	ProSom, Domnamid, Eurodin, Nuctalon
Ethchlorvynol	2540	N	Placidyl
Ethinamate	2545	N	Valmid, Valamin
Ethyl loflazepate	2758	N	
Fencamfamin	1760	N	Reactivan
Fenfluramine	1670	N	Pondimin, Ponderal
Fenproporex	1575	N	Gacilin, Solvolip
Fludiazepam	2759	N	
Flunitrazepam	2763	N	Rohypnol, Narcozep, Darkene, Roipnol
Flurazepam	2767	N	Dalmane
Halazepam	2762	N	Paxipam
Haloxazolam	2771	N	
Ketazolam	2772	N	Anxon, Loftran, Solatran, Contamex
Loprazolam	2773	N	
Lorazepam	2885	N	Ativan
Lormetazepam	2774	N	Noctamid
Mazindol	1605	N	Sanorex, Mazanor
Mebutamate	2800	N	Capla
Medazepam	2836	N	Nobrium
Mefenorex	1580	N	Anorexic, Amexate, Doracil, Pondinil
Meprobamate	2820	N	Miltown, Equanil, Deprol, Equagesic, Meprospan
Methohexital	2264	N	Brevital
Methylphenobarbital (mephobarbital)	2250	N	Mebaral, mephobarbital
Midazolam	2884	N	Versed
Modafinil	1680	N	Provigil
Nimetazepam	2837	N	Erimin
Nitrazepam	2834	N	Mogadon
Nordiazepam	2838	N	Nordazepam, Demadar, Madar
Oxazepam	2835	N	Serax, Serenid-D
Oxazolam	2839	N	Serenal, Convertal
Paraldehyde	2585	N	Paral
Pemoline	1530	N	Cylert
Pentazocine	9709	N	Talwin, Talwin NX, Talacen, Talwin Compound
Petrichloral	2591	N	Pentaerythritol chloral, Periclor

Phenobarbital	2285	N	Luminal, Donnatal, Bellergal-S
Phentermine	1640	N	Ionamin, Fastin, Adipex-P, Obe-Nix, Zantryl
Pinazepam	2883	N	Domar
Pipradrol	1750	N	Detaril, Stimolag Fortis
Prazepam	2764	N	Centrax
Quazepam	2881	N	Doral, Dormalin
Sibutramine	1675	N	Meridia
SPA	1635	N	1-dimethylamino-1,2-diphenylethane, Lefetamine
Temazepam	2925	N	Restoril
Tetrazepam	2886	N	
Triazolam	2887	N	Halcion
Zaleplon	2781	N	Sonata
Zolpidem	2783	N	Ambien, Stilnoct,Ivadal

Back to Top

Hot Items
Program Description | Offices & Directories | Drug Registration | ARCOS | Chemical Program | Publications | Reports Required by 21 CFR | Title 21 Regulations & Codified CSA | Controlled Substance Schedules | Drugs and Chemicals of Concern | Federal Register Notices | Electronic Commerce Initiatives | Quotas | Import Export | Meetings and Events | Career Opportunities | Links | FAQ's | What's New | Site Map | Search | Home | On-Line Forms & Applications | NFLIS
Contact Us

Controlled Substance Schedules > List of Controlled Substances > Schedule V

Controlled Substances by Schedule

This document is a general reference and not a comprehensive list. This list describes the basic or parent chemical and does not describe the salts, isomers and salts of isomers, esters, ethers and derivatives which may also be controlled substances.

Substance	DEA Number	Non Narcotic	Other Names
Codeine preparations - 200 mg/100 ml or 100 gm			Cosanyl,Robitussin A-C,Cheracol,Cerose,Pediacof
Difenoxin preparations - 0.5 mg/25 ug AtSO4/du			Motofen
Dihydrocodeine preparations 10 mg/100 ml or 100 gm			Cophene-S, various others
Diphenoxylate preparations 2.5 mg/25 ug AtSO4			Lomotil, Logen
Ethylmorphine preparations 100 mg/100 ml or 100 gm			
Opium preparations - 100 mg/100 ml or gm			Parepectolin, Kapectolin PG, Kaolin Pectin P.G.
Pyrovalerone	1485	N	Centroton, Thymergix

Back to Top

Electronic Commerce Initiatives | Quotas | Import Export | Meetings and Events | Career Opportunities | Links | FAQ's | What's New | Site Map | Search | Home | On-Line Forms & Applications | NFLIS Contact Us

APPENDIX III.

Unintentional and Undetermined Poisoning Deaths -- 11 States, 1990-2001. MMWR. March 26, 2004/Vol. 53/No. 11, TABLE: Number and percentage of selected substances identified from International Classification of Disease and Related Health Problems, Tenth Revision (ICD-10) T-codes involved in unintentional or undetermined poisoning deaths, by state - eight states., 1999-2000.

MMWR™
Morbidity and Mortality Weekly Report
Weekly March 26, 2004 / Vol. 53 / No. 11

National Poison Prevention Week, March 21–27, 2004

March 21–27 is National Poison Prevention Week. This week is organized each year by the National Poison Prevention Week Council, a coalition of national organizations working to prevent poisonings. This year's activities will focus on reducing unintentional poisonings among children by emphasizing the responsibility of parents, grandparents, and other caregivers for preventing poisonings in the home.

In 2002, U.S. poison-control centers reported approximately 2.3 million poisonings (*1*). Approximately 90% of these occurred in the home and involved common household items (e.g., cleaning products, detergents, medicines, vitamins, cosmetics, and plants) (*2*).

As part of promotion efforts for National Poison Prevention Week, the U.S. Consumer Product Safety Commission has issued a poison lookout checklist, which highlights areas of the home that are common sites of unintentional poisonings and how to correct situations that might lead to poisonings. The checklist is available at http://www.cpsc.gov/cpscpub/pubs/383.html.

Additional information about National Poison Prevention Week is available at http://www.poisonprevention.org/main.html and http://www.cdc.gov/injury. The national toll-free telephone number for poison-control centers is 1-800-222-1222.

References

1. Watson WA, Litovitz TL, Rodgers GC, et al. 2002 Annual report of the American Association of Poison Control Centers Toxic Exposures Surveillance System. Am J Emerg Med 2003;21:353–421.
2. Litovitz TL, Klein-Schwartz W, White S, et al. 2000 Annual report of the American Association of Poison Control Centers Toxic Exposures Surveillance System. Am J Emerg Med 2001;19:337–96.

Unintentional and Undetermined Poisoning Deaths — 11 States, 1990–2001

During 1990–2001, the death rate from poisoning* in the United States increased 56%, from 5.0 per 100,000 population in 1990 to 7.8 in 2001 (*1*). In 2001, of 22,242 poisoning deaths, 14,078 (63%) were unintentional (*1*). To describe trends in poisoning deaths, state health professionals in 11 states† analyzed vital statistics data for 1990–2001. This report summarizes the results of that analysis, which indicated that increases in state death rates from unintentional and undetermined poisonings varied, but increased by an average of 145%; a total of 89% of poisonings involved drugs and other biologic substances. State public health professionals can use local, state, and national surveillance data to monitor trends in drug misuse and to develop effective interventions that can reduce deaths from drug overdoses.

* Poisoning refers to the damaging physiologic effects of ingestion, inhalation, or other exposure to a range of pharmaceuticals, illicit drugs, and chemicals, including pesticides, heavy metals, gases/vapors, and common household substances, such as bleach and ammonia.

† Colorado, Delaware, Florida, Kentucky, Massachusetts, New Mexico, North Carolina, Oregon, Utah, Washington, and Wisconsin. These 11 states participated in the 1999 State Injury Indicators Report (*2*), a collaborative effort of 26 state health departments, CDC, the Council of State and Territorial Epidemiologists, and the State and Territorial Injury Prevention Directors Association, which noted an increase in poisoning deaths.

INSIDE

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

The *MMWR* series of publications is published by the Epidemiology Program Office, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

SUGGESTED CITATION
Centers for Disease Control and Prevention. [Article Title]. MMWR 2004;53:[inclusive page numbers].

Overall poisoning death rates per 100,000 population and sex-, age-, and intent-specific death rates were calculated. Trends were examined for the following categories[§]: 1) all poisonings, 2) unintentional poisonings, 3) suicides, 4) homicides, and 5) poisonings of undetermined intent. Poisoning deaths might be classified as of undetermined intent if the medical examiner or coroner lacked sufficient evidence to determine whether the death was unintentional, suicide, or homicide. Unintentional and undetermined subcategories were combined for most of the analyses. States with low poisoning death rates because of undetermined intent had high unintentional poisoning death rates and vice versa because intent coding practices varied by state.

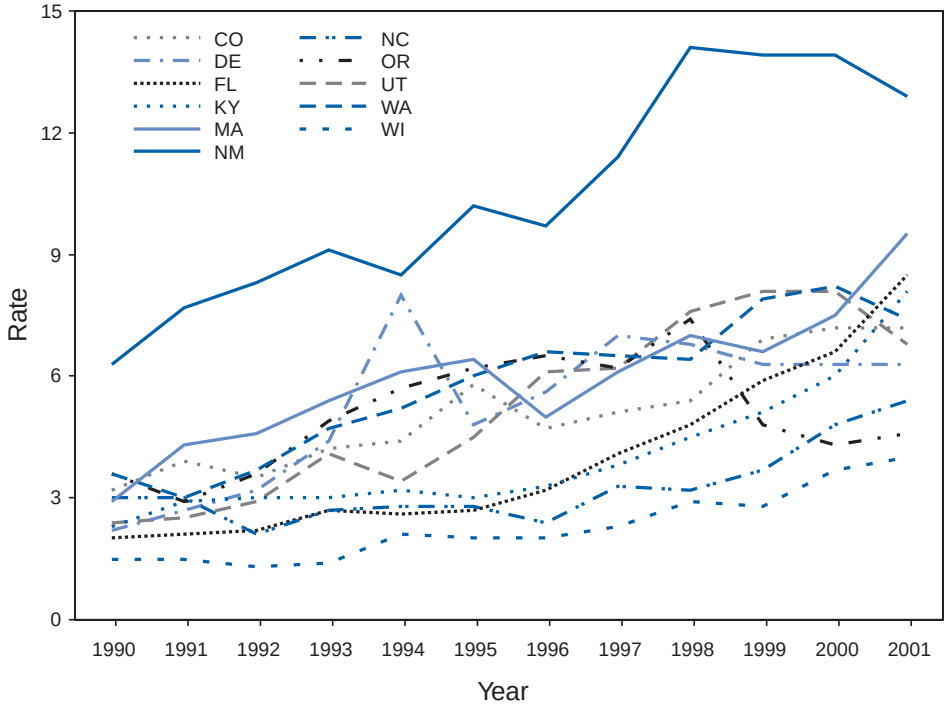
Of the 11 states, eight[¶] had multiple cause-of-death data for 1999 and 2000 to identify the specific substances or classes of substances involved in poisoning deaths in their states. To analyze these data, codes were used from *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10), which was implemented in 1999. ICD-10 contains specific information about substances and classes of substances in codes T36–T50 (i.e., poisoning by drugs, medications, and biologic substances). Because more than one T-code was reported for deaths for which multiple substances were implicated, the percentages reported for specific substances represent each substance as a percentage of all identified T-codes.

During 1990–2001, death rates attributed to unintentional and undetermined poisoning increased in all 11 states (Figure), with an average increase of 145% (range: 28%–325%); poisoning homicide rates were stable, and poisoning suicide rates declined. Nine states (Colorado, Delaware, Florida, Kentucky, New Mexico, North Carolina, Oregon, Washington, and Wisconsin) reported increases in unintentional poisoning deaths; Massachusetts and Utah reported increases in undetermined poisoning deaths. The largest percentage increases in poisoning deaths were in Florida (325%), Kentucky (252%), and Massachusetts (228%). In Colorado (125%), Massachusetts, and Washington (108%), death rates began to increase during 1991–1992. The death rates in Florida, Kentucky, North Carolina (80%), and Wisconsin (123%) were stable during 1990–1996 but increased thereafter. In contrast,

[§] Categorized on the basis of the following codes: **all poisonings:** *International Classification of Diseases, Ninth Revision* (ICD-9), E850–E869, E950–E952, E962, E980–E982, E972; *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10), X40–X49, X60–X69, X85–X90, Y10–Y19, Y35.2; **unintentional poisonings:** (ICD-9), E850–E869; (ICD-10), X40–X49; **suicides:** (ICD-9), E950–E952; (ICD-10), X60–X69; **homicides:** (ICD-9), E962; (ICD-10), X85–X90; and **poisonings of undetermined intent:** (ICD-9), E980–E982; (ICD-10), Y10–Y19.

[¶] Colorado, Florida, Kentucky, Massachusetts, North Carolina, Utah, Washington, and Wisconsin.

FIGURE. Death rates* for unintentional and undetermined poisonings, by year and state — 11 states†, 1990–2001



* Per 100,000 population.
† Colorado (CO), Delaware (DE), Florida (FL), Kentucky (KY), Massachusetts (MA), New Mexico (NM), North Carolina (NC), Oregon (OR), Utah (UT), Washington (WA), and Wisconsin (WI).

the rates in Delaware (186%), New Mexico (105%), Oregon (28%), and Utah (183%) increased substantially during 1990–1998, but declined thereafter.

During 1990–2001, in all 11 states, the increases in unintentional and undetermined poisoning death rates were greatest for persons aged 45–54 years (average increase: 359%; range: 139%–710%) and persons aged 35–44 years (average increase: 195%; range: 14%–910%). Among persons aged ≥65 years, the rate declined an average of 28%. Sex-specific unintentional and undetermined poisoning death rates also increased for males (average increase: 126%; range: 11%–339%) and females (average increase: 203%; range: 95%–486%).

Narcotics and psychodysleptics accounted for 51% of all poisoning deaths. In the eight states that examined T-code frequencies, the substances associated most frequently with unintentional and undetermined poisoning deaths were cocaine (15% of all identified T-codes), alcohol (8%), heroin (7%), antidepressants (5%), benzodiazepines (5%), and methadone (5%). However, the proportion of deaths for which these substances were listed varied substantially by state (Table). Nonspecific categories, such as "other opioids" (e.g., codeine, morphine, oxycodone, and hydrocodone), "other synthetic narcotics," "other and unspecified narcotics," and "other and unspecified drugs, medicaments, and biological substances" accounted for approximately half of all the documented substances associated with unintentional and undetermined poisoning deaths.

Reported by: *M Singleton, MS, H Qin, MS, P Williams, MPA, Kentucky Injury Prevention and Research Center, Lexington, Kentucky. PO Coffin, MIA, Center for Urban Epidemiologic Studies, New York Academy of Medicine, New York. H Hedegaard, MD, CK Meng, PhD, Colorado Dept of Public Health and Environment. T Mathew, MD, B Gladders, MS, Delaware Dept of Health and Social Svcs. S Dearwater, MS, Florida Dept of Health. H Hackman, MD, C Mao, MD, L McKeown, MPH, Massachusetts Dept of Public Health. MG Landen, MD, New Mexico Dept of Health. C Sanford, MSPH, K Jones-Vessey, MS, D Schmid, MA, B Woodard, MS, North Carolina Dept of Health and Human Svcs. J Alexander, PhD, Oregon Dept of Human Svcs. RT Rolfs, MD, Utah Dept of Health. J Sabel, PhD, M LeMier, MPH, A Lima, Washington Dept of Health. V Daniel, MBBS, J Olson, Wisconsin Dept of Health and Family Svcs. VG Coronado, MD, M Davies, MD, RL Johnson, MPH, Div of Injury and Disability Outcomes and Programs, National Center for Injury Prevention and Control; CA Peterson, EIS Officer, CDC.*

Editorial Note: The findings in this report indicate that in these 11 states the unintentional and undetermined poisoning death rate increased during 1990–2001 and that the types of substances associated with these deaths varied by state. Among U.S. adults, drug overdoses are the largest cause of poisoning deaths. In 1992, the total cost of medical spending for all poisoning treatment was approximately $3 billion, an average of $925 per case (*3*). Unintentional drug overdose deaths often are caused by the misuse of multiple drugs, leaving substantial uncertainty about the contribution of each drug to the death. Illicit drugs (e.g., cocaine and heroin) have been known to cause unintentional poisoning deaths. In certain states, the misuse of prescription drugs (e.g., pain-management opioids such as oxycodone HCI with acetaminophen, hydrocodone with acetaminophen, and methadone) has contributed to the increase in deaths from unintentional poisoning (*4*).

The findings in this report are subject to at least four limitations. First, because external cause-of-injury codes used to

TABLE. Number and percentage* of selected substances identified from *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10) T-codes involved in unintentional or undetermined poisoning deaths, by state — eight states†, 1999–2000

Category	ICD-10 codes	Colorado		Florida		Kentucky		Massachusetts	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)
Total no. poisoning deaths		**628**		**1,939**		**443**		**918**	
Total no. T-codes identified (T36–T65)	**T36–T65**	**1,145**		**3,819**		**867**		**1,192**	
Poisoning by drugs, medicaments, and biological substances	T36–T50	972	(84.9)	3,542	(92.7)	747	(86.2)	1,143	(95.9)
Systemic antibiotics	T36	0	—	0	—	0	—	0	—
Other systemic antiinfectives and antiparasitics	T37	1	(0.1)	0	—	0	—	0	—
Hormones and their synthetic substitutes and antagonists, not elsewhere classified (NEC)	T38	7	(0.6)	5	(0.1)	0	(0.0)	1	(0.1)
Nonopioid analgesics, antipyretics, and antirheumatics	T39	12	(1.0)	75	(2.0)	26	(3.0)	9	(0.8)
Narcotics and psychodysleptics (hallucinogens)	T40	510	(44.5)	1,585	(41.5)	232	(26.8)	966	(81.0)
Heroin	T40.1	78	(6.8)	321	(8.4)	2	(0.2)	24	(2.0)
Other opioids	T40.2	79	(6.9)	449	(11.8)	92	(10.6)	45	(3.8)
Methadone	T40.3	29	(2.5)	123	(3.2)	41	(4.7)	18	(1.5)
Other synthetic narcotics	T40.4	32	(2.8)	135	(3.5)	12	(1.4)	17	(1.4)
Cocaine	T40.5	169	(14.8)	426	(11.2)	38	(4.4)	309	(25.9)
Other and unspecified narcotics	T40.6	118	(10.3)	122	(3.2)	45	(5.2)	553	(46.4)
Anaesthetics and therapeutic gases	T41	2	(0.2)	15	(0.4)	1	(0.1)	0	—
Antiepileptic, sedative-hypnotic, and antiparkinson drugs	T42	52	(4.5)	249	(6.5)	56	(6.5)	27	(2.3)
Barbiturates	T42.3	7	(0.6)	23	(0.6)	2	(0.2)	5	(0.4)
Benzodiazepines	T42.4	38	(3.3)	185	(4.8)	51	(5.9)	19	(1.6)
Other antiepileptic and sedative-hypnotic drugs	T42.6	2	(0.2)	4	(0.1)	0	—	1	(0.1)
Antiparkinsonism drugs and other central muscle tone depressants	T42.8	2	(0.2)	33	(0.9)	1	(0.1)	2	(0.2)
Psychotropic drugs, NEC	T43	92	(8.0)	236	(6.2)	63	(7.3)	48	(4.0)
Tricyclic and tetracyclic antidepressants	T43.0	34	(3.0)	85	(2.2)	29	(3.3)	38	(3.2)
Drugs primarily affecting the autonomic nervous system	T44	2	(0.2)	6	(0.2)	0	—	0	—
Primarily systemic and haematological agents, NEC	T45	9	(0.8)	50	(1.3)	9	(1.0)	3	(0.3)
Agents primarily affecting the cardiovascular system	T46	9	(0.8)	27	(0.7)	8	(0.9)	6	(0.5)
Agents primarily affecting the gastrointestinal system	T47	0	—	0	—	0	—	0	—
Agents primarily acting on smooth, skeletal muscle and respiratory system	T48	3	(0.3)	3	(0.1)	3	(0.3)	2	(0.2)
Topical agents primarily affecting skin, mucous membrane	T49	0	—	6	(0.2)	0	—	0	—
Diuretics and other and unspecified drugs, medicaments, and biological substances	T50	273	(23.8)	1,285	(33.6)	349	(40.3)	81	(6.8)
Other and unspecified drugs, medicaments, and biological substances	T50.9	271	(23.7)	1,275	(33.4)	345	(39.8)	81	(6.8)
Toxic effects of substances: chiefly nonmedicinal source	T51–T65	173	(15.1)	277	(7.3)	120	(13.8)	49	(4.1)
Alcohol	T51	134	(11.7)	201	(5.3)	62	(7.2)	27	(2.3)
Carbon monoxide	T58	25	(2.2)	35	(0.9)	32	(3.7)	13	(1.1)
Other gases, fumes, and vapors	T59	3	(0.3)	20	(0.5)	17	(2.0)	4	(0.3)

* Percentages represent each substance as a percentage of all T-codes identified.
† Colorado, Florida, Kentucky, Massachusetts, North Carolina, Utah, Washington, and Wisconsin.

classify underlying causes of death often do not provide sufficient information to identify the particular substances to which a victim was exposed, T-codes were used to identify specific substances that contributed to death (*5*). However, approximately half of the substances identified by T-codes on the death certificates were nonspecific, including 27% classified only as "other and unspecified drugs, medicaments and biological substances." This lack of specificity could reflect limited information provided on the death certificate rather than deficiency in the T-codes. Second, analyses based on T-codes also are limited because the underlying causal agent in deaths involving multiple drugs cannot be identified. Third, these data are state specific and might not be representative of the entire United States; death certificate reporting practices might differ both within and among states. Finally, the poisoning death trends presented in this report should be interpreted with caution because the analysis spans two revisions of the ICD (ICD-9 and ICD-10), and the two classification systems do not always produce comparable figures (*6*).

Key risk factors for drug overdose deaths include multidrug misuse and recent abstinence from substance abuse (*7,8*). Interventions directed at providing assistance to overdose

TABLE. (*Continued*) Number and percentage* of selected substances identified from *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10) T-codes involved in unintentional or undetermined poisoning deaths, by state — eight states†, 1999–2000

Category	North Carolina		Utah		Washington		Wisconsin		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Total no. poisoning deaths	**687**		**359**		**965**		**384**		**6,323**	
Total no. T-codes identified (T36–T65)	**913**		**793**		**1,157**		**670**		**10,556**	
Poisoning by drugs, medicaments, and biological substances	767	(84.0)	732	(92.3)	928	(80.2)	584	(87.2)	**9,415**	**(89.2)**
Systemic antibiotics	1	(0.1)	0	—	0	—	0	—	**1**	**(0.0)**
Other systemic antiinfectives and antiparasitics	0	—	1	(0.1)	2	(0.2)	1	(0.1)	**4**	**(0.0)**
Hormones and their synthetic substitutes and antagonists, NEC	4	(0.4)	0	—	4	(0.3)	1	(0.1)	**22**	**(0.2)**
Nonopioid analgesics, antipyretics, and antirheumatics	19	(2.1)	8	(1.0)	44	(3.8)	15	(2.2)	**208**	**(2.0)**
Narcotics and psychodysleptics (hallucinogens)	528	(57.8)	480	(60.5)	751	(64.9)	286	(42.7)	**5,338**	**(50.6)**
Heroin	80	(8.8)	85	(10.7)	114	(9.9)	49	(7.3)	**753**	**(7.1)**
Other opioids	121	(13.3)	177	(22.3)	162	(14.0)	69	(10.3)	**1,194**	**(11.3)**
Methadone	112	(12.3)	45	(5.7)	115	(9.9)	27	(4.0)	**510**	**(4.8)**
Other synthetic narcotics	49	(5.4)	12	(1.5)	41	(3.5)	32	(4.8)	**330**	**(3.1)**
Cocaine	151	(16.5)	136	(17.2)	280	(24.2)	98	(14.6)	**1,607**	**(15.2)**
Other and unspecified narcotics	15	(1.6)	25	(3.2)	351	(30.3)	9	(1.3)	**1,238**	**(11.7)**
Anaesthetics and therapeutic gases	3	(0.3)	0	—	1	(0.1)	2	(0.3)	**22**	**(0.2)**
Antiepileptic, sedative-hypnotic, and antiparkinson drugs	49	(5.4)	32	(4.0)	123	(10.6)	53	(7.9)	**641**	**(6.1)**
Barbiturates	7	(0.8)	3	(0.4)	12	(1.0)	2	(0.3)	**61**	**(0.6)**
Benzodiazepines	31	(3.4)	17	(2.1)	92	(8.0)	39	(5.8)	**472**	**(4.5)**
Other antiepileptic and sedative-hypnotic drugs	6	(0.7)	3	(0.4)	8	(0.7)	3	(0.4)	**25**	**(0.2)**
Antiparkinsonism drugs and other central muscle-tone depressants	3	(0.3)	7	(0.9)	18	(1.6)	6	(0.9)	**70**	**(0.7)**
Psychotropic drugs, NEC	35	(3.8)	46	(5.8)	288	(24.9)	55	(8.2)	**863**	**(8.2)**
Tricyclic and tetracyclic antidepressants	18	(2.0)	7	(0.9)	106	(9.2)	23	(3.4)	**340**	**(3.2)**
Drugs primarily affecting the autonomic nervous system	3	(0.3)	3	(0.4)	9	(0.8)	5	(0.7)	**26**	**(0.2)**
Primarily systemic and haematological agents, NEC	19	(2.1)	7	(0.9)	41	(3.5)	14	(2.1)	**152**	**(1.4)**
Agents primarily affecting the cardiovascular system	13	(1.4)	1	(0.1)	16	(1.4)	11	(1.6)	**91**	**(0.9)**
Agents primarily affecting the gastrointestinal system	0	—	0	—	1	(0.1)	0	—	**1**	**(0.0)**
Agents primarily acting on smooth, skeletal muscle and respiratory system	4	(0.4)	2	(0.3)	4	(0.3)	11	(1.6)	**32**	**(0.3)**
Topical agents primarily affecting skin, mucous membrane	3	(0.3)	2	(0.3)	2	(0.2)	1	(0.1)	**14**	**(0.1)**
Diuretics and other and unspecified drugs, medicaments, and biological substances	86	(9.4)	150	(18.9)	478	(41.3)	129	(19.3)	**2,831**	**(26.8)**
Other and unspecified drugs, medicaments, and biological substances	85	(9.3)	149	(18.8)	478	(41.3)	129	(19.3)	**2,813**	**(26.6)**
Toxic effects of substances: chiefly nonmedicinal source	146	(16.0)	61	(7.7)	229	(19.8)	86	(12.8)	**1,141**	**(10.8)**
Alcohol	97	(10.6)	40	(5.0)	202	(17.5)	36	(5.4)	**799**	**(7.6)**
Carbon monoxide	28	(3.1)	10	(1.3)	18	(1.6)	37	(5.5)	**198**	**(1.9)**
Other gases, fumes, and vapors	9	(1.0)	7	(0.9)	6	(0.5)	5	(0.7)	**71**	**(0.7)**

patients could include using naloxone, teaching rescue breathing, and encouraging use of 911 to obtain emergency medical services. However, preventing these deaths is a complex challenge that might require a combination of psychological, behavioral, educational, and medical interventions.

States in this study reported different mortality profiles for different substances, suggesting that local surveillance data are needed to help guide prevention efforts. Understanding distribution patterns of medications and illicit drugs in each state, the circumstances of their use (e.g., while alone or with others who could intervene), and the factors that contribute to increased use (e.g., chronic pain, substance abuse, or mental illness) also could help in developing effective public health strategies. Public health professionals should engage the help of others (e.g., substance abuse and mental health workers, law enforcement officials, medical examiners, and physicians) to reduce use of illicit drugs and misuse of prescription drugs, particularly opioids prescribed for pain management (*9,10*).

References

1. CDC. Web-based Injury Statistics Query and Reporting System (WISQARS™). U.S. Department of Health and Human Services, CDC, National Center for Injury Prevention and Control, 2003. Available at http://www.cdc.gov/ncipc/wisqars/default.htm.

2. Thomas C, Butler J, Davies M, Johnson R. State Injury Indicators Report, Second Edition—1999 Data. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, National Center for Injury Prevention and Control, 2004. Available at http://www.cdc.gov/ncipc/pub-res/indicators/default.htm.
3. Miller TR, Lestina DC. Costs of poisoning in the United States and savings from poison control centers: a benefit-cost analysis. Ann Emerg Med 1997;29:239–45.
4. Ballesteros MF, Budnitz DS, Sanford CP, Gilchrist J, Agyekum GA, Butts J. Increase in deaths due to methadone in North Carolina. JAMA 2003;290:40.
5. Landen MG, Castle S, Nolte KB, et al. Methodological issues in the surveillance of poisoning, illicit drug overdose, and heroin overdoses in New Mexico. Am J Epidemiol 2003;157:273–8.
6. Anderson RN, Miniño AM, Hoyert DL, Rosenberg HM. Comparability of cause of death between ICD-9 and ICD-10: preliminary estimates. National Vital Statistics Reports; vol 49, no. 2. Hyattsville, Maryland: U.S. Department of Health and Human Services, CDC, National Center for Health Statistics, 2001.
7. Singleton N, Pendry E, Taylor C, Farrell M, Marsden J. Drug-related mortality among newly released offenders. London, England: Home Office Research, Development and Statistics Directorate, 2003. Available at http://www.homeoffice.gov.uk/rds/pdfs2/r187.pdf.
8. Gossop M, Stewart D, Marsden J. A prospective study of mortality among drug misusers during a 4-year period after seeking treatment. Addiction 2002;97:39–47.
9. Sanford CP. Deaths from unintentional drug overdoses in North Carolina, 1997–2001: a DHHS investigation into unintentional poisoning-related deaths. Raleigh, North Carolina: North Carolina Department of Health and Human Services, 2002. Available at http://www.dhhs.state.nc.us.
10. Sorg MH, Greenwald M. Maine drug-related mortality patterns: 1997–2002. Orono, Maine: Maine Office of the Chief Medical Examiner, Maine Office of the Attorney General, Maine Office of Substance Abuse, 2002. Available at http://www.state.me.us/ag/pr/drugreport.pdf.

Progress Toward Poliomyelitis Eradication — India, 2003

Since the World Health Assembly resolved in May 1988 to eradicate poliomyelitis, the estimated global incidence of polio has decreased >99%, and three World Health Organization (WHO) regions (Americas, Western Pacific, and European) have been certified as polio-free (*1*). Since 1994, when the countries of the WHO South-East Asia Region (SEAR)* began accelerating polio-eradication activities, substantial progress toward that goal has been made (*2–4*). By 2001, poliovirus circulation in India had been limited primarily to the two northern states of Uttar Pradesh and Bihar, with 268 cases reported nationwide. However, a major resurgence of polio occurred during 2002, with 1,600 cases detected nationwide, of which 1,363 (85%) were in Uttar Pradesh and Bihar (*5*). This report summarizes the status of polio eradica-

* Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Mongolia, Myanmar, Nepal, Sri Lanka, and Thailand.

APPENDIX IV.

Frequency and mortality rates of deaths in N.C., 1997-2001, from unintentional single-drug overdoses.

Appendix IV. Number of Unintentional Drug-Related Deaths by County, North Carolina, 1997-2001

	COUNTY	No. of Deaths over 5 Years	5-Year Pop Average	Rate per 100,000 Population
1	MECKLENBURG	84	677,044	2.48
2	GUILFORD	79	413,702	3.82
3	GASTON	60	188,724	6.36
4	WAKE	57	612,737	1.86
5	DURHAM	42	219,488	3.83
6	FORSYTH	39	302,953	2.57
7	BUNCOMBE	38	203,637	3.73
8	NEW HANOVER	37	157,980	4.68
9	CUMBERLAND	34	301,374	2.26
10	CLEVELAND	26	95,213	5.46
11	PITT	24	130,090	3.69
12	RUTHERFORD	22	62,354	7.06
13	ROWAN	22	128,656	3.42
14	ORANGE	21	116,333	3.61
15	BRUNSWICK	20	71,404	5.60
16	HENDERSON	20	87,612	4.57
17	BURKE	19	87,910	4.32
18	ALAMANCE	18	128,666	2.80
19	CABARRUS	15	127,844	2.35
20	ROCKINGHAM	14	91,328	3.07
21	DAVIDSON	14	145,718	1.92
22	SAMPSON	13	58,839	4.42
23	CARTERET	13	59,062	4.40
24	CRAVEN	13	90,785	2.86
25	WAYNE	13	113,067	2.30
26	RANDOLPH	13	128,139	2.03
27	CATAWBA	13	139,405	1.87
28	WILKES	12	65,099	3.69
29	ONSLOW	12	149,428	1.61
30	LINCOLN	11	62,628	3.51
31	UNION	11	120,201	1.83
32	CHEROKEE	10	23,925	8.36
33	BEAUFORT	10	44,611	4.48
34	HARNETT	10	88,969	2.25
35	DARE	9	29,388	6.13
36	COLUMBUS	9	54,247	3.32
37	STANLY	9	57,155	3.15
38	IREDELL	9	119,687	1.50
39	YANCEY	8	17,549	9.12
40	ROBESON	8	121,436	1.32
41	MITCHELL	7	15,559	9.00
42	ASHE	7	24,213	5.78
43	WATAUGA	7	42,398	3.30
44	HAYWOOD	7	53,471	2.62
45	JOHNSTON	7	117,987	1.19
46	GRANVILLE	6	47,435	2.53
47	SURRY	6	70,167	1.71
48	AVERY	5	16,612	6.02
49	POLK	5	18,048	5.54

	COUNTY	No. of Deaths over 5 Years	5-Year Pop. Average	Rate per 100,000 Population
50	MACON	5	29,302	3.41
51	JACKSON	5	32,499	3.08
52	MCDOWELL	5	41,727	2.40
53	CHATHAM	5	48,512	2.06
54	HALIFAX	5	57,430	1.74
55	LENOIR	5	59,564	1.68
56	WILSON	5	73,021	1.37
57	CALDWELL	5	76,707	1.30
58	NASH	5	86,774	1.15
59	CASWELL	4	23,312	3.43
60	ANSON	4	25,201	3.17
61	TRANSYLVANIA	4	28,990	2.76
62	BLADEN	4	31,949	2.50
63	HOKE	4	32,642	2.45
64	DAVIE	4	34,169	2.34
65	FRANKLIN	4	46,419	1.72
66	DUPLIN	4	48,292	1.66
67	LEE	4	48,512	1.65
68	MOORE	4	73,437	1.09
69	PAMLICO	3	12,616	4.76
70	MARTIN	3	25,506	2.35
71	MONTGOMERY	3	26,379	2.27
72	ALEXANDER	3	32,949	1.82
73	PASQUOTANK	3	34,900	1.72
74	VANCE	3	42,520	1.41
75	RICHMOND	3	46,491	1.29
76	EDGECOMBE	3	55,785	1.08
77	CLAY	2	8,635	4.63
78	JONES	2	10,187	3.93
79	MADISON	2	19,348	2.07
80	PERSON	2	35,132	1.14
81	PENDER	2	40,112	1.00
82	STOKES	2	44,200	0.90
83	CAMDEN	1	6,715	2.98
84	PERQUIMANS	1	11,337	1.76
85	WASHINGTON	1	13,793	1.45
86	CHOWAN	1	14,547	1.37
87	CURRITUCK	1	17,873	1.12
88	GREENE	1	18,715	1.07
89	NORTHAMPTON	1	21,966	0.91
90	HERTFORD	1	22,498	0.89
91	SCOTLAND	1	35,855	0.56
92	ALLEGHANY	0	10,525	0.00
93	BERTIE	0	19,934	0.00
94	GATES	0	10,366	0.00
95	GRAHAM	0	7,903	0.00
96	HYDE	0	5,743	0.00
97	SWAIN	0	12,800	0.00
98	TYRRELL	0	4,039	0.00
99	WARREN	0	19,643	0.00
100	YADKIN	0	35,903	0.00

Appendix IV. North Carolina Counties by Mortality Rates for Unintentional Drug-Related Poisonings, 1997-2000

	COUNTY	Rate per 100,000	5-year pop average	No. Deaths over 5 Yrs
1	YANCEY	9.12	17,549	8
2	MITCHELL	9.00	15,559	7
3	CHEROKEE	8.36	23,925	10
4	RUTHERFORD	7.06	62,354	22
5	GASTON	6.36	188,724	60
6	DARE	6.13	29,388	9
7	AVERY	6.02	16,612	5
8	ASHE	5.78	24,213	7
9	BRUNSWICK	5.60	71,404	20
10	POLK	5.54	18,048	5
11	CLEVELAND	5.46	95,213	26
12	PAMLICO	4.76	12,616	3
13	NEW HANOVER	4.68	157,980	37
14	CLAY	4.63	8,635	2
15	HENDERSON	4.57	87,612	20
16	BEAUFORT	4.48	44,611	10
17	SAMPSON	4.42	58,839	13
18	CARTERET	4.40	59,062	13
19	BURKE	4.32	87,910	19
20	JONES	3.93	10,187	2
21	DURHAM	3.83	219,488	42
22	GUILFORD	3.82	413,702	79
23	BUNCOMBE	3.73	203,637	38
24	PITT	3.69	130,090	24
25	WILKES	3.69	65,099	12
26	ORANGE	3.61	116,333	21
27	LINCOLN	3.51	62,628	11
28	CASWELL	3.43	23,312	4
29	ROWAN	3.42	128,656	22
30	MACON	3.41	29,302	5
31	COLUMBUS	3.32	54,247	9
32	WATAUGA	3.30	42,398	7
33	ANSON	3.17	25,201	4
34	STANLY	3.15	57,155	9
35	JACKSON	3.08	32,499	5
36	ROCKINGHAM	3.07	91,328	14
37	CAMDEN	2.98	6,715	1
38	CRAVEN	2.86	90,785	13
39	ALAMANCE	2.80	128,666	18
40	TRANSYLVANIA	2.76	28,990	4
41	HAYWOOD	2.62	53,471	7
42	FORSYTH	2.57	302,953	39
43	GRANVILLE	2.53	47,435	6
44	BLADEN	2.50	31,949	4
45	MECKLENBURG	2.48	677,044	84
46	HOKE	2.45	32,642	4
47	MCDOWELL	2.40	41,727	5
48	MARTIN	2.35	25,506	3

NOTE: Rates based on less than 10 deaths are unstable and should be interpreted with caution.

	COUNTY	Rate per 100,000	5-year pop average	No. Deaths over 5 Yrs
49	CABARRUS	2.35	127,844	15
50	DAVIE	2.34	34,169	4
51	WAYNE	2.30	113,067	13
52	MONTGOMERY	2.27	26,379	3
53	CUMBERLAND	2.26	301,374	34
54	HARNETT	2.25	88,969	10
55	MADISON	2.07	19,348	2
56	CHATHAM	2.06	48,512	5
57	RANDOLPH	2.03	128,139	13
58	DAVIDSON	1.92	145,718	14
59	CATAWBA	1.87	139,405	13
60	WAKE	1.86	612,737	57
61	UNION	1.83	120,201	11
62	ALEXANDER	1.82	32,949	3
63	PERQUIMANS	1.76	11,337	1
64	HALIFAX	1.74	57,430	5
65	FRANKLIN	1.72	46,419	4
66	PASQUOTANK	1.72	34,900	3
67	SURRY	1.71	70,167	6
68	LENOIR	1.68	59,564	5
69	DUPLIN	1.66	48,292	4
70	LEE	1.65	48,512	4
71	ONSLOW	1.61	149,428	12
72	IREDELL	1.50	119,687	9
73	WASHINGTON	1.45	13,793	1
74	VANCE	1.41	42,520	3
75	CHOWAN	1.37	14,547	1
76	WILSON	1.37	73,021	5
77	ROBESON	1.32	121,436	8
78	CALDWELL	1.30	76,707	5
79	RICHMOND	1.29	46,491	3
80	JOHNSTON	1.19	117,987	7
81	NASH	1.15	86,774	5
82	PERSON	1.14	35,132	2
83	CURRITUCK	1.12	17,873	1
84	MOORE	1.09	73,437	4
85	EDGECOMBE	1.08	55,785	3
86	GREENE	1.07	18,715	1
87	PENDER	1.00	40,112	2
88	NORTHAMPTON	0.91	21,966	1
89	STOKES	0.90	44,200	2
90	HERTFORD	0.89	22,498	1
91	SCOTLAND	0.56	35,855	1
92	ALLEGHANY	0.00	10,525	0
93	BERTIE	0.00	19,934	0
94	GATES	0.00	10,366	0
95	GRAHAM	0.00	7,903	0
96	HYDE	0.00	5,743	0
97	SWAIN	0.00	12,800	0
98	TYRRELL	0.00	4,039	0
99	WARREN	0.00	19,643	0
100	YADKIN	0.00	35,903	0

APPENDIX V.

Ranking of Single Drugs Causing Deaths from Unintentional Overdoses by NC Counties in upper Quartile of All Accidental Drug Related Deaths, 1997-2001.

Types of Single-Drugs Identified by Medical Examiner as Responsible for Fatal Drug Overdose: North Carolina, 1997-2001 (Injury Conference Abstract – April 2003)

Appendix V

Table 2.6. Ranking of Single Drugs Causing Deaths from Unintentional Overdoses by N.C. Counties in upper Quartile of All Accidental Drug Related Deaths, 1997-2001

County	single drug/ all drug death mortality rate	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1. Yancey	3 single/8 all 9.12/100,000	methadone-2	acetaminophen-1								
2. Mitchell	4 single/7 all 9.00/100,000	cocaine-1	fentanyl-1	methadone-1	darvocet-1						
3. Cherokee	8/10 8.36/100,000	methadone-4	darvocet-2	diuretic-1	oxycodone-1						
4. Rutherford	14/22 7.06/100,000	methadone-3	morphine-1	clozapine-2	fentanyl-2	oxycodone-2	darvocet-1	opiate-1			
5. Gaston	42/60 6.36/100,000	methadone-10	cocaine-1	heroin-5 morphine-4	fentanyl-3	oxycodone -2 hydrocodone-1 hydromorphone-1	darvocet-2	GHB-1	alprazolam-1 olanzapine-1	CO_2 -1 acetaminophen-1	theophylline-1
6. Dare	3/9 deaths 6.13/100,000	cocaine-2	oxycodone-1								
7. Avery	4/5 deaths 6.02/100,000	methadone-2	morphine-1	oxycodone-1							
8. Ashe	5/7 deaths 5.78/100,000	methadone-2	cocaine-1	hydrocodone-1	opiate-1						
9. Brunswick	16/20 deaths 5.60/100,000	cocaine-5	methadone-4	heroin-3 morphine-1	fentanyl-1	hydrocodone-1	oxycodone-1				
10. Polk	2/5 deaths 5/54/100,000	cocaine-1	methadone-1								
11. Cleveland	15/26 deaths 5.46/100,000	methadone-5	cocaine-3	morphine-2	darvocet-2	alprazolam-1	ephedrine-1	fentanyl-1			
12. Pamlico	0/3 deaths										
13. New Hanover	28/37 deaths 4.68/100,000	heroin-7 morphine-6	cocaine-5	fentanyl-2	methadone-2	GHB-1	meperidine-1	darvocet-1	acetaminophen (1)	carbamazepine-1	doxylamine-1
14. Clay	1/2 deaths 4.63/100,000	methadone-1									
15. Henderson	16/20 deaths 4.57/100,000	methadone-7	fentanyl-2	morphine-2	oxycodone-2	methamphetamine-1	salicylate -1	theophylline-1			
16. Beaufort	5/10 deaths 4.48/100,000	cocaine-1	methadone-1	morphine-1	fentanyl-1	acetaminophen-1					
17. Sampson	10/13 deaths 4.42/100,000	cocaine-1	fentanyl-1	methadone-1	morphine-1	oxycodone-1					
18. Carteret	10/13 deaths 4.40/100,000	methadone-4	heroin-1 morphine-1	fentanyl-1	oxycodone-1	caffeine-1	unspecified-1				
19. Burke	10/19 deaths 4.32/100,000	cocaine-1	fentanyl-1	methadone-1	morphine-1	oxycodone-1	darvocet-1	methamphetamine-1	acetaminophen-1	benztropine-1	herbal-rho-damine b-1
20. Jones	1/2 deaths 3.93/100,000	darvocet-1									
21. Durham	33/42 deaths 3.83/100,000	cocaine-14	heroin-13 morphine-3	fentanyl-1	opiate-1	unspecified-1					
22. Guilford	60/79 deaths 3.82/100,000	cocaine-23	heroin-21 morphine-2	methadone-8	alprazolam-1	codeine-1	fentanyl-1	hydrocodone-1	imipramine-1	darvocet-1	
23.Buncombe	26/38 deaths 3.73/100,000	methadone-5	heroin-1 morphine-4	cocaine-4	acetominophen-3	oxycodone-2	darvocet-2	amphetamine-1	amitriptyline-1 carisoprodol-1	carisoprodol-1	unspecified-1
24. Pitt	14/24 deaths 3.69/100,000	heroin-6 morphine-1	cocaine-3	methadone-2	amitriptyline-2						
25. Wilkes	4/12 deaths 3.69/100,000	methadone-2	cocaine-1	methamphetamine-1							

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
acetaminophen	1 0.13 10.00 0.85	2 0.26 20.00 1.83	2 0.26 20.00 1.53	2 0.26 20.00 1.02	3 0.38 30.00 1.33	10 1.28
acetominophen	1 0.13 50.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.44	2 0.26
alprazolam	0 0.00 0.00 0.00	1 0.13 33.33 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 0.26 66.67 0.88	3 0.38
amantadine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
amitriptyline	2 0.26 28.57 1.71	1 0.13 14.29 0.92	2 0.26 28.57 1.53	1 0.13 14.29 0.51	1 0.13 14.29 0.44	7 0.90
amphetamine	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
benztropine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
butorphanol	1 0.13 100.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
caffeine	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
carbamazepine	0 0.00 0.00 0.00	1 0.13 50.00 0.92	0 0.00 0.00 0.00	1 0.13 50.00 0.51	0 0.00 0.00 0.00	2 0.26
carbon monoxide	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
carisoprodol	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.76	1 0.13 50.00 0.51	0 0.00 0.00 0.00	2 0.26
chloral hydrate	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
clozapine	0 0.00 0.00 0.00	1 0.13 33.33 0.92	1 0.13 33.33 0.76	1 0.13 33.33 0.51	0 0.00 0.00 0.00	3 0.38
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
cocaine	52 6.67 23.32 44.44	31 3.97 13.90 28.44	44 5.64 19.73 33.59	48 6.15 21.52 24.37	48 6.15 21.52 21.24	223 28.59
codeine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.76	0 0.00 0.00 0.00	1 0.13 50.00 0.44	2 0.26
diltiazem	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
diphenlhydramine	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
diuretic use	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
doxylamine	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
drug OD unspecif ied	2 0.26 33.33 1.71	1 0.13 16.67 0.92	1 0.13 16.67 0.76	0 0.00 0.00 0.00	2 0.26 33.33 0.88	6 0.77
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
ephedrine	0 0.00 0.00 0.00	1 0.13 50.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.44	2 0.26
fentanyl	6 0.77 14.29 5.13	7 0.90 16.67 6.42	4 0.51 9.52 3.05	11 1.41 26.19 5.58	14 1.79 33.33 6.19	42 5.38
gamma hydroxybut yrate (GHB)	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 0.26 66.67 1.02	1 0.13 33.33 0.44	3 0.38
gentamicin	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
glyburide	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
herbal medicine containing rhoda mine b	1 0.13 100.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
heroin	23 2.95 15.65 19.66	32 4.10 21.77 29.36	30 3.85 20.41 22.90	31 3.97 21.09 15.74	31 3.97 21.09 13.72	147 18.85
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
hydrocarbon inhalant	0 0.00 0.00 0.00	1 0.13 100.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
hydrocodone	1 0.13 7.14 0.85	0 0.00 0.00 0.00	4 0.51 28.57 3.05	2 0.26 14.29 1.02	7 0.90 50.00 3.10	14 1.79
hydromorphone	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
imipramine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
insulin	1 0.13 50.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.51	0 0.00 0.00 0.00	2 0.26
kerosine heater	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
medication toxicity	1 0.13 100.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
meperidine	1 0.13 33.33 0.85	0 0.00 0.00 0.00	2 0.26 66.67 1.53	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 0.38
mesoridazine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
methadone	7 0.90 4.76 5.98	7 0.90 4.76 6.42	19 2.44 12.93 14.50	56 7.18 38.10 28.43	58 7.44 39.46 25.66	147 18.85
methamphetamine	0 0.00 0.00 0.00	1 0.13 20.00 0.92	1 0.13 20.00 0.76	1 0.13 20.00 0.51	2 0.26 40.00 0.88	5 0.64
morphine	9 1.15 16.98 7.69	7 0.90 13.21 6.42	5 0.64 9.43 3.82	15 1.92 28.30 7.61	17 2.18 32.08 7.52	53 6.79
narcotic	1 0.13 50.00 0.85	1 0.13 50.00 0.92	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 0.26
nitrous oxide	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
norpropoxyphene	1 0.13 100.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
olanzapine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 50.00 0.76	0 0.00 0.00 0.00	1 0.13 50.00 0.44	2 0.26
opiate	1 0.13 33.33 0.85	0 0.00 0.00 0.00	1 0.13 33.33 0.76	0 0.00 0.00 0.00	1 0.13 33.33 0.44	3 0.38
oxycodone	0 0.00 0.00 0.00	2 0.26 5.26 1.83	3 0.38 7.89 2.29	14 1.79 36.84 7.11	19 2.44 50.00 8.41	38 4.87
paroxetine	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.44	1 0.13
propoxyphene	4 0.51 18.18 3.42	2 0.26 9.09 1.83	3 0.38 13.64 2.29	5 0.64 22.73 2.54	8 1.03 36.36 3.54	22 2.82
renograffin	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

(Continued)

injury conference abstract - April 2003
types of single drugs by county

The FREQ Procedure

Table of which_single_drug by dod_year

which_single_drug(which_single_drug)
dod_year

Frequency Percent Row Pct Col Pct	1997	1998	1999	2000	2001	Total
salicylate	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13 100.00 0.51	0 0.00 0.00 0.00	1 0.13
theophylline	0 0.00 0.00 0.00	2 0.26 66.67 1.83	0 0.00 0.00 0.00	1 0.13 33.33 0.51	0 0.00 0.00 0.00	3 0.38
tramadol	0 0.00 0.00 0.00	2 0.26 33.33 1.83	0 0.00 0.00 0.00	3 0.38 50.00 1.52	1 0.13 16.67 0.44	6 0.77
tricyclic antide pressant	1 0.13 100.00 0.85	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.13
Total	117 15.00	109 13.97	131 16.79	197 25.26	226 28.97	780 100.00

Frequency Missing = 316

APPENDIX VI.

Retailed controlled substances per Registrant, N.C. 2001. ARCOS, Report #1.

State of North Carolina 2001 Distribution of Methadone by County

Sorted by: Average			
County	**Number of Registrants**	**Grams**	**Average**
Cleveland	21	9,840.35	468.59
Orange	30	4,794.23	159.81
Buncombe	49	6,065.44	123.78
Yancey	2	237.54	118.77
Henderson	21	2,367.75	112.75
Lee	8	887.01	110.88
Durham	29	3,194.79	110.17
Richmond	10	1,030.93	103.09
Wayne	18	1,840.26	102.24
Polk	4	402.35	100.59
Mitchell	7	699.75	99.96
Wilkes	9	885.06	98.34
Cherokee	8	714.80	89.35
Craven	19	1,659.94	87.37
Rutherford	12	1,031.38	85.95
Transylvania	8	679.15	84.89
McDowell	6	498.57	83.10
Brunswick	16	1,322.09	82.63
New Hanover	37	3,023.92	81.73
Caswell	2	161.79	80.90
Person	6	479.17	79.86
Franklin	6	468.47	78.08
Madison	5	380.84	76.17
Gaston	47	3,539.30	75.30
Wilson	16	1,145.29	71.58
Rowan	23	1,600.68	69.59
Moore	15	1,025.73	68.38
Jackson	8	537.00	67.13
Carteret	16	1,009.18	63.07
Wake	112	6,906.98	61.67
Pitt	27	1,634.82	60.55
Watauga	10	594.37	59.44
Halifax	10	591.26	59.13
Perquimans	2	115.62	57.81
Johnston	26	1,484.93	57.11
Alamance	19	1,082.66	56.98
Macon	6	339.21	56.54
Pamlico	2	112.18	56.09
Randolph	21	1,173.60	55.89
Nash	15	826.55	55.10
Forsyth	55	2,995.68	54.47
Harnett	13	701.92	53.99
Iredell	29	1,558.68	53.75
Rockingham	20	1,074.04	54.70
Surry	18	957.60	53.20
Haywood	9	477.83	53.09
Onslow	21	1,100.75	52.42
Vance	11	576.19	52.38
Cabarrus	31	1,620.70	52.28
Cumberland	47	2,363.80	50.29
Scotland	10	475.26	47.53
Dare	8	380.04	47.51
Davie	7	330.84	47.26
Mecklenburg	139	6,563.35	47.22
Graham	3	134.78	44.93
Granville	9	401.24	44.58
Lincoln	16	699.25	43.70

Date Prepared: 03/10/2003

State of North Carolina 2001 Distribution of Methadone by County

Sorted by: Average			
Chatham	7	299.98	42.85
Union	14	596.86	42.63
Swain	4	166.67	41.67
Catawba	38	1,558.84	41.02
Lenoir	15	607.04	40.47
Sampson	19	741.29	39.02
Davidson	35	1,343.39	38.38
Stanly	9	335.08	37.23
Guilford	73	2,669.05	35.56
Yadkin	3	95.99	32.00
Anson	4	125.77	31.44
Burke	23	713.16	31.01
Hertford	7	217.01	31.00
Duplin	21	632.57	30.12
Edgecombe	13	380.64	29.28
Caldwell	16	462.48	28.91
Alexander	4	113.69	28.42
Jones	2	56.18	28.09
Columbus	19	524.01	27.58
Hoke	4	108.99	27.25
Bladen	8	217.52	27.19
Beaufort	12	326.28	27.19
Greene	1	27.06	27.06
Robeson	22	568.79	25.85
Northampton	2	50.24	25.12
Pender	9	217.37	24.15
Alleghany	2	44.92	22.46
Stokes	9	191.16	21.24
Pasquotank	7	130.96	18.71
Clay	3	52.25	17.42
Ashe	7	110.67	15.81
Currituck	2	29.83	14.92
Washington	3	44.35	14.78
Warren	4	54.00	13.50
Montgomery	7	82.16	11.74
Bertie	2	18.78	9.39
Martin	6	54.69	9.12
Avery	6	27.21	4.54
Chowan	3	11.50	3.83
Tyrrell	1	0.43	0.43
Camden	0	0.00	0.00
Gates	0	0.00	0.00
Hyde	0	0.00	0.00
N.C. Total	1600	102,805.75	64.25
N.C. Average –25%	48		
N.C. Average	64		
N.C. Average +25%	80		

Date Prepared: 03/10/2003

State of North Carolina 2001 Distribution of Oxycodone by County

Sorted by: Average			
County	**Number of Registrants**	**Grams**	**Average**
Cleveland	22	22,066.35	1,003.02
Orange	35	26,597.48	759.93
Wilkes	11	7,699.95	700.00
Vance	11	7,251.40	659.22
Rutherford	13	8,454.31	650.33
Durham	36	23,244.92	645.69
Lee	10	6,376.22	637.62
Rowan	23	14,298.00	621.65
Mitchell	7	4,268.04	609.72
Brunswick	16	9,678.49	604.91
Jackson	8	4,534.28	566.79
Person	7	3,915.88	559.41
Craven	20	11,015.81	550.79
Richmond	13	7,125.92	548.15
Columbus	20	10,674.22	533.71
Carteret	18	9,391.21	521.73
Cumberland	51	26,202.05	513.77
Henderson	22	11,255.13	511.60
Cabarrus	31	15,743.86	507.87
Moore	17	8,492.72	499.57
Cherokee	9	4,462.86	495.87
Yancey	4	1,968.21	492.05
Iredell	31	15,087.27	486.69
Gaston	52	25,220.94	485.02
Watauga	13	6,216.61	478.20
Haywood	13	6,090.17	468.47
Franklin	6	2,754.89	459.15
Burke	25	11,035.24	441.41
Davie	7	2,994.72	427.82
New Hanover	41	17,322.00	422.49
Granville	11	4,647.05	422.46
Buncombe	57	24,044.29	421.83
Greene	1	420.85	420.85
Pamlico	2	830.22	415.11
Macon	9	3,690.67	410.07
Surry	18	7,362.89	409.05
Robeson	27	11,010.35	407.79
Catawba	41	16,361.00	399.05
Transylvania	8	3,140.20	392.53
Alexander	5	1,933.57	386.71
Rockingham	21	8,022.58	382.03
McDowell	8	3,015.36	376.92
Polk	5	1,836.79	367.36
Yadkin	4	1,468.74	367.19
Pitt	32	11,614.67	362.96
Scotland	11	3,966.25	360.57
Caldwell	17	6,099.01	358.77
Onslow	22	7,844.36	356.56
Graham	3	1,065.15	355.05
Forsyth	62	21,936.09	353.81
Randolph	23	8,079.85	351.30
Avery	6	1,984.25	330.71
Hoke	4	1,266.67	316.67
Lincoln	16	5,020.81	313.80
Caswell	2	621.82	310.91
Davidson	37	10,741.84	290.32
Alamance	26	7,539.10	289.97

Date Prepared: 03/10/2003

State of North Carolina 2001 Distribution of Oxycodone by County

Sorted by: Average			
Guilford	87	24,668.74	283.55
Clay	3	848.00	282.67
Wilson	18	4,952.54	275.14
Chatham	7	1,918.10	274.01
Nash	17	4,606.38	270.96
Union	18	4,839.42	268.86
Wake	138	36,704.10	265.97
Sampson	20	5,277.12	263.86
Madison	8	2,075.04	259.38
Harnett	15	3,827.26	255.15
Johnston	27	6,718.11	248.82
Beaufort	13	3,229.57	248.43
Hertford	7	1,727.26	246.75
Stanly	11	2,703.02	245.73
Lenoir	16	3,873.45	242.09
Montgomery	8	1,895.02	236.88
Alleghany	3	703.28	234.43
Mecklenburg	173	40,209.88	232.43
Stokes	10	2,301.55	230.16
Bladen	9	2,046.56	227.40
Wayne	21	4,556.73	216.99
Ashe	7	1,511.69	215.96
Anson	5	1,071.81	214.36
Swain	5	1,022.37	204.47
Dare	12	2,409.19	200.77
Halifax	12	2,260.95	188.41
Edgecombe	13	2,387.99	183.69
Currituck	2	365.90	182.95
Pender	10	1,779.90	177.99
Duplin	21	3,409.58	162.36
Pasquotank	11	1,702.55	154.78
Martin	7	959.28	137.04
Perquimans	2	240.98	120.49
Warren	4	478.96	119.74
Jones	2	220.10	110.05
Bertie	4	419.68	104.92
Washington	5	476.92	95.38
Northampton	3	260.87	86.96
Tyrrell	1	86.44	86.44
Chowan	4	243.37	60.84
Gates	1	43.75	43.75
Hyde	1	21.24	21.24
Camden	0	0.00	0.00
N.C. Total	1,831	688,058.23	375.78
N.C. Average –25%	282		
N.C. Average	376		
N.C. Average +25%	470		

Date Prepared: 03/10/2003

For copies, contact Injury and Violence Prevention Branch
1915 Mail Service Center • Raleigh, NC 27699-1915
Phone: 919-733-3732
FAX: 919-733-9575

State of North Carolina • Michael F. Easley, Governor
N.C. Department of Health and Human Services
Carmen Hooker Odom, Secretary
Division of Public Health • Injury and Violence Prevention Branch
www.dhhs.state.nc.us

325 copies of this public document were printed at a cost of $2,296.00 or $7.06 per copy. (6/04)