

Prescribing Trends for Opioids, Benzodiazepines, Amphetamines, and Barbiturates from 1998-2007

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Total number of dispensed prescriptions for single agent and combination codeine and propoxyphene containing products through U.S. outpatient retail pharmacies, 1998-2007

- In the next set of slides, 2 – 6, focus on the total number of prescriptions for each of the previous mentioned prescription drugs, the actual increase or decrease in prescription volume, and the percent increase or decrease in prescription volume.
- The total number of propoxyphene and codeine prescriptions from 1998 through 2007 decreased year to year for a total decrease of 11.6 million codeine prescriptions and 8.4 million propoxyphene prescriptions, representing a 36.5% decrease for codeine and 27% decrease for propoxyphene.

Total number of dispensed prescriptions for selected agents through U.S. outpatient retail pharmacies, 1998-2007

- What can not be emphasized enough in this slide and the following slides are both the rapid, and very significant increase in prescription volume for the **majority** of these drugs in the last 10 reportable years. Total methadone increased by 3.7 million prescriptions from 1998 through 2007 which equates to a percent increase of nearly 800%. Amphetamine prescription volume increased by 463% or 11.7 million prescriptions, and there was a 409% increase for Fentanyl or 4.5 million prescriptions for the same time period. As for the benzodiazepines, there was a 114% increase in clonazepam which represents 10.9 million prescriptions, 30% increase in temazepam or 1.9 million prescriptions, a 24% increase in lorazepam which represents 4.2 million prescriptions, and a 17% increase in diazepam represented by 2.1 million prescriptions. Those drug prescriptions that decreased in this slide were phenobarbital, which decreased by 22% or 820 thousand prescriptions, butalbital which went down 61% or 381 thousand prescriptions, and finally, methamphetamines which decreased by 65% or approximately 36 thousand prescriptions. Methamphetamine prescriptions have greatly fallen out of favor over the decades and have since been replaced by a dramatic rise in amphetamine prescriptions.
- Dispensed prescriptions for methadone have increased by approximately 794% from 1998 to 2007.
- 463% increase for amphetamine, 409% increase for Fentanyl, 114% increase for clonazepam, 30% increase for temazepam, 24% increase for lorazepam, and 17% increase for diazepam.
- 65% decrease for methamphetamines, 61% decrease for butalbital, and 22% decrease for phenobarbital.
- Source: Verispan, LLC: Vector One®: National, Years 1998-2007, Extracted 7/08

Total number of dispensed prescriptions for single agent and combination oxycodone-containing products and alprazolam through U.S. outpatient retail pharmacies, 1998-2007

- From 1998 to 2007, alprazolam increased overall by 17.6 million prescriptions or 71%, from 24.8 million to 42.4 million prescriptions in 2007, and oxycodone increased by 26.4 million prescriptions or 166%, to 42.2 million prescriptions in 2007.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of dispensed prescriptions for single agent and combination hydrocodone-containing products through U.S. outpatient retail pharmacies, 1998-2007

- Hydrocodone prescription volume tops the list by increasing from 63.6 million prescriptions in 1998 to 123.3 million prescriptions in 2007, which is a net increase in 59.7 million prescriptions by 2007 compared to 1998, a 94% increase.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of dispensed prescriptions for various agents through U.S. outpatient retail pharmacies, 1998-2007

- It's important to keep in mind that when looking at any of these slides, one has to view them by considering the increase or decrease in prescription volume, together with the percent change, to get a more complete perspective of the prescribing trends. You can not show prescription volume alone without percent change, and vice versa, without skewing the overall perspective relative to prescription and drug volume trending.
- Of the selected agents, products containing hydrocodone were the most dispensed in the U.S. from 1998-2007.
- Dispensed prescriptions for methadone have increased by approximately 794% followed by amphetamine, Fentanyl, oxycodone, clonazepam, and hydrocodone at 463%, 409%, 166%, 114%, and 94%, respectively from 1998 to 2007.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Channels of Distribution for Selected Prescription Drugs

- Sales data for oxycodone, hydrocodone, methadone, codeine, propoxyphene, alprazolam, lorazepam, diazepam, clonazepam, temazepam, amphetamine, methamphetamine, butalbital, and phenobarbital by number of tablets, capsules, and mL sold in year 2007 indicate that the majority of distribution is toward outpatient pharmacy settings* (80% or greater).
- The only exception is with Fentanyl in which 21% of distribution is toward outpatient pharmacy settings while 78% is toward inpatient settings.
- *Outpatient pharmacy settings: chain, independent, food stores with pharmacies, and mail order pharmacies. Mail order distribution accounted for approximately less than 12% for all of the manufacturers of selected prescriptions drugs. Mail order data are not included in this analysis.
- Source: IMS Health, IMS National Sales Perspectives™. Year 2007. Data Extracted August 15, 2008
- In this slide, sales data can be of great assistance when it comes to determining the distribution of these drugs. The sales data for these prescription drugs indicates that the majority of distribution, 80%, is toward outpatient pharmacy settings. The only exception was Fentanyl, whose distribution through outpatient pharmacy was only 21%, with 78% toward inpatient settings. Again, outpatient settings comprise of chain pharmacies, independent pharmacies, food stores with pharmacies, and mail order pharmacies. Mail order, however, accounted for approximately less than 12% for all of the manufacturers of selected prescription drugs. Mail order was not included in the analysis for this slide when determining prescription drug distribution.

Total number of prescriptions dispensed by product strength of phenobarbital through U.S. outpatient retail pharmacies, 1998-2007

- The next 18 slides, 8 - 25 reflect the total number of prescriptions dispensed by product strength, the age range for which each product had the majority of prescriptions written, and the ratio between male and females receiving these prescriptions.
- Figure #6 shows the 30 mg strength of phenobarbital being the most commonly dispensed, however, it has declined over the years.
- The ratio for males to females has been 1 to 1.
- The majority of prescriptions were dispensed to children ages 0-10 years for males and adult females ages 41-50. The exception occurred after 2006 in which female children 0-10 years were commonly dispensed phenobarbital.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of butalbital through U.S. outpatient retail pharmacies, 1998-2007

- The 50 mg strength of butalbital is the most commonly dispensed, however, use has been gradually declining over the past 10 years.
- The ratio of dispensed butalbital prescriptions for females to males is approximately 4 to 1.
- The majority of prescriptions were dispensed to both male and females aged 41-50 years.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of single agent and combination codeine-containing products through U.S. outpatient retail pharmacies, 1998-2007

- The 30 mg strength of codeine is most commonly dispensed; however, its use has been declining year to year.
- The ratio of codeine prescriptions for females to males is 1.7 to 1.
- The majority of codeine products were dispensed to males and females aged 41-50, however, after 2005, the range for males changed from 51-60 years of age.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of single agent and combination propoxyphene-containing products through U.S. outpatient retail pharmacies, 1998-2007

- The 65 mg strength propoxyphene was more commonly dispensed and has fluctuated over the last 10 years and the 100 mg strength has steadily declined.
- The ratio of dispensed propoxyphene prescriptions for females to males was 2.4 to 1.
- The majority of propoxyphene were dispensed to adults age 51-60 for females and age 71 plus for males.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of methamphetamine through U.S. outpatient retail pharmacies, 1998-2007

- There was a very gradual decline in 5 mg methamphetamine prescription use with total prescriptions totaling less than 20,000 in 2007.
- Ratio of use between male and females was approximately 1 to 1.
- The majority of prescriptions were dispensed to both males and females aged 41-50 years.
- Methamphetamine prescriptions have greatly fallen out of favor over the decades and have since been replaced by a dramatic rise in amphetamine prescriptions.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of amphetamine through U.S. outpatient retail pharmacies, 1998-2007

- There was a rapid rise in amphetamine prescriptions from 1998 to 2007 with 20 mg being the most commonly dispensed.
- The ratio for males to females is 1.7 to 1.
- The majority of amphetamine prescriptions were dispensed to adolescent males and females aged 11-20 years.
- The average increase in all amphetamine prescriptions rose from 2.5 million in 1998 to 14.2 million in 2007, a 463% increase.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of temazepam through U.S. outpatient retail pharmacies, 1998-2007

- The 30 mg strength of temazepam is most commonly dispensed followed by the 15 mg strength.
- Ratio of females to males is 1.7 to 1.
- The majority of prescriptions were dispensed to males and females age 71 and over.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of diazepam through U.S. outpatient retail pharmacies, 1998-2007

- The 5 mg strength of diazepam was most commonly dispensed with the ratio for females to males being 1.6 to 1.
- The majority of all diazepam prescriptions were dispensed to males and females aged 41-50 years.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of clonazepam through U.S. outpatient retail pharmacies, 1998-2007

- The 0.5 mg strength of clonazepam was most commonly dispensed followed by the 1mg strength.
- The ratio of females to males was approximately 2 to 1.
- The majority of prescriptions were dispensed to both genders aged 41-50 years.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of lorazepam through U.S. outpatient retail pharmacies, 1998-2007

- Lorazepam, 1 mg, is most commonly dispensed followed by 0.5 mg.
- The ratio of females to males was 2.4 to 1.
- The majority of prescriptions were dispensed for both genders aged 71 years and over.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of alprazolam through U.S. outpatient retail pharmacies, 1998-2007

- Alprazolam, 0.5 mg, most commonly dispensed.
- The ratio of females to males was 2.3 to 1.
- The majority of dispensed prescriptions for males and females occurred between ages 41-50.
- Alprazolam increased overall by 17.6 million prescriptions or 71% from 24.8 million in 1998 to 42.4 million prescriptions in 2007.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of Fentanyl through U.S. outpatient retail pharmacies, 1998-2007

- The 50 μg strength of Fentanyl most commonly dispensed closely followed by 25 μg .
- The ratio of females to males approximately 2 to 1.
- The majority of all Fentanyl prescriptions were dispensed to females are aged 71 and older and males aged 41-50 years.
- The average increase in all Fentanyl prescriptions rose from 1.1 million in 1998 to 5.5 million in 2007, a 409% increase.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of methadone through U.S. outpatient retail pharmacies, 1998-2007

- 10 mg methadone was most commonly dispensed with a significant increase over the last 10 years.
- The ratio of females to males was approximately 1 to 1.
- The majority of prescriptions were dispensed to both genders aged 41-50 years.
- The average increase in all methadone prescriptions rose from approximately 468 thousand in 1998 to 4.2 million in 2007, a nearly 800% increase.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of single agent and combination oxycodone-containing products through U.S. outpatient retail pharmacies, 1998-2007

- Oxycodone, 5 mg, was most commonly dispensed.
- The ratio of females to males approximately 1 to 1.
- The majority of oxycodone products were dispensed to males and females aged 41-50 years.
- The average increase in all oxycodone prescriptions rose from 15.9 million in 1998 to 42.2 million in 2007, a 166% increase.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed by product strength of single agent and combination hydrocodone-containing products through U.S. outpatient retail pharmacies, 1998-2007

- Hydrocodone, 5 mg, is the most commonly dispensed strength
- The ratio of females to males prescribed hydrocodone is 1.4 to 1.
- The majority of hydrocodone products were dispensed to both genders aged 41-50 years.
- The average increase in all hydrocodone prescriptions rose from 63.6 million in 1998 to over 123 million in 2007, a 94% increase over 10 years.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed for opioids by gender through U.S. outpatient retail pharmacies, 1998-2007

- For opioids dispensed to both females and males, hydrocodone is the most commonly dispensed drug followed by oxycodone. The use of propoxyphene has steadily declined in use over the last 10 years.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed for benzodiazepines by gender through U.S. outpatient retail pharmacies, 1998-2007

- For benzodiazepines, alprazolam is the most commonly dispensed drug in females followed by lorazepam.
- In males, alprazolam is also the most commonly dispensed drug, however, clonazepam follows second.
- Overall, females fill more prescriptions for benzodiazepines compared to males.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of prescriptions dispensed for amphetamines and barbiturates by gender through U.S. outpatient retail pharmacies, 1998-2007

- For amphetamines and barbiturates, there was approximately a 30% increase in amphetamine use for males from 2002 through 2007.
- There was a 111% increase in use for females over the same period.
- Amphetamine use is still close to a 2 to 1 ratio of males to females.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of extended units (tablets, capsules) dispensed for single agent and combination codeine and propoxyphene-containing products through U.S. outpatient retail pharmacies, 1998-2007

- In the next set of five slides, 26 -30, the volume of drug product is discussed. Prescription volume by itself gives only half the picture, and without the volume of drug product actually being dispensed, the data would be incomplete. To accurately represent trends in prescribing practices, both prescription volume, and drug product volume dispensed, must be presented. Extended units refers to the number of units, including individual tablets, capsules, mLs, patches, etc., dispensed for a given product, for a given period.
- There has been only a small decline in actual volume of codeine and propoxyphene, 12.4 and 12.1%, respectively, with total codeine dispensed at 1.7 billion extended units and approximately 1.19 billion extended units of propoxyphene in 2007.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of extended units (tablets, capsules) dispensed for single agents through U.S. outpatient retail pharmacies, 1998-2007

- The number of units being dispensed for methadone increased from 56.5 million units in 1998 to 758 million units in 2007, a 922% increase. This represents 521.5 million more units dispensed in 2007 than in 1998. Fentanyl increased over the same period by 800% or 74 million units, and amphetamines increased by 345%, which represents approximately 500 million more units dispensed in 2007 than in 1998. Clonazepam increased by approximately 120% from 1998 to 2007 which represents 641 million more units dispensed in 2007 than in 1998. There was a 27% increase in lorazepam or 236 million units over the same period, a 35% increase in temazepam or 70 million units, and a 16% increase in diazepam or 92 million units. There were decreases in butalbital, phenobarbital, and methamphetamine volumes with phenobarbital showing the greatest decrease in volume at 103 million units or 24%.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of extended units (tablets, capsules) dispensed for single agent and combination oxycodone-containing products and alprazolam through U.S. outpatient retail pharmacies, 1998-2007

- Alprazolam increased 83% from 1998 to 2007 which represents almost 1.18 billion more units dispensed in 2007 than in 1998.
- Oxycodone increased by 314% over the same period, from approximately 725 million units to 3 billion units, which represents over 2.25 billion more units of oxycodone dispensed in 2007 than in 1998.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of extended units (tablets, capsules) dispensed for single agent and combination hydrocodone-containing products through U.S. outpatient retail pharmacies, 1998-2007

- Hydrocodone units dispensed increased 172% from 2.68 billion units in 1998 to 7.28 billion units in 2007. This represents over 4.6 billion more units dispensed in 2007 than in 1998.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Total number of extended units (tablets, capsules) dispensed for various agents through U.S. outpatient retail pharmacies, 1998-2007

- This is summation slide of the all the drug products and the number of extended units dispensed from 1998 through 2007.
- The “y” axis is in billions of units dispensed.
- Source: Verispan, LLC: Vector One[®]: National, Years 1998-2007, Extracted 7/08

Rank of selected prescription drugs on the market based on prescription volume for year 2007

- Out of approximately seven thousand five hundred drugs on the U.S. market, all but 4 rank within the top 200 dispensed drugs. Methadone is close to the top 200 at a ranking of 203. To give you some perspective of the prescription volume involved when it comes to ranking these products, the combination product, hydrocodone with acetaminophen, ranks number one at 117 million prescriptions, which is followed by lisinopril, a high blood pressure medication, in the number 2 position, at 61.7 million prescriptions. In 2007, there were over 55 million more prescriptions of hydrocodone with acetaminophen, than there were prescriptions for lisinopril.
- This data presented reflects prescription volume and prescription product dispensed, however, this does NOT reflect how much dispensed product is consumed by the individuals for whom the products were prescribed, or the potential for diversion after dispensing.
- Source: Verispan, LLC: Vector One®: National, Extracted 8.15.08, File: VONA 2008-1191 top drugs dispensed.xls

Drug	Rank
Hydrocodone w/ APAP	1
Alprazolam	10
Oxycodone w/ APAP	21
Lorazepam	30
Clonazepam	33
Diazepam	62
Temazepam	108
Amphetamine salt combo	158
Fentanyl transdermal	167
Codeine w/ promethazine	173
Butalbital/APAP/caffeine	177
Methadone	203
Phenobarbital	245
Propoxyphene	688
Methamphetamine	6458

Sources for data analyses

- Verispan, LLC: Vector One[®]: National (VONA)
 - Years Researched: 1998-2007
 - Data Extracted: August 7, 2008
- IMS Health, IMS National Sales Perspectives TM
 - Year Researched: 2007
 - Data Extracted: August 15, 2008
- U.S. Census Bureau
- <http://www.census.gov/popest/states/NST-ann-est2006.html>
 - 1998 U.S. National Population: July 1st, ~270 million
 - 2006 U.S. National Population: July 1st, ~299 million