Improving the Safety of Central Nervous System Stimulants

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Introduction

Attention deficit hyperactivity disorder (“ADHD”) is a medical condition that is thought to affect approximately four percent of the adult population in the United States and up to eight percent of school-aged children.\(^1\) Symptoms include difficulty concentrating, hyperactivity, and limited impulse control.\(^2\) ADHD was considered untreatable until the introduction of relatively safe central nervous system (“CNS”) stimulants such as Ritalin revolutionized the management of the disorder.\(^3\) Ritalin and other amphetamine-like drugs are typically taken orally in pill or capsule form, and by this route are relatively mild in their stimulating and attention-focusing effects.\(^4\) Because of the ubiquity of ADHD, its frequent diagnosis among teenagers and young adults, and the relatively short duration of action of Ritalin, the drug is generally available to patients on an as-needed basis.\(^5\) Thus, CNS stimulants have become widely available to people in these age groups. Unfortunately, Ritalin can have effects similar to cocaine when administered via routes that provide rapid absorption, such as insufflation (“snorting”) or intravenous injection.\(^6\) It was not long before users discovered that Ritalin, ground into powder


\(^3\) See id.

\(^4\) See National Institute on Drug Abuse, *supra* note 1.


and snorted, or dissolved in water and injected, could provide an inexpensive and seemingly safe “high.”

Ritalin and its relatives have become some of the most abused prescription drugs in the United States. As diagnoses of ADHD have increased, so have prescriptions for CNS stimulants. Studies have shown widespread abuse of these drugs by college and high school students; some teenagers diagnosed with ADHD routinely sell their tablets to their classmates and friends.

It is a common belief among Ritalin abusers that the drug is safe to use because unlike street drugs, it has been tested and approved by the Food and Drug Administration (“FDA”). This misconception ignores the fact that the effects of a drug taken by an ultrafast delivery route can be remarkably different from the effects of the same drug taken with controlled slow absorption. Snorted or injected, Ritalin has side effects such as increased heart and respiratory rates, elevated blood pressure, aggression, hostility, hallucinations, strange behavior, and a decrease in sleep and appetite which can lead to malnutrition. In high doses, cardiovascular complications including stroke, heart attack, and death have been reported.

In 2006, John C. Kulli, M.D., submitted a Citizen’s Petition to the FDA, describing several methods for the reformulation of Ritalin and similar drugs in order to significantly

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7 See id.
8 See Kapner, supra note 5.
9 See Quinton Babcock & Tom Byrne, Student Perceptions of Methylphenidate Abuse at a Public Liberal Arts College, 49 J. Am. C. Health 143, (2000).
10 See id.
11 See Genetic Science Learning Center, supra note 6.
12 See id.
13 See National Institute on Drug Abuse, supra note 1.
15 In the interest of full disclosure, it must be noted that John Kulli is my father.
16 Please see page 14 of this essay for the description of a citizen’s petition.
inhibit the current easy conversion of tablets into insufflation or injection forms. The FDA responded to this petition within the statutory 180 day time requirement, but stated merely that the problem required study. No further response has been forthcoming.

In this paper, I will argue that the FDA should remove the current pill-or-capsule-formulated ADHD medicines from the market, and require drug manufacturers to use the newly formulated, safer method. In part one, I provide a brief history of CNS stimulants, and describe how they are abused. In part two, I describe the reformulation methods suggested by Dr. Kulli, and how this technology can prevent drug abuse. In part three, I give examples of the FDA involvement in other cases of drug safety, and the potential for future involvement. In part four, I explain policy reasons why the FDA should require pharmaceutical companies to improve the safety of these drugs.

Part One: Stimulants and Abuse

A. History of CNS Stimulants

Central nervous system stimulants were a key development in the management of ADHD. Methylphenidate, which is marketed as Ritalin by Novartis Pharmaceuticals, was first introduced in 1956. Adderall is the brand name for the stimulant amphetamine. It was

17 Dr. Kulli has a patent pending on this technology, and as such, has not only a societal interest in the FDA’s decision, but also a financial one. See U.S. Patent Pending No. 20,080,292,665, submitted November 27, 2008.
19 See 21 C.F.R. § 10.30 (2009)
21 See National Institute on Drug Abuse, supra note 1.
22 See Ciampa, supra note 14.
23 See Szufilta, supra note 2.
24 See National Institute on Drug Abuse, supra note 1.
first marketed in 1996\textsuperscript{25} by Shire Pharmaceuticals.\textsuperscript{26} Depending on the dosage, the effect of these drugs can last for several hours to half a day, and include improved focus, alertness, and cognition.\textsuperscript{27} In addition, they can also improve the self-esteem of the patient, have a calming effect, and improve social interactions.\textsuperscript{28}

The stimulants work by increasing dopamine levels in the brain of the patient.\textsuperscript{29} Dopamine is a neurotransmitter associated with movement, attention, and pleasure.\textsuperscript{30} The therapeutic effect of these drugs is accomplished with slow and steady increases of dopamine, similar to the production that occurs naturally in the brain.\textsuperscript{31} Doctors start their patients on low doses of the stimulants, and gradually increase the dose until the desired therapeutic effect is achieved.\textsuperscript{32} Although these drugs generally have a positive impact on patients, the mechanisms behind the drugs’ functions are not fully understood.\textsuperscript{33} However, it is speculated that because methylphenidate and amphetamine increase the release of dopamine, the drugs can improve focus and pleasure in patients who have weaker natural dopamine signals.\textsuperscript{34}

Common side-effects from proper use of the drug include headache, stomachache, insomnia, decreased appetite, nervousness, and dizziness.\textsuperscript{35} In May of 2006, the FDA required manufacturers of ADHD drugs to revise their labels to include a black box warning reflecting growing concerns about an increased risk of psychiatric and cardiovascular problems in patients

\textsuperscript{25} See Attention Deficit Disorder Help Center, \textit{Adderall Side Effects}, http://www.add-adhd-help-center.com/adderall_side_effects.htm (last visited Nov. 9, 2009).
\textsuperscript{26} See Adderall XR, http://www.adderallxr.com/ (last visited Nov. 9, 2009).
\textsuperscript{27} See National Institute on Drug Abuse, \textit{supra} note 1.
\textsuperscript{28} See id.
\textsuperscript{29} See id.
\textsuperscript{30} See id.
\textsuperscript{31} See id.
\textsuperscript{32} See id.
\textsuperscript{33} See Szuflita, \textit{supra} note 2.
\textsuperscript{34} See National Institute on Drug Abuse, \textit{supra} note 1.
taking these drugs.\textsuperscript{36} A black box warning means that research has shown the drug has a significant risk of serious or life-threatening adverse effects.\textsuperscript{37} It is the strongest and most serious warning that the FDA requires.\textsuperscript{38} The psychiatric problems associated with these drugs involve symptoms of hearing voices, manic behavior, and increased and unfounded suspicion.\textsuperscript{39} Cardiovascular problems include reports of increased blood pressure and heart rate, stroke, heart attack, and cases of sudden death in patients with heart defects.\textsuperscript{40}

The effects of these pharmaceutical drugs are likened to those of the street drug cocaine, which also affects dopamine signals in the brain.\textsuperscript{41} Studies in baboons have found that both cocaine and methylphenidate are distributed similarly in regions of the brain that are believed to be responsible for reward and pleasure behaviors, and attach to the same binding sites in the brain.\textsuperscript{42}

\textbf{B. History of Abuse}

Known on the street by nicknames such as “Vitamin R,” “R-Ball,”\textsuperscript{43} and even “Kiddie Cocaine,”\textsuperscript{44} Ritalin and Adderall abuse is a growing problem in the United States.\textsuperscript{45} Because of their capacity to help with concentration combined with their ability to increase the energy of the user, and because they are easily obtainable, these drugs are popular among college and graduate

\textsuperscript{36} See Safety Requirement guidelines, available at http://www.fda.gov/ScienceResearch/SpecialTopics/PediatricTherapeuticsResearch/ucm123229.htm (last visited Nov. 8, 2009).
\textsuperscript{38} See id.
\textsuperscript{39} See Adderall CII Medication Guide, supra note 31.
\textsuperscript{40} See id.
\textsuperscript{41} See Szuflita, supra note 2.
\textsuperscript{43} See Kapner, supra note 5.
\textsuperscript{45} See id.
school students, to help with their studies. They are also becoming a popular party drug on campuses, where they are crushed and snorted or injected for a quicker and stronger effect.

Students often purchase CNS stimulants from peers who have legal prescriptions for the drugs. Prescribed Ritalin costs about fifty cents per twenty milligram tablet, but can sell on the street for upwards of ten dollars per tablet. These abusers (and the students selling the drugs) are usually unaware that the detrimental side effects from snorting or injecting prescription stimulants rival the effects of cocaine use. If they are aware of potential side effects, they may believe that they are in control of their use, that they won’t be affected, or that occasional abuse is safe.

Additionally, Ritalin is among the top ten most frequently stolen controlled medications. The Drug Enforcement Agency (“DEA”) estimated that almost 700,000 doses of Ritalin were stolen from January 1996 to December 1997. Ritalin is reported stolen from students, parents, school nurses’ offices, and pharmacies.

Monitoring the Future (“MTF”), an organization that surveys and studies behaviors of American high school students, college students, and young adults, began researching Ritalin abuse in 2002. MTF discovered that while rates of abuse vary at different schools, the abuse is widespread. Quinton Babcock and Tom Byrne found that more studies on the abuse of the

46 See Ciampa, supra note 14.
47 See Kapner, supra note 5.
49 See Kapner, supra note 5.
50 See Szulflita, supra note 2.
51 See Kapner, supra note 5.
52 See id. Unfortunately, the DEA has not released any more recent data regarding the theft of these drugs.
53 See id.
54 See id.
55 See id.
drug need to be done, as opposed to examinations of its therapeutic benefits.\textsuperscript{56} They conducted a survey of students at a small liberal arts college in Massachusetts, asking them questions about Ritalin abuse at the school.\textsuperscript{57} Their results showed that almost half of the students surveyed knew someone who has snorted Ritalin, and that 12.7 percent had snorted the drug themselves.\textsuperscript{58} They found that because of the potential of abuse of Ritalin, more information about this abuse needs to be acquired so that stronger stimulant medication policies can be created.\textsuperscript{59}

Stimulant abusers generally either snort or inject their drugs.\textsuperscript{60} Snorting involves grinding the tablet into a fine dust and inhaling the dust quickly through the nose using a straw.\textsuperscript{61} Injecting the drug involves dissolving the powder into water, which is usually aided by heating the water.\textsuperscript{62} The water-drug mixture is then injected into the abuser’s veins.\textsuperscript{63}

These two methods of taking the drug bypass the stomach and the liver in favor of the bloodstream, which results in a much more rapid and potent effect than ingesting the same amount orally.\textsuperscript{64} Snorting or injecting drugs that are intended for oral ingestion can be dangerous for several reasons. First, the drugs, manufactured in tablet form, are often mixed with other ingredients that are meant to improve the body’s handling of the drug.\textsuperscript{65} These ingredients include dyes and conditioning ingredients, which can cause injury when inhaled or injected into the body.\textsuperscript{66} Secondly, because the drugs enter the bloodstream much more quickly and

\textsuperscript{56} See Babcock & Byrne, supra note 9.
\textsuperscript{57} See id.
\textsuperscript{58} See id at 144.
\textsuperscript{59} See id at 143.
\textsuperscript{60} See Kapner, supra note 5.
\textsuperscript{61} See id.
\textsuperscript{62} See U.S. Drug Enforcement Administration, supra note 44.
\textsuperscript{63} See id.
\textsuperscript{64} See Babcock & Byrne, supra note 9.
\textsuperscript{65} See U.S. Drug Enforcement Administration, supra note 44.
\textsuperscript{66} See id.
effectively than when ingested orally, the risk of adverse side effects is increased.\textsuperscript{67} These include the severe effects explained previously, such as dangerous psychological and cardiovascular effects.

The DEA lists methylphenidate among a dozen drugs of concern, because of its potential for abuse.\textsuperscript{68} It has also classified Ritalin, Adderall, and similar stimulants as schedule 2 drugs.\textsuperscript{69} Schedule 2 drugs are substances with a high probability for misuse.\textsuperscript{70} Drug abuse research suggests that many drugs that are abused, such as cocaine, act through the area of the brain that regulates dopamine activity.\textsuperscript{71} Taken orally in pill form, Ritalin and Adderall rarely produce a high, and have not been reported to be addictive.\textsuperscript{72} However, because the drug’s intended purpose is to regulate dopamine activity, when injected as a liquid or inhaled as a powder they have effects that are described by abusers as similar to the effects of cocaine.\textsuperscript{73}

Part Two: Reformulation Methods

Dr. Kulli suggests a method of reformulating CNS stimulants that will prevent abuse. This method requires manufacturing the drug into a delivery mechanism that deters its conversion into a powder.\textsuperscript{74} If the drug is manufactured using this method, physical or chemical separation of the active ingredient from the mechanism in which it is being delivered becomes technically difficult, and effectively impossible.\textsuperscript{75} Without the ability to separate the active ingredient from its carrier, it cannot be abused by insufflation or injection.\textsuperscript{76}

\textsuperscript{67} See Genetic Science Learning Center, \textit{supra} note 6.
\textsuperscript{68} See Ciampa, \textit{supra} note 14.
\textsuperscript{69} See U.S. Drug Enforcement Administration, \textit{supra} note 44.
\textsuperscript{70} See id.
\textsuperscript{71} See Babcock & Byrne, \textit{supra} note 9.
\textsuperscript{72} See Ciampa, \textit{supra} note 14.
\textsuperscript{73} See Szuflita, \textit{supra} note 2.
\textsuperscript{74} See U.S. Patent Pending No. 20,080,292,665 (filed November 27, 2008).
\textsuperscript{75} See id.
\textsuperscript{76} See id.
Instead of putting methylphenidate into a tablet that can be easily turned into a powder, the active ingredient would be suspended or dissolved in a carrier that cannot be ground down, such as a liquid or gel. For example, dissolving methylphenidate into oil will make it nearly impossible for a potential abuser to separate the methylphenidate from the oil. If the methylphenidate cannot be separated from the oil, it cannot be snorted through the nose. Liquids that can be evaporated, leaving the active ingredient behind, should not be used. Alternatively, the active ingredient can be mixed into a solid, such as paper, sponge, or pastry, all of which are virtually impossible to grind into powder form.

This reformulation method has a significant potential to reduce the widespread abuse of prescription CNS stimulants. The physical properties of the suggested carriers prevent a potential drug abuser from turning the drug into a powder, thereby making it impossible to snort. To avoid abuse by injection, the carrier must be made of a material that is not water-soluble. The reformulation of these drugs into a pulverization-deterring form would significantly reduce the rates and severity of substance abuse, and therefore reduce injury and death caused by abuse.

Part Three: FDA Involvement in Drug Safety

A. Examples of Previous FDA Involvement

The FDA has the mission of maintaining drug quality, requiring appropriate drug labeling, and post-market reviewing of drugs for unexpected side effects. This safety review involves concerns not only over side effects caused by proper use of the drug, but also the safe

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77 See id at [56].
78 See id.
79 See id.
80 See id.
81 See U.S. Patent Pending No. 20,080,292,665 (filed November 27, 2008) at [57].
82 See id at [69].
83 See Michelle Meadows, Promoting Safe and Effective Drugs for 100 Years, FDA Consumer Magazine (Jan-Feb 2006), available at http://www.fda.gov/AboutFDA/WhatWeDo/History/CentennialofFDA/CentennialEditionofFDAConsumer/ucm093787.htm.
packaging of medicines, as well as minimizing the ability for potential abusers to use the drug in an illegal or unsafe manner.\textsuperscript{84} Below are examples of all three types of review.

1. Side Effects from Proper Use

   In the 1980s the drug company Roche began distributing isotretinoin, a drug to treat severe acne, under the name Accutane.\textsuperscript{85} Roche was aware the drug increased incidents of birth defects in women who took the drug while pregnant, and discouraged doctors from prescribing the medicine to those who may be pregnant.\textsuperscript{86}

   After concern that doctors were not performing pregnancy tests on women before prescribing Accutane, the FDA created a program that included more restrictions on prescribing and dispensing the drug.\textsuperscript{87} In March 2006, the FDA created the iPLEDGE program, which is regulated through a website run by the FDA.\textsuperscript{88} This program requires doctors to register their patients with the website before they can prescribe Accutane.\textsuperscript{89} The registry includes the patient’s name, address, and date of birth, among other things.\textsuperscript{90} Pharmacists must confirm the patient is on the website before dispensing the drug.\textsuperscript{91} In addition, a prescription can only be for thirty days, and there is a seven day window from when the prescription is written to when it

\textsuperscript{88} See id.
\textsuperscript{89} See id.
\textsuperscript{90} See id.
\textsuperscript{91} See id.
must be picked up from the pharmacy.\textsuperscript{92} If the patient misses this seven day time-frame, she must re-qualify for the drug, and have a new prescription written.\textsuperscript{93}

The FDA issued these new regulations in an effort to reduce the known negative side effects of this drug.\textsuperscript{94} However, it is important to note that these regulations were put into effect after the drug had been reviewed and approved by the Agency under its drug safety guidelines, and after it had been on the market for many years. The FDA took advantage of the development of new internet technology to better regulate a potential negative side-effect.

2. Safe Packaging of Medicine

In the fall of 1982, seven people from Chicago were killed after ingesting Tylenol maliciously laced with potassium cyanide.\textsuperscript{95} The FBI and FDA determined the poison was put in the capsules after leaving the drug manufacturing site.\textsuperscript{96} The perpetrator took Tylenol bottles from the shelves of drug stores, carefully filled the capsules with poison, and put them back on the shelves, where they were purchased by the victims.\textsuperscript{97} Johnson and Johnson, the manufacturers of Tylenol, created a triple-seal tamper-resistant package to restore consumer confidence in the brand.\textsuperscript{98}

As a result of the package-tampering that caused these deaths, the FDA required certain over-the-counter medicines to have tamper-resistant packaging.\textsuperscript{99} Under these requirements, the packaging must have indicators that, if missing, can be reasonably expected to give consumers

\textsuperscript{92} See id.
\textsuperscript{93} See id.
\textsuperscript{94} See id.
\textsuperscript{96} See id.
\textsuperscript{97} See id.
\textsuperscript{98} See id.
\textsuperscript{99} See Meadows supra note 75.
some evidence that there has been tampering of the product. This tamper packaging requirement is continuously being reviewed. For example, in April 2009, the FDA added feminine products and contact lens solution to the list of products that must have packaging that is resistant to tampering.

The FDA is active in regulating not only the safety of the drug itself, but the safety of the package as well. The Agency understood that it is important to look at all aspects of drug delivery in order to make drugs as safe as possible for consumers.

3. Minimizing Drug Abuse

Pseudoephedrine is used in prescription and over-the-counter medicines used to relieve nasal and sinus congestion caused by the common cold and respiratory allergies. Pseudoephedrine can also be used illegally to make methamphetamine, a highly addictive drug. In 2006, in an effort to curb the illegal production of methamphetamine, abuse of which is becoming a growing epidemic, the FDA created the Combat Methamphetamine Epidemic Act of 2005, which regulates the sale of any medicine containing the drug. This Act requires any medicine containing Pseudoephedrine to be sold behind-the-counter. The Act also has a monthly limitation on the amount a customer can purchase, requires customers to show photo identification, and requires retailers to keep personal information about the customers for at least two years.

100 See id.
103 See id.
104 See id.
105 See id.
106 See id.
Nasal and sinus congestion medicines are generally safe when taken according to package instructions. However, the FDA decided stricter regulation of this drug was necessary to curb illegal drug abuse.

B. Potential Future FDA Regulations

On November 4, 2009, the FDA launched its Safe Use Initiative. Through this program, the FDA seeks to reduce preventable harm from medicine, in order to improve patient health. One objective of the Safe Use Initiative is to identify specific drugs that are associated with significant and preventable harm, and then intervene to minimize or prevent the harm. The FDA lists four sources of manageable risks. First, medication error is a mistake that occurs anywhere during the use of the medicine. This includes doctor error in prescribing the drug, informational errors by drug consumers, and drug processing errors, such as mistake or drug mix-up. The second source of risk is unintentional or accidental exposure to drugs. The third source is intentional abuse or misuse of a drug. The final source of manageable risk comes from injury from drug quality defects created during drug manufacturing.

Although the FDA initiated this Safe Use Initiative, and has a history of drug safety review, to date it has been minimally responsive to the reformulation method suggested in this paper. Under Title 21 of the Code of Federal Regulations, Section 10.30, anyone may petition

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109 See id at 1.
110 See id at 7.
111 See id.
112 See id.
113 See id.
114 See id.
115 See id.
the FDA to change or issue new drug regulation.\textsuperscript{116} The FDA’s website claims that these petitions are an important part of its regulation-making decisions, and substantial time and staff manpower are spent on processing these petitions.\textsuperscript{117}

In August 2006, Dr. Kulli submitted a petition to the FDA, in which he explained the reformulation method, and asked the Agency to issue a regulation that would require drug manufacturers to use this safer method when producing CNS stimulants.\textsuperscript{118} In February of 2007, Jane Axelrad, the Associate Director for Policy at the Center for Drug Evaluation and Research within the FDA responded to the petition, and stated that they had not yet come to a resolution on the issues raised.\textsuperscript{119} She explained that extensive review and analysis by Agency officials was required before a decision could be reached.\textsuperscript{120} “We will respond to your petition as soon as soon as [sic] we have reached a decision on your request.”\textsuperscript{121} To date, no decision has been made.

The statute requires the FDA’s Commissioner to make a decision about a petition within 180 days.\textsuperscript{122} She may provide a temporary response explaining why the FDA has not been able to make a decision in the petition, including the need for more research on the topic.\textsuperscript{123} However, the tentative response is not required to give a date as of when the final decision will be made.\textsuperscript{124} This leads to the obvious question, what action can a citizen take, who has not received a legitimate decision on her petition? The statute states the response “may specify

\textsuperscript{116} See 21 C.F.R. § 10.30 (2009)
\textsuperscript{117} See FDA.gov, Comment on Regulations (Updated Feb. 7, 2008), http://www.fda.gov/AboutFDA/ContactFDA/CommentonRegulations/default.htm.
\textsuperscript{118} See Kulli, supra note 15.
\textsuperscript{119} See Axelrad, supra note 17.
\textsuperscript{120} See id.
\textsuperscript{121} Id.
\textsuperscript{122} See 21 C.F.R. § 10.30 (2009)
\textsuperscript{123} See id.
\textsuperscript{124} See id.
when a final response may be furnished,” but it does not require a time limit for a final response by the Commissioner.\(^\text{125}\)

There are no court decisions that properly answer this question. In Washington Legal Foundation v. Kessler, the court found that the FDA’s failure to respond to a citizen’s petition in a timely manner was not a formal denial of the petition.\(^\text{126}\) In Hill Dermaceuticals, Inc. v. U.S. Food & Drug Admin., a drug manufacturer was seeking a stay of the FDA’s approval of generic versions of a drug until the FDA had provided a substantive response to the company’s citizen petition.\(^\text{127}\) In its claim, the drug manufacturer argued that the FDA’s tentative response to their petition was inadequate, and endangered public safety.\(^\text{128}\) The court found that the tentative response to the petition was sufficient, because the response offered an explanation for the delay in the Agency’s response.\(^\text{129}\) There has been no successful challenge to the FDA’s slow response to citizen petitions.

Part Four: Policy Reasons for Adopting this New Method

The Office of National Drug Control Policy (“ONDCP”) was established by the Anti-Drug Abuse Act of 1988.\(^\text{130}\) The goals of this program are to “reduce illicit drug use, manufacturing, and trafficking, drug-related crime and violence, and drug-related health consequences.”\(^\text{131}\) The ONDCP notes that prescription drugs are the second most commonly abused category of drugs, behind marijuana, but before cocaine, methamphetamine, and

\(^{125}\) Id.


\(^{128}\) See id.

\(^{129}\) See id.


\(^{131}\) See id.
The plan the ONDCP enacted to reduce drug use is based on three parts. First, stopping drug use before it can begin; second, treatment of drug users; and third, disrupting the market for illegal drugs. In 2009, the budget for this program was 14.1 billion dollars. For 2010, the proposed budget is 14.8 billion dollars, an increase of one and a half percent from the previous year. If the FDA required drug companies to use the reformulation method suggested here, it would, in effect, end the war on drugs with regards to CNS stimulants.

Pharmaceutical companies may argue that this new technology will be expensive and time consuming, and is therefore unreasonable for the FDA to mandate implementation of the technology. However, the examples of the FDA’s involvement in drug regulation described above, almost certainly cost the drug manufacturers money. For example, the FDA’s tamper-resistant packaging requirement meant that each drug company had to research, develop, and produce new packaging for its product. Drug companies know that new technology will cost time and money. In addition, while reformulation will cost money, it is basically a one-time cost to change the production methods of the drug. Because this reformulation method would end the war on CNS stimulant drugs, the societal benefit likely outweighs the cost to manufacturers. As long as it is not unreasonably costly, and the benefit to the public is substantial, the policy should be upheld.

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132 See id.
133 See id.
136 Dr. Kulli’s petition does not include the potential economic or societal impact of the reformulation method.
Drug manufacturers might also argue that the FDA should not be able to require them to use patented technology. However, there are several tamper-resistant packaging patents, and so it is likely this same issue occurred then, and was successfully resolved. Again, as long as the cost is not unreasonable, and the benefit to society is great, there should be no prohibition against the FDA’s creation of new safety requirements.

Opposition to this thesis might argue it is not the responsibility of drug companies to spend time and money to stop illegal abuse of their drug. The abusers are not using the drug as intended by the drug companies. However, the FDA has already required companies to make changes to their drugs due to improper use of other medicines, as previously described in the pseudoephedrine regulation. Additionally, I would argue these companies have a moral obligation to protect consumers and prevent dangerous use of their drug, if the technology exists.

Unfortunately, there is not much a citizen can do beyond petitioning the FDA to adopt this requirement. Traditionally, the government and their officers have sovereign immunity against tort suits. However, the Federal Tort Claims Act allows for government liability in tort for personal injuries that were caused by the negligent acts of government officers acting within the scope of their employment. So it is possible that an injured patient or their family may be able to sue the FDA’s Commissioner, if they could prove the Commissioner acted negligently in failing to either appropriately respond to the citizen’s petition or to enact a statute requiring drug companies to use this drug reformulation.

Alternatively, if the FDA does not require drug manufacturers to reformulate their drugs, the potential exists for the manufacturers nevertheless to be held liable for failing to act, if they knew about this technology but chose not to use it. While the answer to this statement is beyond

138 See id.
the scope of this essay, it is important to note two public health issues that are grappling with this same problem. The first is the regulation of the tobacco industry. The second is obesity and the regulation of the fast-food industry. Both have had widely-publicized lawsuits against companies within their industries.

With regards to the tobacco industry, the most significant government actions all took place in the judicial branch. Congress debated but was unsuccessful in enacting any noteworthy legislation; the FDA tried to regulate tobacco but was blocked by the industry; local governments came up with limited restrictions such as smoking bans in public places. The judiciary, on the other hand, was able to restrict marketing and advertising, create smoking bans, and demand a 246 billion dollar settlement. The success of the tobacco litigation was based on the transgressions of the manufacturers, not on the dangers of the products.

Litigation against fast-food companies is a newer development, and is thus harder to compare to our issue of CNS stimulant regulation. A lawsuit against McDonald’s has been ongoing; the suit has been dismissed and amended four times, and is still pending. However, in their essay on obesity and government regulation, Rogan Kersh and James A. Morone write that “the judiciary remains the most active venue for social change in health politics.” This is in part because other government branches are not inclined to act. They also explain that efforts to regulate private behavior have best been handled in the courts because “such issues

140 See id.
141 See id.
144 Kersh & Morone, supra note 140, at 854.
145 See id.
require governments to negotiate the tension between public needs and private rights." A large collection of affected individuals such as drug users and an easily identifiable corporate target, combined with demands for action and deadlock in Congress, lead to litigation in court.

Depending on the outcome of the case against McDonald’s, we might be able to take these two fields as promising examples of how companies are held liable for injury to their customers. However, to take the drug companies to court, an injured user or their family must be willing to endure a lengthy trial, and an attorney must be willing to spend time and money without being guaranteed a promising result. The FDA is a better resource to use to require drug companies to reformulate CNS stimulants, because it is more cost effective and has far reaching results spanning all drug companies.

Conclusion

The FDA has a well-documented and proud history of protecting citizens from potential dangers caused by drug defects, packaging defaults, and side-effects. The government has a duty to keep up with new technology, especially when that technology protects citizens. It is not enough for the FDA to require black box warnings about the dangers of abuse of CNS stimulants. If it was discovered, for example, that a drug had ground glass in some tablets, would a black box warning on each package be sufficient? It seems obvious that a warning would not be enough, and the FDA would be expected to require the drug manufacturer to reformulate the drug to remove the glass.

In this case, the reformulation method exists, and is a powerful answer to the widespread abuse of stimulant drugs, and its deadly effects. It is the responsibility of the FDA to remove the

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146 Id at 856.
147 See id.
148 See Meadows, supra note 75.
149 I owe this idea to Professor Kolber, Professor of Law, University of San Diego; visiting Professor of Law, Brooklyn Law School.
current pill-or-capsule-formulated ADHD medicines from the market, and require drug manufacturers to use this newly developed and significantly safer method.