AGENDA ITEM G

State of California | Department of Consumer Affairs

Memorandum

To: Enforcement Committee | Date: June 13, 2005

From: Patricia F. Harris
Executive Officer

Subject: **Implementation of SB 151 (Chapter 406, Statutes of 2003)**

Over the past year and a half, the Board of Pharmacy has been implementing the changes to prescribing and dispensing laws for controlled substances that resulted from SB 151 (Chapter 406, Statutes of 2003). The board has been working hard at educating pharmacists and prescribers on the new requirements and coordinating its efforts with the Bureau of Narcotic Enforcement, the Medical Board of California, other prescribing boards, and professional associations. Since January 2004, the board has provided more than 50 presentations on SB 151. Some of the presentations were provided by teleconference to reach large numbers of individual prescribers and pharmacists. In addition, the board has included numerous articles in *The Script* newsletters, and a large number of articles and frequently asked questions and answers are provided on the board's website.

Beginning January 1, 2005, written prescriptions for all controlled substances must be on tamper-resistant security prescription forms printed by a board-approved security printing company. The tamper-resistant security prescription forms must contain specific elements and security features. There are no restrictions on format, color, or size; therefore, pharmacists need to be aware of the required elements.

If a pharmacist has questions concerning the validity of the prescription, the board is advising that the prescription should be treated like any other questionable prescription – call the prescriber to verify the prescription. If the prescription form does not contain the proper features, it may indicate that a board-approved printing company did not print it. Such prescriptions should be reported to the Bureau of Narcotic Enforcement (BNE) by calling (916) 319-9062 (new) or via fax at (916) 319-9448 (new).

Pharmacists should also report to BNE, prescribers that are not complying with the new prescription form laws. The BNE will notify the applicable prescriber board and a letter will be sent to the prescriber instructing him or her to comply immediately.

Currently, the board has approved 70 security printing companies to produce the tamper-resistant security prescription forms for authorized prescribers. These approved printers have more than a thousand distributors marketing the new prescription forms to prescribers and pharmacists.

DEA INTERIM POLICY

In its April 2005*Action Report* publication, Medical Board of California (MBC) caution physicians regarding DEA's interim policy statement on prescribing Schedule II controlled substances. The interim policy statement prohibits physicians from issuing multiple prescriptions for Schedule II controlled substances on the same day to the same patient with instructions for the pharmacy to fill some of the prescription on a specific date in the future.

MBC stated in its newsletter that unless DEA changes its position, physicians must see their patients each a prescription for a Schedule II drug is written. In its next newsletter, MBC will be providing the following statement to provide guidance and clarity to physicians who prescribe Schedule II controlled substances their patients:

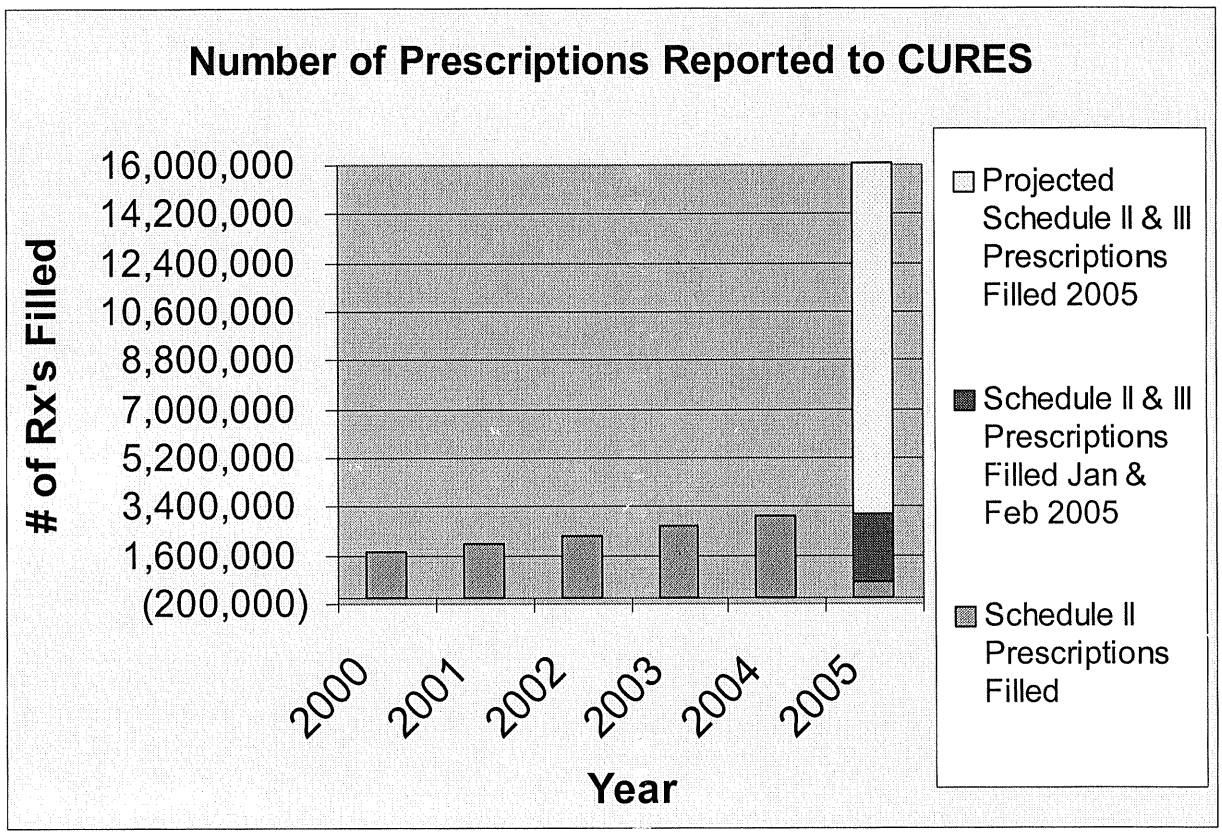
> *When prescribing Schedule II controlled substances to patients, the length of time and Quantity of each Schedule II prescription should be based on the needs of each patient and must be within the standards of responsible prescribing.*

A copy is attached.

CURES UPDATE

On January 1, 2005, pharmacies began reporting Schedule III controlled substances, in addition to Schedule II, to the Controlled Substance Utilization, Review, and Evaluation System (CURES). In addition, prescribers that directly dispense Schedule II and/or III drugs directly to their patients must also report the dispensing information to CURES.

Prior to January 1, 2005, the CURES program received approximately 350,000 Schedule II prescription records per month. With the addition of Schedule III controlled substance reporting, the CURES program now receives more than 1.5 million prescription records per month.



Data as of 5/05.

Patient Activity Reports (PAR)

If a pharmacist or prescriber is concerned that their patient may be abusing prescription drugs, the pharmacist or prescriber can request a *Patient Activity Report (PAR)* from the Bureau of Narcotic Enforcement, CURES Program. The PAR provides the pharmacist or prescriber with a history of all Schedule II and III prescriptions filled for a specific patient. The PAR report includes prescriber name(s) and DEA number(s), the pharmacy name(s) and license number(s), date(s) filled, drug(s), strength(s), and quantity(s). If more than one prescriber is listed on the patient's PAR, a copy of the PAR report is sent automatically to each prescriber listed. According to the BNE, very few pharmacies request PAR's; the majority of PAR requests come from prescribers.

Total Number of Patient Activity Reports (PAR) Sent to Pharmacists and Prescribers[1]

	2003	2004	2005 (Jan. thru Mar)
Total Number of PARS sent to Prescribers/ Pharmacists	845	4,608	2000+

[1] The total number of PARS sent to prescribers and pharmacists data provided by the BNE at the May 11, 2005 CURES Users Group Meeting in Sacramento.

Pharmacists can download *the Pharmacist Request for Patient Activity Report (BNE 1177)* from the board's website at http://www.pharmacy.ca.gov/app_forms.htm. PAR's are usually mailed within 1-3 business days after receiving the request; however, pharmacists and prescribers can request a response by fax for faster service.

BNE has developed a short training presentation for pharmacists and prescribers that describes the PAR's usefulness in the identification of potential prescription drug abuse and diversion. Please contact the BNE at (916) 319-9062 for more information.

Currently, the BNE is looking into how the CURES data could be provided to pharmacists and prescribers on a real-time basis. Currently, pharmacies are required to report by the 18th of every month, the previous months prescription data to the data collection vendor, Atlantic Associates. The data collected is then transmitted to the BNE by the end of every month. Therefore, CURES data is 4 to 6 weeks old when it arrives at BNE.

As part of the research, BNE will be contacting a representative sampling of pharmacies over the next several months in an effort to better understand how the data are captured and transmitted to the data collection vendor, Atlantic Associates.

April 2005
Vol. 93
A Quarterly
Publication

www.caldocinfo.ca.gov

Action Report
Medical Board of California

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Medical Board of California Meetings

2005

May 5-6
San Francisco

July 28-29
Sacramento

November 3-4
San Diego

All meetings are open to the public.

The Fight Against Workers' Compensation Fraud

Department of Industrial Relations/Division of Workers' Compensation

Workers' compensation fraud is a drain on California's economy. Workers' compensation fraud harms employers by contributing to the high cost of workers' compensation insurance and self-insurance and it harms employees by undermining the perceived legitimacy of all workers' compensation claims.

To help promote awareness of the need to eliminate fraud in the workers' compensation system, the Legislature enacted Labor Code section 3822 to require the Administrative Director of the Division of Workers' Compensation to provide every employer, claims adjuster, third party administrator, physician and attorney who participates in the workers' compensation system, an annual notice warning the recipient against committing workers' compensation fraud, and advising of the penalties for such fraud.

Workers' compensation fraud is not limited to claimant fraud. The workers' compensation

(Continued on page 7)

Caution: U.S. DEA Issues Interim Policy on Prescribing Schedule II Controlled Substances

The Drug Enforcement Administration (DEA) issued an "Interim Policy Statement" in the November 16, 2004 Federal Register regarding the issuance of multiple prescriptions for Schedule II controlled substances. The Interim Policy Statement prohibits physicians from issuing multiple prescriptions for Schedule II controlled substances on the same day to the same patient with instructions for the pharmacy to fill some of the prescriptions on a specific date in the future.

This Interim Policy Statement supersedes information posted on DEA's Diversion Control Web site in a document entitled: "Prescription Pain Medication: Frequently Asked Questions and Answers for the Healthcare Professionals and Law Enforcement Personnel." The information on this Web site provided guidance to physicians on how to prepare the multiple Schedule II prescriptions for use by patients with chronic pain or other long-term use conditions, at future dates for up to six months. DEA now believes this information was

(Continued on page 7)

THE MISSION OF THE MEDICAL BOARD OF CALIFORNIA

The mission of the Medical Board of California is to protect healthcare consumers through the proper licensing and regulation of physicians and surgeons and certain allied healthcare professions and through the vigorous, objective enforcement of the Medical Practice Act.

Workers' Compensation Fraud

(continued from cover)

program is also victimized by fraud committed by medical providers, employers, claims adjusters and attorneys.

What Constitutes Medical Provider Fraud?

- Billing fraud
- Employing individuals to solicit new patients
- Unnecessary treatment or self-interested referrals
- Failing to report a work injury

Workers' Compensation Fraud is a Crime

Insurance Code section 1871.4 provides that it is a felony to make or cause to be made any knowingly false or fraudulent material statement or material representation for the purpose of obtaining or denying any compensation, as defined in section 3207 of the Labor Code, or present or cause to be presented any knowingly false or fraudulent written or oral material statement in support of, or in opposition to, any claim for compensation for the purpose of obtaining or denying any compensation, as defined in section 3207 of the Labor Code. It is also a crime to knowingly assist, abet, conspire with, or solicit any person in an unlawful act of workers' compensation insurance fraud.

It is also a crime to make or cause to be made any knowingly false or fraudulent material statements with the intent to discourage an injured worker from claiming benefits or pursuing a claim.

Workers' compensation fraud may be punished by imprisonment in county jail for one year, or in a state prison, for two, three, or five years, or by a fine not exceeding $150,000 or double the value of the fraud, whichever is greater, or by both imprisonment and fine. In addition, if someone is convicted of workers' compensation fraud, the court is required to order restitution to be paid, including restitution for any medical evaluation or treatment services obtained or provided.

Finally, Insurance Code section 1871.5 provides that any person convicted of workers' compensation fraud pursuant to section 1871.4 or section 550 of the Penal Code shall be ineligible to receive or retain any compensation, as defined in section 3207 of the Labor Code, where that compensation was owed or received as a result of a violation of section 1871.4 or section 550 of the Penal Code for which the recipient of the compensation was convicted.

Workers' Compensation Fraud is a Serious Matter

Workers' compensation fraud can increase the cost of doing business and can result in decreases (or no increases) in employee salaries, laying off employees or even going out of business. Workers' compensation fraud can also increase healthcare costs and the cost of insurance for all Californians.

If you would like to obtain more information about the issue of workers' compensation fraud, or would like to report an occurrence of workers' compensation fraud, please call the Department of Insurance Fraud Division's hotline number: (800) 927-4357. If you have Internet access, you can access the Fraud Division's Web site at: http://www.insurance.ca.gov/FRD/Frd_main.htm to obtain more information and locate the telephone number for the Fraud Division office nearest you.

Prescribing Controlled Substances

(continued from cover)

erroneous and was merely a vehicle for circumventing the prohibition on refilling Schedule II prescriptions.

The DEA has indicated it will provide a more detailed review of this issue after taking into consideration the views of the medical community. However, unless DEA changes its position, physicians must see their patients each time a prescription for a Schedule II drug is written.

The full text of the Interim Policy Statement can be viewed at www.deadiversion.usdoj.gov by clicking on "Federal Register Notices" then going to "Rules 2004."

Clarification and additional guidance on the prescribing of Schedule II Controlled Substances: On page 7 of the April 2005 *Action Report*, under Prescribing Controlled Substances, the board advised, "However, unless DEA changes its position, physicians must **see** their patients each time a prescription for a Schedule II drug is written." The term "see" has implied to some, that patients must be seen "face to face" each time, and this was not the Board's intent. The amount prescribed and period for follow-up is not dictated by the DEA, and is subject to the standard of care. The DEA is interested in preventing any form of refill for Schedule II prescriptions including prescriptions containing statements such as "do not fill until…"

The following statement is to provide guidance and clarity for physicians who prescribe Schedule II Controlled Substances to their patients:

> When prescribing Schedule II Controlled Substances to patients, the length of time and quantity of each Schedule II prescription should be based on the needs of each patient and must be within the standards of responsible prescribing.

AGENDA ITEM H

BACKGROUND MATERIALS

State of California | Department of Consumer Affairs

Memorandum

To: Enforcement Committee | Date: June 13, 2005

From: Patricia F. Harris
Executive Officer

Subject: SB 1307 (Figueroa)
Chapter 857, Statutes of 2004

Last year, the Board of Pharmacy sponsored SB 1307 (Figueroa). Governor Schwarzenegger signed the bill, which became effective January 1, 2005. The bill made various changes to the wholesaler requirements and distribution of dangerous drugs. Most of the changes strengthened and clarified the requirements for the distribution of dangerous drugs and dangerous devices in California.

The Enforcement Committee is monitoring the implementation of this legislation. One area of close oversight will be pedigree requirement. The bill requires an electronic pedigree by January 1, 2006 and gives the board the authority to extend the compliance date for wholesalers to January 1, 2008. The Legislature may extend the compliance date for pharmacies to January 1, 2009. The purpose of the pedigree is to maintain the integrity of the pharmaceutical supply chain in the United States. The new requirements are as follows:

Electronic Pedigree for Dangerous Drugs (New)
B&PC 4034—requires an electronic "pedigree" by January 1, 2007. Said pedigree will contain information regarding each transaction resulting in a change of ownership of a given dangerous drug, from sale by a manufacturer, through acquisition and sale by a wholesaler, until final sale to a pharmacy or other person furnishing, administering, or dispensing the drug.
The pedigree must contain all of the following information: (1) the source of the dangerous drug, including the name, state license number, including California license number if available, and principal address of the source (2) the quantity of the dangerous drug, its dosage form and strength, the date of the transaction, the sales invoice number, the container size, the number of containers, the expiration dates, and the lot numbers (3) the business name, address, and if appropriate, the state license number, including a California license number if available, each owner of the dangerous drug and the dangerous drug shipping information, including the name and address of each person certifying delivery or receipt of the dangerous drug (4) a certification under penalty of perjury from a responsible party of the source of the dangerous drug that the information contained in the pedigree is true and accurate.
The application of the pedigree requirement in pharmacies will be subject to review during the Board's sunset review in 2008.

Pedigree Required (New)

B&PC 4163— presently allow manufacturers and wholesalers to acquire or furnish dangerous drugs or devices only from or to those authorized by law to possess or furnish those dangerous drugs or devices. This section is in effect until January 1, 2007, when it will be repealed unless a later enacted statute is enacted before that date. If this section is repealed, the new section will prohibit a wholesaler or pharmacy from selling, trading, or transferring a dangerous drug at wholesale without a pedigree. Additionally, a wholesaler or pharmacy may not acquire a dangerous drug without receiving a pedigree. This section becomes operative on January 1, 2007.

Extension May be Allowed for Implementing Pedigree Requirement for Wholesalers (New)
B&PC 4163.5—authorizes the Board to extend the time allowed for implementing electronic technologies to track the distribution of dangerous drugs within the state if the Board determines that manufacturers or wholesalers cannot meet the requirement by January 1, 2007. The pedigree requirement compliance date may then be extended until January 1, 2008.

Extension May be Allowed for Implementing Pedigree Requirement for Pharmacies (New)
B&PC 4163.6—authorizes the Legislature to extend the time allowed for pharmacies to implement electronic tracking the distribution of dangerous drugs within the state if the Legislature determines that it is not economically and technically feasible for pharmacies to comply with the requirement by January 1, 2007. The date for compliance with the requirement may be extended to January 1, 2009.

It is anticipated that Radio Frequency Identification technology (RFID) will the method used to track a drug's pedigree. The manufacturer would tag the drug with a small chip and antenna. When the tag is in close proximity of a reader, it would receive a low-powered radio signal and interact with a reader exchanging identification data and other information. Once the reader receives data, it would be sent to a computer for processing.

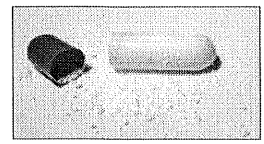
At the April board meeting, Acerity Corporation presented its security software program, which is an electronic authentication process. The system employs a cryptography techniques in conjunction with RFID forming a multiplayer secure process, which provides numerous advantages and allows versatile applications. At the December enforcement committee meeting, there was a presentation by T3Ci. As stated with that presentation, it is not the intent of the Board of Pharmacy to support or endorse any specific technological solution for the electronic pedigree requirement. Acerity Corporation will again present to the Enforcement Committee at this meeting.

Also presenting at this meeting will be SupplyScape. SupplyScape has developed electronic pedigree software that enables a safe and secure pharmaceutical supply chain that complies with federal and state regulations to prevent counterfeit drugs.

Attachment 1 has background material on both companies. Attachment 2 has background articles on counterfeit drugs and efforts to combat the problem.

ATTACHMENT 1

Acerity Corporation



- **Are you concerned about patient safety, reimportation & Internet sales?**
- **Are you feeling pressure from State & Federal mandates or pedigree information?**
- **Are you losing revenue from counterfeiters & diverters while protecting your product & image?**

If any of these questions concern you, Acerity Corporation has developed a set of solutions to effectively stop counterfeiting and diversion of pharmaceutical products while incorporating pedigree information by using patent pending processes, security software systems and Radio Frequency Identification (RFID) technology to effectively address these issues. Acerity Solution Components consist of **AuthentiTrak™**, **Trusted Source Inspector™** and **Pedigree-On-Demand™** Systems. These systems work together to support the smooth flow of pharmaceuticals down the supply chain while adding strong protection for the safety of patients and the interests of corporations while satisfying State and Federal mandates for pedigree information.

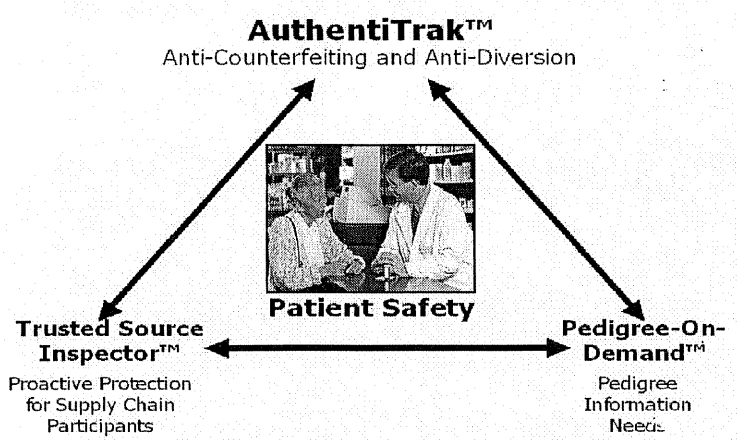
AuthentiTrak™ performs electronic wrapping of outgoing packages. It can function as a stand-alone system to prevent counterfeiting and diversion while performing authenticity verification of incoming packages. The system supports applications which include:

- Covert authentication of products at the item level
- Electronic wrapping of packages to assure package integrity when packages have to be handled by multiple parties (e.g. in freight forwarding)
- Anti-tampering of packages
- Electronic labeling to facilitate accurate materials movement
- Provides basic authenticity verification of incoming packages in a reimportation, Internet sales setting.

Trusted Source Inspector™ (TSI) Protects supply chain participants. The TSI acts as an independent, neutral, trusted entity that verifies and electronically seals repackaged pharmaceuticals before shipping. As part of a larger system, the TSI and AuthentiTrak™ work jointly but independently together for a proactive industry-wide supply chain solution for the pharmaceutical industry, providing a proactive anti-counterfeiting, anti-diversion process. TSI works independently and yet in conjunction with AuthentiTrak™, it provides a very strong system for authenticity verification of incoming packages in a store to store transfer, reimportation and Internet sales setting.

Pedigree-On-Demand™ satisfies the need for pedigree information that State and Federal officials require without divulging information throughout the supply chain. AuthentiTrak™ together with the TSI already provides a strong and proactive anti-counterfeiting and anti-diversion process. However, the system offers:

- State and Federal officials an easy, responsive and effective means to perform detailed pedigree investigations
- No accumulation of paper or electronic pedigrees as the pharmaceuticals travel down the supply chain
- Eliminates tremendous information burdens and unnecessary exposure of data for corporations.



With Acerity Solution Components on site, patient safety concerns, corporate interests, State and Federal mandates are met without the need for a costly and burdensome centralized database approach.

CONTACT US FOR A LIVE DEMO!

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SupplyScape
Safe & Secure

SUPPLYSCAPE ENABLES ON-TIME COMPLIANCE WITH FDA, FLORIDA AND CALIFORNIA PEDIGREE TIMELINES

Electronic Pedigree Software Enables a Safe and Secure Pharmaceutical Supply Chain That Complies With Federal and State Regulations to Prevent Counterfeit Drugs

Cambridge, Mass., November 15, 2004 – SupplyScape Corporation is enabling the pharmaceutical industry to comply on schedule with the FDA's electronic pedigree timeline outlined in the FDA's Combating Counterfeit Drug Report and the Florida and California pedigree laws. SupplyScape is the only company that can enable companies using RFID tags on drugs to be compliant with electronic pedigrees. The company has consulted with the FDA and state boards of pharmacy to ensure the SupplyScape Electronic Pedigree application meets their regulatory requirements for a safe and secure supply chain.

Expertise in pedigree laws and regulations enables SupplyScape to deliver an ePedigree solution that complies with the federal Prescription Drug Marketing Act (PDMA) requirements and is consistent with the FDA's stay of its regulations implementing the pedigree requirements of the PDMA until December 2006, the Florida pedigree law which will be expanded to all drugs and all wholesale distributors in July 2006, the California requirement for electronic pedigrees in January 2007 as well as the Model Rules of the National Association of Boards of Pharmacy (NABP).

"We have been consulting with the FDA on electronic pedigree and determining the regulators' specific requirements," said Shabbir Dahod, president and CEO of SupplyScape. "We are working closely with leading pharma manufacturers, wholesalers, pharmacies and repackagers to be certain the industry's first electronic pedigree application achieves their regulatory, operational and technological specifications."

The SupplyScape Electronic Pedigree meets the specific regulatory needs of each trading partner in the pharmaceutical supply chain including drug manufacturers, repackagers, wholesalers, retail pharmacies, hospitals, physicians' offices and long term care facilities.

"SupplyScape's approach enables a manufacturer like Purdue Pharma to distribute our pharmaceutical products securely," said Aaron Graham, vice president of Corporate Security and chief security officer at Purdue Pharma. "They address the operational needs of the business while ensuring regulatory compliance."

"The pharma industry has been doing a bit of hand wringing as companies consider what are they going to do regarding serialization, RFID, and electronic pedigree, and the reality is that there is not much time remaining for the pharma supply chain to come up with a viable electronic pedigree solution," said Bob Goodman, director of supply chain services and RFID specialist at The Yankee Group. "Yankee Group sees SupplyScape particularly well-positioned as an integral component of the industry's first solution."

"What differentiates the SupplyScape offering from other vendors is a deep understanding of the regulatory environment as a core competency. Lucy Deus (vice president of product development and SupplyScape co-founder) has shown the ability to effectively align this product with the regulatory environment as it exists today, and where it is going tomorrow. SupplyScape is well-positioned to help the industry move forward rapidly in the key area of electronic pedigree," said Goodman.

SupplyScape will begin implementations of the pharmaceutical electronic pedigree software application in early 2005 at key pharmaceutical supply chain companies eyeing on-time compliance for Florida's July 2006 deadline. The solution addresses migration from barcodes to RFID while enabling companies to take advantage of RFID as it is incrementally introduced into the supply chain.

Financing Accelerates Delivery of Electronic Pedigree

SupplyScape closed Series A financing to accelerate design and development of the electronic pedigree application. Investors include Pilot House Ventures and IDG Ventures.

"Expertise in pedigree regulations and relationships in the pharma industry set this company apart from the pack of track and trace solution providers chasing pharma RFID opportunities," said Stephen Van Beaver, general partner at Pilot House Ventures. "Shabbir and the whole team are dedicated to patient safety through secure delivery of authentic drugs."

Drug Security Network Industry Pilot Launched with Capgemini

At the request of leading firms in the pharmaceutical industry, SupplyScape teamed with Capgemini to launch the Drug Security Network. This lab provides pharmaceutical trading partners an environment to collaboratively design and plan regulatory-compliant pedigree deployments to facilitate drug security in the open supply chain. The Drug Security Network provides an opportunity for manufacturers, wholesalers, pharmacies and repackagers to identify return on their investments to comply with pedigree regulations and safeguard the supply chain.

"We believe SupplyScape has built one of the best solutions for electronic pedigree compliance and supply chain security," said Derek Crates, Life Sciences Global Technology Leader at Capgemini. "Together Capgemini and SupplyScape formed the Drug Security Network where clients work individually or together on their electronic pedigree and RFID pharma supply chain solutions."

"By using the Drug Security Network facility together with our combined business knowledge and implementation expertise, companies can work through the issues related to electronic drug pedigree, design an appropriate solution for themselves and ensure a robust implementation of that solution," said Terry Hisey, Life Sciences Practice and Global Supply Chain Leader at Capgemini.

About SupplyScape

SupplyScape provides electronic pedigree software and expertise to safeguard and secure the pharmaceutical supply chain. SupplyScape is a leader in defining a standards-based electronic pedigree solution for the pharmaceutical industry. The company's executives provide electronic pedigree and regulatory guidance to the EPCglobal Healthcare and Life Science Strategy working group. SupplyScape is the solution architect for the Drug Security Network.

The SupplyScape Electronic Pedigree software has been developed with full cooperation from federal, state and industry participants in order to meet the federal and state pedigree laws. It complies with federal and state pedigree laws including Florida, California, Colorado, New Mexico and Nevada as well as the recommendations of the FDA and the National Association of Boards of Pharmacy (NABP). Using EPC, RFID, barcodes and industry standards, it streamlines business operations and enables companies to safeguard prescription drugs, improve the speed and quality of shipping and receiving, expedite returns processing and improve recall precision. Additional information about SupplyScape is available at http://www.supplyscape.com

# # #

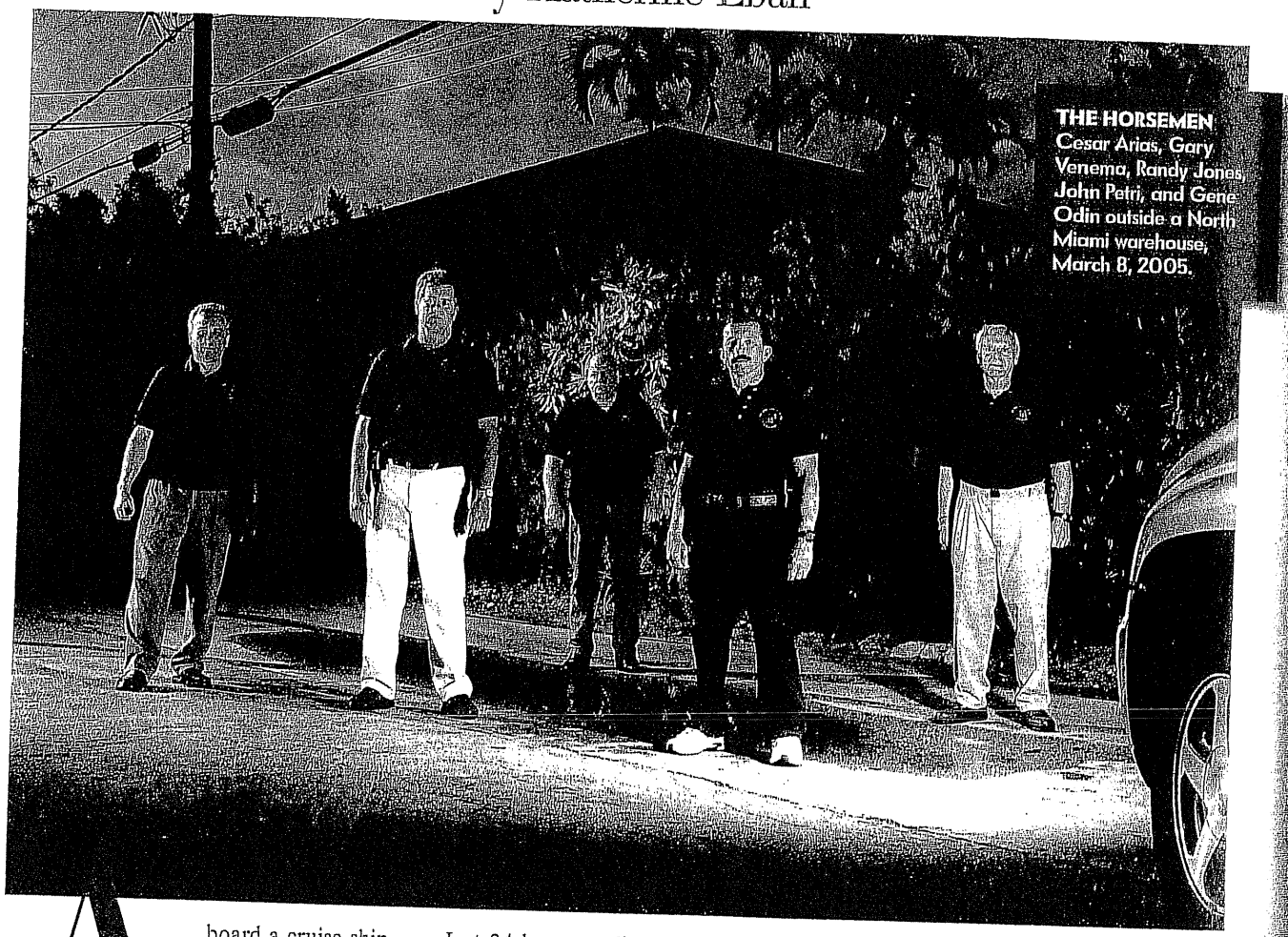
SupplyScape, SupplyScape Electronic Pedigree, and SupplyScape ePedigree are trademarks of SupplyScape Corporation. All other names may be trademarks or registered trademarks of their respective companies.

ATTACHMENT 2

Bad Medicine

Middlemen are polluting the nation's prescription-drug supply with fake or faulty medicine that can spell disaster for patients fighting life-threatening diseases. In an excerpt from her new book, the author tells how five veteran Florida investigators brought down one of the worst alleged traffickers

By Katherine Eban



THE HORSEMEN Cesar Arias, Gary Venema, Randy Jones, John Petri, and Gene Odin outside a North Miami warehouse, March 8, 2005.

Aboard a cruise ship to Cozumel, a vodka-and-soda in hand, Marty Bradley glared at the Gulf of Mexico from inside a locked suite. He had brought 60 employees on the gleaming white ship for his company's annual blowout, a reward for meeting their sales targets. But all Bradley could think of now was which of the employees on board had sold him out and gotten away with the score of their lives.

Excerpted from *Dangerous Doses: How Counterfeiters Are Contaminating America's Drug Supply,* by Katherine Eban, to be published this month by Harcourt, Inc.; © 2005 by the author.

Just 24 hours earlier, on January 16, 2002, a white van had backed into an alleyway behind his Miami warehouse. Some men climbed from the van and managed to twist the dead bolt, tear off the rear metal door, and enter the warehouse. Once inside, they knew exactly what to look for.

Bradley's company, BioMed Plus, is one of the nation's largest private wholesale distributors of blood products. The thieves had headed directly for a freezer that contained plasma derivatives destined for patients with compromised immune systems, hemophilia, and other disorders. All told, they had taken 344 vials of the clear liquids that for many patients mean the difference between life and death. Some of the vials cost almost $4,000 apiece. The heist was worth about $335,000. The break-in occurred just hours after the delivery of a shipment that included a rare drug called NovoSeven, which helps form blood clots in hemophiliacs. The thieves had taken all of it.

Bradley reported the theft to Florida's Bureau of Statewide Pharmaceutical Services, a regulatory requirement he expected to solve nothing. The inspector he knew there, Cesar Arias, a tousled Cuban-American whose heart was certainly in his job, had no juice whatsoever. One glance at the man's car, a dilapidated blue Buick, told the story of his agency's budget woes.

The local cops took a report, but they were too busy chasing dealers of street drugs to care much about a theft of clotting factor. But Bradley knew the stolen vials posed a serious danger. The medicine inside had to remain motionless at a constant temperature

PHOTOGRAPH BY JASON SCHMIDT

and could be transported only with careful planning. At best, it had become useless to a patient; at worst, it could do harm.

Bradley was in the ship's cocktail lounge waiting to disembark when his cell phone rang. His purchasing manager, Marlene Caceres, was calling to report that a small pharmaceutical wholesale company, the Stone Group, was offering to sell some plasma derivatives, which it had never offered before. Bradley had done business with the fledgling company in the past.

The pharmaceutical wholesale market operates as an all-hours auction, with deals and discounts materializing suddenly and medicine passing through many hands. And while few patients know that these middlemen exist, much of the nation's medicine passes through companies like BioMed Plus and the Stone Group.

As Caceres read off the details of the offer, Bradley said, "I don't believe it." Everything she mentioned—including 51 vials of NovoSeven and specific amounts of Gamimune, Gammagard, and Iveegam, all for the steeply discounted price of $229,241—was identical to his list of stolen goods. Bradley knew the medicine was his.

He sought advice from the one person whose number he had with him: Cesar Arias. "Stand by," Arias said excitedly. The drug inspector called one of his few contacts in law enforcement, a state cop named Gary Venema, and then called Bradley back to relay Venema's advice at top volume: "Buy it back! Buy it back!"

Gary Venema was impossible not to notice. A big, sandy-haired man of 50 who had a wiseass grin and wore Hawaiian shirts and a gold sailboat charm around his neck, he had a magnetic, even manic presence that drew every eye in a room. A former cop with 24 years' experience, 15 as a homicide-and-narcotics detective in Hialeah, a gritty suburb of Miami, Venema had seen it all, but his days of adrenaline-pumping shoot-outs were long gone. In 1991, after a political clash, the Hialeah police chief demoted him to road sergeant.

In 1997, he had jumped at the chance to join the Florida Department of Law Enforcement (F.D.L.E.), a statewide police agency with power and panache but notoriously low pay. Despite all his experience, his starting salary was $42,000. Many of his new colleagues were just a few years older than his three sons. But he enjoyed the training, and almost immediately he embarked on a case that involved the organized theft of over-the-counter goods from drugstore chains. Even though the merchandise crossed state lines, the feds, who would be needed to pursue it, didn't seem interested. Venema became discouraged. And then, almost by accident, the case for which he'd been waiting his entire life came along.

It had started inauspiciously enough. On November 13, 2001, he was summoned to a meeting with Assistant Statewide Prosecutor Stephanie Feldman, a petite 28-year-old with five years' trial experience who stood about five feet one inch in heels. Feldman sent Venema and Arias on a one-day sting operation involving a few vials of stolen cancer medicine.

Before he met Arias, Venema had never thought about the safety of his medicine. He assumed that it traveled directly from the drugmaker to the pharmacy. But Arias worried about the medicine's transport, its temperature, where it originated, the path it took, and the documentation of all this. Venema began to think of himself as a student and apprenticed himself to Arias.

On January 21, 2002, a young Stone Group salesman, Sean Dana, arrived at Bradley's warehouse in a souped-up Trans Am. He was wearing shorts and a T-shirt and carried a cooler full of the medicine stolen from Bradley five days earlier.

After Dana dropped off the medicine in the receiving bay, Bradley took him to the conference room, where five people were waiting: Arias, Bradley's lawyer, and three Miami–Dade County detectives.

When asked if he knew that the medicine had been stolen, Dana stammered, "I don't know anything about that." Struggling through a few more questions, Dana then offered that he would like to help but wanted to consult a lawyer first. At that word, "lawyer," the questions had to end.

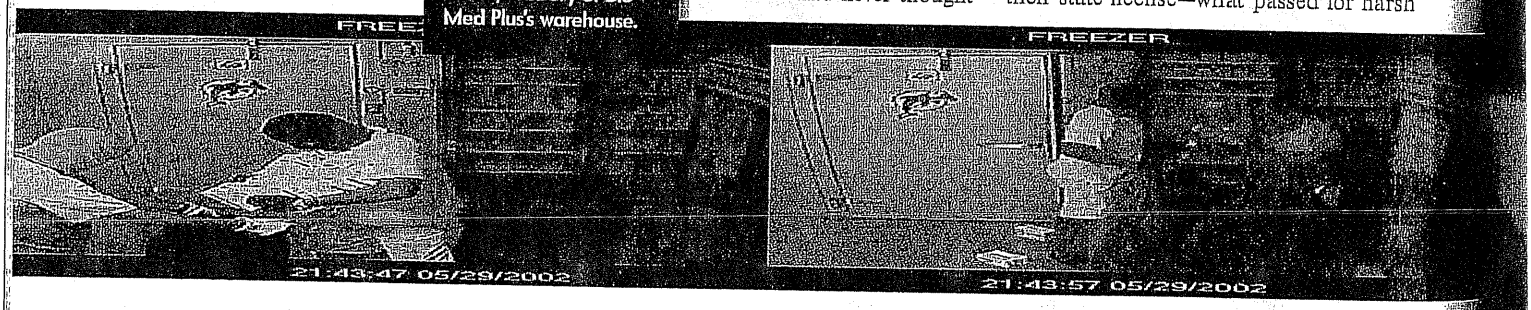
The next day, the president of the Stone Group contacted the authorities and told them that the drugs had been purchased from a company in Kissimmee called BTC Wholesale. His contact there was a man named Michael Carlow, whom he believed to be the owner.

As much as anyone, Carlow personified what was wrong with Florida's medicine business. In the distant past, he had served time in prison for armed robbery and gotten probation for grand theft. In 1998 the state gave his wife, Candace, a prescription-drug wholesale license for a company that Carlow ran as president. In June 2000 he was arrested for buying $83,000 of stolen Neupogen, a cancer and AIDS drug, in the parking lot of a Miami restaurant. He pleaded no contest, paid a nominal fine, and was sentenced to 18 months probation, and he and his wife surrendered their state license—what passed for harsh justice under Florida's weak health law.

Carlow's alleged involvement with BTC—which on paper belonged to his brother-in-law, a former mattress salesman named Thomas Atkins Jr.—suggested that he might be making a comeback. Stephanie Feldman directed Venema and Arias to be at BTC first thing the next morning.

Pharmaceutical middlemen buy, sell, sort, repackage, and distribute 98 percent of the nation's medicine. The companies, about 6,500 in all, range from publicly traded giants with pristine warehouses to small, obscure firms that operate from back rooms.

The largest middlemen, McKesson, AmerisourceBergen, and Cardinal Health—



MEDICINE HEIST Hidden-camera images of the January 16, 2002, robbery of BioMed Plus's warehouse.

The break-in occurred just hours after a delivery of NovoSeven. The thieves had taken all of it.

multi-billion-dollar publicly traded entities known as the Big Three—control 90 percent of this market. Below them sit some 15 regional wholesalers that do billions in business. And below them sit the smaller, secondary wholesalers, a group that included numerous companies set up by Michael Carlow. All of these companies buy from, and sell to, one another. They thrive by speculating on price increases. The Big Three have trading divisions that scout the secondary wholesale market for discounted medicine.

Whereas governments in Europe and Canada largely regulate pharmaceutical prices, drugmakers in the United States fought off price controls, choosing instead to offer targeted discounts that allow them to increase their market shares. The drugmakers charge pharmacies "direct" prices and give wholesalers a small reduction. Hospitals and so-called closed-door pharmacies, which solely supply facilities such as nursing homes, sometimes pay less than half the direct price.

of pharmaceuticals, and the laws governing it are murky at best. Michael Carlow and many others allegedly used this confusion to their advantage. They had state licenses, lawyers, accountants, and all the trappings of legitimacy. Their businesses embodied the spirit of "pure capitalism," as one of Carlow's lawyers described it. "Buy low, sell high, make money."

At 10 A.M. on January 23, 2002, Venema's red truck rattled up to the fading little office building in Kissimmee where BTC had its headquarters. Thomas Atkins Jr., who had been instructed to be there, declined to answer most of Arias's and Venema's questions, including queries about Carlow, whom he acknowledged was his brother-in-law. Atkins did say that he knew nothing about the drugs he was selling, except that some of them needed to be refrigerated.

"Are you basically a front for someone else in this business?," Venema asked.

ing he was senile as a way of extracting information from them.

"We're going to put people in jail," Venema said by way of introduction. Dana and the other Stone Group employees, none of whom were charged with a crime, appeared terrified. Each recognized a mug shot of Carlow—suntanned and smiling with a diamond stud in one ear—from his arrest in 2000. So far, they had purchased more than $2 million in medicine from Carlow at BTC.

They explained that on January 20, 2002—four days after Marty Bradley's drugs had been stolen from his warehouse—a Stone Group salesman had picked them up from Carlow's home in Weston, Florida, near Fort Lauderdale, where he kept medicine in his laundry room and garage.

The inspectors seized several boxes of medicine and loaded them into the truck of Miami-Dade police sergeant John Petri. Short and muscular, with a well-groomed mustache, Petri is a master of surveillance, following suspects invisibly from his truck.

Some pharmaceutical wholesalers were former drug dealers seeking a safer line of work.

The secondary wholesalers contend that aggressive trading helps them reduce prices for mom-and-pop pharmacies and local hospitals that lack the buying power of the big chains. But the bargains also drive a parallel and illegal practice called "diversion," in which some middlemen resort to fraud to obtain discounted medicine. Corrupt wholesalers often solicit those who qualify for discounts to buy more medicine than they need and sell the rest for kickbacks. In 2000, a task force for the National Association of Boards of Pharmacy estimated that up to four-fifths of the closed-door pharmacies that received discounted medicine exploited loopholes to resell at least a portion to outside buyers.

By 2002 the F.D.A.'s criminal investigators faced a problem that they could not clearly measure or solve: a huge volume of the nation's medicine no longer flowed directly from drugmakers to one of the Big Three to a pharmacy or hospital. Instead, the medicine passed through numerous middlemen, with each company taking a wedge of the profit. These sales often went unrecorded or were accompanied by phony pedigree papers that obscured the origin of the medicine and left no way to ensure its safety.

This illicit diversion has become a multi-billion-dollar industry, Terrell L. Vermillion, director of the F.D.A.'s Office of Criminal Investigations, estimates. Yet the practice closely resembles the legal trading

Atkins refused to answer this question too. Arias and Venema emerged from the meeting convinced that BTC was a shell company, its true nature unclear.

In Florida it was laughably easy to become a pharmaceutical wholesaler. All you needed was a refrigerator, a burglar alarm, an air conditioner, $200 for a security bond, and $700 for a license. You needed no experience and no particular knowledge. You had to certify that you had no criminal record, but the pharmaceutical bureau did not actually check.

Florida's pharmaceutical wholesale companies proliferated like rabbits. By 2002, Florida had licensed 1,399 of them—one for every three pharmacies in the state. The wholesalers ranged from trained pharmacists, doctors, and lawyers to criminal kingpins and uneducated street thugs. Some were former drug dealers seeking a safer line of work. Aided by lax regulations and Florida's large Medicaid-and-medicine-dependent elderly population, those trafficking in diverted medicine were making a fortune.

Two days after the interview with Atkins, Venema, Arias, and Arias's partner, drug inspector Gene Odin, set out for Boca Raton to interview the employees of the Stone Group. At 72, Odin had a Ph.D. in medicinal chemistry and two hearing aids that often conked out. He lulled those he regulated into believ-

Now he gathered with the others in the parking lot and listened as Arias explained that the case against Carlow couldn't be much simpler: "You can't have a pharmacy in your house."

Windmill Ranch Estates—a grid of manicured palm trees and Italianate palazzi on sparkling lakes—was among the costliest gated communities in Weston. Carlow lived here on expansive landscaped grounds. His neighbors knew him as a gregarious family man.

He had come a long way since filing for bankruptcy four years earlier. Then, he had lost his $108,000 Bentley and $675,000 Sea Ray yacht, the *Cheshire Cat,* named after the vanishing feline in *Alice in Wonderland.* After his bankruptcy, Carlow also vanished in his particular way. He began to put most of his new possessions in the name of his fourth wife, Candace. He also formed companies that appeared to belong to others.

Michael Carlow was born in Connecticut and raised in Hollywood, Florida. After graduating from high school in 1970, he drifted through a series of jobs. He also embarked on a series of crimes. According to police reports, in 1973, at age 20, he was convicted of armed robbery and served three years in prison. In 1984 he was arrested for dealing in stolen property, but the case against him was dismissed. In 1986 he pleaded guilty to grand theft, was given three years' probation, and was ordered to

complete a substance-abuse treatment program. While enrolled in the program, he was arrested in Alabama for selling cocaine and fled. Later that year he turned himself in and resumed his drug rehab.

By the mid-1990s, Carlow had shed any semblance of the drug-addled hood in his old mug shots. In 1991 he formed what he called a consulting company, which evolved into Quest Healthcare Inc. As he explained to those from whom he wanted money or business, Quest oversaw more than a dozen mental-health, male-impotence, and H.I.V. clinics in six states.

After his 1998 bankruptcy, Quest and his various spin-off companies, most of them not in his name, began branching out into pharmaceuticals. His arrest in June 2000 was a temporary setback, but he never really left the game.

By February 2002, according to authorities, two men were making regular trips to Carlow's Weston mansion, toting duffel bags and old boxes that contained a jumble of pill bottles, medicine vials, and bags of blood derivatives—some still bearing the labels of patients to whom they had been dispensed. The men, Fabian Diaz and Henry Garcia, were known in certain circles as Carlow's "cooks." And their job was to acquire as much medicine as possible.

Investigators believed that the medicine they collected was Carlow's lifeblood. To make the kind of profit Carlow wanted, it needed to be cheap. Free was best of all. Ordering medicine and not paying for it was one way to do this. Another was through the efforts of Diaz and Garcia. The men were so productive that Carlow's garage became a virtual pharmacy repackaging operation, a pharmacist who says he dropped off medicine there told investigators.

At the street level, according to law-enforcement sources, Diaz and Garcia bought cancer and AIDS drugs from Medicaid patients at health clinics in Miami's slums. Some were "professional patients" who sold, rather than took, their medicine. A notorious example of such a patient, Michael McKinnon, made $5,000 a month by selling his AIDS medicine.

Sometimes Diaz and Garcia would simply create patients, authorities say, by retrieving names and Medicaid numbers from pharmacies and treatment centers. If necessary, they also could steal drugs by breaking into warehouses. Through his shifting roster of companies, Carlow then resold the drugs to other wholesalers.

But Carlow had not stopped at selling to obscure companies. He had developed what every small wholesaler dreamed of: a lucrative relationship with one of the industry giants, Cardinal Health. From 1999 through the middle of 2000, Quest Healthcare sold nearly $1.5 million in products to National Specialty Services, then a Cardinal division that was the nation's largest supplier of blood products, cancer drugs, and other specialty pharmaceuticals to hospitals. Cardinal's purchases from at least four companies that Carlow controlled thrust his medicine into the heart of the nation's drug supply, where it inevitably reached patients.

After midnight on February 6, 2002, Gary Venema was awake, staring at the ceiling. He couldn't sleep, because it was Wednesday, and on Wednesdays the city of Weston collected trash at Windmill Ranch Estates.

Dressed in dark jeans, a T-shirt, and sneakers, Venema glided toward the door. He enjoyed thinking of himself as a thief in the night (albeit one on the right side of the law). In his truck he drove to Carlow's gated community, where he flashed his badge and a sleepy guard let him in. Driving down Windmill Ranch Road, he approached a big stucco mansion in the Mediterranean style with pillars and archways shaded by palm trees. A pool glimmered out back.

He drove past slowly, looking to see if anyone registered his presence, but the house remained dark. He doubled back and, with the engine still running, hopped out, grabbed the trash bag, and threw it into the flatbed.

Venema returned twice the next week. Each time, Carlow's trash disgorged evidence that he was into pharmaceuticals and attempting to expand his various businesses. The records indicated that BTC received mail at Carlow's home and sold drugs to companies in Missouri and Nevada. Exuberant after these uncensored looks into Carlow's life, Venema wrote and sent a memo:

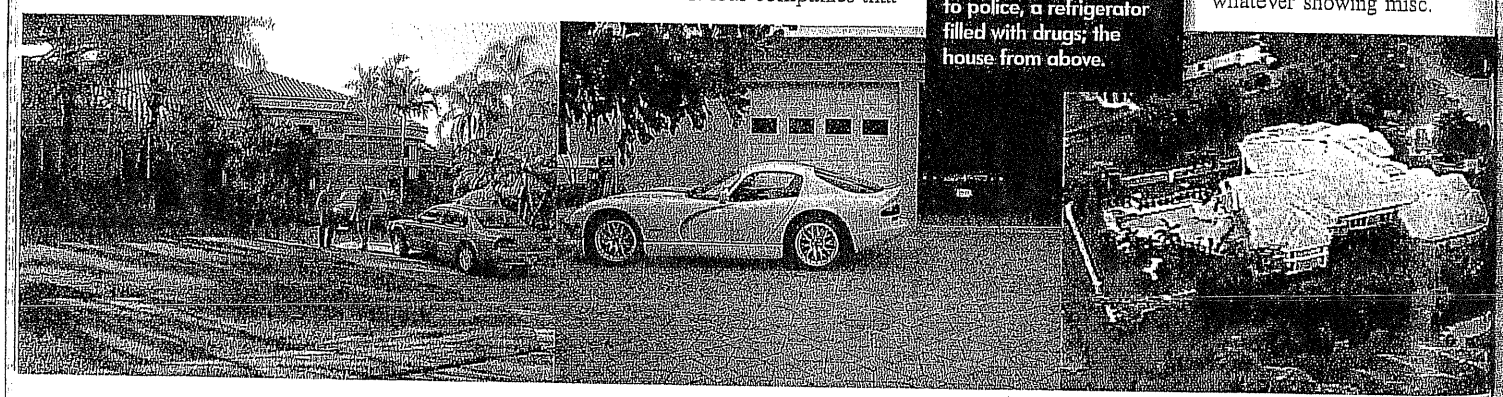
To: Stephanie Feldman/Statewide
From: Gary Venema/Starfleet Command

Steph—couldn't sleep last nite—and you know what I do when I can't sleep—I DO TRASH PULLS! Carlow had a w-9 or whatever showing misc. income for 2001 at $700,000.00 from some investment firm. Also a letter from Hatteras yachts—FDLE agents don' motor around the waterways in Hatteras Yachts—[our] whole office couldn't buy gasoline for one!

He continued:

My strategy would be to:
1) Call Mr. Carlow real nicely for a little friendly chat . . .
2) Have the warrant ready for when his [then] attorney, David Mandel tells me to pound salt
3) Hit his house like the weapon of mass destruction that I intend to be on this guy.

Through the trash alone, Venema soon formed an intimate dislike of Carlow, and he began declaring to almost any-



CRIME PAYS
From left: Cesar Arias and Randy Jones outside Michael Carlow's house in Windmill Ranch Estates, February 2002; Carlow's garage, where he kept sports cars and, according to police, a refrigerator filled with drugs; the house from above.

Arias explained that the case couldn't be much simpler: "You can't have a pharmacy in your house."

one who would listen that he was "coming downtown, Charlie Brown, to get Michael Carlow."

Venema returned to Carlow's mansion on February 15, 2002. This time he was accompanied by Arias, Odin, and five other investigators, including Randy Jones, a bear of a detective from the Miami-Dade Police Department who was carrying cameras and video equipment. Venema held a search warrant that cited suspicion of racketeering, conspiracy to racketeer, grand theft, dealing in stolen property, and prescription fraud.

Venema rang the doorbell and a startled maid opened the door. Carlow wasn't home. The investigators, whose wives clipped coupons, were stunned by what they saw. A zippy yellow Dodge Viper with black racing stripes sat just outside the garage. Carlow's red Ferrari was parked inside. In the house were gleaming antiques, flat-screen televisions and computer monitors, a designer refrigerator, and other accoutrements of major money.

Carlow's file cabinets turned up neatly indexed folders for shell companies, financial records, and yacht purchases. A box of business cards listed Carlow as the "principal" for BTC Wholesale. The investigators emerged with the names of dozens of people and companies, bank-account records, and other leads to mine.

Five days later, Stephanie Feldman summoned Venema, Arias, Odin, Petri, and Jones to her office to create a special task force. At her direction, the five men would investigate how stolen, diverted, and counterfeit medicine was moving throughout Florida and into the nation's supply. She would call their work Operation Stone Cold. Their goal, she said, would be to build a racketeering case against Michael Carlow and his accomplices. Venema would be their lead investigator. She expected indictments within six months.

The five men were not an obvious dream team. Except for Arias, they were all 50 or over. Several of them took medicine for high blood pressure and had to hold documents and restaurant menus at arm's length to read them. None had worked a complex investigation before. But they shared other characteristics not lost on Feldman. They were old-school investigators who came early and stayed late. And none liked spending time behind a desk.

Arias and Odin would supply the essential knowledge of medicine. Venema, as lead investigator, would supply the adrenaline. Petri and Jones, who had worked together for 15 years and had known each other longer, would do the surveillance.

Arias began calling their group "the Horsemen of the Apocalypse," because he envisioned them exacting a biblical revenge on those who sold bad medicine. They codified their identity with five black polo shirts bearing the image of a Grim Reaper holding a scythe amid a cluster of horses. They wore them while executing warrants.

While Feldman was a relative novice, she had a personal interest in the case. Since age 14 she had battled juvenile diabetes, the disease's most severe form. Fourteen months earlier, she had been admitted to the hospital in a diabetes-related coma. She knew that patients' lives were threatened if they did not get exactly the right medicine, maintained in the right way.

Feldman had dubbed the task force Operation Stone Cold because she viewed those trafficking in adulterated medicine as stone-cold killers. "What was happening was nothing short of murder by inches," she concluded early on.

"What was happening was nothing short of murder by inches," Stephanie Feldman concluded.

Waiting in the broiling sun on April 4, 2002, Venema peered down an empty side street in North Miami. "The delivery should be here, I just called them," the short, bearded man next to him announced. Posing as a wholesaler, Venema was waiting for a delivery of high-dose Epogen with a dubious pedigree and a suspiciously low price.

Epogen, a miracle of genetic engineering, had transformed the lives of patients who suffered from anemia after organ transplants, cancer treatments, or kidney disease. Derived from human DNA, the drug turned its manufacturer, Amgen Inc., into the world's largest independent biotechnology company. And Epo, as it is known in the trade, became the best-selling medicine of biotechnology, bringing in $2.6 billion worldwide in 2004 alone. Epogen has to be maintained at a constant temperature of two to eight degrees Celsius and requires protection from moisture, frost, excessive heat, and even light. Amgen—like other makers of delicate medicines—tries to maintain an unbroken set of optimal conditions throughout the manufacturing process. However, as soon as these drugs leave the manufacturer's loading docks, they are liable to drop into a gray market run by pharmaceutical middlemen of just the sort Venema now confronted.

The bearded man, Sheldon Schwartz, had brokered the deal for 100 boxes of Epogen, plus 17 boxes of an AIDS medicine that had already been delivered. Venema had agreed to cut him a check for $509,000, still far below the drugmaker's lowest price. "I don't want to move anything until we go down and you have your check and you're a happy camper," Venema said casually. "I'll just look over to see if the dates are cool and everything."

Schwartz nodded.

Although the sting had no direct connection to the pursuit of Carlow, the newly christened Horsemen were elated at the opportunity it presented. They were fishing in a tainted lake and were sure to draw out at least more information, if not diverted drugs.

Arias, Odin, Petri, and Jones watched and waited silently in cars and trucks positioned around the parking lot. Finally, a silver Mercedes crept down the alley. Arias knew the driver. It was Brian Hill of Jemco Medical International. Arias and Odin had investigated the man for years, but could never find an explanation in his records for his huge success.

Hill climbed out of the car and popped open the trunk. There, baking in a cardboard box without benefit of a cooler or other protection, was the Epogen, almost certainly degraded by the extreme heat and the turbulence of the ride.

The men went inside a nearby warehouse and Venema scrutinized the boxes. Not one had the sticky residue of medicine that had already been dispensed, and they all shared the same lot number: P002970. The drugs appeared pure.

As arranged, his walkie-talkie buzzed and he uttered the words that signaled the backup units to move in. The Horsemen, accompanied by Miami police with guns drawn, stormed the warehouse. Staying in character, Venema feigned outrage and surprise. Hill looked shaky and stunned. Schwartz and the others in the warehouse denied wrongdoing and were not arrested.

Arias and Odin studied the medicine. It looked perfect even to their practiced eyes.

Later that day, Arias contacted Jon Martino, a security official at Amgen, asking whether the company had sold 100 boxes of high-dose Epogen with the lot

number P002970 to a single buyer in the last year. Martino wrote back that 100 boxes of high-dose Epogen was too big an order for anyone in the country.

This led Arias to wonder: If no one had bought 100 boxes of the high-dose medicine at one time, how did they end up grouped together? And who could afford to buy that much? The medicine had a market value of almost $500,000.

In late April, Martino contacted Arias with a succinct verdict on the Epogen: "It's bad." The drug actually was Epogen and came from Amgen, Martino said. But it was not high-dose Epogen—the Rolls-Royce of anemia treatments—as labeled. It was the low-dose medicine, one-twentieth the strength, which cost $258 per box. Someone had glued on counterfeit labels, making each box worth $4,700.

In the parlance of the drugmakers, the medicine had been "up-labeled." The counterfeit labels were indistinguishable from the real ones except for two tiny degree symbols missing in the words "Store at 2 to 8 C." Amgen was sending out a warning letter to physicians, pharmacists, and wholesalers nationwide, identifying the lot and urging those who suspected counterfeit medicine to call the F.D.A. Arias was floored.

As the Horsemen dug deeper, it became increasingly clear that a current of diverted, degraded, and expired medicine lay right below the surface of the so-called legitimate supply. It was not simply that the two streams merged on occasion, by accident, but that the legitimate supply was routinely polluted by inventory from dangerous sources. Since the Big Three bought from Florida's smallest wholesalers, Florida's problem was everybody's.

Medicine counterfeiting has long been endemic in China, India, and certain African countries. But increasingly the American market offers a unique incentive to criminals in search of a niche: medicine here costs far more than anywhere else in the world.

From 2000 to 2004, the F.D.A.'s criminal cases that involved counterfeiting increased almost tenfold, from 6 a year to 58. As of October 2004, 91 counterfeiting cases were active at the agency's Office of Criminal Investigations. One counterfeiting case in 2003 prompted the recall of 18 million doses of Lipitor, an anti-cholesterol drug that is America's best-selling medicine. Pfizer's global security vice president estimates that counterfeit Lipitor may have reached more than 600,000 patients. Those who received it swallowed pills with a bitter aftertaste and no health benefit.

No one actually knows how much counterfeit, adulterated, or subpotent medicine is in our supply, since no one has tested our drugs system-wide. F.D.A. officials have estimated that less than 1 percent of America's drug supply is counterfeit, but even that number is potentially huge. In 2004, Americans filled 3.5 billion prescriptions from domestic suppliers, according to pharmaceutical-industry consultant IMS Health. One percent of that is 35 million prescriptions.

The up-labeled Epogen the Horsemen discovered had already reached patients across the country, including Tim Fagan, a 16-year-old Long Island boy who had undergone a liver transplant and needed weekly injections of Epogen to help boost his red-blood-cell count. The Fagan family bought the medicine from a CVS pharmacy. Desperate to advance his recovery, Tim's mother had administered the injections for eight straight weeks, as directed. After each shot, Tim suffered wrenching muscle cramps, and he did not get better.

Though no one knew it at the time, some of the medicine had most likely moved through a cooler in the back room of a seedy Miami strip club called Playpen South, where counterfeit medicine was allegedly being bought and sold. Carlow had a tangential relationship with the club's owners. He didn't know them, but some of his suppliers did. Consequently, investigators suspect, some of the drugs that flowed from Playpen South moved through Carlow's shell companies.

Operation Stone Cold appeared to be going smoothly. Nine months after the break-in at Marty Bradley's warehouse, 55 of Florida's more than 450 in-state drug wholesalers were either subjects or targets of the investigation, their particulars taped on the wall of a small, windowless conference room at F.D.L.E.

But in truth, by the fall of 2002, things were not going well at all. Despite the extensive corruption Arias and Odin had helped uncover, their own agency, the Bureau of Statewide Pharmaceutical Services, continued issuing wholesale licenses to those associated with felons, effectively pouring more sludge into the funnel that the Horsemen were trying to clean up at the other end.

In addition, the case's sheer size and its promise of media attention brought out micro-managers and obstructionists everywhere. Worst of all was the sentiment in the highest ranks of the statewide prosecutor's office that Michael Carlow's offenses might not be worth prosecuting. He allegedly had passed on phony documents, obscured the origin of medicine, and bought and sold without a license, but these were offenses that, under the state's weak health laws, were punishable only with fines and probation. Using them

Carlow was suspected of selling $54 million in adulterated medicine to wholesalers nationwide.

PRESCRIPTION THUG A gallery of mug shots from Carlow's numerous arrests: from left, 1973, 1973, 1974, 1985, and 2000.

to build a racketeering case was a legal adventure—the last thing any career-minded prosecutor wants to undertake.

Over lunch at the Quarterdeck restaurant, in Plantation, Florida, on May 23, 2003, Carlow extolled the virtues of Costa Rica. He spoke of nice real estate, interesting "retail" opportunities, and the "hookers" he had enjoyed there recently. "I got one for the weekend," he said. "Smoking hot," commented his lunch companion, Steven "Doc" Ivester.

From a distance, the two men might have been mistaken for good friends. Carlow divulged that he found his young wife, Candace, "very immature," while Ivester confided that he went to therapy. "You have this really tangled personal life," observed Carlow. "It's like a bowl of spaghetti that's been drying out."

But Ivester hated Carlow, and the wire tucked beneath his shirt was recording the suspected medicine trafficker's every word. Over the two-hour lunch, Ivester kept leading the conversation back to Carlow's past schemes and his future plans. At one moment, Carlow spelled out his business ethics, stating, "I do not put friends, neighbors, acquaintances into any deals that I am not in myself." At another, he noted approvingly of a woman in the restaurant, "That's a tight pussy there."

In 1998, Ivester, a technology inventor and entrepreneur, launched a company called Navigator, P.C., to develop navigational devices for the navy. Carlow became an investor, pledging $500,000.

One day, Ivester says, he overheard Carlow offer a secretary $25 if she would show him her panties. Another day, a janitor told Ivester about some men taking photographs of a car in the parking lot. It was the Horsemen, photographing Carlow's car. When Ivester asked his new partner whether he was under investigation, Carlow blew up, screaming, "You don't fucking know me. I'm going to ruin you."

Shortly afterward, Ivester says, he found Carlow hugging his girlfriend. Carlow had begun a campaign of seduction that ultimately divided the couple. Ivester believed it was Carlow's revenge for his asking about the investigation.

But Ivester knew something about revenge, too. "I'm not a badass, but I'm not dumb," he said. At the right moment, he had a friend reach out to state officials to offer his services. When Venema learned of Ivester's offer, it was as though Christmas had come early.

Now Venema was outside listening while Carlow—as cocky as ever—provided Ivester with a veritable map of his criminal activities. He described expanding his pharmaceutical business with a new shell company in Kansas, World Pharma, run by his former banker and confidante, Jean McIntyre. He also explained that McIntyre would become his new bookkeeper, replacing his mother-in-law, Marilyn Atkins, whom Carlow said he'd recently terminated for "piss-poor recordkeeping" and being "in-fucking-competent."

He went on to talk about Costa Rica. But his lurid description of his weekend with a 20-year-old named Danielle mattered little to Ivester or to the Horsemen. What grabbed their attention was Carlow's almost incidental remark that he might go back to Costa Rica "this coming week."

If Carlow needed another incentive to leave the country, he got it three days later, when the Fort Lauderdale *Sun-Sentinel* ran a front-page story, FORMER CONVICTS TRY A SAFER VENTURE: PHARMACEUTICALS. The article described Carlow as a "major wholesaler selling millions of dollars worth of questionable medications out of his $1.3 million home." After the article came out, Ivester unearthed a document that Carlow had left in his Navigator offices. It was entitled "Michael Carlow Offshore Wealth Preservation Planning Business Structure Diagram" and listed various offshore accounts, essentially providing a template for a life on the lam.

Some of the Epogen had most likely moved through the back room of a seedy Miami strip club.

If Michael Carlow had been caught selling crack cocaine at a Miami intersection, he would have been arrested instantly and faced serious prison time. Instead, he was suspected of selling more than $54 million in adulterated medicine to wholesalers nationwide, tainting the country's drug supply, and potentially killing patients. And almost no one in Florida government could seem to figure out how to stop him.

Weeks had rolled into months of interagency bickering as some members of the Attorney General's Office of Statewide Prosecution argued with the F.D.L.E. over jurisdiction. It seemed that the most senior state prosecutors were hesitant to proceed. One insider believes they liked "three-by-five cases," those in which the evidence fit on a file card that small. Conversely, they hated "box cases," in which the evidence arrived in a box. Carlow's was a quintessential "box case."

In June, however, the Horsemen's bosses finally got religion. Red lights turned green. Convinced that Carlow was ready to flee, Venema's supervisors now wanted to arrest him.

Late at night on July 20, 2003, Gary Venema flipped open his badge at the Windmill Ranch security gate. "F.D.L.E.," he announced. The guard waved him uneasily into the gated community. In the moonlight, Venema saw right away that the Carlows were home. Two vans were parked in their semicircular driveway, and the Viper's yellow nose peeked out from the side garage.

The investigator took a lazy swing past the house, satisfied that the couple would still be home at first light. In his truck he had arrest warrants for Carlow and 17 associates, among them his wife; his brother-in-law, Thomas Atkins Jr.; his mother-in-law, Marilyn Atkins; and his suspected "cooks," Fabian Diaz and Henry Garcia. He also had a copy of a 95-page indictment that listed 32 charges, including racketeering and grand theft.

I've been waiting my whole life to do something like this, Venema reflected, just so I could say I did.

That night, Venema actually slept a few hours, but by 4:30 A.M. he was out the door. His department had decided to wait until dawn to make sure that there were no mistakes and that Carlow and the others could clearly read the investigators' field jackets. The dangers they faced were twofold: someone threatened with arrest might strike up a gun battle, or, more likely, Carlow would hire lawyers to bury them in procedural complaints.

At five A.M., Venema parked his truck on a side street with a clear view of the house. And then he waited.

At first light, a line of unmarked cars with darkened windows rolled slowly and silently toward Carlow's home. Other units moved into place behind the house. And then two marked police cars, lights turning silently, joined the caravan.

The sound of car doors opening and slamming shut echoed in the sleepy neighborhood. Agents with guns drawn crawled up an embankment behind the mansion, covering it from both sides. It took Venema only a few seconds to reach the door and start pounding. Carlow appeared in a

pair of shorts, surveyed the line of idling cars, and said casually, "Come on in."

Then he sat down at his kitchen table and shook out a cigarette from his pack.

In a separate room, Venema showed Candace a diagram with her husband's picture in the center and the photographs and names of 17 others ringed around him. All of them—including her mother and brother—were being arrested simultaneously. Her eyes widened, but she told Venema, "I don't want to talk to you about anything."

In the kitchen, Carlow asked Venema what his wife was being charged with. "Racketeering," he said. "Her bond is $1.15 million." He did not yet tell Carlow the amount of his own bond: $7 million.

"Can I make some coffee?" Carlow asked. "You're not going to be here that long," one of the officers responded.

By noon, 12 of the 18 indicted were in custody. Exhausted, grubby, exhilarated, the Horsemen went home, showered, and put on suits for the press conference.

Carlow appeared as buoyant as ever at his bail hearing, on July 28. He entered the courtroom in a jail-issue jumpsuit, waving, blowing kisses, and giving thumbs-ups to his friends packing the courtroom.

Candace, however, looked haggard and distraught. Her mood visibly deteriorated as the hearing progressed. As all three prosecution witnesses not only spoke of Carlow's alleged pharmaceutical misdeeds but also detailed his extramarital affairs, Carlow turned to his wife and mouthed, "Are you O.K.?" His secretary and his banker both testified that they had slept with him. Steven Ivester testified that Carlow had seduced his girlfriend. "I can honestly say we beat out *The Jerry Springer Show*," John Petri later observed.

The judge ultimately reduced Carlow's bond from $7 million to just under $3 million. Carlow posted bail and enjoyed his freedom for a day—until the bail bondsmen learned that the Carlows had already defaulted on the mortgage that Candace had offered as collateral for her bail. They apprehended Michael Carlow and took him back to jail.

By the end of 2004, the Horsemen had arrested 55 suspects—more than 30 of them on racketeering charges—and seized $33 million in bad medicine and almost $3 million in cash. Sixteen suspects had agreed to cooperate, most pleading guilty to an array of charges.

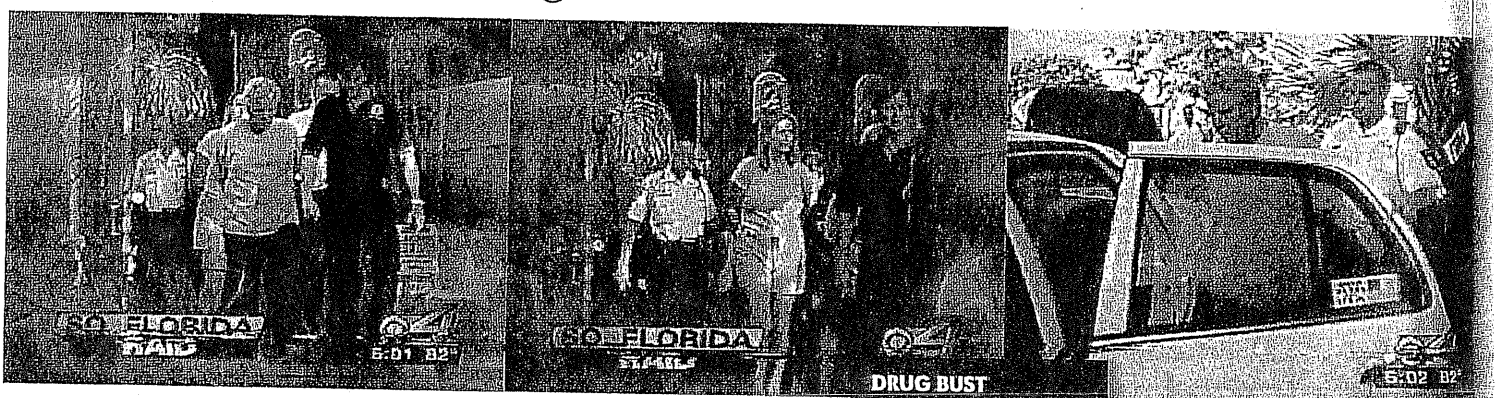
The efforts of the Horsemen led to the passage of Florida's 2003 Prescription Drug Protection Act, which imposed heavy new restrictions on drug wholesalers, required criminal-background checks for those seeking licenses, and created serious criminal penalties for trafficking in adulterated drugs.

In the wake of the state's reforms, the number of licensed drug wholesalers in Florida dropped by almost half. And Operation Stone Cold expanded its reach, working to break up a ring making at least $50 million a year selling painkillers over the Internet, and another that had submitted more than $700 million in fraudulent claims for prosthetic limbs.

Across the country, the F.B.I., the F.D.A., and state investigators continue to probe illicit diversion and counterfeiting networks. Even Marty Bradley, whose call to Cesar Arias sparked Operation Stone Cold, did not escape the increased scrutiny. On March 23, he and seven associates were indicted in Georgia on charges including racketeering and money-laundering. Bradley vowed to fight the charges.

Yet without an overhaul of national laws, bad medicine still pours into the nation's distribution system, and no one is any closer to knowing where it has been. The F.D.A. made clear, in a February 2004 task-force report on domestic counterfeiting, that it would not impose a solution on the powerful wholesalers. Instead, the agency is encouraging the use of promising technology that is still being developed: bar coding and radio-frequency identification that can help track a drug's origin electronically. The agency has also emphasized the need to reduce the "regulatory burdens" for "stakeholders"—which include the middlemen. The nation's drug supply still runs in part on an honor system.

Carlow asked Venema what his wife was being charged with. "Racketeering. Her bond is $1.15 million."



DRUG BUST Television news footage of Michael and Candace Carlow's arrest by Gary Venema (in his black Horsemen polo shirt), July 21, 2003.

Meanwhile, the cases against the Horsemen's biggest targets are plodding through the legal system. Michael Carlow pleaded not guilty to all 20 charges, but he has been abandoned by confidants and former associates, who are lining up to testify for the state. Carlow remains in jail in Fort Lauderdale, awaiting trial later this year. His wife, Candace, filed for bankruptcy in August 2004 and is also awaiting trial. The Windmill Ranch mansion fell into disrepair and was sold in foreclosure in February 2005.

The Horsemen have remained as cohesive as ever, through good and bad. In late 2004 the five men and their wives headed to Amelia Island, off Florida's northeast coast, for a long weekend. They stayed by the ocean, rode horses along the beach, and at night had a cookout, spreading a tarp across the sand. Though they knew they had exposed only a sliver of a systemic problem, they viewed the case and the resulting friendships as the true bonus of a lifetime. □

T05-20
May 10, 2005

Media Inquiries: Rae Jones
301-827-6242
Consumer Inquiries: 888-INFO-FDA

FDA Warns Consumers About Counterfeit Drugs Purchased in Mexico

The Food and Drug Administration (FDA) is warning the public about the sale of counterfeit versions of Lipitor, Viagra, and an unapproved product promoted as generic Evista to U.S. consumers at pharmacies in Mexican border towns.

Consumers who have any of these counterfeit products should not use them and should contact their healthcare provider immediately. FDA is warning consumers that prescription drugs purchased in foreign countries are not regulated by the FDA and do not carry the same FDA assurances of safety, effectiveness, and manufacturing quality as drugs purchased within the United States.

Counterfeit versions of Lipitor (a cholesterol-lowering drug), Viagra (a treatment for erectile dysfunction), and Evista (a treatment and prevention medication for osteoporosis in postmenopausal women) can pose significant risks to consumers. Counterfeit Lipitor that contains no active ingredient or not enough active ingredient could present a long-term risk for the various complications of high cholesterol, such as heart disease. The counterfeit product purchased in Mexico was associated with several reports of high cholesterol in consumers who had used the product. Counterfeit Viagra that contains little or no active ingredient would be less effective than a legitimate product or altogether ineffective. Women who take the substandard generic Evista product that contains no active ingredient may be at risk for developing osteoporosis or for having their osteoporosis progress.

The generic Evista was analyzed by FDA in coordination with the National Association of Boards of Pharmacy and was found to contain no active ingredient. The counterfeit Lipitor and counterfeit Viagra were analyzed by Pfizer, Inc. and were also found to contain no active ingredient.

The generic Evista product was purchased from Agua Prieta, Sonora, Mexico and is labeled as Raloxifeno, fenilox, 50 tabletas, 60mg, made or distributed by Litio and labeled as manufactured in Monterrey, Nuevo Leon, Mexico. The label has red triangles across the top and bottom. (See the website noted below for photographs of the products.)

Counterfeit Lipitor and Viagra were purchased in the Mexican border towns of Juarez, Los Algodones, Nogales, and Tijuana. The counterfeit Lipitor and counterfeit Viagra products were labeled only in English, whereas legitimate Mexican pharmaceuticals are usually labeled in Spanish. In addition, the counterfeit Lipitor was provided in round white plastic bottles; however authentic Lipitor in Mexico is sold only in boxes of blister packs.

FDA and Mexican federal health officials are continuing to work together to address the issue of counterfeit human drug products, especially along our

common border. Recently, federal health officials in Mexicos Federal Commission for the Protection from Sanitary Risks (COFEPRIS) have undertaken several specific operations to target illegal drugs, including counterfeit drugs, in Mexican drug stores. These operations, throughout Mexico, including the areas that border on the U.S. have resulted in the suspension of 19 pharmacies and the confiscation and recall of over 105 tons of medicines.

Reports of suspected counterfeit drugs can be submitted to FDA at http://www.fda.gov/medwatch.

For additional consumer information on counterfeit drugs, visit the following websites:
FDA Consumer Education for Counterfeit Medicine:
http://www.fda.gov/cder/consumerinfo/counterfeit_text.htm
Counterfeit Drug Photographs: http://www.fda.gov/bbs/topics/news/photos/border.h

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U.S. Food and Drug Administration

Combating Counterfeit Drugs: A Report of the Food and Drug Administration Annual Update

May 18, 2005

On February 18, 2004, FDA issued a Report entitled "Combating Counterfeit Drugs: A Report of the Food and Drug Administration." The comprehensive Report highlights several measures that can be taken to better protect Americans from counterfeit drugs. These measures address six critical areas:

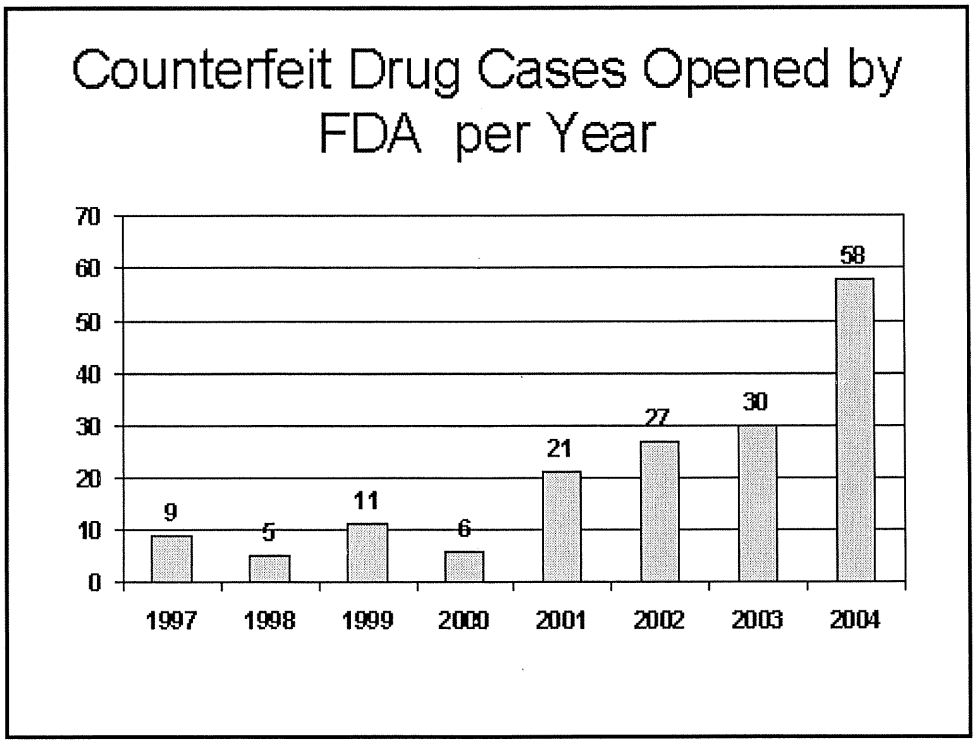
- Securing the actual drug product and its packaging
- Securing the movement of the product as it travels through the U.S. drug distribution chain
- Enhancing regulatory oversight and enforcement
- Increasing penalties for counterfeiters
- Heightening vigilance and awareness of counterfeit drugs
- Increasing international collaboration

Over the past year, we have worked with manufacturers, wholesalers, pharmacies, consumer groups, technology specialists, standard-setting bodies, State and Federal agencies, international governmental entities, and others to advance the measures outlined in the Report. Significant progress is being made in many of these areas. Although we continue to believe that the U.S. drug supply is among the safest in the world, more work needs to be done to further implement these measures and further secure our nation's drug supply.

In 2004, FDA's Office of Criminal Investigations (OCI) initiated 58 counterfeit drug cases, a significant increase from the 30 cases initiated in 2003. We believe that this is in part due to an increased awareness and vigilance at all levels of the drug distribution chain as a result of the Combating Counterfeit Drugs Report released last year. In addition, this increase in investigations is due to increased referrals from and coordination with other state and federal law-enforcement agencies and communication with drug manufacturers.

Fortunately, most of the counterfeit drugs at issue did not reach consumers because we focused our limited resources and developed proactive investigations that enabled us to identify components of counterfeit products and interdict finished counterfeit drug products before they entered domestic distribution.

Although the number of counterfeit drug cases has increased and the threat to the public health is real, most of the suspect counterfeits that we discovered in 2004 were found in smaller quantities, compared to those found in 2003. Most of these drugs were destined for the black market or internet distribution, rather than for widespread distribution in the nation's drug supply chain.



Previously reported data for FY 1997-2003 were revised due to new information indicating involvement of counterfeit drugs in other previously uncounted criminal investigations.

Technology: *Securing the product, packaging, and movement through the supply chain*

In the Report, we stated that it is critical to implement new technologies to better protect our drug supply. We concluded that a combination of rapidly improving track and trace technologies and product authentication technologies could be used to provide a greater level of security for drug products. These technologies are intended to secure the product, packaging, and movement of the product as it travels through the drug supply chain.

Track and Trace Technology

In the Report, we stated that adoption and wide-spread use of reliable track and trace technology is feasible by 2007. This would help secure the integrity of the supply chain by providing an accurate drug "pedigree," a record documenting that the drug was manufactured and distributed under secure conditions. We particularly advocated for the implementation of electronic track and trace mechanisms and noted that radio-frequency identification (RFID) is the most promising technology to meet this need. RFID technology uses a tiny radio frequency chip containing essential data in the form of an electronic product code (EPC). Implementation of RFID will allow supply chain stakeholders to track the chain of custody (or pedigree) of every package of medication. By tying each discrete product unit to a unique electronic serial number, a product can be tracked electronically through every step of the supply chain.

Over the last year stakeholders have made tremendous progress in the development and implementation of EPC/RFID. This is a huge endeavor that requires close collaboration among all constituents of the pharmaceutical distribution system. We have observed and supported this collaboration, and we continue to support it today.

A critical piece of this undertaking is the development of standards for the type of technology to be used and the systems for storing and sharing pedigree information. This activity will ensure that the electronic track and trace technologies adopted are comprehensible and data communication systems are interoperable. We have been present at and actively participated in many industry, standard-setting, and government

meetings and workshops where implementation issues have been discussed. We appreciate the opportunities we have been given to participate in the discussions and provide input when needed.

We received a number of questions over the past year regarding RFID and regulatory issues from members of the supply chain. In response to these common questions, on November 15, 2004, we issued a Compliance Policy Guide (CPG) for implementing RFID feasibility studies and pilot programs as an important and essential step in moving this technology forward. The CPG presents FDA's current thinking regarding several labeling, current Good Manufacturing Practices (GMP), and other regulatory issues that may arise by affixing an RFID tag to a drug product for a feasibility study or pilot program. Several members of the supply chain simultaneously announced their intention to move forward with pilot programs (joint programs across the supply chain or within an individual company) that will involve the tagging of products susceptible to counterfeiting. In fact, three major pharmaceutical companies said that they will incorporate an RFID tag into at least one of their products by the end of 2005. We have been in close communication with participants in these and other pilot studies and provided input when appropriate.

Also in November, we announced the creation of an internal, cross-agency "RFID Workgroup." This group is charged to monitor adoption of RFID in the pharmaceutical supply chain, pro-actively identify regulatory issues raised by the use of this new technology, and develop straightforward processes for handling those issues. We believe that the workgroup will improve communication with members of the supply chain on RFID related issues and will facilitate both the performance of pilot studies and the collection of data needed to formulate policy.

It is important to gain a better understanding of the effects of RFID on drug products, particularly biological products because they may be more susceptible to change in their environment. In the past year, we developed a protocol for the Product Quality Research Institute (PQRI) (a collaboration of FDA, academia, and industry) to evaluate the effects of radio-frequency on specific biological protein-based products. This study is in its very early stages. Also, a laboratory within FDA's Center for Devices and Radiological Health is conducting analyses of the heating and the radio-frequency field strengths induced in certain liquid pharmaceuticals by some RFID systems. We are encouraged by the response of individual companies informing us that they are conducting studies. In addition, the Health Research Initiative of the Auto-ID Laboratories is conducting additional studies on the effects of radio-frequency on various drug products and storage conditions. We look forward to the results of such studies.

Next Steps: FDA will continue to play an active role in public and private sector efforts toward developing an "electronic safety net" for our drug supply, including the adoption and widespread use of reliable track and trace technology by 2007. We will continue to facilitate and monitor standard-setting activities, including efforts by epcGlobal (an entity that has taken a lead role in developing standards) to establish standards for numbering systems, chip frequency, electronic pedigree, and data-sharing and security. In addition, we will continue to encourage and foster research on the use and potential impact of RFID on drug and biological products. Finally, we will regularly review the extent and pace at which RFID is being adopted.

Authentication Technology

In the Report, we noted that authentication technologies for pharmaceuticals (such as color-shifting inks, holograms, taggants, or chemical markers imbedded in a drug or its label) have been sufficiently perfected that they can now serve as a critical component of a layered approach to control counterfeit drugs. FDA's Report acknowledged the importance of using one or more authentication technologies for drug products, in particular those most likely to be counterfeited. Over the past year, we have worked with individual drug manufacturers who sought to incorporate such technologies into their product, labeling, or packaging. When asked, we have provided advice and suggestions regarding application

and use of authentication technologies and worked with sponsors on the regulatory issues associated with making changes to approved product labeling.

In the Report, we said that in order to facilitate the use of authentication technologies on or in approved products, we would consider publishing a draft guidance on notification procedures for making changes to products, their packaging, or their labeling. We decided not to issue guidance in the past year because we would like to gain additional experience working with companies in their application and use of authentication technologies so the guidance can have appropriate general applicability.

Next Steps: We will continue to work with companies and organizations to facilitate use of authentication technologies in products, labeling, and packaging.

Regulatory Oversight and Enforcement

Electronic Pedigree

In the Report, we said that adoption of electronic track and trace technology would help stakeholders meet and surpass the goals of the Prescription Drug Marketing Act (PDMA). We said that we intend to focus our efforts on facilitating industry adoption of this technology. To allow stakeholders to move toward an electronic pedigree we said that we would further delay the effective date for certain provisions in a final rule that FDA promulgated in December 1999 to implement the Prescription Drug Marketing Act of 1987 (PDMA), as modified by the Prescription Drug Amendments of 1992 (PDA). On February 23, 2004, we published a notice in the Federal Register delaying the effective date until December 2006.

As stated above, we are pleased with the progress stakeholders, standard-setting bodies, and software and hardware companies have made thus far toward implementing an electronic pedigree for drug products. We recognize that there have been, and continue to be, challenges along the way. However, we are optimistic that this progress will continue in an expeditious manner toward meeting our 2007 goal. If it appears that this goal will not be met, we plan to consider the options regarding implementation of the PDMA provisions that are the subject of the stay.

Next Steps: We are closely monitoring the progress of widespread use of electronic pedigrees as we assess whether to lift, maintain, or pursue other options regarding the stay of implementation of the provisions in the PDMA final rule. We will continue to work with stakeholders to facilitate implementation.

State Efforts

In the Report, we recognized the important role that the states have in regulating the drug supply chain, and we stated that adoption and enforcement of strong, proven anti-counterfeiting laws and regulations by the states would help in our collective effort to detect and deter counterfeit drugs. FDA strongly supported the efforts taken by the National Association of Boards of Pharmacy (NABP) in revising the Model Rules for Licensure of Wholesale Distributors for states to adopt. These Model Rules make it difficult for illegitimate wholesalers to become licensed and then to transact business. Four states have laws in place that are similar to the Model Rules (Florida, Nevada, California, and Indiana), and other states are considering adoption (e.g., New Jersey, Iowa). FDA has provided advice and input on a few state legislative proposals and we recommend that more states move in this direction in the coming year.

NABP last year also announced the creation the Verified-Accredited Wholesale Distributors™ (VAWD) program as a complement to the Model Rules. Applicants for VAWD accreditation undergo a criteria compliance review, licensure verification, an inspection, background checks, and screening through NABP's clearinghouse. It is intended to provide assurance that the wholesale distribution facility operates legitimately, is validly licensed in good standing, and is employing security and best practices for safely distributing

prescription drugs from manufacturers to pharmacies and other institutions. Recently, Indiana was the first state to pass a law that requires VAWD accreditation for all drug wholesale distributors who do business in Indiana.

In the Report, we said that there would be great value in the creation of a national list of drugs most likely to be counterfeited based on factors that are likely to contribute to counterfeiting risk. The Model Rules called for such a national list as a starting point for application of pedigree requirements in the short term so that there would not be 50 different state lists. In December 2004, NABP convened a National Drug Advisory Coalition, which included industry and state and national government representation. FDA has served in an ex-officio role on this Coalition. The Coalition developed criteria for inclusion or removal from such a list and created a national list that includes 31 drugs. FDA applauds NABP on this accomplishment.

We recognize that states have implemented and are considering provisions requiring a pedigree (in some cases electronic) for drug products. We are pleased that these efforts complement federal requirements and believe that rapid and uniform implementation of a pedigree that starts at the point of manufacture and accompanies the drug product until it is dispensed would be beneficial. As stated in the Report, adoption and enforcement of the Model Rules by all states would have the greatest impact on protecting the nation's drug supply.

In the Report, we also said that increased penalties would help deter counterfeiting and more adequately punish those convicted. As we continue the efforts on the Federal level, it is equally important that states adopt stronger penalties (like those outlined in the Model Rules) so the penalties associated with counterfeiting drugs are commensurate to the significant threat they pose to the public health.

Next steps: FDA will continue to support efforts by the states to adopt and enforce stricter laws and to pursue increased Federal penalties for drug counterfeiting.

Secure Business Practices

In the Report, we described the important role that all participants in the drug supply chain have in adopting secure business practices. Around the time the Report was issued several trade associations for wholesale distributors issued guidelines for their members regarding best practices for drug d istribution system integrity. In fact, in the past year, the Healthcare Distribution Management Association (HDMA) released new membership rules that require active members to adopt best practices that include extensive regulatory, financial, security, and due diligence processes and procedures.

It is also important to note that many of the secure business practices outlined in these trade associations' best practices guidelines are included in the Model Rules for Licensure of Wholesale Distributors for adoption by the states.

Next Steps: We will continue to work with stakeholders who would like to develop secure business practices.

Heightened Vigilance and Awareness

Health Professional Reporting Via MedWatch

In the Report, we indicated that we would encourage and educate health professionals to use the MedWatch form as a mechanism to report suspect counterfeit drugs to FDA. To make the reporting of suspect counterfeits easier, we changed the instructions for the MedWatch reporting form, both paper and electronic versions, so reporters will know how and when to report suspect counterfeits. We have also amended the MedWatch website description of product problems and added "suspect counterfeit" to the list of product

problems to report to FDA using the MedWatch form. FDA staff has promoted the use of MedWatch for reporting suspect counterfeits in numerous speeches to health professional organizations over the past year. A small number of such reports are starting to come in using the MedWatch form.

Next steps: FDA will continue to educate health professionals to use the MedWatch form to report suspect counterfeit drugs.

Counterfeit Alert Network

In the Report, we stated we would create a Counterfeit Alert Network (CAN) and partner with health professional and consumer groups to provide timely and effective notification to their members or constituents of a verified counterfeit event. By signing the CAN co-sponsorship agreement, organizations become CAN partners and agree to deliver time-sensitive messages and information on specific counterfeit incidents and educational messages about counterfeits in general, as well as information about how and when to report suspect counterfeit drug products. In the past year, we have formed the CAN and currently 13 organizations have signed the CAN co-sponsorship agreement.

Also, in the Report, we stated we would develop internal guidelines for the informational contents of outgoing FDA messages that would be useful to communicate a counterfeiting incident to CAN partners. In the past year, we have developed these guidelines, in the form of a template, in collaboration with CAN partners. This template will allow for the efficient preparation and delivery of uniform counterfeit alert messages for partners to further disseminate.

Next Steps: FDA will encourage stakeholders to become members of the CAN and continue to work with CAN partners to be ready to disseminate effective and appropriate counterfeit alerts when needed.

Streamline FDA's Internal Rapid Response to Reports

In the Report, we said that we would streamline our internal processes to respond quickly to reports of suspect counterfeits by improving coordination and communication among all initial responders in the agency. In the past year we amended our internal standard operating procedures and developed a protocol for more efficient internal communication and coordination when a suspect counterfeit drug is reported to the agency, regardless of where the report is received (e.g., MedWatch, an FDA field office, call to the FDA hotline).

Next Steps: No additional action is required.

Educating Consumers and Health Professionals

In the Report, we noted that educating consumers about the risks of counterfeits is a critical piece of the effort to stop counterfeits from entering the stream of commerce. In the past year we have taken many steps towards educating consumers. First, we developed two public service announcements (PSAs) geared to consumers. These PSAs ran in 4.5 million magazines. In addition, 4.6 million medication leaflets distributed by retail pharmacies with patient's prescriptions also carried these PSAs along with additional consumer information about counterfeit drugs. Also, FDA drafted an article about counterfeit drugs that was printed in several local papers nationwide, with an estimated readership of about 9.5 million consumers.

We also set up a webpage on the FDA website for consumers to obtain information about counterfeit drugs, FDA initiatives, and educational information. This website can be found at www.fda.gov/counterfeit. In addition, the National Consumers League (NCL) developed a highly informative website containing useful consumer information about counterfeit drugs.

In the past year, FDA partnered with the National Health Council (NHC) to jointly create and

disseminate educational messages on counterfeit drugs. NHC is a private, non-profit organization of over 100 national health-related organizations. Under this partnership, messages to raise awareness of the dangers of counterfeit drugs and how to avoid them will be developed and tested to measure their effectiveness. In addition, products will be created to deliver these messages to the target audience.

In addition, FDA is developing educational messages to inform pharmacists about how to recognize counterfeits, counsel patients on how to minimize the risk of exposure to counterfeits, and on how to notify FDA if a counterfeit drug is suspected. These efforts are in the early stages.

In the Report, we said that we would re-launch our safe online buying practice campaign. In March 2005, we launched a new campaign with tips for consumers on how to buy drugs safely on the Internet and minimize their risks of getting a counterfeit or otherwise substandard drug.

Next steps: We will increase dissemination of the PSAs and counterfeit drug messages. We will continue to update and post relevant information on the counterfeit drug webpage. We will also continue to work with the NHC to finalize educational messages and develop a dissemination strategy for those messages. In the coming months, we will also work with pharmacy organizations to finalize educational messages for pharmacists and develop a strategy to disseminate these messages.

International Collaboration

In the Report, we recognized that counterfeit drugs are a worldwide concern, and we stated that we would collaborate with foreign stakeholders to develop strategies to deter and detect counterfeits globally. In February 2004, the World Health Organization (WHO) hosted a meeting to discuss an approach for developing global strategies for combating counterfeit drugs. FDA participated in this meeting and supports WHO's efforts in this area. It was decided at the WHO meeting that a concept paper would be drafted with a proposed strategy to address this problem. In March 2005, we attended the 4 th Pan American Conference on Drug Regulatory Harmonization held by the Pan-American Health Organization (PAHO) where a report was presented and recommendations were discussed regarding combating counterfeit drugs in the Americas. FDA's counterfeit drug initiative is consistent with the recommendations of the PAHO report.

FDA's Office of Criminal Investigations (OCI) continues to work with foreign law-enforcement agencies directly and through Interpol on individual international counterfeit cases.

OCI also has provided training on counterfeit drugs to foreign law-enforcement, customs and judicial officers from various parts of the world through the U.S. Patent and Trademark Office (PTO) Intellectual Property Enforcement Academy. In addition, in the past year, several individual countries have sought FDA's insights, advice, and/or training on combating counterfeit drugs. Although the approaches that we outlined in the Report were specific to the U.S. drug distribution system, many of the principles outlined in the Report are applicable generally.

Next Steps: To the extent that resources permit, FDA will continue to work with international organizations, foreign law enforcement agencies, and individual governments to provide training and advice concerning drug counterfeiting and to collaborate on coordinated strategies to combat the problem of counterfeit drugs globally.

Conclusion

Significant progress has been made towards implementing the measures outlined in FDA's Combating Counterfeit Drugs Report issued in February 2004. Although the use of

electronic track and trace technology is still in the implementation stage, adoption and widespread use is closer to becoming a reality as stakeholders work diligently to find solutions to the challenges faced along the way. The use of authentication technologies is gaining acceptance as manufacturers realize that steps should be taken to protect their products from sophisticated counterfeiters. States are starting to adopt stricter laws and harsher penalties to ensure that only legitimate wholesalers do business in their state and they are taking measures to do their part in protecting supply chain integrity. Trading partners in the drug supply chain are also taking steps to ensure secure business practices are adopted and utilized as drug products are bought and sold. Educational efforts have been undertaken to help health professionals and consumers develop a greater awareness and knowledge about counterfeit drugs and how to minimize the risks of exposure. In addition, efforts are underway to tackle counterfeit drugs on a global level.

Despite the progress made, there remains a viable and concrete threat of counterfeit drugs entering the U.S. drug distribution system. We must all continue to work together to expeditiously pursue the measures outlined in the Report to further protect the safety and security of the U.S. drug supply.

Combating Counterfeit Drugs Strategy Status Report

Critical Components:	Completed	Ongoing
Track and trace (RFID)	☐	☑
Authentication technologies	☐	☑
Electronic Pedigree	☐	☑
States adopt stricter laws	☐	☑
Secure business practices	☐	☑
Reporting via MedWatch	☑	☐
Counterfeit Alert Network	☑	☐
Internal rapid response	☑	☐
Educate consumers and health professionals	☐	☑
International collaboration	☐	☑

APPENDIX: Significant Counterfeit Cases Closed in the Past Year

Below are a number of significant counterfeit drug cases that were closed in the past year:

Counterfeit Lipitor

During the first quarter of 2005, three men pled guilty to federal criminal charges in a multi-million dollar Lipitor smuggling and counterfeiting conspiracy. The pleas are a result of an

ongoing OCI investigation involving the manufacturing, smuggling, and interstate distribution of counterfeit pharmaceuticals that was initiated by OCI in April 2003. To date, eight people have been indicted; four have pleaded guilty, and another was convicted by a trial jury.

In another counterfeit Lipitor case, an OCI undercover operation resulted in the arrest and conviction of a Belize citizen for violating Title 21, U.S.C. § 331 (a) – Introduction into Interstate Commerce of a Misbranded Drug. In September 2004 the defendant was sentenced to 10 months incarceration and 1 year probation.

Genapharm.com (Counterfeit Human Growth Hormone)

On March 9, 2004, an Austin, Texas man pled guilty to four counts of conspiracy to introduce misbranded and unapproved new drugs into interstate commerce, counterfeiting human growth hormone, and possessing controlled drugs with intent to distribute. Two other persons involved in these offenses were previously convicted and sentenced.

Counterfeit Viagra

On June 23, 2004, an individual pled guilty to charges of conspiracy, trafficking in counterfeit goods, and a felony violation of the Federal Food, Drug and Cosmetic Act. In pleading guilty, the defendant admitted that he conspired with a manufacturer in Beijing to import thousands of counterfeit Viagra tablets into the United States, which he would then resell. The defendant was sentenced on March 25, 2005 to 18 months in prison, followed by 3 years probation and was fined $6000.

Counterfeit Serostim

On June 16, 2004, an indictment was unsealed in San Diego that charged an individual with conspiring to unlawfully distribute human growth hormone and trafficking in counterfeit goods. According to the indictment, this individual obtained counterfeit Serostim and sold it to bodybuilders who did not possess lawful prescriptions for the drug. Another individual involved in this investigation pled guilty to similar charges on February 19, 2003. Serostim is a prescription drug containing the active ingredient "somatropin," a form of human growth hormone. Serostim is approved by the FDA for use in the U.S. to treat AIDS wasting disease.

Counterfeit Labeled Pharmaceuticals

An Alabama drug wholesaler was convicted for violating Title 21, U.S.C. § 331 (i) (3) – Selling and Holding for Sale a Counterfeit Drug. In October 2004 the company was sentenced to 5 years probation and fined $24,000.

Counterfeit Viagra

In January 2005, a Southern California man pled guilty to importing counterfeit Viagra from China and manufacturing 700,000 counterfeit Viagra tablets at a lab in the U.S. An accomplice was convicted of similar charges in September 2004. The total value of the counterfeit Viagra in this case is more than $5.65 million.

World Express Rx

In January 2005, a San Diego man was sentenced to serve a 51-month prison term and forfeit substantial cash proceeds for his role in operating a large Internet pharmacy scheme. The drugs distributed included a variety of products counterfeited in Mexico, smuggled into the U.S. and sent throughout the country. Some of the ingredients for the drugs were shipped from India and China. In other instances, unapproved and counterfeit drugs made in India and Pakistan entered the U.S. via the Bahamas. At least 14 other individuals are also being prosecuted in California or Florida as part of this international conspiracy.

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NEWS

P&G Teams With T3Ci for RFID Apps

Procter & Gamble signs a multiyear agreement to jointly develop enterprise applications that use RFID data.

By Mark Roberti

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May 17, 2005—Procter & Gamble has signed a five-year agreement with T3Ci, a Mountain View, Calif.-based startup that has created software for analyzing Electronic Product Code (EPC) data from radio frequency identification systems. The two companies will jointly develop new software applications that take advantage of EPC data throughout the supply chain.

"We believe that for P&G—indeed, for many, if not most, manufacturers—a good deal of the benefits of EPC rests in visibility down the supply chain as to how our products are being handled, principally in the retail stores of our customers," says Steve Rehling, director of IT and head of RFID systems at P&G. "We've developed a variety of use cases, and we have a number of hypotheses as to what they should look like. But there's no substitute for getting your hands dirty and using the data to do things."

P&G's Rehling

P&G looked for a company that could provide software tools for analyzing EPC data to determine how new applications could use the data to drive business value. It evaluated a number of suppliers but chose T3Ci for several reasons including "the quality of their thinking, their experience and their willingness to learn with us in a responsive and flexible way," Rehling says.

Among the potential applications the companies will develop are out-of-stock management, the management of in-store promotions and the introduction of new products. "In the retail industry, it's important to get retail compliance behind promotion and new-item management," says Rehling. "There are gaps in execution, so we're looking at ways to use EPC data to improve promotions and new-item initiatives."

T3Ci was founded in October 2003 by Jonathan Golovin, Peter Rieman, Richard Swan and Shantha Mohan specifically to address the issue of how to analyze and use RFID. Golovin previously founded two other companies—Consilium, the largest independent providers of manufacturing execution systems (MES), and Vigilance, an event management company. P&G feels his experience as a pioneer in MES software can be applied to the use of EPC data in the supply chain.

Last year, T3Ci collected data from retailers that were among early adopters of EPC technologies and analyzed roughly 1 million reads. Peter Rieman, executive VP of T3Ci, says that this year, T3Ci will analyze tens of millions of reads.

"We started diving into P&G's data in July of last year," says Rieman. "That led to a number of different things. We could start discussing data quality with retailers, and it let us analyze the supply chain on a per-product basis, using our Historian software."

While enterprise applications focus on transactions involving a product, Historian tracks what happens to the product throughout its life cycle. "We're watching the movie of the life of each tag [on a product]," says Rieman. "We can then compare what's going on with this product, with what's happened to similar products before."

The system can, for instance, track how long a product has been inventory, and it can be set up to trigger an alert if something occurs outside of parameters set up by the user. So if a product typically spends four days in inventory, a manager might choose to be alerted if a shipment of that product is in inventory for more than, say, six days.

The joint development project with P&G will focus on using the analytical tools to determine the data that needs to be collected and shared among supply chain partners to get a return on investment from the use of EPC technologies. Then T3Ci will develop new applications based on that information.

The two companies are currently looking at what applications might be developed. A number of factors will determine which ones are tackled first. These factors include finding out which applications are likely to deliver the most benefits, which ones are the most feasible to develop in a reasonable period of time and which are needed to support pilots that P&G and other manufacturers are undertaking with retail partners.

The support of retailers is critical because they own the data needed to create applications downstream in the supply chain (in retail distribution centers and stores) from manufacturers. P&G has mentioned its cooperation with T3Ci to retailers when discussing pilots.

"When we get to the point where we are looking at what data is needed and how we'll analyze it to discover insights, we confirm the retailer's willingness to have P&G work with T3Ci to analyze the data," says Rehling. "If the retailer is interested in working with T3Ci themselves, we're open to that. But we let the retailer know that the aim is not to generate business for T3Ci, but to provide a path for P&G to gain benefits, which might also benefit the retailer."

Rehling said both P&G and T3Ci would share ownership of the intellectual property that emerges from their collaboration. "We look for a win-win way of crafting the arrangement that enables the technology provider to grow and prosper," says Rehling. "Beyond that we look for ways for P&G to derive direct benefits from the collaboration over and above getting the applications we need."

One of the biggest early challenges that T3Ci is dealing with is the quality of the data, which is eroded by false reads, says Rieman. Sometimes a reader at a trash compactor picks up tags on cases that pass by on a forklift, or an employee takes a tag off a carton to show his wife and walks around the store with it, causing reads to be picked up at a number of read points.

"The worst thing about bar code is you need line of sight to read it," Rieman says. "The worst thing about RFID is you don't need line of sight for it to work. We've developed a rules engine using heuristics to deal with false reads."

T3Ci is currently providing 16 customers, all of which are product suppliers, with analytical reports on their data, and then Richard Swan, T3Ci's chief technical officer, or Shantha Mohan, VP of product management, goes over the reports individually with each customer. In June, T3Ci will provide its Historian software online as an application service provider. Rieman says that the company will likely start to sell software packages in late 2006 or early 2007.

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Health and Behavior

Posted 5/10/2005 9:43 PM Updated 5/11/2005 10:59 AM

Stolen, counterfeit drug problems rise

By Julie Appleby, USA TODAY

Counterfeiting, theft and diversion of prescription medications jumped 16% worldwide last year — and the United States topped the list of countries with reported problems, an analysis by a private firm funded by the drug industry shows.

The report reflects the growing concern about stolen and counterfeit medicines, as well as the practice of "diversion," in which drugs are illegally intercepted from their proper destinations and resold into the wholesale market.

Ranking No. 1 for the second consecutive year, the USA had 76 total incidents of counterfeit, stolen or diverted drugs. Colombia had 60, and China had 59.

Four countries joined the top 10: Russia, Ukraine, Brazil and England. Worldwide, there were 553 reported incidents, compared with 477 in 2003.

"As the largest market for retail pharmaceutical sales in the world, the U.S. will continue to be a target for the distribution of counterfeit, stolen and diverted medicines," says the Pharmaceutical Security Institute's report.

When counterfeit incidents were considered on their own, China had the highest number of reported incidents, followed by Colombia. The USA ranked fifth.

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Where drug incidents occur

Countries with the most incidents in 2004:

	Fake	Diversion[1]	Theft	**Total**
USA	32	30	14	**76**
Colombia	41	15	4	**60**
China	56	3	0	**59**
Russia	40	8	2	**50**
India	36	3	0	**39**
Peru	21	4	0	**25**
Ukraine	23	1	0	**24**
Brazil	3	4	12	**19**
Israel	17	1	0	**18**

The institute, based in Vienna, Va., gathers incident data for its report from the media, drug companies and government regulators. Under-reporting of incidents likely occurs in countries where the press is not free or the government is secretive.

While the statistical threat of counterfeit drugs in the USA is low — most estimates place it at less than 1% of the total supply — concern is rising.

"Against that backdrop, we have a fairly small number (of reported incidents)," says Thomas Kubic, executive director of the Institute. "But it's not something that should be ignored."

Mexico	6	5	6	**17**
U.K.	14	2	1	**17**

1 — Drugs which have been illegally diverted to a different market, population or region than was initially intended.

Source: Pharmaceutical Security Institute

In the past two years, a number of counterfeit high-profile drugs, including anti-cholesterol drug Lipitor and anemia treatment Epogen, have been seized in the USA.

Some counterfeits are outright fakes. Others are watered-down versions of real drugs. Profits are the motive.

"America has become the go-to market for counterfeiters because we pay the highest prices of anyone in the world," says Katherine Eban, author of *Dangerous Doses: How Counterfeiters are Contaminating America's Drug Supply*.

Eban says counterfeits and authentic, but stolen, drugs are sold and resold in the so-called secondary wholesale market. Nationwide, thousands of wholesalers are licensed. While many are legitimate, disreputable firms have been found to slip fake, stolen and diverted drugs into the supply.

In recent weeks, lawmakers and regulators have taken action around the issue:

• Legislation was introduced Monday in Congress to enforce a provision of the Food, Drug and Cosmetic Act that would require all wholesalers to keep "pedigree papers" on the drugs they sell. Such papers track the movement from one wholesaler to another. Wholesalers generally oppose the idea, saying the requirement is costly and ineffective. They say better technology, such as radio-tracking devices, is on the horizon.

• Cardinal Health, one of the nation's main wholesalers, said last week it would curtail its already limited purchases of prescription drugs from secondary wholesalers.

• New York Attorney General Eliot Spitzer last month subpoenaed Cardinal and the other two major wholesalers, McKesson and AmerisourceBergin, as part of an ongoing investigation of the secondary wholesale market.

• A federal grand jury last week indicted six people and six businesses in Utah, New York, New Jersey and California for allegedly diverting a wide range of prescription drugs and selling them to pharmacies. The drugs were then sold to patients.

The indictment said one drug, Procrit, needed refrigeration but was not kept cold.

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NEWS

Packager Uses Tags to Protect Injectables

West Pharmacuetical Services has released an RFID-based product and service offering to help pharmaceutical manufacturers guard injectable drugs against counterfeiting.

By Mary Catherine O'Connor

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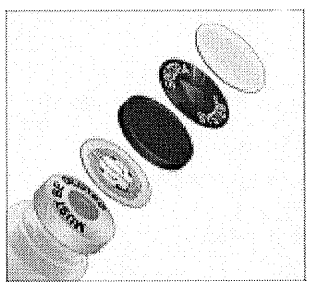
Apr. 29, 2005—Many injectable pharmaceuticals have a high value—a single vial of some drugs can cost thousands of dollars—so counterfeiters can make a significant profit by selling fake or highly diluted versions of the drugs. For this reason, protecting injectable drugs from counterfeiting is especially important to drug manufacturers.

Integrating RFID tags, however, into the packaging for injectable drugs poses significant challenges: Injectable drugs are liquid, and they come in vials sealed with aluminum foil. Liquid and metals can cause RF interference.



The Flip-Off seal with RFID tag

"We have the two biggest enemies to RFID functionality as part of our package," says Carol Mooney, market manager for injectable drugs for West Pharmaceutical Services, a Lionville, Pa.-based manufacturer of packaging and components for drug delivery products. But finding a way to use RFID in its vial packaging has been a priority for the company since the Federal Drug Administration formed its counterfeitdrug task force in July 2003. The task force recommended that a number of technologies, including RFID, be used by pharmaceutical companies in order to prevent counterfeit drugs from entering the pharmaceutical supply chain. Earlier this month, West Pharmaceutical Services debuted West Spectra, a product and services package that employs RFID technology to help manufacturers of injectable pharmaceuticals fight drug counterfeiting and tampering.

Around the time FDA formed its task force, West developed a partnership with Doylestown, Pa.-based RFID systems developer TAGSYS to integrate RFID tags in West's trademarked Flip-Off seal, which consists of a round plastic button and a tamper-evident aluminum seal that covers the rubber stopper used on glass vials. Mooney says West Pharmaceutical Services considered other RFID vendors but was impressed with the depth of experience that TAGSYS has in pharmaceutical applications, which includes a deployment of water- and temperature-resistant TAGSYS tags that were attached to surgical

garments for an inventory application and also a trial in France where TAGSYS tags were embedded in the caps of test tubes containing biological samples preserved in liquid nitrogen. West also believes that TAGSYS tags are robust enough to withstand the rigors of both the West's manufacturing process and also the shock and vibration the vials are exposed to as they move through the supply chain.

Mooney notes that when RFID tags have been applied to the glass body of vials in test pilots, there have been high failure rates in reading the tags because the chips are often damaged during transport. By integrating TAGSYS' RFID tag into the inward-facing side of West's Flip-Off seal, the chip is protected. By placing the tag on the top of the vial, the reader can pick up its RF signal more easily than if the tag were integrated into a label on the side of the vial.

John Jordon, president of TAGSYS' U.S. operations, says that West wanted to use a high-frequency (13.56 MHz) RFID tag because such a tag offers a high level of readability despite the vials' metallic seal and liquid contents. He believes that using UHF on the vials would have been out of the question because the level of readability would be significantly lower. "You just plain couldn't get UHF to do the job nearly as well as HF," he says.

TAGSYS is using a Philips Icode 1 RFID chip in its Spectra product. The chip does not meet any ISO standards, but Jordon notes that it has become a de facto standard among HF applications and that most readers on the market are interoperable with tags made with Icode chips. Jordon says the chips can be quickly encoded and read: More than 150 of the Icode tags can be encoded per minute, and more than 500 can be read per minute.

Drug manufacturers will write an EPC code, and possibly other data pertaining to the drug, to the RFID tag in each Flip-Off seal, and this tag will be used to track and trace the product as it moves through the supply chain. The standards and processes that manufacturers, supply chain partners, wholesalers and retailers will need to follow in order to maintain electronic pedigrees for drugs have not been finalized. But Mooney says she is confident that the technologies used in the Spectra offering will fit within those standards as they become finalized through the FDA and EPCglobal. She says that users of the Spectra product could also use the RFID tags to automate their inventory-taking processes.

An additional benefit of the Spectra Flip-Off seal is that once the entire seal is removed, it cannot be reattached. This is because the structure of the aluminum foil seal under the plastic button changes when it is removed. The plastic button that sits on top of the foil seal, however, can be removed without compromising the integrity of the foil seal. Important drug information, such as recommended dosage and expiration dates, can be printed on the aluminum seal. This will allow users of the drugs to remove the plastic button containing the RFID tag at the point of purchase—which they might want to do so that the RFID tag does not remain with the product as they leave the pharmacy—without also removing important prescription information and without compromising the integrity of the drug inside the vial.

One major global pharmaceutical manufacturer, the name of which neither TAGSYS nor West could disclose, is currently conducting a pilot test of the West Spectra packaging. Jordon says this testing consists of tagging a small quantity of vials and putting them through the pharmaceutical maker's supply chain. When they reach their final destination, whether a pharmacy or a hospital, the vials' tags are read to certify that they are still functioning. The tagged vials, however, are not being sold or administered. Mooney says West is in discussions with a half-dozen other pharmaceutical companies that are also interested in testing the packaging.

TAGSYS will deploy RFID readers and antennas at the facilities of West's

customers and also integrate the data generated from the item-level reads into the users' legacy enterprise resource planning systems. But West will act as the main point of contact for its Spectra customers, coordinating the hardware deployment and service visits between TAGSYS and West's customers. Mooney says West will offer to integrate other technologies for authentication into the Spectra offering, according to the customer's wishes. The Spectra product and service offering is available now; pricing will be negotiated depending on the size and specifics of each deployment.

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Policy Forum

The Global Threat of Counterfeit Drugs: Why Industry and Governments Must Communicate the Dangers

Robert Cockburn[☯]*, Paul N. Newton[☯], E. Kyeremateng Agyarko, Dora Akunyili, Nicholas J. White

Introduction

The production of substandard and fake drugs is a vast and underreported problem, particularly affecting poorer countries. It is an important cause of unnecessary morbidity, mortality, and loss of public confidence in medicines and health structures. The prevalence of counterfeit drugs appears to be rising (see "The Scale of the Problem") and has not been opposed by close cooperation between drug companies, governments, or international organizations concerned with trade, health, customs and excise, and counterfeiting.

In this article we suggest that many pharmaceutical companies and governments are reluctant to publicize the problem to health staff and the public, apparently motivated by the belief that the publicity will harm the sales of brand-name products in a fiercely competitive business. Publicly, at least, several industry sources say the justification for secrecy is to avoid any alarm that could prevent patients taking their genuine medicines. We argue that this secrecy, and the subsequent lack of public health warnings, is harming patients and that it is also not in the long-term interests of the legitimate pharmaceutical industry. We urge a change to mandatory reporting to governmental authorities, which should also have a legal duty to investigate, issue appropriate public warnings, and share information across borders. This is not a role for the pharmaceutical industry, which has a serious conflict of interest.

While some drug companies have given public warnings to protect patients, others have been criticized for withholding information and, in a recent development in the United States, taken to court for failing to act. The industry is addressing the problem. In 2003, US pharmaceutical companies made an agreement with the US Food and Drug Administration (FDA) that they would report suspected counterfeit drugs to the FDA within five days of discovery (see "Companies That Have Warned"), although this remains a voluntary arrangement. In many poorer countries, where the problem is at its worst, there are no similar governmental and industry initiatives.

The Policy Forum allows health policy makers around the world to discuss challenges and opportunities for improving health care in their societies.

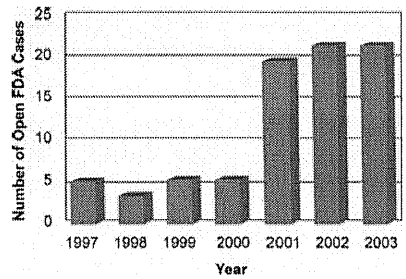
The Scale of the Problem

It has been estimated that up to 15% of all sold drugs are fake, and in parts of Africa and Asia this figure exceeds 50% ([1,2,3,4,5,6,7]; R. Jones, FDA spokesperson, E-mail statement, 18 November 2004). The FDA estimates that fake drugs comprise approximately 10% of the global medicine market (R. Jones, FDA spokesperson, E-mail statement, 18 November 2004). This estimate suggests annual criminal sales in excess of US$35,000,000,000 [1,2]. The number of investigations of possible counterfeit drugs by the FDA has jumped from about five per year in the 1990s to more than 20 per year since 2000 (Figure 1).

Most of the literature on fake drugs derives from local investigative journalism [6,8,9,10,11,12,13,14], with little scientific public health enquiry relative to the enormous scale of this criminal enterprise. The effects on patients of counterfeit medicines are difficult to detect and quantify, and are mostly hidden in public health statistics. The estimate of 192,000 patients killed by fake drugs in China in 2001 gives an indication of the scale of human suffering (see Sidebar).

Secrecy and Counterfeit Medicines

Most data on the epidemiology of counterfeit drugs are kept secret by



DOI: 10.1371/journal.pmed.0020100.g001

Figure 1. The Number of Investigations of Possible Counterfeit Drugs by the FDA Has Been Rising
(Figure: Margaret Shear, Public Library of Science, adapted from [39])

Citation: Cockburn R, Newton PN, Agyarko EK, Akunyili D, White NJ (2005) The global threat of counterfeit drugs: Why industry and governments must communicate the dangers. PLoS Med 2: e100.

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Abbreviations: FDA, US Food and Drug Administration; GSK, GlaxoSmithKline; NAFDAC, Nigerian National Agency for Food and Drug Administration and Control; PSI, Pharmaceutical Security Institute; WHO, World Health Organization

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Competing Interests: NJW is on the editorial board of *PLoS Medicine*. RC, PNN, EKA, and DA declare that they have no competing interests.

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☯These authors contributed equally to this work

DOI: 10.1371/journal.pmed.0020100

the pharmaceutical industry and by governmental agencies. Drug companies employ investigators to track down and facilitate the shutting down of counterfeit industries, but this occurs very much in private.

There are no reliable accessible databases whereby health workers or the public can access current details of which products are being faked in a locality. It is obviously correct that information on anti-counterfeiting strategies and the sources of undercover intelligence should not be released, but we believe that the information on what drug is being counterfeited, and where, should be public knowledge [1].

Government Reluctance

Governments are also often reluctant to publicize problems with the quality of the drug supply in their country. This is reflected in the lack of action in much of the world regarding the problem of counterfeits, relative to their large impact on public health. The World Health Organization (WHO) has a reporting system and some of the information is publicly available [15]. The public information, crucially, does not include the country or region where the fakes were identified. However, the WHO has received no reports of counterfeit drugs from member countries after 2002, and it received only 84 reports between 1999 and 2002 [16,17].

In some countries, government officials have been accused of involvement in the false certification of counterfeit drugs, while in others, governmental agencies have been criticized for suppressing information [9,18]. The WHO in the Western Pacific region, an area severely affected by counterfeit drugs, is planning a rapid alert system for expediting the sharing of warnings and information between governments in the region.

Pharmaceutical Industry Survey

We wrote to the Pharmaceutical Security Institute (PSI) (see Box 1), which collates information on fake drugs obtained by the industry, asking whether they currently forwarded reports of counterfeit drugs to the relevant governments and the WHO. This question was not answered, but the PSI (in a letter dated 29 July 2003) informed us that, "Since its inception, it was recognized that a great deal of this information it [the PSI] contains would remain confidential and would not be disseminated. There is proprietary information that cannot be disclosed, either to peer member companies or to the general audience. Consequently, at this time the dissemination of information…is restricted and limited." The letter added that the PSI encourages its members to report counterfeiting incidents to the appropriate authorities, and that it fully supports the voluntary reporting to the FDA. We also wrote to 21 major companies, of the more than 70 pharmaceutical companies with offices in the United Kingdom, asking for information on the companies' policies on what action should be taken and who should be told when one of their products was found to be counterfeited. We have received replies from six companies; one (Merck Sharp and Dohme) declined to give any information, while three (GlaxoSmithKline [GSK], Bristol-Myers Squibb, and Novartis) stated that they would inform the local drug regulatory authority if they were notified that one of their products was being counterfeited.

Paucity of Warnings about Fake Drugs

That many pharmaceutical companies, professional organizations, and governments, both in developed and developing countries are not releasing warnings is manifested by the paucity of warnings relative to the scale of the problem. The industry's history of secrecy over data about fake drugs, and claims of a commercial motivation, go back over 20 years. In 1982, a spokesperson for the Association of the British Pharmaceutical Industry said, "It is difficult to declare a [fake drug] problem without damaging legitimate business" [13]. This impression of secrecy is supported by historical statements, such as the following: "The Society [Royal Pharmaceutical Society of Great Britain] is not issuing press releases [about counterfeit drugs] because it believes that as much as possible should be done behind the scenes…and that no great publicity should be sought because it could damage public confidence in medicines" [19]. But the Royal Pharmaceutical Society of Great Britain has recently revised its position. David Pruce, Director of Practice and Quality Improvement for the organization, told us (E-mail letter, 14 February 2005), "If

Recent Examples of Counterfeit Drugs

- Approximately one-third to one-half of packets of artesunate tablets, the pivotal, life-saving anti-malarial drug, recently bought in Southeast Asia were fakes, containing no active ingredient at all. A nongovernmental organization in a Southeast Asian country bought 100,000 inexpensive "artesunate" tablets only to find that they were counterfeit [7,39]. See Figure 2 for examples of fake artesunate being sold in mainland Southeast Asia.
- A total of 192,000 Chinese patients are reported to have died in 2001 from fake drugs, and in the same year Chinese authorities "closed 1,300 factories while investigating 480,000 cases of counterfeit drugs worth 57 million USD" [12]. In 2004, Chinese authorities arrested 22 manufacturers of grossly substandard infant milk powder and closed three factories after the death of over 50 infants [40].
- In North America, counterfeit atorvastatin [41], erythropoietin [41], growth hormone [33], filgrastim [33,41], gemcitabine [36,37], and paclitaxel [36,37] have been reported recently.
- Nigeria recently threatened to ban the import of all drugs from India, a major supplier, because of the high prevalence of counterfeits amongst the imports [42].
- In Haiti, Nigeria, Bangladesh, India, and Argentina, more than 500 patients, predominantly children, are known to have died from the use of the toxin diethylene glycol in the manufacture of fake paracetamol syrup [43,44,45].
- During the 1995 meningitis epidemic in Niger, the authorities received a donation of 88,000 Pasteur Merieux and SmithKline Beecham vaccines from neighbouring Nigeria. The drugs were found to be counterfeit, with no traces of active product. Some 60,000 people were inoculated with the fake vaccines [24].
- The recent discovery of counterfeit antiretrovirals (stavudine-lamivudine-nevirapine and lamivudine-zidovudine) in central Africa [46] raises the prospect of a disastrous setback in the treatment of AIDS in sub-Saharan Africa, unless vigorous action is taken now.

there is a risk that a patient has been dispensed a counterfeit medicine, then it is vital that they are informed. There have been two recent cases in Great Britain where counterfeit medicines appeared in the legitimate pharmacy supply chain. The public announcement of the problem of the counterfeit medicines was therefore entirely proper and necessary." He added, "It is important that news stories of this type are handled responsibly so that the public's confidence in their medicines is not undermined. This could deter patients from taking genuine medicines."

This assessment, that the dangers of causing alarm amongst the general public could outweigh the benefits of disclosure, remains widespread in public statements. A spokesperson for the Association of British Pharmaceutical Industries, Marjorie Syddall, wrote (E-mail letter, 20 October 2003), "A company should be completely satisfied that a medicine is counterfeit before informing the authorities, but more importantly still, before it makes this information known to the public—so that no unnecessary alarm is caused."

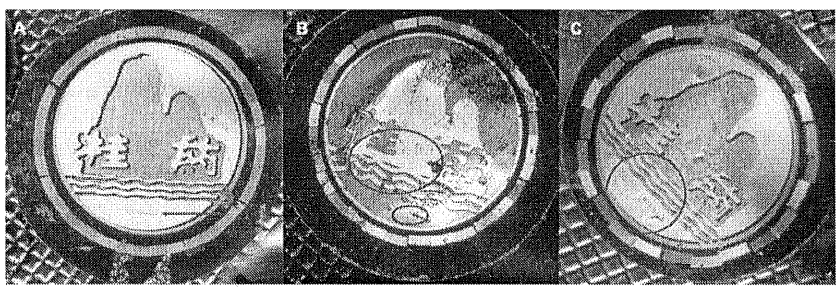
Commercial Motivation—"Cut-Throat Competition"

Chris Jenkins, a founding member of the PSI, now Associate Director of Pinkerton Consulting and Investigations, told us (E-mail statement, 9 December 2004), "It is necessary to keep fake drug information confidential for commercial reasons...to avoid media leaks and to prevent the possibility of rival drug companies taking unfair commercial advantage of a victim company." He explained, "At the outset, we [the PSI] were against having data online that anyone could interrogate...If a patient came to harm as a result of a counterfeit product, the company's good reputation is in danger of disappearing, together with a loss of confidence in the products... The one thing we were trying very hard to do was to keep it [data] out of the hands of the commercial people in any of the companies...The importance of meeting sales' targets is such that you can even find cut-throat competition between different operating divisions of the same company, let alone between two companies competing in the same market with similar drugs."

The WHO 1999 guidelines for the development of measures to combat counterfeit drugs states that "the reluctance of the pharmaceutical industry, wholesalers and retailers to report drug counterfeiting to the national drug regulatory authorities could impede the national authorities from successfully taking measures against counterfeiting", and suggests "the compulsory reporting to the relevant authorities of any incidents in which counterfeits are detected or involved" [20]. A recent review of the law and counterfeit drugs calls for the "eradication of the clandestine status of records and counterfeit drug information" [21]. At the International Conference of Drug Regulatory Authorities in Madrid in February 2004, it was stated by the WHO that "the drugs industry had a great deal of data but was 'very reluctant to make them available'" [17].

Information Strictly Confidential

In the US it was reported that it had been "very difficult to obtain citable factual information about the extent of the problem of counterfeit drugs. Drug companies keep the information they have strictly confidential" [22]. In 1989, the British Department of Health and Glaxo (now a part of GlaxoSmithKline) were criticized for not publicizing information about the discovery in Britain of fake Glaxo Ventolin asthma inhalers. London's *The Times* obtained the fake Ventolin's licence and batch numbers for a story, prompting the release of the information. Warning letters, drafted by Glaxo and the Department of Health, were sent to all 14,000 pharmacists in Britain five weeks after the fake's discovery [8]. In 1998, the company Schering do Brasil was accused of keeping secret the discovery of oral contraceptive pills made of wheat flour for 30 days while they carried out their own investigation [23]. According to the *Far Eastern Economic Review*, the company was fined US$2.5 million by the Brazilian government [6]. Schering do Brasil informed us (E-mail letter, 17 February 2005) that "Federal Justice cancelled the fine in 2002 after the company appealed". In Niger, in 1995, one of the fake meningitis vaccines originating from Nigeria was labelled as made by SmithKline Beecham, but *Le Monde* reported that the company did not act against the counterfeiters, afraid that it might damage trade [24].



DOI: 10.1371/journal.pmed.0020100.g002

Figure 2. Genuine and Fake Guilin Pharma Artesunate Blister Pack Holograms Found in Mainland Southeast Asia
(A) is the genuine hologram attached to the blister packs of the genuine Guilin Pharma artesunate. The red arrow points to a legend stating "GUILIN PHARMA", which is visible with the naked eye as a thin strip below the waves, but can only be read with a microscope (letters are about 0.1 mm high).
(B) is a fake artesunate blister pack hologram: the upper red ring shows that the hologram has crescents, rather than a continuous blank line, between mountain and waves, and the lower ring shows that there is no "GUILIN PHARMA" legend.
(C) is also a fake artesunate blister pack hologram: the red ring shows that the "GUILIN PHARMA" legend is present but the letters are of larger font than those on the genuine hologram and can be read with the naked eye (letters are about 0.3 mm high).
A warning sheet giving more details and photographs is available in [47].
(Photos: Paul Newton, Wellcome Trust SE Asian Tropical Medicine Research Units)

Fake Paediatric Anti-Malarial Drugs

The need to release fake drug information is acute in Africa, where a resurgence of malaria is killing an estimated one million people a year, the vast majority of them children under five [25]. One example

Box 1. The Pharmaceutical Security Institute

The PSI is a not-for-profit corporation formed by the major drug companies to collate their fake drug information to cooperate in fighting the racket. Based in Vienna, Virginia, United States, the PSI holds the only known comprehensive and updated source of fake drug information. The PSI Web site (www.psi-inc.org) states, "On a daily basis, many individuals unknowingly risk death or serious injury to their health by taking counterfeit pharmaceuticals." But its databank, which health workers see as holding key information to prevent patients from taking life-threatening fakes, is not accessible to the WHO, health authorities, or the public. Such is the secrecy of the PSI's information, that access is restricted even between its member companies, which include the 15 largest drug manufacturers.

highlights the problems encountered. One of us (K. Agyarko) found counterfeits of the GSK paediatric anti-malarial syrup halofantrine (Halfan) in August 2002 in Ghana. That month he prepared a public health warning. Agyarko and his deputy told the BBC [26] that he also alerted GSK's Ghana agent, who visited him with staff from GSK's London headquarters and took away samples of the fake Halfan. Agyarko publicly stated (on 23 September 2002, at the First Global Forum on Pharmaceutical Anticounterfeiting in Geneva, Switzerland) [26] that he was asked by GSK to withhold his public warning because it would "damage" their product. After his meeting with GSK, no warning was issued. In a written statement (E-mail letter, 24 October 2003), GSK denied receiving Agyarko's fake Halfan alert and said the company was "not provided with any samples of fakes by the authorities in Ghana".

After a year of enquiries, resulting in a BBC Radio programme (BBC Radio 4, "File on 4", 5 October 2004) [26], GSK reversed its position and said that its local agent had "bumped into" Agyarko and had received his alert and samples of fake Halfan syrup. In a new statement (E-mail letter, 5 October 2004) GSK said: "At no point was any pressure put on the Ghanaian authorities not to issue a public warning on fake Halfan." GSK's vice president of communications, Louise A. Dunn, told us (E-mail letter, 6 October 2004), "There was some confusion over the interactions with Mr Agyarko. The key point here is that there was no wrong doing..."

However, the Ghana incident needs to be viewed in the context of the wider illegal trade in fake Halfan syrup identified in West Africa, and GSK's reluctance to give us details about this trade. We asked GSK whether it had issued any public warnings about fake Halfan syrup, but the question was not answered. The only reference to counterfeit halofantrine syrup that we have been able to find in the public domain was published in a specialist technical journal that described the mass spectroscopy analysis of fake halofantrine syrups by the GSK Medicines Research Centre [27] and demonstrated that the fake syrups contained two potentially harmful sulphonamide drugs, but no halofantrine. We wrote to GSK (letter, 20 June 2003) asking when and where discoveries of fake Halfan were made, and whom GSK had informed about them. GSK told us only that "counterfeit Halfan is present in Nigeria and Sierra Leone" (letter, 21 July 2003). It gave no details of preparation type or discovery dates.

Fake GSK Halfan syrup was discovered in Nigeria in June 2002 by the Nigerian National Agency for Food and Drug Administration and Control. NAFDAC alerted GSK and issued a public health warning in June 2002 in the regular NAFDAC fake drug bulletin [28], giving the fake Halfan syrup's identifying details. The NAFDAC's Dora Akunyili told BBC Radio (5 October 2004): "It is more dangerous not to alert the public. We will still issue a warning even if we find it in only one shop. If you find any fake drug product in only one shop you can be sure it is in many villages...We don't defend companies. We are defending the people" [26].

The Pharmaceutical Board of Sierra Leone, which handles fake drug cases, was not informed by GSK of any discoveries of fake GSK Halfan syrup, according to its director Michael J. Lansana (E-mail letter, 21 January 2004), although it did receive a report of counterfeit adult Halfan caplets from GSK. Later, GSK told us (E-mail letter, 6 October 2004) the fake Halfan syrup it had tested was found in Sierra Leone in late 2001, and that it had informed Sierra Leone's Minister of Health and Sanitation of the find.

Only a single report of counterfeit halofantrine, which does not specify details of preparation type or location, is given in the WHO Counterfeit Drug Reports for 1999–October 2000 [15].

Cross-Border Threats and Cooperation

The fake Halfan syrup cases highlight the importance of communication and cross-border cooperation, and the need for industry and governments to inform neighbouring countries when a fake is found. The global distribution and the scale of the racket in fake adult Halfan capsules was clear in December 2000, when Belgian customs seized 57,600 packs of fake GSK Halfan capsules (and 4,400 packs of fake GSK Ampiclox [ampicillin] and 11,000 packs of fake GSK Amoxil [amoxicillin]) en route from China to Nigeria. The counterfeiters in China were found to be preparing to export 43 tons of 17 brands of drugs from seven international pharmaceutical companies [29].

Companies That Have Warned

Sometimes pharmaceutical companies have publicized information to alert health workers and patients and governments to the dangers of counterfeited or tampered products. For example, Johnson and Johnson, Serono, Hoechst, Wellcome Foundation (now part of GSK), GSK, and Genentech have publicized information on their drugs that have been counterfeited or tampered with. In 1982, cyanide-laced paracetamol killed seven people in the US. The pharmaceutical company whose product had been tampered with, Johnson and Johnson, issued alerts and cooperated with the investigation, and although the financial cost to the company was large, its long-term reputation was probably enhanced. Other companies, at least initially, did not take advantage of the disaster for their own financial gain [30]. In 2002, Johnson and Johnson issued 200,000 letters to health-care professionals in the US warning them of fake Procrit (erythropoetin) within one week of being notified of a severe counterfeit

problem [31]. In 1982, Hoechst voluntarily took out magazine adverts in Lebanon to warn pharmacists and customers of a fake of its drug Daonil (glibenclamide) for the treatment of diabetes mellitus [13]. In 2001, Serono was told by the FDA to issue a public warning to hospitals, clinics, and patients in seven US states after the discovery of a counterfeit of its drug Serostim, a human growth hormone used in the treatment of AIDS and other conditions [32]. In 1984, in Thailand, the Wellcome Foundation (now part of GSK) publicized the discovery of fakes of its antibiotic Septrin (co-trimoxazole) that lacked any active ingredients, and the company's efforts to stop its production. Wellcome also had reports that the fakes were being imported into the UK, which it made public along with the warning that it sent to the British Embassy in Bangkok [14]. In 2001, GSK made public the discovery of fakes of its AIDS treatment Combivir (zidovudine + lamivudine) [32], and Genentech publicized information on fakes of Neupogen (filgrastim) [33].

The Pharmaceutical Research and Manufacturers of America announced in April 2003 that, from 1 May 2003, its 60 members would voluntarily report to the FDA "within five working days of determining that there is a reasonable basis to believe their product has been counterfeited" [34]. This is an important local development but it should be mandated by law and become a global standard. Indeed, we have not found one country where drug companies have a legal duty to report discoveries of counterfeits of their products to public health or trade authorities.

The Sharing of Information on Counterfeit Medicines

We suggest that the pharmaceutical industry, which is such a benefit to our health, is harming both patients and itself by not vigorously warning the public of fake products when they arise. Apart from the moral imperative, there is the prospect of growing legal pressure on drug companies to take responsibility for fakes of their products. In Britain, there are proposals to introduce a charge of "corporate killing" for companies who have contributed to the deaths of customers [35] that could also apply to drug companies if they do not take reasonable steps to warn the public of a fake product.

Drug Companies Sued in the US

Already, the US has seen the first court case brought against two drug companies for allegedly failing to act to protect customers over a fake drug discovery. In 2002, a Kansas City pharmacist was jailed for diluting the anticancer drugs Gemzar (gemcitabine) and Taxol (paclitaxel). The victims and dead patients' families sued the drug companies, Eli Lilly and Myers Squibb, for not taking steps to stop him. The companies argued that they had no duty to protect the plaintiffs from the pharmacist's criminal acts, but a newspaper reported that Eli Lilly and Myers Squibb settled out of court, apparently for US$72 million, avoiding a legal precedent that would hold drug companies liable for not disseminating such information [36,37].

Chris Jenkins suggests that the PSI could face a legal challenge to open its fake drug databases (E-mail, 9 December 2004): "Only the PSI had an overview of the known racket...In theory, every fake drug case reported by the companies should be on there." He is concerned that private investigators could be liable for fake drug data they obtain for client companies.

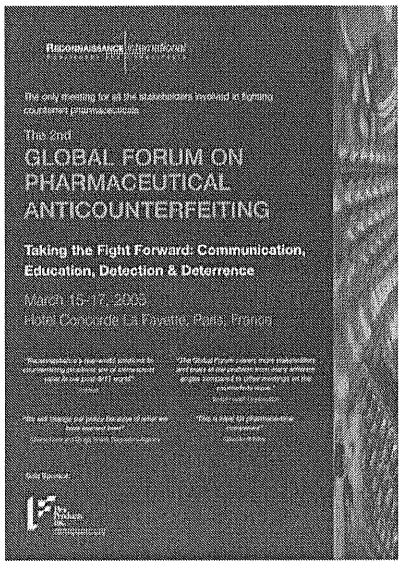
Governments Must Enforce a Legal Responsibility

We believe that the industry, along with pharmacists, health workers, and governments, needs to extend the "behind the scenes" fight against fakes to a public collaborative approach with a legal responsibility to report suspected counterfeits to drug regulatory authorities, in a similar way to the reporting of "notifiable" infectious diseases. The drug regulatory authorities, accountable to the consumers of drugs, should have a statutory duty to investigate and disseminate the information, with the interests of patients as the prime concern. Drug regulatory authorities in economically poor countries will need additional financial support.

We recognize that false information could seriously damage a company and that information should be verified and used prudently. We also recognize that careful public information measures will be needed to prevent patients from stopping the use of genuine products, but suggest that this is possible as pharmaceutical companies can, and have, alerted the public in collaboration with government agencies (see above). However, the decision to warn the public should not be made by the pharmaceutical industry alone, which has a serious conflict of interest. We believe that the long-term interests of both the industry and patients are best served by more openness and social responsibility to public health. Company staff and shareholders should not be in a position to adjudicate conflicts

DOI: 10.1371/journal.pmed.0020100.g003

A collection of counterfeit pharmaceutical drugs seized by the NAFDAC in Nigeria
(Photograph: NAFDAC/International Chamber of Commerce Counterfeiting Intelligence Bureau)



DOI: 10.1371/journal.pmed.0020100.g004

Figure 3. Poster Advertising the Second Global Forum on Pharmaceutical Counterfeiting (Figure: Ian Lancaster, Reconnaissance International)

between commercial gain and public health—such adjudication should be in the hands of government departments accountable to the public.

Aviation Industry Model

The UK Civil Aviation Authority provides a model: suspected unapproved aircraft parts must, by law, be reported to it [38]. When a report of a counterfeit drug is confirmed, the drug regulatory authorities should be responsible for assessing the public health importance of the information and deciding when and how to alert the country's police, trade, customs authorities, and public, and also the drug regulatory authorities of other countries that may be affected, with the assistance of Interpol as required. If a drug regulatory authority is confident, for example, that the fake drug has been intercepted before it has reached the pharmacies, a public alert may not be necessary. The "confusion" reported in the GSK Halfan syrup case also illustrates the great importance for both companies and government departments to keep a secure paper trail of information so that it is clear what has happened and when.

The pharmaceutical company is also a victim of the counterfeiter and should be supported by governmental authorities if it reports promptly. Individuals who report information on counterfeit drugs should remain anonymous and be protected from the criminal counterfeiting underworld, which may exact retribution. International agreements between companies to avoid taking advantage of competitors' misfortunes, when precipitated by rumors or confirmed reports of fake drugs, may facilitate enhanced cooperation within the pharmaceutical industry.

International Convention against Counterfeit Drugs

The Madrid meeting in 2004 considered a proposed international framework convention on counterfeit drugs, presented by the WHO, to promote international cooperation and the exchange of information [17]. If enacted this could be a very important contribution to improving drug quality. The effective control of the global epidemic of counterfeit and substandard drugs will not be easy, and will need a multifaceted approach: the provision of effective, available, and inexpensive drugs; the enforcement of drug regulation; more openness by governments as to the scale of the problem; more effective police action against the counterfeiters and those who may be corrupt allies within government and industry; enhanced cooperation between the industry, police, customs, and drug regulators; and enhanced education of patients, drug sellers, and health workers [4,5,20]. We urge the industry and governments to act, through the sharing of crucial public health information, to facilitate the protection of patients and improve the quality of an apparently deteriorating drug supply.

Counterfeit Drug Conference in Paris

On 15–17 March 2005, the Second Global Forum on Pharmaceutical Anticounterfeiting will convene in Paris, where representatives of the major pharmaceutical companies, governments, medical and scientific professionals, law enforcement agencies, nongovermental organizations, and private investigators will meet to discuss the growing problem that threatens patients and the pharmaceutical industry (Figure 3). ■

Acknowledgments

We are very grateful to Dr. Lembit Rago, WHO Essential Drugs and Medicines Department; Dr. Allan Schapira, WHO Roll Back Malaria Department; John Anderson, Chairman of the Global Anti-Counterfeiting Group; Mark Morris, *Kansas City Star*; Erik Madsen, Interpol; Danièle Letoré, Genevensis; and Marie Ose, Agence France Presse. We are very grateful to Professor Marcus Reidenberg, Cornell University, and Michael Lansana, Head of the Pharmaceutical Board of Sierra Leone, for their support for the arguments put forward in this article. PN and NJW are supported by the Wellcome Trust of the UK.

Author contributions. All authors researched the information for this review, RC and PNN wrote the first draft, and all authors contributed to writing the final version of the manuscript.

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