Get the Big Picture

RAND Review covers the big issues with an eye for the important details.
Message from the Editor

Hidden beneath the grim surface of the three major feature stories in this issue is a surprisingly hopeful message about the worthiness of interagency collaborations—at the local, national, and international levels. Public institutions that coordinate their resources can greatly increase the likelihood of resolving, or at least ameliorating, otherwise intractable policy problems.

Few social ills in America seem as resistant to change as gun violence among inner-city youth. And yet a collaboration of community groups and public agencies in the famously decentralized city of Los Angeles succeeded in reducing gun violence among multigenerational gangs. In our cover story, George Tita and his associates explain how the temporary reductions in violence could be made permanent. One key recommendation is to strengthen the interagency linkages, both by supporting them financially and by holding them accountable for their work.

Nationally, the number of Americans without health insurance soared last year by 2.4 million, the biggest single-year increase in a decade, raising the total to 43.6 million people. That’s roughly 15 percent of the U.S. population. As Susan Marquis and Stephen Long explain, several state governments have made halting progress toward insuring their residents and strengthening the safety net of public health services. However, the real hope lies in a tighter collaboration among state and federal agencies to accomplish what the states alone cannot accomplish.

On an international level, the relentlessly antagonistic postures of U.S. and Russian nuclear forces stand out as superb examples of bureaucratic inertia among security agencies in both countries. To break the dangerous and needless impasse, David Mosher and Lowell Schwartz suggest a series of steps that can be negotiated between the two nuclear establishments. In this case, however, bilateral interagency and intermilitary collaborations alone can do very little to solve the problem. It will depend principally on the exercise of presidential leadership.

—John Godges

On the Cover

Angelenos gather at Delores Mission School in Los Angeles for the 3rd Annual Victims’ Rights Vigil & Community Information Fair on Apr. 5, 2003. Upper left: Law enforcement authorities observe a moment of silence. Shown are Lee Baca, Los Angeles County Sheriff; Jim McDonnell, of the Los Angeles Police Department; Debra Yang, of the U.S. Attorney’s Office; Earl Thomas, of the Los Angeles City Attorney’s Office; and Steve Cooley, Los Angeles County District Attorney. Upper right: Los Angeles City Attorney’s representative Maria Guerrero, second from right, consoles Maria Atilano, far right, whose son was killed by gang violence. Lower left: Brenda Florence, second from left, is a mother of three sons killed by random gang violence. Lower right: George Gutierrez, center, pushes a flag-draped mock coffin in memory of his brother during a Los Angeles rally. The protesters demand a greater police presence in the Boyle Heights neighborhood to reduce gang-related shootings like the one that killed disabled veteran Robert Gutierrez in front of his brother and young nephew.

AP/WIDE WORLD PHOTOS/DESMAN DOVARGANES

AP/WIDE WORLD PHOTOS/KRISTA NILES

4 News
- Progress among high-risk youth
- Sex lessons from television
- The myth of homework
- Rare care for age-related conditions
- A toe in Qatar
- Self-protection against terrorism
- Inadequate protection for emergency responders
- Sea containers as tools of terrorism
- The shrinking military aircraft industry
- The swelling ranks of the obese

10 Perspectives
Molecular Manipulation
How tiny particles are becoming big business

12 Excessive Force
Why Russian and U.S. nuclear postures perpetuate Cold War risks
By David E. Mosher and Lowell H. Schwartz

16 COVER STORY
Unruly Turf
The role of interagency collaborations in reducing gun violence
By George Tita, K. Jack Riley, Gregory Ridgeway, and Clifford Grammich

23 Laboratories of Reform
State health insurance experiments yield lessons for the nation
By M. Susan Marquis and Stephen H. Long

28 Overcompensating?
A tool to refine policies for retaining military personnel
By John Ausink

30 Commentary
No Base Is an Island
Why the military needs formal agreements with civilian authorities on domestic violence cases
By Laura Hickman
News

Project ALERT Helps Even High-Risk Teens

Critics have argued that school-based drug prevention efforts have failed to help high-risk adolescents. But a new study has shown that the RAND-developed Project ALERT program successfully curbs the use of alcohol, cigarettes, and marijuana among middle-school students—even high-risk youth who have already started smoking and drinking by the seventh grade.

The results are based on a randomized, controlled study of the effectiveness of Project ALERT in 55 middle schools in South Dakota from 1997 to 1999. Nationwide, the program reaches more than 1 million adolescents in all 50 states.

Compared with control students, Project ALERT students reduced their use of cigarettes, marijuana, and alcohol. The program was especially successful with the highest-risk early drinkers, substantially reducing their likelihood of engaging in risky forms of alcohol use (such as binge drinking) or of experiencing other problems from drinking. The program also helped keep those who had experimented with cigarettes from making the transition to regular smoking.

“These early smokers and drinkers have substantially elevated risks for increased drug use and a variety of other high-risk behaviors such as violence, unsafe sex, and dropping out of school,” said lead author Phyllis Ellickson.

“These are precisely the youth who need help the most. Curbing alcohol and cigarette use among these high-risk youth when they are in middle school may help prevent the emergence of more serious problems later on.”

Can TV Help Teach Teens About Sex?

Television has come under fire for its negative influence on teens, but a new study—part of a national effort examining the role television plays in teen sexual attitudes and behavior—shows that television programs can be responsible sex educators for teens.

The study surveyed a group of teens who watched an episode of "Friends" in which a condom failure caused a pregnancy. Most teen viewers remembered that the pregnancy involved a condom failure. But teen viewers who watched with an adult or discussed the episode with an adult were twice as likely as others to remember this—and also to remember the statistic presented in the episode about condoms being more than 95 percent effective.

“Our study suggests that if more shows included a message about responsible sexual behavior and what the risks are in having sex, we might have fewer problems with teen pregnancy and sexually transmitted diseases,” noted Rebecca Collins, a RAND psychologist.

“But parents are also really important. The message in the ‘Friends’ episode was accurate but a bit ambiguous. Although it’s important to know that condoms can fail when making a decision to have sex, teens might have come away thinking condoms aren’t worth using. The kids who watched the show with their parents or discussed it with an adult got the message that condoms are mostly effective. So it was the parents who determined what was learned, after ‘Friends’ broached the topic.”

Fifty Years of Homework

Do students have too much homework? Do they have too little? Public opinion about homework has been contentious throughout the 20th century. However, the figure below, created by examining major national surveys over the past 50 years, shows there was no “golden age” when American students did massive amounts of homework. Except for a temporary spike in the amount of homework done during the post-Sputnik years, the trend has remained essentially flat. Today, only about one high school student in eight spends more than two hours per day on homework; that share was no higher in 1948 than it is today.

Shortfalls Found in Quality of Health Care for Vulnerable Seniors

About one-third of senior citizens in the United States have health problems that make them vulnerable to losing their independence and their ability to carry out daily activities. When this vulnerable elderly population receives health care, only 31 percent receive the care recommended for age-related conditions, according to a new RAND-UCLA study of treatments given for 22 of the conditions.

Vulnerable older patients received about the same quality of health care as other U.S. adults for various general medical conditions, including diabetes, stroke, and heart disease. But the quality of care dropped off sharply for such age-related illnesses as pressure ulcers, dementia, urinary incontinence, and end-of-life care.

“With the number of Americans over 65 nearing 15 percent of our population, this study should be a sentinel call for improving medical care given to older people,” noted lead author Neil Wenger, a RAND researcher and professor of medicine at UCLA.

The study shows that the health care system must make a major effort to improve the ability of primary care physicians to identify and to treat the diseases of aging. Equally important, older patients and their families need to become better informed about geriatric health care to ensure that these patients receive proper care.

“Family members and patients need to make sure that everything is being done for age-related ailments, just as they would speak up if their chest pain wasn’t being attended to,” said Paul Shekelle, another study author.

“This should be a sentinel call for improving medical care given to older people.”

RAND-Qatar Institute Brings Analytic Capabilities to Middle East

The RAND-Qatar Policy Institute formally opened in Doha, the capital of the Persian Gulf nation of Qatar, on Oct. 13. The new institute is part of Education City, which is being created in Doha as a regional center of excellence in learning, research, medicine, science, engineering, and technology development.

The institute’s primary mission is to become a source of high-quality, nonpartisan, and rigorously objective analysis of the most important and difficult issues facing public and private decision-makers in the Middle East, North Africa, and South Asia. Other missions include building a base of expertise in policy analysis in the region, enhancing the value of various university branches located in Education City by drawing their faculty and students into analyses of important practical problems, and assisting in strategic and operational planning for Education City itself.

To fulfill all these missions, the institute will use its base in Doha as a gateway through which clients can gain access to all of RAND’s capabilities. On behalf of regional clients, the small local staff will “reach back” to RAND offices in the United States and Europe for the right talent to deal with each particular question.

This will enable the institute to undertake analyses across the full range of RAND’s analytical expertise: education, health, science and technology, environmental protection, effective governance, demographics, labor markets, organizational effectiveness, managing social change, and enhancing domestic and international security, for example.

“The integration of RAND-Qatar into Education City is an exciting step in a joint effort in initiating research and analysis and transforming these studies into practical action plans,” said Sheikha Mozah Bint Nasser Al-Missned, chairperson of the Qatar Foundation and consort of the Emir of Qatar, His Highness Sheikh Hamad bin Khalifa Al-Thani.

“The dynamic relationship between research and policymaking will assist Qatar and the region in constructing our own course toward development that utilizes the full capacity of our citizens and preserves our cultural identity.”
How Can Individuals Protect Themselves in a Terrorist Attack?

One of the lasting impressions of the 9/11 terrorist attacks is that Americans are vulnerable to such attacks on their own soil and must prepare for them, just as they prepare for natural disasters like hurricanes or earthquakes.

But unlike the effects of natural disasters, the effects of terrorist attacks—especially those involving chemical, radiological, nuclear, and biological weapons—are unfamiliar to most people, and the instinctive responses of many people during such events could actually lead them into greater danger. Thus, individuals need simple, concrete guidance, tailored to different types of terrorist attacks, to help them survive. A new RAND report seeks to provide that guidance.

Starting with scenarios for chemical, radiological, nuclear, and biological attacks, a RAND research team—consisting of experts with technical, health, and policy backgrounds—developed a strategy for individuals to follow. Critical to any response is rapidly assessing the type of attack that has occurred. The strategy provides guidance about how to make that determination quickly. The strategy explains the characteristics of different types of attacks and then defines an overarching goal and describes specific actions for individuals to take in each type of attack. Finally, the strategy sets forth essential preparatory actions needed to be able to respond to the different types of terrorist attacks.

“In seeking to understand the effects of an attack from an individual’s perspective, we put ourselves in situations to see what needs we would have and then what could be done,” said lead author Lynn Davis. “Even in the most dangerous of attacks, our needs were relatively few and could be met by keeping in mind a set of overarching goals and following some simple rules.”

Individuals are likely to have to act on their own very quickly. “In most cases, the few minutes immediately following an attack, before professional emergency responders are likely to arrive, are critical to survival,” said coauthor Tom LaTourrette. “Our recommendations are intended to help people act rationally to protect themselves while waiting to learn more and for authorities to arrive.”

For more information: Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks (RAND/MR-1731-5F) and Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks: A Quick Guide (RAND/MR-1731/1-SF).
Emergency Responders Believe They Have Inadequate Protection

According to a groundbreaking RAND study, emergency responders in America believe they are inadequately protected against some of the dangers they face, particularly terrorist attacks, and want better protective clothing and equipment, more compatible communications systems, and expanded training and information on safety practices and equipment.

Emergency responders are this country’s first line of defense against fires, vehicle collisions, medical emergencies, crimes, natural disasters, terrorist attacks, and every other conceivable emergency. RAND researchers conducted in-depth discussions with 190 representatives from 83 emergency responder, technology supplier, and research and professional organizations across the nation.

“The majority of emergency responders feel vastly underprepared and underprotected for the consequences of chemical, biological, or radiological terrorist attacks,” the study notes.

The level of protection varies tremendously from service to service and from hazard to hazard. For example, while firefighters are generally pleased with the fire protection their clothing and equipment afford, they are concerned that using the clothing and equipment can cause severe physical stress and overexertion and decrease their perception of imminent dangers.

Emergency medical responders feel inadequately protected against assaults and hazards associated with terrorism.

Police officers feel especially exposed to assaults and automobile injuries during their everyday duties. Police are also concerned that much of the protective equipment needed for terrorism incidents is not designed with the law enforcement mission in mind, such as the needs for running, using weapons, and apprehending suspects.


Shipping Containers Seen as Global Terrorist Targets

Terrorists could use containers on ships to transport weapons and dangerous materials, or terrorists could use the containers themselves as weapons of mass destruction, according to a new RAND Europe report that looks at the global scale of the problem.

Over the course of a year, 15 million sea containers circulate globally, amounting to over 250 million moves annually. Of these 250 million moves, only about 2 percent are physically checked to verify what is inside the containers.

The global sea-container problem is particularly difficult to resolve because it cuts across the public and private sectors. As a result, there is confusion about ownership of, and responsibility for, the problem, with no single stakeholder who can clearly be identified as responsible for implementing countermeasures.

The report identifies a number of ways to improve sea-container security. For example, a new “risk analysis” software tool developed by the European Commission could help to detect suspicious cargo and thus enable it to be intercepted for inspection. Container integrity could be improved by using “active” seals, which have the capability of giving a notification on status change, rather than “passive” seals, which merely indicate whether a container has been opened. The majority of containers currently use only passive seals.

There could be better systems to track and trace containers and better approaches to verify container loads. The report even envisions an “intelligent container” that could scan its own contents, detect illicit and dangerous cargo, and then contact and warn authorities.

But since the private sector dominates the cargo business, implementing any solution will require the private sector to own the problem. This, in turns, means focusing on theft prevention, for which private companies would see some benefit for investment.

Introducing a security tax, such as what is already in place in airports, could also be used to encourage companies with a vested interest in container security to invest in more sophisticated measures, such as active seals.

For more information: “Seacurity” (RAND/MR-1695-JRC).
Is the Military Aircraft Industry Serving U.S. Needs?

When the Joint Strike Fighter—the F-35—is deployed in the future, it will be one of the mainstays of national security. But in another sense, it could represent a threat to national security.

The F-35, to be built by a team led by Lockheed Martin, is the only new fighter aircraft program the U.S. military has planned for the next 30 years. As a result, in the absence of a new major combat aircraft program, the military aircraft industrial base is likely to shrink (see figure), as military aircraft designers with unique skills leave the industry. Such shrinkage could degrade national security by diminishing the industry’s competition and innovation, according to a new RAND report.

“When some manufacturers look to the future, they just don’t see enough business on the horizon,” said John Birkler, a senior analyst at RAND and lead author of the report. “Unless something is done, business practices will dictate that [manufacturers] reassign their talent to other areas. Indeed, this is already beginning to happen.”

While several smaller projects will likely provide work for military aircraft designers, such work will sustain design teams only through the end of the decade. Spreading production of the F-35 among manufacturers has been suggested as a way to support industry competition, but an earlier RAND report found that this option would be very expensive and would do little to preserve unique design and development capabilities.

A better and less-expensive option, according to the report, would be to fund both a continuing series of advanced design studies and the development of experimental concept demonstrators. This approach would yield a range of new technologies and system concepts to support future military capabilities, while sustaining a vigorous and competitive design and development capability in the industry.

But an even more fundamental issue is whether it is in the country’s best interest to preserve the current industrial structure and capabilities. New developments—such as the growing role for unmanned combat aircraft—are likely to alter the military’s requirements in the future.

Instead of preserving the current industrial model, policymakers may want to consider new types of aircraft research and development programs—and new models of the industrial base—that could do a better job of meeting the U.S. military’s future needs.

For more information: Competition and Innovation in the U.S. Fixed-Wing Military Aircraft Industry (RAND/MR-1656-OSD).

“A Shrinking Industrial Base”

<table>
<thead>
<tr>
<th>1960</th>
<th>1980</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lockheed</td>
<td>Lockheed</td>
<td>Lockheed Martin</td>
</tr>
<tr>
<td>General Dynamics</td>
<td>General Dynamics</td>
<td>Boeing</td>
</tr>
<tr>
<td>Boeing</td>
<td>Boeing</td>
<td>Northrop Grumman</td>
</tr>
<tr>
<td>North American</td>
<td>Rockwell</td>
<td>McDonnell Douglas</td>
</tr>
<tr>
<td>McDonnell</td>
<td>McDonnell Douglas</td>
<td></td>
</tr>
<tr>
<td>Douglas</td>
<td>Northrop</td>
<td>Northrop</td>
</tr>
<tr>
<td>Northrop</td>
<td>Vought</td>
<td>Vought</td>
</tr>
<tr>
<td>Vought</td>
<td>Grumman</td>
<td>Grumman</td>
</tr>
<tr>
<td>Grumman</td>
<td>Fairchild</td>
<td>Fairchild</td>
</tr>
<tr>
<td>Fairchild</td>
<td>Republic</td>
<td>Republic</td>
</tr>
<tr>
<td>Republic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fastest Increasing Group of Obese Americans Are “Severely Obese”

Reports that most Americans are either overweight or obese have raised the level of public discussion about obesity. The focus generally has been on typical obesity, or on those roughly 30 or more pounds overweight. Little is known about severely obese individuals, or those roughly 100 pounds or more overweight. Severely obese individuals have much higher rates of chronic health problems and encounter very different challenges in the health care system than do the majority of obese individuals.

A recent RAND report provides empirical evidence to address this issue. According to the study, based on about 1.5 million respondents to the Centers for Disease Control and Prevention’s Behavioral Risk Factor Surveillance Survey, the proportion of Americans with clinically severe obesity quadrupled from 1 in 200 adults in 1986 to 1 in 50 adults in 2000.

This means that the severely obese population is growing twice as fast as the population of Americans who are simply obese and who have been the focus of an “obesity epidemic” that has been widely discussed in health care circles. (For a discussion of the health care costs of obesity, see “Obesity Costs More Than Smoking, Drinking” in the Spring 2002 RAND Review.)

To be classified as severely obese, an individual must have a body mass index (weight in kilograms divided by the square of height in meters) of 40 or more, which corresponds to about 100 pounds or more overweight for an average adult man. Typically, a severely obese man weighs 300 pounds at a height of 5 feet 10 inches, while a severely obese woman weighs 250 pounds at a height of 5 feet 4 inches.

The findings challenge the common belief that severe obesity is a rare pathological condition among genetically vulnerable individuals, affecting a relatively fixed proportion of the population—as if this proportion is not affected by changes in eating and physical activity patterns in the rest of the population. Instead, the data demonstrate that even clinically severe obesity is a part of the population’s weight distribution and reflects all trends. As the whole population becomes heavier, the weight distribution shifts toward the heaviest, which results in the extreme category—the severely obese—growing the fastest (as shown in the figure).

As a consequence, the widely published data on obesity in the United States underestimate the long-term social and cost consequences of obesity, because morbidity and service use are much higher among severely obese individuals than among other obese individuals.

“With these growth rates, accommodating severely obese patients in clinical practice will no longer be an unusual occurrence in the near future,” says the author, RAND economist Roland Sturm. “Doctors, hospitals, and other health providers must be prepared to treat these people on a regular basis.”

---

The findings challenge the common belief that severe obesity is a rare pathological condition.
FOR MOST PEOPLE, nanotechnology—or more precisely, technological applications that arise from manipulating matter at the molecular scale of billions of a meter—exists only in the futuristic realm of science fiction and fantasy. “Borg” drones on Star Trek relentlessly seek to assimilate human beings by injecting them with “nanites.” Or the nanite-empowered spy from the National Security Agency—the newest six-million-dollar man—commands the center of this TV season’s Jake 2.0. However, nanotechnology has also become a growing research field and a large-scale international business endeavor.

With its roots in pioneering work on self-replicating manufacturing systems done by John von Neumann in his pre-RAND days in the 1940s, the formal field of nanotechnology dates back at least to a classic 1959 talk by Nobel-prize-winning physicist Richard Feynman. In his talk, given at the annual meeting of the American Physical Society at the California Institute of Technology (Caltech) and published in the February 1960 issue of Caltech’s Engineering and Science, Feynman argued that “the principles of physics, as far as I can see, do not speak against the possibility of maneuvering things atom by atom.” Nanotechnology, in its current form, aims to manipulate, position, and build individual molecules and, more generally, to create a variety of new features at the “nanoscale.”

Jim Hurd, the director of NanoScienceExchange, discussed nanotechnology in a recent talk at RAND. As a consultant who facilitates interactions between major stakeholders in the United States and global nanotechnology development efforts, Hurd works with start-ups to put together business alliances and to provide them with major rounds of investment. In his RAND talk, he provided insight into the real-world potential of nanotechnology, the current state of the business, and the global extent of nanotechnology work.

The Race Is On

What kinds of nanotechnology products could emerge in the near term? According to Hurd, we could expect to see nanotechnological sensors and devices make their way to market within the next decade. A large number of companies are working on many potential products, including smart materials that repair their own small scratches (think of self-repairing eyeglasses), stain-resistant clothing, lightweight aircraft structures, improved computer memories, chemical catalysts (materials that enhance chemical reactions without themselves being consumed), and flexible solar photovoltaic systems that can be easily stored and deployed in space.

While the range of such products is diverse, Hurd emphasized that “these particular examples are just a sampling of what is in store for us in the near future.” Companies are already working to create, for example, relatively inexpensive flat-screen televisions, based on carbon nanotubes, that may reach markets in the very near future and “bring nanotechnology into clear view in the home.”

Globally, investment funding has grown to enormous proportions in the field and continues to increase. The combination of research and development budgets around the world is in the billions of dollars. The 2003 fiscal year budget for the U.S. National Nanotechnology Initiative—which coordinates the federal research and development programs of multiple agencies working on nanotechnology—was nearly $800 million.
How countries invest in nanotechnology (or “nano-tech”) reveals their different priorities and approaches, said Hurd. In the United States, the focus is on small start-up companies. Several venture capitalists already play an important role in developing nanotech start-ups. As Hurd mentions, “It is important in this regard for a start-up to succeed in a reasonable time with product development, as opposed to simply extending research, to demonstrate a continued viable business model and to secure further funding.”

The investment model is different elsewhere. In some other countries, Hurd noted, “there are closer and more rapid ties between government and industry, with less emphasis on start-ups and more of a presence by major companies at all levels of nanotech development, from encouraging societal awareness to supplying the final market.” This model of development, common among some Asian countries, puts a higher premium on planning for nanotech development.

Who’s Leading the Pack?
At the moment, according to Hurd, the United States occupies a premier position in the field but will need to continue to work hard to keep that position. Several countries are investing hundreds of millions of dollars annually in nanotechnology. Asia is especially strong, and there are major research and development efforts under way in China, Japan, Korea, and Taiwan.

Japanese companies have shown substantial interest in nanotechnology. During an October 2003 conference in Los Angeles, Mitsubishi Corporation discussed its plans to expand fullerene production from 40 tons per year to 1,500 tons per year in the near future. A laboratory curiosity a few short years ago, fullerenes (geodesic molecular structures named after inventor Buckminster Fuller) are now seen as having great commercial potential in areas as diverse as biomedicine, energy, transportation, information, communication, electronics, and the environment.

Fujitsu provided another example of the excitement and real-world possibilities for nanotechnology. The company’s research and development focuses on carbon nanotubes, nano-bio devices that analyze disease, and quantum information technology that could lead to amazingly powerful computers with the ability both to crack encrypted messages and to protect messages by introducing a whole new field of quantum cryptography.

Asia is not the only continent in on the chase. Europe also has strength in nanotechnology, with Russia, Germany, and Britain being the key players. International cooperation and competition are developing quickly in both the business and research and development sides of nanotechnology. As one indication of the interest in the field, Hurd noted that 25,000 people attended a conference on nanotechnology in Japan last February.

Related Reading

**Early RAND Work Was a Catalyst in the Field**

Although nanotechnology has roots going as far back as the 1940s, the field approached a crossroads in the mid-1990s. At that time, many leading scientists were dismissing its promise. However, no serious and objective exploration of it had been done. RAND researchers Max Nelson and Calvin Shipbaugh decided to investigate the potential prospects for themselves, fully believing the conventional scientific wisdom. Instead, they found the opposite.

In a 1995 RAND report, they highlighted many key areas of development, such as smart materials; tailored catalysts; novel chemical structures such as fullerenes, nanotubes, and dendrimers (tree-like molecular structures); chemical methods that self-assemble molecular structures; biomimetic designs that “imitate life”; and molecular modeling tools. Nelson and Shipbaugh pointed out that other possibilities could emerge using atomic force microscopes, ultrafine particle fabrication, and advanced lithography.

The authors noted that molecular manufacturing might offer promise in aiding human health and performance, thanks to synthetic tissues, molecular delivery systems for drugs, and rapid medical diagnostics. On these grounds alone, the authors argued that efforts in nanotechnology could be well worth pursuing.

Nelson and Shipbaugh also offered guidance. They argued for considering a number of valuable steps in a nanotechnology development effort rather than focusing on one final destination. Milestones along the journey would include the proof of principle of not only a highly capable final product, but also of many interim products that could be valuable in and of themselves.

The 1995 report catalyzed the field. In response to the RAND report, many workshops and conferences have brought together leading experts from diverse disciplines to analyze the potential of nanotechnology.

**Related Reading**


Some Reactions from the Technical Community to Nanotechnology, available online at www.zyvex.com/nanotech/reactions.html.
Excessive Force
Why Russian and U.S. Nuclear Postures Perpetuate Cold War Risks

By David E. Mosher and Lowell H. Schwartz

David Mosher is a RAND senior policy analyst with expertise in nuclear weapons policy and ballistic missile defense. Lowell Schwartz is a RAND associate policy analyst.

Russian strategic nuclear forces remain the only current threat to the national existence of the United States. Although the risk of deliberate attack from Russia has sharply fallen since the end of the Cold War, the risk of an accidental or unauthorized use of Russian nuclear forces has arguably risen. For example, Russia’s early-warning system has severely deteriorated, as has the country’s ability to keep its mobile (and thus survivable) nuclear forces deployed. There are additional concerns about the state of Russia’s command-and-control system and the rise of separatist violence.

None of the nuclear arms control treaties after the Cold War have dealt with the issue of accidental or unauthorized use of nuclear weapons. Instead, these treaties have concentrated on reducing the total number of nuclear warheads each side wields. While these reductions are extremely important for improving the overall U.S.-Russian relationship, they do little to ease the risks of an accidental or unauthorized nuclear launch. This is because those risks stem from the nuclear postures and underlying nuclear doctrines of each nation, which remain firmly rooted in the hostile relationship forged during the Cold War.

Thus, even as U.S.-Russian relations have improved dramatically to the point where the two countries are no longer enemies, they continue to view each other in nuclear terms. This imbalance in the political and nuclear relations between the two countries not only perpetuates the risks of accidental or unauthorized nuclear use but also fundamentally impedes further improvements in relations.

To break this impasse and to bring the nuclear component of the U.S.-Russian relationship into better alignment with the improving political relationship, we recommend a “phased” approach that can improve both nuclear safety and the overall binational relationship (see figure). A phased approach represents the best path for overcoming the inertia of the nuclear establishments while still allowing both countries to maintain nuclear forces at a size and posture appropriate for each stage of an improving relationship.

The first phase would entail immediate U.S. unilateral actions and commitments designed to demonstrate the seriousness of the U.S. intent to improve nuclear safety. For instance, the United States could pull its ballistic missile submarines and attack submarines away from Russia. The hope is that Russia would respond with its own unilateral measures. The immediate steps could then lead to near-term, medium-term, and long-term steps to improve mutual safety further.

The long-term goal would be to eliminate the nuclear element from the U.S.-Russian relationship altogether. At this future stage, neither country would view the other as a nuclear threat at all. The best exam-
ple of this kind of relationship is the one between Britain and France. Both are nuclear powers with divergent views on some issues; yet neither country would consider using nuclear weapons or even military force against the other to settle a dispute.

The improving relations between Russia and the United States present a historic opportunity to solve one of the more vexing problems left behind from the Cold War: how to shrink the chance of accidental or unauthorized use of nuclear weapons to as close to zero as possible. Only a sustained, coordinated effort can solve this problem. Such an effort must begin with presidential leadership and commitment.

**A Lingering Threat**

The past decade has brought significant improvements in the relations between Russia and the United States. At the political level, the changes have been demonstrated most noticeably by Russia’s active assistance in the war on terrorism, even helping the United States to establish basing rights in Central Asia. Changes at the nuclear level have also been notable, particularly the May 2002 signing of the Moscow Treaty in which Presidents George W. Bush and Vladimir Putin each agreed to reduce their long-range nuclear warheads to 1,700–2,200 by the year 2012. That will be down from about 6,000 in each country in 2002 and more than 10,000 each in 1990.

Despite these positive steps, the grave risk of accidental or unauthorized use of nuclear weapons persists for three reasons. First, both the United States and Russia retain their Cold War postures of keeping their nuclear forces on high alert—ready to launch within a few minutes. Inherent in these postures, which promise the rapid delivery of a massive nuclear retaliatory strike, is the distinct risk of an accidental or unauthorized launch.

Second, Russia’s economic difficulties have exacerbated the problem. The country’s mobile nuclear forces—from truck-based and rail-based intercontinental ballistic missiles to submarine-based ballistic missiles—have been decimated in both size and readiness. Far from enhancing U.S. security, these vulnerabilities could push Russia toward a strategy of launching its remaining forces at the first sign of an attack.

Third, U.S. strengths intensify Russian weaknesses. The U.S. Trident submarine force, with its accurate missiles and powerful warheads, continued to expand in the 1990s, making a significant portion of Russia’s silo-based missiles vulnerable. As long as Russia could deploy survivable mobile missiles and submarines—which it could in the 1980s—the country ensured that enough of its forces would survive to retaliate against a U.S. strike. But now, with only a few of Russia’s forces able to leave their silos and with sometimes not even one submarine at sea, the United States could deliver not just a retaliatory strike against Russia but also a devastating first strike. This imbalance could further heighten Russia’s feelings of vulnerability and its incentive to launch its forces preemptively.

There are three principal scenarios for accidental or unauthorized nuclear use. The first scenario is an intentional unauthorized launch brought about by terrorists or rogue commanders.

Third, U.S. strengths intensify Russian weaknesses. The U.S. Trident submarine force, with its accurate missiles and powerful warheads, continued to expand in the 1990s, making a significant portion of Russia’s silo-based missiles vulnerable. As long as Russia could deploy survivable mobile missiles and submarines—which it could in the 1980s—the country ensured that enough of its forces would survive to retaliate against a U.S. strike. But now, with only a few of Russia’s forces able to leave their silos and with sometimes not even one submarine at sea, the United States could deliver not just a retaliatory strike against Russia but also a devastating first strike. This imbalance could further heighten Russia’s feelings of vulnerability and its incentive to launch its forces preemptively.

**Russia’s mobile nuclear forces have been decimated. This could push Russia toward a strategy of launching its remaining forces at the first sign of an attack.**
ized crime and separatist violence have heightened this danger.

The second scenario is a missile launched by mistake. Such a mistake could result from a malfunctioning weapon system or a training accident. To date, Russia and the United States have made great efforts to guard against such accidents. Nevertheless, the probability of a mistaken launch has never been zero, and the economic and social problems in Russia have elevated concerns in the West about this problem.

The third scenario is a nuclear weapon launched intentionally but based on incorrect or incomplete information. If early-warning systems malfunction, they could signal that an attack is imminent when in fact it is not. Or a nonthreatening event might be misconstrued as an attack. Without a clear, accurate picture of what is happening around the globe, Russia might confuse a benign event (such as a space launch) for a nuclear attack. During the Cold War, Russia and the United States each developed a two-tiered early-warning system (using radar on land and infrared sensors in space) to guard against such events. But Russia’s space-based system is now essentially out of order, leaving the country with only a flawed radar system and greatly increasing the chance that an erroneous indication of attack could be mistaken as real. Thankfully, this concern is mitigated somewhat by the improved state of U.S.-Russian relations. U.S. and Russian political leaders today are less likely to believe they are under deliberate nuclear attack than they were during the tense periods of the Cold War.

Despite the end of the Cold War and real improvements in relations, both countries continue to view each other in nuclear terms. The risk of accidental or unauthorized use of nuclear weapons remains unacceptably high. Limiting these dangers will require not merely operational changes in the U.S. and Russian nuclear postures but higher levels of trust and cooperation.

The true solution to reducing nuclear risks is to eliminate the nuclear dimension of the U.S.-Russian relationship altogether. The phased approach that we propose acknowledges the link between nuclear safety and the health of the overall relationship. Near-term improvements in nuclear safety can build confidence between the two nations, thereby enabling more extensive improvements in the medium and long terms. Similarly, actions that improve relations can also lead to improvements in nuclear safety. These dynamics lead us to recommend what we call a “nuclear safety initiative” that encompasses multiple phases over the next 15 years. The timing could be quicker if conditions and leadership allow.

**Immediate Unilateral Steps (2004)**

Within the next six months to a year, the United States should take four immediate steps. It should “stand down” its nuclear forces to the levels specified in the Moscow Treaty. That means removing all but a maximum of 2,200 warheads from U.S. missiles and bombers and placing the warheads and weapon systems in central storage. In addition, the United States should pull its Trident ballistic missile submarines away from Russia, pull attack submarines away from Russia, and reduce the launch readiness of one-third of U.S. silo-based missiles—or about 150 silos. All four actions can be taken quickly and unilaterally. They would be intended to signal to Russia that nuclear weapons are no longer important to the relationship.

At the same time, the United States should commit itself to additional steps that would take some time to implement, either because they are technically difficult or because Russian participation is required. The most urgent commitment is to improve Russia’s access to reliable and accurate early-warning information. The United States should commit to putting early-warning sensors on its own silos, funding Russian early-warning radar stations, and continuing the joint Russian-American research efforts to improve the effectiveness of early-warning technology.

Ideally, Russia would respond with comparable unilateral actions of its own. Perhaps Russia would stand down the forces that it plans to eliminate under the Moscow Treaty, would promise to keep its ballistic missile submarines and attack submarines away from U.S. coasts, and would be open to discussions about further strengthening its early-warning systems.

**Near-Term Steps (2006 to 2007)**

Ideally within two or three years, the United States would have fulfilled its initial commitments by placing early-warning sensors on its silos and by having Congress approve money to strengthen Russian early-warning radar capabilities. The United States could also take fur-
ther steps, such as eliminating the forces it had initially stood down and removing the W-88 warheads from its Trident submarines. The W-88—the U.S. arsenal’s most powerful warhead—is designed specifically to attack and to destroy hardened Russian silos.

The two countries could now begin consultations on more sensitive matters, such as initial steps to reduce the launch readiness of nuclear missile silos and further steps to improve Russia’s access to early-warning information. Reaching agreement on reducing launch readiness will be extremely difficult and will require a good deal of mutual trust. Other near-term consultations could begin on how to implement a destruct-after-launch system capable of disabling reentry vehicles. Such a system would allow an additional 15 to 20 minutes of decision time.

Medium-Term Steps (2009 to 2013) and Beyond
As relations improve over the next six to ten years and the nuclear dimension wanes in importance, the United States and Russia could take more far-reaching steps to improve nuclear safety. For example, the difficult negotiations on reducing launch readiness could begin to bear fruit. The sensors used on silos for early warning could be modified to monitor the launch readiness of the silos in each country. By now, consultations might also have contributed to an agreement on whether destruct-after-launch systems would be feasible and, if so, how best to implement them.

The United States could take two unilateral actions in this time frame. First, it could adopt a new deterrence posture that moves away from reliance on rapid counterattacks against Russia and places greater emphasis on flexibility. Second, it could deploy a limited national missile defense system—but only if it did not adversely affect U.S.-Russian relations.

It is difficult to predict which steps would make the most sense much further into the future, but we can envision two future end states where forces are kept at reduced levels of launch readiness. In the first, the United States and Russia have essentially eliminated the nuclear aspect of their relationship. They keep a few forces on modified alert to address other nuclear threats and take all other forces off alert, with modest monitoring. In the second, the forces of all nuclear states are taken off alert, but only with extensive monitoring. Long-term steps would be implemented consistent with either one of these end states.

Bold moves such as those suggested here could greatly improve nuclear safety as well as enhance U.S. security in other important areas, such as nonproliferation and counterterrorism. These improvements in safety and security depend, however, on improving U.S.-Russian relations in other areas—and, in the end, removing the nuclear component of the relationship altogether. This will not be possible without a sustained, coordinated effort driven by presidential leadership and commitment. The military complexities involved suggest that the U.S. and Russian militaries would also have to work together closely to achieve success.

The exact steps taken by the United States and Russia could surely differ from those suggested here, particularly in the medium term and beyond. But the details are secondary. What is most important is that the process begin immediately.

Related Reading


The Boston Gun Project has been hailed as a national model for reducing youth violence. Shortly after Boston launched the project in 1996, the number of homicides committed by juveniles in the city fell by about two-thirds. Could the Boston success be replicated elsewhere?

The project blended three ingredients of success that seemed transferable to other cities. First, a coalition of community leaders, criminal justice professionals, clergy, and researchers had collaborated on the project’s design, implementation, and evaluation. Second, the project offered youth offenders both “carrots” and “sticks”; it balanced social services (such as job training and substance abuse treatment) with tough punitive measures (such as stricter enforcement of parole and probation regulations). Third, the project was dynamic, meaning that the coalition members continually adjusted the balance of carrots and sticks as conditions warranted.

We at the RAND Corporation attempted to replicate the Boston success in a very different city: Los Angeles. With support from the National Institute of Justice, we instigated and evaluated a community-based effort to reduce gun violence among youth in a working-class area of the city east of downtown. We expected the project, when transplanted to Los Angeles, to retain the core elements of the Boston project. However, we expected that the type of problems addressed and the nature of the interventions pursued might differ from those in Boston, given the different community characteristics in Los Angeles and its much greater decentralization of criminal justice authorities.

Following many months of planning and analysis, the antiviolence intervention in Los Angeles, called Operation Ceasefire, began in October 2000.

Some things worked well, and some things could have worked better. On the positive side, Operation...
Ceasefire confirmed that collaborative community groups, from Boston to Los Angeles, could reduce gun violence by prodding decentralized criminal justice agencies to concentrate their resources in a single geographic area. In this crucial respect, the Los Angeles project succeeded. The coordinated community effort reduced youth violence. The coalition members also succeeded in utilizing newly generated data to design effective interventions.

On the negative side, there were built-in constraints that prevented the Los Angeles project from fully replicating the Boston model and thus its likelihood of success. In Los Angeles, no city agency or community group took ownership of the project. No meaningful opportunity arose to make the project a dynamic one over the long term. And no funds were provided for social services to balance the criminal punishments. In the end, the project could not sustain itself.

In Los Angeles, we learned several lessons for future efforts to replicate the Boston Gun Project. For such efforts to succeed beyond a trial period, they need to include these elements of success:

- Crime data should be analyzed carefully when designing interventions.
- Social services should balance law enforcement efforts to the extent possible.
- City leaders should provide concrete forms of support to the municipal agencies involved.
- City leaders should hold the municipal agencies involved accountable for the results.
- Cost data should be collected to determine whether the projects merit continuation.

**What Made Los Angeles Unique**

At first, it was unclear whether the Boston approach would work in Los Angeles. There were concerns that the Los Angeles Police Department (LAPD) would not welcome a project developed elsewhere. It was unknown if an intervention designed for predominantly African American youth in Boston would be appropriate for a predominantly Latino city. And while the Boston Gun Project had been implemented citywide, a citywide effort was impractical in Los Angeles given its enormous size.

Therefore, we identified a smaller intervention area within the city. We chose the LAPD Hollenbeck division, a 15-square-mile area east of downtown with a population of about 200,000. Hollenbeck has an 81
percent Latino majority consisting primarily of people of Mexican heritage. Unlike other inner-city Los Angeles neighborhoods, where the population has shifted from a black majority to a Latino majority in recent years, Hollenbeck has had a Latino majority for decades. Hollenbeck gangs are among the oldest in the city, with some intergenerational gangs tracing their roots back to before World War II.

Perhaps the most unique characteristic of Hollenbeck came as a big surprise to many of the people working there. A detailed analysis of Hollenbeck homicide files revealed that gang issues, such as disputes over turf and “respect,” were the primary motivating factors for fully half of the homicides—90 out of 180—committed there between 1995 and 1998. An additional 45 homicides involved gang membership plus other factors, such as arguments, domestic altercations, or drug debts. A grand total of only 38 of the homicides—21 percent—involved any kind of drug motive, such as a dispute over drug debts, the quantity or quality of drugs, or the robbery of a drug dealer (see Figure 1). Very few of the homicides were motivated by disputes over drug sales territory.

These findings drew incredulous responses from the working group members. Many had assumed that gang murders in Hollenbeck typically involved drug dealing. “These kids are being killed because of [dope]!” one officer insisted. But careful reanalysis of the data confirmed our findings and pointed to an important characteristic of the violence in this neighborhood: The links among gangs, drugs, and violence had been overdrawn. Although the gang members may sell drugs and may kill or be killed selling drugs, the motivation for the killings in Hollenbeck is not likely to stem from gangs fighting for market control. Rather, the local Latino gang members are more likely to engage in expressive acts of violence over issues of turf and respect.

The unique aspects of the violence in Hollenbeck pointed us toward unique strategies. Violence against others typically consisted of attacks against members of other gangs entering rival territories. Thus, each gang concentrated its activity, either protecting its own turf, preying on rivals on adjacent turf, or attacking rivals on other nearby turf where the gangs had overlapping social connections. Because the violence was spatially concentrated, it could possibly be mitigated by focusing on a small area, maybe no more than several square blocks.

“Nothing Stops a Bullet Like a Job”

As in Boston, the Hollenbeck initiative drew upon the support of area churches, notably those in the East Los Angeles Deanery of the Catholic Archdiocese. At the first meeting of the working group, 14 of the 17 people attending were priests. They represented a long tradition of “street intervention” in the area on behalf of local youth. For instance, Homeboy Industries is a local employment referral center established by a Jesuit priest and driven by the principle that “nothing stops a bullet like a job.” (See table of participating community groups.)

Having this structure of support behind the initiative was vital to the community’s acceptance of any role played by law enforcement agencies, given concerns about previous police interventions that had relied exclusively on gang suppression. The working group intended to balance law enforcement responses with social service programs. The goal was simple: Increase the cost of violent behavior to gang members while increasing the benefits of nonviolent behavior.

The spatial concentration of gang activity became the basis of the intervention. A vast network of rivalries among 29 area groups designated by the LAPD as “criminically active street gangs” offered several focal

---

**Figure 1—Most Hollenbeck Homicides Do Not Involve a Drug Motive**

<table>
<thead>
<tr>
<th>Number of Homicides</th>
<th>Not Gang Related (drug motive)</th>
<th>Gang Related (drug motive)</th>
<th>Gang Related (no drug motive)</th>
<th>Gang Motivated (drug motive)</th>
<th>Gang Motivated (no drug motive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>82</td>
<td>37</td>
<td>22</td>
<td>23</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

points for the intervention (see Figure 2). This “network analysis” of gangs also indicated an important structural break in the neighborhood that allowed for a natural experiment. The San Bernardino Freeway divides Hollenbeck into north and south. With one minor exception, no gang has any rivalries that cross the freeway. We focused the intervention in the southern portion of Hollenbeck, called Boyle Heights, because this was the area of the most intense gang rivalries and of the majority of violent crimes. We could then compare the results of the intervention in Boyle Heights with crime trends elsewhere in Hollenbeck.

The working group spent several months considering a plan to quell gang violence in the wake of any triggering event that might lead one gang to retaliate against another. Because the violence was gang driven, the working group designed a strategy that would leverage the collective structure of the gang itself. As in Boston, the working group in Los Angeles designed an intervention based on a model of “collective accountability”—one seeking to hold all members of a gang accountable for the act of any single member. Among other features of the plan, it was to include:

- increased LAPD patrols in the immediate geographic area of the triggering event
- deployment of officers from specialized police units to the broader neighborhood
- additional police patrols in public parks
- more-stringent enforcement of housing codes for properties used by gang members
- more-stringent enforcement of public housing eligibility rules prohibiting possession of drugs, firearms, and other contraband
- more-stringent enforcement of parole and probation conditions
- more-stringent serving of outstanding warrants on gang members who had committed prior offenses
- referral of gun law violations to federal prosecutors
- dynamic and rapid application of these intervention elements after each violent incident to ensure that perpetrators and victims understood there were consequences for violent behavior.

At the same time, many of the agencies that were planning to impose tougher law enforcement measures were planning to offer social service programs as well. Parole officers and city agencies were planning to offer job-training opportunities. Probation officers were planning to offer tattoo removal and substance abuse treatment. Hospitals and community groups were planning to offer similar services. The working group spread the news throughout the community that the intervention would be launched in the wake of a triggering event—or immediately after a gang member committed a violent act and law enforcement officials had reasonable certainty about the perpetrator and the associated gang.

Many of these carefully laid plans, however, were overtaken by events. At an October 2000 meeting of the working group, representatives of the community organizations (who had been the most vocal advocates of the social service programs) urged the local LAPD captain to launch the law enforcement components of the initiative immediately. Given the very long time needed to

<table>
<thead>
<tr>
<th>Agencies Collaborating on Operation Ceasefire in Los Angeles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criminal Justice</strong></td>
</tr>
<tr>
<td>California Division of Corrections</td>
</tr>
<tr>
<td>California Youth Authority</td>
</tr>
<tr>
<td>City of Los Angeles Housing Authority</td>
</tr>
<tr>
<td>Los Angeles City Attorney</td>
</tr>
<tr>
<td>Los Angeles County District Attorney</td>
</tr>
<tr>
<td>Los Angeles County Department of Probation</td>
</tr>
<tr>
<td>Los Angeles Police Department</td>
</tr>
<tr>
<td>Los Angeles Unified School District Police</td>
</tr>
<tr>
<td>U.S. Attorney’s Office</td>
</tr>
<tr>
<td>U.S. Department of Housing and Urban Development</td>
</tr>
</tbody>
</table>

implement social services such as job training, it did not appear feasible to coordinate the services with law enforcement. Of more urgent concern, violent crime seemed to be escalating rapidly. Events involving two gangs—The Mob Crew (TMC) and Cuatro Flats—were especially troubling (see rivalry highlighted in Figure 2).

The following weekend, a brazen “walk-by” shooting occurred in the heart of TMC territory. Five Cuatro Flats members exited a van, ran around a corner, and opened fire on a group of TMC members. Two people died: a 19-year-old TMC member and a 10-year-old girl who had been riding her scooter down the street and was hit by a stray bullet. This became the triggering event for Operation Ceasefire. It was launched the next day.

**Six Months of Progress**

The intervention as implemented differed in several ways from the intervention as planned. Most obviously, the social service programs were not widely available.

More generally, the intervention was not dynamic. The working group members did not continuously reprioritize their efforts and reallocate resources after each violent incident. Instead, the members focused almost exclusively on the two gangs involved in the triggering event. Subsequent shootings involving other gangs did not receive the level of attention associated with Operation Ceasefire. Consequently, the intervention never created a consistent perception that violent behavior would provoke an immediate response. The intervention became even more spatially concentrated. Rather than operating throughout Boyle Heights, it became confined largely to the five police reporting districts where TMC and Cuatro Flats were most active.

Nevertheless, violent crime and gang crime decreased in the aftermath of the intervention not only in the targeted area and in other areas of Boyle Heights but also throughout the larger Hollenbeck area. Figures 3 and 4 show the striking trends. Within just six months, violent crimes (including homicides, attempted homicides, robberies, assaults, and kidnappings) fell by 28 percent both in Boyle Heights and throughout Hollenbeck. Gang crimes (including gang-related violent crimes, firearm discharges, vandalism, and graffiti) fell by 40 percent in Boyle Heights and 32 percent throughout Hollenbeck. And gun crimes (including any of the above crimes that involved the use of a gun) fell by 23 percent in Boyle Heights and 33 percent throughout Hollenbeck. Even though homicides increased elsewhere in Los Angeles at this time, homicides decreased in Boyle Heights and Hollenbeck.

It is intriguing that the intervention appears to have helped reduce gang crimes involving guns both on the turf of the targeted gangs and on the turf of their rivals. In general, gang crime decreased more rapidly in Boyle Heights than in the remainder of Hollenbeck. Violent crime, however, decreased by nearly identical rates in both areas, and gun crime fell even more rapidly in the remainder of Hollenbeck than in Boyle Heights. These results suggest that focused law enforcement against two gangs helped to quell the activities of their rivals as well.
**What Worked**

Perhaps the most important success of Operation Ceasefire was the ability of the working group, using data analysis and collaborating with many different agencies, to craft a well-designed intervention. This process made it possible for each organization to contribute resources sufficient for making the collective effort a success.

We learned that it is possible for diverse criminal justice agencies— involving police officers, prosecutors, and probation officers—to work together effectively. The experience confirmed that each agency has unique resources that, when pooled, make each agency more effective in curbing violence than it otherwise could be alone.

The working group also rallied community support in ways that exceeded our expectations. Tailoring the intervention against an activity, such as gun violence, rather than an affiliation, such as gang membership, helped to garner community support. In turn, the support helped the working group to enlist a county supervisor to secure grants from the county probation department for hiring an intervention specialist for the project. Community support also led the city attorney’s office to dedicate a prosecutor and a community organizer to the project.

**What Could Have Worked Better**

As noted, the program never became dynamic. One reason for this was the disbanding of LAPD gang units in the wake of the city’s Rampart scandal in which several LAPD gang unit members had been accused of planting evidence. The disbanding of the units meant that many knowledgeable officers were no longer available to participate in Operation Ceasefire. It was difficult for the new gang unit officers to become familiar with the 29 gangs operating in the Hollenbeck area.

The working group members never truly assumed ownership of the project. One objective had been to create a self-sustaining mechanism by which members of the working group could continually address problems of violence in the community. We at RAND did not succeed in transferring ownership of the project from RAND to the working group.

One reason for this failure was the frequent rotation of agency personnel with whom the working group collaborated. During the 18 months of the most intensive planning, RAND researchers interacted with a half dozen LAPD captains. Such turnover may have been inevitable given the larger disruptions within the LAPD at the time, but the high turnover did not foster the stability needed to help the project sustain itself beyond the period administered by RAND. Changes in the political leadership of the city presented further obstacles to sustaining the initiative.

Another obstacle to sustainability was the lack of resources for any single agency to maintain the collaboration.

Agency budgets do not encourage interagency collaboration.
ration. Agency personnel are not evaluated for their performance on such efforts. As one LAPD participant in Operation Ceasefire noted, “No one ever thought this was a bad idea. In fact, it makes sense. But departmental resources were never made available to implement the model in the intended way.”

Operation Ceasefire did not provide funds to any participating organization other than RAND. Agency personnel, including the LAPD officers and county probation officers who devoted the most time to the project, had to maintain their regular duties outside the project. Without people devoted exclusively to the project, it lacked accountability for success or failure. Without participants being evaluated for their performance on the project, they did not see it as a primary responsibility. Failure was not seen as something that would endanger one’s career.

**Recommendations**

City leaders need to support criminal justice agencies involved in interagency collaborations such as Operation Ceasefire. Simultaneously, city leaders need to hold the agencies accountable for the collaborations. The reality is that most agencies have tight budgets. Almost none of the agencies can redirect resources for collaborations. And few agency directors are evaluated on how well they collaborate with other directors. To build future collaborations, city leaders need to ensure that support and accountability measures are built into agency budgets and evaluations.

Cost information is also needed. One reason why there are so few collaborations is that they are considered cumbersome and expensive. Most evaluations of collaborations to reduce crime have focused almost exclusively on how much crime has been reduced. Calculating the true costs in staff time and overhead expenses is necessary to determine whether such interventions merit replication or continuation.

Those who seek to replicate the Boston Gun Project need to analyze local crime data to define the unique causes of violence in an area. Only then can an appropriate response be crafted. Other neighborhoods, even within Los Angeles, could require different interventions than those used in Hollenbeck. In Hollenbeck, gang violence stems from inter-gang rivalries. Elsewhere in the city, gang violence could stem from intra-gang rivalries, as when former gang leaders return from prison and wish to reclaim their leadership roles.

The Hollenbeck working group was fully committed to social service programs, but it had far less access to these kinds of resources than did Boston. We suspect that municipal commitments to social services will almost always lag behind those for law enforcement. Nevertheless, broader efforts to attack the root causes of violence—such as joblessness, substance abuse, and limited education—need to be combined with law enforcement. The combined efforts would stand the greatest chance of producing permanent as well as immediate reductions in youth violence.

**Related Reading**


Laboratories of Reform
State Health Insurance Experiments Yield Lessons for the Nation

By M. Susan Marquis and Stephen H. Long

Once again, the expansion of health insurance coverage has become an issue of debate on the U.S. presidential campaign trail. Since the past presidential election, we have compiled new evidence on the results of several state-based efforts to expand coverage.

Over the past two decades, the states have been the laboratories for testing new approaches to insuring the uninsured. The overall results show that the states have not yet solved the problem of the uninsured. However, many state efforts have produced important lessons that could help federal policymakers in shaping the next wave of national health insurance proposals.

We studied the effects of five kinds of state experiments: regulatory reforms, purchasing alliances, public subsidies for private insurance, expanded public insurance, and attempts to shore up the “safety net” of public hospitals and clinics that offer care for the uninsured. Based on these types of efforts in a limited number of states, we have observed the following results (see Table 1):

- Efforts to make private health insurance more accessible and affordable to small businesses—either through regulatory reforms or through purchasing alliances—have had no significant effect on the number of uninsured. These efforts have neither increased the number of small businesses offering insurance to workers nor reduced the market price of insurance premiums.
- Efforts to make health insurance more affordable for the low-income uninsured—by subsidizing the purchase of either private or public health insurance—have met with mixed success. Large reductions in the numbers of uninsured would require large subsidies—often larger than the states could realistically provide on their own. Moreover, these subsidies could unintentionally flow not just to the uninsured but also to individuals who had previously purchased health insurance.
- Efforts to strengthen the safety net could be more effective in improving the health of some disadvantaged populations than if they obtain health insurance themselves and are left to navigate the health care system on their own.

Regulatory Reforms and Purchasing Alliances
Small businesses are less likely to offer health insurance to their workers than are larger firms. For this reason, the states have experimented with insurance market

The states have not yet solved the problem of the uninsured.
regulations and with purchasing alliances to make private insurance more accessible and affordable to small businesses. These efforts to expand the availability of employer-sponsored health insurance policies are targeted to small-business employees and their dependents. These people constitute 40 percent of the uninsured population.

In the mid-1990s, several states enacted strict regulatory reforms to counter insurance company practices that prevent groups from purchasing insurance or that make it prohibitively costly to do so. The reforms required insurers to make all of their policies available to any employer who wished to purchase a policy. The goal was to make insurance more accessible to workers at risk for having high health care expenses. The reforms also prohibited the use of health status as a rating factor. The rating restrictions were intended to keep the premiums affordable for high-risk groups.

We compared the behavior of small businesses in 9 states that adopted the reforms between 1993 and 1997 with the behavior of small businesses in 11 states and the District of Columbia, where none of the reforms existed before 1997. We compared the following: the percentage of firms offering insurance, the percentage of workers enrolling, the size and variability of premiums, and the percentage of firms altering their decisions about whether to offer insurance.

The reforms had no appreciable effect on any of the outcomes. There were few significant differences in the percentage of small businesses offering insurance before and after the reforms; and there was no consistent direction of effect across the states (see Figure 1). Similar patterns emerged when comparing the percentage of workers enrolling in insurance before and after the reforms. The reforms had no significant effect on the price or variability of premiums. Some reform states had lower premiums than nonreform states; others had higher premiums. We also found no evidence that reforms reduced the rate at which small businesses change their decisions about whether to offer coverage.

Purchasing alliances, meanwhile, were intended to lower administrative costs for small businesses and to give them collective purchasing power to negotiate lower rates from insurance carriers. The alliances were also intended to stimulate competition in the rest of the small-group insurance market, thereby expanding coverage outside of the alliances as well.

We examined the results in the three states—California, Connecticut, and Florida—that had the largest statewide small-group alliances in the nation. Overall, the alliances neither increased the percentage of small businesses offering health insurance nor reduced the price of premiums in the small-group market (see Figure 2).

### Table 1—State Efforts to Expand Health Insurance Coverage Have Met with Mixed Success

<table>
<thead>
<tr>
<th>Goal</th>
<th>Target Group</th>
<th>Policy</th>
<th>States Studied</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand the availability and affordability of private group insurance at small businesses</td>
<td>Uninsured workers and their dependents</td>
<td>Regulatory reforms</td>
<td>CA, CT, FL, MD, MN, NJ, NY, OR, WA</td>
<td>No expansion of employer coverage.</td>
</tr>
<tr>
<td>Make insurance more affordable</td>
<td>Uninsured low-income people, regardless of work status</td>
<td>Subsidized purchases of either private or public insurance</td>
<td>DE, MA, MN, OR, TN, VT, WA</td>
<td>Large subsidies required to decrease the numbers of uninsured substantially. Difficult to limit subsidies to only the uninsured.</td>
</tr>
<tr>
<td>Improve health outcomes for the uninsured</td>
<td>Uninsured low-income people</td>
<td>Stronger safety net of public hospitals and clinics</td>
<td>FL</td>
<td>Successful birth outcomes depended on use of the safety net rather than on expansion of public insurance.</td>
</tr>
</tbody>
</table>
Public Subsidies for Either Private or Expanded Public Insurance

While regulatory reforms and purchasing alliances are meant to make insurance more accessible to uninsured workers, public subsidies for either private insurance or expanded public programs are meant to make insurance more affordable for uninsured low-income people, regardless of work status.

The state of Washington offers a state-subsidized private insurance program known as Basic Health. The program contracts with managed care plans to deliver services to individuals who purchase the state’s Basic Health coverage. In 1997, individuals in families earning below 200 percent of the poverty level paid a sliding-scale premium ranging from $10 to $100 per month, plus a small copayment for most services.

One issue in designing a subsidy program is the amount of subsidy needed to motivate large numbers of people to enroll. We found that cutting the premium in half would reduce the number of uninsured people in the state only slightly. Lowering the monthly premium from $50 to $25, for example, would reduce the proportion of uninsured adults and of uninsured children by about 3 percent. Even with a very modest premium of $10 per month for all enrollees, we found that about one-third of adults and nearly 10 percent of children would remain uninsured (see Table 2). This outcome suggests that substantially decreasing the ranks of the uninsured will require very large subsidies.

And that leads to a bigger problem. The tax capacity of many states makes them unable to cover their uninsured without federal help. We defined the “tax capacity” of each state as the increase in federal income taxes that residents of a state would need to pay to help finance a hypothetical national health insurance program that would cover all uninsured low-income people across the country. We then calculated how far each state’s contribution could go toward subsidizing health insurance for low-income people within the confines of the state.

Nationwide, only half the states would be able to cover all of their uninsured with a budget lim-
about half of those who newly participated in the public programs had replaced their private insurance with public insurance.

A Stronger Safety Net

Even with substantial public subsidies, some people will remain uninsured. They will depend on a strong safety net for access to care. For some people, such as low-income pregnant women, better health outcomes could result from reinforcing the safety net rather than from expanding insurance coverage.

Improving birth outcomes for low-income pregnant women has been an important health policy objective for two decades. Policymakers have pursued this goal both by expanding public insurance programs, such as Medicaid, and by investing in public health care systems that typically coordinate prenatal care and combine clinical care with nonclinical support services.

We evaluated Florida’s experience with both of these approaches. We compared both the use of prenatal services and the birth outcomes for low-income uninsured women and Medicaid-insured women who received care in either the private system or the public system. The results were intriguing. Although the women with Medicaid insurance had more prenatal care visits than did the uninsured women, regardless of the choice of delivery system, the birth outcomes among the women depended on where they received their care, rather than on their insurance status. Consistently, low-income pregnant women fared significantly better in the public health system than in the private health system of physician offices, hospital clinics, and health maintenance organizations, regardless of whether the women were uninsured or covered by Medicaid (see Figure 3).

In the case of uninsured low-income pregnant women, the expansion of health insurance coverage by itself does not appear to lead to better health outcomes, even though it increases the use of health services. Instead, the critical factor appears to be the receipt of care within a public health system that coordinates clinical care and combines it with nonclinical support services.

A Combination of Efforts

States have tried several incremental approaches to expand health insurance coverage. None of the approaches has eliminated the problem, but we can derive valuable lessons nonetheless.

<table>
<thead>
<tr>
<th>Percentage Uninsured</th>
<th>$50</th>
<th>$25</th>
<th>$10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>35%</td>
<td>32%</td>
<td>30%</td>
</tr>
<tr>
<td>Children</td>
<td>13%</td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>

A successful approach will likely involve multiple strategies. Regulatory reforms and purchasing alliances can help to eliminate market practices that make insurance inaccessible to some groups. To increase the demand for coverage substantially, however, will require large subsidies.

Very likely, states will be unable to solve the problem of the uninsured on their own, especially given the current constraints on state budgets. Large reductions in the numbers of the uninsured will require either new federal expenditures or innovative public-private approaches to financing. Many states are now pursuing the latter approach on behalf of uninsured working families, for example, by using public money to pay the employee’s share of employer group coverage.

In a system in which purchasing health insurance is voluntary, we cannot expect everyone to purchase it. Maintaining a strong safety net will remain necessary to ensure that those who remain uninsured will retain access to health care. We clearly need to expand health insurance coverage; at the same time, we need to ensure that the integrity of the safety net does not erode.

**Related Reading**


State Efforts to Insure the Uninsured: An Unfinished Story, RAND/RB-4558, 2003, 6 pp., no charge.
Overcompensating?
A Tool to Refine Policies for Retaining Military Personnel

By John Ausink

John Ausink is a policy analyst at RAND.

As U.S. military operations expand overseas from Afghanistan to Iraq, they place greater strains on U.S. personnel. Defense policymakers, who wish to retain qualified personnel, would benefit from a better understanding of the likely effects of new personnel compensation policies. Changes in policies relating to basic pay, retirement packages, targeted bonuses, reenlistment incentives, and voluntary termination incentives can produce unintended as well as intended results.

To estimate the likely effects of new compensation policies, we at the RAND Corporation have developed a computer software tool called the Compensation, Accessions, and Personnel Management (CAPM) system. Based in part on a version of the well-known Annualized Cost of Leaving econometric model, the CAPM system enables decisionmakers both to study the effects of policy changes on retention rates and personnel levels and to compare the outcomes of various policy packages.

Analysts have always used econometric models to help policymakers study the recruitment, supply, and retention of military personnel. The introduction of the All Volunteer Force in 1973 made the use of these models even more important. But the personnel data used in the models have often been separated from other quantitative tools used by policymakers to project the effects of changes in compensation policies.

To close this gap, the CAPM system integrates the personnel data with the policy projections. This combination allows policymakers to alter the personnel data, to make alternative policy choices, and to quickly compare the results of a wide variety of options.

Two Examples
There have been times in the past when the military services have expressed concern about meeting recruiting goals. One possible response to this problem would be to relax educational standards for recruits.

We used the CAPM system to explore the potential ramifications of such a policy. We began by taking U.S. Air Force data on recruits from fiscal year 2000 and projecting the likely future inventories of these enlisted personnel. We assumed that about 50 percent of the recruits in fiscal year 2000 were high-aptitude white males (as measured by their performance on the Armed Forces Qualification Test) and that 15 percent were low-aptitude white males. Leaving end-strength goals the same, we then projected alternate future inventories, assuming that the recruiting goal for high-aptitude white males had been reduced to 40 percent of total recruits and that the goal for low-aptitude white males had been raised to 25 percent.

The CAPM system showed the likely—and expected—result. Given that retention rates are generally lower for low-aptitude personnel than for high-aptitude personnel, the total number of recruits required in the short run to maintain the same end-
strength in the long run had increased by the fourth year of the projection. Thus, an initial effort to make recruiting easier appeared to have the long-term effect of increasing the need for new recruits.

Another example further illustrates the utility of the CAPM system. In January 2001, the U.S. Department of Defense increased basic military pay across the board—partly to increase overall retention, but also partly to tie subsequent increases in pay more closely to promotions rather than to the length of time spent in any one pay grade. We used the CAPM system to compare the likely retention rates associated with the change, again limiting our analysis to air force personnel.

As expected, and as shown in the figure, retention rates generally increased as a result of the pay increase. What came as a surprise was that retention rates for those eligible for retirement after the 20th year of service decreased for some cohorts in the projection. In particular, the model showed that there would be a fairly significant decrease in retention for those who completed 22 years of service in fiscal year 2001.

Closer examination of the assumptions of the model provided an explanation. For those who entered military service before September 8, 1980, retirement pay is a multiple of the basic pay received in the final year of service. In contrast, for those who entered military service between September 8, 1980, and August 1, 1986, retirement pay is based on the average basic pay for the highest-paying 36 months of the person’s career (usually the last three years).

The model indicated that the increase in basic pay raised retirement pay enough to encourage more people who were still under the “old” retirement plan to leave the air force rather than to reenlist. The compensation changes generally had the opposite effect for those under the newer retirement system. We found this exercise to be a good example of how an unexpected model prediction could lead to a closer examination of the underlying assumptions, which could lead in turn to a better understanding of the motivation for changes in retention behavior.

**A Coordinated Effort**

When areas of policymaking authority such as recruiting, reenlistment, and retirement are closely related to each other, policies established in one area may have profound and sometimes unintended consequences in other areas. This is particularly true in the military, which has long planning horizons, vast amounts of data that can drive the decisionmaking process, and customarily short tours of duty for decisionmaking personnel.

Although the underlying econometric model of CAPM breaks no new analytical ground, the ease with which CAPM allows analysts and decisionmakers to study the probable effects of policy changes can help everyone involved better understand the potential consequences. CAPM is still a work in progress, but the model is an example of the capabilities a user should expect in such analytical tools, and its structure provides an excellent foundation upon which to build further improvements.

**Related Reading**


No Base Is an Island
Why the Military Needs Formal Agreements with Civilian Authorities on Domestic Violence Cases

By Laura Hickman

Laura Hickman is an associate behavioral scientist at RAND and an associate professor of criminal justice at the RAND Graduate School.

If a domestic violence incident occurs on a military installation, who has jurisdiction over the incident? If you answered, “the military installation,” you would be only partly right. Civilian authorities always have jurisdiction over domestic violence incidents that occur off installations regardless of whether the alleged offender is an active-duty service member, but in some cases, civilian authorities may also have jurisdiction over (and be first responders to) incidents that occur on military installations.

These jurisdictional issues lie behind one of the key recommendations of the Defense Task Force on Domestic Violence. The task force, which just finished a comprehensive three-year review of domestic violence in the military, recommended that the U.S. Department of Defense “require installation/regional commanders to seek MOUs [memorandums of understanding] with local communities to address responses to domestic violence.” These MOUs would spell out details of collaborative relationships intended to prevent and to reduce domestic violence involving service members.

While issuing such a uniform MOU policy may be relatively simple, implementing it is not, because each installation faces unique challenges depending on where it is located. In many states, legal changes have broadened the population covered by domestic violence laws, from current and former spouses, to present or former cohabitants, to present or former noncohabiting dating partners, to other persons related by blood and/or marriage, to persons with a child in common regardless of cohabitation. While California law covers all categories, Virginia law covers only three of them. Then again, California police officers have discretion as to whether to make arrests in domestic violence incidents, while arrest is mandatory in Virginia, except under special circumstances.

It becomes even more complicated for installations, because responses vary also by communities within a particular state. For example, communities differ in how much they emphasize establishing and enhancing a coordinated community response to domestic violence. Such a response can involve cooperative relationships among a myriad of agencies, including criminal justice, social service, and nonprofit agencies; citizen groups; major employers; religious and medical communities; and schools.

Finally, installations often abut more than one civilian jurisdiction. In fact, service members at larger installations may live in several different municipalities or different counties, and some service members in installations near state borders (like the U.S. Army’s Fort Campbell in Kentucky) may live in different states.

Under all of these circumstances, MOUs between installations and civilian authorities in neighboring communities could help strengthen collaboration on responses to domestic violence. Installations may already have informal relationships with civilian authorities, but the relationships need to be formalized to ensure that they are not possibly jeopardized by turnover in personnel.

In contemplating the content of such MOUs, it is clear that “one size will not fit all.” To help installation commanders, the department of defense has been developing example MOUs that may serve as models. Such models are useful, but given how varied the civilian communities are, all key agencies within all communities are unlikely to agree to a uniform “model” MOU. Uniform models cannot respond to local conditions in enough detail. Given this, it makes sense that when the department of defense distributes the models, it should be made clear to installation commanders that the models represent not the end of the process but rather starting points for working with neighboring communities and for hammering out details.

Many benefits can come from collaborations between civilian communities and installations to address domestic violence. These relationships, however, must be locally grown and carefully tended. Even when MOUs are established, continuing investment is required from all parties to ensure ongoing compliance with the letter and the spirit of the agreements.
Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks
Lynn E. Davis, Tom LaTourrette, David Mosher, Lois M. Davis, David R. Howell

This volume offers specific steps to take in the event of a terrorist attack that uses chemical, radiological, nuclear, or biological weapons. It discusses basic principles and preparations that might improve your ability to respond to and to survive these attacks. The full report describes the scenario analysis and background used to determine response and preparation strategies (summarized in the Quick Guide, below). A handy reference card can be removed for display.

232 pp. (with reference card) • 2003 • ISBN 0-8330-3473-1 • $28.00 • paper

Also available:
Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks
A Quick Guide
Lynn E. Davis, Tom LaTourrette, David Mosher, Lois M. Davis, David R. Howell
33 pp. (with reference card) • 2003 • ISBN 0-8330-3487-1 • $15.00 • paper

Reducing Gun Violence
Results from an Intervention in East Los Angeles
George Tita, K. Jack Riley, Greg Ridgeway, Clifford Grammich, Allan F. Abrahamse, Peter W. Greenwood

Could an initiative to reduce gun violence that had been successful in Boston be adapted for use elsewhere? Researchers selected a 15-square-mile area in East Los Angeles where violence and inter-gang rivalries were particularly prevalent and found that the intervention helped reduce violent and gang crime in the targeted districts, both during and immediately after implementation. Although the book focuses on Los Angeles, its lessons are drawn from experience elsewhere and have implications for a broad range of communities.

75 pp. • 2003 • ISBN 0-8330-3475-8 • $20.00 • paper

Protecting Emergency Responders, Volume 2
Community Views of Safety and Health Risks and Personal Protection Needs
Tom LaTourrette, D. J. Peterson, James T. Bartis, Brian A. Jackson, Ari Houser

Emergency responders protect people and property in the event of natural and man-made disasters, medical emergencies, terrorist and other criminal acts, and numerous other types of emergencies. The authors held in-depth discussions with firefighters, emergency medical service responders, police officers, emergency management officials, technology and services suppliers, researchers, and program managers from 83 organizations. The findings are intended to help define the protective technology needs of emergency responders and to develop a comprehensive personal protective technology research agenda for the nation.

174 pp. • 2003 • ISBN 0-8330-3295-X • $28.00 • paper

Arms Trafficking and Colombia
Kim Cragin, Bruce Hoffman

A myriad of factors has contributed to extreme political instability and violence in Colombia—including the drug trade, a protracted insurgent conflict, and corruption—but small-arms proliferation remains one of the key underlying problems. The authors analyze the black- and gray-market sources of small/light arms, explosives, equipment, and materiel that are available to terrorist and insurgent organizations active in Colombia, as well as policy implications for the country and the United States.

107 pp. • 2003 • ISBN 0-8330-3144-9 • $20.00 • paper

The RAND Corporation is a member of the Association of American University Presses (AAUP), the largest organization of nonprofit scholarly presses in the world.