Long Range Less Lethal Weapons: Best Practices in Implementation

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Abstract

Long range less lethal weapons are tools that are needed in law enforcement. Police officers are often faced with situations in which they must confront an armed person. In some of these situations lethal force cannot be justified, but standard less lethal use of force options would put the officers in harm's way. The purpose of this research project has been to determine what, if any, long range less lethal weapons are available, and how they have been implemented. For the purposes of this project, 'long range' less lethal weapons have been defined as those that have a range greater than approximately 30 feet. This research project was limited to studying secondary data, so an emphasis was placed on the literature review as the primary source of information. Key themes from the literature included harm caused by less lethal weapons, the importance of education and training for law enforcement officers, and the need for versatility in less lethal weapons. Findings included the need for further research, and an acknowledgement of the need for better long range less lethal weapons.

Key Words: Range, long range, less lethal, non lethal, proximity, distance, police, law enforcement.

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Background

The purpose of this project was to research a topic related to law enforcement that is relevant in today's world. This project seeks to answer the research question "What best practice approaches can law enforcement adopt when implementing the use of long range less lethal weapons?" This topic seems to be especially relevant today due to the challenges law enforcement officers, particularly police officers, have in volatile situations. There are times when the use of a firearm is unnecessary to subdue a subject, but where the limited range (approximately 30 feet) of a Thomas A. Swift Electric Rifle (TASER) would put an officer's safety at risk to get close enough to use the weapon. This project sought to explore what less lethal weapons have a range greater than that of the TASER, and to gather the best practices law enforcement agencies have used in the implementation of such weapons.

The scope of this project was limited to the work that can be conducted by a single researcher during less than one full academic semester. Due to time constraints, this project was limited to the use of secondary data (i.e., various literature, reports, policies, etc.). The reason for choosing this topic for a research project is twofold. First, it delves deeper into the topic of less lethal weapons than I have had the opportunity to research in a similarly structured group project. Second, the interest in the topic of long range less lethal weapons was inspired from footage I viewed in which American police officers were trying to subdue an intoxicated man who had a large knife. The officers did not want to shoot the man with their firearms and attempted to use a TASER, but missed due to the distance between officers and the man, and the fact that getting closer would risk officer safety (Police Activity, 2017). The safety risk here exists because a person running to attack with a weapon such as a knife can bridge a gap of 30 feet faster than he or she can be stopped even with most issued firearms.

Research Question

The research question, “What best practice approaches can law enforcement adopt when implementing the use of long range less lethal weapons?”, was the foundation of this project. As stated above, one of the main reasons for the choice of topic was due to seeing footage of frontline police officers in need of a longer ranged less lethal alternative. While it would be incredibly interesting to conduct experimental studies or interviews with police around the need for long range less lethal weapons, this project’s scope was limited to secondary data. In addition, the information around this topic was largely found in studies that did not include much information in the way of numerical data sets. Therefore, while constructing the design of the project, quantitative and mixed methods approaches were excluded. The type of research method this project used was the qualitative one. The rationale for using a qualitative research method was that the research gathered was largely secondary (coming from existing sources), and that statistics and numbers did not play a large role in this research project.

Once all the necessary information had been gathered, the data was analyzed. This was done by comparing and contrasting the facts and opinions of each resource to determine what products and practices have worked best across multiple agencies and jurisdictions. This information was then interpreted into recommendations for law enforcement agencies who wish to obtain and implement long range less lethal weapons. The recommendations are not expected to be taken as being a scientifically proven list of best practices, as no studies or experiments were conducted as a part of this project. Rather, this project is intended to be taken as the recommendations of a researcher who has taken the time to find out what multiple law enforcement agencies and jurisdictions have done to implement long range less lethal weapons and to be a summary of the available information.

Literature Review

Introduction

Police officers around the world are often faced with a dilemma: When involved in a situation with a subject who is considered dangerous, but perhaps not considered to intend to seriously harm others, what should they do? In such a circumstance, lethal force may be technically justified according to a use of force model but may not be practically called for in a real-world situation. Many officers have TASERs at their disposal, but with a range of 20-30 feet, it still puts officers in harm's way if the subject is armed and capable of fast movement. Considering these complicated situations, this project aimed to research the topic of long range less lethal weapons: best practices in implementation. Finding research that has already been conducted around less lethal weapons used at longer distances enabled the answering of the question, "What are the best practices in implementation of long range, less lethal weapons?" This literature review examined articles from a variety of databases, focusing on academic, peer reviewed publications. As the data was analyzed, three primary themes arose. First, that less lethal means the weapons can still cause lethal harm. Second, there is a need for in-depth officer training, and departmental wide equipping of officers with less lethal weapons. Finally, that there is an increasing need for adaptability in use of force options, especially for less lethal and long range less lethal options.

Search Methodology

The key words used to search databases for articles were as follows: "less lethal", "non lethal", "range", "long range", "proximity", "distance", "police", and "law enforcement". The

databases used were the online library systems of the Justice Institute of British Columbia, and Camosun College, as well as Google Scholar. The Justice Institute of British Columbia initially produced between 57-244 results, depending on the combination of search terms. The Camosun College database produced between 6-373 results, also dependant on the combination of search terms. Google Scholar produced approximately 73,500 results, however many of them were much less academic than those from either of the school library systems.

Articles that seemed to focus on the range of less lethal weapons, long range less lethal munitions, or the types of injuries caused by various kinds of less lethal weapons, were generally kept. Articles about the military uses of less lethal weapons, TASERs only, and Conducted Energy Weapon (CEW) injuries, were largely excluded. During the search for articles, as the terms were adjusted after receiving results that were mostly incompatible with the focus of the topic, the number of results that adequately met the topic focus were towards the lower end of the spectrum mentioned above. It seems that there has not been much research revolving specifically around long range less lethal weapons.

Selecting Articles to Review

From the initial search results, 15 articles were selected for the abstract review. The articles were chosen primarily due to their titles. Titles that seemed to indicate discussion of specific long range, less lethal weapons were included to gain a knowledge of what specific weapons exist. Articles that compared multiple less lethal weapons seemed like they would be helpful in reviewing the options law enforcement have when selecting less lethal options. Articles that discussed the need for less lethal use of force options were included to emphasis the growing need for more less lethal options. Finally, articles that examined injuries or deaths due to long range less lethal weapons were included to help define the term “less lethal”.

From the 15 articles in the abstract review, eight articles were selected for the final review and analysis. The articles selected proved to meet the expectations garnered from the initial review, and had abstracts that seemed to follow the direction of the research topic at hand. Some articles that met the desired criteria but were older, the oldest of which was from the early 1990's, were excluded due to the need to keep the information gathered as current as possible. Other articles were removed from the final review and analysis list due to not having the full article accessible for free. These articles were from Google Scholar. Titles and abstracts for these articles could be read, but access to the full articles required payment, and so were excluded.

'Less Lethal' Does Not Mean 'Non-Lethal'

"Less lethal" is the term commonly associated with incapacitating weapons such as the TASER. These weapons are widely used by law enforcement agencies across the world. Less lethal, sometimes referred to as non-lethal weapons, are designed to assist officers in gaining control of a target without killing the target. They do this through a variety of ways, but all with enough force to temporarily disable the target, while intending not to kill him or her. Despite the emphasis that the myriad of weapons available place on their capacity by naming themselves with the level of lethality they are intended to cause, less lethal weapons have been used, both accidentally and purposefully, to cause fatalities (Voiglio et al, 2004).

As various manufacturers and developers have created less lethal options, some have merged into a grey area in the definition of what 'less lethal' really means. For example, the German defense manufacturer Heckler & Koch designed a 40-millimetre handgun launcher, which fired rounds made of plastic and foam. While in concept, this seems to be an effective way to deter a target from long range, it was found that the injuries caused by this weapon almost

always broke the subject's skin, and had a 50% chance of breaking the target's bones on impact (de Freminville, Prat, Rongieras, & Voiglio, 2010).

In contrast to the Heckler & Koch design, not all less lethal weapons are capable of breaking bones but are still discarded. The Flash-Ball double barreled handgun that fired rubber bullets in either a large single ball design, or in shotgun style with many small rubber pellets, was used by the Swiss police in the early 2000's (Wahl, Schreyer, & Yersin, 2006). The Flash-Ball had a similar range to a TASER, but where a TASER causes only two minor abrasions, the Flash-Ball, while not overtly harmful, left the targets with large bruises or welts (Wahl, Schreyer, & Yersin, 2006). The Flash-Ball was discontinued from use by the Swiss police pending further study into the types of injuries it causes (Wahl, Schreyer, & Yersin, 2006).

The potential dangers of less lethal weapons are not limited to the police against a suspect. A French study emphasized that in France it is legal to purchase less lethal weapons, such as a handheld single shot pistol very similar to the Flash-Ball, called the SAPL GC27, for personal defense. However, as a result, the study documents that people have used less lethal weapons available for civilian use for the specific purpose of killing others (Voiglio et al, 2004). It is easy to see that less lethal weapons are called 'less lethal' not because they are non-lethal, but because they are not intended to kill people, but can in certain circumstances. Because of this, it has been suggested that "less lethal" weapons be recategorized as "reduced wounding power" weapons (Voiglio et al, 2004).

Training, Education, and Armament

Law enforcement officers, especially police officers, have a myriad of tools at their disposal, many of which they carry with them on their belts while on duty. The three typical less

lethal weapons one might see on an officer's belt in the Western world include the TASER, Oleoresin Capsicum spray (often known as OC spray, or pepper spray), and a baton. Aside from these less lethal weapons that are in common use, there are many more not in general use, including weapons that use sticky substances or chemical darts (Downs, 2007). However, aside from the many tools at an officer's disposal, the most important tool an officer has is his or her training (Downs, 2007). It is important for officers to not only be extremely well trained in each aspect of the less lethal weapons at their disposal, but to also be able to rely on their ability to deescalate conflict, and to be confident in their hand to hand combat skills. Better training gives officers the skills to use their less lethal weapons, but also to use the tools that are not on their belts.

Another important aspect for law enforcement agencies to consider when acquiring new less lethal weapons is that not all less lethal weapons are equal. The 2006 article by Wahl, Schreyer, and Yersin acknowledges that the concept of less lethal weapons can be extremely appealing for law enforcement agencies, for any number of reasons. However, it must also be considered that many less lethal weapons are very capable of lethal results if used outside of the range or manner for which they are designed (Wahl, Schreyer, & Yersin, 2006). While it may seem a simple idea that officers just limit themselves to using the weapons in their prescribed context, one must consider the volatile nature of the conflicts that involve law enforcement – it is very unlikely that such conflicts always meet the precise ideal range or conditions for their less lethal weapon deployments.

In addition to the careful training of officers, as well as the proper education on the capabilities of less lethal weapons, it is important for law enforcement agencies to arm their officers with such weapons in a meaningful and efficient manner. Due to high costs of both time

and money for agencies to supply all their officers with less lethal weapons, some agencies or departments will elect to equip only some officers or units with less lethal weapons. This is especially the case for long range less lethal weapons, as they rarely can be worn on an officer's belt and are often slightly cumbersome. At the time of Cummings 2002 article, the Garland, Texas, USA police department had issued long range less lethal weapons to their Special Weapons And Tactics (SWAT) team, but not to their general duty officers. Cummings emphasized that in most situations where the weapons are needed, the situation will be resolved for better or for worse usually before the SWAT team has time to get to the scene of the incident (Cummings, 2002). When law enforcement agencies conduct a fast and efficient roll out of new equipment, such as long range less lethal weapons, they can eliminate much of the potential for officers to be underequipped for the situations in which they inevitably become involved.

The Need for Versatile Less Lethal Weapons

As Downs displays in his 2007 article, there are many types and variations of less lethal weapons, including long range less lethal weapons. Suitably, the spectrum of incidents that law enforcement officers engage in, and the varying sizes and circumstances of the target suspects, are as wide as the number of less lethal weapons on the market. It is important for officers to consider things about the targets of less lethal weapon deployment such as size, age, health, whether the target is intoxicated, and if so, on what substance. This is important because a less lethal weapon deployment on one person could have dramatically differing results than a deployment on another person. For example, a deployment of a TASER on an elderly person with a pacemaker could disrupt the pacemaker, and potentially kill that person. On the other hand, a TASER deployment on a large and intoxicated person could have little to no effect. It is

suggested that wherever possible, officers have multiple types of less lethal weapons at their disposal to be able to adapt to circumstances and targets as needed (Downs, 2007).

While many law enforcement agencies have acknowledged a need for less lethal weapons to some extent, the need for long range options has been less acknowledged for officers in the field. Encouraging the development of long range less lethal weapons, in 2003 the American National Institute of Justice funded a project that created a long range less lethal grenade launcher (Lewis, 2003). The launcher had a range of 100 yards (91.44 metres) and fired flash bang grenades that have a severely disorienting effect on targets. The grenades were designed to explode just prior to hitting the target, to avoid unnecessary injury (Lewis, 2003). Having a long range less lethal weapons such as this grenade launcher enables law enforcement officers to temporarily disable and apprehend suspects in ways that would be impossible with the tools they typically carry.

Further emphasizing the need for long range less lethal weapons, in recent history there has been a noted increase in ‘suicide by cop’ (Cummings, 2002). Suicide by cop is the concept wherein a person who wishes to commit suicide does so by making him or herself become a legitimate threat to the safety of police officers (Dewey et al, 2013). Often this is done by displaying a knife or other weapon and making obvious and threatening advancements on an officer’s position (Dewey et al, 2013). In many departments where officers do not have access to long range less lethal weapons, the only option is to use lethal force. Lethal force is the only option in these situations because the range of a TASER is only approximately 20 to 30 feet. Even when struck by a TASER at 30 feet, many targets can still get close enough to the officer to make an attack. If officers had long range less lethal weapons they could access quickly, the

number of deaths related to suicide by cop, or other shootings solely necessary to defend police officers would likely decrease.

Research Design and Methodology

Methodological Assumptions

The research method chosen for this project was the qualitative research approach. This approach was selected due to the nature of the project. The project, being limited to secondary data, and especially focusing on the literature review aspect, relies on the interpretation of other researchers' work, and therefore meets the requirements of qualitative research (Schulenberg, p. 302, 2016). There are three commonly used formats for research: qualitative, quantitative, and mixed methods. The basis for qualitative research, such as the research of this project, is to interpret information for the purpose of describing the data and the meaning of the data to the reader. Quantitative research puts an emphasis on numerical data, using charts and data sets to convey statistical information about a research study to the reader. The mixed methods approach blends qualitative and quantitative designs to present both interpretive explanation and observations as well as statistical information.

Because this research project primarily examined articles, most of which were qualitative themselves, a qualitative method seemed to be the best approach. Furthermore, the articles that were used that did include some quantitative or mixed methods were not used for their quantitative figures, but as supporting information to aid in the explanation around the issue of best practices in implementation for long range less lethal weapons. The goal of this research report is not to present data-heavy charts and graphs derived from experiments or studies as that would be the purpose of a quantitative report. Rather, the goal of this research project was to

summarize existing literature from studies to present as a compilation of information, along with my own interpretation of the facts that lead to best practices in implementation.

Data Collection

This research report used qualitative methods of data collection. The qualitative research method involves the researcher observing a subject of study and communicating his or her interpretation of the information. When deciding on what type of research method to use, the researcher must consider which method is most suitable for the study in question. “A qualitative approach is appropriate when research questions involve topics we know little about, the topic hasn’t been investigated with this group of people, or the existing theoretical explanations do not seem to apply to the group.” (Schulenberg, p. 45, 2016). For this study, the first aspect of Schulenberg’s criteria is most relevant. As will be discussed later, long range less lethal weapons are a topic that seems to have received very little coverage by academic research.

As mentioned previously, this research report was limited to collecting secondary data. Secondary data is defined as data gathered from previous research (Schulenberg, p. 50, 2016). In other words, secondary data is the information and interpretations collected by other researchers, many of whom would have conducted their own primary studies. In the case of this research report, the secondary data that was collected consisted of published academic articles, reports, and professional standard models for police found online. All collected secondary data was found online through the library database websites of the Justice Institute of British Columbia, as well as Camosun College. Further articles were found through Google Scholar. Police standard models were located on the website of the Royal Canadian Mounted Police at the direction of the project sponsor.

Data Analysis

The approach taken to analyze the data that was used in this report followed several steps. As discussed above, the search for relevant literature began with a gradual filtering from appealing titles of articles, to an abstract review, to a final selection of articles. The articles were then read to ascertain the themes in each individual article. After the articles had been read, key themes from each were written down for comparison. The themes of the articles were then compared and contrasted with each other to find overarching themes or similarities in the data. For the sake of this research report, the three most common themes that were gleaned from the data were highlighted in the literature review section.

The method in which the data was analyzed followed the pattern of inductive coding. There are two basic types of coding – deductive and inductive (Schulenberg, p. 308, 2016). Deductive coding is a process in which the researcher has themes of the literature already selected, and then searches to find articles with those themes (Schulenberg, p. 308-309, 2016). During inductive coding, the researcher identifies themes by reading the literature. During the inductive coding process, greater themes are drawn out of from points made in the articles and are joined together to create larger meaning (Schulenberg, p. 309, 2016).

Following the process of inductive coding to analyze the data made it easier to understand what the data was saying. Having an organized system of breaking down the existing data to find the broader themes provided a filter that both highlighted similar points, and showed which points were limited to the specific context in which the original studies focused. Once the data analysis was complete, it allowed a detailed view not only into the themes and findings, but also into gaps in the research. The information that was found will be discussed in the following section.

Discussion, Findings, and Potential Ethical Issues

Use of Force

Before continuing with the discussion portion of this report, it would be helpful to clarify when police officers in Canada use less lethal weapons. Situations in which police are required to intervene are constantly changing. Because of this, many Canadian police departments roughly follow a use of force model that displays a rationale for what levels of force are generally appropriate in any given circumstance. The Royal Canadian Mounted Police's (RCMP's) version of the use of force model is displayed below in Figure 1.

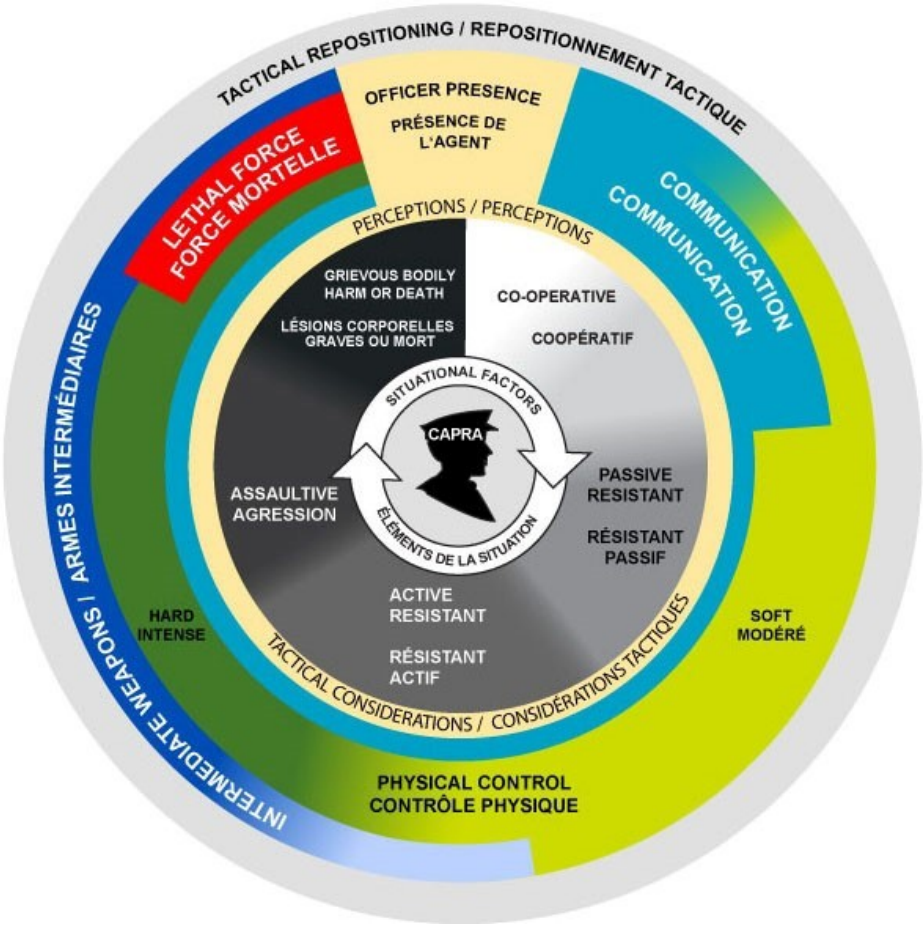

Figure 1. RCMP IMIM. This figure shows use of force escalation in a clockwise direction. (Royal Canadian Mounted Police, 2017).

The RCMP model displayed is known as the Incident Management / Intervention Model (IMIM) (Royal Canadian Mounted Police, 2017). The IMIM is used primarily for training and to assist in explaining use of force in court proceedings (Royal Canadian Mounted Police, 2017). The design of the IMIM emphasizes that use of force is not a step-by-step process. Rather, it is a constantly evolving problem to which police officers must adapt (Royal Canadian Mounted Police, 2017). Officers have to constantly reassess the situations they are in and must consider factors such as the number of people around, number of officers present, and size of the suspect. Furthermore, officers must also consider environmental factors like lighting, cover (from potential firearms violence), distance from suspect, potential weapons nearby, and even the weather (Royal Canadian Mounted Police, 2017). As can be seen from Figure 1, the only constants in any police interaction are presence and communication. These two things are the foundation of police use of force, regardless of the actions of the suspect(s). In Figure 1, less lethal weapons fit into the category of Intermediate Weapons.

Ethical Issues

Whenever conducting a research report such as this, it is important to consider ethics. Because of the limited time given to complete this report, it was limited to secondary data. The limitation to secondary data was in part to avoid the need of having individual project approval from an ethics board. Instead, each member of the Justice Institute of British Columbia's LAWS 4003 course received class-wide ethics approval from an ethics board on the condition that the class would be under the supervision of the course instructor. The supervision of this report by the course instructor largely negated any possibility of exceeding the scope of the project by

carefully guarding against conducting primary research. In addition to the course instructor, the project sponsor was instrumental in guiding the direction of the project, particularly around the study of use of force.

Further ethical issues could involve bias. Everyone has some biases; it is unavoidable. Due to the fact that I was the sole researcher on this project, and that I have ambitions for a career in law enforcement, it is likely that I would tend to align my views in favour of law enforcement. While this may seem like a fairly minor ethical issue, it could have potential to skew my interpretation of the data in favour of law enforcement. For example, this bias may have led me to view certain amounts of injury to a criminal suspect by the use of less lethal weapons as acceptable in favour of quick suspect apprehension.

In addition to the possibility of having a skewed interpretation of the data, bias could have affected the selection of articles. During the initial search for academic literature on the subject of long range less lethal weapons, I may have inadvertently chosen not to pursue articles that had titles indicating a critique against law enforcement for their use of less lethal weapons. Again, while this may not seem to be significant, it may have excluded important information regarding suspect safety or excessive force incidents. While a discussion of potential ethical issues is important, it is also worth noting that no relevant articles were purposefully excluded during the initial search due to a critique of law enforcement.

Discussion

Long range less lethal weapons appear to be a subject of study that the academic world has largely eschewed. That being said, there is plenty of information about various types of less lethal weapons in the library databases I accessed. However, not all the information pertained to

long range less lethal weapons, but merely to regular less lethal weapons. In addition, there are some common practices in police use of long range less lethal weapons that I have observed. These observations have been derived from the literature, and also from knowledge gained from my personal conversations with regular and reserve constables in Greater Victoria over the last several years.

It seems that one of the most common long range less lethal weapons is the beanbag shotgun. This is consistent with the findings from Cummings' 2002 article. The beanbag shotgun has the benefit of being easy to use, as well as cheaper than other alternatives, due to the fact that beanbag ammunition can be used with ordinary shotguns that most police departments already possess (Cummings, 2002). However, as was discussed as a key theme of the research that was conducted as a part of this report, less lethal weapons of this type can be very dangerous to the targets. Rubber bullets, plastic and/or foam projectiles, and beanbag rounds all carry a risk of significant physical harm to their targets.

An additional risk to these types of less lethal projectiles that was not previously discussed is the fact that due to their non-traditional style, many of the rounds are less accurate than regular bullets. This leaves an increased possibility of hitting someone other than the intended target. Cummings discusses this briefly in indicating that the beanbag projectiles are designed to have a stabilizing drag as they traverse the distance between the shooter and the target, reducing the likelihood of hitting an unintended target. It is possible that the combination of affordability and ease of use outweigh the safety concerns over the type of weapon or projectile that is used by law enforcement. The aspect of affordability might be the deciding factor for many law enforcement agencies. As discussed in Lewis' 2003 article, law enforcement

agencies have strictly limited budgets, and most could not afford to purchase enough new less lethal weapons to equip an entire department without ample reasons and time to do so.

Downs' 2007 article discusses many types of less lethal weapons, some of which had long range capacities. Since the early 2000's, study after study have proved that less lethal impact rounds, such as the ones discussed just previously, are dangerous to their human targets. While much of the existing research was being conducted, there were a greater variety of less lethal weapons in use by law enforcement agencies around the world. For example, Switzerland experimented with the Flash-Ball (Wahl, Schreyer, & Yersin, 2006) and France experimented with the SAPL GC27 (Voiglio et al, 2004). Germany developed a high calibre less lethal impact projectile launcher (de Freminville, Prat, Rongieras, & Voiglio, 2010) while the United States developed a long range, highly sophisticated flash bang grenade launcher (Lewis, 2003). It may again be time for governments and law enforcement agencies to begin looking for more efficient long range less lethal weapons.

There are many, many alternative less lethal weapon types. Most of them are discussed in Downs' 2007 article. Beyond impact projectiles, there are chemical darts, sticky substances, slippery substances, sound technology, and high-pressure water cannons, to name a few. While many of these less lethal weapon types were discarded early on due to the rising success of the types that are now commonly used, a revisiting of these technologies may be useful. It could well be that the decade (give or take a few years) that has passed warrants new delivery methods or improvements on old designs.

One idea worth looking into could be that of a Conducted Energy Weapon (CEW) in a dart form of delivery. TASERs have become extremely common in law enforcement, likely due to the fact that they seem to be extremely effective at incapacitating a subject with minimal

lasting injury. However, as was mentioned previously, TASERs have a limited range no greater than 30 feet. The negative impact this has was discussed early on in this report. The challenge with making TASERs have a longer range, is that they currently send their electrical charge through wires connecting the two barbs it fires with the TASER itself. Perhaps some form of high calibre dart could be made that could eliminate the need for a conductive wire. A dart with a self-contained charge in a battery or similar device. To eliminate the harm of an impact from the large dart that would certainly be needed to reach longer distances, some kind of springboard function may be needed. Perhaps if the dart used a similar concept to the way that space shuttles launch from rockets while in travel. In fact, if a springboard-based dart was made, conductive wires could attach the two portions of the dart, having a battery in the rear, with the much lighter barbed darts meant to be the only portion that strikes a target. This is just one idea; many possibilities exist in the realm of less lethal and long range less lethal weapons. The greater the development in this field, the greater service law enforcement agencies will be able to provide for their communities.

Findings

The findings of this report are similar to those of the existing research. The themes outlined in the literature review reinforce that less lethal weapons can be harmful, that operators of less lethal weapons need to be extensively educated and trained in their use, and that less lethal weapons need to increase in versatility. The former two points are generally being implemented in some capacity across the board already, but it is the last point that will be most relevant going into the future. The emphasis on this last point is where this report may differ slightly from the existing research.

While a significant amount of research and development was conducted in past years, more research his now needed. Changing circumstances in law enforcement and culture leave a requirement for updated technology in less lethal weapons. Particularly in long range less lethal weapons. A surface level observation of news headlines over the last few years seems to indicate that there has been increasing hostility towards law enforcement. This means that it is prime time to give law enforcement officers more tools to safely apprehend suspects. Long range less lethal weapons are one type of tool that would be helpful in this aspect. Additionally, the increase in suicide by cop, as cited in Cummings' 2002 article and discussed in Dewey et al's 2013 article, gives ample reason for law enforcement agencies to increase their less lethal use of force options. To summarize, the most important finding of this report, aside from the overall themes of the existing research, is that further research must be conducted. More research on the topic will assist officers in the field by eventually giving them better tools and will also help to increase knowledge of long range less lethal weapons on both law enforcement and civilian levels.

Conclusion

Limitations

As previously discussed, this report was limited to collecting secondary data. While a necessary safeguard due to time constraints on the research project, it greatly reduced the potential impact of this report. A research project that involves primary data collection has the benefits of being able to conduct surveys, interviews, and the like to gather information from relevant people involved in the topic of study. In this case, it could have been beneficial to interview individual law enforcement officers to understand what the consensus around the need for long range less lethal weapons is among the people who do or would use such tools.

Furthermore, a key limitation that was noticed is the lack of recent research in the field of less lethal weapons, and especially long range less lethal weapons. A quick look at the References section of this report will show that the majority of the research used is from the early 2000's, largely prior to 2010, with most of them being earlier than 2006. These publication dates were consistent among all the articles reviewed for inclusion. It is believed that these publication dates are centered around the time when many law enforcement agencies were beginning to implement less lethal weapons such as TASERs. The lack of research in the last eight to 12 years indicates that there is not currently an up-to-date understanding of regular and long range less lethal weapons in the academic field. The lack of contemporary academic research in this field limits the usefulness of reports such as this, due to the focus on secondary data. Again, this limitation continues to emphasize the need for further primary research.

Recommendations

The first recommendation of this report, as has already been discussed somewhat, is that there is a need for further research. This recommendation is primarily for the academic field, although it may prove beneficial for law enforcement agencies to have analysts in their employ investigate the benefits of studying department use of less lethal weapons. Further primary research will be needed for a better academic understanding of less lethal weapons. Once more research is conducted, it may even provide a gateway for more course content around less lethal weapons for students in the fields of law enforcement studies, criminal justice, and criminology.

The second recommendation of this report is for law enforcement agencies. Law enforcement agencies need to be cautious when selecting and implementing long range less lethal weapons. Although the beanbag shotgun is a relatively cheap, and easy to use long range less lethal weapon, it should be considered an interim weapon until a better option can be found.

The reason the beanbag shotgun should be considered as an interim weapon is because of the lasting harm the impact rounds can have on their targets. This was discussed previously. Another reason that beanbag shotgun should be used while agencies seek out better options is due to the need for departmental equipping of officers with long range less lethal weapons as soon as possible. This need was discussed in Cummings' 2002 article.

Summary

To conclude, TASERs, though widely in use, have a limited range of 20-30 feet. Law enforcement officers need to consider their own safety while intervening in violent confrontations, and often need to keep a distance between themselves and the suspects that is greater than 30 feet. The need for distance combined with the limited range of TASERs leads to more officer involved shootings than may be necessary due to a lack of long range less lethal options. Existing research indicates three major themes that emphasize the harm many less lethal weapons can cause to their targets, the need for education and training for law enforcement officers, and the need for increased versatility in long range less lethal weapons. Further research is required, but existing technology should be implemented as quickly as possible to help reduce fatalities and promote officer safety.

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