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The Escape POD: Utilizing Escape Room Methodologies to Train Public Health Volunteers on Open Point-of-Dispensing Operations

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The Escape POD: Utilizing Escape Room Methodologies to Train Public Health Volunteers on Open Point-of-Dispensing Operations

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THE ESCAPEPOD: UTILIZING ESCAPE ROOM METHODOLOGIES TO TRAIN PUBLIC HEALTH VOLUNTEERS ON OPEN POINT-OF-DISPENSING OPERATIONS

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Mobilizing Points-of-Dispensing (PODs) during a mass dispensing of medication event at a local health department will require a large amount of personnel, both staff and volunteers. Training the volunteers prior to this type of event is ideal to ensure that POD operations flow quickly and properly. This project aimed to create an affordable and fun training that engaged volunteers and other interested stakeholders while increasing their knowledge of POD operations. Methodologies used in commercial escape rooms were employed in this training to enhance the participants' understanding of POD operations. Participants to worked in groups to solve puzzles and challenges in a hands-on atmosphere. The results of this study showed that though a didactic, lecture-type presentation is very efficient at conveying information, adding a hands-on portion to the training encourages engagement for the students. This study can help drive future trainings for local public health departments to include fun, hands-on methods like the escape room concept to further advance the engagement and knowledge of their POD volunteers.

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LIST OF ABBREVIATIONS

ASPR	Assistant Secretary of Preparedness and Response
CDC	Centers for Disease Control
ELVPHD	Elkhorn Logan Valley Public Health Department
EOC	Emergency Operations Center
FDA	Food and Drug Administration
MCM	Medical Countermeasures
NECC	Northeast Community College
PHEP	Public Health Emergency Preparedness
POD	Point-of-Dispensing
SNS	Strategic National Stockpile
UNMC	University of Nebraska Medical Center

CHAPTER 1: INTRODUCTION

Strategic National Stockpile Background

The Federal government has recognized that there are situations when local

governments may need assistance when responding to catastrophic public health threats.

To that end, the Office of the Assistant Secretary for Preparedness and Response (ASPR)

maintains what is known as the Strategic National Stockpile, or SNS, a repository for

antibiotics, antivirals, vaccines, antidotes, antitoxins and other medical supplies that

could be necessary in a widespread response to a disaster or emergency (Office of the

Assistant Secretary for Preparedness and Response, 2018). The SNS began as the

National Pharmaceutical Stockpile in 1999. Its purpose was to provide large quantities of

essential medical supplies to states, counties and communities within 12 hours of a

decision to deploy the federal national stockpile. Eventually, the National Pharmaceutical

Stockpile was renamed the Strategic National Stockpile (Association of State and

Territorial Health Officials, 2019).

In Nebraska, if a disease outbreak or bioterrorist event overwhelms local

resources and response capabilities, the local health departments can notify their local

emergency manager of the situation. The emergency manager can in turn ask the

governor of the state to request deployment of SNS assets to the local health district. The

SNS resources are stored in secured warehouses across the United States so that these

assets can arrive at the local health districts in a timely manner. One of the aspects of the

SNS is that the medications in the stockpile can be authorized under the FDA's

Emergency Use Authorization authority. This allows medication that has not been

approved to be utilized in an emergency, or for approved medications to be utilized in unapproved ways to treat the public if elements of the Federal Food, Drug and Cosmetics Act are met (Association of State and Territorial Health Officials, 2019).

Local public health departments throughout the United States are responsible for providing prophylactic medication from the SNS to the public in the case of disease outbreaks or bioterrorist events (Association of State and Territorial Health Officials, 2019). This type of mass dispensing of medication operation would require a vast amount of manpower to operate efficiently and in the time-bound manner that is required to provide prophylaxis in these types of emergency situations. The goal of dispensing the SNS resources is to provide the medications to all of the public in a local health district within 48 hours of deployment of the SNS assets. The local health departments are required by the United States Department of Health and Human Services to have plans in place to dispense this medication (U.S. Department of Health and Human Services, 2019).

Points-of-Dispensing

There are two basic types of models used in mass dispensing of medication during a disease outbreak or following a bioterrorist event. These are known as Points-of-Dispensing, or PODs. Open PODs are generally located at community centers, schools or other large, public locations which can be accessed by the public. The public would be directed to go to one of these Open PODs to receive their medical countermeasures (MCMs). The other model is called a Closed POD. These are businesses, agencies or organizations (both public and private) who would dispense the MCMs to their own

populations and staff so that they could continue their operations during this type of situation (Centers for Disease Control, 2018.)

A good design for a POD involves different entrances and exits for the public to help with the flow of people through the building. Since there will also be traffic issues with increased numbers of vehicles coming to the POD, safety and security personnel will need to direct traffic through the POD area and assist with parking. A POD location will also have established entrances and exits that are separate from each other or that can be modified to be separate to help with vehicle congestion. At the Open POD locations, the public would be screened to ensure they are able to take the provided medications and then given the appropriate medications, depending upon the agent in question. Though it seems straightforward, this type of operation is rather complex.

To make an efficient and comprehensive Open POD, specific jobs and positions within the POD would be utilized. A Greeter would meet the public as they come in the door of the POD; this person would triage individuals to determine if they have symptoms of the disease which is being treated and direct them out of the POD and to their healthcare provider. The Greeter would also assist individuals with filling out forms if the individual did not fill out the forms at home prior to coming to the POD. There would be numerous Greeters at a POD, dependent upon the time of day and number of volunteers and staff available.

After going through the Greeting area, the public would be directed to a Screening area. At this point in the POD, the forms would be examined to determine which type of MCM the person should take. If the person has multiple contraindications, it may be that

the person would be directed to their healthcare provider to get a different medication than what is available at the POD.

After Screening, the person would then proceed to Dispensing. At this station, the person would receive the appropriate MCM and be given information about the medication and what to do if there is an adverse reaction to that medication. Final information would be given to the participants in the POD and their questions answered by POD personnel as they exit the facility.

In addition to personnel in the Greeting, Screening and Dispensing areas and those individuals engaged in the security of the operation, it would be necessary to maintain runners to resupply the stations, help move lines along and ensure that the station workers did not need additional assistance. There would be a first aid area to help with any emergent events, either related to the symptoms that could surface from exposure to the agent involved or other event, such as an injury or health emergency that could occur during POD operations.

The health of the POD workers is always a priority; to that end, it will be necessary to have personnel who can help the workers maintain their health while operating at the PODs. Food workers will help serve food and maintain the hygiene in the eating and break areas. Facility workers will help ensure that that trash is removed from the POD areas, maintain restroom supplies and cleanliness and assist POD workers with internet and other communication issues within the POD.

Local public health departments follow the National Incident Management System (NIMS) when managing these types of incidents (Department of Homeland Security, 2019.) In addition to the Public Health Emergency Operations Center (EOC)

personnel (Incident Commander, Safety Officer, Public Information Officer, Liaison, Chief Medical Officer, Operations Chief, Planning Chief, Logistics Chief and Finance Chief), there will also be Incident Management on site during POD operations. Each POD will have a POD Manager, a POD Planning Chief, a POD Logistics Chief and a Medical Liaison who will all communicate directly with the Public Health EOC personnel. This will ensure that the communications and requests from the POD are directed to the proper individual in the Public Health EOC. All of these positions mentioned will need to be filled for each POD location. Since the PODs would need to operate concurrently during an MCM response, a large number of trained volunteers would be necessary to run the Open PODs.

For POD operations, the volunteers who would operate the Open PODs for Elkhorn Logan Valley Public Health District, city and county employees, along with interested stakeholders from the public are the planned individuals who will work in the PODs. Within the ELVPHD service area, there are 17 towns. In August 2019, Nebraska participated in the Crimson Contagion exercise; as part of this exercise, all health departments needed to provide the number of city and county employees in their districts to the State of Nebraska. The combined number of county and city employees in the ELVPHD district is approximately 2000 employees. These individuals have daily jobs that may prohibit their participation in POD operations, but likely some of them would be able to serve in some capacity at a POD. It is imperative that these individuals and any public health volunteers know how a POD operates and know the intricacies of the positions that are required to make the POD function at a high level.

To train personnel in these POD positions, health departments rely on both Just-in-Time training and pre-event training. Just-in-Time training occurs immediately following a situation or event when members of the public show up at the POD wanting to volunteer their time and expertise to make the POD operate. When people show up at a POD or a disaster site at the time of the disaster with no pre-training, they are considered spontaneous volunteers. These individuals are necessary and useful to the operation, but the Just-in-Time training for these individuals is done quickly and superficially as volunteers arrive at the PODs.

Public Health Volunteer Training

It is far more desirable to train POD volunteers before a disaster or event requiring mass prophylaxis occurs. When dealing with volunteers, however, it can be difficult to entice them to give their time to come to training. Many of the local health department emergency operations fall under the Public Health Emergency Preparedness grant, and there are strict guidelines on what can and cannot be charged to this grant (Centers for Disease Control, 2019). One of the requirements of the grant is that food cannot be used as a motivator to get people to come to training; therefore, people participating in public health training have to be internally motivated to attend and participate in this training. To that end, public health departments need to assist the volunteers and others who have an interest in assisting in public health disasters to become motivated to attend training.

One method to motivate public health volunteers and stakeholders to attend training may be to utilize games when conducting volunteer training for POD operations to help engage the participants and make the training fun. The gamification of POD

training may appeal to a larger group of individuals, enticing them into 'buy-in' of the public health volunteer program. Since training for POD operations follows an ongoing regimen of in-class trainings followed by tabletop and full-scale exercises, creating an initial training that is both fun and effective may help drive more individuals to be a part of local public health emergency response activities.

Escape Room Background

Serious gaming is being used to some extent in higher education for the purposes of learning, skill acquisition and training. The use of games in the healthcare field is beneficial because there is not a risk to patients during the game—players are able to make mistakes without consequences (Cain and Piascik, 2015). In addition, the use of escape rooms has experienced a broadening interest in the past decade; some volunteers and members of the community may decide to attend the EscapePOD training out of sheer curiosity (Sundsbo, 2019).

Using games may be a way that public health departments can engage people from various walks of life. Since people learn in different ways, it is important that the instructor uses various methods to convey information to an audience. Even though lectures are easy to prepare and can take a minimal amount of time, they can sometimes become a rote way of learning. Many people prefer to use active participation with hands-on activities when learning new materials (Everest College, 2014).

The majority of the EscapePOD training was conducted in the ELVPHD service area; the emergency operations of this local health department fall under the Public Health Emergency Preparedness grant (Centers for Disease Control, 2019). The funding

for the EscapePOD training was covered with the PHEP grant as the requirements to training POD volunteers falls into the emergency preparedness parameters.

The only costs for the EscapePOD training were the EscapePOD training materials; meeting locations for the trainings were found in free venues. The items purchased included locks and props used in the course. Some of the props were gathered from existing supplies at ELVPHD and through requests for other supplies which were sent out to ELVPHD employees. An example of this was a request for empty prescription medication bottles sent to employees. Other props were purchased from thrift stores; an example of this is a picture cube and clock that were used in one of the puzzles. For items that could not be found in current stocks, borrowed from employees or bought at thrift stores, those were purchased from box stores or online stores. Printing costs were covered with the grant funds, as well.

Statement of Problem

With limited staff at the local health department level, it will be necessary to use volunteers to work in the Open PODs during a real event. Utilizing volunteers to operate Open PODs can pose many challenges. It is possible to use volunteers from all walks of life to help in the PODs, but it is imperative that proper training be utilized to help these individuals understand their role in the operation and to ensure that the information they are giving to the public is accurate.

In a study published by Roberts, Nimegeer, Farmer and Heaney (2014), the volunteers that were interviewed described some of the issues with volunteering which included time away from family and the stress of the situation. There was also evidence from community members that the volunteers did not actually understand the role that

they were filling for the emergency response. It is very important that volunteers be adequately trained in their role in an Open POD response so that they would be able to operate in the POD effectively and properly.

To this end, the problem that this paper will address is the adequate training of public health Open POD volunteers in Northeast Nebraska. The purpose of this project is to utilize escape room methodologies, in this project called the EscapePOD, to entice public health volunteers and stakeholders from the Elkhorn Logan Valley Public Health Department district and northeast Nebraska to attend Point-of-Dispensing training and provide them with a learning environment that is effective and fun.

Definitions

For this research, escape room methodologies was generally defined as a scenario-based game that is played by groups of people who must think creatively and engage in critical thinking to solve multiple challenges to successfully advance through the room and complete the game.

For this research, the terms "effective" and "fun" were defined by participants' perspectives as gathered from the final analysis of the evaluation and test forms following the EscapePOD training.

Significance of the Project

By gamification of Point-of-Dispensing training, we may appeal to a larger group of individuals, allowing them to engage in the public health volunteer program. Public health training generally follows the Homeland Security Exercise and Evaluation

Program where in-class trainings progress to an eventual tabletop exercise and then those are developed into full-scale exercises. Though this process is effective in training volunteers, offering an initial volunteer training that is fun and effective may bring individuals to all of the trainings who may have otherwise avoided public health training.

The training developed for the EscapePOD will assist with volunteer recruitment, sustain the interest of existing volunteers and increase the overall engagement of community members in public health emergency preparedness. The EscapePOD model developed in this project could be utilized by other local health departments to enhance their POD volunteer trainings.

Research Question

The research question for this study is: Will utilizing the escape room methodology during POD volunteer training increase the POD volunteers' understanding of POD operations following the Escape Room training?

Specific Aims/Objectives

- **Aim 1:** Determine the amount of prior knowledge participants have on the subject before the training begins by conducting a pre-training test.

- **Aim 2:** Determine the amount of knowledge participants gain from the lecture part of the training by conducting a mid-training test consisting of the same questions from the pre-training test.

- **Aim 3:** Determine the amount of knowledge participants gain following the EscapePOD portion of the training by conducting a post-training test consisting of the same questions from the pre- and mid-training tests.

- **Aim 4:** Gain knowledge about participants' perceptions on lecture-based vs. EscapePOD-based training**.**

- **Aim 5:** Make the training affordable and replicable for other health departments to utilize in their own POD training.

Assumptions

- **Assumption 1:** There is enough interest in the public health volunteer program already that we were able to get enough volunteers to attend our training for an adequate sample size.

- **Assumption 2:** The marketing materials created will appeal to all populations in the ELVPHD district and will generate additional attendees to the EscapePOD training sessions.

- **Assumption 3:** These trainings were held in various locations across the ELVPHD service area in northeast Nebraska.

- **Assumption 4:** All trainings were identical at all locations where the EscapePOD training is held.

Limitations

Limitations in obtaining enough volunteers to reach saturation for the qualitative aspects of this study and to do an adequate statistical analysis of the data (n=30) may include:

- Advertising not reaching the desired population

- Weather on the days of the training causing issues for volunteers to travel to training

- Training offered at a time of the day that does not allow for volunteers to attend

- Training offered on a day when volunteers have difficulty attending

Other limitations of this study that do not influence the number of participants could include the following:

In the most traditional sense of escape rooms, players are locked in an escape room and only upon solving the clues and puzzles do they earn the key or combination which opens the door to let them out of the room (Nicholson, 2016). In January 2019, five teenage girls died in a fire that occurred in a locked escape room facility in Poland (Scislowska, 2019). Safety of participants is of utmost concern, so the traditional method of using locked rooms will not be used in this study.

Players may want to cheat to solve the problems and riddles, or the players may also break into the last puzzle, skipping over the first puzzles (Sundsbo, 2019). This can be alleviated to some extent by clear rules. Not all players may contribute equally in solving the puzzles.

The escape room props may break during the training; the activities that ensue will have to be adapted in the midst of the training (Sundsbo, 2019). Another limitation may occur even if the final test demonstrates an increase over the mid test: this increase in test scores may occur simply because the participants heard the information an additional time through the EscapePOD module.

CHAPTER 2: METHODS

Literature Review

One method to motivate public health volunteers and stakeholders to engage more in training may be to utilize games when conducting training for POD operations. Serious gaming is being used to some extent in higher education for the purposes of learning, skill acquisition and training. The use of games in the healthcare field is beneficial because there is not a risk to patients during the game—players are able to make mistakes without consequences (Cain and Piascik, 2015). In addition, the use of escape rooms has experienced a broadening interest in the past decade; some volunteers and members of the community may decide to attend the EscapePOD training out of sheer curiosity (Sundsbo, 2019).

An issue that comes to fruition when considering serious games as a method to convey lessons and training is that the word 'game' is often associated with activities that are frivolous. For instance, board games are played around the kitchen table with friends and family, people have games on their phones and handheld devices to occupy down time and some people engage in the online gaming world as a means to fill a social void. However, corporations have begun to accept that games are a strategy that can be incorporated into their organizations to help train and recruit employees (Cain and Piascik, 2015). It is also important to note that games are not a break from learning—they are learning (Kapp and Cone, 2012).

Play in adulthood is often stigmatized (Guitard, Ferland, and Dutil, 2006). It is also not fully understood how and why adults play or do not play in their adulthood, nor is there a great understanding as to if play is even necessary to learning and functioning as an adult (Whitton, 2018).

The Homeland Security Exercise and Evaluation Program is a framework that helps guide exercises—both discussion-based and operations-based—in the emergency management arena. This program defines games as "simulation of operations that often involves two or more teams, usually in a competitive environment, using rules, data, and procedures designed to depict an actual or hypothetical situation. Games explore the consequences of player decisions and actions." The document goes on to state that games are useful in validating plans and procedures and to help evaluate what resources are required in various situations (Homeland Security, 2013).

Using games may be a way that public health departments can reach different types of learners and engage them in the POD training process. People learn in different ways, and the method that an instructor chooses to utilize when delivering their information will have a substantial impact on what their audience learns and retains (Fleming, 1995). Lectures may not be the most impactful way to reach a large group of learners, even though preparing for a lecture takes less time than other methods of instructional delivery with Clark (2014) even calling lectures a "lazy and damaging pedagogy." According to the *Learning in America Survey* (Everest College, 2014), 52% of Americans believe that active participation through hands-on training is the best learning method.

David Kolb published his learning style model in 1984. In the model, he suggests that positive learning outcomes can be achieved when the students have experiential interaction with the material being presented (1984). In author L. Dee Fink's book, *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*, she stated that higher education faculty often reference higher-level

learning goals such as critical thinking but rely heavily upon lectures to deliver their information (2003). Fink states that lecturing is the dominant mode of delivery for college faculty.

Another issue that Fink discussed was that there was low student attendance in class. These students were not self-motivated to come to class when the energy in the class was low. The students complained about sitting in classes, taking notes and cramming for exams. They could not see the value or significance of what they were learning. When the teachers treat their students as objects that the teachers are going to do something to (I, the teacher, am going to lecture to you, the student, about a subject), then only the goal of foundational knowledge is reached. The instructor has missed the additional values of human dimension, caring and self-directed learning (Fink, 2003).

Carvalho et al. (2015) discuss an activity theory that states that activity is a "purposeful interaction between subject and object." The interaction between subjects and objects is often mediated by physical or mental tools—hammers, computers, knives or maps and notations. According to activity theory, an activity happens at three levels simultaneously, with goals, motives and operations being performed at different levels of awareness. The subject is often aware of his or her goals but may not be aware of the motives behind the activity. The operations are performed unconsciously according to the conditions of the situation. There are constant transformations in the activities that occur based upon changes in the environment and the subject's skill or motivations.

Often, people will play games because of the challenge, the excitement and the uncertain outcome (Kapp and Cone, 2012). This motivation to play will often result in extended time spent in the learning activity compared to sitting in a lecture (Gray, 2018).

This becomes even more crucial in a world where time and attention span is limited—games immerse the learner in a situation and allow that person to advance as they solve problems and utilize their critical thinking skills to strategize a desired outcome (Kapp and Cone, 2012).

Escape rooms were first used in Japan in 2007 (Corkill, 2009), with the initial room developed by Takao Kato. These original escape room events were often held in bars or clubs that had been filled with hidden messages, objects and clues. Players were led into these escape rooms and given 60 minutes to solve the puzzles and escape the room. Since 2007, there have been many iterations of escape rooms; the concept has grown exponentially in the United States (World of Escapes, n.d.).

Escape rooms are considered gamified learning methods and have appeared in recent teaching and training in higher education, in addition to the aforementioned commercial gaming venues (Eukel, Frenzel, and Carnusca, 2017; Piascik, 2015; Hermanns, et al., 2017; Waggoner, Martin, Eads, Branson, 2019; Hermanns et al., 2018; Voros and Sarkozi, 2017; Connelly, Burbach Kennedy, and Walters, 2018). Escape rooms are "live-action team-based games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal, usually escaping from the room, in a limited amount of time" (Nicholson 2015). Escape rooms require teamwork, communication and delegation as well as critical thinking, attention to detail and lateral thinking.

Many authors adapt the escape room game-type methodology when using it in a classroom. In a commercial escape room, players engage in the tasks in small groups of 4 to 6 players, working in the space until the final puzzle has been solved, allowing the

players to "escape" the room. In a classroom, there are generally more than 4 to 6

students; having access to multiple rooms where each small group can work on the

escape room tasks is often not feasible. Therefore, another way of utilizing the escape

room methodologies must be utilized in a classroom setting (Voros and Sarkozi, 2017).

One adaption to the traditional escape room was made for a high school physics

class in Romania (Voros and Sarkozi, 2017). In this adaptation, the game creators could

not guarantee separate rooms for each of their 4 to 6 small groups of students. Instead, the

students all played the game in the same classroom. The teams had to break into a box

that had multiple locks on it, solving puzzles to gain clues to the combinations. Likewise,

Monaghan and Nicholson (2017) modified the escape room idea to include escape boxes.

In this study, each escape box was a toolbox with a lock that secured the box. The teams

solved problems and found clues to give them the combination to the lock.

Yet another adaptation to the escape room idea for education revolved around the

need to have a quick and easy set up and take down; it also needed to be affordable

(Sundsbo, 2019). The props for this event were created from old books and supplies taken

from the stationery closet. In this adapted escape room version, the players 'won' when

the final box was opened.

Because game design requires detailed thought processes to ensure that the flow

of the game engages the students, some authors believe that the task of game design

should not be undertaken by inexperienced individuals (Carvalho, 2015). However, some

of this complexity can be controlled if trial tests are run before the actual use of the

escape room with players. This will help to reduce players' frustration and enhance their

engagement in the game. In addition, what may seem to be a simple puzzle to the escape

room creator may prove challenging for the players; it is important to look at the escape room from the perspective of the players and design the room accordingly (Hermanns et al., 2018).

Another aspect of game design to consider when using an escape room educational experience is the narrative. The narrative gives the players a story and helps drive their activities forward. Every puzzle and item in the game should relate to the narrative (Monaghan and Nicholson, 2017). A consistent narrative will also help the players immerse themselves in the story (Nicholson, 2016).

Pharmacy students who participated in the diabetes-themed escape room designed by Eukel, Frenzel and Cernusca (2017) had a positive perception of the escape room activity that was conducted at North Dakota State University. A one-sample t-test indicated that students' mean (SD) perception was statistically significantly higher than the mean value of the evaluation scale neutral level or lower. In the reported results, 89.9% of the students agreed or strongly agreed that the escape room encouraged them to think about the material in a new way. The majority agreed or strongly agreed that they would recommend the escape room training to other students (95%). Most of the students felt that the escape room was an effective way to learn new information related to diabetes (91.2%), and 87.3% indicated that the escape room was an effective way to learn new information related to diabetes. The students also felt that the escape room enabled them to engage with their teammates to learn new material (96.2%).

In an escape room toolbox strategy used with pharmacology students to learn about cardiovascular medications, Hermanns, et al. (2018) found similar results. Of the students who participated, the majority (n=89, 74.8%) felt that the escape room session

was a valuable activity, but 30 students (25.2%) responded neutrally or negatively. More than half of the students in this study (72.2%) said that they learned from the activity and would like to see more of the escape room concept in future content. Indeed, 52.9% of the students stated that their understanding of cardiovascular pharmacology increased as a result of the escape room activity.

Study Design

Population

The population from which this study derived is from the Elkhorn Logan Valley Public Health Department district in northeast Nebraska and the neighboring health districts. Total population of the ELVPHD health district is 57,002. The majority of the players in the EscapePOD training were the volunteers and public from ELVPHD service area. The number of attendees at each training varied, depending upon location, time and weather and upon whether the volunteers and public chose to come to the public health training based on the messages that were dispersed to advertise the events.

Variables

The *independent variables* included:

- The puzzles, clues and objects used to guide the participants through the EscapePOD process.

The *discrete, dependent variables* included:

- Participant satisfaction with the EscapePOD training
- Amount of information learned by the participants at the EscapePOD training

The *control variables* in this study included:

- Weather on the day of training

- Time of day the training was offered

- Days that the training was offered.

Because this experiment was scheduled to occur in February in Nebraska, there were days and evenings when the training was held, and it was snowy and cold. This may have prohibited some people from attending. The time of day that a training was offered could have also affected how many people were able to attend the training. However, the dates and times were scheduled to occur during the week, both during the day and in the evening, and some events were held on the weekends. The varying days and times that the training was offered was intended to allow people to attend the training that best fit their schedule.

This study used mixed methods, both quantitative and qualitative, in the data collection and analysis. The quantitative portion was determined by evaluating the pre-, mid- and post-training tests. The qualitative portion that was examined was the participants' perceptions of the experience and how likely they believed the escape room concept motivated them to come to the training in the first place.

Data collection method

A focus group was used to evaluate and improve the first drafts of the printed and hands-on materials that were used during the EscapePOD training. This allowed the props and logic used to create the flow of the EscapePOD training to be adjusted, as necessary, prior to the full study that commenced in February, 2020.

This focus group was comprised of approximately 30 University of Nebraska Medical Center (UNMC) nursing students housed at Northeast Community College

(NECC) in Norfolk, Nebraska in late October, 2019. The focus group was utilized in this manner because Elkhorn Logan Valley Public Health Department has historically taught a public health emergency preparedness and response module for the UNMC nursing students at NECC. The EscapePOD module was added to the training that is normally conducted for this group of students. These students know the differences in methods that are utilized in their own college training and offered valuable insight on the two methods (lecture and EscapePOD) used in this training. The focus group allowed the EscapePOD design to be adjusted, as needed, prior to the actual training in February, 2020. If the puzzles were too simple, additional 'noise' was added to make them more difficult. Likewise, if the puzzles were too difficult, they were simplified to make it easier for the players to get through the EscapePOD. The goal was to make the EscapePOD modules last, in total, for 60 minutes.

In early February, 2020, six separate EscapePOD training events were offered to the public. Two events were held in Norfolk, NE, one in West Point, NE, one in Oakland, NE and one in Dakota City, NE. In addition to the these locations, a training was held at the ELVPHD main office in Wisner, NE, as well. EscapePOD training locations were held in the towns where Open PODs would be opened in the ELVPHD district, but they were not necessarily held at the actual Open POD locations as indicated in the ELVPHD Mass Medication Dispensing Plan. Since many of the Open PODs are planned to be opened in schools, any training that we do in those locations could potentially disrupt school sessions. In addition, two of the planned POD locations would require paying rent to use the facility. It was determined to use meeting locations that did not interrupt school and that did not require an exchange of money.

To recruit volunteers and the public to attend the EscapePOD trainings, various methods were utilized to advertise these events. The EscapePOD trainings were advertised via social media, in an ELVPHD volunteer newsletter sent to ELVPHD volunteers at the beginning of January 2020, using posted flyers in the towns in and around where the EscapePOD trainings were conducted, and via news releases. This training was open to both current volunteers and to anyone in the public who would potentially be interested in assisting during an emergency that requires Open PODS to operate in the ELVPHD district. Sample size was dependent upon the number of volunteers and interested members of the public who attended the trainings.

Data were collected via printed tests at the conclusion of each training (Table 1), with additional information gathered via a final evaluation form (Table 2.)

Procedure

The size of the groups within the EscapePOD training were limited; most research suggested four to six individuals per group, with up to 10 being manageable (Cain, 2017). Participants in the EscapePOD training were broken into manageable-sized groups based upon this recommendation as they entered the training room when the total groups were larger than five people.

The participants took a 10-question, multiple choice pre-test immediately prior to the start of the training; they were instructed to put their initials or an identifying symbol at the top of the test. This allowed for anonymity in testing (Appendix A.)

This was followed by a lecture-type training involving a PowerPoint presentation, lasting approximately 20 minutes, which gave them insight into POD operations. The attendees took another 10-question, multiple choice mid-training test that was identical to

the pre-test with instructions to include the same initials or symbol that they put on the first test.

Following this mid-training test, the attendees proceeded to the EscapePOD training, the hands-on portion of the training involving the modified escape room methodology of teaching POD operations. After one hour, or earlier if the group(s) completed the puzzles ahead of the one-hour time limit, the EscapePOD training portion ended. Attendees took an exact duplicate of the 10-question multiple choice test that they took prior to the EscapePOD to determine if their knowledge increased, decreased or stayed the same.

An evaluation was also given to the attendees to determine if the EscapePOD was a motivation for their attendance and if they felt that the training was better, worse or the same as other training they have taken. This evaluation utilized a 5-point Likert scale, ie. 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree and 5=Strongly Agree. Open-ended questions were also utilized for this evaluation (Appendix B).

Finally, the training concluded with a post-activity review. This knowledge check and evaluation ensures that the main points of the information from the training were understood (Cain, 2017). Monaghan and Nicholson also state that an immediate debrief, testing and evaluation should occur at the conclusion of the training as this is an important part of the learning process (2017).

Escape POD Design

There were six modules developed that coincided with various roles that volunteers and staff could fill in an open POD. The modules included security, greeting,

screening, dispensing, transportation and volunteers. The clues and hints found during these six modules all came together to solve a final puzzle. Unlimited hints were given after each module had run for at least 5 minutes to help participants succeed in solving the puzzles.

The security module used envelopes of various sizes and colors all addressed to the same location. The stamps on the envelopes were vintage stamps with states, people and various subjects on them. The participants had to determine from the clue, held in a small mailbox that read, "Avoid the states," that the stamps with states on them were the clue that they needed.

The greeting module had a puzzle that included a photo cube, with six pictures in it with photos of people with physical limitations; all of the people in the photos were pointing different directions. There was also a clock with certain aspects of the people on the cubes cut out and pasted at each hour on the clock. The cube and clock hints worked to unlock a directional lock on a toolbox that held the clue for that module.

To create the puzzle, duplicate photos of each person were printed and a small circle was cut from a duplicate of each photo. This circle was then placed at an hour on the clock. For example, the part of the photo at one o'clock was a small circle with a part of a sweatshirt that could be found in the photo cube photo with a woman in it. The woman represented the deaf community and was giving an American Sign Language sign that involved her pointing downward. The participants then would determine that the first direction of the lock was 'down.' They continued through the twelve numbers of the clock until they had figured out the directions for the directional lock. The clue for this

puzzle was taped to the inside of the lid of the toolbox which they could see once they opened the lock.

The screening module included medication screening forms with fake names and addresses on them. These were forms that could have more than one person on them (head-of-household forms). The participants had to follow an algorithm to determine if the person/people on the form were to receive doxycycline, ciprofloxacin or needed additional medical evaluation. Three forms were prefilled with information that would lead the participants into determining that the form needed to be filed as "doxycycline," "ciprofloxacin" or "medical evaluation." There was a letter sorter that indicated "1. Doxycycline," "2. Ciprofloxacin," and "3. Medical Evaluation." At the top of each head-of-household form, there was a box that had a patient number in it. The patient number coincided with one number on a 3-number combination lock. Put in the right order, the participants were able to deduce that the patient numbers were what comprised the combination to open the lock. Once the lock on the container was opened, the participants were able to obtain another clue to help them solve the final puzzle.

For the screening module, there were six different boxes with six different locks on them. Each box contained a different clue. Each group would pick a box and set of screening forms that had the same group number on them. This added an element of uncertainty for the final puzzle because each group had a set of different clues.

The dispensing module included a line list of fake names, addresses and phone numbers of people and indicated if the person would receive doxycycline or ciprofloxacin. There was a container that contained yellow and red 2X2 square Legos and

a flat, green Lego board. The Lego board held exactly 11 bricks across and 7 bricks down for a total of 77 bricks. This coincided with the 77 people in the provided line list.

On the inside of the Lego container, the hint, "Red = doxycycline; yellow = ciprofloxacin" was written. The line list indicated that bricks should be put in rows. When the line list was translated into appropriate-colored bricks, it spelled out the word "PILL." This word was put into a combination lock that used letters instead of numbers. The lock opened a container that held the next hint for the final puzzle.

The transportation module utilized nine small cars—two black law enforcement vehicles and the remainder of the cars painted red, blue or green. Each car had a different location labeled on it which coincided with potential Open POD sites in the ELVPHD health district. Laminated maps that included the towns and locations were available for the participants to reference. The instructions directed the participants to line the vehicles up in the proper order to form a convoy moving west to east across the district to deliver the POD supplies. The colors of the vehicles coordinated with a directional lock that had colors on it. Once opened, the container held another clue for the final puzzle.

The last module was a go-bag—a bag that holds various things that a person might need to carry with them in an emergency. This included a flashlight, granola bar, whistle, and various other items. As the participants dug through the bag, they eventually stumbled upon a key that would open a lock. The lock was on a second bag that held a clue for the final puzzle inside of it.

The final puzzle was comprised of multiple sizes and types of prescription medication bottles with fake names, addresses and prescriptions indicated on them. The participants used their clues gathered during the Escape POD to open the correct bottles.

For example, the module with the envelopes and stamps said to avoid certain states. If a prescription bottle included an address with one of the mentioned states, the participants would put that bottle aside. In the end, the participants needed to open between 9 and 12 bottles to get the full effect of their choices.

Some bottles contained messages like, "Hooray! The internet was hooked up successfully at the POD. You saved 3,250 people!" If a wrong choice was made, the message in the bottle might say, "Too bad! This bottle says to take the medication four times per day. People got sick from this medication and died. You killed 750 people." We added up the number of people saved vs. the number killed to get an idea of how each choice they made had consequences. If the participants worked together and shared their hints from the screening module (six different sets of forms and locks), they discovered that their overall effect was that they saved more people. Competing against each other caused more people to die.

The design of the EscapePOD used solid instructional strategies that matched the activity so that the game was fun while also being instructional. The EscapePOD training utilized established gamification principles in the design: immediate feedback, multiple attempts, clear rules, continuous challenges that are "just out of reach"—staples of game design (Cain, 2017). Physical locks were used in the EscapePOD training; the role of the locks in the EscapePOD were to provide immediate feedback to the participants. If they got the answers right, the lock opened; if not, they needed to try again. Immediate physical feedback was what made this an engaging choice for Monaghan and Nicholson (2017) when they designed their escape boxes for a pathophysiology course.

As the players progressed through the puzzles, some groups found themselves unable to answer a question after multiple attempts. Hints were provided to the players when they asked for help, but the hints did not give them an outright answer to the puzzle. Providing hints is necessary because people react to situations in unexpected ways. If the players got stuck, they need to be provided a way out (Cain, 2017). During each module, participants were encouraged to attempt to solve the puzzles without intervention or help. However, after five minutes in a module, unlimited hints were given if the participants felt they needed additional help. The goal was not to stump the participants with the puzzles; rather, the goal was to use a fun method to help deliver instruction and ideas about POD operations.

Rules were given verbally at the beginning of the training and written at each station so that the players could engage in the EscapePOD without having to continuously ask the facilitator for directions. This helped with the flow of the game and ensured a fair environment for all players.

Data Analysis

Prior to analysis, the pre-, mid- and post-tests were graded and a percentage correct assigned to each test. The participant scores were put into a spreadsheet with each individual's test score separate from the next. In addition, the event evaluation forms had each individual's Likert score for each question recorded on a spreadsheet. The information obtained from the open-ended questions were entered individually into a spreadsheet for ease of comparison between answers.

The participants' mean scores for the pre-, mid- and post-tests were calculated to compare the test scores.

CHAPTER 3: RESULTS

The individuals who attended the EscapePOD resided in the Elkhorn Logan

Valley Public Health Department district or in neighboring health districts in northeast

Nebraska. The participants were free to choose the date and time that worked best for

them to attend one of the six EscapePOD training events.

EscapePOD Participant Test Scores

Student #	Number of Correct Answers		
	Pre-Test	Mid-Test	Post-Test
1	7	8	10
2	1	8	9
3	7	10	10
4	5	10	10
5	8	9	9
6	6	10	10
7	1	9	9
8	3	10	9
9	4	9	9
10	6	9	9
11	5	9	9
12	6	9	9
13	4	7	10
14	7	9	9
15	8	9	10
16	5	10	10
17	4	9	9
18	6	7	8
19	5	9	9
20	6	9	10
21	7	10	10
22	5	10	10
23	2	8	10
24	6	9	10
25	8	8	9
26	7	10	10
27	4	10	10
Total Correct	143	244	256
Test % Correct	53%	90%	95%

Table 1. Test scores for EscapePOD training participants

The pre-test mean score was 53%. This represents the knowledge about the Strategic National Stockpile and mass dispensing of medications that the students had prior to coming to the training. The mid-test score, which occurred after the students had participated in the 20-minute lecture portion which included a PowerPoint presentation, was 90%. This indicates an increase of 37% after participating in that portion of the training (Table 1.)

This large increase likely occurred because the PowerPoint presentation gave the participants the opportunity to absorb new knowledge about the SNS and POD operations. We would expect a large jump in this situation simply because of the information being presented, as long as the participants were engaged in the PowerPoint presentation. In addition, the pre- and mid-tests were identical, so the participants knew the information that was being asked on the mid-test prior to the PowerPoint presentation and could therefore 'find' the answers during the presentation.

The EscapePOD activity followed the PowerPoint presentation and mid-test. Following this portion of the training, the overall participant test percentage increased to 95%, which indicated a 5% increase from the mid-test scores. This increase could have been because of the EscapePOD activity, or it could have simply been because the participants were seeing the information for a second time. In addition, they had seen the questions to the test twice and knew what answers to be searching for during the EscapePOD activity.

Since there would likely be some reliance on "Just-in-Time" training for volunteers who arrive at a disaster or emergency event without prior training, it is encouraging that the mean of the pre- to mid- tests improved by 37% to an average grade

of 90%. Most "Just-in-Time" training in the emergency plans for ELVPHD involve either a script that is read to participants or a script read to participants with a PowerPoint presentation that highlights the main points of what the volunteers need to know. The PowerPoint section of the EscapePOD training showed that a 20-minute training was adequate to convey information in a that short time period.

By participating in the EscapePOD activity, the final post-test average increased by another 5%. However, given enough time during a Just-in-Time training situation, that additional 5% increase in knowledge could reinforce the information gathered from the lecture portion of the training.

Likert-scale Evaluations

Evaluation forms were used to indicate the level of satisfaction with the EscapePOD training. Each participant was given an evaluation form that included answering questions on a Likert scale and which also included open-ended questions leading to insights into the perceptions of the training by the participants (Appendix B). The Likert evaluation included 17 questions that the participants rated on a scale of 1 to 5 (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.) The results of the Likert evaluation are as follows:

Likert Score Evaluation Questions (Scale 1=Strongly Disagree to 5=Strongly Agree)	Average Answer	Range Low Score	Range High Score
The EscapePOD encouraged me to think about material in a new way.	4.90	4	5
I would recommend this activity to other people.	4.80	3	5
I learned from my peers during the EscapePOD activity.	4.70	3	5
The EscapePOD was an effective way to review the topic of Open POD.	4.83	4	5
The EscapePOD was an effective way to learn new information regarding Open POD operations.	4.93	4	5
I learn better in a game format than a didactic (normal) lecture.	4.47	3	5
The EscapePOD was an effective way to assist my learning of Open POD operations.	4.67	3	5
I feel I was able to engage with my teammates to learn new material.	4.83	4	5
It was difficult for me to focus on learning because I was feeling stressed or overwhelmed.	1.87	1	5
The non-educational portions (eg. puzzles, ciphers, etc.) distracted me from learning about Open POD operations.	1.57	1	4
I prefer assembling information from a variety of sources when learning new material.	4.07	2	5
In general, I enjoy playing games (video games, board games, social media games, etc.)	3.93	1	5
I learn better doing hands-on activities rather than lectures.	4.41	1	5
I prefer to learn by interacting with groups of people rather than learning on my own.	4.10	2	5
I would consider the PowerPoint lecture "fun."	3.17	1	5
I would consider the Escape POD activity "fun."	4.70	3	5
I attended this training event because the advertisements promoting this event mentioned Escape Rooms.	3.43	1	5

Table 2. Likert-scale evaluation results

The lowest score on the Likert-scale evaluation was the number assigned to the statement, "The non-educational portions (eg. puzzles, ciphers, etc.) distracted me from learning about Open POD operations." In other words, the attendees generally did not find that the EscapePOD aspect of the training detracted from the material. Likewise, the next lowest score from the Liker-scale evaluation wanted the participants' perceptions about if they were feeling stressed or overwhelmed. According to Voge and Schwabe (2016), stress can have varying effects on a student's ability to learn. The low scores from the participants indicated that overall, the students would not have been impacted too negatively by stressors in their lives to the point where it would have affected their ability to gain knowledge from this training.

The highest score on the Likert-scale evaluation was the statement that the EscapePOD was an effective way to learn new information. This was encouraging because it meant that the participants believed that the games and puzzles enhanced their ability to gain knowledge from this training. The next highest score on this evaluation was that the EscapePOD encouraged the participants to think about the material in a different way. Part of the purpose of this training was to present material through a novel approach. The participants' answers to this statement support the idea that the EscapePOD portion of the training provided the participants with a new way to consider this material.

Another note of interest from the Likert-scale evaluation was that even though the main purpose of any training is to convey information, having a fun method of offering information seemed to encourage participation between and engagement among the students. The average score for the question that asked if the EscapePOD portion

encouraged participation with teammates was 4.83. There were many opportunities to work with others in attendance during the hands-on portion of the training as the participants worked to solve the puzzles in the EscapePOD. In *Engaging Adult Learners: Philosophy, Principles and Practices* (2013), James Bryson discussed the importance of active learning groups. Bryson states that active learning occurs during any activity when a student is engaged while doing things and thinking about the things they are doing. During these exercises, the students "…talk, listen, discuss, debate, read, write and reflect on content through a variety of activities that require them to interact with each other toward a collaborative outcome." Working with others during the EscapePOD engaged the participants in a way that encourage this type of teamwork and learning.

Overall, the Likert scores to questions revolving around the Escape POD activities reflected participants belief that the hands-on portion enhanced their ability to learn material, encouraged interaction amongst other participants and was a positive enough experience that the participants would recommend the activity to others.

Open-Ended Evaluation

In addition, to the Likert-scale evaluation, the open-ended questions on the evaluation forms were analyzed by finding common themes in the answers. The results to these questions are presented in the following tables. The tables are grouped together based on the topics that they covered.

Question 1: *What is/are the reason(s) you attended this POD training today?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Wanted to know more about the subject/be prepared for the future	11	33%
Asked to attend	8	24%
Interest in the Escape Room/fun way to learn	5	15%
Employer recommended	4	12%
On the volunteer registry	2	6%
Support public health	2	6%
Nothing else to do	1	3%

Table 3. Question 1 open-ended evaluation answers

Question 2: *Where did you first hear about the Escape POD training you attended today?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
One-on-one conversation with another person	15	56%
Email	7	26%
Facebook	3	11%
Flyer	2	7%
Health Department	1	4%

Table 4. Question 2 open-ended evaluation answers

Question 3: *Was the advertising for this training appealing to you? What part did you like? What part of the advertising could be improved?*

Liked the advertising:

Answers	Number of Participants With Same Answer	Percent of Total Answers
Thought it was nice/appealing	7	33%
Didn't see it/didn't pay attention	5	24%
Font, color and images	3	14%
Made it sound more appealing than a normal training	3	14%
Puzzles/games	3	14%

Ways for Improvement:

Answers	Number of Participants With Same Answer	Percent of Total Answers
More ways of advertising/timing of advertising	2	50%
Graphics	1	25%
Date of training	1	25%

Table 5. Question 3 open-ended evaluation answers

Question 4: *Had you heard of Escape Rooms prior to the training you attended today?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Yes	20	74%
No	7	26%

Table 6. Question 4 open-ended evaluation answers

Question 5: *Have you participated in an Escape Room prior to your training today?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Yes	6	22%
No	21	78%

Table 7. Question 5 open-ended evaluation answers

Question 6: *Will you participate in future ELVPHD POD training if the PowerPoint lecture is removed from the agenda and only the Escape POD training is offered?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Yes	12	67%
No	0	0%
Maybe	2	11%
Believe the PowerPoint must always be included	4	22%

Table 8. Question 6 open-ended evaluation answers

Question 7: *Will you participate in future ELVPHD POD training if the Escape POD portion is removed from the agenda and only the PowerPoint lecture is offered?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Yes	15	56%
No	7	26%
Maybe	3	11%
A mix of the two is best	2	7%

Table 9. Question 7 open-ended evaluation answers

Question 8: *What is the best part of the training that you received today?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
Hands-on learning/puzzles	10	40%
Overall information about public health operations	6	24%
Collaboration/interaction	4	16%
Cookies/food	2	8%
Discussion	1	4%
The presenter	1	4%
All of it	1	4%

Table 10. Question 8 open-ended evaluation answers

Question 9: *If you could choose one or two things to improve about the training today, what would you change?*

Answers	Number of Participants With Same Answer	Percent of Total Answers
More people attending	3	25%
Time of training	3	25%
More food	2	17%
Review how to operate locks beforehand:	2	17%
Have soda pop:	2	17%

Table 11. Question 9 open-ended evaluation answers

Additional comments:

Answers	Number of Participants With Same Answer	Percent of Total Answers
Good/great training	6	55%
Fun	3	27%
Presenter is awesome	1	9%
An engaging way to learn about a rather "dry" topic	1	9%

Table 12. Additional comments from evaluation

For Question 1 (Table 3), regarding the reasons that people attended, 33% of the respondents stated that they wanted to know more about the subject with another 24% stating that they attended because they were asked. When considering what kind of advertising to do for an event, this answer served as a reminder that simply asking people to attend is a motivator to increase attendance.

Question 2 (Table 4), which asked the participants about where they first heard about the EscapePOD training event, had 56% of the students state that they heard of the training via a one-on-one conversation. This further reinforces that personally asking people to attend a training can help motivate participant attendance. Both email and Facebook were more important in promoting the Escape POD than the design of the training flyer that was produced for the event. The answers to Question 3 reinforced this, as 24% of the participants stated that they didn't see the advertising or didn't pay attention to the advertising.

Question 3 (Table 5) asked about the flyer and advertising. 33% of the participants stated that the advertising was nice or appealing, but 24% of them didn't pay attention to the advertising or did not see the advertising for the training. Though the visual display of the advertising flyer is important, when ¼ of the attendees don't remember seeing the advertising, there is either room for improvement on the advertising or less emphasis can be placed on the advertising flyers that are created.

For Questions 4 (Table 6) and 5 (Table 7), the participants were asked if they had previously heard about Escape Rooms and if they had participated in a commercial Escape Room prior to the EscapePOD training. Though 74% of the participants had heard about Escape Rooms, only 6 of them (22%) had been to a commercial Escape Room.

Questions 6 (Table 8) and 7 (Table 9) explored the ideas of how attendance would change if either the PowerPoint presentation was cut from the training or if the EscapePOD was cut from the training. If the PowerPoint presentation was removed from the training, 78% of the participants would still return to training while 22% of the participants believed that the PowerPoint should always be included in the training. In contrast, if the EscapePOD portion was removed from the training, 26% of those responding said that they would not attend a training. The hands-on portion was enough to motivate almost ¼ of the respondents to state that they would not attend training from the health department if that portion was removed.

Question 8 (Table 10) asked the participants what the best part of the training was. There were 25 participants who answered this question, and of those, 40% stated that it was the hands-on portion that they felt was the best part of the training.

The final two questions in the open-ended questions part of the evaluation provided general comments on how the training could be improved and overall comments on the training. Besides the comments that the training was a "good/great training," none of the other comments really stood to the forefront. Though the EscapePOD training was offered in multiple locations on multiple dates with varying times, there were some participants who did not like the days or times that the training was offered. There does come a point in the training decision process when it is important to make the choice for dates and times for training with the intent to appeal to the majority of the audience while realizing that it will not satisfy every person who is interested in the training.

In the end, the Likert-scale questions and the open-ended evaluation questions showed that even though the participants enjoyed the game portion of the training, which

is what was expected, there were also a number of participants who also enjoyed the lecture and felt that it was a necessary part of the training. To be fair, the lecture part of the training was the easy part of the training to put together. The information was found on the internet and the tools needed to finish that part of the presentation were all on the computer. It took less than two hours to put together a complete training for that 20-minute section of the EscapePOD training.

Conversely, the EscapePOD portion took over 20 hours to assemble. This involved locating the supplies, brainstorming the flow of the EscapePOD puzzles and then putting the puzzles together in a cohesive bundle to present to the participants. That time did not include the time it took to run the EscapePOD through the UNMC student focus group.

CHAPTER 4: DISCUSSION

Recommendations

The recommendations that come from this study include the following:

1. For future trainings, it is highly encouraged that a hands-on portion be included for the participants. This hands-on portion does not have to be an escape room format, but the scores from the evaluations indicate that most of the participants enjoyed the EscapePOD hands-on activities.

2. Always include at least some form of lecture or a lecture with a PowerPoint presentation to rapidly disseminate information in an organized fashion. This allows the instructor to give the same information and messages to all the students at the same time and in a relatively short amount of time.

3. Utilizing thrift stores to source supplies for an EscapePOD-type training or any other hands-on training is a great way to save money, but it would also be beneficial to ask co-workers and friends for supplies that they have on hand.

4. The flyer and advertising design did not seem to be as important as personally asking participants to attend the training. Though the advertising items are important, time should be invested in requesting colleague and partner attendance at trainings that are relevant to them.

Ethical Considerations

Every person who attended the focus group signed a standard sign-in sheet that ELVPHD uses when conducting training. This form includes information about consent to participate in the activity, including an image release statement.

For the participants who attended the actual EscapePOD training in February, a consent to participate form was also signed. This study was approved as exempt by the University of Nebraska Medical Center Institutional Review Board.

Dissemination of Results

This study has been accepted to be presented as a workshop at the NACCHO Preparedness Summit in Dallas, Texas, which has been rescheduled for August, 2020 due to the SARS CoV-2 (COVID-19) pandemic. In addition, the results were published as a culmination for a Master's Thesis with the University of Nebraska Medical Center, College of Public Health and will potentially be written as a journal article.

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Questions for EscapePOD Pre-, Mid- and Post-Tests

1. What does the acronym "SNS" stand for?

>Correct answer: *Strategic National Stockpile*

2. What can you receive at an Open Point-of-Dispensing location?

>Correct answer: *Free medications*

3. What kind of security is needed while the SNS supplies are enroute?

>Correct answer: *Vehicles which are visibly marked as security vehicles, peace officers in uniform and armed peace officers.*

4. If an Anthrax attack occurs, what two types of medication would we primarily expect to receive from the SNS?

>Correct answer: *Doxycycline and Ciprofloxacin*

5. If a person is taking this particular drug, they CANNOT take Ciprofloxacin.

>Correct answer: *Tizanidine*

6. The Ciprofloxacin that comes in the SNS arrives in which dosage.

>Correct answer: *500mg*

7. The two main drugs that come in the SNS arrive in which form(s)?

>Correct answer: *Tablets, capsules and liquids*

8. The Greeter at an Open Point-of-Dispensing must possess the following:

>Correct answer: *A calm and pleasant demeanor*

9. To help control access to areas of the Point-of-Dispensing where medication is stored

>Correct answer: O*nly people with the proper wristband, badge and/or vest were allowed in the area where medication is stored.*

10. In the event of an outbreak or terrorist attack with a bacterial agent, medication were given at the Point-of Dispensing

>Correct answer: *To one person representing a whole household.*

Appendix A. Questions asked on the Pre-, Mid- and Post-Tests

Evaluation of EscapePOD Training

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The EscapePOD encouraged me to think about material in a new way.	1	2	3	4	5
I would recommend this activity to other people.	1	2	3	4	5
I learned from my peers during the EscapePOD activity.	1	2	3	4	5
The EscapePOD was an effective way to review the topic of Open POD operations.	1	2	3	4	5
The EscapePOD was an effective way to learn new information regarding Open POD operations.	1	2	3	4	5
I learn better in a game format than a didactic (normal) lecture.	1	2	3	4	5
The EscapePOD was an effective way to assist my learning of Open POD operations.	1	2	3	4	5
I feel I was able to engage with my teammates to learn new material.	1	2	3	4	5
It was difficult for me to focus on learning because I was feeling stressed or overwhelmed.	1	2	3	4	5
The non-educational portions (eg. puzzles, ciphers, etc.) distracted me from learning about Open POD operations.	1	2	3	4	5
I prefer assembling information from a variety of sources when learning new material.	1	2	3	4	5
In general, I enjoy playing games (video games, board games, social media games, etc.)	1	2	3	4	5
I learn better doing hand-on activities rather than lectures.	1	2	3	4	5
I prefer to learn by interacting with groups of people rather than learning on my own.	1	2	3	4	5
I would consider the PowerPoint lecture "fun."	1	2	3	4	5
I would consider the EscapePOD activity "fun."	1	2	3	4	5
I attended this training event because the advertisements promoting this event mentioned Escape Rooms.	1	2	3	4	5

Please circle the number that corresponds with your perception of this training.

Appendix B. Likert-scale EscapePOD Training Evaluation
Adapted from Eukel, Frenzel, and Cernusca, 2017.

Evaluation of EscapePOD Training
Page 2

Please answer the following questions to the best of your ability.

1. What is/are the reason(s) you attended this POD training today?

2. Where did you first hear about the EscapePOD training you attended today?

3. Was the advertising for this training appealing to you? What part did you like? What part of the advertising could be improved?

4. Had you heard of Escape Rooms prior to the training you attended today?

5. Have you participated in an Escape Room prior to your training today?

6. Will you participate in future ELVPHD POD training if the PowerPoint lecture is removed from the agenda and only the EscapePOD training is offered?

7. Will you participate in future ELVPHD POD training if the EscapePOD portion is removed from the agenda and only the PowerPoint lecture is offered?

8. What is the best part of the training that you received today?

9. If you could choose one or two things to improve about the training today, what you change?

10. If you have any additional comments about this training, please include them here.

Thank you for attending this EscapePOD training. We appreciate the time you have given to make public health preparedness a priority in our health district!

Appendix B. Open-ended Evaluation Questions.