

## Student Pharmacists' Assessment of a Serious Game on Opioid Medication Safety

Supplementary Table 1. Summary of Themes, Subthemes, and Participant Quotes

Subthemes	Verbatim Quotes
<b>Theme 1: Opioid safety education</b>	
<b>Avoid medication misuse</b>	<p>"Do not give your medications out to people who are in pain. Even though you want to help them, you can't be sure that you won't cause them harm." -G3</p> <p>"Only take medications that are prescribed to you and the way that they are prescribed to you. Do not take medications from others even if they seem similar." -G5</p> <p>"The purpose of this level was to show the importance of refraining from sharing your prescription medications, especially controlled substances such as opioids." - G9</p> <p>"The main take away message was to not share your opioid medications with others." -G10</p>
<b>Naloxone education</b>	<p>"Another message is that when someone is experiencing an overdose, you should give them Narcan (naloxone)." -G1</p> <p>"Demonstrates appropriate use of Narcan (naloxone) in emergency situations and benefits of having Narcan (naloxone) in an emergency. We liked that when you lost the level that it gave you more information about Narcan (naloxone) before bringing you back to the start of the level." -G5</p> <p>"The use of Narcan (naloxone) was beneficial to see." -G6</p> <p>"We liked that it (the game) addressed Narcan (naloxone) because this shows adolescents that there is a risk of taking prescription pain medications and these risks aren't just seen with street drugs." -G9</p>
<b>Safe medication storage</b>	<p>"To show the consequences of improper med storage at home. It shows that you need to keep medications locked away in order to keep them safe and out of reach." -G4</p> <p>"The purpose of the level is to teach adolescents about how to approach having medications in your home. The purpose was to put the medication in the cabinet and lock it." -G8</p> <p>"The purpose is to enforce how to properly store medications so they are not easily accessible by non-authorized people. The message we are taking away is that kids need to know how to be able to safely and securely store medications. Kids should have the knowledge of what to do when they find one of their parents' medications." -G9</p>

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**Theme 2: Engaging, interactive, and realistic game design**


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**Engaging game design**

"We liked that there were a lot of areas to explore." -G1

"The game is visually appealing and has an interesting graphic design. We also thought the dialogue was amusing." -G1

"We liked that it was easy to navigate and the kid-friendly art and animation is very inviting" -G7

**Interactive game-play**

"We were surprised that it was a bit more challenging than we had expected. This made us more involved since we had to think critically and work to beat the level." -G1

"There were a lot of paths, it wasn't a linear straight story and you had to think about what you wanted to do." -G10

"I like the interactive play in the game and that there are different options for you to interact with. It also has a puzzle aspect to it, so the game is more than just going along with a story." -G11

"We liked that while playing you have multiple options and you must figure out how to successfully complete the level." -G8

**Realistic gameplay**

"It also seemed like it was a realistic scenario and presented an ethical dilemma which made you weigh the pros and cons." -G1

"We liked that it was realistic and showed a bathroom setting in a high school and how people interact there between or during classes. This explores a real internal conflict that someone at this age might have, like being nervous about the speech." -G4

"We liked the seriousness of this level, especially with the naloxone and the interview with the police officer and the paramedics. It made the situation very real and added the importance and seriousness of the situation." -G10

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**Theme 3: Social interactions within gameplay depicts decision making and consequences**


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**Peer pressure**

"How your friend insisted that you take the medications, he was pushy (peer pressure) which represents real life. It also represents where you get the medications from, usually your friends who want to help but who do not know the consequences of their actions." -G3

"Drugs can be available at school and peer pressure can be prevalent in school. This peer pressure may not seem malicious, but it is still important to abstain from drug use." -G8

"It also shows that people within your class and who you consider friends are often the ones that will pressure you the most." -G11

#### Consequences

"Do not give your medications out to people who are in pain. Each person's medication regimen is different, and you could not be sure that they are the same medications. Even though you want to help them, you can't be sure that you won't cause them harm." -G3

"We liked that there were options to choose from and that they each had a more favorable or less favorable outcome." -G4

"Understand that there are consequences associated with taking medications and side effects do exist." -G6

"Sharing your medication can lead to bad outcomes for you and the person you shared your medication with. It's important to understand the problems that could come from sharing your medication." -G10

#### Theme 4: Improve gameplay instructions and dialogue

##### Game controls and playable environments

"One member said they didn't like that there were playable areas that didn't have a purpose to advance/progress the story." -G1

"Add controls on how to play the game. Before game have a 'how to play' segment at the beginning and add a 'control' button that you can press at any time." -G3

"There were no tutorials for the controls so it was confusing to start. Potential solutions: have a basic tutorial on how to move the character before this level starts." -G5

"Highlight actionable items so it is not confusing." -G5

"The controls were not explicitly stated, so it took a little while to start playing." -G7

"It would have been nice to have an introduction for how to play the game; it took us awhile to realize that the players moved when we used the arrow keys." -G9

"There are some rooms that are random and don't serve a purpose in the game. They could be eliminated to help streamline the game." -G11

##### Incorporate level objectives and summaries

"Summarize each level at the end so that you finalize what you learned and the consequences of your actions." -G3

"The objectives were not clarified at the beginning so we did not understand the outcome of the level." -G5

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"The objective of the level was not clearly stated, so it might take a while for someone who is not aware of proper medication storage" - G7

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"Set up an explanation stating what you did wrong." -G7

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"For all the levels, something I would change is adding a clear explanation of why you failed the level" -G8

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"Provide an objective so that you can navigate through the level with a purpose. We thought it would be beneficial to explain the objective of the game; providing an objective at the beginning of the level, so that you can figure out how to successfully pass the level." -G8

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#### Game dialogue and structure

"Narcan (naloxone) is specifically for opioid overdoses." -G1

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"One member commented that there seemed to be more reading in this level, and it brought the user out of the experience a bit. They suggested breaking up the periods of more dialogue with a bit more action." -G1

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"Make an option for the player to go to the nurse if they are in pain." -G4

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"When you give one of the characters your medication, it should clearly state that it is an opioid medication so that when you need to administer Narcan (naloxone) to them, the user will learn that

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"Make the talking bubbles shorter or have the characters talk quicker. Shorten the time the bubbles show up or a give an option to skip through the talking bubbles." -G5

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"We would change the order in which the main character had to do things. It might be helpful to have a pop-up thought bubble for the main character to see what he's thinking which might help the player play the game." -G10

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"Make the dialogue change with a click of a button so that you can move through it how fast you want; sometimes the dialogue was too slow and made us lose interest in the game." -G11

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