

Deliverable D8.3 Online game app for high school students

WP8 | Awareness Raising Leader acronym | AEMPS Author(s) | Laura Alonso Irujo, Ana Navarro Tamayo, Carolina Prada Seijas, María Santacreu García (alphabetically ordered) Reviewer(s) | Antonio López Navas, Cristina Muñoz Madero and EU-JAMRAI Coordination Team Dissemination level | Public Delivery date | 30-4-2020 Updated version: 28-2-2021



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1. Micro-Combat App: a new way to learn while playing

Given the complexity of introducing antibiotic resistance in the curricular program of schools and high schools, EU-JAMRAI decided to develop this tool to facilitate that the subject is treated by teachers and students during school hours, promoting information, awareness and behaviour change in the youngest generations.

To achieve this goal, EU-JAMRAI developed an alliance with the ISGlobal Research Institute to adapt their card game Micro-Combat (an initiative endorsed by the European Centre for Disease Prevention and Control - ECDC) to a mobile application that can be downloaded and used anywhere in the world.

Objectives

Main objectives

To provide general and specific knowledge about antimicrobial resistance and enhance correct use of antibiotics, promoting individual behaviour change.

To make players become familiar with different types of pathogens (bacteria, viruses, fungi, and protozoa), multiple routes of transmission, different infectious diseases, the specificity of drugs to combat them, and the phenomenon of pathogen resistance to these drugs.

Secondary objective

To advocate for the inclusion of the antimicrobial resistance subject in science educational curricula to achieve social transformation through accumulated individual behaviour change.

An application resulting from an alliance

Micro Combat was originally a card game developed by the Barcelona Institute for Global Health (<u>ISGlobal</u>) in collaboration with Laboratori de Jocs, and produced and validated with funding from the European Health Forum Gastein and the European Antibiotic Awareness Day (EAAD), an initiative of the ECDC (European Center for Disease Prevention and Control). Its physical version saw the light in 2017.

Figure 1: Picture of Micro-Combat card game



ISGlobal is a non-profit private law entity resulting from an alliance of academic, governmental and philanthropic institutions, which aims to improve the health and development of the most vulnerable populations, contributing to global efforts to improve global health to starting from the areas of biomedical research and international cooperation.

With the aim of making the youngest generations aware of the antibiotic resistance problem, and thus preventing it from worsening in the future, EU-JAMRAI developed an alliance with ISGlobal to adapt their paper-based card game Micro-Combat to a mobile application that can be downloaded and used anywhere in the world.

2. About Micro Combat App

Micro-Combat App is a cooperative game, designed for players aged 10 years old and older. With an approximate duration of 15 minutes each play, it can be used in classroom or anywhere. It allows introducing, among other concepts, what types of pathogens we are exposed to, how we can prevent the spread of infectious diseases, how much more effective is prevention than the subsequent treatment of diseases or what antimicrobial resistance is. This mobile application allows players to play remotely with people from their own environment or from anywhere in the world.

- Number of players: 1-4
- Approximate duration: 15 min
- Recommended age: 10 years old and older

Illustration 1. Screen shots of Micro-Combat from the development program.



Target Audiences

• Main target audience

School and High school students (aged 10 years old and older).

• Indirect target audience

Educators and parents.

Language

The videogame is available in **English** and also in the other **18 languages spoken by the partners** of the project EU-JAMRAI:

English, Spanish, French, Czech, Danish, Estonian, Dutch, German, Greek, Italian, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Slovenian, Swedish, Romanian, Croatian.

The platforms

Micro Combat is available on iOS and Android and can be downloaded here:





How to play Micro-Combat game App?

In order to facilitate children's learning experience, EU-JAMRAI prepared a video tutorial explaining all the phases and rounds of the game and its main characteristics.

The video **tutorial** is available in the same **19** languages of the game here:

https://youtube.com/playlist?list=PLrRj7XI9ALp9rGj8vnIjIdOUoiKiaPpxv





Defences	Atta	Attacks		
Medicines	Pathogens Protozoa © 00 00 00 00 00 9 00 00 00 00 00 Bacteria	Special Solution Solution Sol		
Preventive	00 <t< td=""><td>8</td></t<>	8		
	Virus			

Questionnaire

Before starting, players have to answer some questions that give them their very first points. The questionnaire appears again after the 5th time they play. These questionnaires allow us to get statistics with the participants' knowledge about AMR before and after playing the game.

Questionnaire

1. What are microorganisms?

a) Bacteria, viruses, fungi and microscopic protozoa that can cause disease

- b) Very small insects
- c) Microscopic plants that grow in gardens

2. How do we prevent microorganisms from causing disease?

- a) Isolating them in small boxes
- b) Washing our hands thoroughly and often
- c) We cannot prevent germs from causing diseases
- 3. Antibiotics are drugs that act against which microorganism?
- a) Against bacteria and can only be taken when the doctor tells you
- b) Against viruses, which cause the cold
- c) Against all germs

4. What is antibiotic resistance?

- a) It is the capacity that our body has to fight against microorganisms.
- b) It is the ability of bacteria to survive antibiotic treatment.

c) I don't know

5. Can some viruses, bacteria, fungi and protozoa spread from person to person?

- a) Yes.
- b) No.

Points and Rewards

During the game, players get points. These points can be exchanged by characters and their work tools. The more times they play, the more points they get and the more rewards they can collect.

The characters have been selected to represent the professional groups that are most affected or involved in the fight against antimicrobial resistance, from a One Health perspective. An effort to break down stereotypes and promote gender equality has been made.

Illustration 2. Micro-Combat rewards.



3. The science and behaviour change strategy behind the game

Antimicrobial resistance

Antimicrobial resistance happens when microorganisms (such as bacteria, fungi, viruses, and parasites) change when they are exposed to antimicrobial drugs (such as antibiotics, antifungals, antivirals, antimalarials, and anthelmintics). Microorganisms that develop antimicrobial resistance are sometimes referred to as "superbugs".

As a result, medicines become ineffective and infections persist in the body, increasing the risk of spreading them to others.

Micro-Combat introduces the antimicrobial resistance concept through the cards called "resistance". These cards are designated to their correspondent pathogen. When an "antibiotic resistance" card is assigned to a bacterial infection, the players cannot use the "antibiotic medicine" card to treat the character.

Through this game method, players understand that when medicines become ineffective against infections, their health can be at great risk.



Illustration 3. Antibiotic resistance card.

How does AMR happen?

Antimicrobial resistance occurs naturally over time, usually through genetic changes. However, the misuse and overuse of antimicrobials is accelerating this process. In many places, antibiotics are overused and misused in people and animals, and often given without professional oversight. Examples of misuse include when they are taken by people with viral infections like colds and flu, and when they are given as growth promoters in animals or used to prevent diseases in healthy animals.

Antimicrobial resistant-microbes are found in people, animals, food, and the environment (in water, soil and air). They can spread between people and animals, including from food of animal origin, and from person to person. Poor infection control, inadequate sanitary conditions and inappropriate food-handling encourage the spread of antimicrobial resistance.

The importance of prevention

As noted in the Global Action Plan elaborated by the World Health Organization (WHO) in collaboration with FAO and OIE: *Good sanitation, hygiene and*

other infection prevention measures that can slow the development and restrict the spread of difficult-to-treat antibiotic-resistant infections are a "best buy"¹.

Besides, it can be cost effective and implemented in all settings and sectors, even where resources are limited.

Because prevention and control are a crucial part of fighting antimicrobial resistance, the concept has been introduced in the game through a group of cards called "defence", composed by prevention measures and medicines.

Prevention cards are: vaccine, washing hands, boil water, food control, work globes, face-mask, use of condom and mosquito repellent.

Medicines cards are: antibiotic, antifungal, antiprotozoal and antiviral.

Players use prevention cards in order to avoid getting ill when a pathogen is risking his/her life. Medicines cards are used when prevention cards are not available or cannot be used, and the player is already infected.

By this technique, players learn prevention measures for different diseases, enabling them to apply them into their daily life habits.



Illustration 4. Preventive cards.

Responsible use of antibiotics

Sepsis, pneumonia or tuberculosis are some of the infections which treatment has been made difficult due to antimicrobial resistance. The loss of efficacy of antibiotics is one of the greatest threats to global health. Micro-Combat explains the need of a responsible use of antibiotics by showing that the "antibiotic medicine" card is only effective to treat bacterial infections and by teaching the players to use the "medicine" cards in relation to the severity of the infections, thus the medicine cards have different values and these values have to match with the virulence of the pathogen.

¹ World Health Organization. Global action plan on antimicrobial resistance. Geneva: WHO; 2015. Available from: http://www.who.int/antimicrobial-resistance/global-action-plan/en

Illustration 5. Medicines cards.



Why is AMR a global threat?

Antibiotic resistance does not recognize borders, race or socioeconomic status and is present in every country.

Patients with infections caused by drug-resistant bacteria are at increased risk of worse clinical outcomes and death, and consume more health-care resources than patients infected with non-resistant strains of the same bacteria.

New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases, resulting in prolonged illness, disability, and death.

Without effective antimicrobials for prevention and treatment of infections, medical procedures such as organ transplantation, cancer chemotherapy, diabetes management and major surgeries (for example, caesarean sections or hip replacements) become very high risk.

The global concept is introduced through the "characters" cards: men and women of different ages, ethnicities, jobs, etc. During the card game this diversity becomes visible because all of them can get an infection, and the prevention measures and medicines are the same for all of them. Also, the "super pathogen" can affect anyone.

Illustration 6. Micro-Combat characters.



4. Dissemination Strategy

Spots, promo materials & website

Three different spots and promo materials were designed to promote the Micro-Combat App. Each material was adapted for the specifications of each social media platform (Facebook, Twitter, Instagram and TikTok) and with a very detailed segmentation strategy to cover a wide audience.

<u>Spots</u>

Spot 1: https://youtu.be/NFabn6ClinM



Spot 2: https://youtu.be/BGCG2cBZw6g



Spot 3: https://youtu.be/udi-GAEqAMo



Social media postcards



Press Release



Website and landing page

We prepared two different websites for the launch of the App:

Landing page: this website is the official website that every game has with the main information and the direct links to download the app.

https://microcombat.eu/



• A site within EU-JAMRAI website: we considered important to have also a dedicated page in our website explaining the objectives of the game, the target, and the most relevant information.

https://eu-jamrai.eu/micro-combat/



Newsletter and mailing

We set up a newsletter and mailing campaign for all the EU-JAMRAI's partners, stakeholders and collaborators, to inform them about the app's launch and to ask their collaboration in its dissemination in their respective countries and social networks.

Social Media Promotions

Given that it is a digital product, and taking into account the good results obtained in other campaigns, it was decided to support the launch of the application with a campaign on social media with paid promotions, in parallel with non-paid posts (organic).

The company hired

Smile Ads was hired to plan and implement the social media campaigns.

Smile Ads is an agency of strategic marketing born in 2015, with professionals in the field of online marketing and focused on results-driven marketing: SEM and Social Ads. Its working method guarantees a high ROI (Return on Investment) in the campaigns, thus getting the most out of the budget.

The countries and the schedule

The campaign ran for almost a month in all the countries that are part of EU-JAMRAI: Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Holland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden.

The launch of Micro Combat and the campaign took place on 28^{th} of December 2020 and ended on 28^{th} of February 2021.

Segmentation

The announcements of the four platforms have had an impact on a highly segmented audience, which was crucial to obtain such good results.

Publications

These are some examples of the main publications of Micro Combat campaign on social networks.

Facebook





Instagram



Twitter



Total engagements

#AMR #Antibioticresistance #game #app pic.twitter.com/pXt0mQtOIX

750

5. Results

Number of downloads

In the two months since the App was launched, more than 2,800 people from 50 different countries have already downloaded it.

The countries with the highest number of downloads so far were: Spain, Italy, Portugal, Greece, Romania, Czech Republic, Poland, Germany, France, Belgium, Croatia, The Netherlands and Slovenia.

Social media results

The total amount invested in the campaigns was $4.600 \in$. The breakdown by platform, type of campaign and country can be seen in the following tables.

Platform	Impressions	People Reached	Interactions	Cost (€)
Twitter	227.809	212.871	1.757	267,79€
Tik Tok	441.000	349.802	2.208	269,69€
Instagram	2,084.500	1,351946	155.606	2.455 <i>,</i> 36€
Facebook	681.565	330625	124.858	1.614,35€
	3,434.874	2,245.244	284.429	4.607,19€

Table 1: Investment by platform and results

Definitions of the concepts

Impressions: this is the total number of times that the posts have been shown in users' timelines. A single post might be shown more than once in a single user's timeline, i.e.: the video has been shown three times to the same user until this person has clicked on it and watched the video. This term is useful to the person who is running the campaign, because it allows him/her to control if he/she is annoying users due to the post appearing too many times in their timelines.

People Reached: this is the actual number of people reached, as it only counts one time per user, not all the times that the user has seen the posts (as in the case of 'impressions').

Playbacks: this is the number of times the video has been watched. The audience might have seen the post, but they may not have clicked on the play button. Playbacks count the people that have actually watched the videos.

Engagement: this is the number of comments, likes, shares, etc. It is the number of interactions between the public and the posts.

Do players really learn?

In order to monitor players' knowledge evolution, EU-JAMRAI incorporated into the App a test of 5 questions that appears the first time before playing, and after the fifth game.

With the data collected so far, it has been observed that in the first test only 47% of the people answered the 5 questions correctly.

After having played 5 games, this maximum number of correct answers increased to 70% of the users.





6. Lessons learnt

- Build a multi-sectoral team with scientists (to ensure that the contents are scientifically accurate), communicators and pedagogues (to translate complex scientific concepts to a universal language understandable by children with different backgrounds) and gaming experts (to introduce these concepts into a fun game experience).
- The timeline for the whole process will not be less than one year (thinking and writing the script, hiring the developer company, the developing process, the testing process, translations, the submission to the Google Play and Apple Store portal, and the launch and promotion of the product).
- Making a provision for delays is crucial. Developers can find unexpected problems, which could mean to highly compromise the date of the delivery.
- Weekly monitoring with the developer company is essential to avoid losing control of the project.
- Focal groups are needed to test the videogame in order to improve the playability.
- The preparation of a well-designed launch and promotion is crucial for the success of your product.
- It is important to keep checking the comments made on the stores and maintain the game updated.





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