

McMASTER UNIVERSITY

# User Manual

REVISION 0

CAPSTONE TEAM 14

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# **1 Introduction**

The HIV Regimen Generator is a website that will be used by doctors to create a combination of ARV medications. The generated output will be analyzed by the doctor and the best available option will be given to a patient with HIV. The website will consist of a form that will allow the client (the doctor in this case) to enter a series of inputs pertaining to the patient's medical history and requirements. The form will display input options related to the patient and the type of medication they can receive. After the doctor has selected or entered the required inputs, they will be redirected to a page that displays their inputted form data, along with the medication combinations that our algorithm will generate. The medication being displayed will also have a description and other information associated with its use and side effects.

# **2 Copyright**

HIV Regimen Generator is owned and managed by Team 14 of CS4ZP6. The team is a part of McMaster University. The collaborators on the project are: Ananthan Kanagasabai, Andrei Ciontea, Curran Tam, Joseph Nguyen and Victor Siu. This project is hosted on GitHub. The license of Common Development and Distribution License (CDDL-1.0) is used for fair use.

# **3 About this Manual**

This manual will report how the website will be operated and will inform first time users how to navigate and use the HIV Regimen Generator to its full potential. The manual will first describe the webpages associated with it, as well as their purpose and how to navigate between them. Then the manual will describe existing errors/issues and the steps required to correct them. Finally, the section at the end of this document will answer common questions associated with the project.

## 4 Naming Conventions and Terminology

- ARV: Antiretroviral drug
  - Medication that is given to patients who are HIV positive
- BSA: Body Surface Area
  - Value that is calculated by using the weight and height of a person to predict dosage requirements
- Tanner Stage
  - A scale of physical development in children, adolescents and adults; this is used to determine the amount of dosage to give the patient

## 5 Browser Requirement

The HIV Regimen Generator is compatible and has been tested with the following web browsers:

- Google Chrome
- Mozilla Firefox
- Internet Explorer

## 6 Tasks

### 6.1 Start

The Start page (Figure 1) is the landing page of the website. On this page, the website logo is displayed. A Start Here button is also available which will redirect the user to the Form page where patient information will be entered. Additionally, there is a navigation menu at the top of the page that will be available at all times. The navigation menu features a Home option, that will take the user back to the landing page. There is also an About option on the navigation menu that serves as an information/tutorial page. Lastly, the navigation menu includes a Contact Us option, that contains the contact information of the group and a way to submit inquiries.

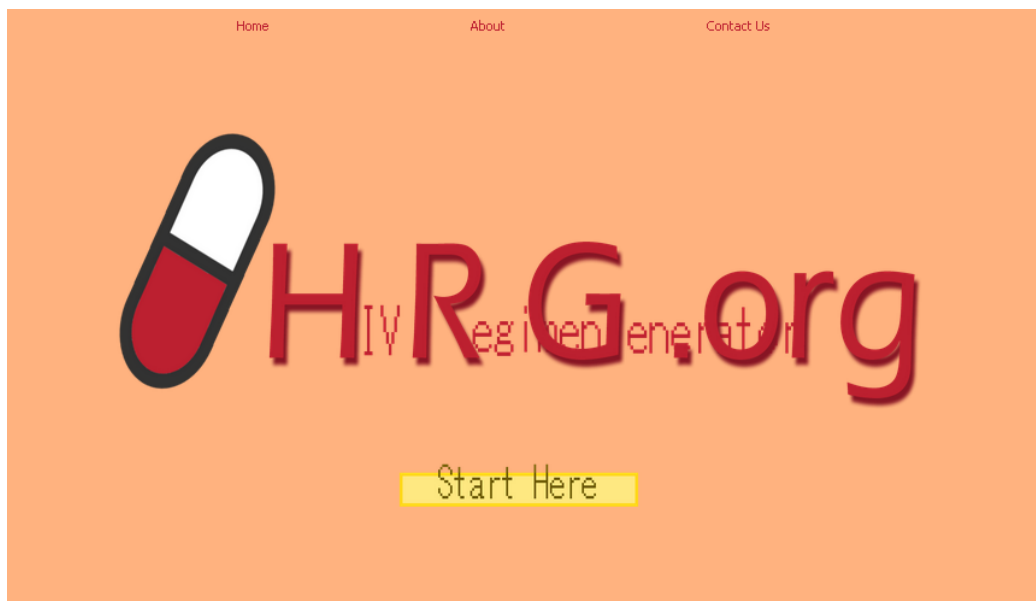



Figure 1: Screen image of the Landing/Main page

## 6.2 Form

This page (Figure 2) is a form that asks for the medical information of the patient. It first asks for any preliminary information such as: age, height, and weight. Next is the Calculate BSA button, which calculates the body surface area of a person based on the inputted height and weight. The Tanner stage is used to measure the physical development in an adolescent. HLA refers to the human leukocyte antigen, which is a gene complex that will determine whether or not to give the abacavir medications. Next is a checklist of the medical issues that are present in the patient, as well as any applicable resistances. Depending on the age of a child, some forms of applying medication cannot be used, so the form provides the user with an option of selecting the type. Lastly, the form asks for allergies which could potentially conflict with prescribed medication and thus the system will need to reweigh its suggested options. Submitting this form will take you to the combo page.



[Home](#)
[About](#)
[Contact Us](#)

\*Disclaimer\* None of the following information you provide will be stored. All details inputted will be removed immediately after you close the browser.

### Patient Information

Age:

Height:

Weight:

Calculate BSA

BSA:

Tanner stage:

HLA status:

Any baseline medical issues (check any/all that apply):
 

☐ Renal dysfunction
 ☐ Osteoporosis or bone issues
 ☐ Hepatitis

☐ Hypercholesterolemia
 ☐ Pregnant or risk of becoming pregnant
 ☐ Cholestasis

☐ Neuropsychiatric issues
 ☐ Insulin resistance, hyperglycemia/diabetes

Resistance(s):

What kind of medications can the patient take:
 


☒ Suspension only
 ☐ Swallow Pills
 ☐ Crush pills and mix with food

Allergies:
 

☐ med A
 ☐ med B
 ☐ med C

Other medical allergies:

ERROR for site owner:  
 Invalid domain for site key


 reCAPTCHA  
Privacy - Terms

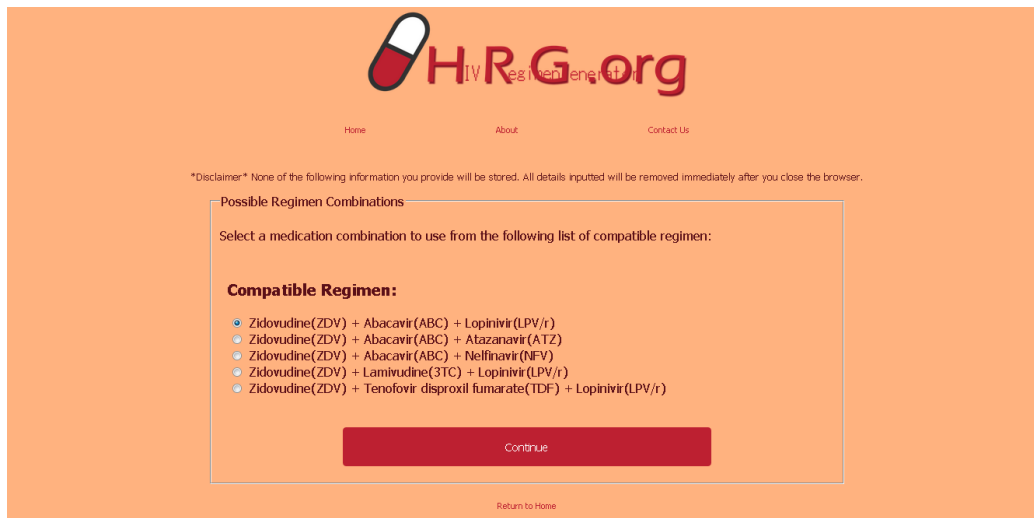
Submit

[Return to Home](#)

Figure 2: Screen image of Patient Information page; the form

## 6.3 Combo

The Combo page (Figure 3) will be displayed after the client has filled out the required information on the form page. This page will display a few possible combinations of medications that may be used by the patient. The client then selects one of the combinations by clicking on a radio button beside the desired combination. When the client has made their final decision on what combination they wish to work with, they can click on the Submit button to be taken to the Results page.



The screenshot shows the HRG.org website interface. At the top, there is a logo for HRG.org with a pill icon. Below the logo are navigation links: Home, About, and Contact Us. A disclaimer states: "None of the following information you provide will be stored. All details inputted will be removed immediately after you close the browser." The main section is titled "Possible Regimen Combinations" and contains the instruction: "Select a medication combination to use from the following list of compatible regimen:". Below this, there is a section titled "Compatible Regimen:" with a list of five options, each preceded by a radio button. The first option is selected. The options are: 1. Zidovudine(ZDV) + Abacavir(ABC) + Lopinivir(LPV/r), 2. Zidovudine(ZDV) + Abacavir(ABC) + Atazanavir(ATZ), 3. Zidovudine(ZDV) + Abacavir(ABC) + Nelfinavir(NFV), 4. Zidovudine(ZDV) + Lamivudine(3TC) + Lopinivir(LPV/r), and 5. Zidovudine(ZDV) + Tenofovir disoproxil fumarate(TDF) + Lopinivir(LPV/r). At the bottom of the list is a red "Continue" button. A "Return to Home" link is located at the very bottom of the page.

HRG.org

Home About Contact Us

\*Disclaimer\* None of the following information you provide will be stored. All details inputted will be removed immediately after you close the browser.

Possible Regimen Combinations

Select a medication combination to use from the following list of compatible regimen:

**Compatible Regimen:**

- ☒ Zidovudine(ZDV) + Abacavir(ABC) + Lopinivir(LPV/r)
- ☐ Zidovudine(ZDV) + Abacavir(ABC) + Atazanavir(ATZ)
- ☐ Zidovudine(ZDV) + Abacavir(ABC) + Nelfinavir(NFV)
- ☐ Zidovudine(ZDV) + Lamivudine(3TC) + Lopinivir(LPV/r)
- ☐ Zidovudine(ZDV) + Tenofovir disoproxil fumarate(TDF) + Lopinivir(LPV/r)

Continue

Return to Home

Figure 3: Screen image of Combination Selections page

## 6.4 Results

The Results page (Figure 4) is a final information page which displays the patient information at the top, containing all the details that were written on the form. Below the patient information are the details of the regimen that was selected on the combo page. This provides a more detailed description of each medication, as well as their: suggested dosage, potential side effects, and a link to a reference should the user have any further inquiries.



[Home](#)
[About](#)
[Contact Us](#)

### Patient Information

**Age:** 4 Years and 6 Months  
**BSA:** 0.6 m<sup>2</sup>  
**Weight:** 24 kilograms (kg)    **Height:** 57 centimetres (cm)  
**Tanner stage:** 2    **HLA status:** B  
**Medical Issues:**  

- Renal dysfunction

**Patient prefers medicine:** Suspension only  
**Allergies:** n/a  
**Additional Notes:** n/a

### Patient's Selected Regimen:

#### NRTIs

##### Zidovudine

**Suggested dosage:** Once per day.  
**Potential side effects:** Headache, nausea, neutropenia, vomiting, anemia, anorexia, and malaise.  
 More information at: <https://www.drugs.com/cdl/zidovudine.html>

##### Abacavir

**Description:** Treating HIV infection with other medications. Abacavir is a nucleoside analog reverse transcriptase inhibitor (NRTI). It works by slowing down the growth of HIV, the virus that causes AIDS.  
**Suggested dosage:** Twice per day.  
**Potential side effects:** Arthralgia, cough, fatigue, lethargy, myalgia, pruritus, vomiting, chills, and malaise  
 More information at: <https://www.drugs.com/cdl/abacavir.html>

#### LPV/r

##### Lopinivir

**Description:** Treating HIV infection. It is used along with other medicines for HIV. Lopinivir/ritonavir is a combination of 2 HIV protease inhibitors. It works by stopping the HIV virus from multiplying.  
**Suggested dosage:** Twice per day.  
**Potential side effects:** Increased serum cholesterol and increased serum triglycerides.  
 More information at: <https://www.drugs.com/cdl/lopinavir-and-ritonavir.html>

Print

Return to Home

Figure 4: Screen image of Medical Results page



## **6.5 About**

The About page gives detailed information about the purpose of our website. The purpose is to provide a regimen to any HIV positive patients. This page will also contain information about the team, as well as provide this user manual and a tutorial on how to operate the website.

## **7 Troubleshooting**

### **7.1 Overview**

The team has taken the necessary precautions so that no errors from the website will negatively affect a client's personal operating system. The website will be tested before it is uploaded the Internet. This part of the document will address any problems that will arise as a result of being on this website.

### **7.2 Internet Connection**

The client must use a machine with a working internet connection to access this website. Otherwise, no web pages will be displayed.

### **7.3 Slow Loading**

Any pages that are loading slowly are a result of an overload to the server or a slow internet connection.

## **8 Frequently Asked Questions**

Q: Can we get more details of the drug that we can use?

A: Yes. After getting results, there is a link to go to <https://www.drugs.com/> in the Patients Selected Regimen of result page. You can click the link to see any information about the drugs.

Q: Is this site accurate?

A: Yes. This website has been tested by both the developers of the algorithm and the doctor that we have been working alongside.

Q: How updated is the medical database being used?

A: The medical database is up to date as of February 28, 2017. Further improvement of this algorithm could allow us to extract information from an existing website to detect new medications and discoveries.

Q: How will a patient's sensitive information be protected?

A: Information about the patient will not be recorded. This algorithm simply receives information and outputs medications without any information that will identify or keep a record of any specific patient.