

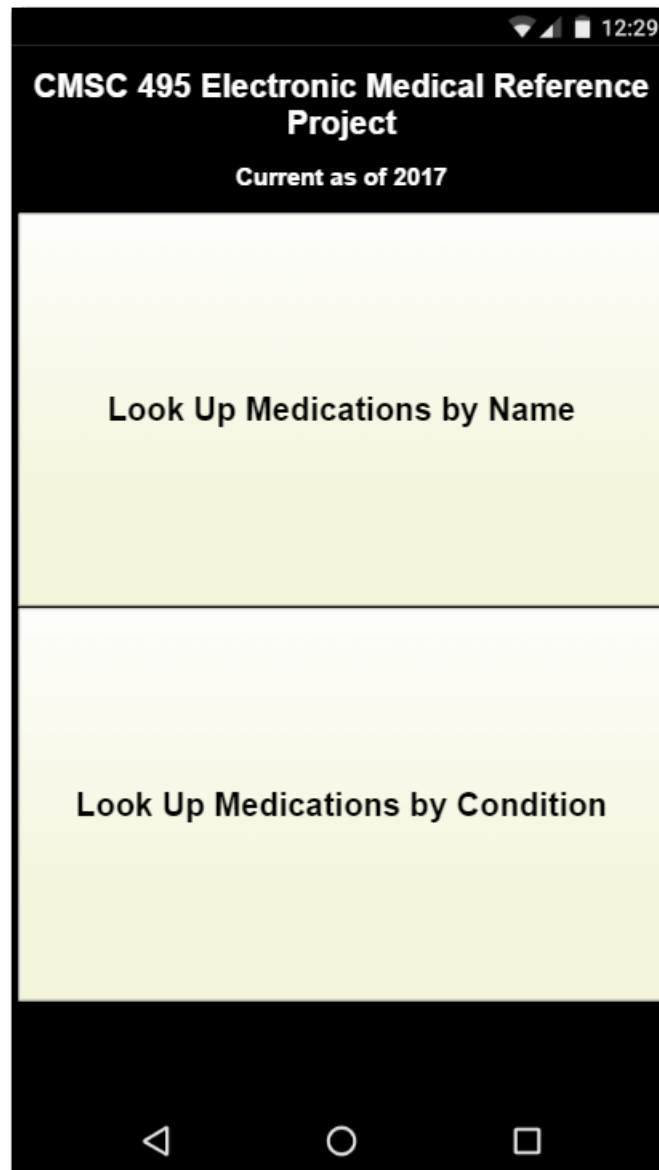
**4. Instructions for using the system** - Depending on the device, this application will present you with a different interface. Let's start with mobile devices:

**NOTE** - If you have any problems or encounter any errors while using this application, please contact us at [cmssc495ems@umuc.edu](mailto:cmssc495ems@umuc.edu)

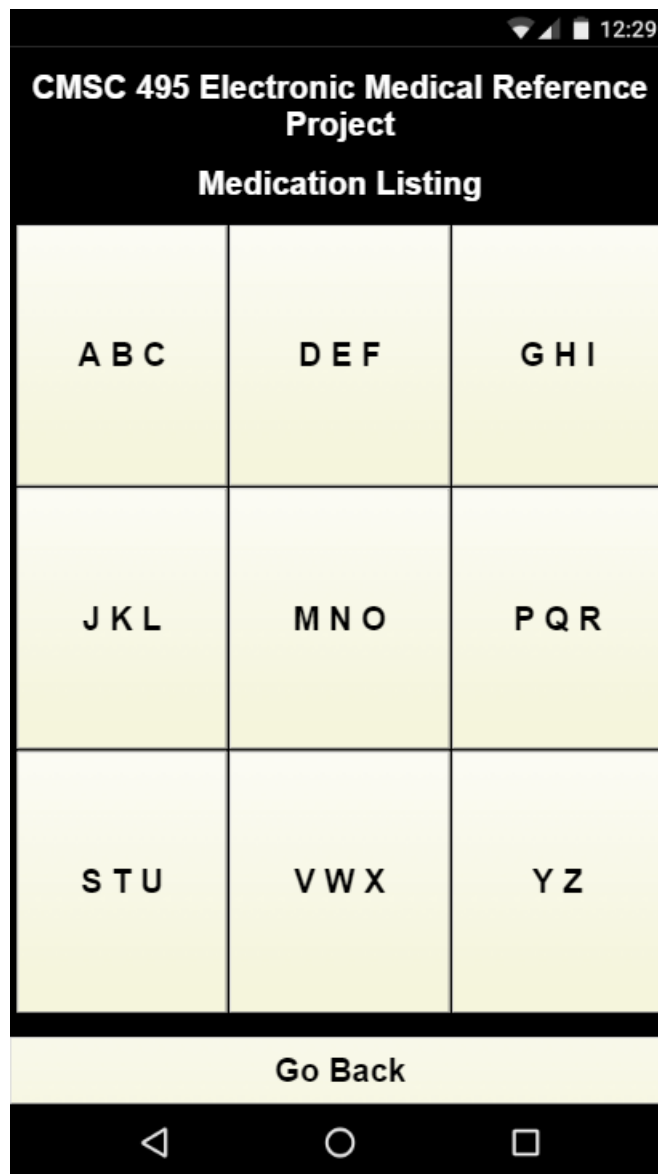
#### **4.1 Mobile Devices - All Users**

**NOTE** - Administrative functions are not accessible on mobile devices

4.1.1 Visit [<http://sample-env.h3tq4n7wkp.us-east-1.elasticbeanstalk.com/>] through your Internet browser:



4.1.2 When you reach the landing page, you can select "Look Up Medications by Name" or "Look Up Medications by Condition". Select "Look Up Medications by Name" for now:



4.1.3 Select the button with the first letter of the medication for which you are searching, in this case "ABC" for "Clopidogrel":



NAME:	CONDITION:
Abilify (B) aka Aripiprazole (G)	Antipsychotic
Accupril (B) aka Quinapril (G)	HTN/ACE Inhib
Aciphex (B) aka Rabeprazole (G)	GERD
Actonel (B) aka Risedronate (G)	Osteoporosis
Actos (B) aka Pioglitazone (G)	Diabetes
Acyclovir (G) aka Zovirax (B)	Herpes
Adalimumab (G) aka Humira (B)	Inflammation
Adderall (B) aka Amphetamine (G)	ADHD
Adipex P (B) aka Phentermine (G)	Weight Loss
Advil (B) aka Ibuprofen (G)	NSAID
Albuterol (G) aka ProAir HFA (B)	Asthma
Aldactone (B) aka Spironolactone	Diuretic

Go Back

4.1.4 The application presents all the medications in the database that start with the letters A, B, or C, as well as the conditions the medication treats. Using a finger, scroll down until you reach "**Clopidogrel**":

12:29	
Clarithromycin (G) aka Biaxin (B)	Antibiotic
Cleocin (B) aka Clindamycin (G)	Antibiotic
Clindamycin (G) aka Cleocin (B)	Antibiotic
Clobetasol (G) aka Clovate (B)	Corticosteroid
Clonazepam (G) aka Klonopin (B)	Anxiety
Clonidine (G) aka Catapres (B)	Hypertension
<b>Clopidogrel (G) aka Plavix (B)</b>	<b>Anti-Platelet</b>
Clotrimazole (G) aka Lotrimin (B)	Antifungal
Clovate (B) aka Clobetasol (G)	Corticosteroid
Codeine / APAP (G) aka Tylenol #2 (B)	Pain Relief
Cogentin (B) aka Benztropine (G)	Parkinsons
Colchicine (G) aka Colcrys (B)	Gout
Colcrys (B) aka Colchicine (G)	Gout
Concerta (B) aka Methylphenidate	ADHD
Go Back	

4.1.5 When you reach "**Clopidogrel (G)**", you see that it's brand name is "**Plavix (B)**", it is an **Anti-Platelet** medication, and it is highlighted in red. This means the medication is a blood-thinner which may exacerbate a patient's emergency (e.g., Clopidogrel may prevent a patient's head wound from clotting, etc.) At this point, you have three options:

- You may select "**Clopidogrel (G) aka Plavix (B)**" to see additional information about the medication.
- You may select **Anti-Platelet** to see a list of the medications that treat that condition (similar to the "**Look Up Medications by Condition**" option)
- You may select "**Go Back**" to return to the previous screen.

Select "**Clopidogrel (G) aka Plavix (B)**" to see additional information about the medication:

Generic Name:

**Clopidogrel**

Brand Name:

**Plavix**

Action:

**Anti-Platelet**

Conditions:

**Stroke**

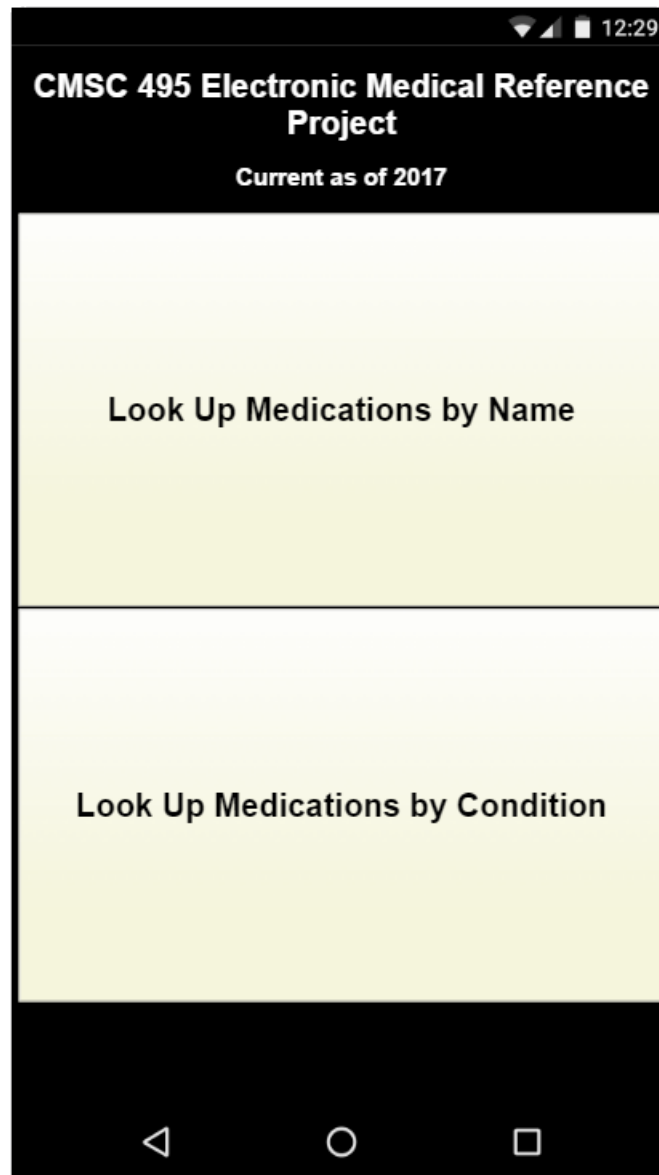
Blood Thinner:	Controlled:
<b>Yes</b>	<b>No</b>

Overdosages:

**Platelet inhibition by clopidogrel is irreversible and will last for the life of the platelet. Overdose following clopidogrel administration may result in**

**Go Back**

4.1.6 Here you see additional information about Clopidogrel, such as overdosages, interactions, and warnings. In addition, you can select **Stroke** to find out more information about the condition and other medications that can treat it. Once you are done exploring the details page, select **Go Back** until you reach the landing page:



4.1.7 Once you have returned to the landing page, select "**Look Up Medications by Condition**":



4.1.8 Select the button with the first letter of the condition for which you are searching, in this case "DEF" for "Diabetes":

CMSC 495 Electronic Medical Reference Project

CONDITION:

Dementia

Depression

Diabetes

Eczema

Edema

Enlarged Prostate

Erectile Dysfunction

Fever

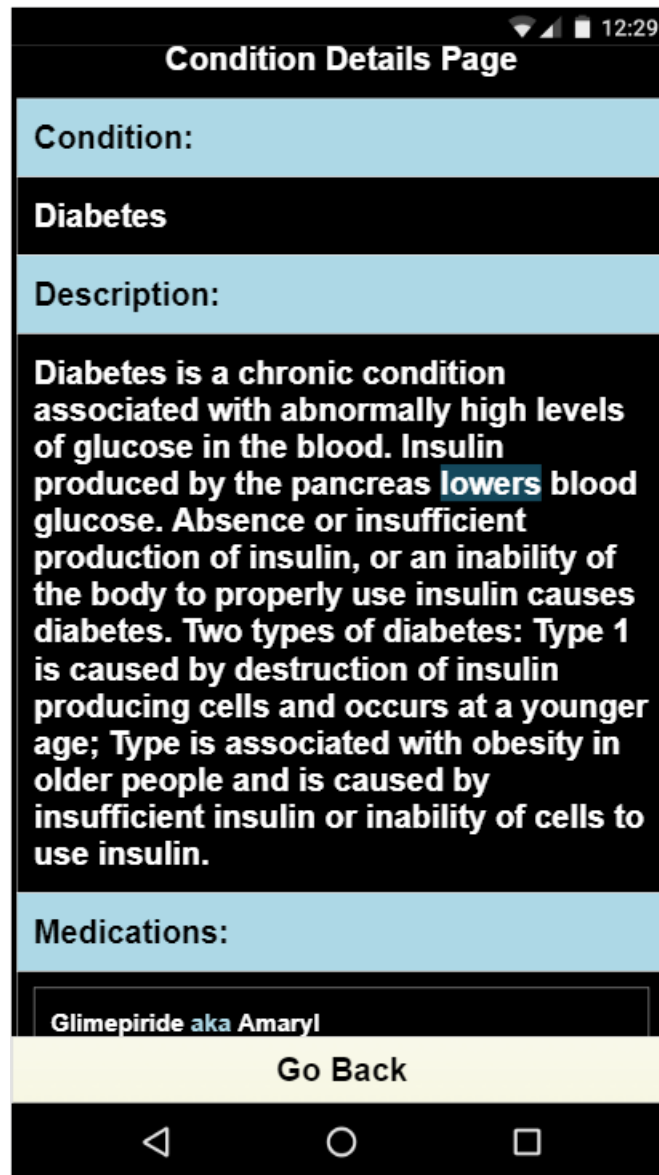
Fibromyalgia

Frequent Urination

Go Back

4.1.9 Select "Clopidogrel (G) aka Plavix (B)" to see additional information about the medication:





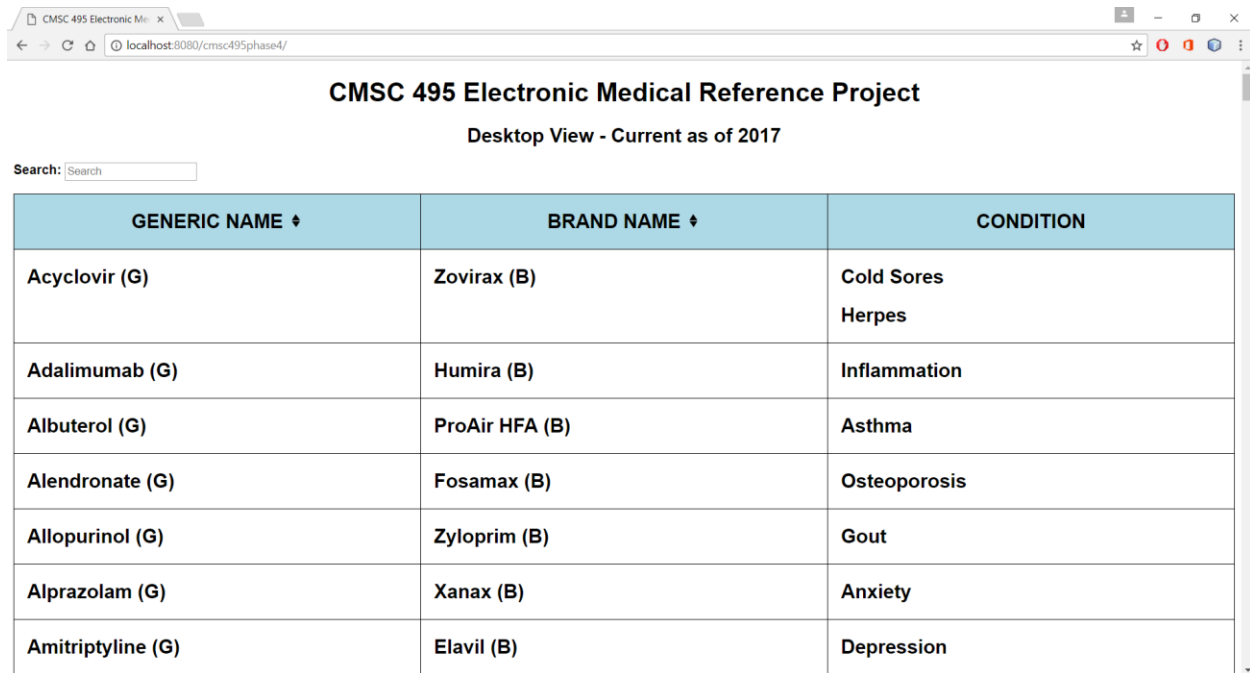
4.1.10 Here you see additional information about Diabetes, such as a description and medications that can treat the condition. In addition, you can select **Glimepiride aka Amaryl** to find out more information about the medication.

4.1.11 You have now reviewed all the mobile functionality of the application. Feel free to continue exploring the application to become familiar with its use.

## 4.2 Desktop Browser - Provider

**NOTE** - Administrative functions are not accessible on mobile devices

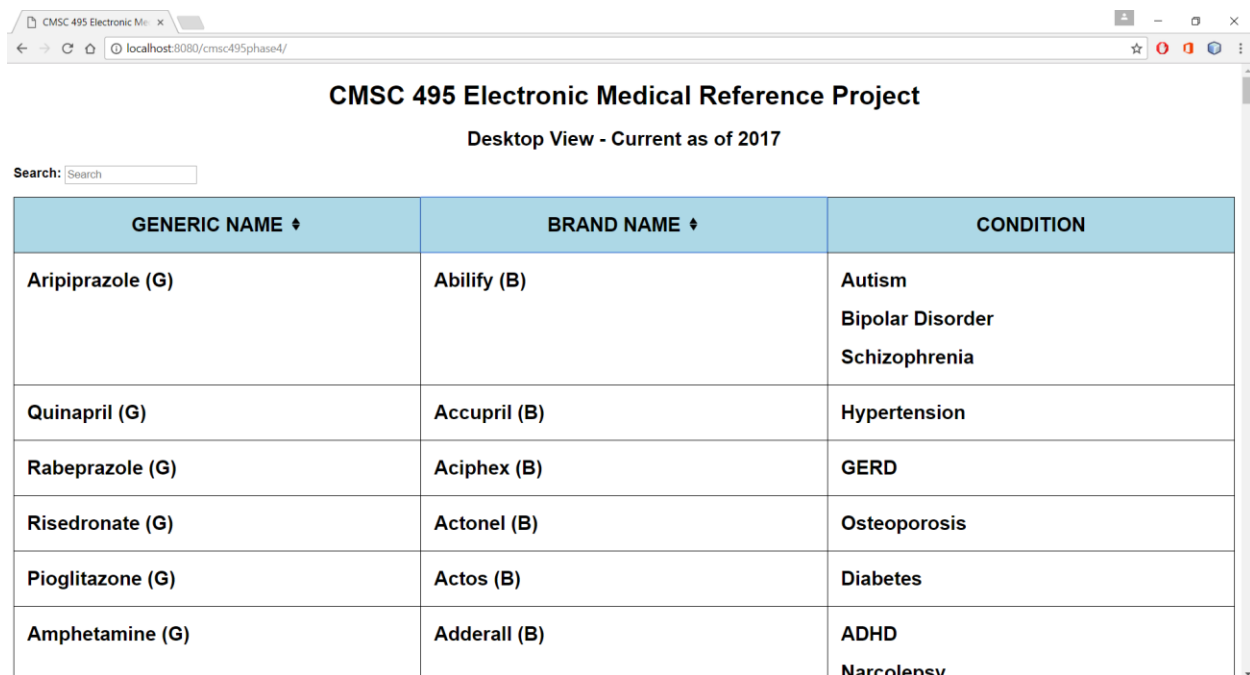
4.2.1 Visit [<http://sample-env.h3tq4n7wkp.us-east-1.elasticbeanstalk.com/>] through your Internet browser. When you reach the landing page, you will notice three columns - **Generic Name, Brand Name, and Condition**:



The screenshot shows a web browser window with the address bar displaying 'localhost:8080/cmssc495phase4/'. The page title is 'CMSC 495 Electronic Medical Reference Project' and the subtitle is 'Desktop View - Current as of 2017'. Below the title is a search bar with the placeholder text 'Search:'. The main content is a table with three columns: 'GENERIC NAME', 'BRAND NAME', and 'CONDITION'. The table contains seven rows of data.

GENERIC NAME	BRAND NAME	CONDITION
Acyclovir (G)	Zovirax (B)	Cold Sores Herpes
Adalimumab (G)	Humira (B)	Inflammation
Albuterol (G)	ProAir HFA (B)	Asthma
Alendronate (G)	Fosamax (B)	Osteoporosis
Allopurinol (G)	Zyloprim (B)	Gout
Alprazolam (G)	Xanax (B)	Anxiety
Amitriptyline (G)	Elavil (B)	Depression

4.2.2 This table is sortable. For example, if you click on BRAND NAME, the table will resort its contents by the medication's brand name in ascending order:



The screenshot shows the same web browser window as before, but the table is now sorted by Brand Name in ascending order. The table contains six rows of data.

GENERIC NAME	BRAND NAME	CONDITION
Aripiprazole (G)	Abilify (B)	Autism Bipolar Disorder Schizophrenia
Quinapril (G)	Accupril (B)	Hypertension
Rabeprazole (G)	Aciphex (B)	GERD
Risedronate (G)	Actonel (B)	Osteoporosis
Pioglitazone (G)	Actos (B)	Diabetes
Amphetamine (G)	Adderall (B)	ADHD Narcolepsy

4.2.3 In addition, the table is searchable. For example, if you type in Stroke in the search box, the table will find all instances of stroke:

The screenshot shows a web browser window with the address bar displaying 'localhost:8080/cmsc495phase4/'. The page title is 'CMSC 495 Electronic Medical Reference Project' and the subtitle is 'Desktop View - Current as of 2017'. A search bar at the top left contains the text 'Stroke'. Below the search bar is a table with three columns: 'GENERIC NAME', 'BRAND NAME', and 'CONDITION'. The table lists six medications: Ticagrelor (G), Warfarin (G), Enoxaparin (G), Clopidogrel (G), Dabigatran (G), and Rivaroxaban (G), all associated with the condition 'Stroke'. At the bottom of the page, there is a footer that reads 'CMSC 495 6380 Current Trends and Projects in Computer Science (2175) Project' and 'Copyright © 2017 - All Rights Reserved'.

GENERIC NAME	BRAND NAME	CONDITION
Ticagrelor (G)	Brilinta (B)	Stroke
Warfarin (G)	Coumadin (B)	Stroke
Enoxaparin (G)	Lovenox (B)	Stroke
Clopidogrel (G)	Plavix (B)	Stroke
Dabigatran (G)	Pradaxa (B)	Stroke
Rivaroxaban (G)	Xarelto (B)	Stroke

4.2.4 If you click on the medication's name, you can learn more details about the medication, such as overdosages, interactions, and warnings:

The screenshot shows a web browser window with the address bar displaying 'localhost:8080/cmsc495phase4/desktopDetails.jsp?medID=12'. The page title is 'CMSC 495 Electronic Medical Reference Project' and the subtitle is 'Medication Details'. The page displays a table with medication details for Aripiprazole. The table has two columns: 'Generic Name' and 'Brand Name'. The 'Generic Name' is 'Aripiprazole' and the 'Brand Name' is 'Abilify'. The 'Action' is 'Antipsychotic'. The 'Conditions' are 'Autism', 'Bipolar Disorder', and 'Schizophrenia'. The 'Blood Thinner' status is 'No'. The 'Controlled Substance' status is 'No'. The 'Overdosages' section describes the effects of an overdose, including vomiting, somnolence, atrial fibrillation, bradycardia, tachycardia, coma, convulsion, hypertension, hypotension, lethargy, loss of consciousness, QRS complex prolonged, QT prolonged, respiratory arrest, status epilepticus, and early charcoal administration. It also states that cardiac monitoring should be instituted and that airway, oxygenation, and ventilation should be maintained.

Generic Name:	Aripiprazole
Brand Name:	Abilify
Action:	Antipsychotic
Conditions:	Autism Bipolar Disorder Schizophrenia
Blood Thinner:	No
Controlled Substance:	No
Overdosages:	Overdose may result in vomiting, somnolence, atrial fibrillation, bradycardia, tachycardia, coma, convulsion, hypertension, hypotension, lethargy, loss of consciousness, QRS complex prolonged, QT prolonged, respiratory arrest, status epilepticus. Early charcoal administration may be useful. Cardiac monitoring should be instituted. Maintain airway, oxygenation and ventilation, and manage symptoms.

4.2.5 If you select **Autism**, you can find out more information about the condition and other medications that can treat it:

CMSC 495 EMR Project

localhost:8080/cmssc495phase4/desktopConDetails.jsp?conID=9

## CMSC 495 Electronic Medical Reference Project

### Condition Details

<b>Condition:</b>
Autism
<b>Description:</b>
A spectrum of neuropsychiatric disorders characterized by deficits in social interaction and communication, and unusual and repetitive behavior. Some, but not all, people with autism are non-verbal.
<b>Medications:</b>
Aripiprazole aka Abilify
Risperidone aka Risperdal

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4.2.6 To return to the home page, click on the title, "CMSC 495 Electronic Medical Reference Project".

4.2.7 You have now reviewed all the non-administrative desktop functionality of the application. Feel free to continue exploring the application to become familiar with its use.

### 4.3 Desktop Browser - Medication Administration

4.3.1 Visit [<http://sample-env.h3tq4n7wkp.us-east-1.elasticbeanstalk.com/>] through your Internet browser. Scroll down to the bottom of the page and you will see a skeleton key. This is how you access the login screen to edit medication information:

Valsartan (G)	Diovan (B)	Hypertension
Vardenafil (G)	Levitra (B)	Erectile Dysfunction
Venlafaxine (G)	Effexor (B)	Depression Fibromyalgia
Verapamil (G)	Verelan (B)	Angina Hypertension
Vitamin D (G)	Caltrate (B)	Osteoporosis
Warfarin (G)	Coumadin (B)	Stroke
Zolpidem (G)	Ambien (B)	Insomnia

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4.3.3 Click on the key to reach the **Login** page:

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**Login Page**

Username:

Password:

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4.3.4 There are three administrative levels: User, Editor, and Administrator. For our purposes, we will describe the Administrator level. Once you have logged in, you will reach the **Admin Menu** page:

CMSC 495 EMR Project | x

localhost:8080/cmssc495phase4/adminMenu.jsp

## CMSC 495 Electronic Medical Reference Project

### Admin Menu

Welcome, cmssc495admin!

[Log Out](#)

---

#### User Functions:

[View and Edit Profile](#)

---

#### Editor Functions:

[Medications Administration](#)

[Conditions Administration](#)

---

#### Administrator Functions:

[Users Administration](#)

[Full Database Update](#)

[View Event Log](#)

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4.3.5 The first level is **User Functions**. Press **View and Edit Profile** to view your last login date/time or to change your password:

CMSC 495 EMR Project | x

localhost:8080/cmssc495phase4/adminEditProfile.jsp

## CMSC 495 Electronic Medical Reference Project

### View and Edit Profile

Welcome, cmssc495admin!

[Return to Administration Menu](#) or [Log Out](#)

---

#### User Information:

User Name: cmssc495admin  
Role: Administrator  
Locked Out: No  
Last Login: Tue Jul 11 17:01:45 EDT 2017

---

#### Change Password:

Old Password:

New Password:

[Submit](#)

---

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4.3.6 Once you have finished exploring this page, press **Return to Administration Menu**.

4.3.7 The next level is **Editor Functions**. Press **Medications Administration** to add, update, or delete a medication:

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localhost:8080/cmsc495phase4/adminListMedications.jsp

## CMSC 495 Electronic Medical Reference Project

### Medications Administration

[Return Administration Menu](#) or [Log Out](#)

[Add Medication](#)

Search:

GENERIC NAME ↕	BRAND NAME ↕
Acyclovir (G)	Zovirax (B)
Adalimumab (G)	Humira (B)
Albuterol (G)	ProAir HFA (B)
Alendronate (G)	Fosamax (B)
Allopurinol (G)	Zyloprim (B)
Alprazolam (G)	Xanax (B)

4.3.8 Once again, this table is sortable and searchable. Right now, click on **Add Medication**:

CMSC 495 EMR Project | x

localhost:8080/cmsc495phase4/adminAddMedication.jsp

## CMSC 495 Electronic Medical Reference Project

### Add Medication

Welcome, cmsc495admin!

[Return to Medications Administration Menu](#) or [Log Out](#)

Generic Name*:	<input type="text"/>
Brand Name*:	<input type="text"/>
Action*:	<input type="text"/>
Conditions:	<input type="text"/> * <input type="text"/> <input type="text"/>
Blood Thinner*:	<input type="radio"/> Yes <input checked="" type="radio"/> No
DEA Schedule*:	<input type="text"/>

4.3.9 Here you can add medications to the database. For now, press **Return to Medications Administration Menu**, then select **Alprazolam** to edit the medication:

CMSC 495 Electronic Medical Reference Project

Edit Medication

Welcome, cmsc495admin!

[Return to Medications Administration Menu](#) or [Log Out](#)

Generic Name*:	<input type="text" value="Alprazolam"/>
Brand Name*:	<input type="text" value="Xanax"/>
Action*:	<input type="text" value="Sedative"/>
Conditions:	<input type="text"/> * <input type="text"/> <input type="text"/>
Blood Thinner*:	<input type="radio"/> Yes <input checked="" type="radio"/> No
DEA Schedule*:	<input type="text" value="4"/>

4.3.10 Here you can edit the medication's details, as well as delete the medication from the database:

CMSC 495 EMR Project | x

localhost:8080/cmhc495phase4/adminEditMedication.jsp?medID=6

	<input type="text"/>
Blood Thinner*:	<input type="radio"/> Yes <input checked="" type="radio"/> No
DEA Schedule*:	<input type="text" value="4"/>
Overdosages*:	Overdose results in somnolence, confusion, and coma, with reduced or absent reflexes, respiratory depression, and hypotension. Vomiting should be induced (gastric lavage if unconscious); maintenance of pulmonary ventilation is essential; IV pressor agents may be necessary for hypotension in addition to IV fluids. Flumazenil may be used for reversal of the sedative effects of benzodiazepines (risk of seizure). Value of dialysis has not been determined.
Interactions*:	Serious allergic reactions including angioedema have occurred. Suicidal behavior and ideation, seizures, hallucinations, mania, depression, hepatic failure, Stevens-Johnson syndrome, profound sedation, respiratory depression, coma, and death have been reported.
Warnings*:	Contraindicated in patients with hypersensitivity to benzodiazepines, concurrent use of ketoconazole and itraconazole. CNS depressant effects may be markedly increased with concurrent use of other CNS-depressants. Physical dependence with withdrawal symptoms including seizures may occur. Interaction with P450 drugs and CYP3A inhibitors. Risk of fetal abnormalities.

\* - Required Fields

[Update](#) or [Delete](#)

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4.3.10 For now, press **Return to Medications Administration Menu**, followed by **Return to Administration Menu**. Press **Conditions Administration** to add, update, or delete a condition:



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Conditions Administration

[Return to Administration Menu](#) or [Log Out](#)

[Add Condition](#)

Search:

CONDITION ▴	DESCRIPTION ▴
Addiction	Compulsive physiological need for and use of a habit-forming substance (i.e. heroin, nicotine, or alcohol) characterized by tolerance and by well-defined physiological symptoms upon withdrawal.
ADHD	A disorder in which a person is unable to control behavior due to difficulty in processing neural stimuli, accompanied by an extremely high level of motor activity.
Allergies	Hypersensitivity to a substance resulting in exaggerated or pathological reaction ranging from mild to severe: sneezing, itching, skin rashes, angioedema, shortness of breath, anaphylactic shock, death.

4.3.11 Once again, this table is sortable and searchable. Right now, click on **Add Condition**:

CMSC 495 Electronic Medical Reference Project

Add Condition

Welcome, cmsc495admin!

[Return to Conditions Administration Menu](#) or [Log Out](#)

Condition:	<input type="text"/>
Description:	<input type="text"/>

[Add to Database](#)

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4.3.12 Here you can add conditions to the database. For now, press **Return to Conditions Administration Menu**, then select **ADHD** to edit the medication:

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localhost:8080/cmsc495phase4/adminEditCondition.jsp?conID=2

## CMSC 495 Electronic Medical Reference Project

### Edit Condition

Welcome, cmsc495admin!

Return to Conditions Administration Menu or Log Out

<b>Condition:</b>	ADHD
<b>Description:</b>	A disorder in which a person is unable to control behavior due to difficulty in processing neural stimuli, accompanied by an extremely high level of motor activity.

Update or Delete

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4.3.13 Here you can edit the medication's details, as well as delete the medication from the database. For now, press **Return to Conditions Administration Menu**, followed by **Return to Administration Menu**.

4.3.14 The next level is **Administrator Functions**. Press **Users Administration** to add, update, or delete a user:

CMSC 495 EMR Project | x

localhost:8080/cmsc495phase4/adminListUsers.jsp

## CMSC 495 Electronic Medical Reference Project

### User Administration

Return to Administration Menu or Log Out

Add User

Search: Search

User ID *	User Name *	Role *	Locked Out *	Last Login *
1	rgarcia92@student.umuc.edu	Administrator	No	Sun Jan 01 12:01:00 EST 2017
2	steven.g.burke@gmail.com	Editor	No	Sun Jan 01 12:01:00 EST 2017
3	joe.greenm@gmail.com	Editor	No	Sun Jan 01 12:01:00 EST 2017
4	denise@peet.io	Editor	No	Sun Jan 01 12:01:00 EST 2017
5	cdbtheone@gmail.com	Editor	No	Sun Jan 01 12:01:00 EST 2017
6	cmsc495user	User	No	Tue Jul 11 13:38:45 EDT 2017
7	cmsc495editor	Editor	No	Sun Jan 01 12:01:00 EST 2017

4.3.15 Once again, this table is sortable and searchable. Right now, click on **Add User**:

CMSC 495 Electronic Medical Reference Project

Add User

Welcome, cmsc495admin!

Return to User Administration Menu or Log Out

User Name*:	<input type="text"/>
Roles*:	<input type="text"/>

Add to Database

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4.3.16 Here you can add users to the database. For now, press **Return to Users Administration Menu**, then select **cmsc495user** to reset the user's password or to delete the user from the database:

CMSC 495 Electronic Medical Reference Project

Edit User

Return to User Administration Menu or Log Out

User Information:

User Name: cmsc495user  
 Role: User  
 Salt: BMCZDpxUaqRS4xNv9LnZ6uY6uaZsjzww  
 Hash: 6b80cf9e860ade923fa9d83dc06e563bc0553c27f50ae796e511fb2f533cbb71  
 Locked Out: No  
 Last Login: Tue Jul 11 13:38:45 EDT 2017

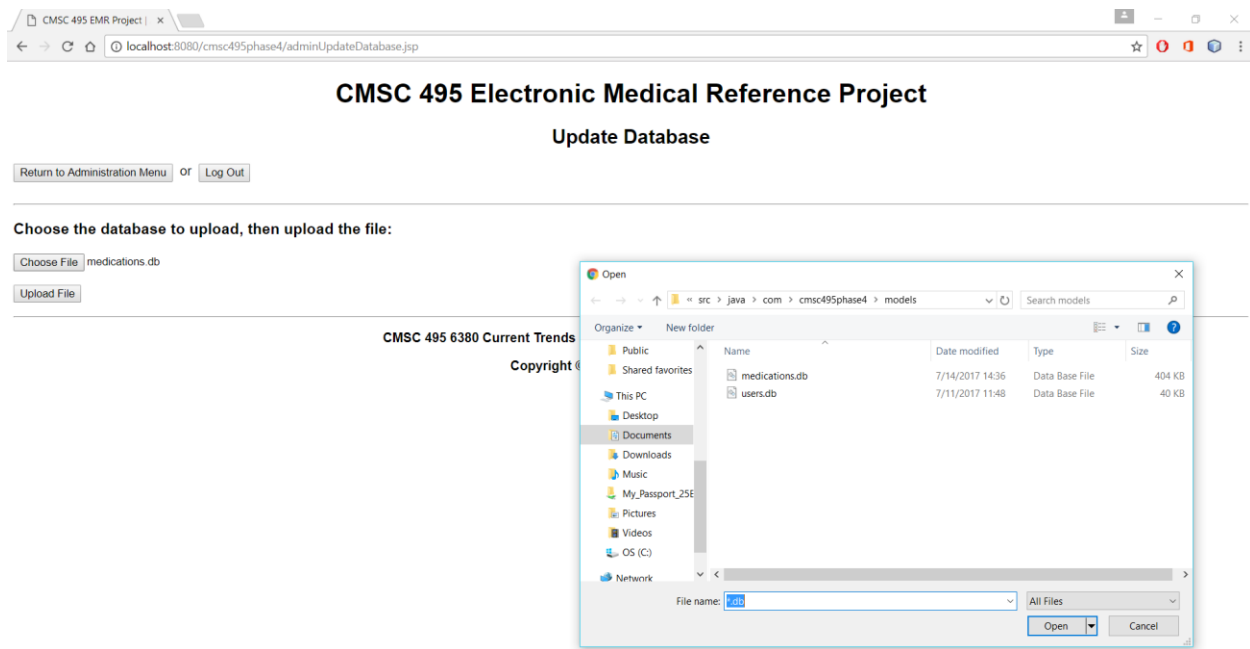
Reset Password

Delete User

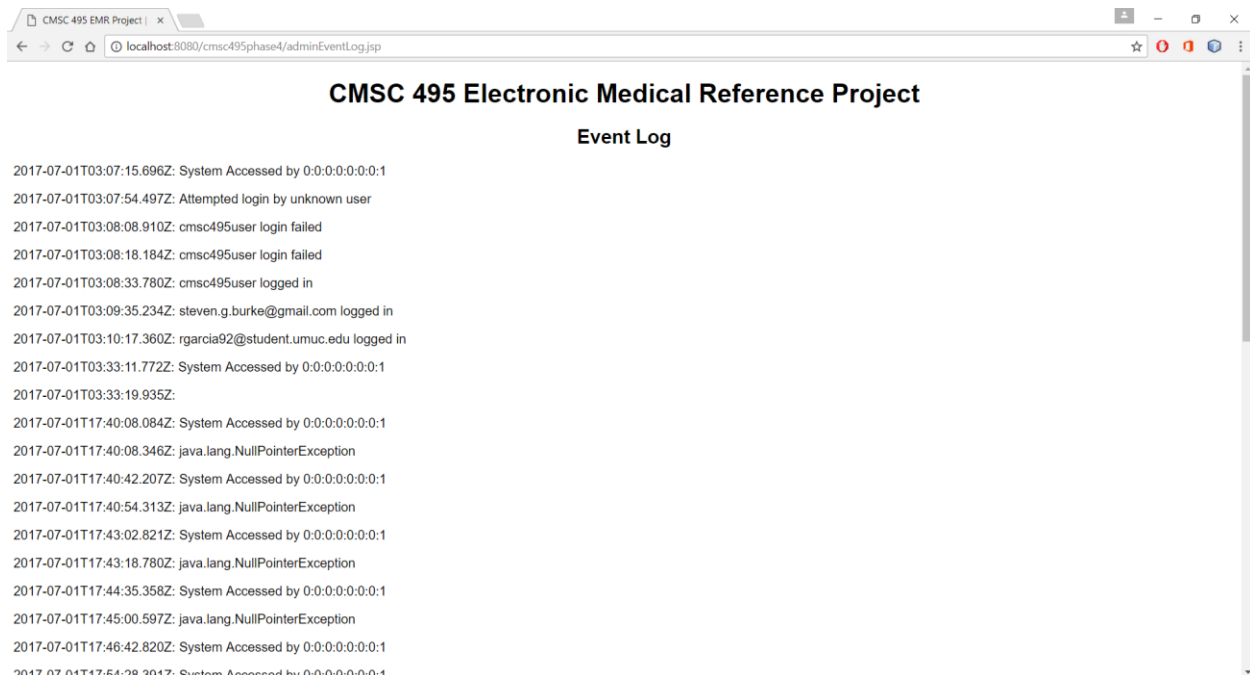
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4.3.17 For now, press **Return to Users Administration Menu**, followed by **Return to Administration Menu**. Once there, you will notice a button named Full Database Update. While it is disabled right now for use on AWS' Elastic Beanstalk, database administrators will use this to upload databases that have been updated using SQL instead of the administrative interface:



4.3.19 Press View Event Log. Here you will be able to see all user events, such as logging in, as well as any problems (This is disabled for use on AWS' Elastic Beanstalk):



4.3.20 You have now reviewed all the administrative functionality of the application. Feel free to continue exploring the application to become familiar with its use.