



جامعة قطر
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الصحة
HEALTH



كلية الصيدلة
College of Pharmacy
QATAR UNIVERSITY جامعة قطر
عضو في الصحة HEALTH Member of

Implementation of Technology into Patient Care and Education

College of Pharmacy Preceptor Development Session

April 23, 2019

Pre-Quiz

- Download: Socrative student OR
- Go to the following link: <https://b.socrative.com/login/student/>
- Enter: CPD5166
- Type your name!
- Begin the Pre-Quiz

Program Learning Outcomes

- Discuss how technology can be introduced into the pharmacy practice setting to enhance the experience for pharmacy students, pharmacists, and patients
- Explain the features of the My INR[®] anticoagulation mobile application and how it can be used by patients to improve adherence
- Understand how to estimate cardiovascular risk through the use of ACC/AHA cardiovascular risk calculator application
- Discuss the features of the AsthmaMD[®] mobile application to educate patients on asthma management
- Discuss the advantages and disadvantages of the presented applications for practice
- Understand the role of E*Value for the experiential education of pharmacy students
- Demonstrate how to utilize the features in the E*Value system when assessing student performance on practice experiences



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Mobile Application to Assist Anticoagulation Patients

Dr. Hazem Elewa, RPh, PhD, BCPS

Importance of Health Applications

- Useful tool in healthcare for teaching, learning, and practice
- Utilized to provide patient education, disease self-management, and remote monitoring of patients
- Important for clinicians, including clinical preceptors, to learn technology and to train students
- In pharmacy, technology was shown to improve medication's use, adherence, patient treatment outcomes, and pharmacy practice

Challenges with oral anticoagulants (OACs)

- Warfarin: mainstay oral anticoagulant, **77%** of OAC use in Qatar (2015)
- Narrow therapeutic index
- INR routine monitoring
- Adherence is KEY to avoid complications



Role of Health Apps

- Global emergence of mobile health application (Apps) gives new opportunities to help patients
- Apps can maintain wellness, encourage behavior change and adherence
- “My INR” is an app to help warfarin patient to adhere to their medication
- It keeps track of INR readings, prescribed medications and future appointments

My INR

My Profile

Your Name

Z

Prescribed Medication

Warfarin

Target INR

2.00 to 3.00

Daily Reminder

4:14 PM Off

Save

Add New Medication

Do your dosages vary daily? No

| | | | | |
|---|---------|---|----------------------------------|----------------------------------|
|  | 0.25 mg | 0 | <input type="button" value="+"/> | <input type="button" value="-"/> |
|  | 0.5 mg | 1 | <input type="button" value="+"/> | <input type="button" value="-"/> |
|  | 1 mg | 0 | <input type="button" value="+"/> | <input type="button" value="-"/> |
|  | 2 mg | 1 | <input type="button" value="+"/> | <input type="button" value="-"/> |
|  | 3 mg | 0 | <input type="button" value="+"/> | <input type="button" value="-"/> |
|  | 5 mg | 0 | <input type="button" value="+"/> | <input type="button" value="-"/> |

Continue for

1 months

Save

Have you taken your medication today? No

Today's Medication



| | | |
|---------------------------|---------------------------------|--|
| Last INR Reading | Today's Medication | Next Appointment |
| 2.9 Target: 2-3 | 2mg 30 days remaining | Tuesday 30th April @ 8:31 am |

Add New

| | | |
|--|---|--|
|  + INR Reading |  + Medication |  + Appointment |
|--|---|--|

My Profile **About INR** **My INR History**

My INR

Last INR Reading
1.4
Target: 1.6-2.2

Todays Medication
5.5 mg
5 days

Next Appointment
Friday
27th
March
@ 10:49 am

Add New

+ INR Reading + Medication + Appointment

Carrier

My INR History

List Graph

✓ - Taken medication

| | | |
|-------------------|-------|------|
| ✓ Thu Jul 28 2016 | 2.5mg | 1.86 |
| ✓ Wed Jul 27 2016 | 2.5mg | |
| ✓ Tue Jul 26 2016 | 2.5mg | |
| ✓ Mon Jul 25 2016 | 2.5mg | |
| ✓ Sun Jul 24 2016 | 2.5mg | 2.84 |
| ✓ Sat Jul 23 2016 | 2.5mg | |
| ✓ Fri Jul 22 2016 | 2.5mg | |
| ✓ Thu Jul 21 2016 | 2.5mg | 1.82 |
| ✓ Wed Jul 20 2016 | 2.5mg | |

Export





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Using Mobile applications for Cardiovascular Disease Risk Assessment and Management

Dr. Monica Zolezzi, *BPharm, MSc, ACPR, APA, PhD*
Assistant Professor, College of Pharmacy

- Atherosclerotic cardiovascular disease (CVD) remains the leading cause of death worldwide.
- CVD risk assessment (CVDRA) is an important strategy for the early identification of modifiable risk factors and their management.
- CVDRA (risk scoring) recognizes the hazards of multiple risk factors to determine the absolute risk of experiencing a CVD event in a given time period.
- Almost all CVD guidelines recommend some form of risk scoring as a way to prioritize and plan primary prevention interventions.

Benefits of CVDRAM

- Identifies higher-risk groups who are likely to have greater net benefit from pharmacotherapy.
- Increasing individual awareness of CVD and associated risk factors
- Providing risk information and the benefits and risks of interventions
- Increased initiation or intensification of lipid-lowering and antihypertensive medications
- Improving overall patient adherence with medications
- Help individuals maintain general wellness

CVD Risk Assessment

| Guidelines/ Country | Risk Assessment Tool | Age Range / End- points | Variables | Risk Score/ Category |
|--|---|--|--|---|
| ACC/AHA (2018) USA / Qatar | Pooled Cohort Equations to estimate 10-year ASCVD risk | 40 - 75 Probability of CHD death, nonfatal MI, fatal or nonfatal stroke | Age, gender, SBP, HTS treatment, TC, HDL-C, DM, smoking | <5% = Low 5 - <7.5% = Borderline ≥ 7.5% - <20% = Intermediate ≥ 20% = High |
| WHO/ISH (2010) 14 WHO Sub-regions (EMRO) | Color charts to estimate 10-year CVD risk specific to countries of the WHO epidemiological sub-regions | 40 - 79 Risk of a fatal or nonfatal major cardiovascular event (MI or stroke) | Age, gender, SBP, smoking, DM. One set uses TC and the other is for settings in which TC is not available. | <10% = Low 10% - <20% = Moderate ≥20% = High |
| NZGG (2018) New Zealand* | NZ Primary Prevention equations derived from the PREDICT study to estimate 5-year CVD risk | 30 – 74 (25 years for people with SMI)* Risk of stroke, TIA, MI, angina, PAD or HF | All traditional risk factors + additional variables (as of 2018), including ethnicity, family and medical Hx, BMI & CrCl | <5% = Low 5–15% = Intermediate ≥ 15% = High |

Mobile Application for CVD RAM ASCVD Risk Estimator

The ACC and the American Heart Association (AHA), in collaboration with the National Heart, Lung, and Blood Institute and other specialty societies, have released four guidelines focused on the assessment of cardiovascular risk, lifestyle modifications to reduce cardiovascular risk and management of elevated blood cholesterol and body weight in adults.

In order to support the implementation of these guidelines the ACC and AHA have jointly published a new mobile application (app).

The ASCVD Risk Estimator application helps health care providers and patients estimate 10-year and lifetime risks for atherosclerotic cardiovascular disease (ASCVD) using the Pooled Cohort Equations and lifetime risk prediction tools. The ASCVD Risk Estimator provides easy access to recommendations specific to calculated risk estimates. Additionally, the app includes readily accessible guideline reference information for both providers and patients related to therapy, monitoring, and lifestyle.

The app is available on both iTunes (iPhones, iPads) and Google Play (Galaxy, Nexus, other Android devices). Use the links below from your mobile device to download the app.



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American
Heart
Association

2013 Prevention Guidelines **ASCVD RISK ESTIMATOR**



Download the App
From iTunes 

Download the App
From Google Play 

Launch the
Web Version 

ASCVD Risk Estimator

App Store Preview IPU



ASCVD PLUS

ASCVD Risk Estimator Plus



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| Estimate Risk | Therapy Impact | Advice |
|---|--|--------|
| Current 10-Year ASCVD Risk 18.4% | Previous 10-Year ASCVD Risk -0% | |
| Lifetime ASCVD Risk 50% | | |

Estimate Risk Unit of Measure: **US** SI **Reset all**

App intended for primary prevention patients without ASCVD and LDL-C < 190 mg/dL (4.921 mmol/L)

Patient Demographics

Current Age:
Age must be between 40-75

Sex: Male Female

Race: White African American

| Estimate Risk | Therapy Impact | Advice |
|---|--|--------|
| Current 10-Year ASCVD Risk 34.4% | Previous 10-Year ASCVD Risk -0% | |
| Lifetime ASCVD Risk 69% | | |

Do you want to compare to risk level at a previous visit?

Yes No

Therapy Impact

Advice

AMERICAN COLLEGE of CARDIOLOGY ASCVD Risk Estimator Plus

Resources Disclaimer About News

| Estimate Risk | Therapy Impact | Advice |
|---|--|--------|
| Current 10-Year ASCVD Risk 34.4% | Previous 10-Year ASCVD Risk -0% | |
| Lifetime ASCVD Risk 69% | | |

Project Risk Reduction by Therapy **Reset**

Project 10-Year ASCVD Risk

18.8% with Smoking Cessation, Statin Therapy

- Quit Smoking
- Start/Intensify Statin
- Start/Add Blood Pressure Medication(s)
- Start/continue aspirin therapy

Remove this scenario

Project a Different Therapy Combination



10-year ASCVD risk not available for patients with LDL-C < 70 mg/dL. See Advice tab for more information on managing other risk factors.

Current 10-Year ASCVD Risk**

Lifetime ASCVD Risk: 50%

Optimal ASCVD Risk: 4.9%

Current Age *

55

Age must be between 20-79

Sex *

Male

Female

Race *

White

African American

Other

Systolic Blood Pressure (mm Hg) *

124

Value must be between 90-200

Diastolic Blood Pressure (mm Hg) ○

89

Value must be between 60-130

Total Cholesterol (mmol/L) *

3.4

Value must be between 2.267 - 9.389

HDL Cholesterol (mmol/L) *

0.8

Value must be between 0.519 - 3.50

LDL Cholesterol (mmol/L) ○

0.777

Value must be between 0.777-7.770



10-year ASCVD risk not available for patients with LDL-C < 70 mg/dL. See Advice tab for more information on managing other risk factors.

Current 10-Year ASCVD Risk**

Lifetime ASCVD Risk: 50%

Optimal ASCVD Risk: 4.9%

Projected 10-Year ASCVD Risk

8.0% with Smoking Cessation

Quit Smoking

Start/Intensify Statin

Start/Add Blood Pressure Medication(s)

Start/continue aspirin therapy



Tobacco Cessation (for this Patient)

To reduce ASCVD risk:

- Tobacco abstinence is recommended (I, B), firmly advise patient to quit. (I,A)
- Use combination of behavioral interventions plus pharmacotherapy. (I,A)
- Avoid exposure to secondhand smoke. (III: Harm, B)
- Assess tobacco use at every visit. (I,A)
- Make a follow-up plan.

See below for more information on each of these steps.

Supporting Expert Consensus Advice*

To facilitate tobacco cessation in adults and optimize outcomes:

- Assess at every visit for tobacco use and record tobacco use status as a vital sign. (I, A)

Consider including the following in your assessment:

- [Heaviness of Smoking Index](#)
- Other indicators of nicotine dependence:

Who to Screen?

- Men aged 40 y and older
- Women aged 50 y and older or postmenopausal women
- Children with a family history of hypercholesterolemia or chylomicronemia

Screen all patients with the following conditions regardless of age:

- Diabetes
- Hypertension
- Current cigarette smoking
- Obesity
- Family history of premature CAD (< 60 y in first-degree relative)
- Inflammatory disease (SLE, rheumatoid arthritis, psoriasis)
- Chronic renal disease (eGFR < 60 mL/min/1.73 m²)
- Clinical atherosclerosis
- HIV infection treated using highly active retroviral therapy
- Clinical manifestations of hyperlipidemia (xanthomas, xanthelasmas, premature arcus cornealis)
- Erectile dysfunction

CAD—coronary artery disease, eGFR—estimated glomerular filtration rate, HIV—human immunodeficiency virus, SLE—systemic lupus erythematosus.



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AsthmaMD: A Smartphone Application for Asthma

Ms. Nour Hisham Al-Ziftawi *BPharm, MSc. Pharm Candidate*
Graduate Teaching Assistant, College of Pharmacy

Introduction

- Asthma is a common disease that can be life-threatening for patients
- AsthmaMD is a Smartphone app designated for asthmatic patients and their families to increase medication adherence
- Enables healthcare professional to follow up with the patients
- Improves patient adherence and related outcomes, and improve healthcare professionals efficiency
- Available for Android and IOS → Playstore or Appstore → Search → AsthmaMD

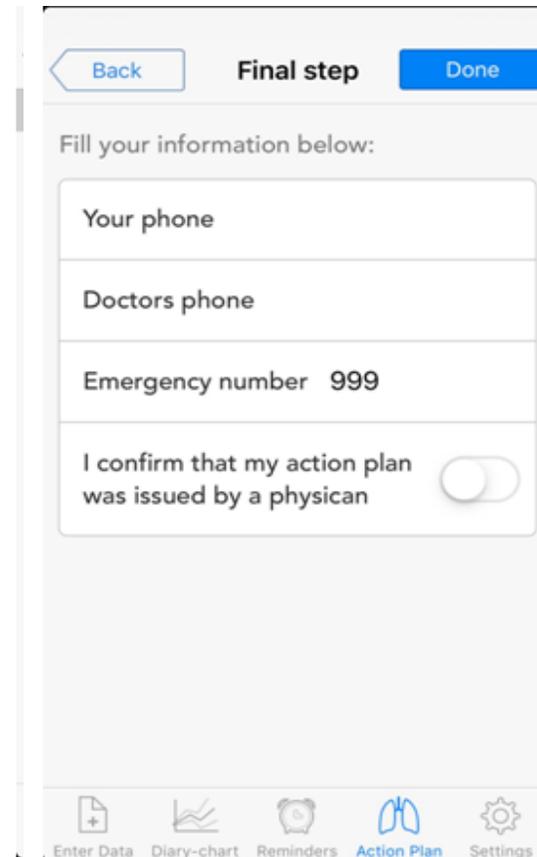
A: Get Started

- Create an account
- Enter your information
- Get started!

The screenshot shows a mobile application registration screen. At the top, the status bar displays the time 2:25, signal strength, Wi-Fi, and battery icons. The form is organized into two columns. The left column contains five input fields: 'First Name', 'Last Name', 'Email', 'Password' (with a toggle for visibility), and 'PSP Code'. The right column contains 'Date of Birth', 'Height', a gender selection (Male/Female), and two optional fields: 'Highest Peak Flow' and 'Highest FEV-1'. Below these is a 'Keep me logged-in for' section with radio buttons for '1 week', '3 months', and '1 year' (the latter is selected). A 'Doctor email' field is also present. At the bottom of the form are two large blue buttons: 'SAVE' and 'DONE'. A bottom navigation bar features icons for 'Enter Data', 'Diary-chart', 'Reminders', 'Action Plan', and 'Settings', with 'Enter Data' currently selected.

B: Fill-up the action Plan

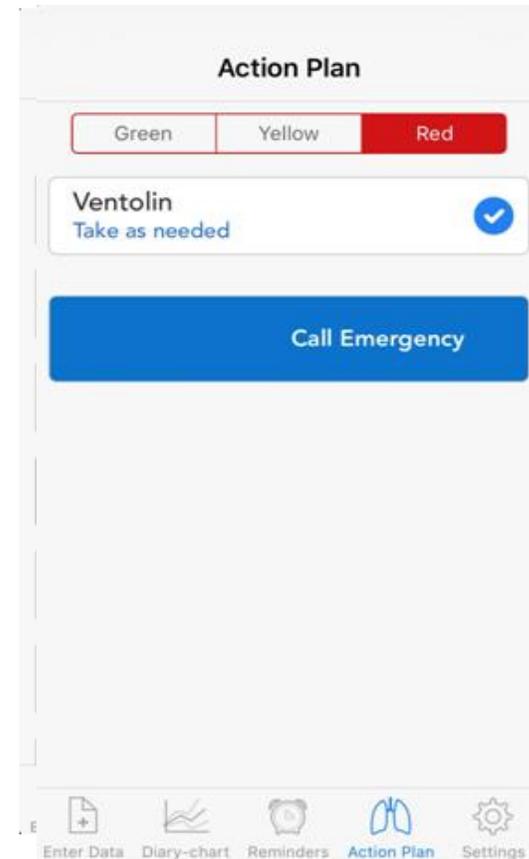
- Enter the drugs of use as prescribed
- Classified into 3 zones: green, yellow, red
- Specific doses to each zone



The screenshot shows a mobile application interface for the final step of creating an action plan. At the top, there is a navigation bar with a 'Back' button on the left, the text 'Final step' in the center, and a 'Done' button on the right. Below the navigation bar, the text 'Fill your information below:' is displayed. The form consists of several input fields: 'Your phone', 'Doctors phone', and 'Emergency number 999'. Below these fields is a confirmation statement: 'I confirm that my action plan was issued by a physician', followed by a toggle switch that is currently turned off. At the bottom of the screen, there is a navigation bar with five icons and their corresponding labels: 'Enter Data' (a plus sign in a square), 'Diary-chart' (a line graph), 'Reminders' (a clock), 'Action Plan' (a pair of lungs), and 'Settings' (a gear). The 'Action Plan' icon is highlighted in blue.

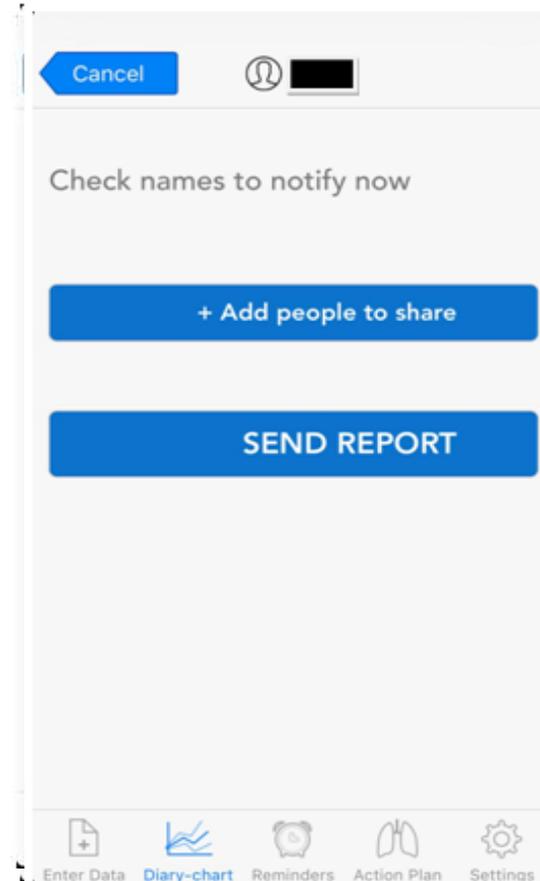
B: Fill-up the action Plan (Cont'd)

- Useful in case of forgetting what to do at a specific level of asthma
- Automatically sets a daily reminder to take the medications as prescribed;
- Timings are adjustable on preference



C: Create records and share charts

- Educate patient to enter data on a daily basis
- Once data is entered for 1 week, 1 month, or 3 months, charts will be created
- Weekly, monthly, 3-month charts can be shared with physician or pharmacist via email



Advantages

- Easy to use
- Can share with healthcare providers

Disadvantages

- English language only
- Doesn't give feedback to the patients