

How to monitor Cholesterol and Blood coagulation?

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326 PHCL

Cholesterol Self Monitoring Devices



Cholesterol overview

Major dietary sources of cholesterol

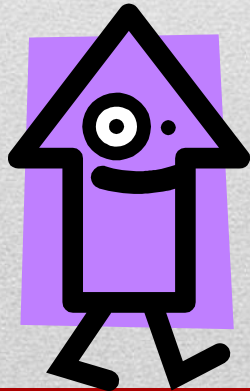
- Cheese
- Egg yolks
- Beef, poultry
- Fish, and shrimp
- Human breast milk



LDL and HDL Cholesterol: What's **Bad** and What's **Good**?

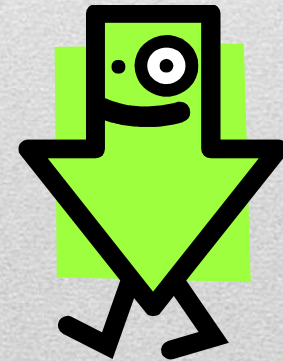
HDL

- known as “GOOD” cholesterol.
- Why? The **Higher** the better.



LDL

- known as “BAD” cholesterol.
- Why? The **Lower** the better.



Dyslipidemia

- Dyslipidemia means an abnormal amount of lipids, or fats, in the blood
 - They may result in increased risk CVD and atherosclerosis
-

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Saudi Med J. 2008 Feb;29(2):282-7.

Hyperlipidemia in Saudi Arabia.

Al-Nozha MM, Arafah MR, Al-Maatouq MA, Khalil MZ, Khan NB, Al-Marzouki K, Al-Mazrou YY, Abdullah M, Al-Khadra A, Al-Harhi SS, Al-Shahid MS, Al-Mobeireek A, Nouh MS.

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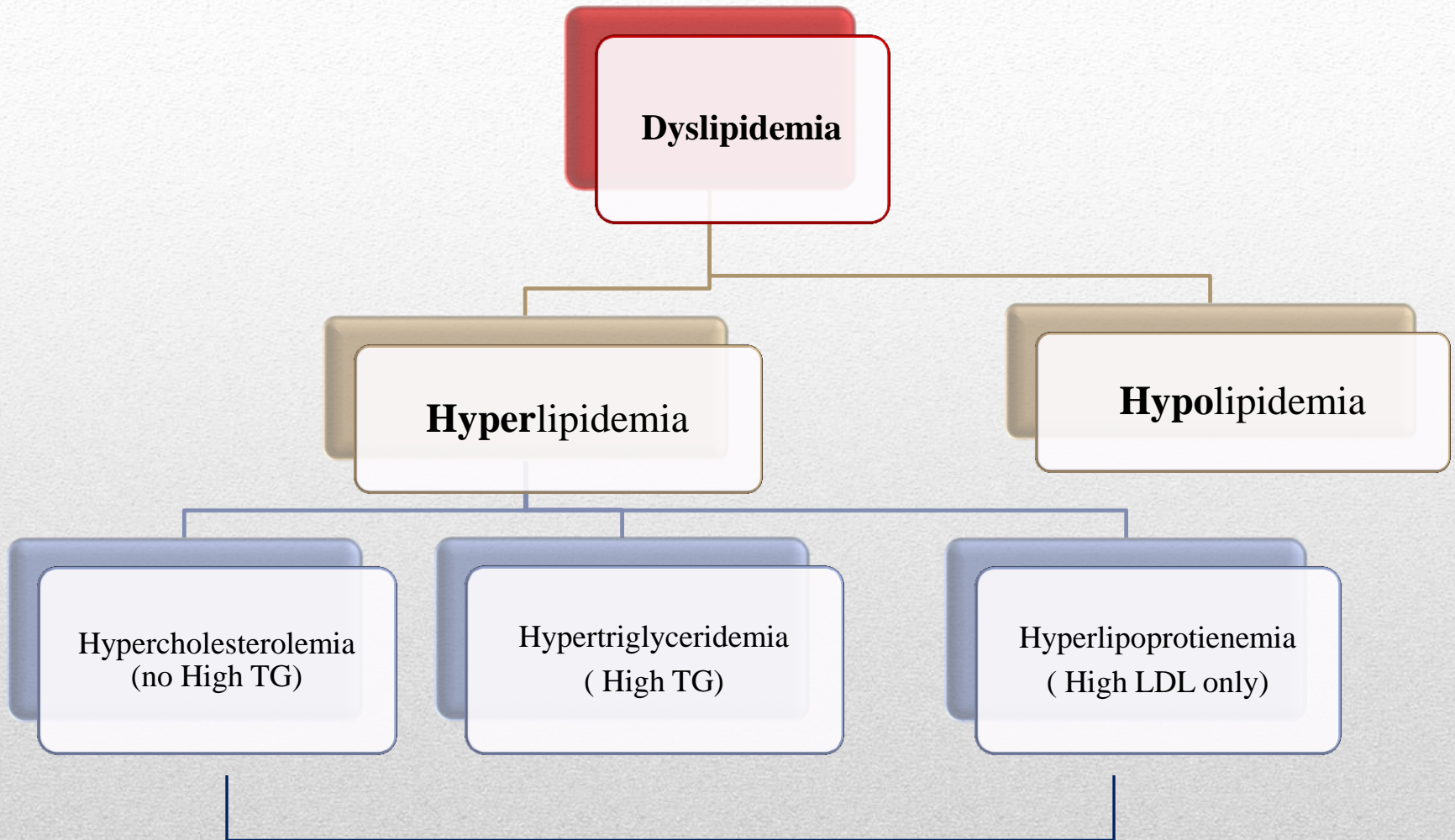
Abstract

OBJECTIVE: To determine the prevalence of hyperlipidemia among Saudis of both genders in rural and urban communities.

METHODS: Selected Saudis in the age group of 30-70 years were studied over a 5-year period between 1995 and 2000 in Saudi Arabia. Data were obtained from history, physical examination, and analysis of fasting plasma lipids. The data were analyzed to classify individuals with hypercholesterolemia (HC) (total cholesterol $>$ or $=$ 5.2 mmol/l), and hypertriglyceridemia (HT) (total triglycerides $>$ or $=$ 1.69 mmol/l). Logistic regression analysis was performed to provide a risk assessment model and correlation with other coronary artery disease (CAD) risk factors.

RESULTS: The number of study samples included in the final analysis was 16,819. The prevalence of HC was 54% with mean cholesterol level of 5.4 \pm 1.52 mmol/l. Prevalence of HC among males was 54.9% and 53.2% for females, while 53.4% among urban Saudis and 55.3% for rural Saudis. Hypertriglyceridemia prevalence was 40.3% with mean triglycerides level of 1.8 \pm 1.29 mmol/l. Males had statistically significant higher HT prevalence of 47.6% compared to 33.7% in females ($p < 0.0001$).

CONCLUSION: Hyperlipidemia is reaching higher prevalence rates in KSA. This finding may suggest that CAD will soon be a major health problem. Reduction in obesity by adopting healthier eating habits, and increasing physical activity are of considerable importance to our community.



Synonyms

Atherosclerosis

Normal levels

Total Cholesterol Level	Total Cholesterol Category
Less than 200 mg/dL 200-239 mg/dL 240 mg/dL and above	Desirable Borderline high High

LDL Cholesterol Level	LDL Cholesterol Category
Less than 100 mg/dL 100-129 mg/dL 130-159 mg/dL 160-189 mg/dL 190 mg/dL and above	Optimal Near optimal/above optimal Borderline high High Very high

HDL Cholesterol Level	HDL Cholesterol Category
Less than 40 mg/dL 40 - 59 mg/dL 60 mg/dL and above	A major risk factor for heart disease. The higher, the better. Considered protective against heart disease.

Screening

- Everyone age 20 and older should have a fasting "lipoprotein profile" every 5 years
 - Cholesterol should be checked **more often than every 5 years** if :
 - Your TC is ≥ 200 mg/dL
 - men >45 yo or women >50 yo
 - Your HDL (good) cholesterol <40 mg/dL.
 - You have other risk factor for heart disease and stroke.
-

The Framingham Risk Score

- Used to estimate the chance that a person will develop cardiovascular disease within the next 5 or 10 years.
 - Also, to determine who should be offered preventive drugs such as drugs to lower blood pressure and drugs to lower cholesterol levels.
 - There are two Framingham Risk Scores, one for men and one for women
 - Recommended every 3-5 years for men age >40 years and women >50 years.
-

Men

Estimate of 10-Year Risk for Men

(Framingham Point Scores)

Age	Points
20-34	-9
35-39	-4
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	11
70-74	12
75-79	13

Total Cholesterol Points

Age 20-39	Points
<160	0
160-199	4
200-239	7
240-279	9
≥280	11

Age 20-39	Points
Nonsmoker	0
Smoker	8

HDL (mg/dL)	Points
≥60	0
50-59	1
40-49	2
<40	3

Systolic BP (mmHg)	Points
<120	0
120-129	1
130-139	2
140-159	3
≥160	4

Point Total	10-Year Risk %
<0	< 1
0	1
1	1
2	1
3	1
4	1
5	2
6	2
7	3
8	4
9	5
10	6
11	8
12	10
13	12
14	16
15	20
16	25
≥17	≥ 30

10-Year risk _____%

Women

Estimate of 10-Year Risk for Women

(Framingham Point Scores)

Age	Points
20-34	-7
35-39	-3
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

Total Cholesterol Points

Age 20-39	Points
<160	0
160-199	4
200-239	7
240-279	9
≥280	11

Age 20-39	Points
Nonsmoker	0
Smoker	8

HDL (mg/dL)	Points
≥60	0
50-59	1
40-49	2
<40	3

Point Total	10-Year Risk %
< 9	< 1
9	1
10	1
11	1
12	1
13	2
14	2
15	3
16	4
17	5
18	6
19	8
20	11
21	14
22	17
23	22
24	27
≥25	≥ 30

10-Year risk _____%

- Low risk (<10 % CHD risk at 10 years)
- Intermediate risk (10 to 20 %)
- High risk (>20 %)

Calculator: 10 year risk of developing cardiovascular disease in women (Patient information)

Input:

Age	<input type="text"/>	yr	▼
Systolic Blood Pressure	<input type="text"/>	mmHg	▼
Total Cholesterol	<input type="text"/>	mg/dL	▼
HDL Cholesterol	<input type="text"/>	mg/dL	▼
On blood pressure medication	<input type="text" value="No"/>		
Cigarette smoker	<input type="text" value="No"/>		
Diabetes present	<input type="text" value="No"/>		

Results:

Risk % ▼

Reset form

The CardioChek® System

The Two-Minute Home Cholesterol Test

- Approved by the FDA in 1993, home cholesterol tests generally measure the total fat levels in your blood.
 - Relied on by physicians.
 - Easy to use; two buttons do it all
 - Results in two minutes or less
 - Portable, palm-sized
 - Large digital readout
 - Stores the last 30 results of each test.



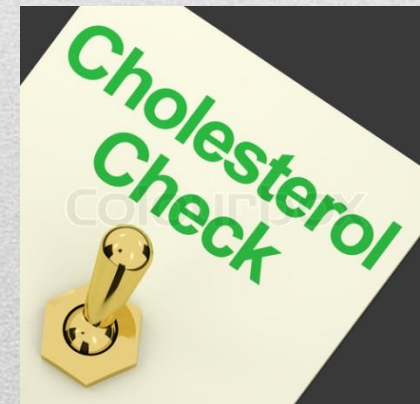
The CardioChek® System



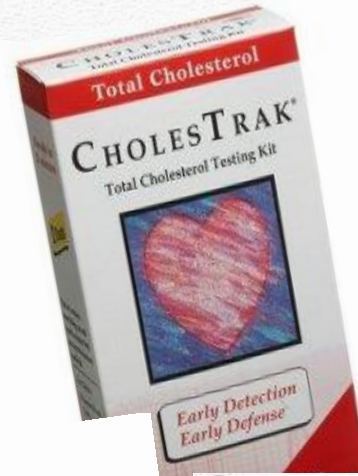
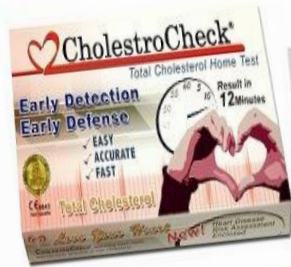
How to Use it ?

Before testing

- The test is done after a **9- 12 hour FAST** without food, liquids or pills.



Home test kits



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Patient counseling for Hyperlipidemia treatment

Lipitor ® Counseling

Blood Coagulation Self Monitoring Devices





Normal Blood clotting process

Thrombosis

- Formation of a blood clot (**thrombus**) inside a blood vessel, obstructing the flow of blood through the circulatory system causing cell death
 - When a blood vessel is injured, the body uses platelets (thrombocytes) and fibrin to form a blood clot to prevent blood loss
 - A clot that breaks free and begins to travel around the body is known as an embolus
 - Thromboembolism is the combination of thrombosis and its main complication, embolism.
-

Classification

Venous Thrombosis

- Deep vein thrombosis (DVT)
- Pulmonary Embolism (PE)

Arterial Thrombosis

- Atherosclerosis
 - Myocardial infarction
 - Stroke
-

Venous Thromboembolism (VTE)

- VTE is manifested as:
 - Deep venous thrombosis (DVT)
 - Pulmonary embolism (PE).

How DVT Forms?

DVT and PE

• Risk factors for DVT

- Family or personal history of clots
- Immobility
- Surgery
- Malignancy
- Smoking
- Pregnancy
- Oral contraceptives
- Major medical illness



➤ The principal cause of pulmonary embolism is DVT.

• Symptoms of DVT

- Leg swelling, pain, warmth, and erythema (calf or thigh)
-

Management

- Anticoagulants = Blood thinners
 - Heparin (IV)
 - LMWH (SC)
 - Warfarin (PO)
 - Antiplatelets = Preventing platelets sticking together
 - Aspirin (PO)
-

Blood Coagulation Profile

Prothrombin time (PT) :

- Time necessary to generate fibrin after activation of factor VII.
 - A prolonged PT
 1. Either affected by abnormalities or deficiencies in coagulation factors I, II, VII or X
 2. Or by the presence of circulating anticoagulants
 - Reference Range: 10-12 sec.
-

International Normalized Ratio (INR):

- Measures the time it takes for blood to clot and compares it to an average.
- Attempt to standardize the PT because of nono-standerdised thromboplastins.
- $$\text{INR} = \left(\frac{\text{Patient PT value}}{\text{Mean normal PT}} \right)^{\text{ISI value}}$$
- Normal INR= (0.8–1.2)



Coagucheck®XS system

- Self-testing device For patients on vitamin K antagonist therapy to monitor their PT/INR values at home or on the go
- **Features**
 - Simple, fast process (1 min)
 - Finger-stick sample (no venous draw)
 - Patients receive comprehensive training
 - Built-in quality control.

How to use?



HemoSense INRatio PT/INR Monitoring System (InRatio2)

- Test Strips do not require refrigeration.
- Small one drop (15 μ L)
- Reduces paperwork and materials cost.
- Simple interface, easy to learn and use.
- Ensures reliability on each and every test.
- Entire test procedure requires fewer steps.
- Portable size increases geographic freedom.



How to use?

Easy Test Procedure



1) Turn on the meter, insert a Test Strip and check the Strip Code.



2) Perform a fingerstick when the meter displays "ADD SAMPLE"



3) Apply a hanging drop of blood to the sample well of the Test Strip



4) See the results within 2 minutes.

What Should you Cover During Warfarin Counseling?



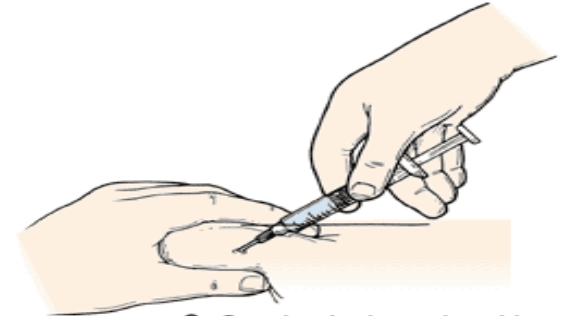
ماذا تعرف عن الوارفارين؟
SFDA



How to Give a Subcutaneous Injection



1. Use an alcohol swab to clean the skin where you will give yourself the shot.



2. Gently pinch up the skin and insert the needle into the skin at a 45° angle.



3. After you insert the needle completely, release your grasp of the skin.



4. Inject all of the solution by gently and steadily pushing down the plunger.



5. Withdraw the needle and syringe and press an alcohol swab on the spot where the shot was given.



Thank you
