



Pre-Marital Counseling and Tests

Objectives

- What is premarital counseling.
- Who are Carrier's and their fates.
- How to interpret the TESTS.
- What is a successful counseling.

Team leaders

Abdulaziz Aljohani Laila Alsabbagh

Team members

Layan Alwatban
Arwa Alzahrani
Norah Alkadi
Reham Alhalabi
Fayez Aldarsouni

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Reference: Girls' & Boys' Slides



Medicine437



Medicineteam437@gmail.com



Waiting for your **Feedback**

premarital counseling

Pre-marital: before marriage

Counseling: “ professional guidance of the individual by utilizing psychological methods.....”

Premarital counseling is a type of advice that helps couples prepare for marriage.

Premarital counseling can help:

- Ensure that both spouses would have a strong, healthy relationship.
- Giving them a better chance for a stable and satisfying marriage.



premarital Screening Program

This is a state of prevention, so if you detect early you will prevent early

Background:

- Genetic disorders particularly Hemoglobinopathies like Thalassemia & Sickle cell anaemia and infectious diseases.
- A high prevalence of Carrier status was reported predominantly in the eastern and south western regions of Saudi Arabia

it provides counseling on:

- The **odds** of transferring this disease to their **prospective marriage partner**
- The **odds** of transferring this disease to their **future children**
- **Solutions** and how to move forward



2004

the Saudi Ministry of Health implemented a mandatory premarital screening program to decrease the incidence of these genetic disorders in future generations, such as hemoglobinopathies: sickle cell and thalassemia.

2008

this test was updated to include mandatory screening for

- HBV
- HCV
- HIV.

This new program was named “ program of health marriage”.

2013

The program changed its name from pre-marital screening to healthy marriage program and started electronic integration.

Girls' slides only

program's objectives

- ↓ the rate of the genetic blood disorder and infectious diseases
- ↓ the financial burden of treating people affected with these diseases, also decreases burden on hospital and health care system.
- To avoid psychological and social problems for these future families
- To make it easier for people who want to make the test to ask for it.
- To raise awareness about the concept of a comprehensive healthy marriage.

Certificate of healthy marriage

The certificate is issued after the test results have been done and counseling has been performed in the counseling clinic for cases that mandate it.

هذي الشهادة تعطى للمأذون عند عقد النكاح

Examples of such cases: Having Hep C, hemoglobinopathy with chance of having diseased children

Cultural considerations

- Consanguineous marriage (56% in 1995, 57.7% in 2007 in KSA) ¹
- Respect the couple's decisions. The test is mandatory but the results are not mandatory. ²
- Family and tribal pressure
- Taboo of certain diseases/ stigma ³
- Privacy and confidentiality

1- many marriages in KSA were between relatives. This plays an important role in the genetic blood disorders. SC A and thalassemia are common in certain regions like Eastern and Southern.

2- the test results and the certificate of compatibility are not obligatory. The decision is up to the couple to go ahead with the marriage or not, regardless of the results.

60 % of say they prefer to cancel at-risk marriages, but only 2% actually cancelled- mainly due to society pressure.

3- Some disease like HIV have a stigma with them. We know that HIV can be transmitted via blood, during delivery, and sexual intercourse. Unfortunately, people immediately think of sexual activity with HIV which is unfair to those that got it via blood transfusion or from their mother during delivery.

Boys' slides only

Prerequisite of a Screening Program

Any successful screening program must comply with : very important

- **prevailing culture.**
- **ethnic values.**
- **Economic values.** Not every person can do an expensive test
- **Societal values.**

This could come as MCQ

Performed Tests

Complete Blood Count.

Sickle cell test.

Hemoglobin electrophoresis.

HBs Ag.

Anti-HCV.

HCV screening by ELISA.

HBV screening by ELISA.

Anti-HIV.

HIV-Confirmation by Western blot Method.

How Screening tests can help

A simple blood test can detect CARRIERS of these disorders.

The future couples could be informed about their chances of producing affected children.

Why include HIV/ HBV/ HCV in premarital Screening Program?

These diseases are now prevalent in epidemic proportion.

They can be easily transmitted to sexual partners and to newborns.

They are not curable.

The mortality and morbidity rates are high.

Boys' slides only

Why include hemoglobinopathies in premarital Screening Program?

Common in some regions of Saudi Arabia.

This imposes a heavy financial burden on the society.

These are autosomal recessive inheritable haemoglobinopathies.

These are incurable, and causes significant morbidity and mortality.

I will go Quickly through it. you know it from pathology and physiology

important Types of Normal Hemoglobin Know that! If you know the normal you will know the abnormal

Hb A	Hb A2	Hb F <small>We often forget this</small>
comprises 92% of adult hemoglobin.	comprises 2-3% of adult hemoglobin. Increased in β -Thalassemia	Comprises less than 1% of hemoglobin in adults. Normal Hemoglobin in Fetus from 3-9th month of life . Increased In β -Thalassemia.

Types of Abnormal Hemoglobin Chain Structure

Hb S
(Sickle Cell Hemoglobin)

In homozygous state both genes are abnormal presents as Sickle Cell Anemia

- Hb: b/w 6-8 gm /dl.
- Reticulocyte count: 10-20%.
- Hb electrophoresis Shows:
 - Hb A: 0 %
 - Hb SS: 95%
 - Hb F: 2-20%.

Sickling Solubility test: precipitation of Hb S gives a turbid appearance. The parents of affected child will show sickle cell trait.

Hb AS
(Sickle cell trait)

- In heterozygous state only one chromosome carries the gene.
- Hb electrophoresis Shows:
 - Hb A : 60 %
 - Hb SS: 40%
 - Hb F: 2 %

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Laboratory Interpretation of Hemoglobinopathies

- β -Thalassemia minor (Trait) : symptomless heterozygous carrier state.
- β -Thalassemia Major : severe symptomatic homozygous Anemia.
- Sickle cell anemia.
- Sickle cell trait.

Q:What is the best test to differentiate between iron deficiency anemia and thalassemia?

Ans:Electrophoresis

Could come in the exam

Genetic Carrier

A person who carries an allele without exhibiting its effects. Such an allele is usually **recessive**, but it may also be dominant and latent, with symptoms that do not appear until adulthood

Actually anyone could be a carrier for any disease ,you will never know ,unless you did an electrophoresis

Who is a carrier of Thalassaemia?

The β Thalassemia Trait is indicated by the following:

- Normal or slightly low Hemoglobin.
- Decreased mean cell volume (MCV)
- And/or reduced mean cell hemoglobin (MCH).
- Hemoglobin A₂Level >3.5% by Hemoglobin electrophoresis.
- Microcytic hypochromic picture.

How will you interpret an **Autosomal recessive** disorder?

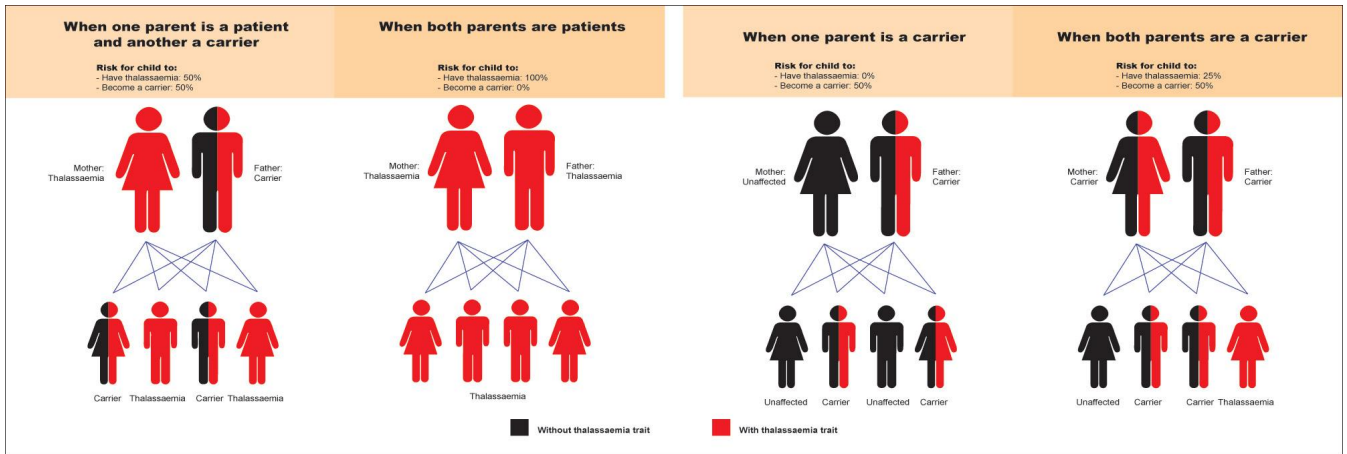
This disorder manifests itself only when individual is homozygous for the disease Allele.

The parents are generally unaffected healthy carriers.

The offspring of an affected person will be healthy heterozygotes unless other parent is also a Carrier

Important

Possible Future Child's faith



First parent	Second parent	Chances of each child to have the disease
Diseased	Carrier	Each child has: 50% chance to have the disease 50% chance to be carrier
Diseased	Diseased	All children will have the disease
Normal	Carrier	Each child has: 50% chance to be carrier 50% chance to be normal
Carrier	Carrier	Each child has 25% chance to have the disease (1 in 4 chance) 50% chance to be carrier 25% chance to be normal

Check the scenarios in the last page

Boys' slides only

Who is a viral carrier?

One who harbors disease organisms in his body without manifesting any symptoms, thus acting as a distributor of infection.

A viral carrier fate

HIV and Hepatitis B & C viruses can remain dormant for months or even years in CARRIERS without showing any symptoms.

With early diagnosis and treatment CARRIERS of HIV or hepatitis viruses can keep the symptoms under control and reduce the risk of serious complications.

Fate of HBV infection

- 85% of cases---- Full recovery
- 5-10% of cases ----Chronic hepatitis / cirrhosis / liver carcinoma
- 10% of cases ---- Carriers.
Supposed a person is suspected to have HBV and you did test him, and his result showed as a negative results
You can't tell him that the test is normal until you repeat the test after 3 months

Screening for HBV (double stranded DNA virus)

- Who is HBV Carrier?
 - Following an acute HBV infection- which maybe sub-clinical- 5-10% of patients will not clear the Virus and will become carrier's of HbsAg.
 - Carriers are usually discovered incidentally on blood Test either Pre- marital examination or routine health check-up or blood Donation.
 - Healthy HBsAg carries:
 - HBsAg : positive. +
 - HBeAg : negative. -
 - HBe-antibody : positive. +
 - HBV-DNA : Negative. -
- Important**

Boys' slides only

Screening for HCV

- A single stranded RNA Virus.
- It is 70-90 % of cases found in post-transfusion cases.
- Again mostly found incidentally during Pre marital screening OR routine check-up or Blood donation.
- Not easily spread through sexual –contact.

Screening for HCV

No carrier state found

- Chronic liver disease --- 70-80 % of cases.
- Cirrhosis of Liver ----- 5% of cases.
- Hepatoma ----- 15 % of cases

Screening for HIV

- HIV is a Retrovirus infecting T-Helper cells bearing the CD4 receptors.
- Transmission:
 - sexual --- 60-70% of cases.
 - From mother to child ---- 90% of cases.

Fate of HIV - antibodies

- Confirmed by Western blot Test.
- Presence of HIV-antibodies gives no indication about disease progression.
- After exposure to HIV –infected person it may take **upto 3 months to become positive.**
- Consider repeating this test if exposure may have occurred **< than 3 months prior to testing.**

It's very important to take a history

Boys' slides only

What will happen after the test?

Consult your family physician

The steps that a family physician should take in case of:

Hemoglobinopathies

- The future couple should be advised that after marriage your children could suffer from Sickle Cell anemia or Thalassemia.
- The physician will not issue the premarital fitness certificate.
- The decision will be for the future couple whether to go ahead with the marriage or not.

HIV or Hepatitis virus

- The physician will repeat the test before confirming the diagnosis.
- If still positive; will not issue premarital fitness certificate.
- HIV & HCV Positive are encouraged to avoid marriage(for now) – as there is much higher chance to transmit infection to your future spouse.
- Could come in the exam In HBV Carriers , the healthy partner is advised to be vaccinated.
- The HIV ,HCV patient will be informed and referred to a Specialty Clinic for Follow-up.*

*We have a vaccine for hepatitis B but,we don't have one for Hepatitis C

What ethical issues can arise?

- Usually premarital screening comes too late for couples to change their opinions about marriage.
- By this time they are already committed for this relationship.
- Which spouse will be affected the most? Both of them
- Is it a stigma or dilemma for the female? It may prevent her from getting married

Boys' slides only

A Taboo for female

- Rejecting marriage on these ground may affect her Social Life.
- Sometimes this stigma may prevent her from ever getting married.

Stigma=وصمة عار

Dilemma=a difficult situation or problem

Taboo= a social practice that is restricted or prohibited

Stigma for male and female

- HIV testing also has far-reaching social impact especially when someone is planning to marry.
- In some communities certain values may clash with concept of premarital HIV testing with major issues of confidentiality

What is the family physician's role?

1. Discuss genetic counseling

Encourage individuals or family to obtain information about a genetic condition that may affect them so that they can make appropriate decisions about marriage, reproduction and health management.

2. Discuss consanguinity

Relationships by blood or common ancestry in which the chances of offspring inheriting a recessive allele for a disease are increased. The closer the relationship the greater the risk. (especially cousin marriages)

Prevalence of consanguineous marriages in muslim community

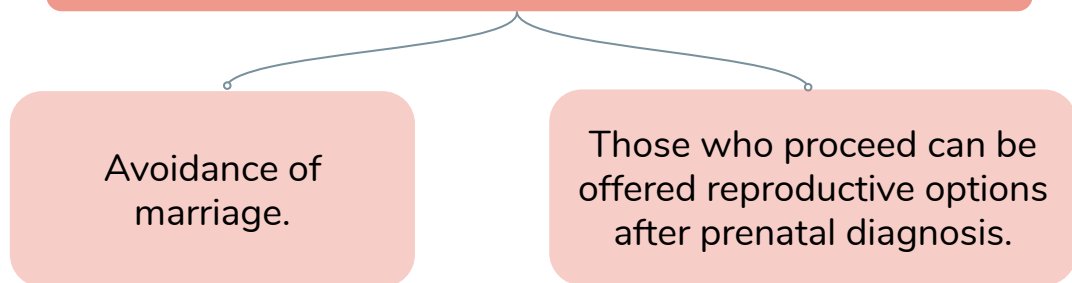
- (25%-60%) of all marriages in Arab regions are consanguineous with a high incidence of first-cousin marriage.
- In Saudi Arabia (90%) of couples detected as carriers did not follow the advice and went ahead with their marriages.
- There are many teachings in Islamic Culture which promote healthy marriage and role of counseling.
- Marriages between members of same tribe or extended family groups are favored in muslim communities.
- Social and familial commitments make it difficult to ask partners to undergo premarital testing.
- Wrong religious beliefs could be obstacles to premarital screening success regardless of education level.

Boys' slides only

A successful premarital approach

- Education and attitude of the couples to be screened.
- The meaning of the term “carrier Status” should be made known to the members of the public long before they get married.
- **Educational programs** about the benefits of premarital examination should target unmarried males so they can make informed choices about unmarried females and consanguineous marriages.
- **Active involvement of policy makers** to establish and implement appropriate screening techniques and policies.
- **“Solution focused”** premarital counseling Helping couples to develop a shared vision for the marriage.
- Solution oriented interventions.
- Solution oriented questions and feedback
- Approach adopted by the counselor (Educate all members of the screening Team lab technologist, nurse practitioners, physicians, counselors, outreach workers, social workers.)
- There should be good cooperation between community and religious leaders, schools, parents, and health professionals.

Available choices after positive test results



Conclusion

Any mandatory screening program does have the potential to succeed as long as the **target population** is clearly identified and all ethical issues (confidentiality of results) ,religious,cultural and human rights and concerns about post-diagnostic management are fully addressed.

Important Scenarios

Scenario #1

Mohammed and Fatima presented to the primary care clinic for pre-marital screening. You performed the following blood tests: complete blood count, sickle cell test, hemoglobin electrophoresis, and virology tests for HIV, Hep C, and Hep B. Both were clear from any abnormalities.

Related questions:

1. Is counseling required in this situation?
No

Scenario #2

Amal and Tareq performed pre-marital screening tests and it was found that Tareq is a Hep B carrier. Repeat the tests to confirm. To issue them a health marriage certificate it is mandatory that they go to the counseling clinic.

Related questions:

1. **what will you counsel them about?**
 - A. Transmission to wife- Hep B vaccine
 - B. Transmission to future children – Hep B vaccine
 - C. Solutions: refer to specialty clinic as needed.
2. What if it was Hep C or HIV?
 - A. Repeat the tests to confirm.**
 - B. Counseling is mandatory as well.**
 - Transmission to wife- no vaccines, health education
 - Transmission to future children
 - Solutions: refer to specialty clinic as needed. (antiviral therapy)
 - C. The marriage**
 - If decided to proceed, sign that they received counseling and they are going ahead with the marriage despite counseling

Important Scenarios

Scenario #3

Ali, from the Eastern region, presented to your clinic for pre-marital screening as he intends to marry his cousin. His Prospective wife did the test and was clear from any abnormalities. Ali's hemoglobin electrophoresis shows Hb A : 60% , Hb SS :40% , Hb F : 2 %.
meaning he is a carrier of sickle cell trait.

Related questions:

1. **What would you tell them about the odds of inheritance for their future children?**

Each child has 50% chance to have the trait and 50% chance to be normal

2. **What if Ali's fiancé Sara was also a sickle cell trait carrier?**

Counseling:

- A. Transmission to future children?**

Each child has 25% chance to have the disease, 50% chance to be carrier and 25% chance to be normal

- B. Solutions/alternatives?**

Find another partner for marriage who doesn't have sickle cell trait or anemia

3. **What if Ali had sickle cell anemia and Sara was clear?**

- A. Odds of transmission to future children?**

All children will have sickle cell trait

- B. Is an appointment at the counseling clinic mandatory to issue the certificate?**

No, no one of the children will have the disease so no need for consultation.

4. **What if Ali is a carrier and Sara has sickle cell anemia?**

Counseling:

- A. Odds of transmission to future children?**

Each child has 50% chance to have the disease and 50% chance to have the trait

- B. Alternatives/solutions?**

Find another partner for marriage who doesn't have sickle cell trait or anemia.

Certificate of healthy marriage will be given after they go to the counseling clinic.

Quick Revision

Premarital counseling is a type of advice that helps couples prepare for marriage.

The test itself is mandatory but the results are not obligatory.

Premarital counseling provides counseling on:

- The **odds** of transferring this disease to their **prospective marriage partner**.
- The **odds** of transferring this disease to their **future children**.
- **Solutions** and how to move forward.

Main things to test for: sickle cell anemia, thalassemia, HBV, HCV and HIV

Any successful screening program must comply with : very important

- prevailing culture.
- ethnic values.
- Economic values.
- Societal values.

In HBV Carriers , the healthy partner is advised to be vaccinated.

The HIV ,HCV patient will be informed and referred to a Specialty Clinic for Follow-up.

First parent	Second parent	Chances of each child to have the disease
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MCQs

1. What are the tests performed in "healthy marriage program"?

- A- CBC
- B- hemoglobin electrophoresis
- C- HBsAg
- D- all

2. A successful screening program must comply with:

- A- prevailing culture
- B- economic values
- C- social values
- D- all

3. When a carrier marries a carrier, the offspring could be:

- A- homozygous and affected 50%
- B- a carrier 25%
- C- genetically normal 25%
- D- none

4. Example of a taboo of certain disease is:

- A- Measles
- B- HIV
- C- Diabetes
- D- thalassemia