



## **TOBACCO AND THE UROPETIC SYSTEM**

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# **TOBACCO AND THE UROPETIC SYSTEM**

## **GOAL OF MODULE**

Provide students with knowledge about the harmful effects of tobacco on the uropoetic system, specifically about the association between tobacco use and erectile dysfunction. Students will also acquire skill to address smoking and to provide smoking cessation counseling for patients with uropetic disorders.

## **TARGET AUDIENCE**

- a. Level of Student/Learner
  - Undergraduate medical student and resident in training
- b. Course or Subject in General Surgery across semesters III,IV,V,VI,VII,VIII,IX

## **LEARNING OBJECTIVES**

Students will be able to:

- Describe the burden of erectile dysfunction (ED) in smokers
- Explain the association between smoking and erectile dysfunction
- Explain the importance of smoking cessation on intervention for erectile dysfunction

## **CURRICULUM STANDARDS ADDRESSED**

The Surgery and its Allied Specialties in medical curriculum has the main objectives of providing knowledge on the aetiology, Pathophysiology, principles of diagnosis and management of common surgical problems including emergencies. Of the 300 hrs in general surgery 24hrs are set aside for the genitourinary system during which the module can be implemented.

## **MINI LECTURES**

A mini lecture about Tobacco and Erectile Dysfunction will be presented in this module. In this mini lecture, the lecturer will present the burden of erectile dysfunction and how tobacco use is associated with it. The mechanisms of tobacco affecting the development and progress of erectile dysfunction will be explored and elaborated. Students will be taught to address smoking and cessation for patients with tobacco related erectile dysfunction.

## **MINI LECTURE: TOBACCO AND ERECTILE DYSFUNCTION**

### **MINI LECTURE CORE SLIDES**

1. The Burden of Erectile Dysfunction
2. Smoking and Sexual Health in Men
3. Smoking as a Risk Factor for Erectile Dysfunction
4. Smoking and Erectile Dysfunction
5. Pathophysiology of Smoking and Erectile Dysfunction
6. Smoking Cessation and Erectile Dysfunction

## **CASE DISCUSSION / CLINICAL SCENARIO**

### **Overview**

In this module, students are asked to practice integrated communication with simulated patients under supervision of instructors, in order to develop their smoking cessation skills. Students will be trained to routinely ask about patients' smoking status in every anamnesis. After obtaining patients' current smoking status, students will then practice how to assess patients' readiness to quit, advise and assist patients to quit smoking, and also arrange follow ups to monitor patients' smoking cessation progress. Students will also learn how to deliver efficient encouragement and provide proper explanation about the harm of tobacco on health, particularly endocrine systems, and to help patients in their smoking cessation attempts.

### **Introduction**

There is a link between cigarette smoking and erectile dysfunction. Cigarette smoking is an independent risk factor for inducing vasculogenic impotence, and it is linked with erectile dysfunction with a doubling of the already high risk in men with heart disease, diabetes, and hypertension. Smoking more than 10 cigarettes a day was independently associated with an earlier onset of andropause symptoms like impotence, weakness, and memory loss. Moreover, Park et al. found that current smoking was significantly associated with sildenafil failure in men over the age of 60 years suffering from impotence (Park et al. 2005).

Despite this, impotence is not well recognized by the general public or even by general practice medical providers as a potential consequence of smoking. Other health professions are missing an opportunity to teach smokers about another good reason to kick the habit (Linnebur 2006).

### **Learning Objectives**

Upon the completion of this skills laboratory practice, students are expected to be able to:

- Describe the burden of erectile dysfunction in smokers
- Explain the association between smoking and erectile dysfunction
- Explain the importance of smoking cessation for erectile dysfunction

### **Asking the patients' smoking history**

In a survey done by QTI, 77% of Indonesian doctors did not routinely ask patients about smoking. Research studies show that if doctors have a reminder to ask about smoking, e.g., smoking status is part of the vital signs, doctors are three times more likely to advise patients to quit. Simple advice from a physician has been shown to increase abstinence rates significantly (by 30%) compared to no advice (Fiore et al. 2000). Despite increased awareness of impotence, many patients are reluctant to mention it to their doctor, therefore it may be appropriate to proactively discuss sexual dysfunction with patients with an increased risk of ED.

There are several important factors that should be considered when we are asking the patients' smoking history: 1) asking the smoking status of all patients; 2) if patient does not smoke, they should be asked if they have ever smoked (because even after quitting, a smoker can start again); 3) questions should be delivered in a non-critical manner; 4) evaluate the patients' smoking history (how many cigarettes they smoke daily, do they use any other forms of tobacco); and 5) make a note on the patients' smoking status in the medical record (e.g., place patients' smoking status in your patients' card).

**Role play**

This case can be used in role play. One student acts as a doctor, and the other act as a patient. Perform integrated simple communication with patients, and remember to ask about patients' smoking status.

**Case Scenario:**

A 42 year old banking professional requested medical help for Erectile Dysfunction. He has noticed increasing difficulty over the last several years. He does occasionally have erections sufficient for penetration and awakens with an erection at times. His medical history is also significant for hypertension in the past. Examination revealed no obvious pathology. No history of sexually transmitted diseases and diabetic mellitus. He smokes 2 packs of cigarettes per day. He has been married for 15 years and has 2 children aged 14 and 10 years.

**Vital signs:**

Blood Pressure : 150/90

Pulse : 94/min

Body Weight : 70 kgs

Temperature : 97 F

Smoking Status : Smoker Ex-Smokers Never Smoke (Circle one)

Smoking Status of spouse: Smoker Ex-Smokers Never Smoke (Circle one)

**Checklist of Encounter with Simulated Patient**

No.	Aspects	Score
	<b>Ask</b>	
1.	• Ask patient whether he/she smokes or not	
2.	• If the patient doesn't smoke, ask whether he/she ever smoked before	
3.	• If the patient smokes, ask how many cigarettes he/she takes per day	
	<b>Assess</b>	
4.	• Assess patient's readiness to quit.	
	<b>Advise</b>	
5.	• Advise patient to quit smoking	
6.	• Personalize advice by using the tobacco user's health status/disease	
	<b>Assist</b>	

7.	<ul style="list-style-type: none"> <li>Assist the patient to quit by giving him/her pamphlets, brochures</li> </ul>	
<b>Arrange for Follow-up</b>		
8.	<ul style="list-style-type: none"> <li>Arrange to follow up on tobacco use</li> </ul>	
<b>TOTAL SCORE</b>		

**Points for Discussion:**

- **Tobacco causes erectile dysfunction:** In men, smoking can cause erectile dysfunction, reduction in semen quality, reduced response to fertility treatment, and foetal malformation. The risk increases in patients with heart disease, treated hypertension, and diabetes.
- **Risk for smokers:** Current smokers have 70% higher risk for erectile dysfunction compared to non-smokers. The risk is positively associated with the duration and intensity of smoking. Both active and passive smoking increases the risk of ED.
- **Infertility:** Tobacco use leading to erectile dysfunction could be one of the reasons for infertility among couples. Cigarette smoking decreases arterial flow to the penis and causes acute vasospasm of the penile arteries
- **Quitting & Erectile Dysfunction:** Penile hemodynamics improves soon after cessation, which can later improve erectile function. Smoking cessation should be advised along with other health behaviors, i.e. exercise and avoidance of excessive alcohol in order to preserve normal endothelial function. Quitting will reduce the risk of ED by 30%

**FACT SHEETS TO SUPPORT DISCUSSION**

The fact sheets are to be used by the tutor to supplement the discussion about the scenario. And this fact sheet will address background information on tobacco which could be relevant to the scenario.

- The impairment of venous drainage plays significant role in younger ED patients due to smoking-induced atherosclerotic changes affecting the arterial system develop over a longer period.<sup>1</sup>
- Smokers presented with ED nearly 7 years earlier than did nonsmokers.<sup>1</sup> (RR/OR?)
- The semen parameters used to indicate fertility in men, such as semen volume, acidity, concentration, and viability, significantly were much lower in smokers than nonsmokers.<sup>2</sup>
- Smoking affected semen quality and significantly reduced ejaculate volume, particularly among heavy and long-term smokers.<sup>2</sup>
- One out of 10 male smokers reported that they had trouble keeping an erection when they wanted to, a difficulty that lasted for at least one month over the previous year.<sup>3</sup>
- Based on cumulative exposure (pack-years), men who ever smoke or who smoke at some time were more likely to have ED compared with men who never smoke.<sup>4</sup>
- When current smokers were compared with former and never smokers and were stratified by age, smokers in their forties had the greatest relative odds of having ED, that is OR 2.74

(0.44–16.89), compared with OR 1.38 (0.51–3.74), OR 1.70 (0.82–3.51), and OR 0.77 (0.27–2.21) for men in their fifties, sixties, and seventies, respectively. Compared with men who never smoked, men who currently smoked were more likely to have ED after the data was adjusted for age.<sup>4</sup>

- Compared with men who never smoked, men who smoked at some time had a greater likelihood of erectile dysfunction (age-adjusted odds ratio = 1.42), and there was a dose response.<sup>4</sup>
- Comparing the pairs of three smoker groups (mild, moderate, and heavy smokers), sperm concentration and fertility index (FI) in heavy smokers were significantly lower than that observed in mild smoker and non-smoker groups.<sup>5</sup>
- There are significant relationships between cigarette smoking and impaired testicular histology, reduced diameter of seminiferous tubules, and decrease in the index of the Sertoli cells in rats. All these elements are directly linked with the reduction in the sperm development process in rats.<sup>6</sup>
- Sperm count and morphology in infertile smokers were significantly lower than in male non-smokers, whereas sperm motility in infertile male smokers was also slightly lower than infertile male non-smokers.<sup>7</sup>
- The prevalence of erectile dysfunction among cigarette smokers was higher compared with non-smokers in the same age groups (smokers vs. nonsmokers, age 35–44: 6.4% vs 4.6%; 45–54: 17.8% vs 14.8%; 55–64: 44% vs 35.6%; and 65–74: 54.7% vs 45.6%).<sup>8</sup>
- Smoking more than 10 cigarettes a day was independently associated with an earlier onset of andropause symptoms like impotence, weakness, and memory loss.<sup>9</sup>
- Among smokers, occurrence of ED is a result of impaired penile veno-occlusive mechanisms.<sup>1</sup>
- Maintenance flow (MF) of venous blood in the penis is more impaired by smoking than arterial blood (the peak systolic velocity). This MF is one important indicator of venous involvement in pathogenesis of ED among smokers.<sup>1</sup>
- Smoking increases the risk of ED by 50% (OR = 1.5; 95% CI = 1.3-1.7), and quitting will reduce the risk by 30% (OR = 1.2; 95% CI = 1.1-1.3)<sup>3</sup>
- Penile hemodynamics improves soon after cessation, which can later improve erectile function.
- Cessation should be an integrated strategy for clinical treatment for erectile dysfunction. Cessation of smoking should be advised along with other health behaviors, i.e. exercise and avoidance of excessive alcohol in order to preserve normal endothelial function

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### **SAMPLE EXAMINATION QUESTIONS**

#### **Short notes:**

1. How does smoking relate to erectile dysfunction?
2. Does quitting smoking affect erectile dysfunction? If so, how?

#### **MCQs:**

1. Current smokers have..... higher risk for erectile dysfunction compared to non-smokers.
  - a. 30%
  - b. 50%
  - c. 70%
  - d. 90%
2. Long term effects of smoking on penile vascular supply is;
  - a. Damage to the vascular endothelium and peripheral nerves
  - b. Damage to the corporal tissue
  - c. Impairment of endothelium-dependent smooth muscle relaxation
  - d. All of the above
3. Both active and passive smoking increases the risk of Erectile Dysfunction
  - a. True
  - b. False
4. Quitting will reduce the risk of Erectile Dysfunction by .....
  - a. 20%
  - b. 30%
  - c. 40%
  - d. 60%