Medical Guide on Fasting for Muslim Patients

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Preface

Fasting is an essential pillar of Islam that is required to be observed daily during the month of Ramadan every year. Additional voluntary fasting is encouraged and practiced by many Muslims throughout the year. Since fasting means complete abstinence from eating or drinking for extended hours of the day, this may raise health concerns for many patients about the potential effects of lack of food and water on bodily functions or related to medications and surgical procedures or other interventions.

The aim of this book is to serve as an easy to understand, but comprehensive source for medical guidance on the impact of fasting on the health of patients with different medical conditions. The main objective for this guide is to advise Muslim patients on how to safely practice fasting and to reduce the potential risks of fasting on individual's health. Each chapter is written by medically qualified staff and edited by physician reviewers.

Our goal is to focus on the general medical effects of fasting. This guidance should in no way be considered religious rulings (jurisprudence) nor individual fatwas for patients to fast or not, as there are many individual factors that play into such a decision and each patient needs to clarify this with their physicians and religious scholars. Although this book can help guide healthcare professionals and provide advice to their patients, we intentionally use language that is easy to understand by patients and healthy individuals without the background of medical knowledge.

This guide is published by Muslim Healthcare Network, Cincinnati Ohio and made available free to the public. Editors welcome any feedback on the content as chapters will he updated periodically.

Authors and Editorial Team encourage the readers to seek religious opinion for their individual cases and utilize this Guide as a medical advice to use when discussing with their medical teams or religious scholars.

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We pray for the complete healing of all patients, and may Allah accept this work from the contributors and those who disseminate the knowledge to benefit others.

The Editors

Content

Disclosure: Authors and Editorial Team encourage the readers to seek religious and medical opinion for their individual cases and utilize this Guide as a general medical advice to use when discussing with their medical teams or religious scholars.

Chapter 1

INTRODUCTION TO RAMADAN FASTING

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1. Ramadan Fasting Overview

Definition of Ramadan Fasting

Ramadan fasting, a yearly religious worship, entails voluntary abstinence from all food or drink from sunrise to sunset.

As Allah said in Sorat AL-BAQARAH

> "O ye who believe! fasting is prescribed for you, as it was prescribed for those before you, so that you may become righteous". *(AL-BAQARAH,184).*

Fasting in Ramadan is an obligatory act of worship exclusive to Islam that spans an entire month. This practice of voluntary dietary restraint has a rich history spanning centuries and is prevalent in numerous religions and cultures worldwide. With Islam boasting a global following exceeding two billion, it is safe to estimate that hundreds of millions of individuals partake in the annual observance of Ramadan fasting. In recent times, fasting has garnered increasing interest due to its potential health benefits. Research has revealed its positive effects on various health conditions, such as weight loss, type 2 diabetes management, heart disease prevention, and potential benefits in addressing Alzheimer's disease *(Azizi, 2010; Roky et al., 2004*).

Global Muslim Population and Regional Demographics in 2023

In the year 2023, Muslims constitute a significant portion of the global population, numbering approximately 2 billion individuals, accounting for approximately a quarter (25%) of the world's total inhabitants *(Lipka et al., 2017)*. When we look at regional breakdowns of self-identified Muslims as a percentage of the total population, we find substantial figures in different parts of the world. In the Middle East-North Africa (MENA) region, for instance, a remarkable 91% of the population identifies as Muslim. Likewise, in Central Asia, this figure stands at 89%. In Southeast Asia, about 40% of the population adheres to Islam, while in South Asia, the proportion is approximately 31%. In Sub-Saharan Africa, it is around 30%, and in Asia as a whole, Muslims make up about 25% of the population. In Oceania, the percentage is 1.4%; in Europe, it is 6%; and in the Americas, it is approximately 1% *(Pew Research Center,2009)*.

Islam in the USA

Islam, as a religion, holds the position of being the third-largest faith in the United States, constituting approximately 1% of the nation's populace. While it lags Christianity and Judaism in terms of numbers, it is on par with Buddhism and Hinduism in its share of the population. According to a 2017 study, an estimated 3.45 million Muslims resided in the United States at that time, representing about 1.1% of the total population. Notably, in that same year, 20 states, primarily located in the South and Midwest regions, reported that Islam

was the predominant non-Christian religion within their boundaries. Recent statistics, as of the 2020 U.S. Religion Census, indicate that the Muslim community has grown to 4.45 million individuals, now constituting approximately 1.3% of the overall population in the United *States* *(Pew Research Center,2018: Religious Statistics & Demographics,2020)*.

2. Fasting as a Religious Practice

Spiritual Significance

Millions of Muslims worldwide observe the fasting period during Ramadan, which is one of the Five Pillars of Islam *(Bakhotmah, 2011)*. It is a time for spiritual reflection, self-discipline, and increased devotion to God *(Sadeghirad et al., 2014)*. Fasting during Ramadan serves as a means for Muslims to demonstrate their devotion to God and cultivate self-discipline. It also enables them to connect with the experiences of hunger and thirst, fostering empathy for those less fortunate. During Ramadan, Muslims intensify their spiritual practices through increased prayer and Quran recitation. Additionally, acts of charity, including giving money, food, or clothing, are encouraged. Helping others, such as volunteering or donating, is another way to enhance spirituality. This sacred month also emphasizes the importance of spending quality time with family and friends, as Muslims come together to break their fast each evening. Ultimately, Ramadan provides a special opportunity for Muslims to deepen their spiritual connection with God, fortify their faith, and hone their self-discipline, all while fostering compassion for those in need.

Cultural and Social Importance

Ramadan fasting is not only a religious practice but also holds significant cultural and social importance for Muslims worldwide. It is a time of self-reflection, increased devotion, and communal solidarity as individuals come together to observe the fast and engage in acts of charity and worship. Additionally, the fasting period serves as a reminder of the poor people and encourages empathy and compassion towards those who are struggling with hunger and poverty. Muslim's view fasting as purifying their souls, increasing self-discipline, and strengthening their connection with God. This deep-rooted religious significance sets Ramadan fasting apart from other dietary restrictions that are primarily driven by personal preferences or societal beauty standards.

Inspiring Gratitude, Building Community, and Embracing Faith

Gratitude is another core value of fasting, as it prompts Muslims to be thankful for the abundance of blessings they have, including ample food and clean water. Furthermore, Ramadan cultivates a sense of community and unity, with increased communal prayers, iftar gatherings (the meal to break the fast), and time spent with family and friends. Lastly, fasting during Ramadan is a scriptural practice and one of the Five Pillars of Islam, representing essential acts of worship outlined in the Quran and Hadith (Prophet Muhammad's teachings).

3. Fasting in Ramadan: Timing and Dietary Patterns

The Dynamic Timing of Ramadan Fasting

Ramadan occurs in the ninth month of the Islamic calendar, and its dates change annually due to the lunar-based calendar *(Bakhotmah, 2011)*. The dates of Ramadan change every year because the Islamic calendar is lunar based *(Sadeghirad et al.,2014)*, and the length of fasting varies geographically and seasonally in different parts of the world *(Akgul et al., 2014)*.

Dietary Patterns and Fasting Duration

Muslims who fast during Ramadan eat two meals a day, one before dawn and one after sundown *(Toda & Morimoto, 2004)*. This pattern of eating helps individuals maintain their energy levels throughout the day while still fulfilling their religious obligations. The daily fasting period during Ramadan can last between 11 and 18 hours.

4. Age and Timing of Fasting Obligations in Islam

When Fasting becomes Required

Puberty in Islam marks the age at which both boys and girls must fast, although exceptions exist. In general, this is the time when menstruation begins for girls and when wet dreams or voice deepening occur for boys. To this rule, there are some exceptions. Children are not obligated to fast, for instance, if they are ill or traveling. In addition, if a boy or girl is 15 years old but has not hit puberty yet, they must still fast. However, between the ages of 10 and 15, most kids experience puberty. During this stage, children may face physical changes such as growth spurts, hormonal fluctuations, and the development of secondary sexual characteristics. These changes can impact their energy levels and ability to handle fasting. Additionally, the mental challenges of fasting may include feelings of hunger, fatigue, and difficulty concentrating. Parents need to provide support and guidance during this time to ensure their children's well-being and the successful completion of their fasts.

Puberty can begin and progress on different dates for different people *(Argente et al.,2004)*, which is important for parents to keep in mind. Other kids may enter puberty earlier than others, and other kids might grow out of it faster than others. Therefore, it is crucial to discuss with your child's doctor when fasting becomes necessary for them to help determine if they are physically and emotionally ready to handle the challenges of fasting. Additionally, consulting with a healthcare professional can ensure that any potential health concerns or risks are properly addressed and managed during the fasting period.

5. Ramadan Fasting: Practices and Exemptions

Exemptions from Fasting

Children, menstrual women, the sick, and travelers are exempt from the fasting requirements of Ramadan. Women who are expecting or nursing are likewise spared from fasting and are allowed to wait until a suitable moment. Pregnant and nursing women are exempt from fasting during Ramadan due to the potential impact on their health and the health of their babies. They need to prioritize their well-being and consult with

a healthcare professional to determine the best course of action during this time. Additionally, due to potential health risks, healthcare professionals may advise people who are elderly or have chronic illnesses to refrain from fasting. These individuals need to prioritize their well-being and consult with a healthcare professional to determine the best course of action during Ramadan.

Comprehensive Ramadan Fasting: Beyond Food and Drink

Muslims who fast throughout Ramadan are also expected to refrain from talking about others, using foul language, and engaging in sexual thoughts and behaviors. These additional restrictions during Ramadan aim to promote self-discipline, mindfulness, and spiritual purification. Muslims need to embrace these practices as a means of strengthening their connection with God and fostering personal growth.

6. Ramadan Fasting and Dietary Regimens: Exploring Differences and Motivations

Fasting in Ramadan vs. Fasting in a Dietary Regimen

Fasting during Ramadan is a widespread practice embraced by various religions and cultures worldwide. Beyond nourishment, it fosters a deeper connection to food and a heightened sense of gratitude for life's sustenance. Consequently, there exists notable differences between how Muslims observe fasting during Ramadan and how others restrict their dietary intake, often for reasons related to health or appearance. Muslims participating in Ramadan adhere to a stringent regimen, abstaining from all food, water, and fluids from dawn until sunset each day. In contrast, individuals pursuing dietary regimens tend to adopt more flexible approaches, often involving the limitation of specific food types or caloric intake over uncertain durations *(Lessan & Ali, 2019)*. The divergence in fasting practices underscores the profoundly spiritual dimension of Ramadan fasting, which transcends mere physical health or cosmetic objectives. While dietary regimens may have health and appearance as their primary goals, Ramadan fasting is rooted in devotion and spiritual reflection.

The Fasting Revolution: Exploring Health and Wellness in the Modern Age

In recent years, fasting has garnered increasing interest due to its recognized potential health benefits. Scientific research and a growing body of evidence have shed light on how fasting, when done mindfully and with proper guidance, can positively impact various aspects of health. From weight management and improved insulin sensitivity to potential cardiovascular benefits, fasting has emerged as a subject of study and exploration within the field of health and wellness. Fasting, when approached with proper guidance, can also have an impact on mental health. Studies have shown that intermittent fasting may improve cognitive function and promote neuroplasticity, potentially reducing the risk of neurodegenerative diseases. Additionally, fasting has been found to have positive effects on gut health, promoting a diverse microbiome and improving digestion. Considering fasting as a potential tool for enhancing health outcomes has become more popular because of the surge in interest, which has also sparked a wider discussion about its place in contemporary healthcare practices.

7. Health Benefits and Considerations for Ramadan Fasting

Demonstrated Health Benefits

Numerous health advantages of Ramadan fasting have been demonstrated, including cholesterol reduction, better blood sugar regulation, and weight loss. It is crucial to remember that fasting throughout Ramadan can be difficult, especially for those who are not accustomed to it. Consider the following if you are thinking about fasting during Ramadan. Before beginning any form of fasting, see your doctor, especially if you have any underlying medical concerns. To prevent dehydration, consume plenty of fluids before sunrise and after sunset. To ensure you are getting the nutrients you need, eat nutrient-rich foods at meals. When you are fasting, stay away from physical exertion and take pauses if you feel sick.

Prioritizing Health During Ramadan Fasting

Islamic rules guarantee that people can put their health first and get the treatment they require when they do. Islam advises people to prioritize their health and seek the appropriate care when they do. Prior consultation with a healthcare provider is strongly advised for anyone considering fasting throughout Ramadan who has underlying medical issues. Healthcare professionals can guide whether fasting is safe and appropriate based on the individual's specific health condition. They can also help create a customized fasting plan, if suitable, that considers the individual's medical needs and ensures their well-being during the fasting period. It is important to note that fasting during Ramadan may have different effects on individuals with certain medical conditions, such as diabetes or heart disease. These individuals should consult with their healthcare provider to ensure they can safely participate in fasting and make any necessary adjustments to their medication or treatment plan. Additionally, healthcare professionals can offer support and monitoring throughout the fasting period to ensure the individual's health remains stable and any potential complications are addressed promptly.

8. Conclusion

Ramadan fasting stands as a unique and revered practice within the Islamic faith, extending beyond mere dietary restraint to encompass a profound spiritual journey. As Muslims worldwide embark on this annual pilgrimage of self-discipline, mindfulness, and devotion to God, they also partake in a communal experience that fosters empathy, compassion, and a sense of unity. The significance of Ramadan fasting goes beyond its religious roots; it carries deep cultural and social importance for Muslims around the globe. It serves as a reminder of the less fortunate, prompting acts of charity and promoting a sense of responsibility within the community. Furthermore, it encourages gratitude for life's blessings and strengthens familial bonds through shared meals and nightly gatherings.

Notably, Ramadan fasting is not a practice solely grounded in faith; it has garnered increasing attention in the realm of health and wellness. Research highlights its potential benefits, including weight management, improved insulin sensitivity, and even potential advantages in addressing various health conditions. Fasting, when approached mindfully and with proper guidance, can contribute to both physical and mental well-being.

It is important to note that fasting may not be suitable for everyone, particularly individuals with certain medical conditions or those taking specific medications. Consulting with a healthcare professional can help determine if fasting is safe and appropriate. Additionally, incorporating a balanced diet and staying hydrated during non-fasting hours is crucial to maintaining overall health and well-being during the fasting period. The month-long observance of Ramadan is not only a time of abstaining from food and drink but also a period of increased prayer, reflection, and acts of charity. It serves as a reminder to Muslims worldwide of the importance of self-control, empathy towards others, and gratitude for the blessings in their lives. Through this annual practice, individuals are able to strengthen their connection with Allah and cultivate a sense of community with fellow believers.

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Chapter 2

MEDICAL TREATMENT OR INVERVENTIONS AND IMPACT ON FASTING VALIDITY

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Introduction:

With the advancements of modern medicine, there are now numerous situations in which patients may need a variety of medical interventions ranging from pills to injections to invasive procedures. Scholars study these interventions and do their best to determine which of them may invalidate, or break, the fast. While there is usually a significant overlap in fatwahs, there are differences of opinions between scholars / fiqh councils on a number of these issues.

Things vary based on the person involved, their medical conditions, and treatments they need. We will not be able to cover all situations, but most of the health risks with fasting come from 3 things:

1. Lack of sufficient hydration
2. Changes in dietary habits (e.g. carbohydrates in those with diabetes)
3. Missing medications

As a general rule, if a treatment or intervention is not urgently needed then it is better to schedule it outside of fasting hours in Ramadan. If it is medically urgent to receive the treatment then it should be done, and even if it breaks the fast the patient can make up that fast later. It is important to maintain adequate hydration and nutrition between *Iftar* and *Suhoor* time. Patients are advised to check with their physicians prior to fasting.

In this chapter we will be referencing fatwahs by reputable English sources, primarily the Assembly of Muslim Jurists of America *(AMJA)* and the fatwahs of Sheikh Muhammad *Saalih Al-Munajjid* available on his website. Please note there can be differences of opinions on some of these matters between scholars, especially those of different *madhahib (schools of Fiqh)*. We recommend asking your local, reputable scholars for advice and guidance in personal situations.

Oral Medications:

There is agreement between the scholars that swallowing pills or other forms of oral medications (including liquids) during fasting hours invalidates the fasting. As such, it is recommended to take oral medications outside of fasting hours, or to make up those days of fasting if possible 1, 2. However, some scholars make an exception for medications that are kept under the tongue *(sublingual)* rather than swallowed with precaution not to swallow any of the medicine. Inhaled medications (e.g. asthma inhalers) are also acceptable during fasting and do not violate the fast *(see Table 1 for more information) 1, 3, 4.*

Injections (intravenous/intramuscular/subcutaneous):

Generally, the scholars divide injections into two types 5 – 7:

1. Nutritional: Getting IV fluids or nutrition, and this would invalidate the fast. Along these lines, most modern scholars consider receiving a blood transfusion or undergoing dialysis to be similar to getting IV nutrition.
2. Medicinal: Getting an injection for treatment of a condition, and a number of scholars have issued fatwahs that these do not invalidate the fast.

Drops:

Generally, scholars have issued fatwahs that eye drops, ear drops, and nose drops do not invalidate the fast as long as the medication does not reach the throat 1, 8.

Enemas/Suppositories/Catheters/Endoscopy:

Medicines administered via enemas or suppositories (rectal/vaginal), as well as urinary catheters do not break one's fast. Procedures like endoscopies do not violate the fast as long as solutions are not administered into the gut 1.

Creams/Emollients/Patches:

Medications applied topically do not violate the fast 9.

Smoking:

Smoking violates the fast 10, 11.

For a summary of a list of interventions that may or may not break the fast, please reference Table

Please note that there are differences in certain rulings in *Mathaheb*. Please check with your sheikh to clarify specific situations for you.

It is prudent whenever medically allowed and possible to take the treatment or the procedure outside fasting hours in doubtful situation, if it does not pose harm to your health.

Symptoms	Impact on Fasting	Reference	Comments
Loss of consciousness/ epilepsy	Does not violate the fast unless unconscious all day (sunrise to sunset)	12	Adhere to your seizure medication and check if you can take them at night.
Vomiting	Vomiting unintentionally does not ruin the fast. However, vomiting intentionally invalidates the fast.	13	
Bleeding (unrelated to menses)	If not deliberate (e.g. nosebleed) then it does not break the fast. If deliberate and small amount (e.g. blood draw) then it does not break the fast If deliberate and large amount that would affect their health (donating blood) OR it's a result of cupping, then it does violate the fast	14	

Medications			
Oral meds	Swallowing oral meds violates the fast. Sublingual (under the tongue) medications do not violate fasting so long as the patient avoids swallowing any of medication.	1, 2, 15	Check if you can schedule the night.
Inhaled medications	Inhalers do not violate the fast, but using a vaporizer/nebulizer that utilizes a liquid base will violate the fast as the liquid particles will reach the stomach	3, 4	
IV therapies	IV meds that are not nutritional do not violate the fast. IV fluids, IV nutrition, and dialysis violate the fast.	5 - 7	
Drops	Eye, ear, and nose drops do not invalidate the fast as long as the medication does not reach the throat.	1, 8	
Enemas/suppository	Medicines administrated via enemas or suppositories (rectal/vaginal), do not break one's fast	1	
Patches/Creams	Topical medications do not violate the fast	9	
Procedures			
Endoscopy/colonoscopy	Do not violate the fast as long as solutions are not administrated into the gut		
Others			
Smoking	Smoking is haram whether in Ramadan or not, and it violates the fast		

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Chapter 3

MEDICATION MANAGEMENT DURING RAMADAN

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Introduction

Muslim patients who plan to observe the fasting of the month of Ramadan may seek medical advice on various issues such as the potential risk of fasting on their disease, what precautions and recommendations they should follow to minimize any harm, and what they should do about their medications. Following table will present the most commonly used medications and the modification recommendations for during Ramadan.

Disease Type	Medication Type	How to use during Ramadan
High Blood Pressure	Amlodipine/Valsartan/beta.blockers and calcium channel blocker medications also	It is recommended to be taken after Taraweeh to avoid lighheaedness.
	Water pills/Diuretics	It is recommended to be taken after Taraweeh to avoid lightheadedness. However, it is better avoided before bed to have a better sleep quality.
Endocrinology diseases	Levothyroxine	Make sure not to take supplementary medications that contain calcium or iron simultaneously, Try to have a time gap of at least four hours between the two medications. The absorption of Thyroid hormone medication can be affected by other food. This is why it is better to be taken on an empty stomach. Levothyroxine can be taken in two ways: • Take it one hour before Souhor tiem • After the iftar meal, refrain from eating for at least four hours, and then take your Levothyroxine. After this, wait for 60 minutes before having any food. • After you break your fast with only some water and or a date, take your Levothyroxine, Then, wawait for 30-60 Wait for 30-60 minutes before having your iftar meal.
High Cholesterol	Cholesterol-lowering drugs	It is recommended that you take the same dose that was prescribed to you before Ramadan, after Iftar. Avoid having Grapefruit or Grapefruit juice. Continue the diet that was prescribed to you based on your condition.
Reflux/stomach burn	Pills/chewing pills	Take it one hour before Souhor time For Stomach burn pills, it is recommended to take your pill after you breawk your fast with water and dates. Then wait for 30 minutes and have your Iftar food. You can also have your pill 30 minutes before Suhoor. For stomach-burning chewing pills or syrup use them when burn symptoms start. Try not to take another dose until at least two hours later. Avoid certain food types that may irritate the stomach, such as caffeine, tea, spicy food, and food high in fat. If you still have symptoms after taking your meds, please consult your doctor.

Disease Type	Medication Type	How to use during Ramadan
Diabetes	**General notes on Diabetes:** Please consult your specialized physician before Ramadan to know whether you can fast. You may need to do blood sugar tests regularly at the beginning of Ramadan to ensure you are taking the proper dose regimen.	
	Glibenclamide	Keep your iftar dose as it is. However, the Suhoor dose should be reduced to half to avoid low sugar levels. If blood glucose continues to be low, it might be better to cancel Suhoor dose after consulting your specialist.
	Metformin	If you are taking a 500-dose pill one time a day, it is better to take it after iftar. If you are taking two pills a day, it is better to take one at iftar and another at Suhoor. If you are taking three pills a day, it is better to take two at iftar and one at Suhoor. If you are taking four pills a day, it is better to take two at iftar and two at Suhoor. As for (long –acting Metformin ER/XR) XR 750, it is better to take one dose after iftar, whether on two or three tablets.
	Gliclazide	If you are taking it once a day, take it at iftar. The dose can be lowered if sugar levels are maintained well. If you take it twice a day, take one at iftar and one before Suhoor. The dose at Suhoor can be lowered if sugar levels are maintained well.
	Pioglitazone HCl Vildagliptin Empagliflozin Liraglutide	You can take the same dose as before Ramadan.
	Long-acting insulin. E.g.: Glargine-Detemir-Degludec.	If you take one dose daily, take it at Iftar, reducing the dose by 15-30%. If you take two doses a day, you can take the same dose you were taking before Ramadan at iftar and another at Suhoor. However, the dose at Suhoor is preferred to be reduced to half.
	Insulin Rapid, E.g: Glulisine – Aspart – Lispro.	Take the first dose at iftar (the same dose you took at breakfast before Ramadan). This dose can be modified depending on Blood Sugar readings. Take the second dose at Suhoor (The same dose you would take at supper before Ramadan). It is preferred to reduce this dose by 30-50%. The third dose, which you used to take at dinner before Ramadan, is canceled.
	Insulin Lispro Protamine (100 Mix – 50 Mix – 25 Mix)	If you are taking it once a day, take it at iftar. The dose can be modified depending on sugar levels. If you are taking two doses a day, you can take the same dose you were taking before Ramadan at iftar and another dose at Suhoor. However, it is preferred that the dose at Suhoor be reduced by 20-50%. If you usually take three doses, you can take only two doses at Ramadan, as explained above, and the third dose (Dinner dose before Ramadan) can be canceled.
	Mixed Insulin	If you are taking one dose per day, take it at iftar. The dose can be reduced by 15-30%. If you are taking two doses a day, you can take the same dose you were taking before Ramadan at iftar (the dose you were taking at breakfast) and another dose at Suhoor (the dose you were taking at supper before Ramadan). However, it is preferred that the dose at Suhoor be reduced by half.
	GLP-1 meds like Ozempic, Wegovy	You can take the same dose you were taking before Ramadan at iftar(the dose you were taking at breakfast) and another dose at Suhoor (the dose you were taking at supper before Ramadan). However, it is preferred that the dose at Suhoor be reduced by half. Usually, we keep the same dose once a week, consider decreasing the dose 50% if symptoms of hypoglycemia, don't share this medication along with Sulfonylurea (e.g. Gliplizide, glymipriede) with high risk for Hypoglycemia.

Disease Type	Medication Type	How to use during Ramadan
Infections	Antibiotics	If you are taking the drug every 24 hours, it is preferred to be taken after iftar. The exact time every day. If you are taking the antibiotic every 12 hours, you can take the first dose after iftar at the same time every day. The second dose can be taken after 12 hours or before Fajr Prayer. If you are taking three doses a day, it is better to visit your specialist to modify the doses if possible.
Supplementary drugs	Vitamins	It can be taken at any time between iftar and Suhoor. Best after meals. Same time every day.
Eye drops	Eye drops	Make sure to take your eye drops at their usual time during Ramadan.
Epilepsy	Anti-epileptic drugs	If you are taking one dose, you can take it any time between iftar and Suhoor. They are preferred to be at the exact time every day. If you are taking two doses, you can take the first dose at iftar and the second before the Fajr Prayer. If you are taking three to four doses a day, it is better to visit your specialist to modify the prescription if possible.

Resources

1.Saudi Ministry of Health Guide on Medication Management in Ramadan (Arabic)

https://x.com/saudimoh/status/1766903096343408642?s=48&t=aI9x23omHg9Oepx2V_OlfQ

Chapter 4

FASTING FOR CANCER PATIENTS

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Introduction:

Cancer is a very common disease affecting millions of people every year. According to one estimate, approximately 40% of people (1 in 3 individuals) will develop cancer in their lifetime. (1) For most patients it has a huge impact on their well-being, not only physically but also mentally, socially, and financially. Cancer comes in many varieties and affects individuals very differently depending upon the age and gender of the individual, the organs affected, stage at diagnosis and speed of cancer growth. Even the same cancer can affect two individuals very differently as far as the type and severity of symptoms as well as from one time in the disease course to another. Over the last few decades, our understanding of cancer and how to treat these patients has improved significantly. Multiple treatment modalities are available, and each treatment can impact patient quality of life differently. We currently have surgery, radiation therapy, and several types of drug treatments including chemotherapies, immunotherapies, targeted therapies, and hormonal therapies. Each of these treatments come with their own complications and side effects which may differ from one patient to another. Moreover, over time the severity of the symptoms may improve with good disease control, or it may worsen if the disease progresses.

Fasting, with some variation, is an act of worship for many religions. Islam obligates daily fasting (no food or drink from sunrise to sunset) every year for the month of Ramadan for individuals who are able to fast. There is emerging evidence that intermittent fasting may have health benefits including anticancer effects (2). It is becoming much more common for patients dealing with cancer to seek medical advice regarding the safety of fasting as they are either suffering through symptoms of cancer or treatment adverse effects. Due to differences in symptoms related to cancer and complications related to treatment, there are different situations that can affect fasting. Considering many individuals' strong desire to fulfill their religious obligations, and potential health benefits of fasting, it is not prudent for us to provide an overarching decision of recommending no fasting to all cancer patients. Although it is very difficult to cover all possible scenarios in this chapter, we will address some common situations and make recommendations regarding the safety of fasting. These recommendations in no way substitute personalized medical advice, and individual patients should always seek advice from their physicians.

Effects of Fasting on Patient Health:

Cancer patients may be at risk of malnutrition or dehydration due to decreased oral intake, increased use of nutrients by cancer, and loss of fluids. Already decreased intake may result from cancer, causing loss of appetite or direct involvement of the GI tract. Chemotherapy may also lead to a decrease in appetite or cause nausea. Increased fluid loss may occur from increased sweating, vomiting or diarrhea. The loss of fluids

combined with decreased oral intake may lead to dehydration, low blood pressure and eventually kidney damage. There are chemotherapy agents that require increased hydration to protect the kidney.

Considering the above-mentioned facts, we can broadly divide cancer patients into three categories based on health risk associated with fasting.

Safe Conditions:

Conditions that do not present increased risk of fasting to patients more than the general population.

Conditions with Uncertain Risk:

These conditions vary in their risk based on the individual patient and treatment, and require individual advice from physicians.

Likely Harmful Conditions:

These conditions have a clearly increased risk of harm with fasting, and if adequate hydration and caloric intake are not maintained, patients can develop organ failure. Additionally, these conditions often require frequent administration of medications, making fasting impossible.

Table 1. The categories of risk of fasting in patients with cancer

General Recommendations and Precautions

Nutrition and Hydration:

Unintentional weight loss in cancer patients can negatively affect quality of life and survival. There are multiple reasons for weight loss in cancer patients including lack of appetite, nausea, vomiting, diarrhea, and tumor growth. Supportive care of cancer patients often includes nutritional support to make sure patients have adequate calorie intake and can maintain hydration by drinking enough fluids. It is essential for patients with cancer to have adequate amounts of food and fluids. If the patient going through cancer treatment chooses to fast after discussion with their physician, it is very important that patients are able to meet nutrition and hydration goals between *Maghrib (Iftar, sunset)* and *Fajer (Imsak, sunrise)*.

Medication Administration:

After open discussion with your physicians some medications can be safely modified to accommodate fasting. Table 2 provides some general guidelines in this regard.

Parenteral Nutrition:

Total Parenteral Nutrition (TPN, intravenous administration of all nutrition) is the only way to provide some patients with nutrition and hydration due to inability to tolerate food orally while they are going through cancer treatment. Although it is usually provided over 24 hours, many patients can be on cyclic TPN where it is infused overnight. If the volume of fluids can be limited during the time between *Iftar* and *Imsak*, then it will be safe to do that and fast. If that is not possible either due to the fluids' volume or nutritional/mineral needs, then it should be infused as required and the patient should not fast.

Tube Feeding

A similar principle applies if the patient has a feeding tube If the nutritional needs and fluid volume can be infused during nighttime between *Iftar* and *Imsak* without exposing the patient to increased risk, then

the patient can fast that day If this is not possible and the patient cannot tolerate receiving all nutrition at night, then the patient should not fast.

Radiation Therapy

Patients receiving radiation therapy generally can fast unless they have gastrointestinal complications or symptoms such as nausea, vomiting, diarrhea and stomatitis/mucositis. They may require medications, oral hydration, and pain killers and therefore, they may not be able to fast.

Stem Cell Transplant and Other Cellular Therapy Patients

The recommendations regarding fasting for patients undergoing stem cell transplant have to be individualized by the treating physicians as there are many factors to consider. These include but are not limited to: type of transplant, autologous (your own stem cell) or allogeneic (someone else's stem cell), timing of the transplant, i.e., within a month, 3 months ago, or a long time ago, need for infection prophylaxis, nutritional status, symptom burden of graft vs host disease, need for immunosuppressive medications.

The Risk Level for Harm	Conditions	Comments
Safe **Able to fast**	Asymptomatic cancer survivor not on any treatment	Same risk as healthy individuals
	Breast or prostate cancer patients on endocrine (Hormonal) therapy	Patients may continue their medication after the fasting period is complete for the day
	Patients on targeted therapy with no or mild symptoms	Medication administration can be modified with managed quality of life.
	Between chemotherapy or immunotherapy cycles when they have recovered from acute adverse effects	Fasting can be safe once side effects resolve, usually a week or more post chemotherapy
	Skin directed therapies for skin cancers	Same risk as healthy individuals
	2-4 weeks after surgeries	Once patient recovers from the acute effects of surgery, fasting should be safe
Maybe cause harm. **Discuss fasting with physicians**	Patients on frequent dosing of their cancer treatment or prophylactic medications	Must check with treating physician if dosing can be safely modified temporarily to accommodate fasting
	Cancers involving certain organs where fluid intake is very important	
	Patients with ongoing symptoms, for example pain management needs	Must check with treating physician regarding treatment modification
Harmful **Recommended not to fast**	Patients with severe nausea, vomiting or diarrhea	
	Patients with dehydration	
	Patients with significant weight loss >10% and malnutrition	
	Recent major surgery	
	Active radiotherapy to brain or involving GI tract	
	Patients not able to maintain oral intake	

Type of Medications	Recommendations
Intravenous chemotherapy or immunotherapy	If treatment intent is curative, it is always advisable to maintain the treatment dose and schedule by taking the treatment on time. However, some treatments with palliative intent can be safely modified to accommodate fasting. Some of the medications (immunotherapy) given every 2 or 3 weeks can be given every 4 or 6 weeks
Subcutaneous injection	Should be given per schedule but if it is self-administrated once a day, it can be given after iftar
Once daily oral medications	Can be taken after iftar
Pills taken twice a day	Can be safely taken after iftar and before Imsak if the time is 8 hours or more. If the time is less than that check with your physician.
Pills taken three or more times a day	Check with your treating physician if the schedule can be modified to twice a day or if the third dose can be safely skipped. If modification is not effective, take them as recommended and do not fast.

Available Resources and References

1. https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-factsand figures/2023/2023-cancer-facts-and-figures.pdf

2. Faiza Kalam, PhD and others, Intermittent fasting interventions to leverage metabolic and circadian mechanisms for cancer treatment and supportive care outcomes, *JNCI Monographs*, Volume 2023, Issue 61, June 2023, Pages 84–103, https://doi.org/10.1093/jncimonographs/lgad008

Chapter 5

FASTING FOR PATIENTS WITH DEMENTIA

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Introduction:

Dementia: Dementia is an acquired disorder that is characterized by a decline in cognition involving one or more cognitive domains (learning and memory, language, executive function, complex attention, perceptual-motor, social cognition). Alzheimer disease (AD) is the most common cause of dementia and one of the leading sources of morbidity and mortality in the aging population. It is increasingly prevalent with advancing age, there were an estimated 4.5 million individuals over the age of 65 years living with clinical AD in the United States in 2011. This figure is projected to rise to 13.8 million in the United States and >130 million worldwide by 2050.

In general, the incidence of dementia doubles every 10 years after 60 years of age. There are more females than males with the disease, particularly over the age of 85 years, due to differences in life expectancy. Aside from age, the most clearly established risk factors for AD are a family history of dementia, rare dominantly inherited mutations in genes that impact amyloid in the brain, and the apolipoprotein E (*APOE*) epsilon 4 (e4) allele. Although most patients get dementia due to neurodegenerative conditions like Alzheimer disease (AD), Dementia with Lewy bodies (DLB), Frontotemporal dementia (FTD) and Parkinson disease dementia (PDD), some patients can have non-neurodegenerative dementias like Vascular dementia. Non -neurodegenerative Dementia may be reversible, or progression can be slowed or halted, if the underlying cause can be identified and adequately treated. Mixed dementia refers to the coexistence of more than one dementia-producing pathology, most commonly AD and vascular dementia.

Memory difficulty is the most common chief complaint; in addition, patients with dementia also have difficulty with one or more of the following:

- Retaining new information (e.g., trouble remembering events)
- Handling complex tasks (e.g., balancing a checkbook)
- Reasoning (e.g., unable to cope with unexpected events)
- Spatial ability and orientation (e.g., getting lost in familiar places)
- Language (e.g., word finding)
- Behavior

Management of Dementia: The first step in management is an accurate diagnosis of the type of dementia. At present, most of the treatment is symptomatic management. In this regard, important management issues include treatment of behavioral disturbances, environmental manipulations to support function, and counseling with respect to safety issues. A close discussion with the patient's caregiver is essential.

Effect of Dementia on the Ability to Fast: Patients with dementia have a decreased ability to make decisions. This is an important issue as these patients become increasingly unable to make decisions for

themselves and may not fully understand the implications of fasting. The likelihood of diminished capacity is related to the severity of cognitive impairment. The decision to fast therefore will depend upon patient ability to understand why he or she is fasting and what it entails. Family members can be instrumental in helping patients make these decisions.

Effects of Fasting on the Patient's Health:

General Recommendations and Precautions

Dementia affects patients' ability to comprehend the idea of fasting and increase the risk of forgetting that he/she is fasting which can increase the stress on the patient and the caregiver.

As dementia advances, there is increased risk of malnutrition and dehydration as patient will have decreased appetite and oral intake.

Table 1 attempts to classify possible effects of dementia and clinical situations into the following three categories:

Safe Conditions: (Do not pose any health risk on the patient and medically safe to fast)

Conditions with Uncertain Risk: (Variable risks and cannot make common recommendations. Patients need to discuss with physician)

Likely Harmful Conditions: (Fasting poses clear health risk on the patients and better medically NOT to fa

Table 1. Effects of Fasting on the Patient's Health

About Nutrition

Nutrition in patients with dementia can be an issue any way as they often forget to eat or may not feel the hunger. Their appetite often decreases and fasting can add additional risk of dehydration and malnutrition. Caregivers should consult with the patient's physicians to mitigate these risks.

About Medications

Dementia medication is usually scheduled once or twice daily, and can be safely take it at either Suhoor or Iftar, or both.

Table 2: Scheduling Medications during Fasting

The Risk Level for Harm	Conditions	Comments
Safe Able to Fast	Patients with mild dementia who can comprehend the meaning and implication of fasting	Other medical conditions may impact patient's ability to fast
Maybe have harm. Discuss fasting with physicians	Moderate to severe dementia where patients are unable to comprehend the idea of fasting or forgetting that he/she is fasting	Some patients may still be able to fast with family help and support, please discuss your physician
Harmful Recommended not to fast	Severe and end stage dementia where patient cannot comprehend the meaning of fasting and fasting increased risk of dehydration and malnutrition	

Types of Medications	Recommendations for use
Donepezil	Once daily at Suhoor or Iftar
Memantine	Twice daily at Suhoor and Iftar
Galantamine	Twice daily at Suhoor and Iftar or once daily for the extended release from??
Rivastigmine	Patch throughout the day

Chapter 6

FASTING FOR PATIENTS WITH GASTROINTESTINAL DISORDERS

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Introduction:

Intermittent fasting (IF) has gained popularity over the past few years due to its overall positive effects on health, such as improving blood pressure, heart rate, cholesterol levels, and glycemic control *(1)* Li Z *et al* 2021.

Ramadan-associated intermittent fasting (RF) is a unique form of fasting practiced by 1.9 billion Muslims worldwide during the holy month of Ramadan.

Between dawn and dusk, Muslims refrain from eating, drinking water, smoking, and having sexual intercourse. The vast majority of Muslims take this religious obligation very seriously, and it has been practiced for over 1,400 years, as decreed by the Quran.

There are some exceptions to RF. Prepubertal children, women during their menstrual period or postnatal bleeding, travelers, pregnant or breastfeeding women, the mentally unfit, and those with acute or chronic illness are exempt from fasting. (2) Abolaban H *et al* 2017.

Since RF is a dietary modification, chronic medical conditions affected by dietary changes, such as diabetes and gastrointestinal (GI) diseases, may be exacerbated in patients with these chronic illnesses who are observing the fast.

RF takes place between dawn and sunset. This change affects eating patterns, sleeping patterns, and physical activity patterns. This change alternatively affects the circadian rhythm hormones, including cortisol, insulin, leptin, ghrelin, growth hormone, prolactin, sex hormones, and adiponectin. (3) Lessan N *et al* 2019.

Ramadan and Gastrointestinal Benefits

One study by Su et al. reported significant remodeling of the gut microbiome during Ramadan-associated intermittent fasting (4) Su J et al 2021

The principal finding is that RF has a beneficial effect on gut hormone levels for leptin, glucagon-like peptide-1 (GLP-1), peptide YY (PYY), and cholecystokinin (CCK) in males with obesity (5) Zouhal H *et al* 2020.

RF provides many health benefits to the gastrointestinal system by restructuring the gut microbiome, altering the levels of gut hormones, and essentially cleansing the gastrointestinal tract.

Pre-Ramadan Counseling

Counseling practices during Ramadan can be challenging for providers. Asking about the patient's history, lifestyle changes, values, previous fasting experience, medication regimen, assessing fasting length, and climate can allow clinicians to stratify patients into very high-, high-, moderate-, or low-risk categories. Clinicians may counsel high-risk and very high-risk patients regarding concerns with health risks and worsening of chronic medical conditions, essentially discouraging these patients from fasting. Low - or moderate-risk patients may fast if lifestyle and medication issues have been addressed. Detailed counseling that addresses the risks of fasting is critical in provider-patient interactions.

Muslims who are exempt from fasting are pregnant or breastfeeding women, women in their menstrual period or postnatal bleeding, travelers, elderly individuals who cannot handle fasting, mentally disabled individuals, prepubertal children, and those with an acute illness that will worsen with fasting 2) Abolaban H *et al* 2017.

Being well-hydrated, maintaining a healthy diet, structuring exercise between sunset and sunrise, altering drug regimens, and avoiding practices that result in rapid weight changes may provide a helpful basis for initial advice for informing fasting patients.

Medication Recommendations

Fasting can also affect the absorption of medications for gastrointestinal disorders. Given that Muslims are required to refrain from food and liquids and the consumption of oral drugs while fasting, the efficacy of and adherence to drug regimens may be compromised during Ramadan. The typical fasting day can last up to 18 hours, which can be problematic as patients may elect to forgo their medicine, skip doses, or combine multiple doses without medical advice from their physician. One or two daily doses are the most common drug regimens used during Ramadan and are typically much easier to follow than medications with multiple doses. Providers should consider these changes in medication dosing and bioavailability and offer recommendations to improve drug dosing and help patients comply with their treatments during Ramadan fasting.

Dietary Recommendations

When physicians meet Muslim patients during Ramadan, they should remember that their dietary habits are altered compared to non-Ramadan months, especially regarding meal timings and dietary content. In addition to these changes, each Muslim patient may have a cultural background with unique traditional cuisine and dishes with varying nutritional content. The patient's eating habits and nutrient intake should be assessed during and after Ramadan to avoid foods that trigger gastrointestinal symptoms. It is possible to link dyspepsia, bloating, indigestion, and heartburn to food intake during fasting. This may allow providers to have a candid discussion with patients regarding which foods may be triggering the patient's symptoms. The goal is to emphasize a consistent and persistent healthy diet with wholesome foods from diverse food groups and an appropriate amount of protein.

Ramadan-associated Intermittent Fasting and Gastrointestinal Disorders

Patients with a high risk of severe health complications are discouraged from fasting. Therefore, data on the consequences of fasting in patients with certain conditions may provide a better understanding for physicians and Muslim patients to make informed health decisions.

Table 1 summarizes the recommendations mentioned below for fasting.

Inflammatory Bowel Disease (IBD)

Inflammatory bowel disease is a broad term used to describe inflammation of the gastrointestinal tract. It can be further subclassified into Crohn's disease and Ulcerative colitis. Crohn's disease is classically seen with skip lesions and transmural inflammation of the intestinal mucosa involving any part of the gastrointestinal tract with complications involving fistula, obstruction, nutritional deficiency due to malabsorption, and the risk for kidney stones. Ulcerative colitis is defined by superficial and continuous colon ulcerations with complications such as toxic megacolon and a higher risk of colon cancer. Studies have found no statistically significant difference in their self-reported symptoms before and after Ramadan and no correlation between the number of days fasted and disease severity (which was based on self-reported symptoms). Ramadan fasting posed no significant risks to patients with mild and uncomplicated IBD. The final recommendations offered by these studies include thoroughly counseling IBD patients on the possible risks of fasting during Ramadan and allowing them to observe Ramadan with precautions and vigilance. Elderly UC patients require special attention.

Peptic Ulcer Disease

Gastric or duodenal ulcers cause peptic ulcer disease (PUD). Common causes of PUD include Helicobacter pylori infection and long-term use of non-steroidal anti-inflammatory drugs (NSAIDs) or aspirin. Based on evident correlations between peptic ulcer disease and dietary intake, Ramadan fasting may impact the symptoms and risk for complications of PUD.

It is recommended that patients with epigastric pain take precautions if they choose to fast, such as consulting their physician or taking anti-secretory agents such as proton pump inhibitors (PPIs) to reduce stomach acidity. It is preferabe to take medications that are long acting to make compliance with fewer pills taken at night.

Essentially, studies found that gastric ulcers may have impaired healing associated with RF. There may be more surgical interventions for peptic ulcer disease patients in fasting months compared to non-fasting months. Regarding duodenal ulcers, studies have found that RF exacerbates duodenal ulcer symptoms and incidence. Within this discussion, emphasis should be placed on the importance of careful self-monitoring of symptoms under the close supervision of physicians. Providers should counsel patients so they understand the risks of fasting and when to seek medical attention.

Gastroesophageal Reflux Disease

GERD patients who fast during Ramadan can see improvements in their symptoms through positive changes in diet behavior, including the lack of smoking and alcohol consumption. However, suppose they are eating at high volumes before sleeping or ingesting foods or drinks that can exacerbate GERD symptoms. In

that case, their symptoms might be improved by safely taking a proton pump inhibitor before the initiation of fasting during Ramadan. It is also recommended to avoid foods and beverages that trigger acid reflux symptoms. One recommendation to alleviate GERD occurrences during Ramadan is a Mediterranean diet.

Regarding GERD patients who experience symptoms during the fasting day, it would be prudent for physicians to suggest proton-pump inhibitor (PPI) administration 30-60 minutes before the iftar (sunset) meal (on an empty stomach). An alginate or an alginate-antacid combination is a recommended drug alternative that allows the patient to maintain speed and relieve postprandial reflux more quickly. These medications can be taken after an iftar meal and have been shown to reduce gastric acidity and reflux more quickly than omeprazole, a PPI.

In summary, available literature thus far points to the consensus that fasting with GERD is ultimately safe.

Upper Gastrointestinal Bleeding

Due to the dangerous nature of upper gastrointestinal bleeding (UGIB), it is essential to gauge whether fasting is suitable for those at risk for UGIB. Prophylactic measures should be taken for those at risk for peptic ulcer disease. Several studies pointed out that duodenal ulcers may have symptom flares during Ramadan. However, this correlates to duodenal ulcers classically being a more common source of UGIB. Ramadan fasting can be dangerous for patients with active peptic ulcers due to the feared hemorrhage complication. Therefore, patients with active GI bleeding should refrain from fasting and seek medical attention.

Liver Diseases

Metabolic dysfunction-associated steatotic liver disease (MASLD) occurs commonly with comorbidities such as obesity, high cholesterol, and type 2 diabetes, as the name implies. Most people with MASLD do not experience any symptoms. In rare cases, those with MASLD may experience fatigue or vague right upper abdominal discomfort.

In addition to the potential metabolic benefits of fasting, limiting food consumption during Ramadan fasting can help reduce cholesterol levels, improve blood lipid profiles, and even lead to weight loss. With reduced BMI cholesterol levels and beneficial metabolic changes, Ramadan fasting may improve MASLD and other components of the metabolic syndrome.

Patients with liver transplants who have stable graft function and do not suffer from cirrhosis could safely observe Ramadan with special counseling with their hepatologists, especially about the immunosuppressive drugs that all liver transplant patients take.

Fasting during Ramadan is deemed suitable for patients in the early stages of liver cirrhosis without decompensation. However, for individuals with decompensated liver cirrhosis, it is advisable to refrain from fasting due to the accelerated onset of starvation resulting from diminished hepatic glycogen synthesis and storage during the postprandial state. To mitigate fasting duration for patients with decompensated liver cirrhosis, it is recommended to maintain a maximum interval of 3-4 hours between nutritional intake while awake. Additionally, to minimize nocturnal fasting time, incorporating an early breakfast and a late-evening snack into their dietary routine is advisable.

Studies have suggested that fasting is potentially beneficial for patients with MASLD. Cirrhotic patients with Child-Pugh class A may fast with close observation, but Child-Pugh B or C patients should not fast due to the higher risk of complications.

The Risk Level	Conditions	Comments
Safe Able to fast	Inflammatory Bowel Disease in remission	Elderly patients should discuss this with their physician before fasting
	Liver Cirrhosis Child A (mild)	Patients may continue their medication after fasting the day
	Peptic ulcer disease in remission	There is limited data, but it is ultimately deemed safe
	Gastroesophageal Reflux Disease (GERD)	-
Unsafe (Discuss fasting with physicians)	Inflammatory bowel disease-Active	
	Active peptic ulcer (disease (untreated or partially treated)	
Harmful (Recommended not to fast)	Cirrhosis Child C and B (moderate, severe)	
	Actove GI Bleeding Severe Gastroenteritis with dehydration Bowel obstruction	

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Chapter 7

FASTING RAMADAN AND KIDNEY DISEASES

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Introduction

Chronic kidney disease (CKD) is a common term indicating kidney damage due to various reasons.

The most common causes of CKD include diabetes, hypertension, analgesic abuse, congestive heart failure, glomerulonephritis, and systemic diseases like systemic lupus erythematosus (SLE), rheumatoid arthritis, and others.

In clinical practice, volume depletion or reduced renal perfusion is the most common cause of acute kidney injury especially in vulnerable patients.

Fasting in Ramadan requires no eating or drinking for almost 12+ hours and poses a potential risk of acute kidney injury in patients with already compromised kidney function.

What Do We Know About Fasting In CKD?

We did an extensive review of several studies done on CKD patients who fasted during the month of Ramadan.

We found that most of the studies have a small sample size of less than one hundred patients.

High-risk patients were excluded from the studies.

Most of the studies fail to find a significant decline in kidney function with fasting.

Those who showed worsening kidney function were mainly hypotensive during fasting, were elderly that are above 70 years old, and were volume depleted.

Studies showing a decline in kidney function with fasting failed to show any difference in the non-fasting CKD group. This may mean that the decline in kidney function in the fasting group may be just CKD progression rather than fasting.

There are small studies that show improved kidney functions, reduction in proteinuria, and better blood pressure control in the fasting population with an increase in blood-urea-nitrogen (BUN) in the last 7 days of Ramadan. BUN returned to normal after the month of Ramadan.

All the studies recommended regular evaluation by the nephrologist if the patient is planning to fast and have medications adjusted especially to avoid hypotension and hypoglycemia.

Positive Effects of Fasting on The Patient's Health

It is known that mild food restriction leads to multisystemic beneficial effects and activates cellular stress response pathways to protect cells and tissues from damage.

It protects against ischemic insults in organs like the liver, heart, brain, and kidneys.

One study demonstrated that fasting protects the rat kidney against oxidative stress and mitochondrial dysfunction in early acute kidney injury and against fibrosis development.

General Recommendations and Precautions

Kidney disease, dialysis, or transplant patients planning to fast should have a detailed discussion with the nephrologist before Ramadan.

They should have a clear understanding of their medications, what to eat, and when it is important to break the fast.

Table 1 attempts to classify the possible effects of fasting and clinical situations into the following three categories:

Safe Conditions: Do not pose any health risk to the patient and medically is safe to fast.

Conditions with Uncertain Risk: Variable risks and cannot make common recommendations. Patients need to discuss with the physician.

Likely Harmful Conditions: Fasting poses clear health risks to the patients and better medically NOT to fast.

When to Stop Fasting?

Patients should stop fasting if creatinine is elevated from base line by 0.2-0.3 mg/dl, weight loss or gain due to volume overload is noticed, any electrolyte imbalance noted especially high or low sodium, potassium, excessive weakness, or sleepiness etc.

What to Eat?

Eating a healthy diet is essential for patients with CKD.

It is recommended to maintain a low salt diet during Iftar, and to get 2.5- 3 liters of water during Iftar hours, avoid licorice for patients with moderate to advanced CKD due to water retention. Avoid foods high in potassium and phosphorus.

An appointment with the dietician is very helpful in getting education regarding the different foods people usually eat in Suhoor and Iftar.

It is important to know the glycemic index, and caloric value of dates, fruits, and others.

Figs, olives, and barley are considered to be good for kidneys.

Baking soda is helpful in CKD patients if their blood pressure is not uncontrolled.

Cumin is a helpful spice in reducing blood pressure and proteinuria.

About Medications

Table 2: Scheduling medications during fasting

The Risk Level for Harm	Conditions	Comments
Safe Able to fast	Post-Kidney Transplant After one year of transplant with stable kidney function	Need to modify immunosuppression medications to be taken with Suhoor and Iftar Need to have at lease 2-2.5 litres of water during Iftar hours
	Chronic Kidney Disease (CKD) stages 1-3 (mild to moderate)	Need to have at lease 2-2.5 litres of water during Iftar hours
	Hypertension	Medications can be taken with Suhoor and Iftar Need good hydration during Iftar hours
	Kidney Stones	Need to maintain water intake of 2.5-3 litres during Iftar hours, can also use lemonade for hydration Most patients need to use potassium citrate to alkalinize the urine, which prevents stone formation
May Be Harmful Discuss fasting with the physician	Chronic Kidney Disease (CKD) stage 4-5 (severe)	Need to consult with the primary nephrologist Phosphorus binders are to be taken with Iftar and Suhoor
	End Stage Renal Disease (ESRD) on hemodialysis	Consult with the primary nephrologist about the medication's adjustment during non-dialysis days of fasting The risk of fasting during dialysis day is high with complications of hypotension and the risk of passing out
	End Stage Renal Disease (ESRD) on peritoneal dialysis	Consult with the primary nephrologist Peritoneal dialysis bags concentration, duration, and volume may need to be adjusted, and insulin may need to be adjusted as well
Harmful Recommended not to fast	Unstable kidney function, uncontrolled diabetes, heart failure, hypertension, recurrent kidneys stones, who require medications more than two times a ay and require frequent adjustment in dosing	Patients who fast and have high-risk profile should be educated and evaluated frequently with labs to make sure their kidney function is stable
	Pregnant CKD patients	
	Recurrent Kidney stone	
	Patients on certain medications including diuretics, tolvaptan etc.	
	Severe resistant Hypertension	

Types of Medications	Recommendations for use
Immunosuppression medications	Need to be taken with Suhoor and Iftar
Phosphorus binders	Need to take with Suhoor and Iftar and adjust for any medium meals in between
Blood pressure medications	Adjust to twice daily medications and need to consult with the physician to switch to extended released formula
Diabetes Medications	If on insulin, prefer to take it with Iftar Reduce the dose of medications at Suhoor to avoid hypoglycemia Check blood sugars mid-day and before Suhoor and Iftar to get an idea and medications should be adjusted accordingly

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Chapter 8

FASTING FOR PATIENTS WITH DIABETES MELLITUS

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Introduction:

Type 2 diabetes is a disorder that disrupts the way the body uses sugar. All the cells in the body need sugar to work normally. Sugar gets into the cells with the help of a hormone called insulin. Insulin is made by the pancreas, an organ in the abdomen. If there is not enough insulin, or if the body stops responding to insulin, sugar builds up in the blood causing harm to other organs. That is what happens to people with diabetes.

There are 2 different types of diabetes:

- **Type 1** diabetes – In type 1 diabetes, the pancreas does not make insulin or makes very little insulin, usually diagnosed at young age or in childhood.
- **Type 2** diabetes – In most people with type 2 diabetes, the body stops responding to insulin normally. Then, over time, the pancreas stops making enough insulin, type 2 is the most common type.

Ramadan is a lunar-based month, and its duration varies between 29 and 30 days. Muslims who fast during Ramadan must abstain from eating, drinking, use of oral medications, and smoking from pre-dawn to after sunset; however, there are no restrictions on food or fluid intake between sunset and dawn. Most people consume two meals per day during this month, one after sunset and the other before dawn.

This chapter will discuss the general recommendations for patients with diabetes and general guidelines for fasting during this holy month. Fasting is not meant to create excessive hardship on the Muslim individual according to religious tenets. Also of note, fasting is a spiritual issue for which patients make their own decision after receiving appropriate advice from religious teachings and from health care providers.

It is important to recognize the symptoms of low blood sugar, also called hypoglycemia. The symptoms of low blood sugar can include severe hunger, fatigue, exhaustion, dizziness, headache, blurred vision, shaking hands, sweating, and increased heart rate. Patients experiencing these symptoms are advised to immediately break their fast by drinking a sugary juice and to seek medical attention so they can undergo observation.

Diabetics who fast need to be aware of the potential health risks. They must also be ready to listen to the recommendations of their healthcare team to achieve a safer fasting experience.

Diabetic patients who are cleared to fast by their healthcare team are advised to drink plenty of water between Iftar and Suhoor, avoid overindulging in sweets and fats, check their blood sugar regularly, and immediately break their fast if they feel unwell or if their blood sugar drops.

The decision to fast carries an assortment of potential risks and complications for individuals with diabetes. Individuals with diabetes who choose to fast during the Holy Month should obtain a medical assessment and specific advice on medication and dietary adjustments. (see Table 1 below)

Pre-Ramadan Medical Assessment

All patients with diabetes who wish to fast during Ramadan should prepare by undergoing a medical assessment and engaging in a structured education program to undertake the fast as safely as possible. This assessment should take place 1–2 months before Ramadan. Specific attention should be devoted to patients' overall well-being and to the control of their glycemia, blood pressure, and lipids. Appropriate blood studies should be ordered and evaluated. Specific medical advice must be provided to individual patients concerning the potential risks they may experience if they decide to fast. During this assessment, necessary changes in diet or medication regimen should be made so that the patient initiates fasting while on a stable and effective program. This assessment should also extend to those who do not wish to fast because they often are exposed to the risk of hypo- and hyperglycemia during Ramadan as a reflection of social habits encountered during the month.

Management of patients with Type 1 diabetes

Fasting at Ramadan carries a very high risk for people with type 1 diabetes. This risk is particularly exacerbated in poorly controlled patients and those with limited access to medical care, hypoglycemic unawareness, unstable glycemic control, or recurrent hospitalizations. In addition, the risk is also very high in patients who are unwilling or unable to monitor their blood glucose levels several times daily. It is currently recommended that treatment regimens aimed at intensive glycemia management be used in patients with diabetes. Therefore, the most important thing is to monitor blood sugar closely while fasting. If patients with type 1 diabetes prefer to fast at Ramadan, the current understanding is that the basal-bolus regimen is the preferred protocol of management. It is thought to be safer, with fewer episodes of hyper- and hypoglycemia. A frequently used option is once- or twice-daily injections of intermediate or long-acting insulin along with premeal rapid-acting insulin. Using a Continuous glucose monitor (CGM) can help patients with Type 1 DM monitor sugars more closely.

Management of patients with type 2 diabetes

Diet-controlled patients.

In patients with type 2 diabetes who are well controlled with lifestyle therapy alone, the risk associated with fasting is quite low. However, there is still a potential risk for occurrence of postprandial hyperglycemia (after meal high blood sugar) after the predawn and sunset meals if patients overindulge in eating. Distributing calories over two to three smaller meals during the non-fasting interval may help prevent excessive postprandial hyperglycemia. Physical activity may be modified in its intensity and timing, e.g., ~2 h after the sunset meal.

Patients treated with oral agents

The choice of oral agents should be individualized. In general, agents that act by increasing insulin sensitivity are associated with a significantly lower risk of hypoglycemia than compounds that act by increasing insulin secretion.

Metformin: Patients treated with metformin alone may safely fast because the possibility of severe hypoglycemia is minimal. However, perhaps the timing of the doses should be modified to provide two-thirds of the total daily dose with the sunset meal and the other third before the predawn meal.

Glitazones: The thiazolidinedione or glitazone agents (pioglitazone and rosiglitazone) are not independently associated with hypoglycemia.

Sulfonylureas: Such as glyburide or glimepiride. It has been suggested that this group of drugs is unsuitable for use during fasting because of the inherent risk of hypoglycemia.

***Short-acting insulin secretagogues*. Members of this group (repaglinide and nateglinide):**

are useful because of their short duration of action. They could be taken twice daily before sunset and predawn meals.

***Incretin-based therapy*. dipeptidylpeptidase-4 inhibitors (DPP-4is) alogliptin, saxagliptin, sitagliptin, and vildagliptin:**

These classes of agents are not independently associated with hypoglycemia, though they can increase the hypoglycemic effects of sulfonylureas, glinides, and insulin.

Sodium-glucose Cotransporter 2 (SGLT2) inhibitors (empagliflozin): This class of medicine will not cause hypoglycemia but they can increase the amount of urination and cause symptoms of dizziness

***α-Glucosidase inhibitors* (Acarbose and miglitol)**: slow the absorption of carbohydrates when taken with the first bite of a meal. Because they are not associated with an independent risk of hypoglycemia, particularly in the fasting state, they may be particularly useful during Ramadan.

Patients treated with injectable glucagon-like peptide-1 receptor agonists (GLP-1ras) semaglutide and liraglutide

Semaglutide can be dosed once a week to minimize appetite and promote weight loss. Liraglutide is dosed once a day, independent of meals, and is more effective in controlling fasting glycemia.

Patients treated with insulin

Problems facing patients with type 2 diabetes who administer insulin are like those with type 1 diabetes, except that the incidence of hypoglycemia is less. Again, the aim is to maintain necessary levels of basal (intermediate or long acting) insulin to prevent fasting hyperglycemia with the goal of not skipping the predawn Suhoor meal. An effective strategy would be judicious use of intermediate- or long-acting insulin preparations plus a short-acting insulin administered before meals. Although hypoglycemia tends to be less frequent, it is still a risk, especially in patients who have required insulin therapy for several years or in whom insulin deficiency predominates in the pathophysiology; Very elderly patients with type 2 diabetes may be at especially substantial risk and is not recommended for them to fast.

Insulin injections: using one injection of a long-acting or intermediate-acting insulin can provide adequate coverage in some patients if the dosage is appropriately individualized; however, most patients will require

rapid- or short-acting insulin administered in combination with the basal insulin at meals, particularly at the evening meal, which typically contains a larger caloric load. There is some evidence suggesting that use of a rapid-acting insulin analog instead of regular human insulin before meals in patients with type 2 diabetes who fast during Ramadan is associated with less hypoglycemia.

Insulin pumps An insulin pump provides continuous insulin delivery over 24 h with basal infusion rates programmed and individualized for each patient. Patients self-administer boluses of insulin with meals or at times of hyperglycemia, often with mathematical support from the pump. The reliance on exclusively rapid-acting or short-acting insulin allows for flexibility over an extremely wide range of insulin doses with great precision. However, frequent glucose monitoring is required because failure of the pump or the infusion site can result in severe deterioration in control over a few hours. Theoretically, the combined risks of hypoglycemia from prolonged daytime fasting and hyperglycemia from excessive nighttime eating can be better managed by an insulin pump–based regimen than by multiple insulin dose–injection therapy. Hypoglycemia can be aborted, reduced, prevented, and even more readily treated in pump-treated patients by timely downward adjustments or even stopping insulin delivery from the pump. Such an advantage is not available to those treated with a conventional insulin injection in which insulin continues to be released from the site of injection throughout its predetermined duration of action. Any excess insulin action can only be counteracted by intake of carbohydrates.

General Recommendations and Precautions About Nutrition

- Diabetes management in patients who fast is highly individualized, and the plan will differ from patient to patient.
- It's important NOT to skip the suhoor meal, which is just before dawn. High fiber starchy foods like high fiber cereals or oats, buckwheat, bulgur wheat or brown or wild rice are more slowly absorbed and have a low glycemic index. These foods take longer to digest.
- Be mindful of portion sizes of carbohydrate containing foods. These will help you to manage your blood sugar levels in the healthy target range while you're fasting. It is especially important to incorporate proteins into your suhoor meal.
- Lentils and chickpeas are good sources of protein and are high in fiber
- Before starting the day's fast, you should drink enough sugar-free and decaffeinated fluids to avoid being dehydrated during the day. If you drink tea, green tea is recommended as it will act as an appetite suppressant.
- Include more non starchy vegetables, such as broccoli, spinach, and green beans.
- Include fewer added sugars and refined grains, such as white bread, rice, and pasta with less than 2 grams of fiber per serving.
- When breaking the fast, dates are part of the traditional meal. These are high in fiber but can also be high in carbohydrates. Two large dates are around 20g carbohydrates so try to not eat more than one date.
- When breaking the fast, limit fatty and sugary foods ad avoid sugary drinks
- Follow The Plate Method: Portion control. It's easy to eat more food than you need without realizing it. The plate method is a simple, visual way to make sure you get enough non starchy vegetables and lean protein while limiting the number of higher-carb foods you eat that have the highest impact on your blood sugar.

The Plate Method

Start with a 9-inch dinner plate (about the length of a business envelope):(see picture1 below)

Fill half with non-starchy vegetables, such as salad, green beans, broccoli, cauliflower, cabbage, and carrots.

Fill one quarter with a lean protein, such as chicken, turkey, beans, tofu, or eggs.

Fill one quarter with carbohydrate (Carb) foods. Foods that are higher in carbs include grains, starchy vegetables (such as potatoes and peas), rice, pasta, beans, fruit, and yogurt. A cup of milk also counts as a carb food.

Other considerations

If your blood glucose drops lower than 70 in the early hours of the fast, it would be advisable to break the fast since your blood glucose will drop further if you continue to fast.

If your blood glucose drops lower than 60 at any given time, it would be recommended to break the fast immediately and consume glucose tabs/sugary drink.

If your blood glucose is elevated to greater than 300, it would also be advisable to break the fast as your sugar will go higher if you delay treatment.

The Risk Level for Harm	Conditions	Comments
Safe Able to Fast	• Well-controlled diabetes (A1c< 7) treated with lifestyle therapy (no medications) • Well-controlled diabetes treated with metformin, acarbose, thiazolidinediones, and/or incretin-based therapies in otherwise healthy patients.	
Maybe cause harm. Discuss fasting with physicians	• Moderate hyperglycemia (average blood glucose 150-300 mg/d; pr A1C7.5-9.0%) • Renal insufficiency • Living alone and treated with insulin or sulfonylureas. • Patients with multiple medical diseases (comorbid conditions) • Old age with ill health	Patients need to discuss with physician Extra prayers are considered part of exercise program and can lead to hypoglycemia
Harmful Recommended not to fast	• Severe hypoglycemia (blood glucose< 70) within the 3 months prior to Ramadan • A history of recurrent hypoglycemia • Hypoglycemia unawareness • Sustained poor glycemia control. • Ketoacidosis-related hospital admission within the 3 months prior to Ramadan • Type 1 diabetes • Acute illness • Hyperosmolar hyperglycemic coma within the previous 3 months • Performing intense physical labor • Pregnancy • Chronic dialysis or chronic kidney disease stage 4 & 5	

Before Ramadan	
Patients on diet and exercise control	Consider modifying the time and intensity of physical activity; ensure adequate fluid intake
Biguanide, metformin 500 mg or 1000 twice a day	Metormin, 1,000 mg at the sunset meal, 500 mg at the predawn meal, Ensure adequate fluid intake
TZDs (pioglitazone), AGIs, or incretin-based therapies (GLP-1 saxenda, semaglutide, tirzepatide)	Can take the medication prior to iftar time, no adjustments are needed
Sodium-glucose Cotransporter 2 (SGLT2) inhibitors (empagliflozin)	Can cause dehydration so may be consider half dose or switching to a different medicine
Sulfonylureas once a day (glipizide, glimepiride)	Dose should be given before the sunset meal; adjust the dost based on the glycemic control (how well blood glucose is controlled) and previous history of hypoglycemia (low blood glucose)
Sulfonylureas twice a day	Ensure eating 2 meals, Use half the usual morning dose at the predawn meal and the usual dose at sunset meal. Could consider switching to a different medication during Ramadan given the risk of hypoglycemia especially if patient is inconsistent with suhoor
Premixed or intermediate-acting insulin once daily	Consider changing to long-acting or intermediate insulin in the evening and short or rapid-acting insulin with meals; take usual dose at sunset meal
Premixed or intermediate-acting insulin twice daily	Consider changing to long-acting or intermediate insulin once a day and short or rapid-acting insulin with meals; if not take usual dose at sunset meal and half usual dose at predawn meal
Long-acting insulin once a day	Consider decreasing dose by 20%

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Chapter 9

FASTING FOR PATIENTS WITH HYPERTENSION

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Introduction:

Every year, hundreds of millions of Muslims worldwide observe the sacred tradition of Ramadan, a month-long period of fasting from dawn to dusk. This religious practice brings about significant changes in diet and lifestyle for those who participate. Consequently, understanding the impact of Ramadan fasting on health, particularly on blood pressure, becomes imperative. Hypertension, a condition characterized by sustained elevated blood pressure levels, affects an estimated 1.28 billion adults globally, making it a prevalent health concern. In the United States, hypertension affects 32 to 46% of US adults with prevalence increasing by age, but often the diagnosis can be delayed, so it is known as a "silent killer". Despite its silent nature, hypertension poses serious risks, including heart attack, stroke, and kidney disease. Identifying and managing high blood pressure is crucial, especially considering its asymptomatic nature for the most part.

For Muslims, the obligation to fast during Ramadan presents unique challenges, particularly regarding medication adherence and blood pressure management. This chapter aims to address these challenges by discussing strategies for adjusting medication regimens, monitoring blood pressure, and ensuring the safety of fasting for individuals with hypertension.

This chapter seeks to provide guidance to empower patients in navigating the intersection of religious observance and medical care during Ramadan, but in no way is this a substitute for medical advice and individual patients should always seek advice from their physicians.

What is high blood pressure?

High blood pressure is a condition that puts you at risk for heart attack, stroke, and kidney disease. It does not usually cause symptoms. However, some symptoms of elevated blood pressure include headache, blurry vision, chest pain, shortness of breath, dizziness.

Typically, blood pressure readings consist of two numbers: the systolic pressure (when the heart contracts) and the diastolic pressure (when the heart relaxes). Medical guidelines categorize blood pressure into normal, elevated, stage 1 hypertension ranges based on these numbers. While various medications exist to manage hypertension effectively, adhering to prescribed treatments remains essential for optimal control.

- **Normal** – Top number of 119 or below **and** bottom number of 79 or below
- **Elevated** – Top number between 120 and 129 **and** bottom number of 79 or below.
- **Stage 1** – Top number of 130 or above **and/or** bottom number of 80 or above.

Blood pressure is acutely affected by changes in diet, physical activity, stressors, and sleep patterns.

General Recommendations and Precautions

In Ramadan, Muslims have 2 basic meals during the day, one is predawn (Suhoor) and one is after sunset (Iftar). This dietary change is the key change in their lifestyle for the month which could impact blood pressure as intake could be reduced/adjusted and timing of meals are different. However, Muslims may also have a different level of physical activity and different sleeping pattern during the month.

Multiple studies showed that fasting Ramadan has a positive effect on the vast majority of the fasting hypertension patients (better blood pressure control) and help patients adhere to their medications better. Ramadan also presents an ideal time for gradual weight loss, as even modest reductions, such as five percent of body weight, have been shown to normalize blood pressure levels. Caloric restriction not only reduces body weight, but it has been shown to improve cardiovascular risk factors and improve insulin sensitivity and systemic inflammatory states.

Nutrition:

During Ramadan, it is crucial to maintain proper hydration by consuming plenty of fluids and unsweetened natural juices at Iftar, thereby mitigating thirst, dehydration, and associated complications. Incorporating fruits and vegetables into daily meals is essential as they provide potassium, aiding in the control of high blood pressure. It is advisable to avoid high-fat dishes. Nuts can provide protein and healthy fats. It is advisable to avoid stimulants like coffee and caffeinated soft drinks to minimize caffeine intake because they serve as diuretics and can lead to fluid loss later.

High-sodium foods such as salted nuts and pickles should be replaced with fresh green salads to prevent hypertension. Additionally, including grilled fish rich in Omega-3 fatty acids, such as salmon and sardines, at least twice a week can help regulate blood pressure and prevent cardiovascular diseases. Red meat and poultry should be consumed in moderation, while low-fat dairy products are recommended due to their calcium content, which contributes to blood pressure regulation and bone health. Fried foods, processed meats and cheeses containing high sodium concentrations, such as sausages and mortadella, should be avoided.

Licorice drinks (juice common in some middle east countries) should be limited to 1 cup a day as in excess it can cause blood pressure elevation. Also olives, while high in good fat, may have too high of a salt content so should be limited to no more than 4-5 per day.

Portion control should also be regulated because often people may eat poorly during the evenings when it is time to break fast. Often there are celebratory foods during the evening meal and after a day of fasting, people may eat hundreds of calories in a hurry. It is advisable to eat a small portion or a few dates with a glass of water initially to start the meal. Once the body registers the metabolic change, then it is likely to need less food intake during the meal.

Physical Activity:

Regular blood pressure measurements and continued exercise during Ramadan, can aid in blood pressure regulation. It is essential to ensure proper hydration (as discussed above) if performing aerobic exercise. A good rule of thumb to consider is cutting back on intense cardio workouts or heavy weight training exercise by half of the intensity and duration.

Smoking:

Individuals with hypertension should view Ramadan as an opportunity to quit smoking, as nicotine significantly raises systolic pressure and escalates the risk of heart attacks and strokes.

Medications

Dehydration, volume depletion, and a tendency toward hypotension may occur with fasting during Ramadan, especially if the fast is prolonged and is associated with excessive perspiration. Hence, the dosage and/or the type of antihypertensive medications may need to be adjusted to prevent hypotension (low blood pressure).

Below is a list of the most common types of medications given to people with high blood pressure:

Calcium channel blockers

- Amlodipine: one of the most commonly prescribed medication, can be taken during suhoor in Ramadan
- Nicardipine, Nifedipine and Diltiazem are other common calcium channel blockers used for hypertension, these medications available in multiple times during the day dosing and extended-release dosing, it is recommended to discuss with you physician before Ramadan to be switched to the extended-release formula in preparation for fasting.

ACE inhibitors or Angiotensin Receptor Blockers ("ARBs")

- Lisinopril and Losartan are the most common ones, they are usually once a day medication and can be taken same time everyday either with suhoor or with iftar.

Diuretics (“water pills”)-

- Hydrochlorothiazide (HCTZ) is a commonly prescribed medication for hypertension, it is a weak diuretic, and it is usually prescribed once a day and can be taken during iftar in Ramadan.
- Furosemide (Lasix) is a stronger diuretic and dose should be adjusted during Ramadan to avoid dehydration; adjustment should be discussed with your physician.

Beta blockers

- Metoprolol, Carvedilol, Atenolol and Bisoprolol are the most common in this class, these medications usually prescribed once or twice a day.
- If it is prescribed once a day you may take it with Iftar every day.
- If it is prescribed twice a day and:
- § you live in an area where there is at least 8 hours before iftar and suhoor then it can be taken with these meals
- § you live in an area with less than 8 hours between iftar and suhoor then you need to discuss with your physician to adjust dose or replace with an extended-release version that is available for most of these medications.

Clonidine:

- Clonidine is a special medication as you may have withdrawal symptoms (very high blood pressure) if not taken as prescribed which is usually 3 times a day, it is strongly suggested that it is switched to an extended-release skin patch during Ramdan (discuss with your physician)

One consideration for this is that the predawn meal may often be skipped by some people as it can be tempting to stay in bed instead of waking up. It is crucial to ensure this is not skipped when taking medication and to make sure you hydrate well.

When not to fast?

If blood pressures remain elevated or are in low range with symptoms of dizziness, headaches, blurry vision, or chest pain then medical attention may be warranted and it is advisable to break the fast.

Conclusion

Most medical studies have shown that patients with hypertension can complete their fast if they have no complications or other medical problems. If you have high blood pressure and wish to fast, fasting should not have a negative impact on your blood pressure balance. Please check with your doctor as each individual case could warrant different considerations.

The Risk Level for Harm	
Safe **Able to Fast**	• Well controlled blood pressure
Maybe cause harm **Discuss fasting with physicians**	• Patients with concurrent Diabetes • Geriatric patients • Patients with chronic kidney disease • Patients with End stage renal disease on Dialysis
Harmful **Recommended not to fast**	• Unstable/unregulated high blood pressure • Very low blood pressure

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