

Medicine in Islam

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(Eng and Edin)

Preservation of life is mandated by the following verse of the Qur'ān: "The saving of one life is as if one has saved humanity."

From the earliest times in the history of Islam, medicine has played a vital role. The importance of seeking treatment was emphasized by the Prophet himself in his sayings, which are known as the Ḥadīth: "Allah never created a disease for which he did not create a cure. So seek treatment." "There is a cure for every malady (except old age). If the right treatment is administered, Allah willing the malady is cured."

All the religious scholars agree that a medical doctor is ordained to find a cure for a disease and if one is not found, he should continue to do research until it is found. Thus in Islam disease is not looked upon as a curse from God to be endured and suffered but as an affliction for which a cure has to be sought and administered, with patience and perseverance.

Ethics of Medicine in Islam: The Physician and the Patient

Very early in the history of Islamic civilization (second century after Hijra or the beginning of the Islamic calendar[1]), Islamic medical ethical standards of practice were established set, and the relationship between a physician and patient was defined.

The physician was always held to the highest professional standards and ethics in treating his patient. One of the earliest treatises written on medical ethics was *Adab al-tabīb* (Practical Ethics of the Physician) by Isḥāq Ibn Ali al-Ruhāwī, a ninth century physician practicing under the Islamic Caliphate. In this philosophical treatise Ruhāwī examines not only the relationships between a patient and a physician, but also a physician's personal standards of behaviour, conduct of daily activities, morality and even his relationship with God. A physician was expected not only to perform to the best of his capacity in treating his patient, but also to be a model citizen in his society.

In Islam certain rules have to be observed when administering treatment (Mohammed 1980). With advances in medical sciences the ethics of a particular treatment have to be examined in light of Islamic tenets and beliefs, *'the Shariah.'*

History of Medicine in Islam

Medicine as a science and art was cultivated during the development of the Islamic civilization (Hamarneh 1983). The advancements made were limited only by the development in the associated fields of physics, mathematics, chemistry, pharmacology, pharmacy, and philosophy. The Muslims gathered material together from extant sources added their own observations and compiled it into encyclopaedic works (Savage-Smith 1994). Medical knowledge disseminated to all corners of the expanding Islamic empire.

The Early Era of Islamic Medicine and the School of Medicine at Jundishapur

Jundishapur or "Gondeshapur" was a city in Khuzistan founded by Shāpūr I (241–272 CE). In present day western Iran the site is marked by the ruins of Shahbad near the city of Ahwaz (Seyyed 1976). The town was taken by Muslims during the caliphate of Hadrat Umar. At this time it already had a well-established hospital and medical school.



Anushirwan Adil (The Just) is considered the founder of the Medical School and hospital at Jundishapur. This became a prototype for the Islamic Empire.

Many Syrians took refuge in the city when Antioch was captured by Shāpūr I. The closing of the Nestorian School of Edessa by Emperor Zeno in 489 CE led to the Nestorians' fleeing and seeking refuge in Jundishapur under the patronage of Shāpūr II. The Greek influence was already predominant in Jundishapur when the closing of the Athenian school in 529 CE by order of the Byzantine emperor Justinian drove many learned Greek physicians to this town. A university with a medical school and a hospital was established where Greco-Syriac medicine blossomed. To this was added medical knowledge from India brought by the physician vizier of Anushirwan called Burzuyah. On his return the latter brought back from India the "Fables of Bidpai," several Indian physicians and details of Indian

[1] The Islamic calendar began 16th July 622 marking the migration of the Prophet of Islam from Mecca to Medina.

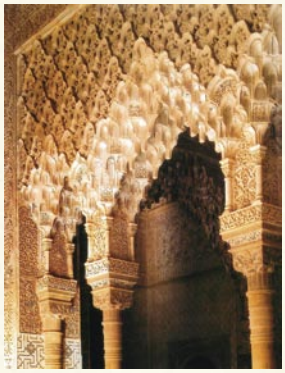
medical texts. Thus at the time of the Islamic invasion the school of Jundishapur was well established and had become renowned as a medical centre of Greek, Syriac and Indian learning. After the advent of Islamic rule the university continued to thrive.

It is likely that the medical teaching at Jundishapur was modeled after the teaching at Alexandria with some influence from Antioch. This hospital was to become the model on which all later Islamic medical schools and hospitals were to be built. The School thrived during the Ummayid caliphate and medical and philosophical works of both Hippocrates and Galen were translated into Syriac. These were later to be translated into Arabic.

It was during the Abbasid Caliphate that Caliph al-Manṣūr, the founder of the city of Baghdad, invited the head of the Jundishapur School to treat him. This physician was Jurjis Bukhtīshūʿ, a Christian. He treated the Caliph successfully and was appointed to the court. He did not stay permanently in Baghdad, returning to Jundishapur before his death, but the migration to Baghdad had begun. His son, Jibrīl Bukhtīshūʿ, established a practice in the city and became a prominent physician. By the second half of the second century after Hijra (eighth century CE) the fame of Baghdad began to rise. Many hospitals and medical centers were established and tremendous intellectual activity was recorded.

Resources for the Development of Islamic Medicine: The Bayt Al-Ḥikmah or "The House of Wisdom"

Al-Ma'mūn is usually credited with having made the translation of the Greek sciences systematic and institutionalized in the form of the *Bayt al-Ḥikmah*. This institution has been variously referred to as an academy, translation centre and library. Its principal activity was the translation of philosophical and scientific works from Greek/Syriac into Arabic.



Alhamra Palace in Granada Spain. Andalus was one of the finest centers of learning medicine the only one in Europe beginning of the first millennium.

Scholars have recently begun to doubt some of the assumptions and the interpretations that have been made about the nature and function of this institution. To start with, no date can be established for its foundation, so although the earliest reference to it is in the time of Hārūn al-Rashīd, it may have existed with the caliphs al-Manṣūr or al-Mahdī (r. 775–785). Regarding its function, there are references in the sources to translation activity, but these are about work from Persian to Arabic, and there is nothing to suggest that there was any translation at the *Bayt al-Ḥikmah* from Greek into Arabic. Perhaps this can explain some of the confusion over its function. The main reason may be that by the time Ibn al-Nadīm was writing his biographical history the institution had assumed legendary qualities, which have continued to impress subsequent commentators (Attewell 2002).



The Grand mosque in Cardoba. One of the finest examples of Islamic Architecture in Spain.

The most celebrated translator of Greek learning into Arabic is Ḥunain ibn Iṣḥāq (d. 873 or 877). Born in Hira, Ḥunain was the son of an apothecary. He soon translated the entire collection of Greek medical works, including Galen and Hippocrates. He was more scientific and interpreted the original text by cross-reference, annotation and citing glossaries. His original contributions included 10 works on ophthalmology. He rose to the highest honor by being appointed the director of the House of Wisdom by Caliph al-Mutawakkil.

Yuḥannā ibn Masawayh (Mesuse senior) was an early director of the House of Wisdom. He wrote about gynecological problems.

The House of Wisdom had enormous effects on Islamic science, philosophy, art, architecture, agriculture and government. Some of the Islamic physicians had available to them much of the knowledge of ancient Greece, Syria, India and Persia and in turn they contributed their observations and originality.

Hospitals During the Islamic Era

The idea of a hospital as an institutional place for the caring of the sick has not been recorded in antiquity. There were sanatoria and "travel lodges" that were attached to temples where priests attended to the sick. Most of the therapy in these sanatoria consisted of prayers and sacrifices to the gods of healing.

A large number of hospitals were developed during the Islamic era. They were called *bīmāristān*. The early Caliphs adopted the idea of a hospital as a place where the sick could get attention. The first hospital is credited to Caliph al-Walid I (86–96 AH 705–715 CE). At first it was considered no more than a leprosarium because it allowed the segregation of lepers from others. It did have on staff "salaried doctors" to attend the sick.

The first true Islamic hospital was built during the reign of Caliph Hārūn al-Rashīd (170–193 AH 786–809 CE). Having heard of the famous medical institution at Jundishapur the Caliph invited the son of the chief

physician, Jibrīl Bukhtīshū‘ to come to Baghdad and head the new *bīmāristān*. It rapidly achieved fame and led to the development of other hospitals in Baghdad. It is claimed but not established that one of these, the “Audidi” hospital was built under the instructions of the Islamic physician al-Rāzī. At its inception it had 24 physicians on staff, including specialists such as physiologists, oculists, surgeons and bonesetters. When Djubair visited Baghdad in 580 AH/1184 CE he recorded that this hospital was “like a great castle” with water supplied from the river Tigris and all the appurtenances of royal palaces.

One of the largest hospitals ever built in the Islamic Empire was the Mansūri Hospital in Cairo. It was completed in 1248 CE. It had a total capacity of 8,000 people. The annual income from endowments alone was one million dirhams. Irrespective of race, religion and creed or citizenship (as specifically stated in the waqf documents, see below) nobody was ever turned away. There was no limit to the time the patient was treated as an inpatient. There were separate wards for men and women, and medicine, surgery. Fevers and eye diseases also had separate wards. It had its own pharmacy, library and lecture halls. It had a mosque for Muslim patients as well as a chapel for Christian patients.

The waqf (an inalienable religious endowment in Islam) specifically stated:

> ‘The hospital shall keep all patients, men and women until they are completely recovered. All costs are to be borne by the hospital whether the people come from afar or near, whether they are residents or foreigners, strong or weak, low or high, rich or poor, employed or unemployed, blind or sighted, physically or mentally ill, learned or illiterate. There are no conditions of consideration and payment; none is objected to or even indirectly hinted at for non-payment...’ (Ahmad 1939).

Some of the hospitals, especially those established by princes, rulers and viziers, were luxurious; some were actual palaces that had been converted to hospitals. The annual income of Jibrīl Bukhtīshū‘ was 4.9 million dirhams (Rahman 1989). His son, also a doctor, lived in a house in Baghdad that was air-conditioned by ice in summer and heated by charcoal in winter. For comparison, a resident, who was supposed to be on duty for two days and two nights a week, was paid 300 dirhams a month.

The Great Physicians of Islamic Medicine

The era of Islamic medicine produced some very famous and notable physicians. These physicians were not only responsible for getting all the existing information on medicine together, but also for adding to this knowledge by their own observations, experimentation and skills. Many of them were skilled in medical writing and produced encyclopaedic works which became standard texts and reference works for centuries. Some of these tenets form the basis of instruction of students of *ṭibb* and *ḥikmah*, traditional Islamic medicine still practised in India and Pakistan today, under the name ‘Unani or Tibbi’ medicine. For the sake of classification, the historic periods of the Islamic physicians can be divided into three parts (1) *the period of Islamic Renaissance*: This started from the beginning of Islamic era and ended with the end of the Abbasid dynasty; (2) *the period of Islamic Epoch*: when all sciences including medicine reached the pinnacle of development and (3) *the period of decline*: during which the knowledge of Islamic medicine declined in the Islamic state but was translated into European languages and became the basis of further development and discoveries.

The Bukhtīshū‘ Family of Physicians

The oldest in this family was Jurjis Bukhtīshū‘, who was the Chief Physician at the Hospital in Jundishapur. He came from a Christian family and was summoned to the court of Caliph Ma’mūn (148 AH/765 CE) when the latter fell ill. It was his son Jibrīl Bukhtīshū‘ who was later invited by Caliph Hārūn al-Rashīd to come to Baghdad to treat him (171 AH/787 CE). He was Chief until he died in 185 AH/801 CE.

Masawayh

Another family that migrated from Jundishapur to Baghdad was the family of Masawayh who went at the invitation of Caliph Hārūn al-Rashīd. One became a famous ophthalmologist. Most famous amongst his three sons who were physicians was Yuḥannā ibn Masawayh (Mesue Senior). He wrote prolifically; 42 works are attributed to him. He is known for having a sarcastic temperament but commanded great respect because of his medical expertise.



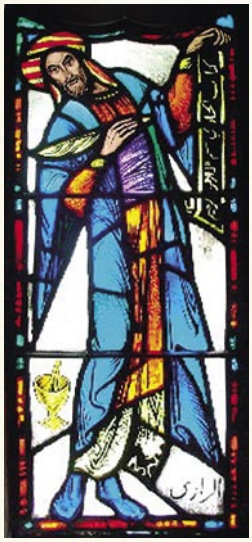
Galen’s introductory treatise on the skeletal system, “On Bones for Beginners” (De assibus ad tirones) was translated into Arabic by Hunayn ibn Ishaq. This manuscript contains, among other treatises, a very rare copy of Hunayn’s Arabic translations.

Ḥunayn ibn Isḥāq

Ḥunayn ibn Isḥāq, who was a student of Ibn Masawayh, became the greatest translator of Greek and Syriac medical texts during the third century AH/ninth century CE. He was responsible for masterly translations of Galen, Hippocrates and Aristotle into Arabic. He also improved the Arabic medical lexicon giving it a rich technical medical language to express medical terminology. He was himself a physician and wrote two original works on ophthalmology.

Al-Rāzī

The most famous physician of this time and perhaps of the entire early Islamic era is Muḥammad ibn Zakariyya al-Rāzī (born 251 AH/865 CE; died 312 AH/925 CE), called Rhazes by his Latinized name. He was born in Rayy in northern Persia, not far from modern Tehran. Although not much is known about his early life or his medical education, his fame started with the establishment of a hospital in Baghdad of which he was the chief. The story of how he picked the site of the hospital when asked to select one, has become one of the classical legends of Islamic medicine. He had pieces of meat hung in various quarters of the city and had them examined for putrefaction and recommended the site where the meat had decayed the least as the most suitable site. This made him one of the first physicians to infer indirectly that there was an element of bacterial putrefaction in the degradation of meat, and suggested the environmental role that contaminated air plays in the spread of infection.



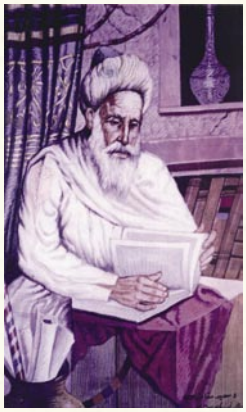
This stained glass window in the Princeton University Chapel commemorates the contribution of Al-razi (Rhazes) to the science of medicine.

Al-Rāzī is known for numerous other original contributions to the art and science of medicine. He described the differences between smallpox and chickenpox and gave an in depth description of measles. He described allergy to roses in one of his classical cases. The Islamic historian and scientist alBīrūnī listed 56 medical works of al-Rāzī, the most famous being *al-Ḥāwī*, an encyclopaedia of medical knowledge based on his personal observations and experiences. A copy preserved in the National Library of Medicine in Bethesda Maryland is described as the third oldest medical manuscript preserved in the world today.

Besides these and other original contributions of which many have been published, al-Rāzī devoted a lot of his time to teaching, bedside medicine and attending to the royalty and court. The impact of these publications on Islamic medicine was tremendous. His books became an invaluable addition to the armamentarium of a medical student of the time and remained standard texts until the appearance much later of texts by al-Majūsī (d. 994) and Ibn Sīnā, who authored such monumental works as *al-Qānūn fī l-ṭibb* (The Canon of Medicine).

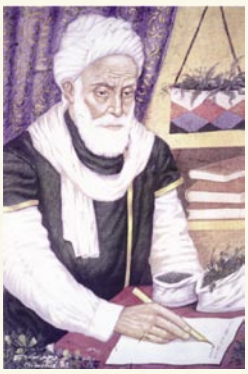
Al Majusi

In the fourth century of Hijra, tenth century CE another Islamic physician gained prominence in Baghdad. His name was ʿAlī ibn al-ʿAbbās al-Majūsī (d. 384 AH/994 CE). (Latinized: Haly Abbas) He became the director of the Adud-dawlah Hospital. Al-Majūsī dedicated his medical work *Kitāb al-Malakī* (The Royal Book) to its founder. This book is very well systematized and organized. It is divided into two volumes, one covering theory and the other practical aspects. Each of these has ten chapters. The first volume deals with historical sources, anatomy, faculties, six primeval functions, classification and causation of disease, symptoms and diagnosis, urine, sputum, saliva and pulse as an aid to diagnosis, external or visible manifestations of disease and internal diseases like fever, headache, epilepsy and warning signs of death or recovery. The second volume deals with hygiene, diet, cosmetics, therapy with simple drugs, therapy for fevers and diseases of organs. There is a chapter on surgery, orthopaedics, and finally treatment by compound medicaments.



Ali ibn Abbas al-Majusi (known in the West as Haly Abbas, D. 994). He was the author of Al-Kitab Al-Maliki (the Royal Book). It became the standar textbook of medicine for all medical students of his time.

About the second century AH/eighth century CE a great centre of knowledge learning and culture had been developing in the western part of the Islamic empire. This was in Spain or "Andalusia" as the Arabs called it. Spain was invaded and conquered by the Muslims in 93 AH/714 CE. When the Ummayad dynasty ended in Baghdad the last of Ummayad princes escaped to Spain where they established the Western Caliphate. The rulers of this dynasty laid the foundation for the Muslim rule of Spain that was to last for seven centuries. During this time Cordoba, also called "Qurtuba," became a great centre of international learning. A great library containing more than a million volumes was established.



Abul-Qasim Khalaf Ibn Abbas Al Ansari Az-Zahrawi (Albucasis) 936-1013 CE can truly be called the "Father of Surgery." His Tasrif described and illustrated many surgical instruments for operations he devised and described. His book was used as standard surgical text for 400 years, even in European universities.

Al-Zāhrawī

Perhaps the most famous physician and surgeon of the era was Abū l-Qāsim al-Zahrāwī, known to the west as Albucasis (318 AH/ 930 CE to 403 AH/1013 CE). He gained great fame as a physician. He wrote a 30-volume compendium called al-Taṣrīf. The initial volumes dealt with general principles, elements and physiology of humours and the rest dealt with systematic treatment of diseases from head to foot. The

last volume deals with all aspects of surgery. It was the first textbook of surgery with illustrations of instruments. He emphasized that knowledge of anatomy and physiology was essential prior to undertaking any surgery:



Instruments for incisions, cautery amputations, etc. From a copy of al-Zahrawi's "Tasrif," the first Surgical Textbook ever written with illustration of instruments!

'Before practicing surgery one should gain knowledge of anatomy and the function of organs so that he will understand their shape, connections and borders. He should become thoroughly familiar with nerves, muscles, bones arteries and veins. If one does not comprehend the anatomy and physiology one can commit a mistake which will result in the death of the patient. I have seen someone incise into a swelling in the neck thinking it was an abscess, when it was an aneurysm and the patient died on the spot.'

He described operations on varicose veins, reduction of skull fractures, dental extractions, forceps delivery for a dead foetus to mention just a few. His work raised surgery to a high level.



Abu Ali Al husayn Ibn Sina (Avicenna) (980–1037). He was not only a physician par excellence, but also a philosopher, mathematician and an astronomer.

Ibn Sina

However, the greatest physician of the Islamic era was *Abū ʿAlī al-Ḥusain ibn ʿAbdallāh ibn Sīnā,* Avicenna or Ibn Sīnā. Some historians of medicine call him one of the greatest physicians that ever lived. That is because Ibn Sīnā was not only a physician, but also his knowledge and wisdom extended to many other branches of science and culture including philosophy, metaphysics, logic and religion.

Ibn Sīnā was indeed a prodigy. At the age of 10 he had memorized the whole Qur'ān. By age of 16 he had mastered all extant sciences that appealed to him including mathematics, geometry, Islamic law, logic, philosophy and metaphysics. By age 18 he taught himself all there was to learn at that time in medicine. Born in the city of *Būkhara* in what is now central Asia in the year 370 AH/980 CE, he rapidly rose in ranks and became the vizier (prime minister) and court physician of the Samanid ruler Prince Nuh ibn-Mansūr. The Royal Library was opened to him and this enlarged his knowledge. He began writing his first book at age 21. In the short span of 30 years of writing he wrote over a 100 books of which 16 were on medicine. His magnum opus is *Qanūn fī l-ṭibb* (The Canon of Medicine). This voluminous compendium of medical knowledge rivaled one written earlier by al-Rāzī and al-Majūsī and indeed surpassed both of these in content and originality. It was composed of five volumes: general principles, simple drugs, systematic description of diseases from head to foot, general maladies and compound drugs. The Canon was translated into Latin by Gerard of Cremora and Andrea Alpago and remained the standard textbook of medicine in Louvain and Montpellier until the seventeenth century.



The Canon of Medicine (Kitab al-Qanum fi al-tibb) by Ibn Sina (d. 1037/428 H). A rare complete copy made in Iran, probably at the beginning of the 15th century. NLM MS A53, fol. 368b, the illuminated opening of the 4th book.



Ibn Al Nafis 1208–1288, discoverer of pulmonary circulation, a full 200 years before being described by Servetus and Columbo.

Ibn Nafīs

Islamic physicians not only possessed excellent knowledge of anatomy, but also they added some challenging new concepts that were revolutionary to the then understanding of anatomical concepts laid down by the "ancients." The example that has now become well known is that of the discovery of the lesser or pulmonary circulation by Ibn Nafīs (d. 687 AH/ 1288 CE). The description he gave of pulmonary circulation challenged the fundamental concept held by Galen. In fact it suggested that there existed a pulmonary capillary bed where the blood was "purified" before being brought back to the heart by the pulmonary artery, thus predating the discovery of pulmonary capillaries long afterwards, made possible by the discovery of the microscope by Antony van Leeuwenhoek.

As already mentioned Al-Zahrāwī emphasized that the knowledge of anatomy was a prerequisite for the surgeon.

> 'Now this is the reason why there is no skillful operator in our day: the art of medicine is long and it is necessary for its exponent, before he exercises it, to be trained in anatomy as Galen has described it, so that he may be fully acquainted with the uses, forms, temperament of the limbs; also how they are jointed, and how they may be separated, that he should understand fully also the bones, tendons and muscles, their numbers and their attachments; and also the blood vessels both the arteries and the veins, with their relations.'

The physiological concepts embodied in Islamic medicine were based on the Hippocratic and Galenic concepts of elements, natures and humours. In this theory harmony in the body prevails when all the humours are in proper balance and it is their imbalance that creates disease. Under this principle, disease is a state of imbalance of humours and needs the restoration of balance to bring the organism back to its normal healthy state. Islamic medicine also expounds the concept of elements and temperaments. The basic elements are earth, fire, air and water, and each of these is given a temperament: earth is dry and cold; water is humid and cold; fire is hot and dry; air is humid and hot. Each of the four essential body fluids – blood, phlegm, yellow bile and black bile – is assigned a respective temperament. Each dietary food, medicine or climatic environment can thus then modify or temper the humours of the body and it is an interplay of these that can restore health from sickness or cause the sickness to worsen.



An illustrated opening from the alchemcial treatise "the Proof Regarding Secrets of the Science of the Balance." Undated copy made in Morocco in the late 19th century. This work is concerned to a large extent with the classification of plants, animals and minerals, and with the alchemist concept of 'balance.'

It was the fundamental belief of a Muslim physician that the organic body alone cannot manifest life, being innate and devoid of a life force. It was the instillation of a life force, *Ruh*, which gave it vibrancy and vitality of spirit. Thus without the Ruh, no function of the body is possible. It is the Ruh which descends from God to mix with the anatomic and physiologic body to make a complete human being. It is thus essential when treating a diseased state to take the Soul or 'Ruh' into consideration. Laying the foundation of Holistic Medicine.

Pharmacy, Pharmacognosy, Materia Medica and Therapeutics

One of the sciences that had an impetus on Islamic medicine was the development of pharmacy and pharmacognosy. Most Islamic physicians and scholars studied chemistry or alchemy. This study was furthered by the concomitant development of techniques to refine drugs, medications and extracts by processes of distillation, sublimation and crystallization. Pharmacists became commonplace in Islamic lands, and their proliferation ultimately required the institution of licensing.

Pharmacological drugs were classified into simple and compound drugs. The effects of these were detailed and documented. The earliest Islamic works on pharmacognosy, such as "*Treatise on the Power of Drugs, Their Beneficial and Ill Effects*" and "*The Power of Simple Drugs*" were written in the third and fourth century AH/ninth century CE. Most medical texts contained chapters on the use of both these types of remedies. Rāzi's al-Ḥāwī mentions 829 drugs.

Materia medica and texts containing compendia of drugs and their effects appear frequently during the era of Islamic medicine. Notable amongst these is the contribution of Abu Bakr ibn Samghun of Cordoba, *The Comprehensive Book on Views of the Ancients as Well as the Moderns on Simple Drugs*. Ibn Juljul made a commentary on drugs and plants described by Dioscordes and added a number of newer ones. Al-Zahrāwī's *al-Taṣrīf* mentioned earlier in reference to its surgical volume also had a section on plants and drugs. The second book of the *Canon* is devoted to the discussion of simple drugs and their powers and qualities. One of the most authoritative books on drugs was written by al-Bīrūnī, entitled *The Book on Drugs*, which contains a huge compendium of drugs, their actions and their equivalent names in several languages.

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☐ **I would like information on how to include IIIM in my Will or Living Trust.**
☐ **I would like information on how to make a Gift of Assets to IIIM that will return income for life.**
☐ **I have already included IIIM in my Estate Plan.**