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Iran's Triangular Clinic

In 2002, when Dr. Farshad Farzadfar was working for the Iranian Ministry of Health's Integrated Health Program, he was appointed to lead a 12-member committee whose task was to determine how the Triangular Clinic services for populations at risk of contracting HIV/AIDS could be incorporated into primary health care clinics and replicated throughout the country. The first Triangular Clinic started in 1999 as a small pilot project in Farzadfar's hometown of Kermanshah. Dedicated physicians invested large amounts of time in tracking down HIV-positive individuals, earning their trust, and building up the Clinic practice. It had since gained international recognition and expanded to two new sites. With reported cases of HIV increasing and beginning to spread beyond the nation's population of injecting drug users (IDUs), the Ministry of Health wanted to spread the Triangular Clinic model nationwide. Under Farzadfar's leadership, the Integration Subcommittee's goal was to replicate and integrate the Triangular Clinic model throughout Iran in only one year.

Overview of the Islamic Republic of Iran

The modern nation of Iran lay on a high plateau surrounded by volcanic mountain ranges and coastal plains that stretched along the shores of the Persian Gulf. Iran boasted the longest coastline of the Persian Gulf, linking Asia, the Middle East, and Europe.[1] Armenia, Azerbaijan, and Turkmenistan bordered Iran to the north, as did Afghanistan and Pakistan to the east and Iraq to the west (see **Exhibit 1** for map of the Middle East). Much of Iran's land was desert – only 10% of the land was arable, and only 25% was suitable for grazing. Iran sat atop 10% of the world's oil reserves and was the world's second largest oil producer.

Oil sales provided 80% of export earnings and between 40% and 70% of government revenue.[2] Other major industries included textiles, food processing, cement, and other construction materials.[3]

Julie Rosenberg, Marissa Bohrer, and Joseph Rhatigan prepared this case with assistance from Sachin Jain and Andrew Ellner for the purposes of classroom discussion rather than to illustrate either effective or ineffective health care delivery practice.

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History

Iran, known as Persia until 1935, was home to some of the world's most ancient civilizations. Arab invasions brought the Islamic religion to Iran in 536 CE. Sunnism was the dominant form of Islam until the rise of the Safavid dynasty (1502-1736) when Shia Islam was declared the official state religion.

The state's inability to maintain order and uphold justice fueled a constitutional movement that led to the establishment of a parliament and the birth of a constitutional monarchy in 1906.[1] With the discovery of oil in 1908, Great Britain and Russia struggled for financial and political control of the country. They established long-term occupations and gave Iran only a small percentage of the large revenues generated from the nation's oil.

In 1925 Reza Pahlavi staged a military coup and then became the *shah* (monarch). He went on to rule the country for the next 16 years, followed by his son, Mohammed Reza Pahlavi, who ruled until 1979. During World War II, Iran was a major supplier of oil to Allied forces; British, Soviet, and American troops occupied the territory.[4] In 1951, after a vote by Iran's parliament, Mohammad Mosaddeq, the democratically elected Prime Minister of Iran, nationalized the Anglo-Iranian Oil Company (AIOC) that the British government had controlled. As a result, Britain boycotted Iran, and political instability and retaliatory efforts ensued until an eventual coup supported by the United States and Britain led to Mosaddeq's arrest in 1953.

In the 1970s an Islamic revival opposed the *shah*'s regime, which was seen as Westernized, corrupt, and oppressive. Demonstrations ultimately led to a revolution by Muslim *Ulema* (scholars) in 1979 to overhaul the Iranian monarchy. The Islamic Republic of Iran was created, and the new constitution instilled a theocracy based on Shia Islam. Ayatollah Khomeini, the supreme religious leader, ruled; he appointed the head of the judiciary and military and endorsed the appointment of the popularly elected president. He was also responsible for appointing the religious jurists on the Guardian Council who would approve all *sharia* (Islamic law).[4] Ayatollah Khomeini served as a spiritual guide to Islamic clergymen, who numbered over 200,000 in 50,000 mosques and seminaries and provided leadership in local communities. *Fatwa*, holy orders or religious edicts, provided interpretation of the Quran, Islam's holy book, as it applied to daily modern life.[1]

As Iran reformulated its government in late 1980, Iraq, led by Saddam Hussein, attacked with hopes to expand its power and its access to the Persian Gulf via the jointly controlled Shatt al'Arab waterway. Iraq's main port, Basra, was on the waterway and provided the only means for Iraq's oil exports to reach the outside world without passing through foreign countries. In the first few months of the war, oil production dropped from 1.3 million barrels per day to 450,000. By 1982 the Iranians had regained the first captured city, and Iraq voluntarily withdrew the rest of its troops and sought a peace agreement. Iranian troops continued into Iraq in an attempt to topple Hussein, however. Both nations continued sporadic air attacks against cities, military installations, and tankers in the gulf.[1]

Estimates put the number of Iranian dead from the war between 500,000 and 1 million and the number wounded at 600,000.[5] Damage to oil installations for Iran was estimated at USD 28 billion. The Iranian government estimated that by the end of 1984, the war had cost the country over USD 200 billion.[6] Including military supplies and civilian damages, the costs probably exceeded USD 500 billion for each side.[7] The war did little to change the political situation in either country.

With Ayatollah Khomeini's death in 1989, senior clerics appointed Ayatollah Ali Khamenei to be the supreme religious leader. In July 1999 tensions between an increasingly conservative and vocal clergy and President Mohammad Khatami's reform-minded government reached a climax with over a week of

anti-government protests in Tehran. Khatami was re-elected in 2001, but the Guardian Council blocked many of his efforts, and conservatives tried to impede the reformist movement.

Demographics

In 2002 Iran was the seventeenth most populous country in the world. From 1976 to 1991, the percentage of the population living in urban areas grew from 47% to 57%.[2] Nearly 39% of the population was under the age of 15. About 163,989 people lived in one of Iran's 220 prisons in 2001, with an annual turnover of 700,000.[8] The major ethnic groups were Persian (51%), Azeri (24%), Gilaki and Mazandarani (8%), Kurd (7%), and Arab (3%).[9] Farsi (Persian) was the official language of Iran. Over 99% of the population was Muslim; less than 10% was Sunni, and the rest was Shia. A 2002 estimate put unemployment at 15.7%,[10] a rate that had been slowly declining since the war with Iraq ended in 1988.

Basic Socioeconomic and Demographic Indicators[i]

INDICATOR		YEAR
UN Human Development Index ranking	101 out of 177	2002
Population (thousands)	66,903	2000
Urban population (%)	64.2	2000
Drinking water coverage (%)	93	2000
Poverty rate (% living under USD 1.25 per day)	<2	2005
Gini index	38	2005
GDP per capita in PPP (constant 2005 international dollar)	8,278	2002
GDP per capita in constant 2000 USD	1710	2002
Literacy (total, female, male)	77, 70.4, 83.5	2002

Kermanshah Province

Kermanshah Province was on the western side of Iran, bordering Iraq, containing 13 towns, including the capital city Kermanshah (see **Exhibit 2** for map of Iran's provinces). The province was embroiled in both land and air attacks throughout the Iraq-Iran War. It served as a launching point for Iran's counter-offensive and Iraq's target for retaliation. In 1981 Iraq captured five cities in the province, and the following year Kermanshah was shaken by several bombing raids that killed civilians.[11, 12, 13] During the war, the region also suffered internal political violence. Several of Khomeini's aides and appointees were assassinated in the province, and members of leftist organizations were executed.[14, 15]

The war damaged the industrial infrastructure of Kermanshah, and the National Government of Iran invested little in the province after the war. The number of black market jobs began to grow, and drug trafficking and the number of drug users increased.

In 2002 Kermanshah's population was 1.8 million, of which 62% lived in cities and 37% in rural areas.[16] The average age was 19 years, and 10 to 14 year olds comprised the biggest age group. Most of the

[i] This data was comprised from the following sources: United Nations (UN), UNICEF, World Bank, and United Nations Educational, Scientific, and Cultural Organization (UNESCO).

population respected and maintained ethnic-tribal allegiances and followed the beliefs of their respected groups.[17]

Health in Iran

In 2000, 100% of people in urban areas and 86% in rural areas of Iran had access to local health services.[18] Under-five mortality per 1,000 live births was 44, down from 72 in 1990. Infant mortality was 29 per 1,000 live births, down from 55 in 1990. The maternal mortality ratio per 100,000 live births dropped from 94 in 1990 to 37 in 2000. During that period, vaccination coverage for children under one year rose from 32% to 100% for polio; from 38% to 100% for measles; from 33% to 95% for diphtheria; and from 10% to 96% for tuberculosis (TB).[19] The top causes of death in 2002 were ischemic heart disease (21%), road traffic crashes (11%), and cerebrovascular disease (8%; see **Exhibit 3** for a list of the top 10 causes of death).[19]

Health System and Epidemiologic Indicators [ii]`

INDICATOR		YEAR
Average life expectancy at birth (total, female, male)	67, 70, 65	2000
Maternal mortality ratio (per 100,000 live births)	37	2000
Under five mortality rate (per 1,000 live births)	44	2000
Infant mortality rate (per 1,000 live births)	21	2000
Vaccination rates (% of DTP3 coverage)	95	2000
Undernourished (%)	<5	2001
Adult (15-49 years) HIV prevalence (per 100,000)	133	2005
HIV antiretroviral therapy coverage (%)	3	2006
Tuberculosis prevalence (per 100,000)	45	2000
DOTS coverage (%)	100	2002
Malaria cases (per 1,000)	<1	2006
Government expenditure on health as a % of total government expenditure	11.3	2002
Government expenditure on health per capita (international dollar, USD)	142, 107	2000
Total health expenditure per capita (international dollar, USD)	382, 290	2002
Physician density (per 10,000)	9	2005
Nursing and midwifery density (per 10,000)	16	2005
Number of hospital beds (per 10,000)	17	2005

Health Care System

In 1979 the Iranian health care system was reformulated to improve access to health care and to reduce disparities between health outcomes in rural and urban areas by placing heavy emphasis on primary health care.[20] The public health system was free. Facilities in rural areas called "health houses" provided basic public health care in the form of vaccinations, monitoring of childhood growth, and basic

[ii] This data was comprised from the following sources: WHO, UNICEF, UN.

medical services. There were about 17,000 health houses throughout the country. Community health workers, known as *Behvarz*, were selected from their local communities and trained for two years to staff the health houses.[20] *Behvarz*, once appointed and trained, often served for life.[21] There were 30,000 *Behvarz* working throughout the country. In urban areas "health posts" provided essentially the same services as the health houses.[22]

Health houses and health posts referred complicated patients to health centers, which were staffed by a physician and other health workers (see **Exhibit 4** for diagram of rural public health facility triage system). There were 2,400 rural health centers in total (one rural health center for every 7,000 people) and 2,200 urban health centers. Health centers offered technical expertise in primary and preventative health care, including medical diagnostic services and dentistry services. They collected health data, monitored follow-up, and dispatched mobile teams of health care workers on an as-needed basis. The larger district health centers analyzed regional data to identify health problems, conducted research and epidemiological studies, and supported the health houses and posts administratively and financially.[22] District hospitals addressed conditions and needs not met by the smaller facilities. Medical universities and teaching hospitals offered the most complex services. With one per province, they oversaw the district health systems (see **Exhibit 5** for an organizational structure of Iran's health system).[10] There were 5,000 physicians working in the public health system.

In 1980 the Ayatollah Khomeini's "Cultural Revolution" to de-Westernize the higher education system and make it compatible with Islamic fundamentals led to the closure of all universities for three years. During this period, the secular students and professors who opposed Islamization were entirely purged. Three million Iranians were estimated to have left, including many health professionals.[23] A merger between the Ministry of Health and the Ministry of Medical Education in 1985 linked the education and executive sectors. This merger ensured that the medical education institutions would be held accountable for meeting community needs.[18] Health sector reform, inspired by the World Bank's model, was initiated in parallel.

Volunteers became an important part of the health sector in 1993. In a low-income suburb south of Tehran, 200 women were recruited to improve the health status of the community. The volunteers served as intermediaries between families and the government health centers; they maintained files at the health facilities with demographic and health information on each household in their area. The volunteers used the information to help families make appointments and track health care needs. The program spread to other districts; by 2002 there were more than 43,000 health volunteers nationally.[24]

Family Planning

Iran was one of the first countries to include family planning as part of its development plan, incorporating it into free maternal and child health services beginning in 1966. The family planning program was dismantled soon after the 1979 revolution, however. The new government associated family planning with Iranian royalty and Western innovations. The 1980 attack by Iraq gave Iran's religious government reason to encourage the population to "be fruitful and multiply"; the government believed a large population would be an advantage in the war and supported campaigns to increase the population. The 3% population growth per year noted in a 1986 census was one of the highest rates in the world. Birth rates were soon up to six children per woman.[24]

When the war ended, the Minister of Health and Education issued a *fatwa* regarding family planning and announced that the government would establish a family planning program in 1989. Through the Government of Iran, the Ministry of Health and Medical Education provided free family planning services to all married couples to promote small families as the norm and to help couples prevent unplanned pregnancies. All modern contraceptive methods were available to married couples, free of

charge, at public clinics. By 1999 the contraceptive prevalence rate was 73% (see **Exhibit 6** for more on the contraceptive methods used). The Middle East's only condom factory operated in Iran.[24]

Opiate Drug Use

Iran had a long history of production, distribution, and use of opium – a narcotic formed from the latex or sap inside immature opium poppy seeds (see **Exhibit 7** for discussion of opiate drugs and addiction). In the 1920s Iran was a source of around 100 tons of opium per year for internal and external markets. By 1934 it produced over 461 tons.[25] By 1949 an estimated 1 in 10 Iranian adults used opium, with approximately 1.3 million regular opium users and roughly 500 opium dens in Tehran. Until as late as the 1950s, drinking opium in tea and coffee shops was a common, officially tolerated cultural practice. In 1955 opium production and consumption was made illegal, but the law was rescinded in 1969 due to pressure from landowners and farmers. In the early 1970s there were an estimated 400,000 opium users and 30,000 identified users of heroin—a semi-synthetic, more powerful opium derivative. [26]

Following the 1979 Islamic Revolution, the production of opium again became prohibited, and production decreased dramatically.[25] The country became a net importer, and the use of heroin, the more addictive, refined derivative increased; an estimated 2 million people were regularly using opiate drugs. The chaos of the revolutionary period and the new regime's focus on eliminating alcohol rather than narcotics likely fueled the increase.[26] In addition, the war with Iraq severely damaged the country's economy, causing unemployment, stressful living conditions, and population movements.[16]

Efforts to combat drug use and addiction in Iran primarily sought to reduce the drug supply in the country by blocking its transport across the shared border with Afghanistan, where 75% of global opium production occurred in 1999. A large quantity of heroin entered Iran en route to Europe and Central Asia. Iran's share of the global seizures of heroin and morphine was 9% in 1987-1998. Ten years later, its share was 42% of the global seizures (154,454 kilograms of opium, 25,186 kilograms of heroin/morphine); its overall heroin and morphine seizures grew by over a quarter in 1999, reflecting both the massive increase of opium production in Afghanistan and the continued efforts of the Iranian authorities. The country lost 2,600 members of the security forces in anti-drug operations. The government also embraced the arrest and legal prosecution of drug users.[16] Addiction itself was considered illegal.

A survey in 1999 found that 16% of drug users were in treatment, and 37% of street-recruited drug users had a history of incarceration.[27] In 2000, 144,578 Iranians were arrested for drug use and/or drug offenses.[16] Most Iranians who used narcotics were employed, married, and lived with their families (see **Exhibit 8** for profile of drug users).

Around this time, the government established compulsory drug rehabilitation centers, which served as residential facilities for drug users but provided no drug abuse treatment. The State Welfare Organization, the government agency responsible for drug treatment and rehabilitation services, focused on abstinence. Relapse rates were very high. Psychiatric hospitals, already taxed by their care for the psychiatrically ill, found it difficult to provide detoxification treatment.[16]

The *United Nations 2000 World Drug Report* identified Iran as having the highest prevalence of opiate use in the world among those between 15 and 64 years old at 2.8%. An estimated half million people used heroin regularly,[25] and over 2,000 overdose deaths were reported.[26] The retail price of opium was typically USD 2.70 per gram in 2000, and the price of heroin was USD 1.10 at 4% to 20% purity in 2001.[28] In 2001 the National Drug Control Bureau estimated there were between 1.2 and 2 million drug users in the country. Of those, it was estimated that 40% were injection drug users (IDUs). Evidence suggested that this number was rising. The opium poppy ban in Afghanistan in 2000 reduced the opium supply in the Iranian market, shrinking the available heroin stocks. Their purity was decreasing, and prices were

rising, which led many to transition to injection-based methods for a more powerful result. Heroin was up to USD 3410 per kilogram in 2002.[28]

IDUs were most likely to be adolescents, with initiation around the age of 15. The majority of IDUs used heroin. Although syringes and needles could be obtained from private pharmacies that had been licensed to sell them at low cost, about half of IDUs shared needles and syringes with their friends, family, and fellow inmates.[27]

HIV/AIDS in Iran

A High Council on AIDS in Iran was formed in 1988, but government and religious leaders branded HIV/AIDS a "Western" disease related to illegal behaviors and took little action. One Iranian health professional commented on the situation:

> It's a taboo, AIDS. In Iran, being a theocracy, supposedly there are no lies, no sins. Infidelity is the first thing that comes to mind when people think of HIV/AIDS. Or, that it's men having sex with men, that it's a gay man's disease. It's hard to bring people out and have them talk about it. Unfortunately, it will always be a taboo.... Whether my cousin got AIDS from sex or IV drug use, no one knows, but my family says that he got it from IV drug use because that's still more accepted.

Ministry of Health and Education officials saw AIDS as a threat to their work and the government. In the words of another Iranian health worker:

> The main problem in Iran was if you [as a health official] said that we have an AIDS problem, a suicide problem, an addiction problem, a sex-worker problem, then [the government leaders] said you can't manage the country; you have poor management. They want to cover their weaknesses in terms of political issues. They are worried both about the people's dissatisfaction in the country and critics in the media from foreign countries. Top managers believe if you tell people we have a lot of HIV/AIDS patients, it shows that the regime is insufficient and media, especially foreign media, will have propaganda on it.

In 1997 after hearing the results of the sentinel survey, a national parliament member, who was also an infectious disease specialist, sought to address the HIV problem. He received USD 10 million from the *Majlis* (parliament) and the Ministry of Health for the construction of a central HIV/AIDS hospital in Kermanshah, his hometown. When news reached the province, however, many people were outraged and protested in the streets. Demonstrators argued that the city's reputation would suffer. Soon, the plan for the hospital was cancelled, and the parliament member was voted out of office.

Epidemiology of HIV

The first reported case of AIDS in Iran occurred in a hemophiliac boy in 1987. In 1996 the government initiated the first HIV sentinel sites in three prisons to access a high-risk population.[29] In addition to a case-reporting system, the government soon had 75 testing sites throughout prisons, juvenile detention centers, and university clinics. The sites offered voluntary testing to the spouses of HIV-infected individuals; children of HIV-infected mothers; children in correctional facilities; drug users in compulsory drug rehabilitation centers; IDUs at drug treatment clinics; prisoners; sexually transmitted disease (STD) patients; truck drivers; migrants; and anyone else who wanted it.[16] Iran did not submit comprehensive HIV/AIDS data to the Joint United Nations Program on HIV/AIDS (UNAIDS) until late 1999.[30] By July 2001 the Iranian National Committee on AIDS reported that the total of cumulative documented HIV/AIDS cases was 2,458. Of those cases, 1,841 (74.8%) were drug users, with needle and syringe sharing accounting for the bulk of transmissions. Of the 646 spouses of HIV-infected individuals tested, 7.4% were HIV positive; and 15% of children of HIV-positive mothers were HIV positive.[23] One study of 50 commercial sex workers in a city in Western Iran found 6% to be HIV positive, but all of these cases were also IDUs.[31]

Drug users showed very low awareness of the risks of HIV/AIDS infection. A 1999 rapid situation assessment found that 20% of respondents had never heard of HIV/AIDS. Among those who had heard of the disease, 20-30% were unaware that it could be transmitted through the sharing of injecting drug equipment.[27] Little HIV/AIDS prevention work had been done with IDUs, and no printed materials on HIV/AIDS were available to drug users.[26]

HIV in Kermanshah

The first case of HIV in Kermanshah was diagnosed in the prison in 1995 (see **Exhibit 9** for more on number of new cases per year). That same year, three additional cases were diagnosed among prisoners and blood donors in Kermanshah (see **Exhibit 10** for more on detection sites). Rates of infection as high as 29% among IDUs were identified in two prisons in 1996.[26] In Zahedan prison, researchers reported a 63% rate of HIV among IDUs,[26] leading to closure of the prison and redistribution of the prisoners.[29] In 1996, 58 new cases, five of which were blood donors, were diagnosed in Kermanshah (see **Exhibit 11** for more on routes of transmission). The HIV prevalence rate was 3-8% in the Kermanshah Province prison.[17] In 1997, there were 493 new cases in Kermanshah; 6 cases were detected among those undergoing voluntary testing and 12 among blood donors. In 1998 there were 17 new cases among prisoners, 8 cases among blood donors, and 5 cases among those who were voluntarily tested in Kermanshah. In 1999, 11 new cases were detected in prison, 14 among blood donors and 7 from voluntary testing. The majority (97.6%) were male, with 49% single, 27% married, and 11% divorced or widowed.[16]

The Triangular Clinic

In 1999 a group of physicians including Dr. Abdolreza Shahrezaee, supervisor of the Provincial Disease Control Department, Dr. Rezaee Zangane, a provincial AIDS expert, and Dr. Mansoori, the Kermanshah Medical University health deputy, began mobilizing to address HIV/AIDS in Kermanshah. Vice-Dean for Health at Iran University Dr. Mohammad Mehdi Gooya, supported the efforts, as did the Dean of the Medical University. The Director of the Kermanshah Department of Health, an influential provincial decision maker, granted them a small room in a clinic affiliated with the Kermanshah Medical University.[22] The office was in a busy medical center.

The physicians obtained the names of the 400 HIV-infected individuals identified years earlier and searched for them in their homes and the streets. They could find only 10. They realized many had registered under false and multiple names and given false addresses so that they could not be tracked or identified.[22]

The doctors consulted the patients they found, provided information about the disease, and offered medical services free of charge. Most of the patients were very depressed; many were estranged from their families and were unemployed. They felt ostracized from society; people would not shake their hands, and their children often were afraid to hug them. Many patients themselves had misconceptions about HIV transmission. The physicians found that suicide, not AIDS-related illness, was the main cause of death among these HIV-infected individuals.[22] The physicians soon gained enough trust to convince many of the patients to come to the clinic.

The physicians continued making visits to their patients' homes to intervene more closely as well. They went under the auspices of offering medical care to patients' families. Once they gained families' trust, they seized the opportunity to talk to them frankly about HIV/AIDS and provide them with accurate information about the virus's transmission.[22]

Upon learning about HIV/AIDS, the patients' parents often had feelings of guilt about how they had treated their sons, and many sought counseling with the physicians. The patients' wives and children soon were coming to see the physicians too. The physicians provided serodiscordant couples with condoms to prevent the uninfected partner from becoming infected. Thus began their condom distribution "program."[22]

Word about the clinic continued to travel quickly through the close-knit, high-risk communities, particularly among IDUs. More and more patients visited the office. The clinic staff impressed people with the great lengths they would go for their patients.

The clinic offered other services including babysitting when patients were hospitalized and family members were unable to take care of their children; helping procure food for people living with HIV/AIDS (PLWHA) and their families; distributing donations from the local mosques in Kermanshah; providing heaters and fuel during the winter; and providing temporary housing for those evicted from their rented residences or kicked out of their parents' homes because of their HIV-positive status.

Establishing the Triangular Clinic

Within the first five months, patient volume increased from seven visits per month to 230 visits per month. Clinic visits continued increasing to eventually reach 500-600 per month. The physicians' ability to attract high-risk clients in large numbers caught the attention of the health center director. The physicians lobbied for improved status in the health system and gained access to the entire second floor of a primary health clinic building, as well as to the supplies afforded a primary health care clinic. With their new inventory and a desire to maintain a low profile as an HIV/AIDS care center, they began to offer expanded health services, including nutrition, family planning, voluntary testing and counseling (VCT), and HIV care.[16]

In August 2000 the clinic staff determined their services would target three main groups: PLWHA and their families, IDUs, and people with sexually transmitted diseases (STDs). They began calling their project the Triangular Clinic (see **Exhibit 12** for diagram of Triangular Clinic Model).[7] Over time the University approved the growth of staff from two part-time physicians to two full-time general practitioners, one full-time specialist, two midwives, three public health experts, one psychologist, one laboratory expert, and four administrative staff, as well as two additional part-time physicians and two part-time consultants.

The Triangular Clinic's Care Delivery Model

When a person living with HIV or AIDS, an affected family member, drug user, member of a high-risk group, or STD patient visited the clinic, the staff conducted a risk assessment (see **Exhibit 13** for flow chart of clinic services). Anyone who wanted VCT received it as well as testing for other STDs. Prisons, TB clinics, blood transfusion centers, the private sector, and other provinces also referred patients. Staff sent individuals who tested positive for HIV to the HIV unit. Starting in 2000, the clinic then collected additional information on the spouse or partner, referral source, children, date of diagnosis, history of other high-risk behaviors, stage of disease at the time of diagnosis, probable route of transmission, and the results of a TB workup (sputum smear, PPD skin test, and chest X-rays). The clinic repeated the TB workup on an annual basis, cluster of differentiation 4 (CD4) counts every six months, and other lab tests as required. For HIV-negative individuals, the clinic collected demographic information and information on high-risk behaviors and repeated HIV testing every three months or as necessary.

In order to help its clients receive services that it was not equipped to provide, such as specialist services, dental services, inpatient care for infectious diseases including HIV/AIDS, and comprehensive

TB and hepatitis treatment, the clinic developed relationships with hospitals and other health care facilities. Their relationships helped to foster the acceptance of HIV patients at these facilities. The clinic also helped coordinate the services offered by other organizations in Kermanshah: the Red Crescent Society provided financial and material support to people living with AIDS, counseling for those engaged in high-risk behavior, and a primary prevention training program for volunteers; the Imam Khomeini Welfare Committee provided support for the needy; and the State Welfare Organization provided inpatient and outpatient treatment and rehabilitation services for drug users. The Triangular Clinic made referrals to the State Welfare Organization's abstinence-oriented treatment programs when appropriate.[18]

Services at the clinic were kept confidential by assigning each patient a code. The code consisted of the first letter of the patient's family name and a number that the patient could remember easily. Though most health centers kept written records in notebooks with patients' names, Triangular Clinic records were stored in a computerized database. Each service provider could enter the patient's code into the computer, and only the relevant portion of his or her record would come up. Pharmacists could enter medication information without seeing the mental health records, and counselors could write treatment progress notes without knowing the clinical details. The physicians had access to the complete chart and could track a large collection of statistics, including when each patient received treatment consultations, medicine from the pharmacy, physical therapy, or imaging studies. The computer also tracked how much money was spent on patients. The documentation officer at the Triangular Clinic maintained a comprehensive tracking system, making it possible to quickly and easily identify those who were in treatment and lost to follow-up.[18] Patients could elect the method of follow-up they preferred or not to have any follow-up at all.

The center formalized an initiative to provide homecare for those who were too ill or afraid of stigma to seek care at the clinic. The homecare initiative took place at night after the official clinic hours. It was during home visits that the physicians commonly learned of relatives, friends, or drug-use partners who were in need of help and medical attention.

Injecting Drug Use Services

After intense lobbing at the Ministry of Health and Education, the clinic gained permission to provide substance abuse treatment. It began dispensing medications such as clonidine and eventually methadone. It paid for other prescriptions at outside pharmacies as well if clients did not have the money to pay.

The clinic physicians found that for some clients, the drug addiction treatment proved ineffective. They expanded their IDU services with risk-reduction materials – bleach, needles, and syringes – free of charge in 2001.

Distributing syringes required the approval of the judiciary, the police, and national and provincial authorities. Some outside doctors objected to the distribution of needles on the grounds that patients would sell them to other drug users. Clinic doctors argued that if people did sell the needles, they would be selling clean needles to a target group that their clinic did not reach. They felt it did not matter who used the needles, as long as it was someone at risk. After much negotiating, the clinic got permission for free needle distribution and worked with public and private pharmacists to license them to dispense or sell needles to ensure ease of access. Soon the clinic provided incentives, such as food and money, for people to bring in used syringes and needles, creating an active needle exchange program.

The clinic began forming addict peer groups in 2001 that provided services for about 500 addicts per month. Addicts volunteered to live in groups in small buildings with a bathroom and a few beds and got paid a small amount of money to provide food, shelter, baths and sterile needles to other addicts. The

volunteers were also responsible for referring cases to the behavioral diseases centers for counseling. They performed outreach services for those who were not attending the group buildings, reaching another 200 people per month. The group buildings served as a kind of community learning center.

The clinicians tried to attract the female partners of IDUs into the clinic by offering women's health services staffed by female health care providers in the mornings. They created a support group for these women as well.

HIV/AIDS Care and Support

The clinic always provided serodiscordant couples with condoms, and it provided counseling on communication, disclosure, and relationships. Clients continued to have access to the support services that attracted them as well. The clinic did not have antiretroviral therapy (ART) medications but provided TB treatment and prophylaxis to prevent opportunistic infections in AIDS patients.

To help expand their services, the physicians obtained a grant from the discretionary funds of the Kermanshah Medical University. They leveraged these funds to lobby Roche in Tehran, Dubai, and the United Kingdom for a discount on antiretroviral drugs. They provided ART prophylaxis starting in 2001 to two groups: pregnant women for prevention of mother-to-child transmission of HIV and health care workers occupationally exposed to HIV for post-exposure prophylaxis.[16]

Many of the women with HIV/AIDS were widowed with children, unemployed, and unable to seek help from their families out of fear of revealing their HIV status. The clinic approached two charities. They invited the Committee *Imdad* (assistance) Imam Khomeini, a religious, non-governmental organization with a somewhat conservative attitude toward HIV, to meet with nine of the HIV-positive women. During the meeting, the women explained that their HIV infections resulted from relations with their HIV-infected husbands, not from sex work, and what the disease had done to their lives. Touched by the women's stories, the members of the Committee offered money to support them. When the women said that what they most needed was housing, the Committee arranged for this.

The clinic organized recreational activities for PLWHA and their families and friends, including a summer camp, a musical group, and a mountain climbing team as well as outings to the mountains and other group entertainment opportunities. It provided referral services for welfare and outside support to promote high quality of life, lifestyle stability, and stress reduction.[16]

Expanding Their Reach

Although their client base continued to increase, the doctors believed that there were still at-risk groups they were not reaching. They knew, for example, that 70% of the population in Iran was under 30 years old, which represented a large pool of potential clients. They decided to do a pilot project with adolescents by going to schools given there was a national attendance rate of 95%.

They first approached the educational authorities about their idea for a pilot project in the areas most affected by drug use. They believed parents in those regions would be the least resistant to their children being educated about drug use and HIV/AIDS. At 20 high schools, with the approval of 400 teachers, managers, and principals, thousands of students went through a two-hour educational class about AIDS. Among these students, 500 were asked to attend a longer three-day workshop to learn about teaching and leading their peers and to become referral agents for the clinic. They received written materials to distribute to peers and family and formal identification cards affiliating them with the clinic. The physicians organized a workshop for the parents of the students as well to explain to them why it

was important to educate the students. From these student outreach efforts, 364 people were referred to the clinic and 13,564 received AIDS education.

The physicians reached other groups as well. They wrote two hours of HIV instruction into the family planning curriculum taught at the universities and conducted training with the army. At the medical university, they facilitated a more in-depth workshop. Red Crescent volunteers attended trainings, as did clergy members and police. Many of the police who had originally objected to the needle exchange program became advocates and helped spread the message.

The Triangular Clinic staff grew to six full-time physicians, about 10 other staff members, and 25 health volunteers working directly in the clinic. Everyone there, whether nurse or janitor, had to go through HIV/AIDS training. Trainings were a few weeks long and were offered several times per year. Though the work was hard, there was not frequent turnover among staff; they were dedicated. Referring to the early days, Dr. Hengameh Namdari, who became supervisor of the Provincial Disease Control Department in 2000, reflected:

> Wow, those were tough days… We were constantly redoing things, because we did not know how to go about doing it right. The workload was increasing by the day. We had reached a point where we could not afford making any mistakes anymore. However, the obstacles and the headaches were becoming bigger too. The number of patients was growing and so were their needs and problems.

Staff participated in social events together and with patients and shared a common vision for aiding those in need. The Iranian government provided a hardship bonus for all government employees, ranging from 10% to 25% of salary, depending on the difficulty of the work. The Triangular Clinic workers began receiving the full 25%.

Due to the high cost of ARTs, about 36% of the clinic's budget was allocated to treatment, 16% to harm reduction materials distribution, and 7% to methadone maintenance.[7]

Impact

A majority of HIV-positive drug users attending the clinic changed their risk behaviors substantially – they gave up drug use; stopped injecting; stopped sharing injecting equipment with others; started using sterile injection equipment every time they injected drugs; adopted safe sexual practices; and brought their spouses and injecting partners to the clinic so that they could be counseled in prevention.[18] In the first year of VCT, 50 cases were detected. In the second year, 137 cases were detected. Out of the 76 serodiscordant couples counseled at the clinic, none had seroconverted.[22] By the end of 2001, more than 58,000 people had received some AIDS education.[17] By 2002 835 people had undergone VCT, and 22% were found to be HIV positive. Of 511 IDUs tested, 31% were found to be HIV positive. There were 1,228 HIV/AIDS cases known to the Triangular Clinic by 2002, 91% of which came from Kermanshah. According to government reports, the number of adults in need of ART at the end of 2002 in Iran was 2,200. Fewer than 600 were on any treatment by the following year.[32]

Mobilization of Key Stakeholders

Several events helped the clinic gain a place on the political, educational, and public agenda. One of the primary physicians left his post in the clinic to head the Red Crescent Organization of the state of Kermanshah. Dr. Gooya, who at the inception of the HIV/AIDS counseling center was the Vice-Dean for Health at Iran University, became the Director General of the Iranian Centers for Disease Control and Prevention (CDC), where he had more opportunities to promote the Clinic's activities. Dr. Mansoori, the

Vice-Dean for Education at the Kermanshah University Medical School, brought the issue of HIV/AIDS to the attention of the Governor and other official stakeholders.

In 2001 the World Health Organization (WHO) invited Iran to present at a regional UNAIDS/WHO conference on HIV/AIDS initiatives in Lebanon. Due to the absence of any other substantial HIV/AIDS program in the country, the government asked the Triangular Clinic physicians to attend the conference and present the Kermanshah experience. The Lebanon conference led to an official WHO visit and recognition of the clinic as a "best practice model."

Invigorated by this positive reinforcement and the prestige it earned the Iranian government, the officials became outspoken advocates for the model. The chancellor recommended to the provincial governor that the model be adopted at the provincial level. The governor responded by establishing a monthly stakeholder meeting, the Provincial HIV/AIDS Committee, to monitor the epidemic. The Red Crescent Society, the Prisons Affairs' Bureau, the Imam Khomeini Committee, the provincial governments, medical schools, police, and other public sector leaders came together to discuss the problem, strategies for slowing the epidemic, and the role each would take. The group worked to create a strategic plan to "prevent and control HIV infection, AIDS, and the resulting complications in society."

The National Director of Prisons Affairs' Bureau visited the Triangular Clinic in 2001 and soon he too was an advocate. He established the first Behavioral Diseases Counseling Center in Kermanshah prison modeled after the University's Triangular Clinic that year. Clinic staff presented at the Iranian Infectious Diseases Conference, and prison wardens and the National Judiciary officials accepted the proposal to extend services to the health clinics in additional prisons. As Dr. Hengameh Namdari explained, "The Iranian government realized the magnitude and the value of our efforts, and this led to substantial national support and recognition…. It was a triumphant day."

Going National

After the Triangular Clinic was replicated in two areas of Tehran, the staff realized the only way that the clinic could be financially sustainable was by integrating it into primary care on a national level. Integration had helped leverage integral resources for health strategies in the past such as maternal and infant health, and HIV/AIDS currently received only a small line item of the national budget.

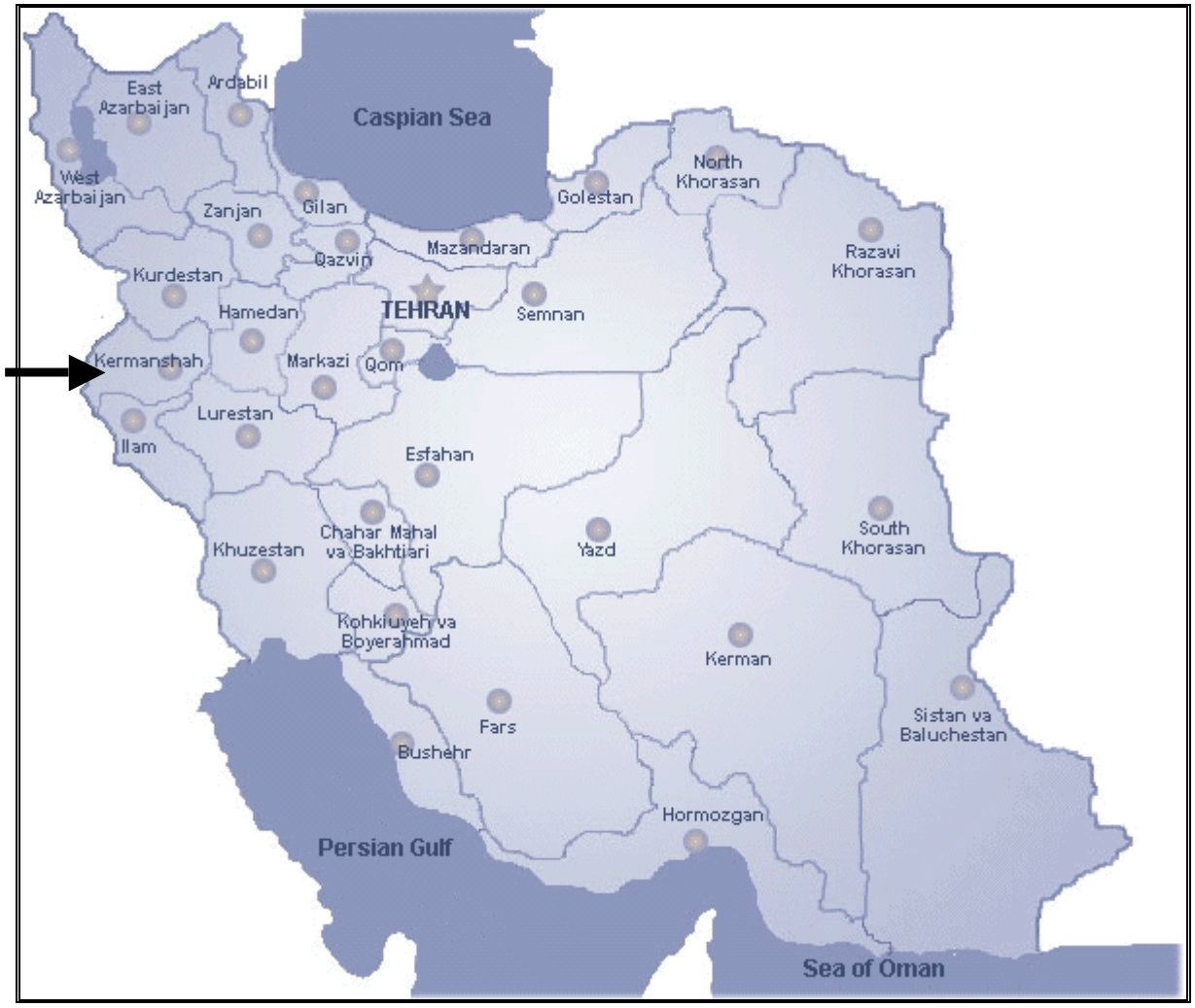
In 2002 the head of the Iranian CDC and national HIV/AIDS chair approached Ministry of Health and Education officials about this idea. The undersecretary for health created a subcommittee to review the idea. He appointed Dr. Farshad Farzadfar as chairman and assigned 12 others, including senior-level experts, senior researchers, and a member of the management and planning organization, to sit on the subcommittee. The group met once or twice a week to review Farzadfar's work. Under Farzadfar's leadership, they were responsible for making plans that the bigger committee would approve.

Farzadfar had heard about the clinic over the years from colleagues. In order to figure out how to replicate and integrate it, however, he knew he would have to see and understand the clinic firsthand. He spent a week at the clinic talking with the clinic's director, Dr. Hengameh Namdari, and other clinic staff. He learned about the challenges of developing the clinic and reaching clientele, and he returned for a second visit to observe clinic operations. When he arrived back in his office, he considered how to present the clinic's delivery strategy, developed over several years, to his fellow committee members. Iran was a large and diverse nation, and it had taken time, a lot of hard work, and some skillful negotiating to get the original Kermanshah clinic off the ground. How would Farzadfar lead the country in replicating this model?

Exhibit 1 *Map of the Middle East*

Source: Publicly available at http://www.lib.utexas.edu/maps/middle_east_and_asia/middle_east_pol_2003.jpg.

Exhibit 2 *Map of the Provinces of Iran*



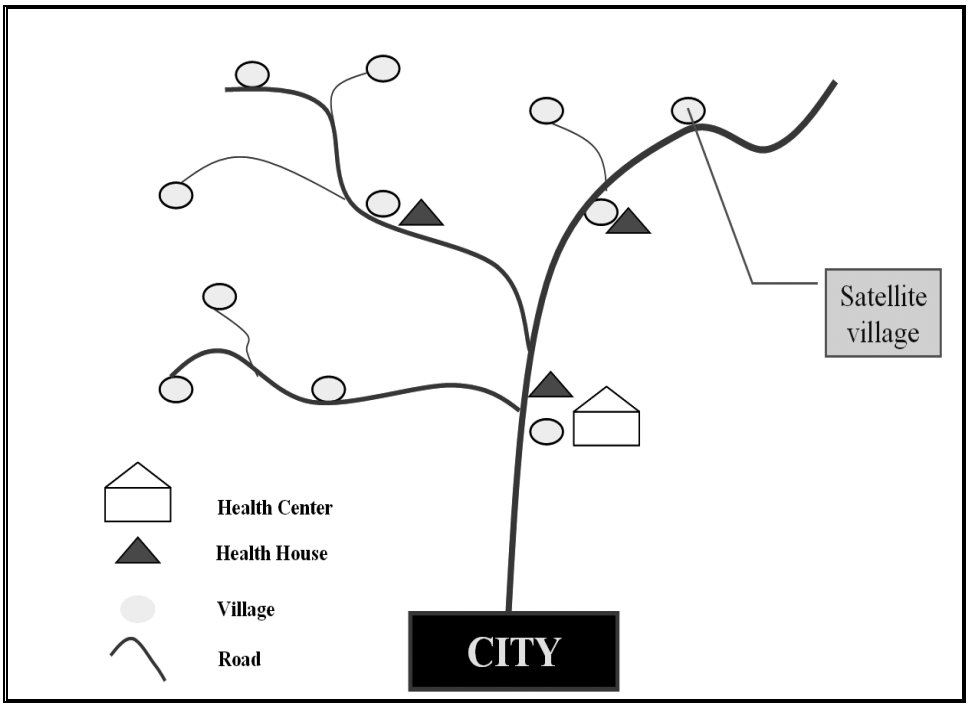
Source: Embassy of Iran. Available at http://www.iranembassy.gr/eng/Iran_provinces.htm.

Exhibit 3 *Top 10 Causes of Death in Iran, 2002*

Causes	Deaths (%)	Years of Life Lost (%)
All causes	100	100
Ischemic heart disease	21	12
Road traffic accidents	11	16
Cerebrovascular disease	8	4
Perinatal conditions	5	10
Hypertensive heart disease	3	1
Stomach cancer	3	2
Chronic obstructive pulmonary disease	2	1
Diarrheal diseases	2	5
Inflammatory heart disease	2	1
Lower respiratory infections	2	2

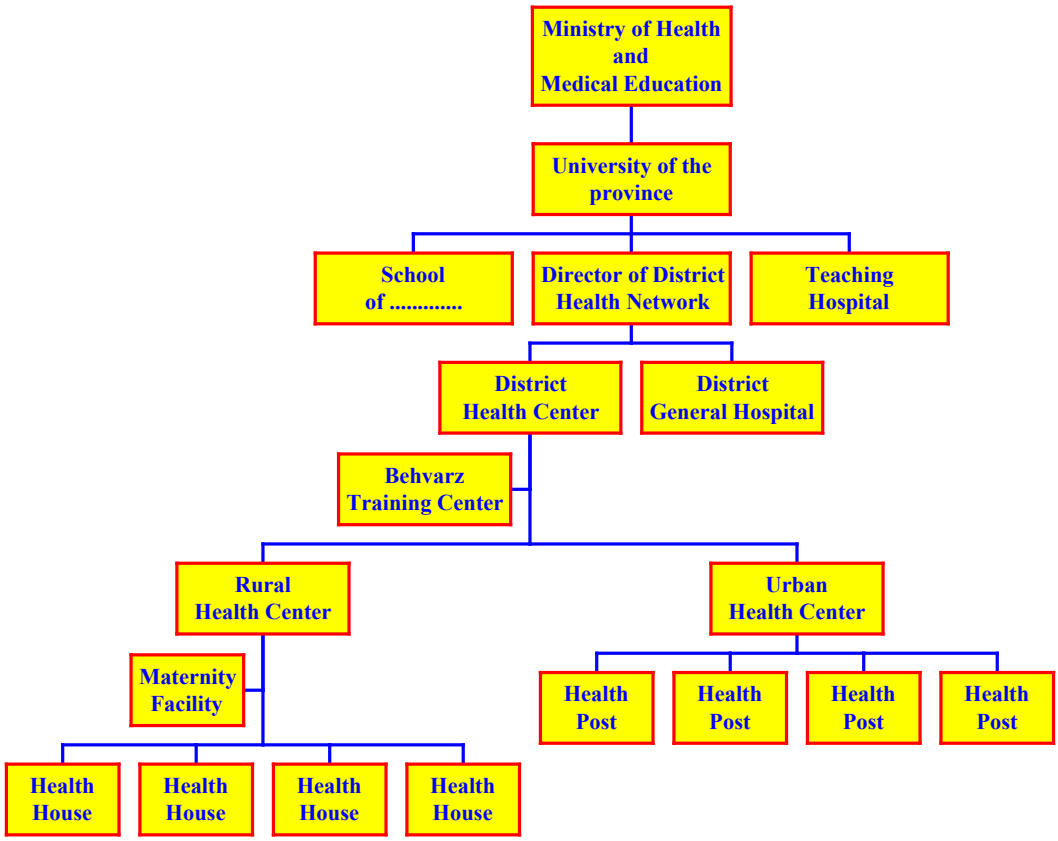
Source: World Health Organization, *Iran Mortality Country Fact Sheet*, WHO, Editor. 2006, World Health Organization: Geneva.

Exhibit 4 *Location and Triage System of Rural Public Health Facilities*



Source**:** DTARH Health Information, Ministry of Health.,2005. [Courtesy of Farshad Farzadfar].

Exhibit 5 *The Structure of Iran's Health System*



Source: Eastern Mediterranean Regional Office for the World Health Organization (EMRO), *Background on the health system in the Islamic Republic of Iran*, in *World Health Organization in the Islamic Republic of Iran*, World Health Organization (EMRO), Editor. 2006, WHO: Tehran.

Exhibit 6 *Contraceptive Methods Used by Married Iranian Women Relying on Modern Methods, 2000*

Method	Percent of population using method
Condoms	10%
Male sterilization	5%
Female sterilization	31%
Pills	33%
IUDs	15%
Injections	5%
Norplant	1%

Source: Roudi-Fahimi, F., *Iran's Family Planning Program: Responding to a Nation's Needs*, in *Middle East and North Africa (MENA) Policy Brief*, Population Reference Bureau, Editor. 2002, Population Reference Bureau: Washington, DC.

Exhibit 7 *Opioid Drugs and Addiction*

Heroin is synthesized from morphine, a derivative of the opium poppy plant. Like morphine and other substances derived from opium, heroin is considered a narcotic or an opiate. Soon after the drug enters the bloodstream, heroin mimics the action of natural endorphins, creating a sense of extreme well-being and tranquility. Heroin can be administered by snorting, by inhaling vapors produced by heating it, and by injection--the fastest and most powerful means of achieving results. Regular heroin users develop tolerance to the drug, requiring higher and higher doses to experience the same feeling of euphoria. Large doses are fatal. Users inject approximately four times per day. Chronic constipation and addiction occur with regular use.

Addiction, defined as persistent, relapsing, compulsive substance-seeking despite negative consequences, is a complex behavioral phenomenon that is usually reinforced by both the positive sensations that accompany substance use, and the unpleasant withdrawal symptoms that occur after a substance is stopped. Long-term use of addictive substances can cause structural changes in the brain that result in craving even after years of abstinence.[iii]

With just three days of sustained heroin use, withdrawal symptoms set in 6 to 24 hours after stopping the drug. Symptoms may include sweating, chills, severe muscle and bone aches, nausea and vomiting, diarrhea, goose bumps, cramps, fever, malaise, anxiety, depression, persistent penile erection in males (priapism), extra sensitivity of the genitals in females, yawning, tears, and sleep difficulties (insomnia). Many users also complain of a painful condition called "itchy blood," which can result in compulsive scratching that causes bruises and sometimes leaves scabs.

Untreated opioid withdrawal syndrome is not fatal—but the discomfort of withdrawal makes abstinence extraordinarily challenging for addicts. One approach to easing opioid withdrawal and initiating recovery is to substitute a longer-acting opioid such as methadone for heroin and either maintain patients on daily methadone for an indefinite period, or else slowly taper the dose. Typically, methadone clinics require patients to return every day for treatment. Despite having an addiction potential comparable to heroin, methadone is recommended for those who have repeatedly failed to complete detoxification or have relapsed, as a way to avoid the physical risk, psychological damage, and social marginalization that come along with frequent heroin use. Methadone does not provide the "rush" that opioid drugs do, has a long duration with oral dosing and prevents patients from craving other opioids. A shorter-term approach for opioid withdrawal is to use clonidine, a medication primarily used to treat hypertension, which often lessens the unpleasant symptoms of withdrawal.

Source: Compiled by case writers.

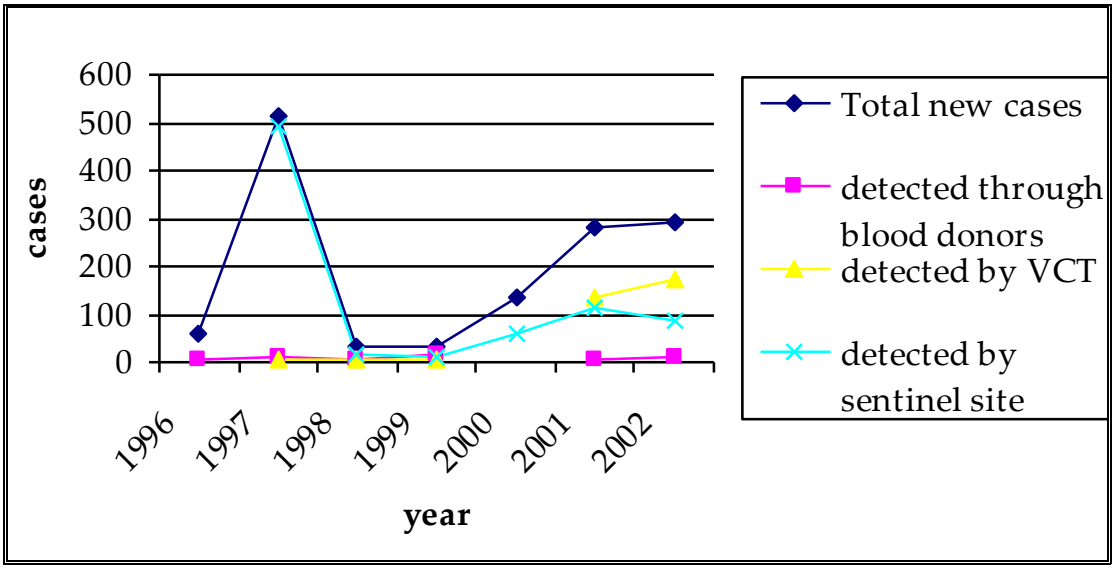
[iii] Cami J. and M. Farrè. Drug Addiction. *New England Journal of Medicine*, 2003. 349(10): 975-986.

Exhibit 8 ***Profile of Drug Users in the Islamic Republic of Iran***

Feature	Available estimate
Mean age	33 years (± 10 years)
Mean age of beginning drug use	22 years (± 7 years)
Sex	> 90% male
Marital status	> 50% currently married
Living alone	< 10%
Employment rate	~ 80% employed
History of incarceration	~ 40% total 20–25% because of drug use
Injecting drug use	20–25% lifetime 10–15% recent months

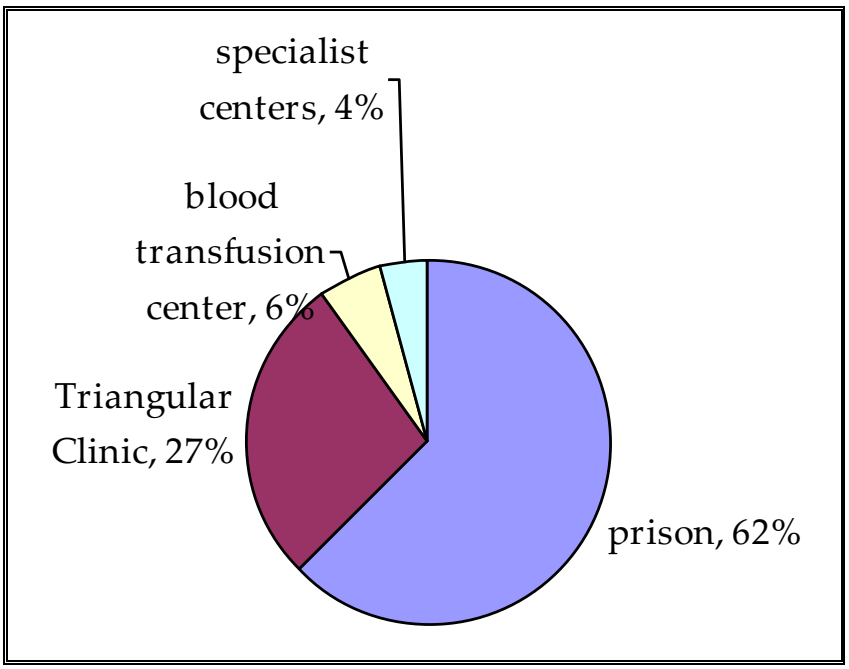
Source: Mokri, A., Brief overview of the status of drug abuse in Iran. Archives of Iranian Medicine, 2002. 5(3): p. 184-190.

Exhibit 9 *New HIV/AIDS Cases in Kermanshah by Year by Means of Detection*



Source: Kermanshah Province, *Kermanshah Province Records in Fight Against HIV/AIDS*, Ministry of Health and Education. 2005, Republic of Iran: Kermanshah.

Exhibit 10 *Site of HIV/AIDS Diagnosis in Kermanshah, 2001*



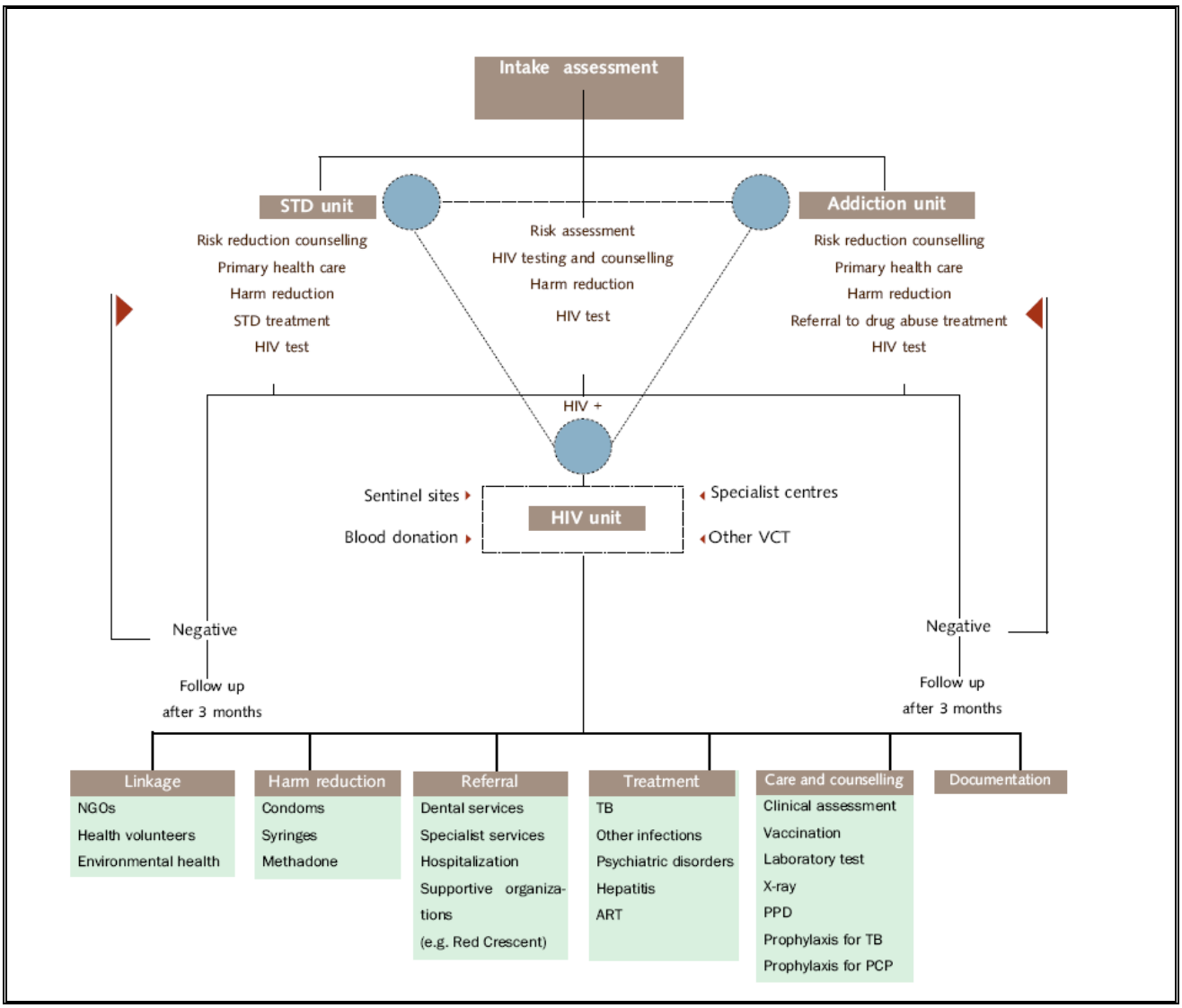
Source: Kermanshah Province, *Kermanshah Province Records in Fight Against HIV/AIDS*, Ministry of Health and Education. 2005, Republic of Iran: Kermanshah.

Exhibit 11 *HIV Transmission Routes in Iran and Kermanshah*

Route of Transmission	Iran	Kermanshah
IDU	62.3	81.0
Heterosexual intercourse	7.4	2.0
Blood products	1.9	0.2
Vertical transmission	0.5	--
Unknown	27.9	17.0

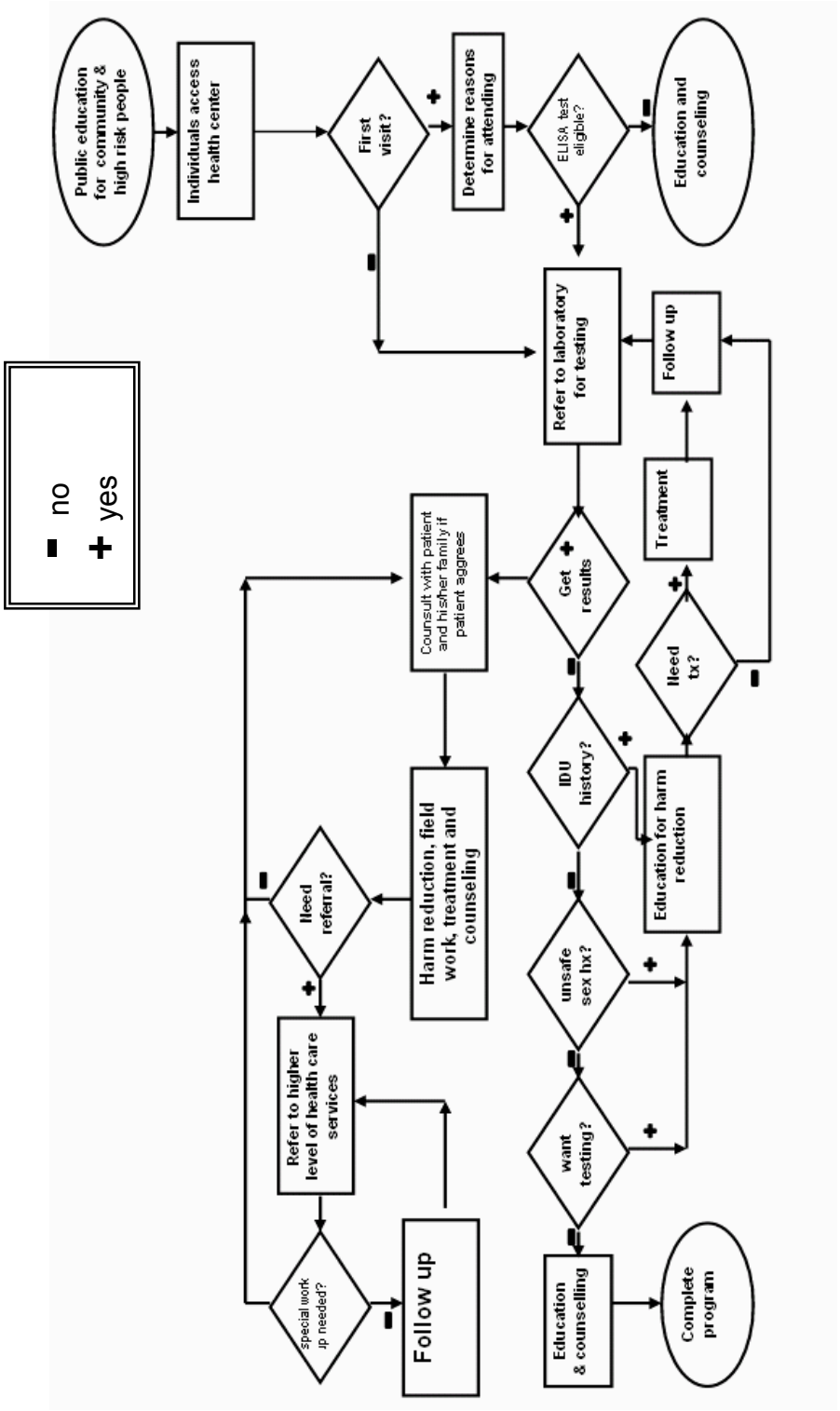
Source: Alaei, K. Comprehensive model for the prevention of drug abuse and treatment of drug users living with HIV/AIDS in Kermanshah. in Regional meeting on expanded access to HIV/AIDS treatment in the countries of the Eastern Mediterranean Region. 2002. Cairo, Egypt.

Exhibit 12 *Triangular Clinic Model*[16]



Source: World Health Organization and Regional Office for the Eastern Mediterranean, Best Practice in HIV/AIDS Prevention and Care for Drug Abusers: The Triangular Clinic in Kermanshah, Islamic Republic of Iran 2004, WHO: Cairo.

Exhibit 13 *Patient Flow Chart for Triangular Clinic Services*



Source: Farshad Farzadfar.

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