TEHRAN UNIVERSITY OF MEDICAL SCIENCES

National Institute of Health Research
I.R.Iran

Islamic Republic of Iran
Ministry of Healrh & Medical Education
International Affairs Department

Health Transformation Plan (HTP) towards Universal Health Coverage in the I.R. Iran

Comprehensive Report
May (2014) - March (2017)

Health System Observatory

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2019

In the Name of God

Preface

Development of this report began in early 2018, with the aim of providing an overview of different aspects of the HTP towards achieving UHC in Iran. The assessment of HTP conducted retrospectively, for the period of mid-2013 to the mid-2018. This report followed a participatory approach and engaged with all relevant departments within the MoHME to gather data. The main focus here is to describe how various components of HTP contributed to the pathway to achieve UHC in Iran. All upstream policies related to the components of HTP, from before and after its implementation, have been reviewed in this report. The report also provides a visual picture of all measures that were performed by the MoHME, during 2013-2018, understanding which may help better planning and implementation of future initiatives. Therefore, the report covers all measures that were executed by Deputy of Curative Affairs, Deputy of Public Health, and Food and Drug Organization of Iran, all affiliated with the MoHME, in line with achieving UHC in Iran.

This report is provided by the National Institute of Health Research I.R. Iran, with the participation of various units of the Ministry of Health and Medical Education.

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Chapter One

General Information on Demographic, Health and Economics in the Islamic Republic of Iran

The Geographical and Socio-Demographic Status

Located in West Asia, with the area of 1,648,195 km^2, Islamic Republic of Iran is the 18th-laregest country in the world. To the north, Iran is bordered with Azerbaijan, Armenia, and Turkmenistan, to the east with Afghanistan and Pakistan, and to the west with Turkey and Iraq. The north of country is on the shore of the Caspian Sea, while the Persian Gulf and the Oman Sea are located in the south. Iran is divided into 31 provinces. The last census of 2016 reported the total population of 79,926,270 in Iran, 59,146,847 (74%) of whom lived in urban and 20,730,625 resided (26%) in rural areas. The population has increased by 29.1% during the last 25 years. Life expectancy at birth is 74 years. According to the last census, the adult (10 to 49 years of old) literacy rate is 94.7% (Table 1).

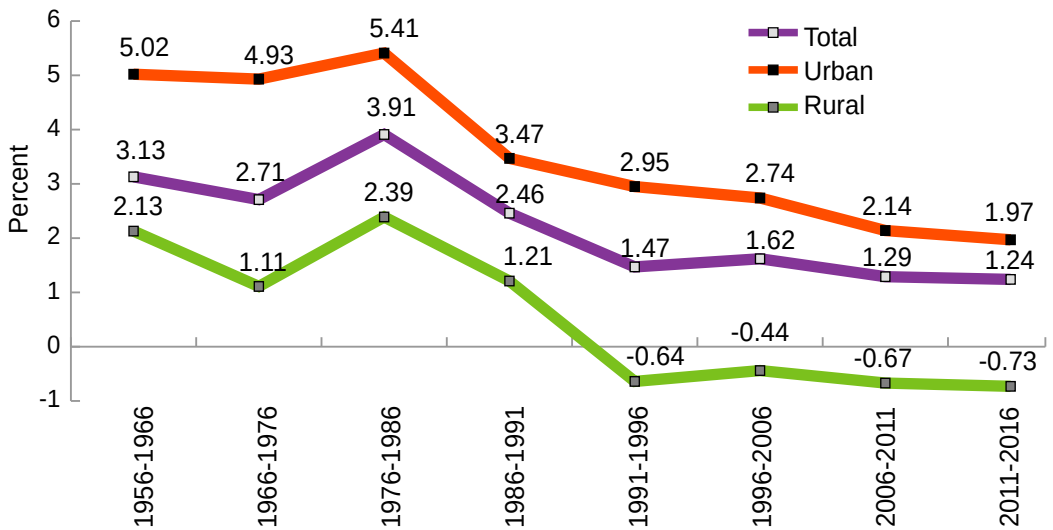
Table 1. Population changes in Iran, 1976-2016.

Year	Total Population	Urban Population	Rural Population	Houshold Dimension			Population Density (per m^2)	Adult Literacy Rate
				Total	Urban	Rural		
1976	33,708,744	15,842,974	17,865,770	5	4.9	5.2	21	47.5
1986	49,445,010	27,194,760	22,250,250	5.1	4	5.5	30	61.8
1996	60,055,448	37,234,403	22,821,085	4.8	4.6	5.2	37	79.5
2006	70,495,782	48,364,681	22,131,101	4	3.9	4.4	43	91.7
2011	75,149,669	53,702,886	21,446,783	3.5	3.5	3.7	46	92.4
2016	79,926,270	59,146,847	20,730,625	3.3	3.3	3.4	49	94.7

During the past three decades, Annual Population Growth (APG) has declined from 3.91 to 1.24%. The highest APG (3.91%), was between 1976 to 1986, and declined to 2.46% (1986 to 1991), 1.47% (1991 to 1996), 1.62% (1996 to 2006) and reached 1.29% in 2011. The 2016 census showed the APG at 1.24%. Nonetheless, the APG trend showed a heterogenic pattern among various socio-geogrphic regions, ranging from +5.41% in urban areas (at its peak) to -0.73% in rural settings. The negative APG observed in rural areas

began between 1991 to 2016, which was mainly due to internal migration from rural to urban areas. During this period, the APG declined from 1.21%, in 1986, to -0.64%, in 1991, reached -0.44 in 2006, and declined to -0.73 in 2016 (Figure 1).

Figure 1. Average annual population growth, 1956-2016.



Based on the 2016 census, 24,185,133 households lived in the country, 8.46% of whom had one, 20.71% had two, 28.45% had three, 27.64% had four, and 14.74% had five members. In addition, the cencus revealed that 17.73% of households live in the capital city of Tehran, while only 0.66% of households live in Ilam province.

Figure 2 illustrates Iran's population pyramid in 2016. Currently, 44.8% of the population are in the age group of 30 to 64 years old. The percentage change of each age group from 1986 to 2016 is shown in Figure 3.

Figure 2. The population pyramid (2016).

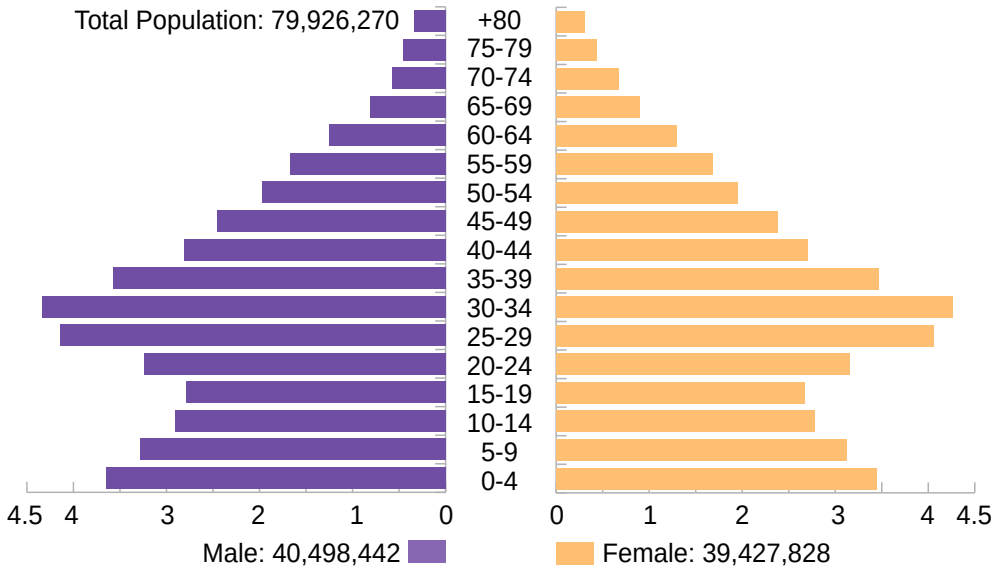
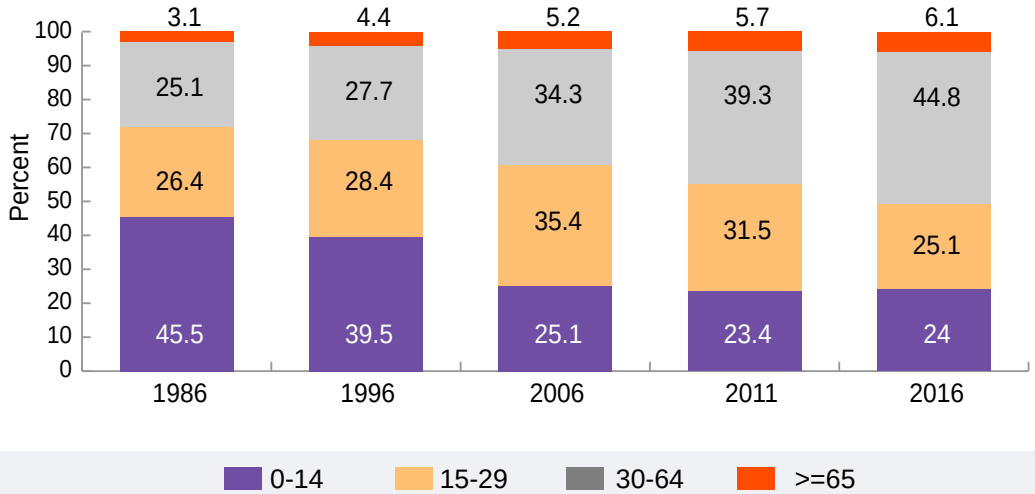


Figure 3. Trend of the age groups, 1986-2016.



The Economic Status

Iran has a mixed economy system, which is experiencing transitions. The economy is heavily reliant on the export of crude oil and gas. During the past two decades, the country has experienced two economic recessions of 2008 and 2012. The negative growth of the agriculture sector and reduced production and export of oil were the main underlying reasons for the 2008 economic recession. In 2012, significant devaluation of the Iranian currency (Rial) against United States dollar (USD), mainly due to unfair imposed international sanctions was the main cause of the recession that resulted in sharp Gross Domestic Product (GDP) growth decline from 3.5% in 2011 to -5% in 2012. In 2013, the economy began to recover and the GDP growth increased to -1.8%. The nuclear deal between Iran and six major powers, so-called the Joint Comprehensive Plan of Action (JCPoA) was signed in 2015, which led the sanctions to be lifted and oil production and export resumed in 2016. The agreement had substantial impact on the economic growth in Iran, which reached 8.3%. The World Bank has predicted 4-4.5% annual economic growth from 2016 to 2021 in Iran. Table 2 presents the trend of selected macro-economic indicators from 2010 to 2016 in Iran.

Table 2. Macro-Economic Indicators in Iran, 2010-2016.

	2010	2011	2012	2013	2014	2015	2016
GDP per capita (PPP)	17,391	18,112	17,411	17,782	18,115	17,869	18,989
Unemployment Rate	13.5	12.3	12.1	10.4	10.6	11	12.4
Inflation Rate (Urban)	13.9	26.4	28.6	32.1	14.8	11.3	6.8
Inflation Rate (Rural)	20	36.5	32.7	36.1	13.7	10.6	7.2

The World Bank report ranked Iran, with the gross per capita national income of 17,400 US$, the 90th country in 2016 in the world, based on the Purchasing Power Parity (PPP- International Dollar), which is categorized as an upper middle-income economy. Among the countries that are listed in the Iran's Development Vision Plan (IDVP), Qatar (140,720 US$), United Arab Emirate (70,570 US$), Kuwait (97,970 US$), Saudi Arabia (54,730 US$), and Turkey (19,360 US$), have better ranks than Iran.

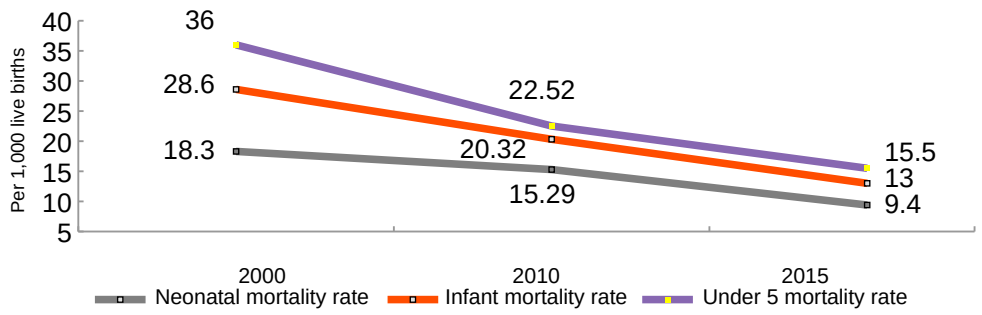
The young population pyramid that has resulted in over-supply to the labor market, has in turn led to significant unemployment rate during the past two decades in Iran. The Statistical Center of Iran (SCI) reported the unemployment rate in 2015, which increased. The World Bank estimated that the unemployment rate will fluctuates around 11% in the coming years in Iran.
The country's inflation rate was above 10% for the period of 2006-2015, which is not satisfactory in comparison with the target countries in the IDVP of Iran. The implementation of anti-recession package resulted in the inflation rate to decline to less than 10% in 2016. The SCI reported the inflation rate 6.8% and 7.2% in urban and rural areas in 2016, respectively. The World Bank projected continuous reduction of the inflation rate in Iran until it reaches about 6% (2017).

The Health Status

Child and Maternal Mortality

In 2015, children under five years mortality rate was 15.5, infant mortality rate (IMR) was 13, and neonatal mortality rate (NMR) was 9.4 per 1,000 live births, all presenting substaintial reduction from 2000 onward in both rural and urban settings in Iran (Figure 4).

Figure 4. Trends in neonatal, infant and under 5 mortality rates, 2000-2015.



In 2016, maternal mortality ratio (MMR) was 19 per 100,000 live births, which, compared with 2010, decreased by 7.4% (Figure 5). The life expectancy at birth (how long on the average a newborn can expect to live, if current death rates do not change), healthy life expectancy, MMR, under-5 mortality, infant mortality and neonatal mortality rates are presented in Table 3.

Table 3.The current status of life expectancy, child mortality rates and maternal mortality ratio in Iran.

Indicator	Year	Amount
Life Expectancy at Birth (year)	2015	74.6
Healthy Life Expectancy at Birth (year)	2015	64.8
Neonatal Mortality Rate (per 1,000 live births)	2016	9.4
Infant Mortality Rate (per 1,000 live births)	2016	13
Under 5 Mortality Rates (per 1,000 live births)	2016	15.5
Maternal Mortality Ratio (per 100,000 live births)	2016	19

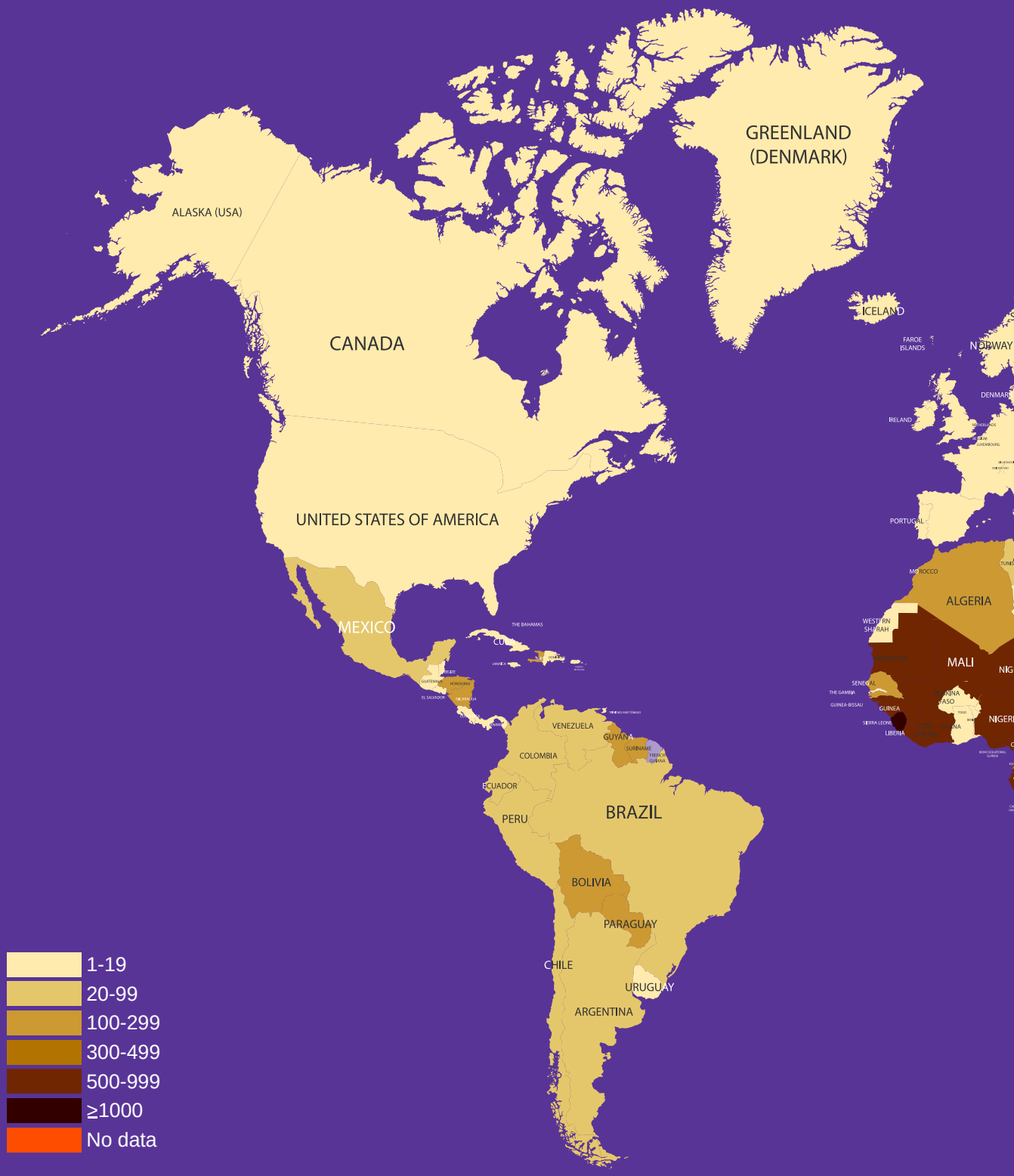
Mortality and burden of diseases

Life expectancy at birth is currently 74.6 years in Iran, which increased by 2.5% from 2000 to 2010, and by 2.6% from 2010 to 2015. In 2016, 79.7% of all adjusted deaths and 74.1% of all DALYs (Disability Adjusted Life Years) were due to Non-Communicable Diseases (NCDs), both of which are higher that the global average (72.2% and 61.3%, repectively) (Figure 6).

Key Points

- Based on the 2016 census, 24,185,133 households lived in the country;
- In total 8.46% of whom comprised of only one member, 20.71% with two members, 28.45% with three members, 27.64% with four members, and 14.74% with five members;
- 17.73% of households lived in the capital city of Tehran;
- 44.8% of the population are in the age group of 30 to 64 years of old.

Figure 5. Maternal mortality ratio per 100,000 live births in 2016.



Golobal Average Rate: **216** per 100,000 live births

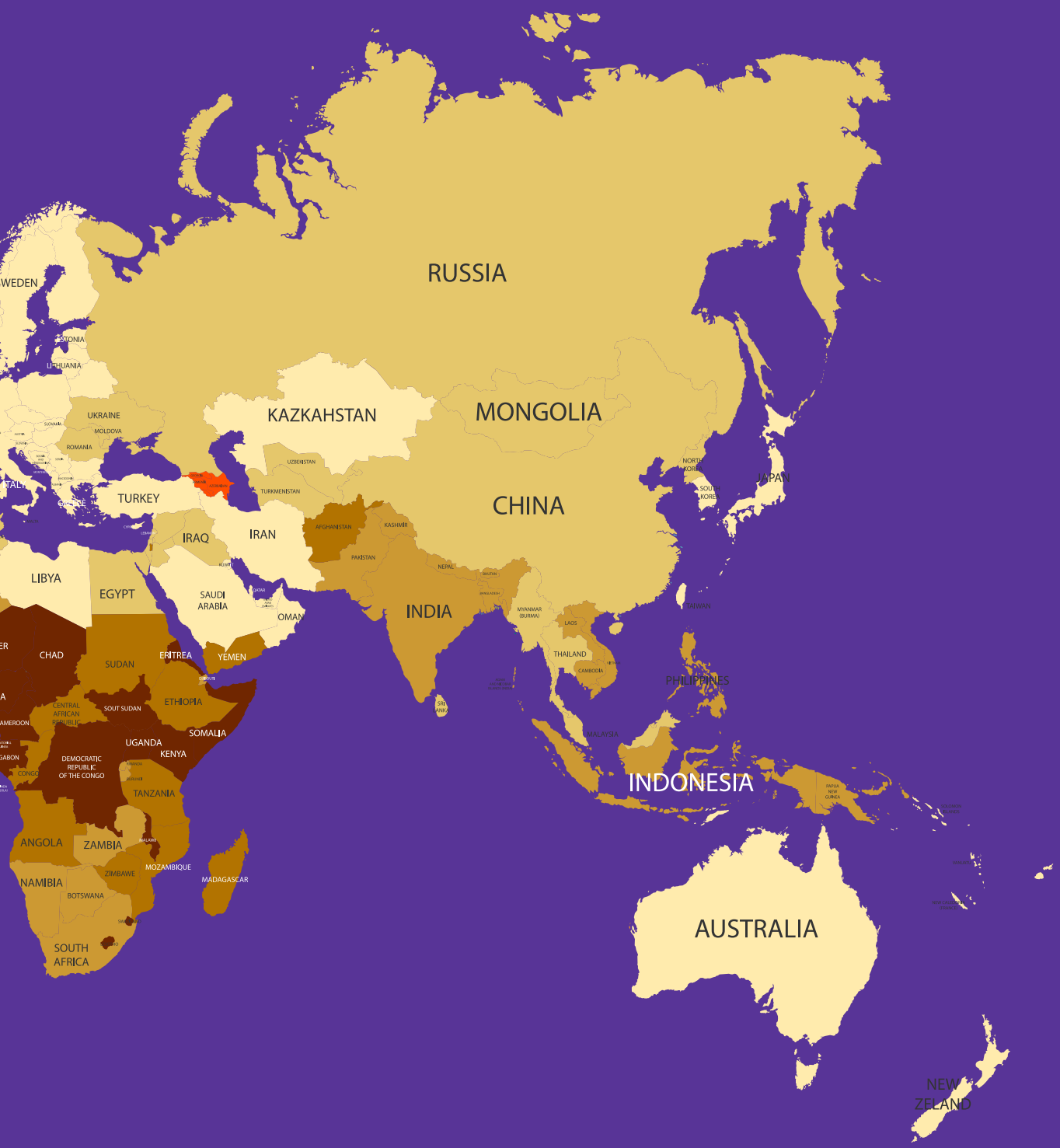
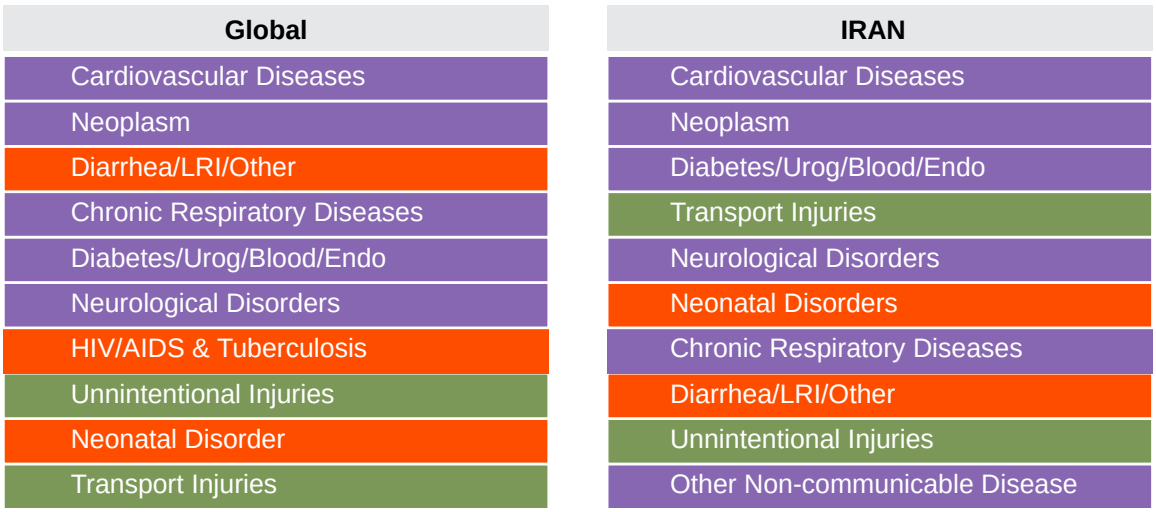

RUSSIA
WEDEN
ESTONIA
LITHUANIA
UKRAINE
MOLDOVA
ROMANIA
KAZKAHSTAN
MONGOLIA
UZBEKISTAN
TURKMENISTAN
TURKEY
CHINA
NORTH KOREA
SOUTH KOREA
JAPAN
IRAQ
IRAN
AFGHANISTAN
KASHMIR
PAKISTAN
NEPAL
BHUTAN
BANGLADESH
LIBYA
EGYPT
SAUDI ARABIA
OMAN
INDIA
MYANMAR (BURMA)
LAOS
TAIWAN
THAILAND
CAMBODIA
PHILIPPINES
CHAD
SUDAN
ERITREA
YEMEN
DJIBOUTI
SRI LANKA
MALAYSIA
CENTRAL AFRICAN REPUBLIC
SOUT SUDAN
ETHIOPIA
SOMALIA
UGANDA
KENYA
DEMOCRATIC REPUBLIC OF THE CONGO
INDONESIA
PAPUA NEW GUINEA
TANZANIA
ANGOLA
ZAMBIA
MALAWI
MOZAMBIQUE
ZIMBAWE
NAMIBIA
MADAGASCAR
BOTSWANA
SOUTH AFRICA
AUSTRALIA
NEW ZELAND

Figure 6. Main cause of DALYs & death in Iran and the world in 2016.



Despite MMR's decreasing trend 2006-2011, the period of 2011-2015 experienced an increasing MMR trend in Iran, due to five major resons: myocardial infarction; cerebrovascular disease; diabetes; road accident injuries; and hypertensive heart diseases.

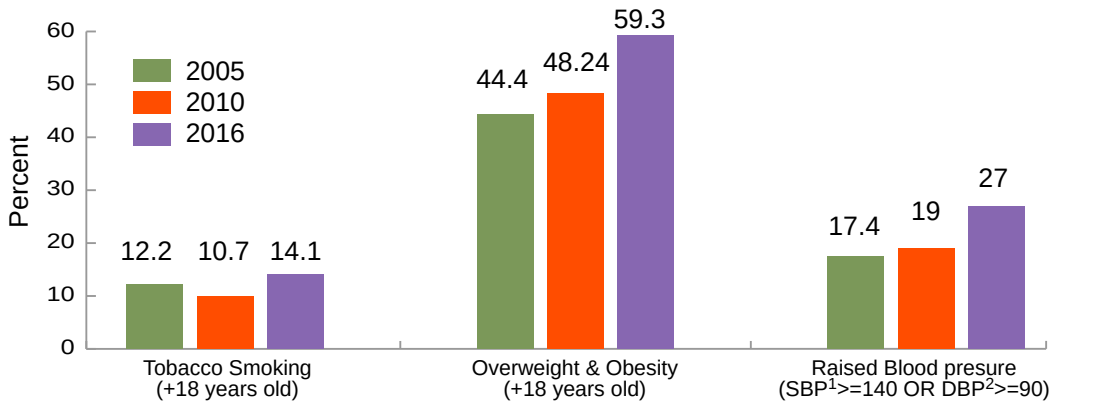
Table 4. The top 10 causes of mortality in Iran, 2006, 2011 & 2015.

Cause of death	Mortality rate per 100,000 population			% Change
	2006	2011	2015	2006 - 2015
Myocardial Infarction	105.8	83.7	85.3	-19.4
Cerebrovascular Diseases	52.6	24.4	42.1	-19.93
Diabetes	7	12.5	21.4	205
Road Accidents	46.6	55.6	19.3	-58
Hypertensive Heart Diseases	15.7	18.3	16.6	5.7
Other Cardiac Diseases	12.6	9.6	13.7	6.5
Other Unspecified Respiratory Diseases	4.9	5.7	9.9	100
Stomach Cancer	11.2	14.6	9.9	-11.6
Pneumonia	7.3	4.3	8.4	15.2
Cancer of Trachea, Bronchus and Lung	7.8	11.5	6.8	-12.1
Total Deaths	438.7	414.6	415.7	-5.2

Non-Communicable Disease Risk factors

Figure 7 shows the prevalence of NCDs' three main risk factors in 2005, 2010, and 2016. In 2016, the prevalence of smoking was 14.1% for all age groups, and the prevalence of obesity and overweight (measured by Body Mass Index (BMI)> 25) was 59.3% among all Iranians over the age of 18, both increased compared to 2005. The prevalence of hypertension among males and females was 25.7% and 28.2%, and the prevalence of high blood sugar among males and females was 11.4% and 12.9%, in 2016, respectively, both showing an increase compared to 2005 and 2010.

Figure 7. Trend of NCDs' risk factors in Iran, 2005, 2010 & 2016.



1 SBP=Systolic Blood Pressure
2 DBP=Dystolic Blood Pressure

Key Points

- Child mortality have experienced a substantial decrease;
- In 2016, Iran's maternal mortality ratio was 19 per 100,000 live births, 7.4% decrease compare to 2010;
- Iran's life expectancy at birth is 74.6 years. Iranian's life expectancy have increased by 2.5% from 2000 to 2010, and by 2.6% from 2010 to 2015;
- In 2016, 79.7% of all deaths and 74.1% of all DALYs were due to NCDs;
- In Iran, MMR has experienced a decreasing trend during 2006 and 2011. However, during the period of 2011 to 2015 it has experienced an increasing trend.

Health Financing

Health systems can be financed through three main sources: (1) public revenues (taxes or social insurance premiums); (2) private payments (Out-of-Pocket expenditures, complementary insurance, etc.), and; (3) external resource mechanisms. Health financing system is a mix of all three above ways. The implementation of recent Health Transformation Plan (HTP) in 2014 led to an increasing public health expenditures, whereas the share of private resources, mostly Out-of-Pocket Payment (OOP), decreased. Currently, in comparison with high-income countries, other upper middle-income countries, the Eastern Mediterranean Countries (EMCs), IDPV's target countries, and the global average, the share of public health expenditures from the total health expenditures (THE) is low in Iran, whereas the share of private expenditures is higher than the average rate of the above countries.

Although HTP was successful in decreasing the OOP, partially through increased public health expenditure, the proportion of public health expenditures (that contains the expenditures of the Iranian Health Insurance Organization (IHIO) and the Social Security Organization (SSO)) is still low in Iran. The increasing share of current health expenditure as a percentage of GDP after the implementation of HTP might indicate the high priority of the health sector. There still remains the challenge of efficiency compared to other upper middle-income countries with similar per capita public health expenditures, whose OOP is less than Iran.

National Health Accounts (NHA) in 2014 and the World Health Organization (WHO) report identified the challenges of Iran's health system in providing sustainable financial resources for health as well as its limited financial capacity for further allocation of resources towards the healthcare system. Thus, increasing the efficiency of health expenditures at all levels is crucial, achieving which requires the following interventions:

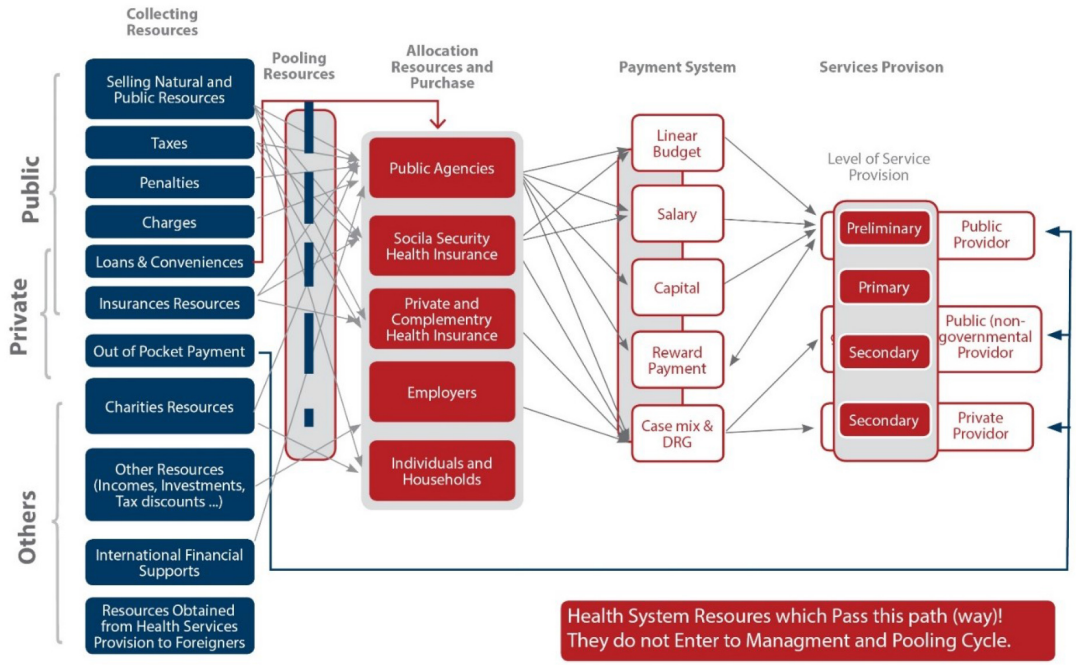
- Design and implementation of an evidence-based Basic Health Benefit Package (BHBP);
- Revision of current clinical practice guidelines and developing new guidelines for management of prevalent diseases;
- Developing the list of essential drugs and replacement of them with the expensive brand drugs with generic medicines;

- Tackling healthcare professionals' dual practice at both private and public sectors to reduce induced demand and bring the health expenditures down ultimately;
- Reforming providers' payment method(s) from a fee-for-service model without a cap to a case-based or global budget model in hospitals, and capitation payment in primary healthcare services;
- Design and implementation of a tailored national referral system to control utilization of healthcare services;
- Procedural integration of multiple health insurance funds and strengthening the stewardship and monitoring role of the Supreme Council of Health Insurance (SCHI).

There are two types of health insurance schame: basic and complementary, in Iran. The four main health insurance funds are: SSO; Armed Force Health Insurance Fund (AFHIF); IHIO; and Imam Khomeini Relief Foundation (IKRF). The IHIO is governed by the SCHI, whose secretariat was transferred from the Ministry of Cooperatives, Labour, and Social Welfare (MoCLSW) to the MoHME in 2017. The statistics showed that in 2015, 47.92% of the population were covered by the IHIO, 44.64% by SSO, 1.53% by IKRF, and 5.91% by the AFHIF. Basic Health Benefit Package (BHBP) is a list of services and goods that are covered by the health insurance funds. The list is constantly under revision to reflect national economic, political and social considerations. The availability of financial resources for insurance funds depends very much on the bargaining power of the MoHME to negotiate with the basic health insurance funds. The importance of developing a BHBP was first emphasized in the Universal Health Insurance Act (UHIA) of 1994, which mandates the MoHME to define the basic eligibility criteria, level of medical services and drugs, i.e. emergency, general and specialist medical services (both outpatient and inpatient), and specified list of services to be covered by the basic health insurance organization as well as the list of extra specialist services to be covered by complementary health insurance funds.

Inefficient insurance coverage is among the main causes of significant OOP in Iran. Although 93% of the population have at least one health insurance coverage package, only 28% of the THE are paid by health insurance organizations/funds. To enjoy a well-functioning payment system for health, the WHO and the scientific literature emphasize on the overall crucial role of strategic purchasing, while the capitation for primary health care services, and Diagnosis-Related Groups (DRGs) and global budget for secondary and tertiary services, as the most efficient methods. The HTP of 2014 has emphasized on the implementation of these payment methods to enhance the efficiency of Iran's healthcare system. Nevetheless, the real practice is proving cumbersome. Figure 8 illustrates the conceptual framework of health financing in Iran.

Figure 8. Conceptual framework of health system financing in Iran



Main indicators of financing health system are shown in Table 5.

Table 5. Health economic indicators of Iran between 2009 to 2015

Cause of death	2009	2010	2011	2012	2013	2014	2015
THE as % of GDP	7	7.1	6.8	6.5	6.1	7.5	8.13
GGHE as % of GDP	2.7	2.4	2.4	2.2	2.4	3.7	4.6
OOP as % of GDP	3.8	4.1	3.8	3.6	2.9	2.9	3.4
THE per Capita (PPP)	1120	1233	1233	1245	1096	1366	1557
GGHE per Capita (PPP)	426	416	433	382	427	680	799
OOP per Capita (PPP)	416	717	691	627	515	529	593
GGHE as % of THE	38	33.7	35.1	33.3	39	49.8	51.3
Social Security Insurance Funds as % of THE	16.8	16	15.1	17.8	19.7	24.1	28
OOP as % of THE	54.8	58.2	56	54.8	47	38.7	35.1
OOP as % of Private Health Expenditure	88.4	87.8	86.3	82.1	77	77.2	77.3

Figures 9 and 10 illustrate a comparison between selected health financing indicators in Iran and selected countries.

Figure 9. THE as percent of GDP, 2007-2014.

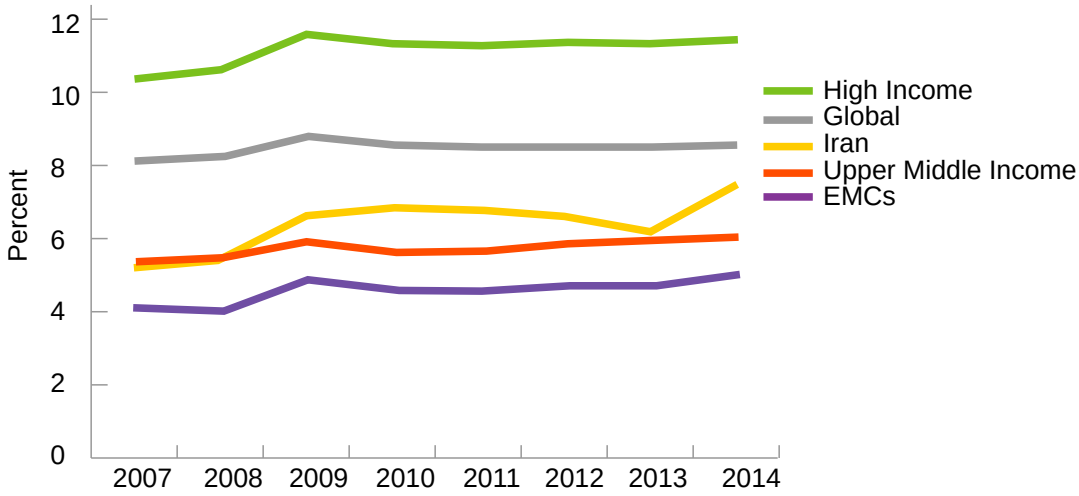
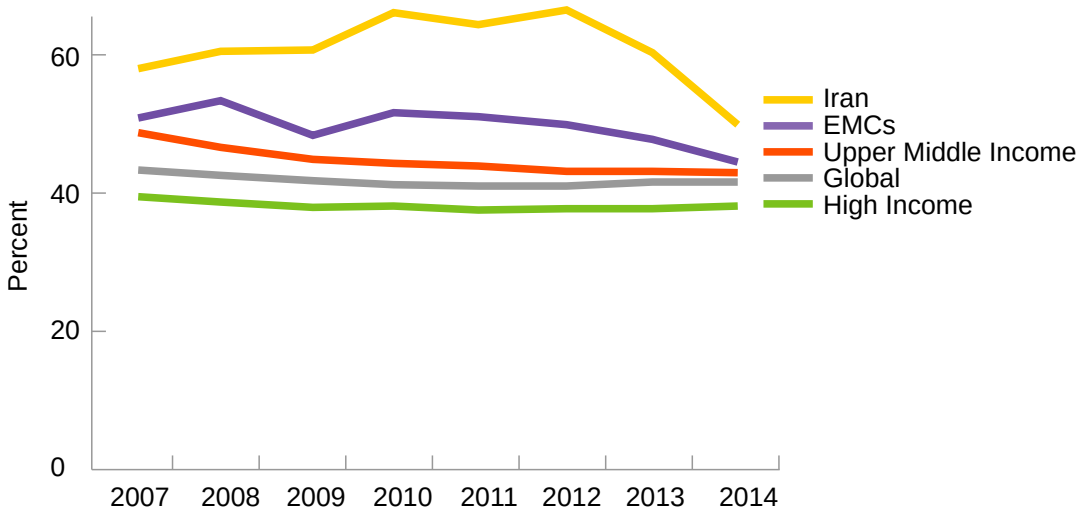


Figure 10. Private Health Expenditure as percent of THE (OOP, Complementary Health Insurance Companies), 2007-2014.



Key Points

- After the implementation of recent Health Transformation Plan (HTP), public health expenditures has increased;
- Currently, in comparison with high-income countries and selected upper middle-income countries, Eastern Mediterranean Countries (EMCs), share of public health expenditures from the total health expenditures (THE) is low, while the share of private expenditures is higher than average rate of the above countries in Iran;
- HTP was successful in decreasing the OOP through increased public health expenditure, which is still low;
- To increase the sustainability of healthcare resources, it is crucial to identify and address the sources of inefficiency must be identified;
- For instance, dual practice needs to be addressed to reduce induced demand;
- Changing providers' payment method(s), shifting from a fee-for-service model without a cap to a case-based model or global budget model for hospitals and capitation model for primary healthcare services, are recommended to enhance efficiency;
- Designing and implementing a national referral system to control utilization of healthcare services is the key;
- Procedural integration of health insurance funds and strengthening stewardship and monitoring role of the Supreme Council for Health Insurance (SCHI) are essential.

Chapter Two

Health Transformation Plan

(The most important interventions following implementation of Health Transformation Plan in order to achieve Universal Health Coverage)

Health Transformation Plan

Introduction

Despite several structural and organizational reforms in the course of last few decades, the health system in Iran has been facing fundamental challenges in access to needed healthcare services with fair financial contributions of households. Inadequate political support and insufficient budget (GDP per capita for health) have been two fundamental reasons behind such chronic shortages in the country.

Accordingly, the 11th government (2013-2017) prioritized health by declaring health as its top agenda and launched HTP in May 2014. HTP key aim was to reach UHC through five main reforms as the following. Initially, HTP had one primary and three subsequent main phases. Lack of medicines supply due to the unfair international sanctions led the MoHME to bridge the shortage of essential medicines through substantial price reduction in early 2014. The HTP formulated a nationwide strategy to respond to people's concerns for improving health, greater satisfaction and enhanced financial protection. Multiple additional funding streams were envisioned to ensure adequate and meaningful implementation of HTP.

HTP was structured in gradual phases, each consisted of a series of interlinked reform packages and a set of interventions for improving various aspects of health financing, service delivery, and their overall governance. In summary, the objectives of HTP were:

1. Sustainable financing of the health sector;
2. Financial risk protection against health expenditures;
3. Increasing equitable access to high quality healthcare services;
4. Improving the performance of service provision system;
5. Improving health through extra-health sector measures;
6. Increasing people's satisfaction as the ultimate goal.

To achieve these objectives, series of measures were implemented as defined benefit packages in the areas of curative services, public health and medicine.

HTP's Main Packages in Line with Universal Health Coverage (UHC)

HTP's overall goal is to achieve UHC. In this section, HTP's intervention packages that are in line with UHC will be described in more details (Table 6). Obviously, there are other supportive or complementary measures and interventions that are not covered in this report.

Table 6. HTP's packages in line with UHC in Iran at the begining of the plan

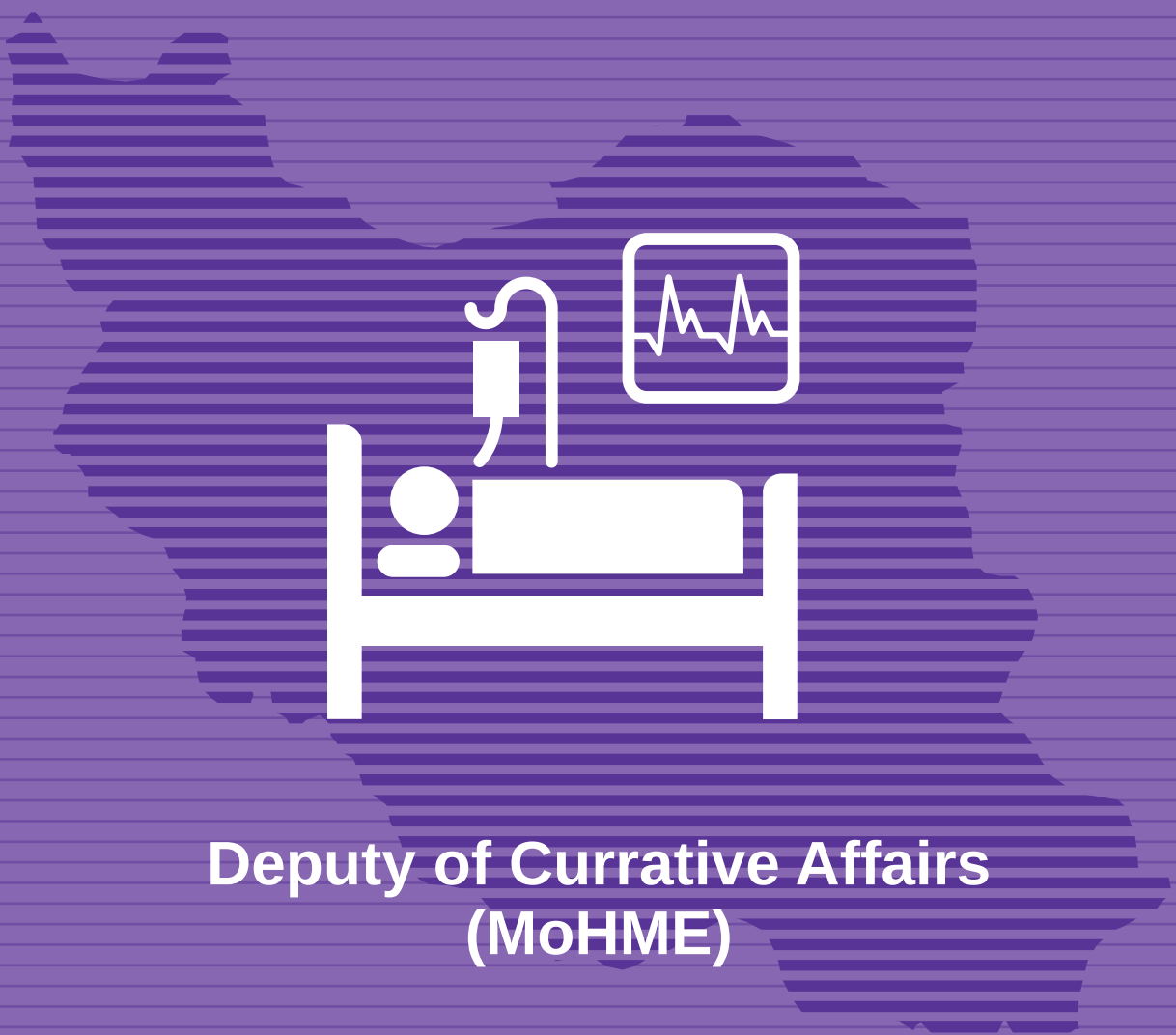
	Implemented package	Responsible organization	Impact on UHC
1	Insuring people without the basic health insurance (the "Basic Health Insurance Package")	IHIO, Deputy of Curative Affairs- (MoHME)	Financial risk protection
2	Reducing the OOP for inpatient services within the MoHME hospitals	Deputy of Curative Affairs	Financial risk protection
3	Quality improvment of outpatient visits within the MoHME hospitals & expansion of special clinics	Deputy of Curative Affairs	Increased coverage rate
4	Employing specialist physicians in deprived areas (the "Stay in Deprived Areas Package")	Deputy of Curative Affairs	Increased coverage rate
5	Contracting out specialist physicians to stay full-time in the MoHME hospitals (the "Resident Specialist Package")	Deputy of Curative Affairs	Increased coverage rate
6	Free of charge natural vaginal delivery at the point of service provision	Deputy of Curative Affairs	Financial risk protection
7	Expansion of emergency services and air ambulance ("Air Ambulance Packages")	Deputy of Curative Affairs	Financial risk protection
8	Improving hotelling services within the MoHME hospitals (the "Hotelling Package")	Deputy of Curative Affairs	Increased coverage rate
9	Expanding basic health insurance package to villagers, nomadic populations, and residence of cities with <20,000 population (expansion of rural family physician program)	IHIO, Deputy of Public Health- (MoHME)	Financial risk protection
10	Scaling up primary healthcare services (new advanced health services) to marginalized population and residents of cities with 20,000-50,000 population (revision and coordination of service provision methods)	Deputy of Public Health	Increased coverage rate
11	Completion, expansion, and revision of family physician (FP) program and referral system in urban areas across Fars and Mazandaran provinces	Deputy of Public Health	Increased coverage rate
12	The implementation of electronic referral system and SIB platform	Deputy of Public Health	Increased coverage rate
13	Promoting domestic pharmaceutical industry, increasing the market share of domestic produced medicines, and controlling the price of medicines and medical equipment	Food and Drug Organization (FDO)- (MoHME)	Financial risk protection

Key Points

- The main goal of all measures and interventions in HTP is to achieve UHC;

- The HTP comprises of:
  1. Sustainable financing of health sector;
  2. Financial risk protection against health expenditures;
  3. Increasing equitable access to high quality healthcare services;
  4. Improving the performance of service provision system;
  5. Improving health through extra-health sector measures;
  6. Increasing people's satisfaction as the ultimate goal.

  To meet the HTP objectives, series of main measures were implemented in the areas of curative services, public health and medicine and in the format of defined benefit packages.



Deputy of Currative Affairs (MoHME)

1 Insuring people without the basic health insurance (the "Basic Health Insurance Package")

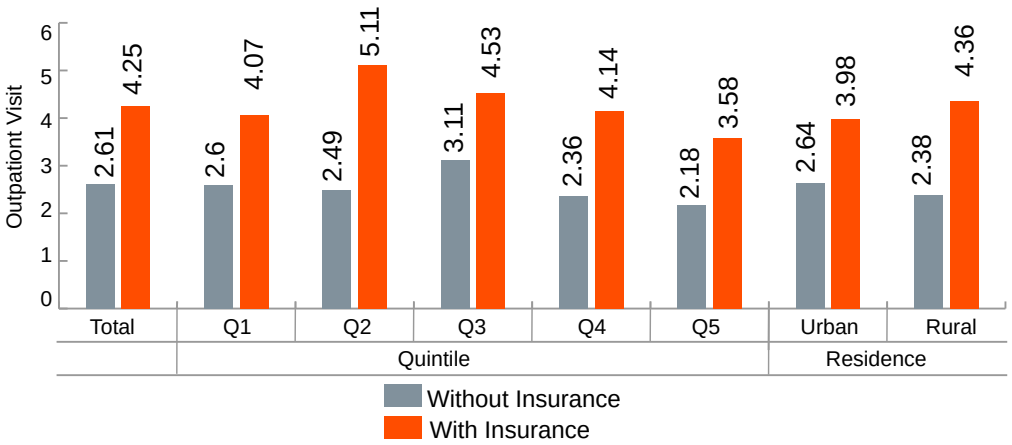
Upstream policies

Universal Health Insurance ACT (UHIA)
In 1994, 20 years prior to the implementation of HTP, the Parliament approved the Universal Health Insurance Act (UHIA). Article four of the UHIA mandated the government to provide health insurance for all individuals who want to be insured whithin the period of maximum five years, while prioritizing the poor rural citizens. The Universal Health Insurance Coverage (UHIC) did not materialize in practice until the recent HTP in 2014.

The Supreme Leader's mega health policies
In April 2014 (one month before the implementation of HTP), series of mega policies were declared by the Supreme Leader. Article nine of the mega policies emphasizes on expansion of universal basic health insurance; full coverage of all citizens' basic health needs; and reducing patients' co-payments in a way that who ever falls sick, her/his only concern will recovering from sickness, and nothing else.

Before the HTP implementation
The National Institute of Health Research (NIHR) was done Demographic Health Survey revealed that an overall 16.8% of the population were uninsured in 2010, while the proportion was above 25% in some provinces i.e. Tehran, Qom, and Alborz. Financial accessibility is an important determinant of access to health services among different income groups. In other words, access to health services without financial affordability equals to lack of availability of services. Due to unfair sanctions and its consequences, citizens' affordability declined from 2011 to 2013, which in turn led to decreasing utilization of healthcare services. Figure 11 presents the utilization of healthcare services among insured and uninsured citizens in 2015, demonstrating lower levels of utilization among uninsured.

Figure 11. Number of visiting by physicians by basic insurance status in 2015.

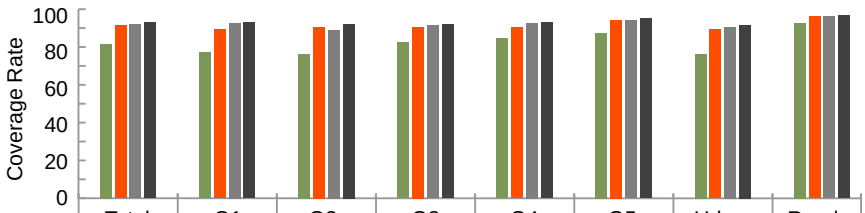


Insurance is an important indicator of equity. Improving equitable utilization of healthcare services depends on people's financial ability across all socioeconomic groups to utilize services, while ensuring that no one is denied to receive any needed service due to not being able to pay, as highlighted in the mega health policies of the Supreme Leader. Prior to HTP, most uninsured population were among vulnerable groups without a permanent job, whom mostly lived in rural, deprived, and/or marginalized areas. The goal of expansion of health insurance coverage was not only providing the uninsured people with the insurance log-book. Rather, the HTP aimed to enhance the value of health insurance log-book as a means for increasing availability and protect citizens against financial hardship.

Expansion of insurance coverage (from the beginning of HTP in May 2014 until March 2018)

The implementation of the the UHIA by the 11th (2013-2017) and 12th (2017-2021) governments resulted in 8,807,663 uninsured individuals to be insured. Figure 12 illustrates the status of health insurance coverage before and after the HTP implementation based on the household surveys.

Figure 12. Insurance coverage before and after the HTP implementation based on the household surveys.



	Total	Q1	Q2	Q3	Q4	Q5	Urban	Rural
		Quintile					Residence	
Befor 2010	81.5	77	76.4	82.4	84.5	87.4	76.4	92.8
Beginning of the plan	91.3	89.3	90.7	90.7	90.4	94.3	89.4	96.2
January-September 2015 (as the Midpoint)	92.03	92.6	88.9	91.5	92.7	93.9	90.5	96.2
Last available data: March 2016	93.1	92.9	92.2	91.9	93	95.1	91.7	96.7

Key Points

- In 2015, 47.92% of the population were covered by the IHIO, 44.64% by the SSO, 1.53% by the IKRF, and 5.91% by the IFIF;
- Although 93% of the population have health insurance coverage, only 28% of the total health expenditures are paid by health insurance organizations/funds.

2 Reducing the OOP for inpatient services within the MoHEME hospitals

Upstream policies

Clause 29 of the constitution of the I.R.Iran

Article 29 of the constitution recognizes access to social security and needed healthcare and medical services as a universal entitlement for all citizens, i.e. retired, unemployed, elderly, people with disability, and vulnerable. The law mandates the government to provide the above-mentioned entitlements for all citizens through public income and societal participation.

The Supreme Leader's mega health policies

Article 9.1 and 9.2 emphasizes on expansion of universal basic health insurance; full coverage of all citizens' basic curative needs; and reducing patients' co-payments in a way that whoever falls sick, her/his only concern will recovering from sickness, and nothing else.

Article 9.4 mandates the MoHME to develop comprehensive benefit packages at basic and complementary levels and purchase the packages through health insurance system. The policy also emphasizes on good governance and effective monitoring of the policy implementation to avoid induce demand and unnecessary measures during examination, diagnosis and treatment cycle.

Fifth National Development Plan of I.R. Iran

Article 34

b) to achieve equity in health and reduce OOP to a maximum 30% of health expenditures, equitable access to healthcare services, avoid catastrophic health expenditures, medicine coverage, curing high cost and hard to cure diseases, reduce reliance of healthcare facilities on the incomes directly earned through selling services, and help training, and sustainable provision of required human resource. In addition to the MoHME's regular funds, 10% of the total required funds to be generated from the targeted subsidies, which will be allocated to the MoHME. The government must estimate the required funds annually and allocate them to the MoHME accordingly.

Before the HTP implementation

Before the implementation of HTP, the OOP for outpatient services was high, which in some cases it increased to 95%. Some main sources of high OOP prior to HTP were referring patients to outside of the hospitals to buy medicine, supplies, and perform imaging services, whose costs were paid by the patient and therefore increased the OOP. In other words, the hidden costs that were not included in the bills were imposed to the patients, which led to substantial catastrophic healthcare expenditure and increasing financial risk. The HTP included a package to reduce cost of inpatient services and bring OOP down by providing all required services whithin the MoHME hospitals.

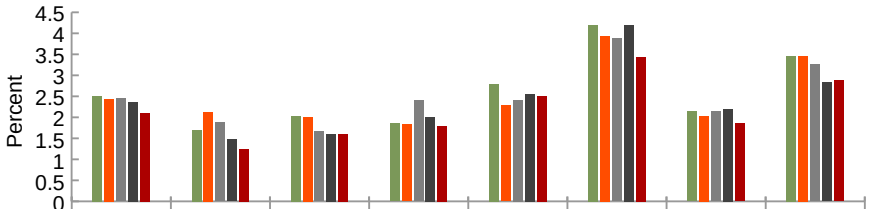
From the beginning of HTP until March 2018

A financial protection package was developed to protect patients, particulalrly vulnerable groups, against catastrophic health expenditures and OOP within the MoHME hospitals. The package also aimed to eliminate referrals for imaging, ancillary health services, medicines and medical devices to outside of hospitals.

Impact on OOP and financial protection at the household level

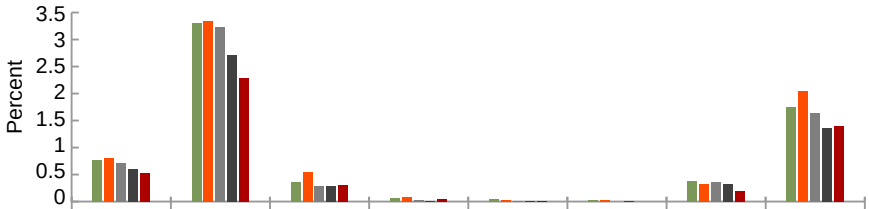
The implementation of the package led to decreased OOP for inpatient services within MoHME hospitals to 6% for urban residents and 3% for villagers, nomadic populations, and residence of cities with < 20,000 population. By adding the costs of medicine and other supplies, the figures will increase to 10 and 5%, respectively. In total, until March 2018, 32,200,000 inpatient cases whithin the MoHME hospitals have been financially protected. At the households' level, the OOP reduced from about 47% in 2013 to about 35.2% in 2016. Figure 13 presents the catastrophic healthcare expenditure (CHE) indicator and Figure 14 illustrates the impoverished costs.

Figure 13. Incidence of catastrophic health expenditure, 2013-2017.



	Total	Quintile					Residence	
		Q1	Q2	Q3	Q4	Q5	Urban	Rural
2013	2.51	1.70	2.04	1.85	2.80	4.19	2.14	3.46
2014	2.43	2.12	2	1.83	2.28	3.94	2.04	3.46
2015	2.45	1.88	1.66	2.40	2.41	3.88	2.14	3.26
2016	2.37	1.47	1.61	2.01	2.56	4.19	2.20	2.83
2017	2.11	1.24	1.61	1.79	2.50	3.43	1.85	2.88

Figure 14. Incidence of impoverished costs, 2013- 2017.



	Total	Quintile					Residence	
		Q1	Q2	Q3	Q4	Q5	Urban	Rural
2013	0.77	3.31	0.37	0.07	0.04	0.03	0.38	1.75
2014	0.80	3.35	0.55	0.08	0.02	0.02	0.33	2.04
2015	0.71	3.24	0.28	0.02	0.01	0.00	0.36	1.64
2016	0.60	2.71	0.28	0.01	0.01	0.01	0.33	1.36
2017	0.53	2.28	0.31	0.05	0.01	0.00	0.20	1.49

The HTP interventions have directed to 10% OOP reduction for both outpatient and inpatient services. Nevertheless, achieving 100% financial protection requires further 20% OOP reduction to happen. The hospitalization trend

shows that access to inpatient services was almost 98% for those in need of hospitalization services (Figure 15).

Figure 15. Percentage of received inpatient services (2015).

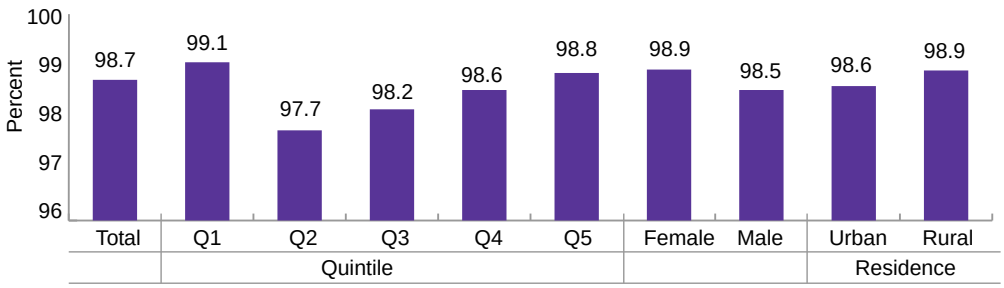


Table 7 shows the utilization of inpatient services, which is 0.118 per capita per year in Iran.

Table 7. Inpatient per capita, 2014-2016.

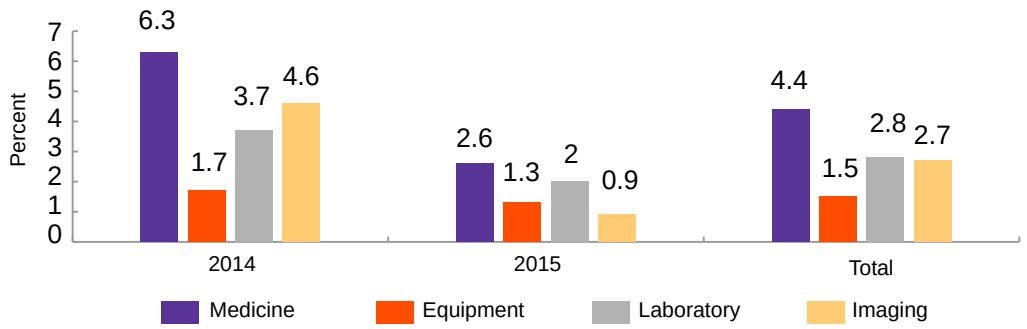
	2014	2015	2016
MoHME Hospitals	0.090	0.098	0.100
Others (Public, Private, Charity)	0.017	0.018	0.018
Total	0.107	0.116	0.118

Before the HTP implementation, most inpatinet services were partially covered by the insurance organizations, if covered at all. In addition, due to flawed system, medical equipment and supplies were sold at inflated prices. HTP led to increased number of medicines available at the hospitals from 340 to 750. The availability of medical supplies also increased, while patintes were not forced to buy the supplies and medical equipment from the outside of hospitals. For imaging services, those services that were not available within the hospitals, were provided through Hospital's Referral Chain (HRC), without any transportation costs.

HTP made the role and responsibility of health insurance organizations more transparent and reduced the financial transactions between the patients and service providers, which eventually led the OOP to reduce. The FDO strengthened its procurement and monitoring capacity and the MoHME trained and enhanced its supervisory role through the Medical Universities to ensure through implementation

of the HTP across all healthcare facilities nationwide. The NIHR became responsible to measure and monitor the outcomes of HTP. Figure 16 presents the proportion of patients' referral to outside of hospitals for different services, which declined for all types of items and services from 2014 to 2015, with the highest decline for medicines category.

Figure 16. Percentage of patients' referral to outside of hospitals within the MoHME hospitals, 2014, 2015.



Key Points

- Financial protection package at the MoHME hospitals was developed to protect patients against CHEs, particularly among vulnerable groups;
- Its main goal was to reduce OOP within the MoHME hospitals. Other goals were to eliminate referrals to outside of hospitals to do imaging, ancillary health services, and acquire medicines and medical devices;
- The HTP resulted in OOP for inpatient services within the MoHME hospitals to reduce to 6% for urban and to 3% for villagers, nomadic populations, and residence of cities with < 20,000 population, while by adding the costs of medicine and other supplies, the figures will increase to 10 and 5%, respectively;
- HTP made economic transactions between patients and providers, as well as the role of health insurance organizations more transparent;
- Referral to outside of hospitals for all types of items and services declined after the HTP.

3 Quality improvment of outpatient visits within the MoHME hospitals & expansion of special clinics

Upstream policies

Fifth National Development Plan of the I.R. Iran

Article 34

b) to achieve equity in health, reduce OOP to a maximum 30% of health expenditure, achieve equitable access to healthcare services, to avoid catastrophic health expenditures, expand medicine coverage, treat hard to cure diseases, reduce healthcare centers' reliance on their specific incomes generated from service provision, and help train and sustainable provision of human resources, 10% of the resources released through the implementation of "Targeted Subsidies Law" must be allocated to the health system.

The Supreme Leader's mega health policies

7-3- Provision of healthcare services by public and private sectors.

Before the HTP implementation

Prior to HTP, the OOP was high because financial support was not enough for outpatient services; while access and utilization of services at the public sector reduced due to physicians' reluctance, some of whom with dual practice encouraged patients to receive outpatient services at the private sector, mostly at their offices. The private sector provided about 80% of outpatient services, whereas 80% of inpatient services was provided by the public sector. In addition, there were not adequate clinics whithin the MoHME hospitals to respond to the need for quality outpatient services within the hospitals. Therefore, the public hospitals were not usually the point of care for patients seeking outpatient services at the public sector.

From the beginning of HTP until March 2018

The implamentation of outpatient visits within hospital led to improving quality of outpatient services through avoiding repeated visits and unnecessary paraclinic tests, reducing unnecessary hospitalization and surgeries, equipping special and subspecial clinics, and standardization of patients physical examination, which eventually improved financial protection. Figure 17 shows the decline of OOP attributed to outpatient services after the HTP implementation.

Figure 17. The OOP attributed to outpatient services, 2007-2017.

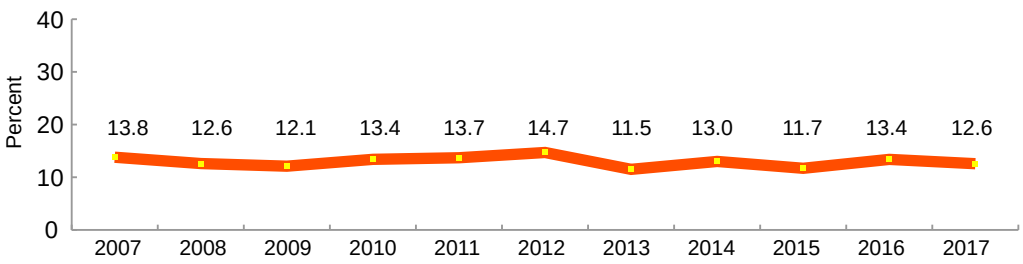


Figure 18 demonstrates that despite the assumption that increased access to outpatient services through HTP might had led to overutilization due to induced demand, the trend of outpatient services utilization showed no meaningful change.

Figure 18. Trend of outpatient services utilization, 2000, 2014 and 2015.

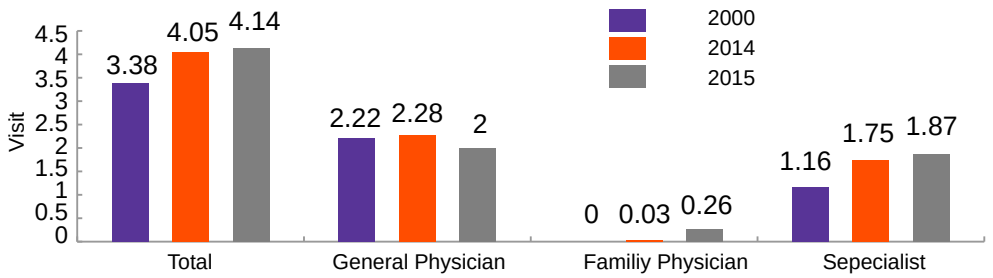


Figure 19 presents the percentage of provided outpatient services, which shows no utilization inequality and insignificant variation among different income groups as well as between urban and rural areas residents.

Figure 19. Percentage of received outpatient services (2015).

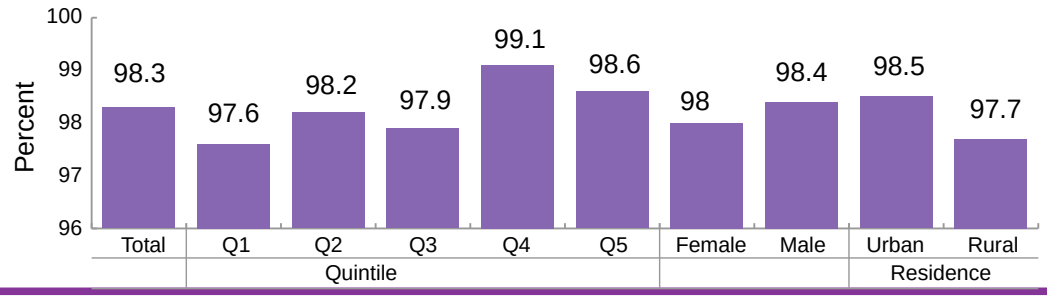
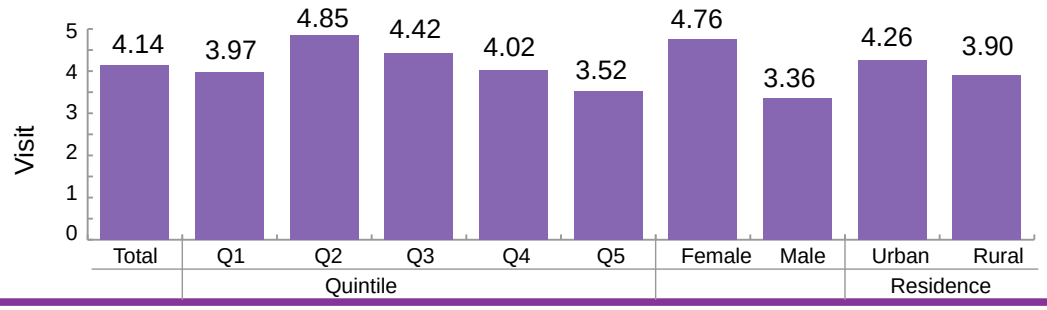


Figure 20 shows per capita utilization of outpatient services among different income and equity levels in 2015, revealing insignificant inquality among target groups.

Figure 20. Per capita utilization of outpatient services (2015).



The trend of healthcare services utilization shows that outpatient consultations have increased by 1.8 times for specialist physicians and 1.2 times for general practitioners during the past 12 years, which reveals the tendency towards specialists' consultations in Iran. Until March 2018, 158 million consultations were performed by 14,000 specialists and sub-specialists working in 658 specialized clinics across 385 cities. The low (subsidised) tariffs aimed to increase access of vulnerable groups and deprived populations to healthcare services. About 250 new polyclinics were built, which created 6440 new offices for physicians to visit patients. In addition, specialized clinics within 128 deprived cities were built.

4 Employing specialist physicians in deprived areas (the "Stay in Deprived Areas Package")

Upstream policies

The MoHME's organizational chart and tasks Act of 1988

6- Planning for appropriate and equitable distribution of human resources for health and other educational facilities by emphasizing on public health priorities and serving the deprived areas.

The Supreme Leader's mega policies for health

8- Increasing and improving quality and safety of comprehensive and integrated healthcare services by emphasizing on equity and accountability, clear informing, effectiveness, efficacy of healthcare netwroks, and consistent with rationing and referral system.

10-4- Directing the subsidies towards the health system and spending them to improve equity and health promotion, particularly in deprived areas and for the poor.

Fifth National Development Plan of I.R. of Iran

Article 36

a) Those physicians working in less developed areas for at least two years, will be eligible to receive extra advantages in addition to those that are mentioned in the law. The MoHME will nominate those physicians who will be confirmed by the MoHME for Special Assistance.

The Islamic Revolution has the mission and responsibility to serve deprived and poor people and expand universal equity. HTP consisted of a package to improve the quality of healthcare services in less developed areas, increase access to healthcare services at secondary and tertiary levels, and increase physicians' stay in marginalized regions. The package envisioned to enhance physicians' full-time stay within remote areas by incentivizing them through pay-for-performance payment method.

Before the HTP implementation

Prior to HTP, all specialist doctors were required to serve in deprived areas for a defined time period after their graduation. In practice and in the absence of more incentives, most doctors left the region immediately after their compulsory services came to an end, leaving most remote areas being underserved or served by temporarily-working physicians.

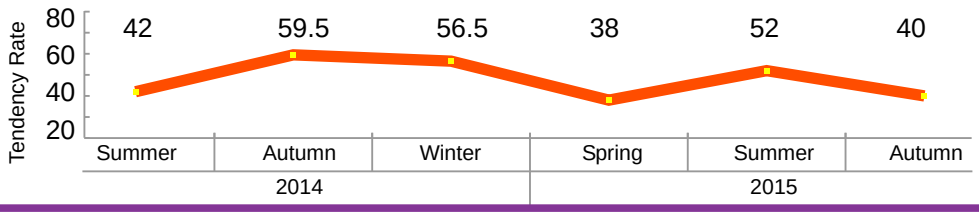
From the beginning of HTP until March 2018

HTP's "Stay in Deprived Areas Package" provided further incentives to increase physicians' stay in deprived areas, including general practitioners and specialists working fulltime at the hospitals and emergency departments in the deprived areas. The payment method was also revised and the deprived areas were categorized into four levels on the basis of extent of underdevelopment, climate status, distance from the border, demoghraphic factors, and number and performance of healthcare centers and surgeries in the area. Further, the package increased financial protection and aimed to decrease the probability of not seeking treatment or leaving healthcare services due to access issues or unaffordable costs. The latter was pursued through establishing specialized clinics within or attached public hospitals as substitutes to receiving care at the private sector that was expensive and would have caused OOP.

This package led to 42% increase in voluntary stay of physicians in deprived areas after finishing their compulsory servives. The plan is expected to complement the recent program of the MoHME to intake indigenous medial students for the medical schools in deprived areas, whom must stay and practice in their regions for a long-term (Figure 21). The package resulted in:

- Covering 309 deprived and under developed cities/towns and 342 active hospitals across these areas;
- Three folds increase in the number of physicians in deprived areas, including 6150 physicians currently practicing in deprived areas as fulltime providers (1435 general practitioners and 4715 specialists, sub-specialists and fellowships), in comparison to 2200 phycisian before the HTP;
- Increasing access to secondary and tertiary services in deprived areas, three folds increase in outpatient services and 65% increase in inpatient services;
- Eradication of informal payments in deprived areas.

Figure 21. Physicians' tendency to stay in deprivied areas, 2014 and 2015.



Delayed payments may have some undesirable impact on the HTP's goal to reduce informal payments. Continous monitoring of physicians' satisfaction who practice in deprived areas, identifying the reasons for dissatisfaction, and having plans to address them are critical to increase doctors' stay in deprived areas. Attractive financial incentives have significant impact on physicians' decisions to serve in deprived areas that suffer from geographical, economic, social and cultural deprivations. In addition, poor housing conditions, family welfare aspects, and medical equipment shortages have that led to substantial differences between deprived areas and the large and affluent cities. HTP created meaningful rise in doctors' payment and incentivized them to practice in hard to reach and remote areas. Punctual payment is also crucial to encourage physicians to stay longer and reduce or eliminate the informal payments, which was one of the main reasons behind substantial OOP in many deprived regions.

Key Points

- Covering 309 deprived and under developed cities/towns and 342 active hospitals in these areas;
- Increasing the number of physicians in deprived areas by three times, including: 6150 physicians (1435 general practitioners and 4715 specialists, sub-specialists and fellowships), versus 2200 physician before HTP;
- Increasing access to secondary and tertiary services in deprived areas, three folds increase in outpatient services and 65% increase in inpatient services;
- Eradication of informal payments in deprived areas.

5 Contracting out specialist physicians to stay full-time in hospitals (the "Resident Specialist Package")

Upstream Policies

The MoHME's organizational chart and tasks Act of 1988

6- Planning for appropriate and equitable distribution of human resources and other educational facilities by emphasizing on public health priorities and serving deprived areas.

Fifth National Development Plan of the I.R. Iran

Article 36

a) Those physicians working in less developed areas for at least two years, will be eligible to receive extra advantages in addition to those that are mentioned in the law. The MoHME will nominate those physicians who will be confirmed by the MoHME for Special Assistance.

b) Timely provision of curative services in hospitals and patients being served by specialists at emergency departments as quick as possible.

Before the HTP implementation

Before HTP, access to specialist doctors was almost impossible during out-of-office hours (i.e. evenings, nights and holidays) in public hospitals as well as many private hospitals. In teaching public hospitals, most diagnostic and curative procedures were conducted by medical students, interns and residents. Academic staff (doctors, Instructors, assistants, associate or full professors) were not fully present during all stages of care, which contributed to decreasing levels of patients' satisfaction.

From the beginning of HTP until March 2018

HTP mandated Medical Universities to employ specialists and sub-specialists for 24 hours a day/7 days a week service provision in hospitals. The package aims to increase quality of healthcare and improve access to healthcare services during out-of-office hours and holidays. Timely reception of patients, eliminating waiting time for surgical and emergency procedures, fast process of emergency patients within emergency departments, 24-hours a day/7 days a week accountability of the MoHME-affiliated hospitals, active operating room during evening and night shifts, were among the main features of this package, which also aimed to reduce medical errors and increase patients' safety.

HTP mandated all hospitals with 64 to 96 beds to recruit a permanent and fulltime physician, with the speciality of internal medicine, general surgery or emergency medicine for hospitals with 96 to 256 active beds, the presence of 2 to 4 permanent physicians became mandatory, while hospitals with more than 256 active beds, the number is 4 to 6 permanent physicians. As a result, 6650 specialists and sub-specialists in 19 disciplines are serving the population in 412 public hospitals across 212 cities, 860 of whom work as permanent specialists within healthcare centers. The intervention led more patients to seek care at the emergency departments, where most patients will be discharched less than six hours, while patients' satisfaction has also increased.

Key Points

- Timely admission, reducing waiting time for surgical and emergency procedures, fast assignment of emergency patients in emergency department, timely and 24-hour accountability in MoHME hospitals, and activation of the operating room during evening and night shifts are the main goal of the “resident specialist package”.

6 Free of charge natural vaginal delivery at the point of service provision

Upstream policies

The Supreme Leader's mega policies for health

Article 1

Preventing interventions that aim to reduce fertility rate and promoting measures to stable population size based on Islamic codes, strategic requirements of Iran, demographic studies, and continuous monitoring of the population.

Article 2

(1) Cultural capacity building to achieve desired population growth and informing policy-makers about negative consequences of declined fertility rate, particularly lower than replacement rate;
(2) Developing policies, plans, regulations, and laws to support and incentivize the population to achieve desired fertility rate, and suspending policies, plans and regulations that incentivize lower fertility rate.

Article 3

(1) Developing a comprehensive plan to produce and implement various educational, research, and informative programs in social media, particularly the national media, in order to promote the benefits of childbearing and informing citizens about the negative aspects of declined fertility rate, on the basis of the strategic requirements of the country;
(2) Explaining demographic theories of Islam and promoting them by clergies to inform policy-makers and people about the benefits of childbearing and increased fertility rate;
(3) Development and implementation of promotive, educational, research, and medical services by the MoHME to revise the societal views about demographic characteristics of Iran;
(8) Revising all policies and development programs as well as laws and regulations, through appropriate revision of laws and regulations about family planning;
(9) Development and enactment of smart programs to promote fertility.

The Supreme Leader's mega policies on population

1. Promoting dynamic, mature and youth population through increasing the fertility level to more than the replacement rate.

Before the HTP implementation

In line with the Sustainable Development Goals (SDGs), improving mothers and child health is among the international commitments of the I.R. Iran. This is an obligation that the MoHME is trying to achieve through the implementation of national programs such as 'improving mothers' health through pregnancy health' and 'reducing child mortality rate'. Reducing child and maternal mortality associated with the consequences of delivery would require to reduce Cesarian Section (C/S) rate, those without indication, and promoting natural vaginal delivery (NVD).

From the beginning of HTP until March 2018

In line with new demographic policies to increase the fertility rate, this package intended to improve one of the most important health indicators to reduce C-Section rate in Iran, which was considerably higher than the global average. Therefore, all hospitals were mandated to reduce C-Section rate. The package aims to motivate pregnant women for NVD and increase financial protection through the interventions listed below:

- Increase the quality of inpatient services and remove users' co-payment for natural delivery, aiming to incentivize mothers to select NVD;
- Paying bonus, in addition to normal tariffs, to incentivize providers to conduct NVD within the MoHME hospitals;
- Developing real tariffs for NVD in line with HTP and national strategies;
- Paying additional fees to anaesthesiologists to motivate local anaesthesia during NVD;
- Providing required equipment for gynaecologists and licensed midwives to conduct NVD within the MoHME hospitals;
- Allocating special funds to the MoHME hospitals to optimize the physical space of delivery wards, build private delivery rooms to respect mothers' privacy based on cultural values and codes, and provide husbands and/or other companions with the opportunity to be present during labour to support mothers, all aiming to make the process of NVD as pleasant as possible;
- Promoting NVD through education, e.g. preparation classes for women and enabling providers.

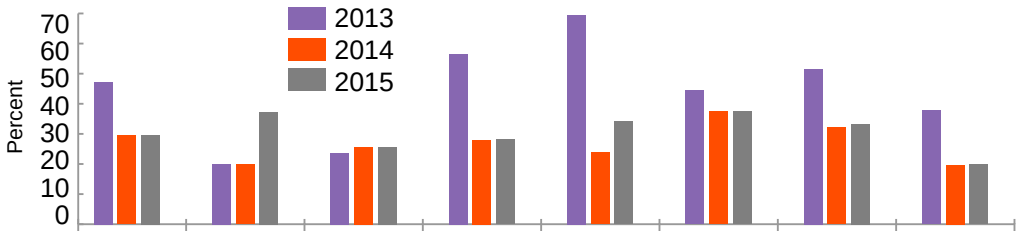
The MoHME conducted the below measures to fulfil the aims of this package:

- 1,958,471 free NVDs were recorded;
- Reducing cesarean section by 15% (2015);
- Free enabling training for 702,000 pregnant women;
- Building 1800 labour, delivery and recovery room (LDR), within 366 hospitals;
- Providing insurance coverage for 85% of infertility treatment costs;
- Building 17 new centers to treat infertility with emphasis on deprived provinces;

- Bulding and equipping 24 new infertility treatment centers nationwide;
- Provision of 31,000 infertility services;
- Reducing OOP for 3 million infertile couples;
- Improving and expanding the educational centers;
- Establishing a database on infertility wards and infertility centers;
- Establishing a database for patients' information and provided infertility services;
- Establishing the infertility committee to involve in tertiary-level interventions to reduce infertility (donating fetus).

The above-mentioned measures reduced C-Section from 56% in 2013 to less than 50% in 2014.

Figure 22. C-Section during mothers' first delivery before and after the implementation of HTP.



	Total	Q1	Q2	Q3	Q4	Q5	Urban	Rural
		Quintile					Residence	
2013	47	20	23	56	69	44	51	37
2014	29	19	25	28	23	37	33	19
2015	29	37	25	28	34	37	33	19

Key Points:

- 15%C-Section reduction;
- Building 1800 labour, delivery and recovery room, so-called labour, delivery, and recovery room (LDR), in 366 hospitals;
- Insurance coverage for 85% of infertility treatment costs;
- Expansion and equip 24 new infertility treatment centers;
- Provision of 31,000 infertility services since August, 2016.

7 Expansion of emergency services and air ambulance ("Air Ambulance Packages")

Upstream Policies

The 5th National Development of the I.R. Iran

Article 32

d) The MoHME is required to develop a national curative plan whitin the framework of integrated basic health insurance, family physician, referral system, treatment guidelines, medical emergencies, establishment of board of trustees within teaching hospitals, fulltime faculty members, tariffs related to specialized clinics, and supplementary insurances, and seek its approval by the cabinet.

Article 34

a) to achieve equity in health and reduce OOP to a maximum 30% of health expenditures, equitable access to healthcare services, avoid catastrophic health expenditures, medicine coverage, curing high cost and hard to cure diseases, reduce reliance of healthcare facilities on the incomes directly earned through selling services, and help training, and sustainable provision of required human resource. In addition to the MoHME's regular funds, 10% of the total required funds to be generated from the targeted subsidies, which will be allocated to the MoHME. The government must estimate the required funds annually and allocate them to the MoHME accordingly.

Before the HTP implementation

Prior to the HTP implementation, there was no air ambulance in the country.

From the beginning of HTP until March 2018

In line with the essential national need, i.e. severe shortages of ambulance availability and high prevalence of traffic injuries and death, it was decided to establish and promote air ambulance system as the most appropriate way to improve medical emergency system in Iran. The package aimed to enhance the coverage of hard to reach areas for car ambulance and heavy traffic roads by air ambulance. The intervention succeeded to expand the coverage to dual carriage roads, rural roads, mountain and hard to reach areas with 150 km distance from a helicopter station,

and improved the MoHME's ability to respond to traffic-related accidents and unforeseen events as well as transportation of required equipment and medical teams to support pre-hospital medical services, expanded support to pregnant mothers and children, and finally proved useful in evacuating rural areas affected by both natural and manmade crisis.

Program to expand air ambulance service aims to reach two macro objectives: (a) improving equity in access to medical services; and (b) improving the quality of medical services. The program has achieved the following so far:

- Establishing 34 air ambulance stations and transferring 19,000 injureds people and patients to hospitals;
- Expansion and renovation of national ambulance services, purchasing 2400 new ambulances, which were added to the existing 3000 ambulances in the country;
- Building and expansion of 125 emergency and trauma wards in trauma specialized hospitals and renovating the emergency departments of other hospitals;
- Buying 1500 emergency beds and standardization of 180 emergency beds;
- Recruitng extra emergency medicine specialists based on the regional needs and policy priorities;
- Empowring human resources working in emergency departments.

Key Points:

- Before implementation of the HTP there was no air ambulance in the country;
- Covering hard to reach areas for ambulance cars and roads with heavy traffic was the main goal of this package;
- 34 air ambulance bases were established and 19,000 injured persons and patients were transferred to hospitals;
- 2400 new car ambulances (before implementation of the HTP, there were only 3000 ambulances in the country) were added;
- 125 emergency wards were built in trauma hospitals and emergency departments of other hospitals were renovated.

8 Improving hotelling services within the MoHME hospitals (the "Hotelling Package")

Upstream Policies
The Supreme Leader's mega policies for health
7-3- Providing services by providers within public and private sectors.

Before the HTP implementation

Patient satisfaction surveys are important tools to assess hospitals' performance. Inappropriate hotelling services due to old hospital building with undesirable air condition, rest rooms, catering servies, and welfare equipment, plus an overall much higher hotelling quality in the private hospitals led to significant people's dissatisfaction from the MoHME public hospitals.

From the beginning of HTP until March 2018

From the outset, HTP requested a comprehensive and nationwide assessment of hotelling services in the MoHME hospitals, which resulted in catogrizing them into seven groups, on the basis of below criteria: building and facilities, equipment, welfare services, cleaning services and hygien, catering services, administration and workflow, and human resources. The hospitals were ranked then from three to five stars, while all teaching hospitals were mandated to meet the minimum standard level. To enhance equity, deprived areas were prioritized for improving hotelling services, e.g. Sistan-va-Baluchestan, and Khuzestan provinces were first, while the capital province of Tehran was the last to undergo hotelling renovation measures. As a result, the following have been achieved so far:

- Reconstruction of 2,650,000 m^2 of treatment space;
- Distribution of 130,000 hotelling equipment;
- Completion of reconstructing 45,000 hospital beds, being conducted by domestic resources;
- Providing 74,000 capital-driven medical equipment for hospitals;
- Optimization of infrastructure equipment for hospitals;
- Improving catering services for patients and their companions within the MoHME hospitals;
- Staff behavioural change and revising procedures to provide services within the MoHME hospitals.

Key Points

- Reconstruction of 2,650,000 m^2 of treatment space;
- Distribution of 130,000 hotelling equipment;
- Complete reconstruction of 45,000 hospital beds using domestic capabilities.

Deputy of Public Health (MoHME)

9 Expanding basic insurance package to villagers, nomadic populations, and residence of cities with <20,000 population (expansion of rural family physician program)

Upstream Policies

The following Articles and Acts have emphasized the expansion of family physician program: Article 29 of the constitution; Comprehensive welfare and social security system Act; UHIA; Article 91 of the 4th national development plan; Operational instruction of article 91 of the 4th national development plan; Paragraph c of Article 32 of the 5th national development plan.

The 4th national development plan

Clause 91 line:comprehensive and universal coverage of health insurance; expansion of referral system and family physician; health promotion; organizing treatment-seeking behaviours of the population, physicians, and healthcare centers; reducing OOP; revising payment method to healthcare centers and physicians; harmonization of basic health insurance package and improving services coverage; equitable access to healthcare services; prevention of unnecessary hospitalization and reduction of induced demand; targeting health subsidies; and equity in distribution of financial resources.

National Budget Law Based on the 2005 national budget, the IHIO (previously known as Medical Services Insurance Organization: MSIO) was mandated to provide insurance log-books to all residents of rural areas and cities with < 20,000 population, which entitled them to receive healthcare services through family physician and referral system program. Family physician and the health team have the full responsibility of covered families, so that if a patient will be referred to the upper levels, the health team should follow them accordingly.

The Supreme Leader's mega policies for health

2. Realization of comprehensive health and healthy human approach in all laws, regulations, and policies;

7. Separation of stewardship, financing, and service provision duties with the aim of improving accountability, equity, and providing desired healthcare services;

8. Increasing and improving quality and safety of services and comprehensive care with focus on equity and emphasizing on accountability, transparency, effectiveness, efficacy and productivity in the frame of healthcare network, which are consistent with the referral system;

11. Increasing awareness and accountability, and empowering citizens and families to organize and actively participate in provision, maintenance and promotion of health by using institutional capacities and cultural, educational and media under the supervision of the the MoHME.

Before the HTP implementation

The concept of FP has its roots in the Iranian-Islamic culture and dates back to centuries ago. The famous Iranian physician and scholar Muhammad ibn Zakariya al-Razi once told: "the patient needs to select one physician among all eligible ones and only refers to him/her, because if you visit several physicians, the probability of medical error accumulates, whereas the probability of making mistakes when a single physician looks after the patient is lower".

After the Islamic Revolution, many attempts were made to establish a desired health system to meet all societal needs in line with "Health for All" approach, i.e. the establishment of the Primary Health Care (PHC) network that resulted in significant improvements in the health outcomes, particularly in rural areas.

From the beginning of HTP until March 2018

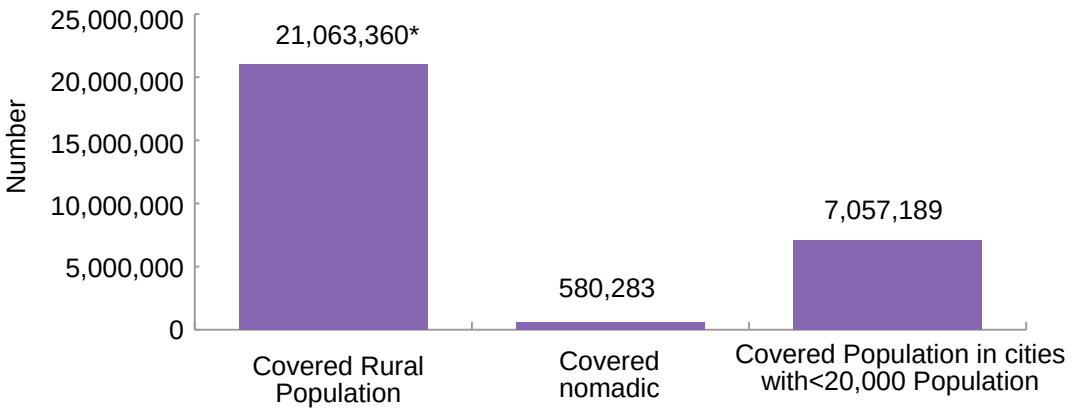
The World Health Report of 2010: "Health System Financing, the Path to Universal Coverage", emphasized on the importance of achieving UHC through new FP strategies. Indeed, HTP intended to strengthen the healthcare system in Iran to UHC through FP. HTP included a package to expand basic health insurance to villagers, nomadic populations, and residents of cities with <20,000 population through below interventions:

- Providing required human resources;
- Developing benefit packages;
- Developing methods to provide the services included in the benefit packages;
- Developing a payment system;
- Providing required physical infrastructures.

Population under the coverage of FP program

The rural FP program covers almost 28 million people, about 21 million residing in rural areas, 580,000 of nomadic population, and 7 million residents of cities with <20,000 population, 22 million of whom have rural health insurance log-books. Figure 23 shows the population covered by the rural FP program.

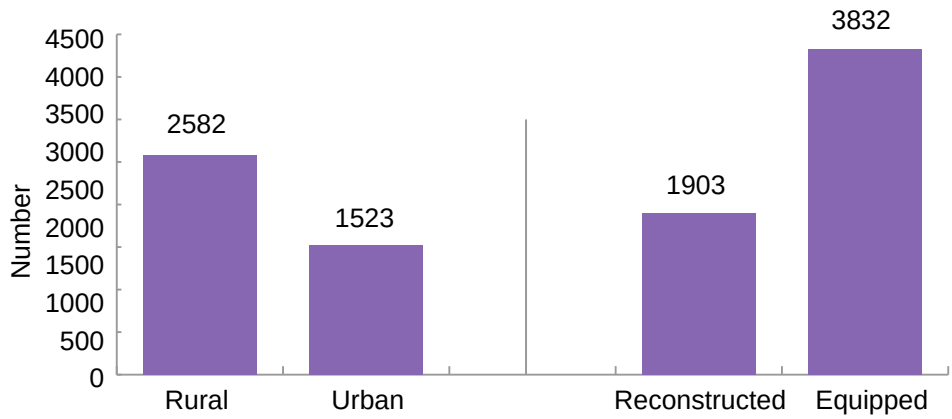
Figure 23. Population covered by the rural FP program (2017).



* Based on 2017 estimation

Figure 24 presents the status of comprehensive healthcare centers that are implementing the rural FP program.

Figure 24. Comprehensive healthcare centers implementing the rural FP in 2016.



A fundamental step to complete the operational structure of healthcare network in rural areas was reconstruction and equipping 2000 health houses, out of which, 1000 were operational. From 3200 physicians' residence in rural areas, 1595 were reconstructed and 2427 were equipped.

Table 8 presents the status of pharmacy service providers in rural FP from 2014 to 2016. In total, 4135 pharmacies are involved in the program, 70% of them are running by the private sector.

Table 8. Pharmacies engaged in the rural FP program, 2013-2016.

Pharmacies' Status	2013-2014			2014-2015			2015-2016		
	Location		Total	Location		Total	Location		Total
	Within the health center	Outside the health center		Within the health center	Outside the health center		Within the health center	Outside the health center	
Public	1495	21	1516	1278	7	1285	1101	24	1125
Non-public	1918	599	2517	2148	662	2810	2245	765	3010
Total	3413	620	4033	3426	669	4095	3346	789	4135

In 2016, the list of essential medicines contained 436 drugs plus 7 supplementary medicines that were available across all health centers implementing the rural FP program, through 4135 active public pharmacies and 3010 private ones.

Table 9 presents the status of laboratory services available in the rural FP program.

Table 9. Provision of laboratory services in the FP program, 2014-2016.

Status of laboratories	2014	2015			2016		
		Service provision		Total	Service provision		Total
		Sampling	Active laboratory		Sampling	Active laboratory	
Public	1734	788	1632	2420	1174	1591	2765
Non-public	400	68	221	289	44	280	324
Total	2134	856	1853	2709	1218	1871	3089

About 3089 active laboratories (2765 public and 324 outsourced to the private sector) are providing diagnostic services in the FP program. In addition, 1712 public centers and 250 non-public centers provide imaging services, 10% of which are provided by the private sector.

Human Resources

Table 10 and 11 illustrate the status of human resources and the related indicators in the rural FP program

Table 10. Status of human resources in the rural FP program, 2014-2017.

	2014		2015		2016		2017	
	Required	Available	Required	Available	Required	Available	Required	Available
Physician	7337	6604	7488	6852	7500	6641	7500	6569
Midwife	5128	5060	5364	5285	5392	5377	5392	5192
Nurse	879	334			1725	806		
Laboratory	937	658			2114	1503		
Imaging	231	65			199	98		
Dentist			1491	1188	1876	1476	1876	1476
Oral hygiene			483	122	331	105		
Oral health					1383	146		

Table 11. Status of the rural FP program indicators, 2014-2016.

Indicator	Standard	2014	2015	2016
Referral to the secondary level	10	9	8.27	8.5
Travel to visit patient in their villages	100	83	85.5	86.4
Average medicines per each prescription by family physicians	2.5-3	2.88	2.9	2.9

Services provided through FP program are:

- Integrated promotion and prevention interventions for non-communicable diseases (NCDs), i.e.controlling blood pressure and blood sugar for diabetes, promotion of mental health programs, and screening neonatal hypothyroidism;
- Development of health benefit packages for different age groups;
- Promoting self-care programs through training and empowering health volunteers, e.g. health ambassadors;
- Implementation of electronic health records (EHRs) to registration and record the information of target population;
- Providing pregnancy Sonography, once during each pregnancy and free of charge;
- Providing routine pregnancy tests for free;
- Integration of selected emergency services into PHC;
- Providing 436 extra medicine for centers implementing rural FP program;
- Providing supplement medicines for breastfeeding including Vitamin A&D drops,
- Iron, and Multivitamins, plus Vitamin D_3 and D_3 pills for school age children and adolescences;
- Universal distribution of Pentavalent vaccine in all health houses and health posts;
- Providing oral health services:
  - Developing a software for oral health electronic card;
  - Establishing a website for the department of oral health department at the MoHME;

- Developing educational content for people with disability and their carers;
- Publication and distribution of guiding books on oral health for urban elementary schools;
- Distribution of learning assistance tools for 60,000 elementary schools;
- Holding educational meetings for 15,000 of employees of healthcare centers;
- Screening services for 7,000,000 elementary students and registering their information on to the national system;
- Providing Varnish Fluoride for 1,700,000 first year elementary students and 7 million elementary students;
- Construction and equipping 1000 healthcare centers to provide services to students;
- Establishing 500 mobile oral health centers for elementary schools.

- Providing laboratory services (more details are available below).

Laboratory services

The national reference laboratory, affiliated with the MoHME, aimed at rationing the available laboratory services through the HTP initiatives. HTP succeed to provide integrated laboratory services for different age groups and free of charge, as listed below:

- Laboratory services for pregnant women, including blood groups & Rh, CBC test, differential count of blood cells, full analysis of urine, urine culture, serum creatinine, BUN, Indirect Coombs test (for Rh negative mothers), FBS, TSH, VDRL, HBSAg (if necessary);
- Screening tests for diabetes, FBS, and serum cholesterol;
- Glucose challenge test and oral glucose tolerance test;
- Neonatal screening tests, measuring TSH, phenylketonuria (PKU) test.

Establishment of emergency bases for ambulances to provide pre-hospital services in rural areas and for nomadic population

Despite establishment of emergency bases for ambulances in urban areas and roads, the law did not specify anything about rural areas. As a result, the responsibility of these areas became under the MoHME.

Program to provide healthcare services to nomadic population and establishment of health houses for nomadic population

UHC requires all citizens to have equitable access to all needed healthcare services irrespective of their place of living, socioeconomic status, etc. The nomadic citizens are categorized as vulnerable groups in Iran, providing healthcare services for them was prioritized in the HTP. Since 2015, the law mandated the PHC network to provide public health and medical services, listed below, to the nomadic population through the health houses in the area:

- Collecting information at the family level;
- Construction and equipping 150 health houses;
- Organizing the majority of nomadic population through non-nomadic health houses;
- Developing a five-years strategy for health, health insurance, and supportive services for nomadic populations;
- Primary development and expansion of rural FP program for the nomadic population by using appropriate strategies to incentivize physicians to serve nomadic citizens and refer them to higher levels of care, if necessary;
- Increasing per capita payments for nomadic populations, through the funds raised by increased 1% value added tax (VAT).

Key Points

- The rural FP covers about 28 million people, 21 million in rural areas, 580,000 of nomadic population, and 7 million of residents of cities with <20,000 population;
- In 2016, 436 essential medicines and 7 supplement medicines became available for all health centers implementing the rural FP program, through 4135 active public and 3010 private pharmacies;
- 3089 active laboratories (2765 are public and 324 are providing diagnostic services through outsourcing) providing diagnostic services in HTP.

10 Scaling up primary healthcare services (new advanced health services) to marginalized population and residents of cities with 20,000-50,000 population (revision and coordination of service provision methods)

Upstream Policies

Paragraph b of Article (32) of the 5th national economic, social, and cultural development plan of Iran has obliged the MoHME to operationalize "comprehensive and universal health services system" with emphasis on PHC Services, FP and referral system, strategic purchasing of healthcare services, and pay-for-performance as appropriate payment system. The priority must be given to less-developed areas, particularly villagers, marginalized areas, and nomadic populations. In order to support the implementation of the above mentioned comprehensive program, referring to paragraph b, Article (38) and paragraph d, Article (32) of the 5th national development plan, the government established the country executive by laws (Implementation Regulation) for the health system and for the strategic purchasing in 2013 and 2014, respectively.

The Supreme Leader's mega policies for health

2. Realization of comprehensive health and healthy human approach in all laws, regulations, and policies;
8. Increasing and improving quality and safety of services and comprehensive care with focus on equity and emphasizing on accountability, transparency, effectiveness, efficacy and productivity in the frame of healthcare network, which are consistent with the referral system;
11. Increasing awareness and accountability, and empowering citizens and families to organize and actively participate in provision, maintenance and promotion of health by using institutional capacities and cultural, educational and media under the supervision of the the MoHME.

Before the HTP implementation

From the outset, the PHC services have been providing in both urban and rural areas. Nevertheless, PHC became comprehensive and successful in rural areas and remained fragile in the urban settings. The implementation of FP program began in urban settings of two pilot provinces of Fars and Mazandaran in 2012. Yet universal and nationwide implementation of FP in urban settings has not happened yet.

From the beginning of HTP until March 2018

HTP began with the recruitment of doctors in urban settings. The private sector was contracted to outsource the services through establishment of cooperative firms. The human resources for urban FP program included:

- Health carer at the health posts;
- Nutrition experts and mental health experts in urban and marginalized areas (informal settlements) and the comprehensive healthcare centers;
- Physician, public health experts, occupational health experts and environmental health experts at the comprehensive healthcare centers.

Tables 12 and 13 and Figure 25 present the number of healthcare centers and their staffs in urban areas.

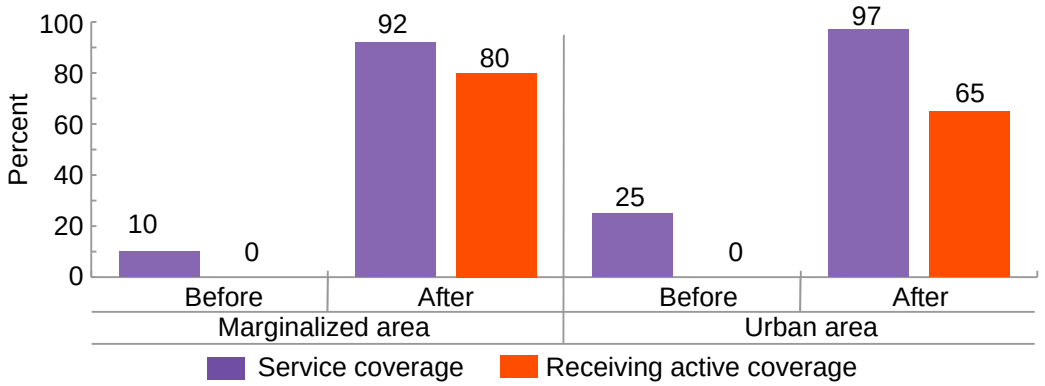
Table 12. Healthcare facilities in marginalized and urban areas after HTP.

Healthcare center	Marginalized areas and cities with population of 20,000 to 50,000			Marginalized areas and cities with population more than 50,000		
	Outsourced	Public	Total	Outsourced	Public	Total
Health post	890	1,065	1,955	1,674	3,054	4,728
Urban comprehensive healthcare center	197	621	818	303	1,810	2,113
Total population	14,774,648			53,222,451		

Table 13. Number of healthcare staff at marginalized areas and urban areas in collaboration with the private sector, 2015-2017.

	Marginalized areas and cities with population of 20,000 to 50,000	Marginalized areas and cities with population more than 50,000
	2015	2017
General practitioner	426	1,111
Health expert	4,148	9,903
Mental health expert	531	1,273
Nutrition expert	477	961
Environmental and occupational health expert	208	2,166
Total (above + other)	8,736	19,108

Figure 25. Coverage changes (%) in marginalized areas and urban areas before and after the HTP implementation, until March 2018.



11 Completion, expansion, and revision of family physician (FP) program and referral system in urban areas across Fars and Mazandaran provinces

Upstream Policies

2. Realization of comprehensive health and healthy human approach in all laws, regulations, and policies;
8. Increasing and improving quality and safety of services and comprehensive care with focus on equity and emphasizing on accountability, transparency, effectiveness, efficacy and productivity in the frame of healthcare network, which are consistent with the referral system;
11. Increasing awareness and accountability, and empowering citizens and families to organize and actively participate in provision, maintenance and promotion of health by using institutional capacities and cultural, educational and media under the supervision of the the MoHME.

Before the HTP implementation

The history of FP program in Iran dates back to 2002, when the MoHME had plans to pilot FP in Khorasan-Razavi, East-Azerbaijan, ChaharMahal-va-Bakhtiary, and Sistan-va-Baluchestan provinces. No real implementation happened in the end due to lack of political as well as budgetary constriants.

In 2004, the parliament approved allocation of extra financial resources to insure all residents of rural areas. The MoHME began the implementation of FP in rural areas and cities of <20,000 population in 2005, which in 2010 was expanded to cities with population of 20,000 to 50,000 in three pilot provinces of Khuzestan, ChaharMahal-va-Bakhtiary, and Sistan-va-Baluchestan. The pilot implementation of urban FP program provided good insight and experience for Medical Universities, and an analytical evaluation report was prepared for the cabinet, which recommended the universal implementation of urban FP by mid 2013.

In May 2012, FP and referral system began to be implemented in Fars province, then in September 2012 it was implemented in Mazandaran province. In March, 2013, significant changes were occurred in implementation trend and instruction of the program, which led to decision to expand the program to be implemented in eight other provinces including: Khuzestan, South-Khorasan, East-Azerbaijan, West-Azerbaijan, Qazvin, Yazd, Ardebil, and Sistan-va-Baluchestan.

The pilot provinces experienced slow and challenging FP implementation, which made the future of the program more ambiguous and as a result, no other provinces than pilot sites of Fars and Mazandaran provinces implemented urban FP prior to HTP.

From the beginning of HTP until March 2018

The implementation of urban FP continued in two pilot provinces during HTP. Figures 26- 28 and Table 14 present the status of FP program in two pilot provinces.

Figure 26. FP healthcare providers in Fars and Mazandaran Provinces in 2014.

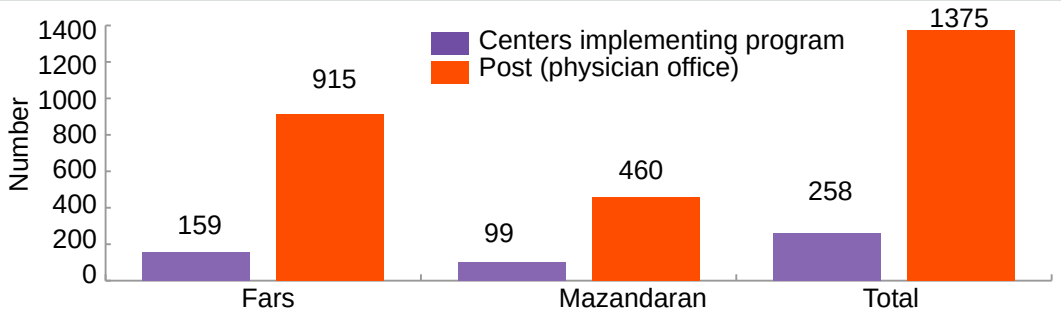


Figure 27. Human resources engaged in FP program in Fars and Mazandaran Provinces (2014).

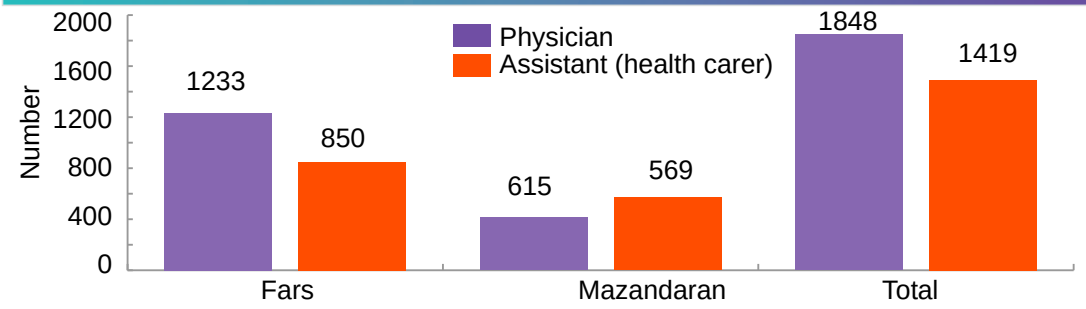
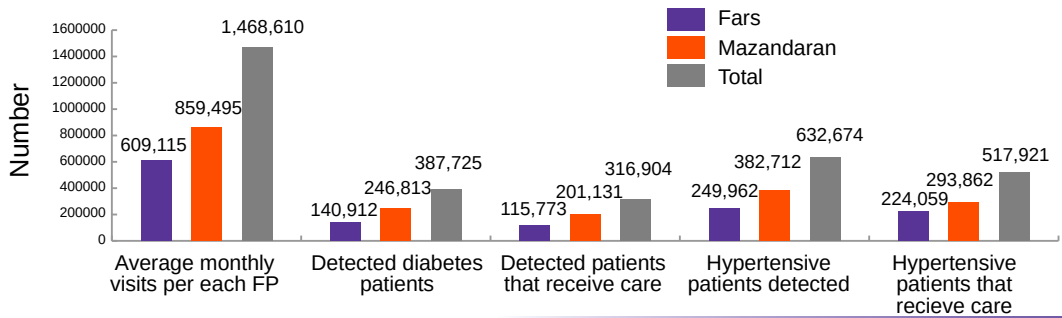


Table 14. Covered population by FP program in Fars and Mazandaran Provinces in 2014.

Province	Total covered population	Registered population	Populations that have access to a physician			
			SSO	IHIO	IKRF	Armed force
Fars	3,184,935	3,043,468	1,802,263	1,208,821	29,495	6,480
Mazandaran	1,605,432	1,519,932	956,609	538,144	17,270	-
Total	4,790,367	4,563,400	2,758,872	1,746,965	46,765	6,480

Figure 28. Indicators of FP program in Fars and Mazandaran Provinces in 2014.



12 The implementation of electronic referral system and SIB platforme

Upstream policies

Electronic Referral System (ERS) was mentioned in the 5th and 6th national development plans:
a) In March 2014, the cabinet approved a bill on ERS;
b) Paragraph d of Article 32 of the 5th national development plan;
c) Paragraph d of the memorandum of understanding on allocating funds that raised through 1% extra value added tax (VAT);
d) Clauses 70 and 74 of the 6th national developed plan.

Before the HTP implementation

No considerable intervention was performed to implement ERS prior to HTP.

From the beginning of HTP until March 2018

Interventions to promote ERS can be divided into three time intervals:
a) From the beginning of the HTP (May 2013) until 2014;
b) 2016-2017;
c) 2017 onward.

a) From the beginning of the HTP (2013) until 2014

The activities as the following were conducted:

- Preparation of a memorandum of understanding on allocating funds that raised through 1% extra value added tax (VAT);
- Setting an agreement to improve the health of villagers, nomadic population, and residents of cities with < 20,000 population, with emphasis on curative services. The focus was on:
  1) Clause 1: Reducing the co-payment of rural health insurance to 5% for inpatient referred patients;
  2) Clause 2: Increasing the budget of health insurance organization to compensate the increased costs resulted from the implementation of new relative value book;
  3) Clause 3: Relative value discount for rural health insurance in the referral system;
  4) Clause 4: Providing the budget for the implementation of referral system at secondary and tertiary levels for citizens referred through rural health insurance route;
- Begin to establish an online system for registering information of the referral system;
- Developing guidelines for "Referral System";

- Summary of activities: "implementation instruction of ERS in terms of financing, payment methods, and piloting the SIB platforme".

b) Activities during 2016-2017

- Joint and collaborative initiatives by main stakeholders, i.e. the national committee of FP and referral system; office for statistics and information technology- MoHME; Deputy of Public Health, Deputy of Curative Affairs, and the IHIO to improve IT operational solutions for ERS;
- Conducting feasibility studies for the implementation of referral system at medical universities of Zanjan, Yazd, North-Khorasan, and Ardebil; and continuous revisions following ongoing feedbacks.

c) Activities conducted from 2017 until March 2018

- Continuing technical discussions to expand ERS for rural areas, nomadic population, and cities with < 20,000 population by the public health committee of HTP Secretariat;
- Dissemination of "operational instruction of referral system (first step) for rural areas, nomadic populations, and cities with < 20,000 population" across 10 medical universities (Mashahd, Qom, Yazd, Kermanshah, North-Khorasan, Zanjan, Maraghe, Bushehr, Golestan, and Ardebil);
- Assigning Gulestan university of Medical Sciences to assess the implementation of ERS;
- Developing a flowchart for different steps of the referral process;
- Running the ERS in three cities of Gulestan province;
- Information exchange between the primary and secondary levels through the designated ERS systems.

Electronic health record (SIB platforme): the new program

Since 2015, three parallel EHR applications have been in use at the primary healthcare level in Iran, where 74 out of 81 million have been registered so far. The main stream portal that most of the country is using is the SIB (the Iranian Integrated Portal, the equivalent of Apple in Farsi, which is also a symbol of health) system. In addition, Mashhad University of Medical Sciences is using SINA system, while Gulestan University of Medical Sciences is using a system called NAB. Despite differences in the appearance and some sub-functions of three software in use, all EHR systems in Iran contain demographic, health and medical records of individuals, which can be accessed by healthcare professional from all around the country, if necessary and through defined procedures for respecting individuals' privacy. All EHR solutions in Iran contain a wide range of personal and demoghraphic data, the history of diseases, and the therapeutic and health measures as follow:

- Vital signs;
- Lifestyle (nutrition, medicine, body mass index, etc.);
- Past history of diseases;
- History of received healthcare services;
- History of para-clinical measures (laboratory tests, imaging services, etc.);
- Immunization (vaccination) history;
- History of communicable diseases;
- Public health records of the living place and working place.

Main goals of the EHR

1. Running the Iranian EHR;
2. Social justice and equitable access of all citizens to high quality and managed healthcare services;
3. Smart provision of healthcare services, based on individuals' characteristics (i.e. age, gender, disease, pregnancy, etc.), family characteristics (genetics and environmental factors), and based on national health programs, enabling continuous monitoring of targeted groups (e.g. neonatal and children, pregnant women, elderly, etc.);
4. Information management in the health sector;
5. Help to implementation of national health-related programs, including FP and referral system, through information exchange with other IT solutions already in use within the MoHME;
6. Integration of health-related information sources, e.g. Relative Value Unit System, International Classification of Diseases, for a more meaningful access by health professionals;
7. Hardware management (location, equipment, and facilities) of service providers through healthcare networks of the Medical Universities;

8. Providing organized services to other centers (multisectoral exchange of information), including kindergartens, schools, Universities, production and industrial units, nursing homes, garrisons, etc.;
9. Providing necessary data for research purposes.

The target community of the EHRs

Until March 2018, over 74 million EHRs have been established. The EHR solutions, mainly SIB, have provided over 775 million services to more than 125,000 users, including physician, public health experts, health carers, Behvarzes, and other health professionals, in more than 32,000 healthcare facilities.

The targets of EHRs

The EHRs' target has been listed below:

1. One EHR for all citizens;
2. Integrated provision of healthcare services for all Iranians, particularly in less developed and marginalized areas, aiming to ensure good health of all citizens;
3. Qualitative improvement through better standardization of the latest national programs;
4. Provision of health services based on special needs of various age groups, particularly among at risk target groups (mothers, children, and elders);
5. Implementation of the referral system;
6. Service provision through urban and rural FP:
7. Smart provision of services by using information systems that may help reduce routine operational errors;
8. Integration of information across healthcare centers;
9. Creating the foundation for communication between provision centers and individual providers, including physicians and other healthcare professionals, clinical and para-clinical centers, and other centers;
10. Enabling better management of healthcare facilities, human resources, and physical resources based on the regional needs, and help spatial planning in the health sector;
11. Extracting integrated reports of the health sector to identify national, regional, and local strengths and needs for macro planning;
12. Alighning national health programs with latest achievements and global programs.

Overall activities under the EHR

The following activities were conducted for the implementation of EHR in Iran:

- Registration of demoghraphics, past medical history, and current physical examination of citizens;
- Screening and follow-up for different age groups;

- Events registration (birth, death, marriage, divorce, pregnancy, delivery, diseases, sensitivities, medicine consumption);
- Registration system for cause of death and differential diagnosis based on the international classification of diseases-10 (ICD-10);
- Registration of episodes of physician's consultation;
- Referral to secondary and tertiary levels, and recording interventions provided at these levels to provide feedback;
- Implementation of urban and rural FP;
- The vaccination history;
- Establishing an electronic prescription system that is linked to the pharmacies, laboratories, and imaging centers, in a way that external providers (outside of the health center) can have access to the data;
- Dental-related measures (identifying curative needs and interventions);
- Providing brief versions of the EHR;
- Collecting vital information (vital census, so-called ZIJ in Farsi);
- Implementation of healthy pregnancy programs to apply appropriate interval between the pregnancies;
- Implementation of nutritional care and monitoring system for nutrition and other interventions;
- Implementation of mental healthcare, its monitoring system and the related interventions based on the WHO's applied suicide intervention skills training;
- Implementation of screening and monitoring programs for genetic disorders;
- System for reception, waiting time, and financial transactions;
- Coherent management of providers (equipment, facilities, location, catchment area);
- Implementation of environmental health and occupational health systems, for both individuals and families;
- Implementation of schools' health record systems;
- Implementation of NCDs management and syndromic surveillance system;
- Implementation of national program on new health services, i.e. risk factors and NCDs (Cardicascular diseases, diabetes, cancers and strokes), risk factors such as obesity, smoking, alcohol consumption, unhealthy diet, and physical inactivity;
- Implementation of pricing system based on the relative value units;
- Implementation of system for monitoring and management of reducing the risk of disasters.

Characteristics of the EHR

The EHR solutions in Iran have the following characteristics:

- Using high technology (internal complexity and being user friendly);
- Immediate recording of the events and all episodes of care (services, licenses, procedures);

- Reengineering the procedures (maintaining necessary procedures and removing unnecessary ones);
- Comprehensive reporting system;
- Minimizing hardware needs and communication infrastructures;
- Online managerial dashboards;
- Considering security requirements in design, implementation, and users' access to data;
- Mass, fast, and complex production of big data and information.

Outcomes indicators of the implementation of public health, prevention and PHC packages in Iran

Table 15 presents some selected outcome indicators of FP and other PHC-related packages in Iran.

Table 15. Coverage of the public health and primary health care services

Indicator	2000	2010	Latest Value
Antenatal Care Coverage (any)	93.1	96.91	-
Antenatal Care Coverage (+4)	79.8	88.6	-
Care-seeking behavior for under five years (U-5) child pneumonia	66.3	62.5	-
Birth by Skilled Attendant	-	96.4	99.3
Tuberculosis Detection and Treatment	-	-	69.9
HIV Antiretroviral Treatment	-	-	14.0
Access to Improved Sanitation Water	93	96.8	96.7
Access to Improved Sanitation	97.7	98	98.5
Diarrhoea Treated with Oral Rehydration Salts (ORS), U-5	92.9	94.8	84.9
Hypertension Treatment Effective Coverage (+18 years)*	-	-	40.1
Diabetes Treatment Effective Coverage (+18 years)*	-	-	61.8
Tobacco Use (+18 years)*	-	10.0	14.1
Alcohol Consumption (+18 years)*	-	-	2.0
Age-standardized mean Population Intake of Salt (Sodium Chloride) per day in grams (+18 years)*	-	-	9.2
Consumption at least five total Servings (400g) of Fruit and Vegetable per day (+18 years)*	-	-	17.2

*18 years and over

Food and Drug Organization (MoHME)

13 Promoting domestic pharmaceutical industry, increasing the market share of domestic produced medicines, and controlling the price of medicines and medical equipment

Upstream Policies

The Supreme Leader's mega policies for health

4- Establishment and strengthening the required infrustructures to produce ingredients of medicines, vaccines, biological products, and medical equipments, based on the international standards;

5- Organizing demand and preventing induced demand along with strong gatekeeping to restrict prescriptions only to the ones within the referral system and in line with clinical practice guidelines. Plan for generic medicines and national formulary, effective policy-making for monitoring production, consumption and import of medicines, vaccines, biological products, and medical equipment in order to support domestic production and export.

The extensive unfair sanctions imposed by Iran that were severely intensified during 2012-2013, resulted in significant devaluation of the Iranain currency (Rial) and left the country to face severe shaortage medicines, vaccines and medical equipments, all contributed to all-time high OOP in Iran prior to the implementation of HTP. The magnitude of crisis was severe enough that, in 2013, and before formal implementation of the HTP, the 11th government began fundamental measures to address the challenge.

Before the HTP implementation

Strengthening domestic pharmaceutical industry has been the priority of health policy-makers, particularly in the course of past few years. To support in-house production, since September 2013, restrictions have been imposed to import medicines that can be produced locally, to a maximum 10% of the market consumption. The restriction has been gradually expanded to all new medicines that can be produced domestically. Finanlly, for those medicines that can be produced domestically, prices were set between 60 to 70% of similar foreign products. From very early days, the MoHME at the 11th government began multidimensional interventions to address the supply crisis and bring down the price of needed medicine in the country.

From the beginning of HTP until March 2018

The above-mentioned interventions to increase the share of domestic production were successful (Figure 29), and increased the share of domestic products to 70% of the market in 2015.

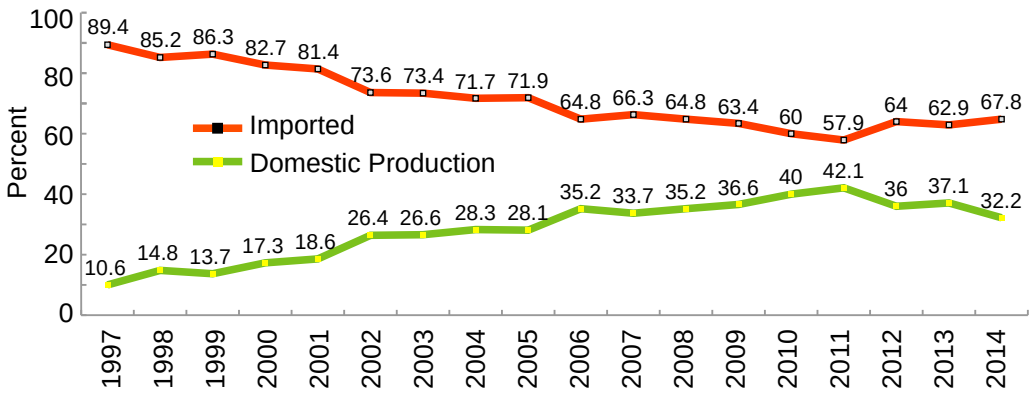
Further, in 2013, several interventions were implemented to reduce the price of medical equipment and increase the citizens' financial protection, including:

1. Financial supports to Medical Univeristies to pay medicines subsidies for the poor;
2. Allocating free essential medicines and vaccines to the PHC networks;
3. Covering the cost of radiopharmaceuticals;
4. Reducing the cost of expensive medicines for hard to cure and chronic diseases;
5. Financing the costs of milk powder and specific foods for patients with Congenital Metabolic Disorders;
6. Increasing financial protection for selected medicines, based on the MoHME's list;
7. Financial grants for health insurance organization to reduce co-payments of patients with hard to cure and chronic diseases.

To address the shortage of medicines, interventions were executed as follows:

1. Providing essential medicines and, then, obligating health insurance organizations to cover a higher percentage of medicines costs, part of which to be compensated by the MoHME;
2. Obtaining all necessary approvals (i.e. government, Central Bank, Ministry of Foreign Affairs, etc.) and removing international barriers to import the ingredients of needed medicines;
3. Easing the regulations to import nessecary medicines and continuous assessment of medicines' market;
4. Advocating the rational prescription and use of expensive medicines by the health insurance organizations;
5. Prohibition of patients' referral to outside of hospitals to buy medicines and supplies;
6. Developing instruction for distribution, supply, and consumption of nessecary medical supplies within the MoHME centers;
7. Providing medical supplies to hospitals;
8. Developing instruction for rational prescription and use of expensive medicines in inpatient wards of hospitals.

Figure 29. Domestic production and imported medicines, 1997-2014.

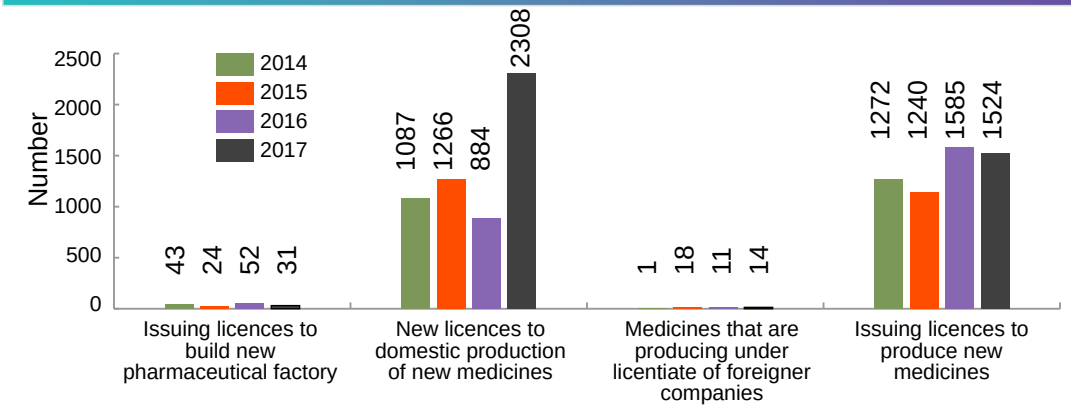


As a result, OOP for outpatient prescription reduced from 56% in 2013 to 40% in 2014, while for intpatient prescriptions, it reduced from 54% to 10%, and for hard to cure diseases it reduced from 45% to 11%, in 2013 and 2014, respectively. Before HTP, impoverishment due to "catastrophic health expenditures" (CHEs) happened in 0.34 of households who received medicines, which reduced to 0.31 after the HTP implementation. The highest incidence of CHEs was among the poorest housholds, which also reduced by 10%. Let alone that 1.52% of poor housholds still faced CHEs in 2014. In contrast to the impoverishment costs, CHEs for medicines was more frequent among the housholds with higher levels of income. Before the HTP, the highest percentage of CHEs as a result of impoverished costs was within the 5th quintile (the richest). About 0.39% of the 5th quintile faced with CHEs, which reduced to 0.17% after the implementation of the HTP.

In addition, the list of available medicines in hospitals increased from 340 to 750, a 50% increase, in 2015, while monthly shortage of medicines also decreased from 170 to 30 items. Further, the list of available medicine within the PHC network increased from 320 to 436, while 7 supplementary medicines became available across all health centers.

Figure 30 illustrates selected indicators of expansion of the pharmaceutical industry in Iran.

Figure 30. Indicators showing the expansion of pharmaceutical industry in Iran.



Expansion of pharmaceutical industry requires expansion of active pharmaceutical ingredient manufacturing and infrustructures (Figure 31), and then development of production technology for biologic products (Figure 32).

Figure 31. Active pharmaceutical ingredient manufacturing in Iran.

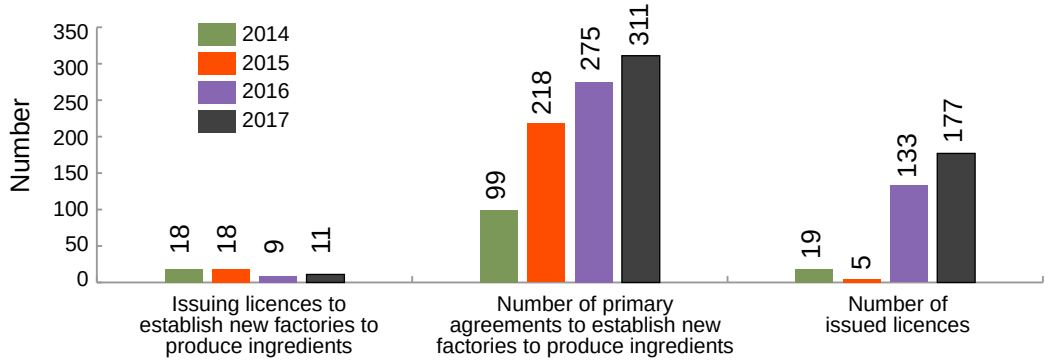
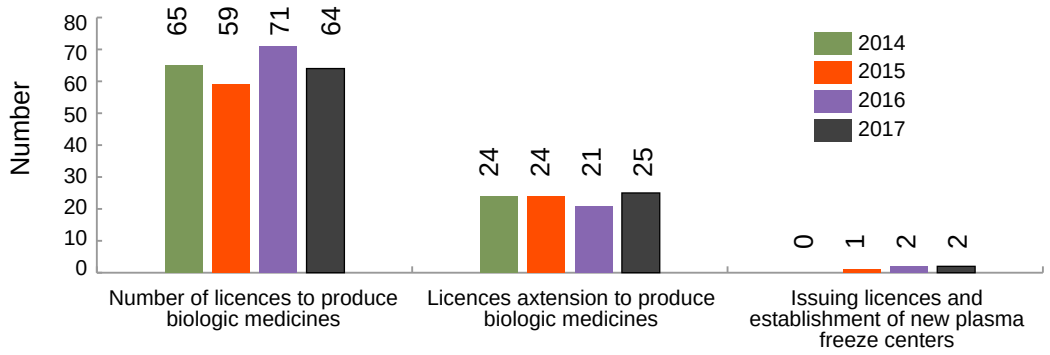


Figure 32. Approved licenses to manufacture biotechnological products in Iran.



Regulation and stewardship of the pharmaceutical sector in Iran

WHO categorizes medicines and medical technologies as one of the six Building Blocks of any health system. In Iran, various regulations and laws have been in place to ensure availability, accessibility, quality, effectiveness, rational prescription and consumption, and afforadibility of medicines. After the implementation of HTP, the MoHME, through FDO, its causi-dependent agency for regulation and stewardship of medicines, initiated significant revisions in the policies and rules for the pharmaceutical industry. The newly published National Document of Pharmaceutical Policies (NDPP) of 2016 comprises of four sections:
(a) Availability and accessibility;
(b) Affordability;
(c) Quality;
(d) Rational prescription and consumption.

a) Availability and accessibility

Availability and accessibility comprises of medicines registration, temporary licecnce issuance, medicines with limited prescription, and planning and provision, which will be discussed below.

Medicines registration

Registration is the first step to provide medicines that are safe, effective, and high quality. Quality, safety, and effectiveness of medicines require monitoring and reviewing the production records, supervision of production and distribution procedures, and rigourous issuance of various licences. Article 14 of the medical regulation law mandates that pharmaceutical products, foods, production and import of all medicines to be monitored and licenced. Article 20 of the same law makes it obligatory to conduct robust evaluation of the competency of manufacturer or importer of any biological product, and licencing such endeavors through a legal commission. The NDPP requires the MoHME, through the FDO, to register and issue licences for production, import, distribution, and supply of medicines. Licences are valid for a specified time period, currently for four years, and if nessecary, can be renewed. By registring a medicine, the producer, distributer, or importer company obliges by law about the quality of that particular medicine. In addition, the company is committed to provide enough quantity of the medicine for the entire country, failure to do so will result its request to renew the licence may be denied.

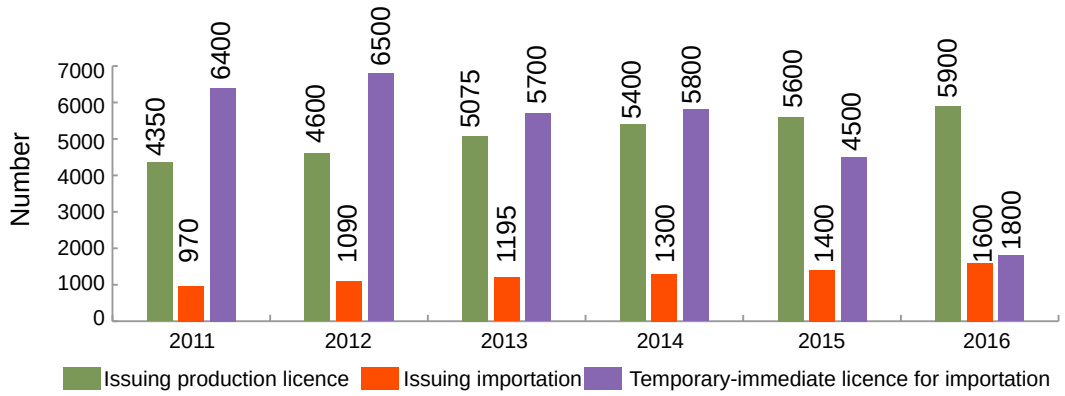
Temporary licence issuance

Although all imported medicines to the Iran pharmaceutical market should follow official registration procedures, during crisis (i.e. shortage of life-threatening medicines), the MoHME is permitted to bypass the laws and regulations and issue temporary licences to

import required medicines and address the emergency situations. An urgent medicine is a drug that is registered in the national formulary and if necessary, is allowed to be imported without any registration process. In contrast, medicines with limited prescription are those that are not registered in the national formulary, but can be imported if phsycians could prove that the available medicines are ineffective or have negative consequences for the patients. licences issued for urgent medicines are valid only for 28 days. Nevertheless, the sisxth national development plan (2016) has prohibited physicians to prescribe medicines that are not registered in the national formulary. Therefore, medicines with limited prescription are illegal to be imported since mid 2017.

Figure 33 shows the number of issued licences on production and import of medicines, before and after the HTP implementation. It is evident that during 2012, the thoughest year of international imposed sanctions on Iran, the request to import medicines with limited prescription, was at its peak.

Figure 33. Issured licences for production and imported of medicines, 2011-2016.



WHO has emphasized the critical importance of availability and accessibility of essential medicines. The complete list of essential medicines comprises of three lists. Medicines of the first list, that is common to all countries, are both available and accessible in Iran. The second list is the Eastern Mediterannean essentiall medicines list. Iran has already met the goals for 2025 regarding availability and accessibility of this medicines list. The third list is a national formulary of medicines. The MoHME is making efforts to maximize the availability and accessibility of this list in Iran. 'National Council for Evaluation and Development of Medicines in Iran' is responsible for development and monitoring the national formulary. All medicines before they get produced or imported to the Iran market must be evaluated and registered by the council. The sixth national development plan of Iran mandates the development and publication of national formulary every three monthes. Moreover, prescribing any medicine that is not included in the list would be considered as an offense and will be prosecuted.

Planning and provision

From March 2016 to March 2017, Iran's pharmaceutical market had the value of 4500 million US$, 70% of which was controlled by domestic companies (Figures 34 & 35). Although, it is not the most accurate indicator, number of prescribed medicine items provides a picture of the market size.

Figure 34. Value of production and import market based on consumer price (in million US$).

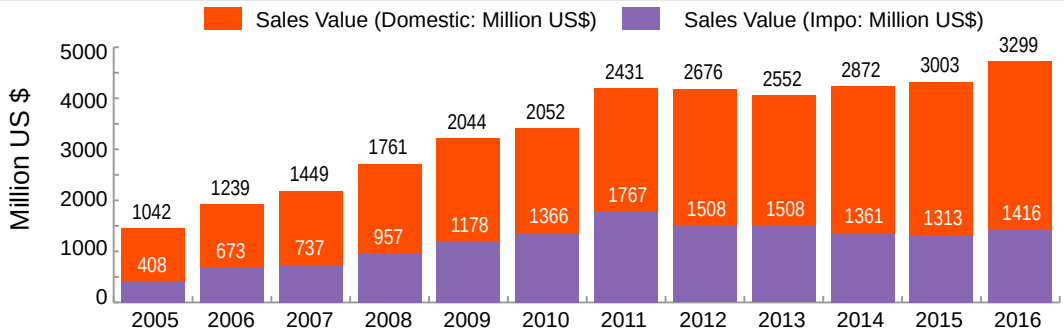
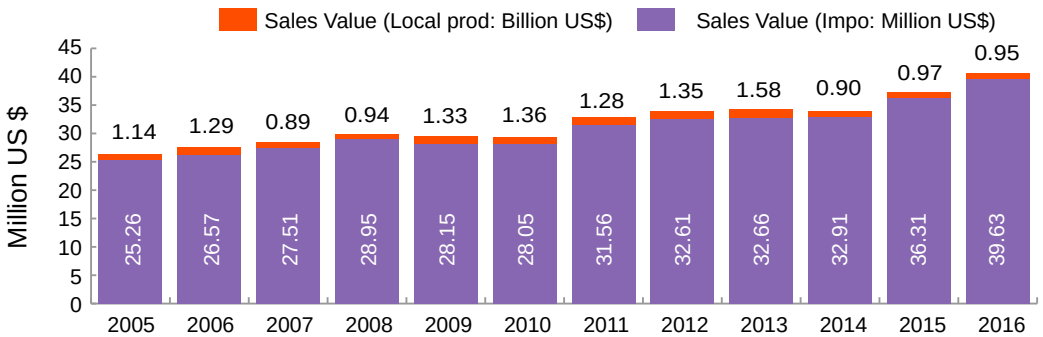
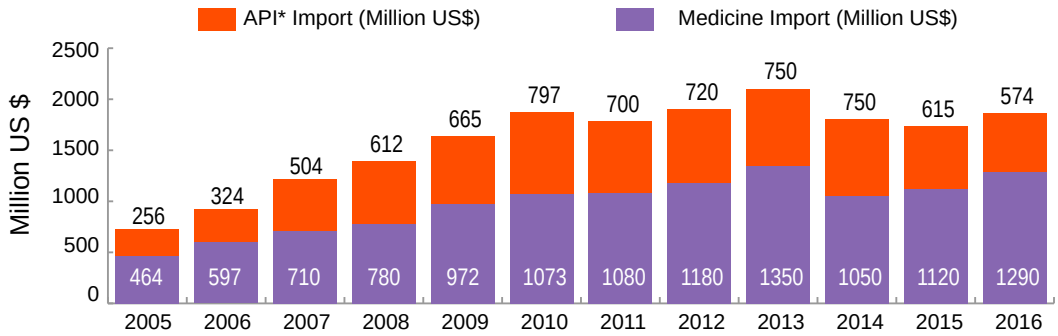


Figure 35. The volume of produced and imported medicines market in Iran (in million US$).



More than two-thirds of medicines included in the national formulary are produced locally. Despite the national potentiall capacity to produce and export many medicine items, the amount of annual export was less than 200 million dollars before HTP, most of which to neighbouring countries. Almost two-thirds of medicine production capacity is in the hand of public and semi-public companies, i.e. the SSO, Barakat Foundation, and Bank Melli Iran (BMI). The biggest share of imported medicines is by the private companies, most of them are representatives of global manufacturers in Iran. Overall, public and semi-public sectors control over 30% of the pharmaceutical market in Iran. Figure 36 compares the volume of imported in comparison with produced medicines (in million US$) in Iran. It is evident that the share of imported medicines has reduced after the HTP.

Figure 36. Imported in comparison with produced medicines in Iran, before and after HTP (in million US$)



*Active Pharmaceutical Ingredients (API)

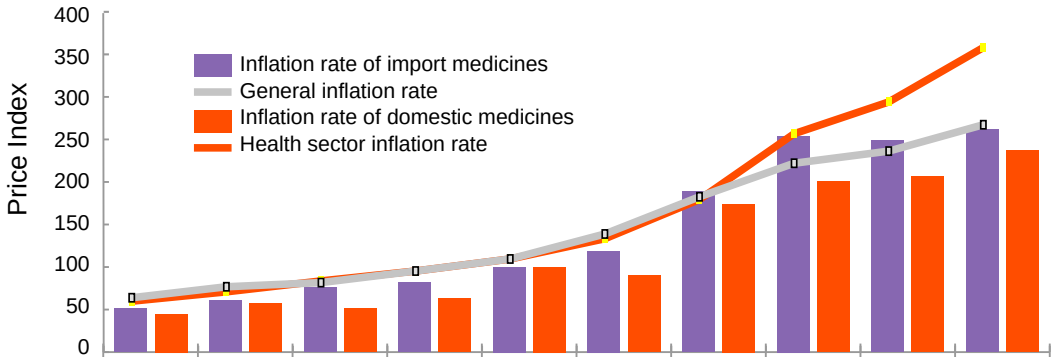
b) Affordability

Provision of affordable medicines is a key priority in health policy. WHO recommended that health systems policy-makers choose appropriate strategies to manage pricing policies in a way to ensure the affordability of medicines. Affordability contains pricing and subsidies that are following.

Pricing

The MoHME attempts to choose appropriate pricing strategies to provide the maximum affordability of medicines while preventing irrational consumption. The current regulations has exempted over-the-counter-medicines from FDO's pricing rules (NDPP 2016). To determine the price of locally-produced medicines or any change in the current prices, most medicines are priced through value-based pricing, comparison with other countries, or External Reference Pricing (ERP), while ERP method is used for imported medicines. Figure 37 shows that product price index of locally produced and imported medicines has grown to the same as the index of public goods prices (2011 was used as the base year). Nonetheless, health sector inflation rate has been higher than general inflation rate during the past few years.

Figure 37. Comparison of price index in public sector, health sector, and the pharmaceutical market.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inflation rate of import medicines	51	61	75.5	82.1	100	118.8	188.6	254	249	261.5
Inflation rate of domestic medicines	44.9	57.3	51.4	63	100	90.1	174	201	206	236.9
General inflation rate	52.7	66.1	73.2	82.3	100	130.5	175.9	216.8	231.6	263.8
Health sector inflation rate	48.5	59.9	71.2	85.3	100	124.7	172.6	252.8	291.6	358

Subsidies for medicines

Subsidized medicines include drugs for Haemophilia, Rare Bleeding Disorders, dialysis, major Thalassemia, transplantation, Multiple Sclerosis, and selected Metabolic Disorders. Subsidized medicines are distributed under direct supervision of the MoHME and their quantity is determined by the Medical Universities as well as curative protocols. Currently, subsidies related to rare diseases are allocated as defined in the memorandum of understanding (MOU) between the MoHME and the MoCLSW, according to which, the MoHME pays the price difference for over 300 medicines mentioned in the MOU, aiming to reduce OOP. The current co-payment for such medicines is less than 10%. Sustainability of financial sources is a permanent challenge for management of such diseases.

c) Qaulity of medicines

Ensuring the quality of available medicines is the core of effective medicine policies. To do this, the MoHME, through FDO, collects the quality-related data of all medicines before licencing them to enter the market. Quality assessment contains reviewing data recorded in the common technical document as well as visiting the manufacturing site to ensure good manufacturing process is being followed. In September 2017, Iran became the member of pharmaceutical inspection co-operation scheme, a cooperation agreement between member countries to unify the monitoring and inspection processes.

In addition to pre-manufacturing monitoring, the FDO runs regular post marketing surveillaces. Figures 38 and 39 show the trend of inspection and sampling of market products during the past six years.

Figure 38. Number of inspections for good manufacturing processes, 2011-2016.

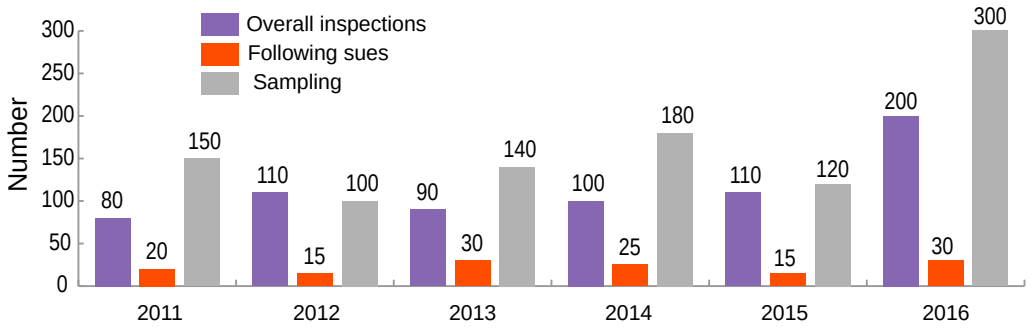
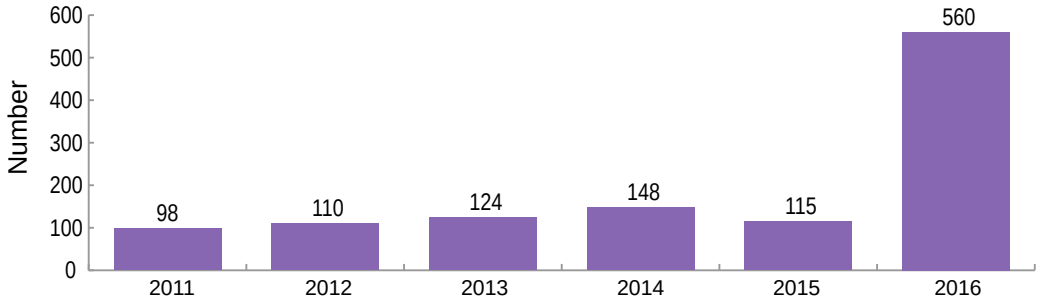


Figure 39. Control and sampling through post marketing surveillance plan, 2011-2016.



Another approach to quality control is supervising medicines safety through establishing a monitoring, prevention, and reporting system of adverse reactions of medicines, through registration and reviewing adverse reactions center, known as pharmacovigilance. Since 1998 this center is working as the full member of WHO's program on monitoring pharmaceutical products. The aim of investigating adverse reaction of medicines is prevention of mortalities resulted from medicines' side effects and preventing the adverse reaction itself.

d) Rational prescription and consumption

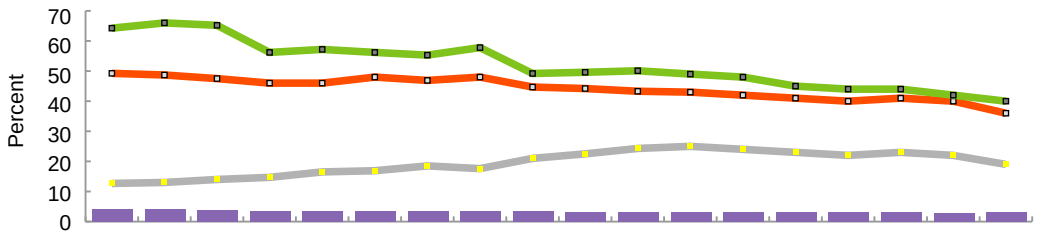
Given the fundamental role of rational prescription and consumption of medicines in promoting patients' health and reducing adverse side effect of medicines, the national pharmaceutical policies have obliged the MoHME to rationalize the prescription and consumption of medicines with participation of other stakeholders.

Rational prescription and consumption means prescribing appropriate medicine, based on patients' clinical status, with appropriate dose, and for a defined period. To revise and improve medicines consumption, the scientific committes of reviewing prescriptions has been in place since 1996. To determine medicines' prescription indicators in Iran, the Beta version of comprehensive software of prescriptions was pilotted in Mashahd University of Medical Sceinces, which was expanded to other provinces in 1997. Since 1997, 39 committes on rational prescription and consumption in Medical Universities have registered more than 200 million prescriptions from all over the country in the comprehensive prescription software. In 2000, the committee of reviewing prescriptions was rebranded as the committee of rational use of medicines.

After the HTP implementation, the national committee has held over 15 meetings, to promote rational prescription and consumption cycle. The system has the ability to provide feedback on prescription indicators to all physicians, and many doctors have received such feedback. Comparative indicators have been efficient objective means to improve physician's performance as well as strong evidence to inform policy makers to design further required interventions.

The latest evaluation of physicians' prescriptions shows that each prescription contains an average of three medicines, while 40% of outpatient prescriptions contain antibiotics and injectable products (Figure 40).

Figure 40. Average items per each prescription and proportion of injectable products, antibiotics, and corticosteroids in outpatient prescriptions, 1998-2014.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Antibiotic	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3
Injection	49	49	48	46	46	48	47	48	45	44	43	43	42	41	40	41	41
Corticosteroid	64	66	56	56	57	56	55	58	49	50	50	49	48	45	44	44	42
Mean Item	13	13	14	15	17	17	19	18	21	23	24	25	24	23	22	23	22

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Concluding Remarks

In line with its upstream policies and international obligations, Islamic Republic of Iran has the responsibility to perform short and long-term reforms to strengthen the health system and pave its way towards UHC and ultimately, sustainable health development. Began in May 2014, HTP is Iran's pathway to reach UHC. Although OOP has substantially reduced after the HTP implementation, further attempt is necessary all dimensons of UHC in Iran, i.e. universal and effective insurance, equitable quality services for all, and prevent financial hardship.

The National Institute of Health Research (NIHR) of the Islamic Republic of Iran is an institution established as the health observatory, and to produce and promote the use of scientific evidence needed by health-planners and policymakers at national level. The focus of NIHR is on the results and outcomes of health interventions. Acting on its mission as the health observatory in national level, NIHR, by using all the knowledge in the country and international knowledge capacities, while forecasting trends and monitoring health system indicators; and using the experiences of other health systems, designing and recommending effective interventions for health system reforms and, if implemented, evaluating and monitoring interventions; on the other hand, recognized as a reference and consultant, providing scientific evidence to health decision-makers in the country, and as observatory in the region, thereby enabling health administrators and managers to achieve a healthy society

National Institute of
Health Research I.R.Iran