Contents available at **PubMed**
www.anmm.org.mx

PERMANYER

Gac Med Mex. 2016;152:249-55

A critical view about public health in Mexico*

*Roberto Tapia-Conyer**
Faculty of Medicine, UNAM; General Director, Fundación Carlos Slim, Mexico City, Mexico

Public health is going through a crucial moment, and we have to take it as an opportunity to restore the leadership that once characterized Mexico both at regional and global level. In order to achieve such a goal, those of us who have devoted our professional efforts to strengthen the Mexican public health, must understand the state of the art in science, the new technologies and the new developments, not only to avoid being left behind, but to adopt a leading position, as befits to the respected medical tradition of our country.

A retrospective view will allow us to have a starting point. Therefore, I invite you to remember some milestones in the history of our public health; milestones that represent achievements that were, in many cases, driven by distinguished members of this Academy. Looking back is not only an academic requirement: history is a warning from the future.

Although the history of public health in our country spans over several centuries, it is until the Porfirio Diaz's government when modern public health initiates in our country, with the establishment of the Superior Public Health Council and the enactment of the first Health Code[1,2].

After the revolutionary triumph and its institutionalization through the Constitution of 1917[I], the importance of public health was acknowledged by establishing the General Health Council as a constitutional body that has subsists to the present day, being this Academy one of its members[3].

In 1922, when the institutions that would shape up the new Mexican State started to emerge, the Public Health School of Mexico was founded[4], being one of the oldest in the continent, along with those at Johns Hopkins, Harvard and Sao Paulo universities[5]. Since then, those classrooms have witnessed the training of professionals who have been active participants in many achievements of the discipline in our country. It is important to highlight that the Public Health School of Mexico was the basis for the creation of the National Institute of Public Health in 1987[6].

Currently, Mexico has approximately 30 public health schools[7], among which the Department of Public Health of the School of Medicine of the National Autonomous University of Mexico (UNAM –*Universidad Nacional Autónoma de México*) stands out for its central role in human capital formation and in the development of research. I am, as many members of this Academy, a proud UNAM's alumnus.

During the decade of 1940s, the bases of the health system as we currently know it were set through the creation of the Mexican Institute of Social Security; the evolution of the Health Department to become the Ministry of Health and Assistance and the foundation of the first National Health Institutes[8].

In 1974, Mexico marked a milestone by establishing free reproductive choice as a constitutional right[II]. Mexico was the the second country at global level to recognize that right and the first one in America to do it[9].

It was not until 1983, 66 years after the Constitution was enacted, that the right to health protection was incorporated within its text[III]. In order to ensure access to this right, the General Health Law was issued by the Congress the following year[IV].

Correspondence:
*Roberto Tapia-Conyer
Académico Titular
Director General de la Fundación Carlos Slim, AC
Lago Zurich 245, Torre Falcón, Piso 20
Del. Miguel Hidalgo
C.P. 11529, Ciudad de México, México
E-mail: tapiaconyer@gmail.com

*Academic year 2015 opening "Ignacio Chávez" conference

I. Enacted on February 5, 1917.
II. Constitutional amendment, published in the Diario Oficial de la Federación on December 31, 1974.
III. Constitutional amendment, published in the Diario Oficial de la Federación on February 3, 1983.
IV. Published in the Diario Oficial de la Federación of February 7, 1984.

These legal achievements were obtained thanks to the vision and leadership of Dr. Guillermo Soberón Acevedo, former president of our Academy, who was in charge of promoting a change to move from a Ministry of Health and Assistance to the Ministry of Health, in accordance to the conceptual principle of the right to health protection[V] [10].

During the last years of the 20th century, reforms in the public health arena continued. In 1996, while Dr. Juan Ramón de la Fuente, another prominent former president of the Academy, was Minister of Health, the Integral Agreement for Health Services Decentralization was signed[VI]. Under the same leadership, and with the complicity of Dr. José Narro Robles, prominent member of this Academy, who was then Vice-Minister of Sectoral Coordination , the Vice-Ministry that would be responsible of the public health programs at the federal level was created. I had the honor to serve as the first Vice-Minister of Prevention and Disease Control[VII].

In 2000, the Law of National Institutes of Health was enacted[VIII] and in 2003, a financial amendment was applied to the General Health Law, the latter process was led by another member of this Academy, Dr. Julio Frenk, while he was Minister of Health. As a result of the previously mentioned amendment, the System of Social Health Protection was created, best known as *Seguro Popular*, with the objective of reducing out-of-pocket expenses and prevent the poorest and most vulnerable population from incurring in catastrophic expenses[11].

One would think that, with those reforms and others that I am not going to mention for time's sake, the Mexican State would already had a defined conceptualization of what the concept of public health encompasses. The truth is that the only legal text where public health services are enlisted in Mexico is the Regulation for Social Health Protection, issued in 2004[12].

In other words, although we can say that in modern Mexico public health has been present and active for almost 150 years, the Mexican State did not have a defined concept of the discipline until just a decade ago.

Then, how could Mexico become regional and global public health reference?

The answer, as many others in this country, is: thanks to the people who took care of these tasks, since, ultimately, the collective value of any institution is determined by the individual value of each and every one who contributes with work, talent, knowledge and experience.

This did not occur because there was an abundance of financial resources; on the contrary, those resources were scarce. In such a context, regional and global leadership was accomplished on the basis of passion, heart, effort and commitment of women and men who were and are everyday in different fronts and trenches, working for Mexico to be a country with health. Their legacy is impressive, and some milestones are worth remembering.

In the early years of the 20th century, more than half the population died before reaching the age of 15 due to infectious diseases; still in 1940, there were two millions of people afflicted by malaria and 5,000 children died before the 5 years of age from causes such as measles, pertussis, tetanus, diphtheria and diarrhea[13].

Although immunization measures in our country originated in 1804, when Dr. Francisco Balmis introduced the antivariolous vaccine[14], it was not until 1973 when immunization was organized through the National Immunization Program[15].

And it was in 1991 when, under the leadership and personal commitment of the then Minister of Health, Dr. Jesús Kumate, also former president of this Academy, the Universal Vaccination Program was created, which significantly contributed to decrease the morbidity and mortality related to communicable diseases and has led to the eradication of diseases such as poliomyelitis, measles, congenital rubella syndrome and dog bite-associated human rabies, as well as to the control of neonatal tetanus[16].

This was accomplished thanks to proactive strategies, such as the National Vaccination Days, which evolved to become the National Health Weeks[17]. Public health professionals achieved through those activities to leave a mark in millions of Mexicans who acknowledge the public health personnel efforts as the most precious of the social sense of the public service.

Mexico reached the vaccination regional and global leadership with one of the most complete immunization programs of the world. In 1973, there was a basic six-immunogens scheme. Twenty-five years later,

V. On January 21, 1985, the Federal Public Administration Organic Law was amended , and the Ministry of Public Health and Assistance changed its name for Ministry of Health *(Secretaría de Salud).*

VI. Published in the *Diario Oficial de la Federación* on September 25, 1996.

VII. On August 6, 1997, a new Internal Regulation of the Ministry of Health was published in the Diario Oficial de la Federación This new Regulation eliminated the Vice-Ministry of Planning and created the Vice-Ministry of Prevention and Disease Control.

VIII. The law was published in the *Diario Oficial de la Federación* on May 26, 2000.

between 1998 and 2006, several innovative vaccines were introduced, for a total of 13 immunogens integrated in the scheme. To date, with the introduction of the vaccine against the human papillomavirus, the scheme prevents 14 diseases[18].

As you can see, through vaccination we achieved a lot, but this wasn't everything.

For a long time, malaria was the first cause of infant death in several states. Since 1982, nobody has died in Mexico of this disease[19]. It was precisely in the decade of 1980s when the effort to give malaria the 'coup de grace' was consolidated thanks to a firm leadership at the Federal level and to the commitment of the operating personnel in the state health services.

Continuing with communicable diseases, we must refer to what occurred in the middle of the 1980's, when the HIV epidemic began to affect the world[20].

Thanks to the vision of a distinguished member of this Academy, Dr. Jaime Sepúlveda, Mexico adopted urgent containment measures that included an absolute ban on blood and plasma trade[IX].

In parallel, the National and State Centers of Blood Transfusion were established in order to maintain health control of blood and blood products. In addition, an aggressive campaign was launched to promote the use of condom[21].

Such measures, and later the free universal coverage of antiretroviral drugs treatment, are largely the fruit of the struggle of civil society organizations working on HIV and AIDS, many of which are integrated by persons that live with this virus, and have allowed a significant decrease in the AIDS-related mortality, while maintaining the HIV epidemic under control[22].

Also worth mentioning is the reduction of diarrheic diseases, including cholera: Since the decade of 1990s, acute diarrheic diseases-associated mortality has shown a decreasing pattern. In 1995, the mortality rate for acute diarrheic diseases in children younger than 5 years was 15.4 for 100,000. By 1999, this rate had already decreased to 9 per each 100,000 children younger than 5 years.

The described reduction was achieved thanks to high-impact interventions, such as: the rehydration therapy known as "*Vida Suero Oral*", which was developed with the outstanding participation of Gonzalo Gutiérrez Trujillo and Felipe Mota Hernández, also members of this Academy had an outstanding participation; the vaccination against rotavirus; the Firm Floor (*Piso Firme)* Strategy for houses, and the provision of micronutrients and antiparasitic agents during the National Health Weeks[23-25].

Cholera arrived to Mexico in June 1991 in the small rural community of San Miguel Totolmaloya, in the State of Mexico, and was remained present until 2001, when the last case was reported[26]. Almost 10 years later, in 2010 and 2011, two cases were reported, respectively, in the state of Sinaloa[X 27], and in 2014, there was an outbreak in Hidalgo[28]. This demonstrates the relevance of never lowering the guard and, whoever says otherwise, might well visit Disneyland, origin of the important measles outbreak in our neighboring country[29].

With the described actions, mortality in children younger than five years decreased significantly, allowing for our country to opportunely reach the objective established in the Millennium Development Goals[30].

A central component in public health activities is sexual and reproductive health. As previously mentioned, in the decade of 1970, free reproductive choice became a constitutional right, which was followed by access to information, services, supplies and technology.

Since then, prevalence of the use of contraceptive methods maintains an increasing pattern of utilization until these days; however, increases are dwindling[31]. In 1976, only 3 out of every 10 childbearing-age females that were in a couple regulated their fecundity by using some contraceptive. In 1987, this proportion increased to 5 in every 10 and, in 2009, to little over 7 out of each 10. Today, most Mexican women have an average of 2 children, although the global rate of fecundity in indigenous populations is above 3 children[32], whereas 31.2% of female adolescents between 15 and 19 years of age have an active sexual life and 56% of them have already been pregnant[33].

In 2004, the Family Planning Mexican Official Standard was modified in order to make all efficacious and safe contraception methods available to men and women, with emergency contraception or the "morning-after pill" standing out due to the controversy caused by its inclusion in the list[XI].

However, in the past few years, issues ranging from ideology to plain bureaucracy have obstructed effective

IX. The amendment reform of the General Health Law by means of which these measures were legally adopted was published in the *Diario Oficial de la Federación* on May 27, 1987.

X. In 2010, the SiNAVE identified a new case in Navolato, Sinaloa, and in 2011, one more case in Otatillos, municipality of Badiraguato, Sinaloa.

XI. The resolution that modified the family planning services Mexican Official Standard NOM-005-SSA2-1993 was published in the *Diario Oficial de la Federación* on January 21, 2004.

and timely access to family planning supplies[34]. Unsatisfied contraceptive demand has impacted especially on adolescents, as previously mentioned.

Teenage pregnancies are, by definition, risk pregnancies, and the lack of adequate care makes them contribute to the still alarming rates of maternal mortality in Mexico something[35,36] that as physicians and as Mexicans we cannot allow, especially when we know the cause and the solution of the problem: public health interventions should be based on scientific evidence, never on dogmas or political leaders' ideological positions.

In public health, we know that information is the essence of prevention; thus, recognizing the relevance of having reliable information for evidence-based decision making, the Epidemiological Information System and the National Survey System were created.

In 1986, the National Health Surveys System was launched and, since then, it has enabled for programs to be evaluated by documenting their coverage and impact, as well as the health and nutritional conditions of the population[37].

In 1995, the National Epidemiological Surveillance System (SINAVE – *Sistema Nacional de Vigilancia Epidemiológica*) was implemented. The SINAVE is a tool able of identifying harms and risks for health that receives information from all institutions to meet its purpose[38].

Other subject in which Mexico has had great advances is tobacco control. When the World Health Organization (WHO) put the Framework Convention on Tobacco Control on the table, which is the first public health international treaty aimed for countries to adopt a global commitment and establish minimal measures to fight tobacco consumption and its consequences, Mexico was the first country in Latin America to sign it[XII]. A few years later, internationally adopted commitments translated into the General Law for Tobacco Control, which contemplates measures that have allowed an important reduction of the elevated number of premature deaths[39].

I would like to conclude this historical account by remembering what has been done in terms of bioterrorism and containment plans: After the World Trade Center Twin Towers attack in New York on September 11th, 2001, the world was faced with a new kind of threat: the intentional use of biological agents with terrorist purposes. Several anthrax attacks were registered in USA and Mexico was not free of the risk of a similar attack. Thus, a series of timely response and containment strategies were designed and displayed, which included integrating a strategic reserve of supplies, as well as the creation in 2003 of the National Committee for Health Security[XIII,40].

Mexico has also developed several plans to face threats originating in nature or by emergent diseases, such as severe acute respiratory syndrome, SARS, which menaced the world at the dawn of the XXI century[41].

In 2005, with the global threat of an influenza pandemic and taking into account the accumulated experience, the National Preparation Plan for an Influenza Pandemic was created, four years before the AH1N1 pandemic made its appearance in our country. Thanks to the existence of that plan, to the simulation exercises carried out and to the vaccine strategic reserve, the onslaught of the pandemic could be successfully confronted[42,43].

The purpose of enumerating all these facts and figures is to demonstrate that in Mexico we had and still have the capacity to make first-level public health.

We also had and have the most valuable asset: our human team. Trained and committed people with great conviction and a special mystic, willing to reach the most difficult goals, as long as they are provided the necessary tools to perform their tasks and their effort is acknowledged and recognized.

Then, why are we in this situation? At what moment in time this that resembles a crisis began?

To try to answer these questions, let's talk about a very concrete and recent example, the already-referred amendment to create the *Seguro Popular* in 2003, which generated an unprecedented increase in the funding of health services. And the idea behind it was that if historically so much had been achieved with so little, with more resources we could make much more. That was the theory, but it did not translate into reality.

Prior to the implementation of *Seguro Popular*, the annual health expenditure for an individual or one family was equal to 52%, i.e., more than half their clinical needs and drug expenses were paid of their

XII. Mexico signed the Framework Convention on Tobacco Control on August 12, 2003. It was ratified by the Senate of the Republic on April 14, 2004, and published in the *Diario Oficial de la Federación* on May 12, 2004.

XIII. The agreement that created the National Committee for Health Security was published on September 22, 2003, in the Diario Oficial de la Federación.

pockets. With the arrival of the *Seguro Popular*, that expenditure was reduced to 49%, i.e., an impact of barely 3% which, in comparison to the amount of resources invested, represents absolutely nothing. On the contrary, we are obtaining much less results for our money[44].

In fact, figures published by the WHO as part of the National Health Accounts demonstrate that the increase on health public expenditure was increased in 2012 to the equivalent of 6.1% of the gross domestic product (GDP), but it did not impact on out-of-pocket spending, which actually increased at almost the same proportion as the public expenditure[45].

If the financial resources were available, why did theory fail to meet with reality? The answers are many, and I will highlight only a few:

- Lack of perspective of the human right. For the Mexican State it is still not clear that it a duty to make everything necessary to guarantee real access to the necessary services in order to materialize the right to health protection[46]. On the other hand, people are used to the bad service they are provided, they do not assume that the State must protect their health and, therefore[47], they take what they are given without demanding quality and timely care.
- It was forgotten that, when resources are invested, applying strict financial and operational control mechanisms is required[48]. This would have allowed for each peso to be tracked. Social problems are not solved with money alone. Allowing or fostering the lack of transparence and accountability is equal to corruption, which may be passive or active, and is one of the main reasons for the *Seguro Popular* null impact because, since elementary measures to know the use and destiny of resources were not adopted, those did not arrive where they were supposed to, generating a diversion that disrupted the operational health system, concretely, at the level of state governments[49].
- It was not taken into account that currently, we are faced with the challenges corresponding to more complex risk and disease profiles, and this was not taken into account[50]. In the past, priority was to control diarrheas and infections; today, chronic conditions, cancer, addictions and mental health make it necessary to focus efforts on proactive prevention, on individuals' co-responsibility, timely detection and follow up to institutionalize the continuum of care. In addition, it becomes essential for local health systems to operate more efficiently, systematizing processes to ensure impact, using reimbursement procedures based on results with quality institutions, with flawless ethics and performance assessment.
- The relevance of a human resources policy according to the demand was overlooked[51]. Here, I want to emphasize the importance of promoting the training of quality personnel to operate within the primary care services, that is, the basis of the health system, which has remained limited; on the other hand, the vast offer of human capital graduated from the country's public health schools is not being exploited.

Moreover, in the past few years, conviction, legitimacy and passion have been lost, largely because true public health professionals have been pushed into the background, and public health began to respond to political interests and not to the search of the population wellbeing.

In the operational structures trained and experienced technicians and professionals were substituted by political[XIV] opportunists and, even today, positions are used to fill state and federal authorities' agreed quotas. It would be convenient to advocate for legislation to ensure that those positions, vital to the development of Mexico, are occupied by those who demonstrate having the merits, and not only contacts or acquaintanceships.

So far, these are some of my impressions on why theory failed to meet reality.

At the beginning of my intervention I told you I was going to speak also about the future because there is where I see a great opportunity for public health to start moving forward, to face the challenges, to defeat the lack of transparency and regain leadership.

There is a global tendency to generate reforms aiming to have Universal Health Systems[52]. Joining such trend in reality and not only on paper, represents an opportunity for change.

If we are to take advantage of that opportunity, which in reality is an obligation as Mexicans committed to our country, we must not wait any longer. We have to adopt necessary measures as soon as possible in order for our projected Universal Health System[53,54]

XIV. Look, for example, "Fiscalía aprende a ex director del Seguro Popular Jalisco", at: http://www.informador.com.mx/jalisco/2015/575983/6/fiscalia-aprehende-a-ex-director-del-seguro-popular-jalisco.htm.

to function as an "accountable" health system, through a reengineering procedure sustained upon the following axes:

- Population: defining and quantifying the population we want to act upon, both by vulnerability and by acquired rights. And conscience has to be generated that these rights go hand in hand with obligations, in other words, that there is co-responsibility of the individual and the community.
- Continued care: in view of the new epidemiological profiles, continuity of care has to be guaranteed. It's not enough for people to attend a clinic or hospital; those physical spaces have to be transcended, so health services can take advantage of the available technological platforms, to efficiently reach communities and homes.
- Impact metrics: improvement indicators have to be established both at the population and individual levels, especially for those interventions that most benefit the people. Indicators measuring the use of resources and performance improvement should be included as well.
- Information: to have a single information system that captures data from the very source of the flow of actions at different levels of care, that can be consulted in real time by multiple providers and users, that serves to make informed and correct decisions and, if it is required, to react modifying the course. This is already feasible thanks to the tools offered by technology, such as connectivity and capacity to store and share large amounts of information.
- Training: we have to invest on the health personnel in order to strengthen it, both on technical skills and human development.
- Incentives: to introduce a non-economic incentives plan, based on performance, as well as on population and individual goals, aiming to benefit of state health systems and their personnel.
- Leadership: leadership spaces must be recovered by defining adequate profiles, in order for them to be covered by people with training on public health. We cannot set aside the importance of a dignified remuneration for a well done work.
- Innovation: we should take advantage of the enormous potential of scientific knowledge generation and communication, as well technological innovations available all over the world.

There is enormous potential deriving from disciplines such as genomics, proteomics and nanotechnology, just to mention some, thanks to which, something that not long ago was inconceivable and even sounded as a conceptual contradiction, now is possible: personalized public health, where the focus on covering populations is maintained, while at the same time each person can be intervened according to his/her risk pattern.

In light of the possibility for the creation of a Universal Health System, we have the most transcendent opportunity for change in our history. We cannot allow, once more, for theory to move away from reality. We have to demonstrate commitment and congruence.

I will conclude with Mahatma Gandhi's wise words and inviting you to keep them in mind in the work you perform everyday to the benefit of Mexico's public health: "Recall the face of the poorest and the weakest person whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to that person"[XV].

I appreciate the courtesy of your attention. Thank you very much.

References

1. Carrillo AM. [Economics, politics, and public health in Porfirian Mexico (1876-1910)]. Hist Cienc Saude Manguinhos. 2002;9 Suppl:67-87.
2. Secretaría de Gobernación. Código Sanitario de los Estados Unidos Mexicanos. México: Imprenta de la Patria; 1891.
3. Kershenobich Stalnikowitz D. [General Health Council]. Gac Med Mex. 2012;148(6):598-600.
4. Gudiño-Cejudo MR, Magaña-Valladares L, Hernández Ávila M. [The Mexican School of Public Health: its founding and first years: 1922-1945]. Salud Publica Mex. 2013;55(1):81-91.
5. Fee E. A History of Education in Public Health. Oxford: Oxford University Press; 1991.
6. Secretaría de Salud. Decreto por el que se crea el Instituto Nacional de Salud Pública. Diario Oficial de la Federación, 27 de enero de 1987.
7. [Internet] Consultado el 10 de febrero de 2015. Disponible en: http://www.educaedu.com.mx/salud-publica
8. Gómez-Dantés O, Sesma S, Becerril VM, Knaul FM, Arreola H, Frenk J. [The health system of Mexico]. Salud Publica Mex. 2011;53 Suppl 2:s220-32.
9. Chavkin W, Chesler E, eds. Where Human Rights Begin: Health, Sexuality, and Women in the New Millennium. Rutgers University; 2005.
10. Soberón Acevedo G, comp. Derecho constitucional a la protección de la salud. Ciudad de México: Miguel Angel Porrúa; 1983.
11. Secretaría de Salud. Decreto por el que se reforma y adiciona la Ley General de Salud. México: Diario Oficial de la Federación; 15 de mayo de 2003.
12. Secretaría de Salud. Reglamento de la Ley General de Salud en Materia de Protección Social en Salud. México: Diario Oficial de la Federación; 2004.
13. Kumate J, Isabasi A, Llausas A. Perspectivas en la investigación de las enfermedades infecciosas y parasitarias. En: Velázquez-Arellano A, ed. La salud en México y la investigación clínica. Desafíos y oportunidades para el año 2000. Ciudad de México: Coordinación de la Investigación Científica, Dirección General de Publicaciones, UNAM; 1985.

XV. This phrase is part of the speech entitled *A talisman* that Gandhi wrote and pronounced on August 1947, the year India obtained its independence.

14. De Micheli A, Izaquirre-Ávila R. [On the vaccination before and after Jenner]. Rev Invest Clin. 2011;63(1):84-9.
15. Valdespino-Gómez JL, García-García ML. [Thirtieth anniversary of the National Measles Vaccination Program in Mexico. The great benefits and potential risks]. Gac Med Mex. 2004;140(6):639-41.
16. Frenk J, Gómez-Dantés O. Extending the right to health care and improving child survival in Mexico. En: Selendy J, ed. Water and Sanitation Related Diseases and the Environment: Challenges, Interventions and Preventive Measures. John Wiley & Sons; 2011.
17. Hurtado Ochoterena C, Matías Juan NA. Historia de la vacunación en México. Vac Hoy Rev Mex Puer Pediatr. 2005;13(74):47-52.
18. Santos JI. [Vaccination in Mexico in the context of the "vaccine decades": achievements and challenges]. Gac Med Mex. 2014;150(2):180-8.
19. Kumate J. A cien años del descubrimiento de Ross: el paludismo en México. México: El Colegio Nacional; 1998.
20. Sharp PM, Hahn BH. Origins of HIV and the AIDS Pandemic. Cold Spring Harb Perspect Med. 2011;1(1):a006841.
21. Soberón G. [AIDS: general characteristics of a public health problem]. Salud Publica Mex. 1988;30(4):504-12.
22. Fundación México Vivo. Treinta años del VIH-SIDA: perspectivas desde México. México: Fundación México Vivo; 2011.
23. Larracilla Alegre J. A 50 años de iniciada la hidratación oral voluntaria en niños con diarreas. Revista Mexicana de Pediatría. 2011;78(2):85-90.
24. Sepúlveda J, Bustreo F, Tapia R, et al. Improvement of child survival in Mexico: the diagonal approach. Lancet. 2006;368(9551):2017-27.
25. Esparza-Aguilar M, Bautista-Márquez A, González-Andrade Mdel C, Richardson-López-Collada VL. [Analysis of the mortality due to diarrhea in younger children, before and after the introduction of rotavirus vaccine]. Salud Publica Mex. 2009;51(4):285-90.
26. Sepúlveda J, Valdespino JL, García-García L. Cholera in Mexico: The paradoxical benefits of the last pandemic. Int J Infect Dis. 2006;10(1):4-13.
27. Secretaría de Salud. Alerta DGE/2010/18/COLERA/18 agosto 2010 y Alerta DGE/2011/1/COLERA-A 19 abril 2011.
28. Moore SM, Shannon KL, Zelaya CE, Azman AS, Lessler J. Epidemic risk from cholera introductions into Mexico. PLoS Curr. 2014;6.
29. Zipprich J, Winter K, Hacker J, Xia D, Watt J, Harriman L. Measles outbreak—California, December 2014-February 2015. MMWR Morb Mortal Wkly Rep. 2015;64(6):153-4.
30. México, Gobierno de la República. Los Objetivos de Desarrollo del Milenio en México. Informe de Avances 2013: Resumen Ejecutivo. [Internet] Disponible en: http://200.23.8.225/odm/doctos/ResInfMex2013.pdf
31. Tuirán R, Partida V, Mojarro O, Zúñiga E. Fertility in Mexico: trends and forecasts. En: Completing the fertility transition. United Nations, Department of Economic and Social Affairs, Population Division; 2002.
32. Instituto Nacional de Estadística y Geografía e Instituto Nacional de las Mujeres. Mujeres y hombres en México 2010. México: INEGI e INMUJERES; 2013.
33. Gutiérrez JP, Rivera-Dommarco J, Shamah-Levy T, et. al. Encuesta Nacional de Salud y Nutrición 2012. Resultados Nacionales. Cuernavaca, México: Instituto Nacional de Salud Pública; 2012.
34. Grupo de Información en Reproducción Elegida. Omisión e indiferencia: derechos reproductivos en México. México: GIRE; 2013.
35. Mensaje del Dr. Javier Domínguez del Olmo, Oficial Nacional de Programas del Fondo de Población de las Naciones Unidas en México (UNFPA) en la Conmemoración del Día Nacional para la Prevención del Embarazo no Planificado en Adolescentes. [Internet] Disponible en: http://www.unfpa.org.mx/noticias/UNFPA_26_09-2011.pdf
36. Observatorio Mexicano de Mortalidad Materna. Indicadores 2012. [Internet] Disponible en: http://www.omm.org.mx/omm/images/stories/Documentos%20grandes/Indicadores%202012%20octubre%2029.pdf
37. Sepúlveda J, Tapia-Conyer R, et al. Diseño y metodología de la Encuesta Nacional de Salud 2000. Salud Publica Mex. 2007;49 Suppl 3.
38. Tapia-Conyer R, Kuri-Morales P, González-Urbán L, Sarti E. Evaluation and Reform of Mexican National Epidemiological Surveillance System. Am J Public Health. 2001;91(11):1758-60.
39. Medina Mora ME, coord. Tabaquismo en México: ¿cómo evitar 60,000 muertes prematuras cada año. México: El Colegio Nacional; 2010.
40. Comité Nacional para la Seguridad en Salud. Plan Nacional de Protección de la Salud ante el Riesgo de Bioterrorismo. México: Secretaría de Salud; 2004. [Internet] Disponible en: http://www.salud.gob.mx/unidades/cdi/documentos/Gen-planBioterrorismo.pdf
41. Kuri Morales P, Santos Preciado JI. [Severe acute respiratory syndrome and the organized response in Mexico: are we prepared?] Salud Publica Mex. 2003;45(3):157-8.
42. Comité Nacional para la Seguridad en Salud. Plan Nacional de Preparación y Respuesta ante la Pandemia de Influenza. Ciudad de México: Secretaría de Salud; 2005.
43. Kuri Morales P, Betancourt Cravioto M, Velázquez Monroy O, Álvarez Lucas C, Tapia-Conyer R. [Influenza pandemic: Mexico's response]. Salud Publica Mex. 2006;48(1):72-9.
44. CONEVAL. Evaluación estratégica de protección social en México. CONEVAL; 2013. [Internet] Disponible en: http://www.coneval.gob.mx/Informes/Evaluacion/Estrategicas/Evaluacion_Estrategica_de_Proteccion_Social_en_Mexico.pdf
45. World Health Organization. Global Health Expenditure Database. [Internet] Disponible en: http://apps.who.int/nha/database
46. Tapia Conyer R, Motta Murguia ML. El Derecho a la Protección de Salud Pública. En: Brena Sesma I, comp. Salud y derecho. México: UNAM; 2005.
47. Organización Mundial de la Salud. Resolución CE152/12 sobre Protección Social en Salud. [Internet] Disponible en: http://www.paho.org/hq/index.php?option=com_content&view=article&id=9119:nueva-resolucion-organizacion-panamericana-salud-sobre-proteccion-social-salud-region-americas&Itemid=2075&lang=es
48. Ruiz L, Arredondo O. Transparencia presupuestaria y rendición de cuentas. México: Fundar, Centro de Análisis e Investigación, AC; 2012.
49. Auditoría Superior de la Federación. Informe General de la Cuenta Pública 2013. [Internet] Disponible en: http://www.asf.gob.mx/uploads/55_Informes_de_auditoria/Informe_General_CP_2013.pdf
50. Kuri-Morales PA. [Impact of health transition on services demand]. Gac Med Mex. 2011;147(6):451-4.
51. Comisión Nacional de Derechos Humanos. Recomendación General 15 sobre el Derecho a la Protección de la Salud. México, 23 de abril de 2009. [Internet] Disponible en: http://www.cndh.org.mx/sites/all/fuentes/documentos/Recomendaciones/Generales/REC_Gral_015.pdf
52. Organización Mundial de la Salud. Universal Health Coverage (UHC). Fact sheet N° 395. Septiembre de 2014.
53. Shortell SM, Casalino LP. Health Care Reform Requires Accountable Care Systems. JAMA. 2008;300(1):95-7.
54. Rittenhouse DR, Shortell SM, Fisher ES. Primary care and accountable care--two essential elements of delivery-system reform. N Engl J Med. 2009;361(24):2301-3.