



# ***vaccination contribution to the sustainability and efficiency of health care systems in Libya***

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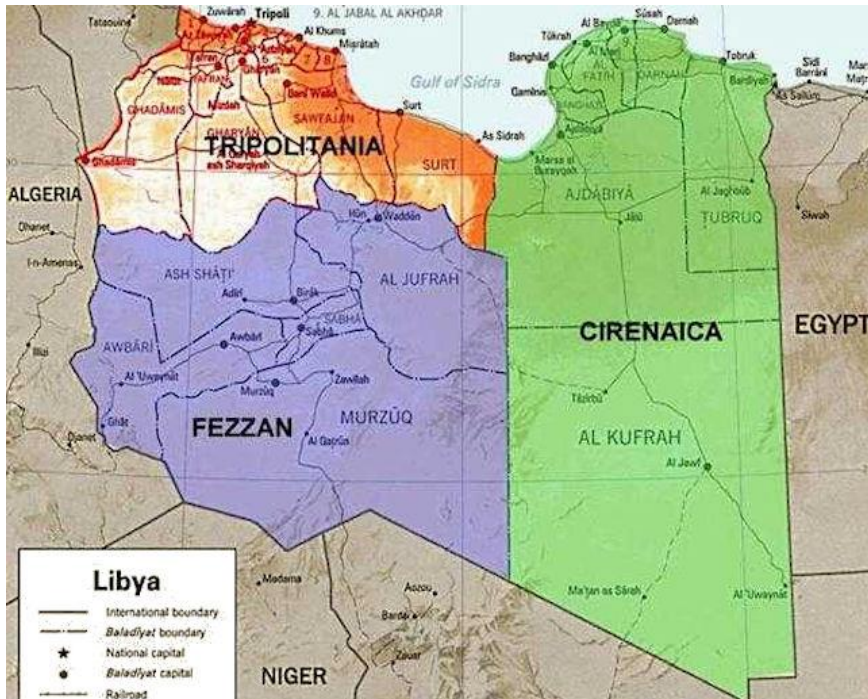
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Libya is a vast country, its territories approaches 1.8 Sq /km, surrounded by 6 African countries, its coast extends approximately 2000 km on the Mediterranean sea

# POPULATION



- The **population of Libya is estimated to be 7000,000** it is ranked the 106 nation in population among the 193 nations of the world.
- Birth Cohort 230000 / Years
- Approximately 40% of the population under 20 years of age, **4% over 65 years.**
- The overall population density is **4 per sq km.**
- **86% of the population live in urban areas**, The capital city, **Tripoli** population of 2,006,000. **Benghazi**, population is 1,033,000.

# PAST CONTRIBUTION OF VACCINATION TO GLOBAL HEALTH

## Jenner The man who eradicated Smallpox

- The development of vaccination as a public health tool is attributed to Edward Jenner and his experiments with cowpox in **1796**.
- As smallpox vaccine was the first vaccine to be deployed widely in human, it was appropriate that smallpox was the first human infectious disease to be eradicated by vaccination, a milestone achieved in **1979**



# Libyan Vaccine Program history

- Libyan vaccine program is long lasting .It started in the sixties of the last century , and being evolved with time.
- Libya was the 1<sup>st</sup> country to introduce BCG vaccination on massive scale, Libya in 1971 has passed a legislation, that made BCG vaccination compulsory.



# Libyan Vaccine Program history

- The program is being upgraded continuously , MMR was introduced in the early 90ties , and being given at 12 and 18 months .
- Hep B vacine was First introduced in 1993 , then we went back and immunized , those born in 91 , and 92 and went back further and immunized those born in 88,89 and 90 .



# Libyan Vaccine Program history

- The last case of confirmed paralytic polio in Libya was in October 1991. Libya has been through the switching process from TOPV to b.OPV in may 2016 including the fighting zoons.
- Now adays immunization against polio , now include 2 doses of oral polio (BOPV) ,at birth and at 9m of age , in addition to 5 doses of injectable polio at 2,4,6,18 months and 6 years.
- In response to reported cases of paralytic polio from Syria and Nigeria , Libya has conducted 4 polio vaccination campaigns against polio .



# Evolutions of The Libyan EPI from 19sixties -2018



# Libyan EPI in the sixties

- During the sixties of the last century , Libya vaccine program included immunization against :
  - **BCG , Measles, poliomyelitis.**
  - **Diphtheria, Tetanus, whooping cough**



# Libyan EPI 2007

Age/Months	Item specification
Birth	BCG+ T-OPV & Hepatitis B
2M	Penta (DT <b>P</b> + HBV + HIB) +OPV
4M	Penta (DT <b>P</b> + HBV + HIB) +OPV
6 M	Penta (DT <b>P</b> + HBV + HIB) +OPV
12 M	MMR + OPV
18 M	DPT+ MMR
6 Y	DT + OPV
15Y	Td Adult + OPV



# Upgraded Libyan EPI 2012-2013

Age/Months	Item specification
Birth	BCG+ OPV & Hepatitis B
2M	Hixa (DTaP+ HBV + HIB+IPV) + Rota +PCV
4M	Hixa (DTaP+ HBV + HIB+IPV) + Rota +PCV
6 M	Hixa (DTaP+ HBV + HIB+IPV) + Rota
9M	Meng conjugate A,C,Y,W 135 & OPV
12 M	Meng conjugate A,C,Y,W 135 + PCV + MMR
18 M	Penta (DTaP+ HIB+IPV) & MMR
6 Y	Meng Cong + DT + OPV
15Y	Td Adult + + TOPV+ (HPV 3 dose)



# Libyan Vaccine Program

- HPV introduced in 2013 for girls aged 15y.
- 2017 HPV moved to the age of 12y, and to close the gap we immunizing the 13 and 14y old.



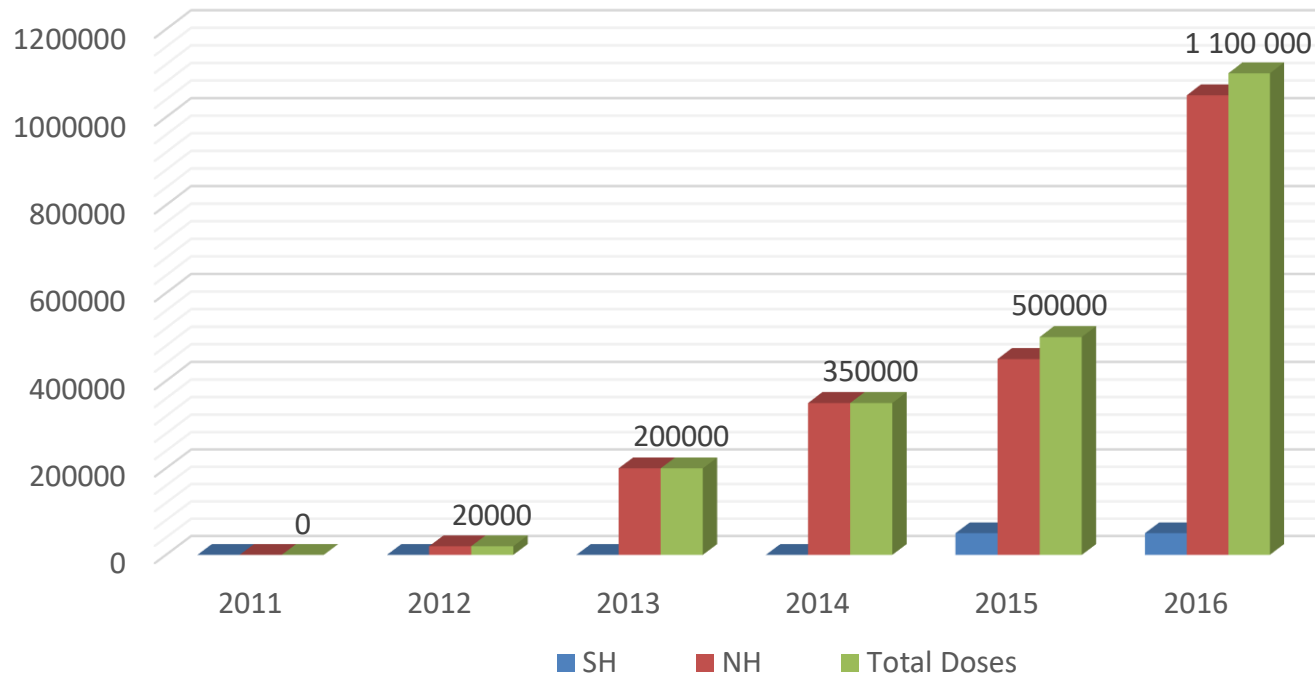
# Upgraded EPI 2017-2018 :

Age/Months	Item specification
Birth	BCG+ <b>b-OPV</b> & Hepatitis B
2M	Hixa (DTaP+ HBV + HIB+IPV) +Rota RotaVairus + <b>PCV</b>
4M	Hixa (DTaP+ HBV + HIB+IPV) +Rota RotaVairus + <b>PCV</b>
6 M	Hixa (DTaP+ HBV + HIB+IPV) + Rota RotaVairus
9M	Meng conjugate A,C,Y,W 135 & <b>b-OPV</b>
12 M	Meng conjugate A,C,Y,W 135 + PCV + MMR
18 M	Penta (DTa <b>P</b> + HIB+IPV) & MMR
<b>6 Y</b>	<b>Tetra (TdaP+IPV)</b> & Meng Cong
<b>12 Y (Female )</b>	<b>Q HPV</b>
<b>15Y</b>	<b>Meng conjugate &amp; TdaP</b>

# Flu vaccine utilization 2011-2017



# Flu vaccine utilization 2011-2017



	<2011	2012	2013	2014	2015	2016	2017
NH	0	20000	200000	350000	450,000	1,050,000	On Going
SH	0				50,000	50,000	
Total	0	20,000	200,000	35000	500,000	1,100,000	



# Adult Vaccination Program

- Hep B Vaccine
- Flu Vaccine
- T.T. Vaccine
- W. Cough
- Meng. Vaccine
- Hz Vaccine





## Studies to support the programs

- Whooping cough serological study at school entry
- MMR Serological study at school entry
- Meningococcal Pharyngeal swap study age band ( 10-21 Years )
- Whooping cough serological study during Pregnancy
- Hepatitis A Virus serological study at school children

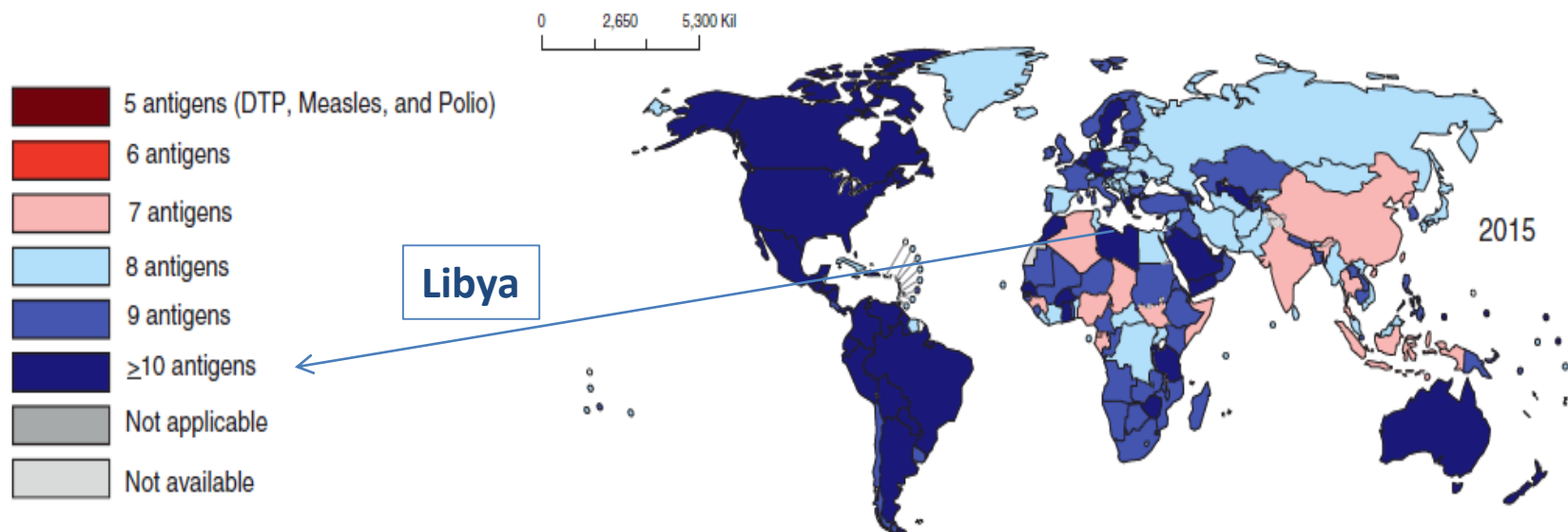


## Libyan Vaccine Program

- Vaccination are enforced by law.
- kept as government monopoly .
- Free of charge for all (expectancies and immigrants) Equity achieved.
- The Libyan public support was crucial for the progress of the program.



# Number of vaccines antigens introduced in national immunization schedule 2000 compared to July 2015



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# Public Health Benefit

- The infrastructure
- Personnel required
- Effective and Quality Vaccine
- An effective and sustainable immunization program .
- These are the corner stone of primary health-care services particularly in the critical perinatal and early infancy period.
- The annual return on investment in vaccination has been calculated to be in the range of 12% to 18%, but the economic benefits of improved health continue to be largely underestimated.



# Promoting investment and Economic Growth

- Vaccination is considered the most successful and cost effective medical intervention ever introduced.
- A recent publication from the U.S centers for Disease Control and Prevention suggests that this distinction continues to hold, reporting that for children born in the U.S during the period 1994–2013 vaccines will have prevented 322 million illnesses, 21 million hospitalizations and 732,000 premature deaths, saving \$295 billion in direct medical costs and \$1.38 trillion in total societal costs.

Whitney CG, Zhou F, Singleton J, Schuchat A (2014) Benefits from immunization during the vaccines for children program era— U.S, 1994–2013. *MMWR Morb Mortal Wkly Rep* 63(16): 355-352.



## Sustainment and efficiency of the EPI during conflict

- The national vaccine programs is maintained in full including in the fighting zones
- Introduction of New Vaccine.
- Renewal of the Cold Chain System
- National campaigns:
  - 4 for polio between 2014 – 2017
  - One for MMR in OCT 2017.
  - The coverage rates of these campaigns were in excess of 95%.
  - The campaigns were monitored by UNICEF, WHO & NGO



# Preventing development of antibiotic resistance

- The development of new vaccines against infectious pathogens where antibiotic resistance is a global threat is viewed as a better long- term option to control the problem of increasing resistance.
- Vaccines reduce the prevalence and hinder the development of resistant strains.
  - Streptococcal drugs resistance
  - Multi drugs resistance



# Improvement of infant morbidity and mortality

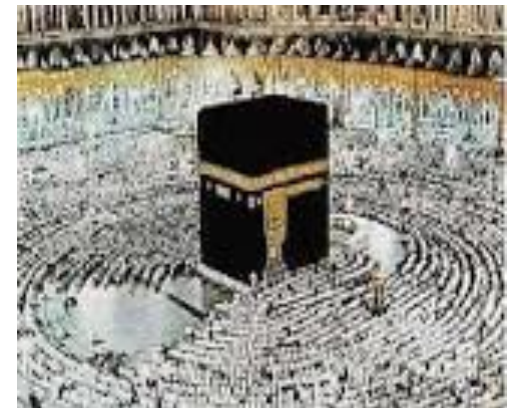
- With improvements in infant and child mortality, women can have as much children as they want, that can reach adulthood with out fears.
- This has significant health, educational, social and economic benefits.





# Safe travel and mobility

- Pilgrims for Hajj and Umra are given
  - Seasonal Flu vaccine
  - Meng. Vaccine
- Traveler to to High Risk area
  - Yellow Fever Vaccine
  - Meng. Vaccine



# Prevention of related Diseases

- Cancer ( Hepatic cell carcinoma )



- Congenital anomalies & Mental Retardation



# Prevention of related Diseases

- Physical disability



## Sub acute sclerosing panencephalitis

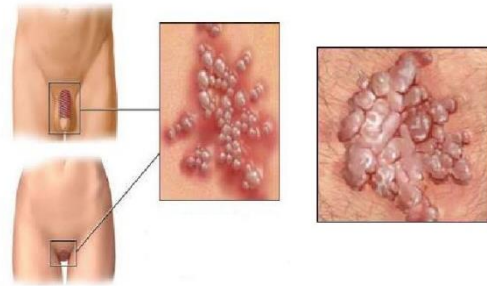
## Measles & SSPE

- **Subacute sclerosing panencephalitis (SSPE)** 1 in 100,000 people infected with measles develop SSPE. SSPE is 'incurable' but the condition can be Prevented by vaccination



# Prevention of related Diseases

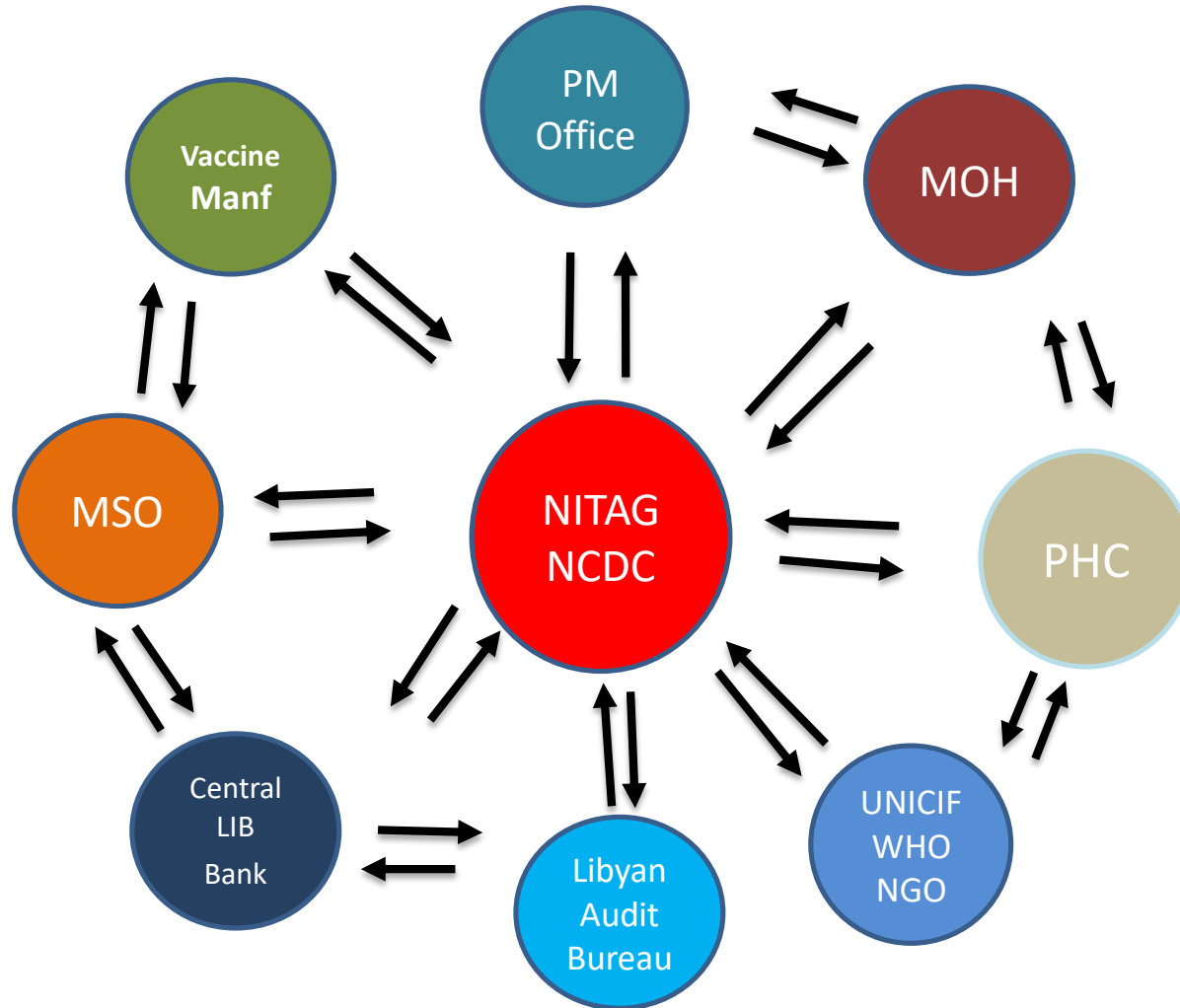
## HPV Genital warts & Cr. Cancer



## Meng. & Amputation



# inter-sectoral interaction in our EPI



## Conclusion

- Sustainability of our vaccine program has contributed to efficient health care system.
- Multi sectorial cooperation and understanding is crucial part for sustaining good health system extends equity, reduces poverty, and being cost effective.
- Continuous upgrading is mandatory and it is human right for every individual to have access to safe vaccine of proven efficacy so that they can live a healthier and fuller life.









