VACCINATION, THE BASIC PILLAR OF HEALTH POLICY

ΣfEE
HELLENIC PHARMACEUTICAL
COMPANIES ASSOCIATION

December
2023

CONTENTS

SUMMARY

Vaccines constitute one of the most effective interventions in public health.

The development of vaccination programmes according to the population's health needs and the full implementation of the recommendations constitute an investment in public health and the health system.

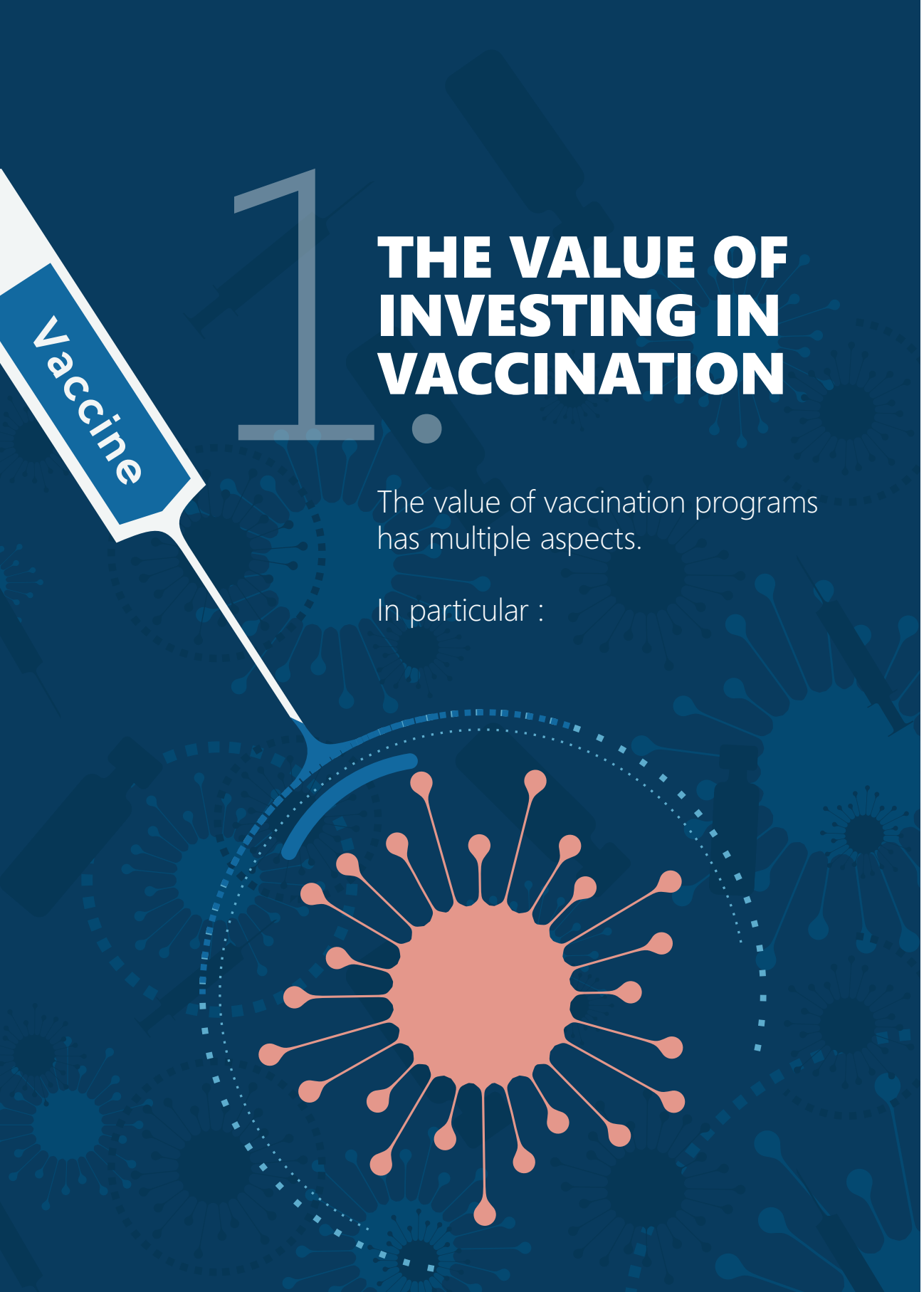
Vaccination concerns all age groups.

The benefits of vaccination do not regard solely the persons vaccinated but affect the whole population, through the so-called "herd immunity".

The recent public health crisis, COVID-19 pandemic highlighted the value of vaccines, since they contributed to the limitation of the virus dissemination and helped the global community return to normal.

Greece has one of the most updated vaccination programmes according to the recommendations of European and International health authorities. Nevertheless, defining vaccination goals and distinct processes for the establishment, assessment, reimbursement and monitoring mechanisms of the vaccination program are crucial factors for the protection and promotion of public health.

An equally important factor for the development of advanced and effective vaccination programmes is the adoption of a sustainable budget. In the formation of the budget, the process of horizon scanning is important.



1 THE VALUE OF INVESTING IN VACCINATION

The value of vaccination programs has multiple aspects.

In particular :

1.1. VACCINATION CONSTITUTES INVESTMENT IN PUBLIC HEALTH

Vaccination constitutes investment in public health since it brings about important benefits to the whole society.[1,2] The World Health Organisation (WHO) estimates that vaccines save 4 to 5 million lives annually.[3]

A McKinsey survey demonstrated that states' investment in prevention – including vaccination – can bring about a reduction by circa 40% of the global morbidity load in the next decades, leading to a healthier society and a stronger economy. In fact, a healthy population could contribute up to $2.4 trillion in Europe's GDP within the next twenty years[4], given the reduced morbidity & mortality, as well as increased productivity.

The USA Contagious Disease Center (CDC) states, respectively, that for each dollar spent in child vaccination $3 dollars are saved in direct cost (diseases management) and $10 dollars are saved indirectly with regard to the overall cost society incurs[14], estimating that the vaccination of children born in the USA between 1994-2018 saved $406 billion dollars in terms of direct medical cost and $1.88 trillion in terms of social cost.[5]

An analysis published in 2020 by the London Office of Health Economics showed, respectively, that for each 1£ invested by the British state in vaccination, 2.18£ in average "are refunded" to the health system (including vaccination against HPV, pneumococcal disease and herpes), thus demonstrating the important contribution of vaccination in the improvement of the health level and economic growth of the country.[6]

1. Ethgen O, Baron-Papillon F and Corner M (2016). How much money is spent on vaccines across Western European countries? Hum Vaccin Immunother. Vol. 12(8): 2038–2045.
2. Bloom DE, Cadarette D and Ferranna M (2021). The Societal Value of Vaccination in the Age of COVID-19, Am J Public Health. 111(6): 1049-1054. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8101582/ (Accessed September 2021).
3. Xiang Li, Christinah Mukandavire & Zulma M Cucunubá et al. (2021), 'Estimating the health impact of vaccination against ten pathogens in 98 low-income and middle-income countries from 2000 to 2030: a modelling study', The Lancet, Vol. 397, No. 10272, 398-408
4. Prioritizing health: A prescription for prosperity | McKinsey
5. Vaccines Are Cost Saving - Vaccinate Your Family
6. The Broader Value of Vaccines: The Return on Investment From a Governmental Perspective | OHE https://www.ohe.org/publications/broader-value-vaccines-return-investment-governmental-perspective

Furthermore, studies in Europe show that vaccination against seasonal flu may save between 248 and 332 million Euros annually thanks to the cost reductions of hospitalization and medical visits to the GP.[7]

Finally, during the first year of the pandemic, it is estimated that vaccination against COVID-19 prevented 19.8 million deaths, reducing death rates due to COVID-19 by 63% in 185 countries.[8] In the USA in particular, according to a recent study, the overall savings due to vaccination are estimated at $51,77 billion, with each $1 invested in vaccination bringing a return on investment of approximately $10 from direct and indirect costs that would have burdened the population and the health system if vaccination had not taken place.[9]

1.2. VACCINATION CONCERNS ALL AGE GROUPS

Vaccination programmes aim at covering the health needs of all age groups. It is worth mentioning that the extended vaccination campaigns have led to the eradication of smallpox while Europe is free of poliomyelitis.[10] In the period 2001 to 2020, vaccines have overall prevented circa 20 million deaths, 500 million cases of disease/morbidity and 9 million cases of long-term invalidity worldwide.[11] More specifically, child vaccination strengthens the health of baby and infant populations, and leads to a healthy growth. According to the W.H.O., it is estimated that 4-5 million deaths annually, on a global scale, are prevented through vaccination[12] and 750,000 children are saved from severe disability, while 1.5 million additional deaths may be avoided if global vaccination coverage is extended.[13,14] Adolescents' vaccination, respectively, further boosts organism's resistance against infectious diseases.

7. Preaud E et al (2014). Annual public health and economic benefits of seasonal influenza vaccination: a European estimate. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4141103/ (Accessed September 2021). Largerin N et al (2015). Role of vaccination in the sustainability of healthcare systems, J Mark Access Health Policy. https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC4802702/ (Accessed September 2021)
8. Watson, O.J., Barnsley, G., Toor, J., Hogan, A.B., Winskill, P. and Ghani, A.C., 2022. Global impact of the first year of COVID-19 vaccination: a mathematical modelling study. The Lancet Infectious Diseases, 22(9), pp.1293-1302.
9. Sah, P., Vilches, T.N., Moghadas, S.M., Pandey, A., Gondi, S., Schneider, E.C., Singer, J., Chokshi, D.A. and Galvani, A.P., 2022. Return on investment of the COVID-19 vaccination campaign in New York City. JAMA Network Open, 5(11), pp. e2243127-e2243127
10. European Commission (2018). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Strengthened Cooperation against Vaccine Preventable Diseases. https://eur-lex.europa.eu/legal-content/EN/ TXT/?uri=CELEX:52018DC0245 (Accessed September 2021).
11. WHO (2017). Bulletin of the World Health Organization: Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020. https://www.who.int/bulletin/volumes/95/9/16-178475/en/ (Accessed September 2021)
12. Vaccines and immunization (who.int)
13. WHO Europe (2014). European Vaccine Action Plan 2015-2020. https://www.euro.who.int/__data/assets/pdf_file/0007/255679/ WHO_EVAP_UK_v30_WEBx.pdf (Accessed September 2021).
14. http://www.who.int/features/factfiles/immunization/en/

Finally, the adults' vaccination programme protects them from life-threatening diseases, significantly diminishing the probabilities of complications appearance.

The benefits are extremely important as the demographics are a critical factor in the design of Public Health Policy goals. Population's ageing, in particular, increases the danger of chronic diseases, thus exerting pressure on the health care systems. It is stated, for example, that vaccination against seasonal flu may reduce hospitalizations and deaths by 45% and 38% respectively amongst aged persons with diabetes, and is also related with reduced risk of cardio-vascular related death.[15,16] Similarly, the recent public health crisis – the COVID-19 pandemic – has shown that infectious diseases can have disastrous effects on the health and life quality of adult population. Almost half a million lives of persons beyond the age of 60 were saved in 33 countries in the whole European region of W.H.O. since the onset of the vaccination against COVID-19.[17]

1.3. VACCINATION BOOSTS POPULATION'S RESILIENCE AGAINST VIRUSES THAT MAY LEAD TO CANCER

The Human Papilloma Virus (HPV) is accountable for circa 90% of cervix & uterus cancer, as well as other forms of cancer, both in men and women.[18] Hepatitis B, respectively, affects the lives of 15 million people in Europe and may lead to complications such as liver damage or cancer in 20-30% of the cases.[19] In total, vaccination against Hepatitis B and Human Papilloma Virus (HPV) might avert 1.1 million cancer cases globally.[20]

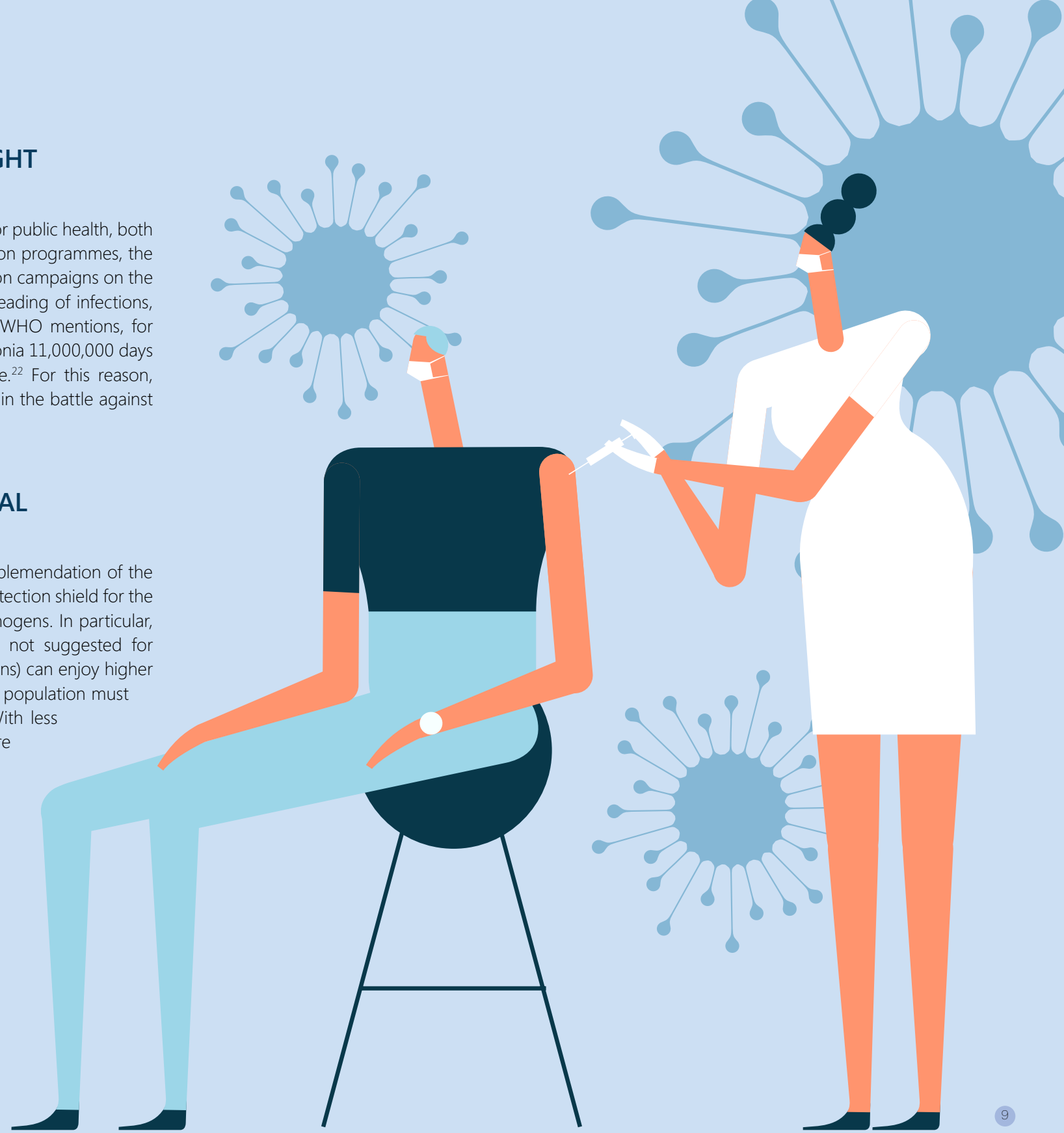
15. Pascale E et al (2020). Communicating Benefits from Vaccines Beyond Preventing Infectious Diseases, Infectious Diseases and Therapy. 9: 467–480.
16. Modin D et al (2020). Influenza Vaccination Is Associated with Reduced Cardiovascular Mortality in Adults with Diabetes: A Nationwide Cohort Study, Cardiovascular and Metabolic Risk. 43(9): 2226-2233. https://care.diabetesjournals.org/content/43/9/2226.long (Accessed September 2021). 13
17. https://www.ecdc.europa.eu/en/news-events/who-ecdc-nearly-half-million-lives-saved-covid-19-vaccination
18. Arbyn M et al (2020). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. https://pubmed.ncbi.nlm.nih.gov/31812369/ (Accessed September 2021)
19. WHO Europe (2019). Hepatitis B in the WHO European Region. https://www.euro.who.int/__data/assets/pdf_file/0007/377251/Fact-Sheet-Hepatitis-B_2019-ENG.pdf (Accessed September 2021).
20. Gavi. World Cancer Day: the little-known role of vaccines in fighting cancer. https://www.gavi.org/news/media-room/world-cancer-day-little-known-role-vaccines-fighting-cancer? gclid=EAIaIQobChMI97uii52t8AIVD6h3Ch1HcQ1TEAAYAiAAEgKrlPD_BwE (Accessed September 2021).

1.4. VACCINATION IS AN ALLY IN THE FIGHT AGAINST MICROBE RESISTANCE

The development of microbe resistance constitutes a major threat for public health, both at global and national level. The development of modern vaccination programmes, the full implementation of recommendations, the continuous information campaigns on the multiple benefits of vaccination, can all impede the onset and spreading of infections, thus contributing to the reduced use of antibiotics up to 47%.[21] WHO mentions, for instance, that if every kid were vaccinated for streptococcal pneumonia 11,000,000 days of annual antibiotic therapy would have been avoided worldwide.[22] For this reason, WHO has developed a 10-year action plan for the use of vaccines in the battle against microbial resistance.

1.5. VACCINATION AS A MEANS OF SOCIAL SOLIDARITY

Through the herd immunity, which is achieved through the full implemendation of the vaccination goals set by the public health authorities, an indirect protection shield for the whole population is built, due to the "lower circulation" of the pathogens. In particular, specific social groups (vulnerable ones) for which vaccination is not suggested for certain diseases (i.e. pregnant women, immune-depressed, newborns) can enjoy higher protection through vaccination. In the case of measles, 95% of the population must be immune against measles in order to secure herd immunity. With less than 95% of the individuals immune to measles, the incidents more than tripled from 2016 (<5,000) to 2017 (14,000) reaching the 8,000 cases in 2018 in the W.H.O. region of Europe – the highest figures in a decade.



21. Leveraging Vaccines to Reduce Antibiotic Use and Prevent Antimicrobial Resistance: An Action Framework: World Health; 2020. Licence: CC BY-NC-SA 3.0 IGO
22. Antibiotic resistance: Why vaccination is important (who.int)

2 THE NEW ENVIRONMENT AND THE IMPORTANCE OF VACCINATION PROGRAMMES

Greece disposes one of the most advanced vaccination programmes, regarding the child, adolescent and adult population. Nevertheless, the new challenges indicate the need for taking action through fully implementing the national vaccination programme in order for the public to obtain the biggest benefit of the vaccination

In this context, the following factors are crucial:

2.1. CREATING DISTINCT PROCEDURES FOR THE ESTABLISHMENT, ASSESSMENT AND REIMBURSEMENT OF VACCINES

Setting distinct stages and clearly defined responsibilities and procedures for the agencies defined by law regarding the development and reimbursement of the vaccination programmes is important in designing and implementing of vaccination policies. A transparent decision-making process will strengthen the trust of the population towards vaccination.

2.2. DESIGNING A SUSTAINABLE BUDGET FOR VACCINATION

The Hellenic Association of Pharmaceutical Companies (SFEE), acknowledging that the financial sustainability of the vaccination programme is an investment in society[23,24], stresses, the importance of the existence of a separate vaccines budget that has been established since 2020.[25]

In drafting a sustainable budget, the knowledge of the health needs, the demographic evolutions, the changes in the disease patterns and the developments in technology are important factors to consider., The "horizon scanning" process that provides the necessary information regarding the evolutions in the field of new technologies and the full implementation of registries are mechanisms that can contribute to the long-term planning and securing the financial sustainability of the vaccination programmes.

2.3. ESTABLISHING VACCINATION TARGETS

Establishing vaccination targets reflects the commitment of the health authorities in establishing vaccination as the main tool for the promotion of public health. More specifically, European Union has been pointing out the need for establishing vaccination coverage goals since 2009. The W.H.O. respectively included in the European Vaccination Action Plan 2015-2020 goals such as maintaining a poliomyelitis-free Europe, eradicating measles and rubella, containing hepatitis B, and attaining specific vaccination coverage goals such as ≥ 95% of the DTP vaccine in 48 of the 53 countries (90% rate) and 75% of

23. European Commission (2018). Commission Communication on Strengthened Cooperation against Vaccine Preventable Diseases. https://eur-lex.europa.eu/resource.html?uri=cellar:b86c452c-494e-11e8-be1d-01aa75ed71a1.0001.02/DOC_1&format=PDF (Accessed September 2021).
24. Faivre P et al (2021). Immunization funding across 28 European countries, Expert Rev Vaccines. https://www.tandfonline.com/doi/full/10.1080/14760584. 2021.1905257 (Accessed September 2021).
25. N. 4715/2020

the vaccine against seasonal flu. Regarding HPV vaccination, for 2020 and 2021, W.H.O.[26] and E.U[27] set as vaccination goal to increase the vaccination rate in girls at least 90% (up to 15 years old) as well as to significantly increase the vaccination rate in boys in order to reduce HPV-related cancers.

It is worth mentioning that the COVID-19 pandemic has seriously affected the routine vaccination. In 2020, the global vaccination coverage rate dropped at 83%, with 23 million infants below the age of one not having received the basic vaccines, registering negative records for the first time since 2009.[28] The big discrepancies in the vaccination programmes are found in the booster vaccination of adolescents and adults. The non-completion of vaccinations - either primary or boosters – makes them insufficient and ineffective. In particular, an adolescent must be vaccinated against Meningitis of all 4 serotypes A, C, W, Y, against the Human Papilloma Virus (HPR) and complete the booster jabs against Diphtheria, Tetanus, Pertussis and Poliomyelitis.

Equally important are the discrepancies caused by missed booster vaccinations in adults. In the long run, this downward trend may cause a substantial threat to attaining herd immunity and maintaining low morbidity and mortality rates in younger ages, thus leading to the appearance of diseases that could have been prevented through vaccination (Measles epidemic, for instance, in 2017).

2.4. IMPLEMENTATION OF VACCINATION REGISTRIES SYSTEM AND PUBLIC AWARENESS CAMPAIGN

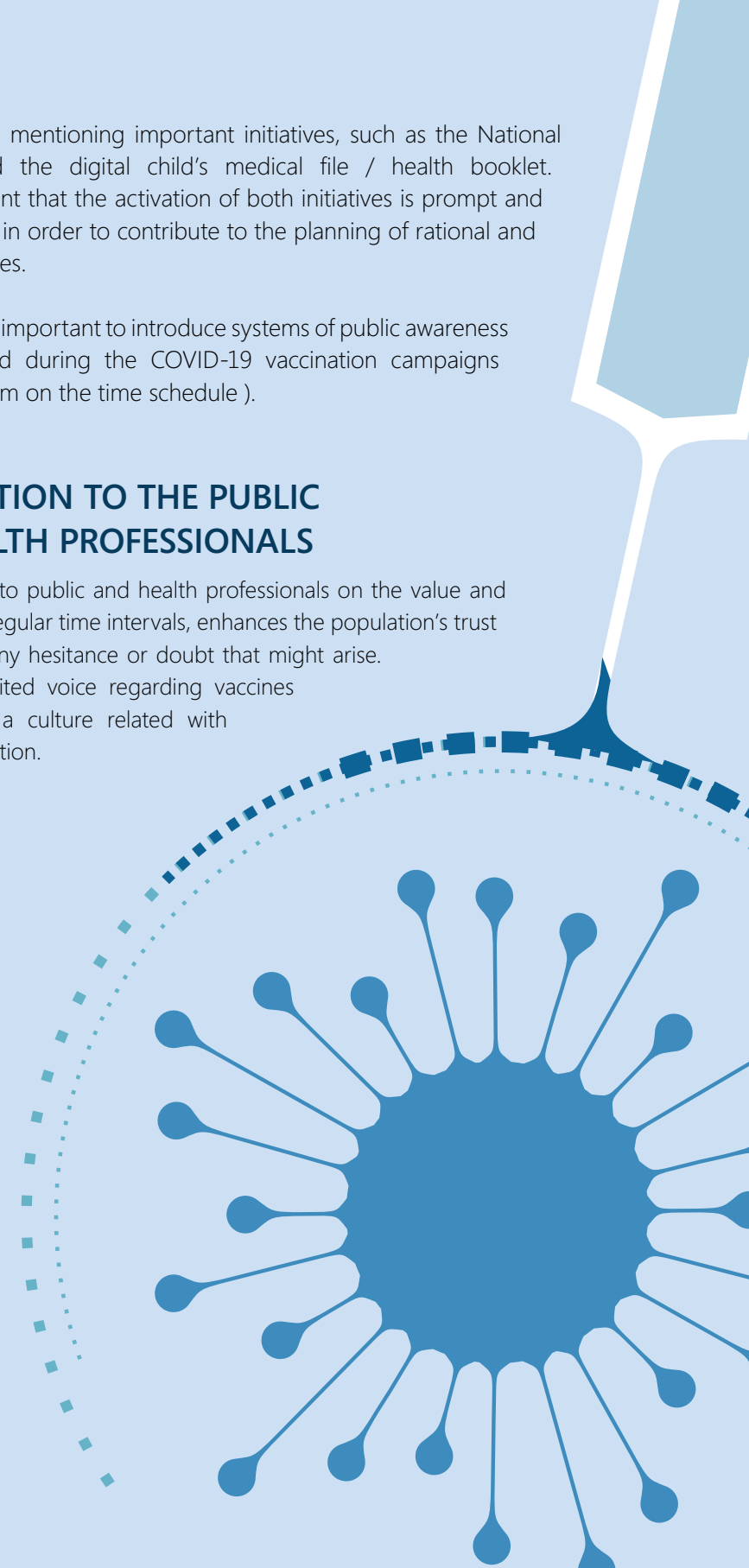
The development of a system recording the vaccination coverage allows to set priorities, offers data for the assessment of the value of the vaccination programme and mobilises the health authorities, scientific community and general population for the correct observation of the National Vaccination Programme. Furthermore, the recording systems may constitute a monitoring system of the established budget and offer significant data for its revision.[29]

In this context, it is worth mentioning important initiatives, such as the National Vaccination Registry and the digital child's medical file / health booklet. Nevertheless, it is important that the activation of both initiatives is prompt and their operation unhindere in order to contribute to the planning of rational and effective vaccination policies.

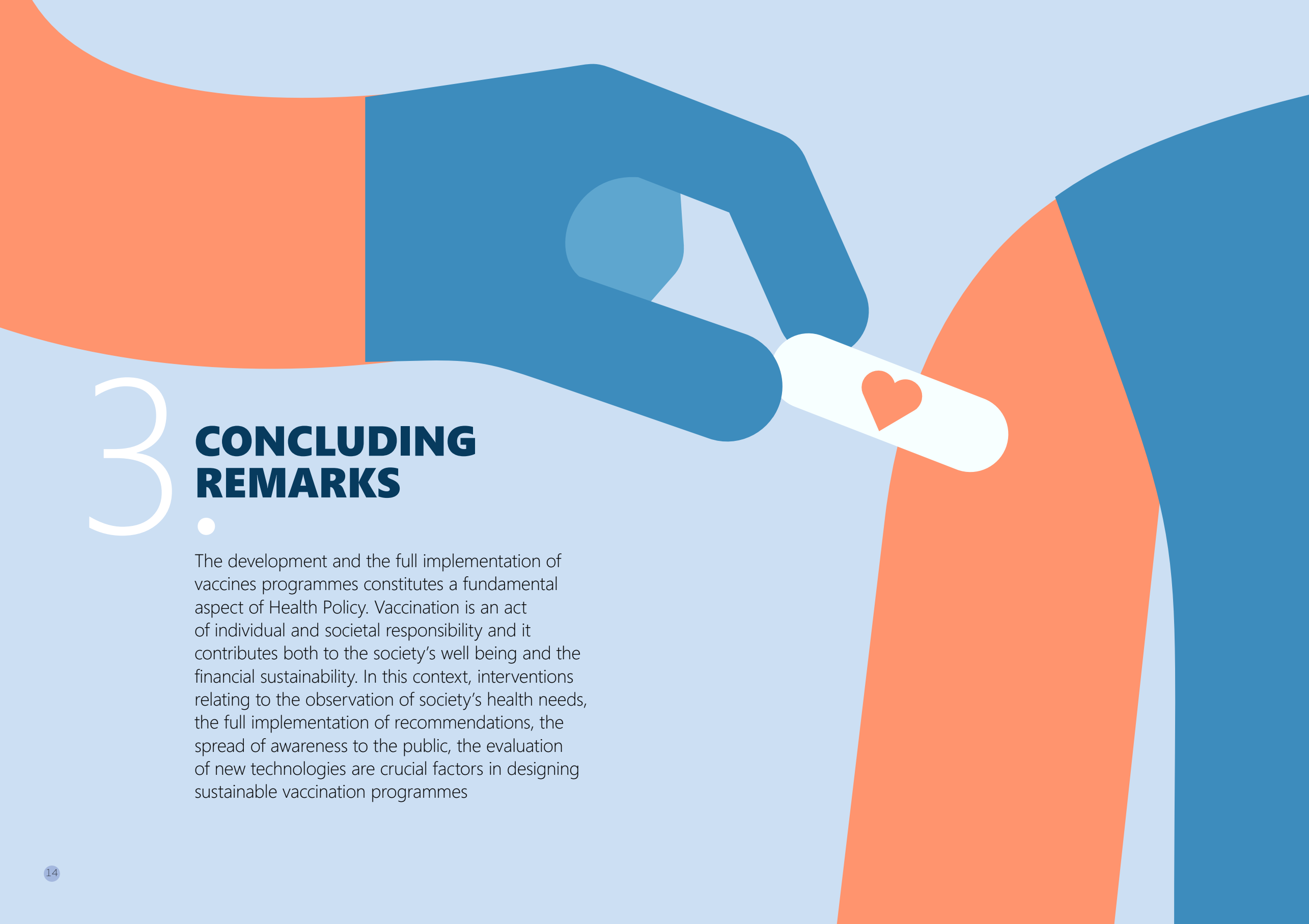
Parallel to that, it would be important to introduce systems of public awareness as the ones implemented during the COVID-19 vaccination campaigns (citizens' information system on the time schedule).

2.5. INFORMATION TO THE PUBLIC AND HEALTH PROFESSIONALS

The on-going information to public and health professionals on the value and benefits of vaccination, in regular time intervals, enhances the population's trust in vaccines and prevents any hesitance or doubt that might arise. Furthermore, having a united voice regarding vaccines leads to the creation of a culture related with prevention through vaccination.



26. WHO World Health Assembly (2020), Global strategy to accelerate the elimination of cervical cancer as a public health problem (who.int)
27. Europe's Beating Cancer Plan (2021), EU Commission, Europe's Beating Cancer Plan (europa.eu)
28. Impact of the COVID-19 Pandemic on Administration of Selected Routine Childhood and Adolescent Vaccinations — 10 U.S. Jurisdictions, March–September 2020 | MMWR (cdc.gov)
29. A-Fresh-Shot.pdf (policyexchange.org.uk



3 CONCLUDING REMARKS

The development and the full implementation of vaccines programmes constitutes a fundamental aspect of Health Policy. Vaccination is an act of individual and societal responsibility and it contributes both to the society's well being and the financial sustainability. In this context, interventions relating to the observation of society's health needs, the full implementation of recommendations, the spread of awareness to the public, the evaluation of new technologies are crucial factors in designing sustainable vaccination programmes

ΣfEE
HELLENIC ASSOCIATION OF PHARMACEUTICAL COMPANIES

280 Kifissias Avenue & 3 Agriniou st., 15232 Chalandri
sfee@sfee.gr, www.sfee.gr