

LIFE COURSE AND INTEGRATION

Introduction and value proposition

Over the next decade, changes in population demography, disease epidemiology and the availability of new vaccines will increase the need to reach different age groups with new vaccines and booster doses. Immunization may be required if immunity against diseases wanes with age but the diseases remain a threat, and if new diseases emerge that affect older age groups and those with underlying risk factors.¹ In some cases, vaccines may be given to mothers to protect newborns, to provide broader population immunity against certain diseases or to reduce unnecessary antibiotic use. By extending vaccination and other health interventions to older children, adolescents and adults, immunization programmes therefore have the potential to contribute substantively towards primary health care strengthening and Sustainable Development Goal 3 (SDG3).

To achieve this potential, immunization programmes will have to work in synergy with other health programmes to achieve better health outcomes, for all populations but particularly those currently underserved. Having an immunization programme that is integrated within a wider health system enables it to comprehensively address the health needs of populations over time, make efficient use of resources and improve collaboration between programmes.

Regional outbreaks (e.g. Ebola, measles) and global pandemics (e.g. COVID-19, novel influenza strains) create specific challenges and opportunities across the life course and for integrated health services.² Outbreaks and pandemics may require vaccination for wider age groups than usually prioritized, such as adults. They may require new immunization platforms (e.g. vaccination in workplaces). However, such platforms create an opportunity to reinforce the importance of or begin providing all recommended vaccines for different ages and in combination with other services (e.g. occupational health and safety training in the workplace).

A review of the Global Vaccine Action Plan (GVAP) suggested that integration of immunization and other health services and relationship building outside the

health sector were limited.³ Therefore, the vision for a life-course approach to vaccination for 2030 is based on equitable access to high-quality vaccination and other health interventions at all ages.

Transitioning to a life-course approach yields multiple benefits and addresses several coming developments. Several vaccines in development will need to be delivered outside of infancy (e.g. malaria, respiratory syncytial virus, new TB vaccines). In addition, for some diseases, immunity gaps and/or waning immunity along the life course have been identified and point to the need for booster doses to be given later in life to ensure continued protection against disease. Opportunities to provide catch-up vaccination for vaccines missed earlier in life or to address waning immunity are not being exploited in many countries.

Vaccines that target older age groups will become increasingly important, to prevent premature death and disability, to maintain functional abilities in later life, and to protect others.² For adolescents, human papillomavirus (HPV) vaccines protect against cervical cancer, a disease that develops later in life,⁴ while DTP boosters safeguard against waning antibody levels, and potentially provide life-long immunity.⁵ For maternal immunization, vaccines can both protect the mother and fetus, thus preventing disease in neonates.⁶

Lastly, evidence from several assessments of missed opportunities for vaccination suggests that the potential benefits of integration within immunization programmes are not currently being realized. As many as one in three children and one in two women accessing health services experience missed opportunities for vaccination or do not receive health interventions that could be feasibly delivered during a vaccination visit.^{7,8} The benefits of reduced missed opportunities include reductions in mortality and morbidity as well as improved use of healthcare resource.

The COVID-19 pandemic will bring vaccination across the life course into sharp focus. If and when COVID-19 vaccines become available, there will be an urgent need to deliver them to all age groups, particularly older age groups, who are at particular risk of severe disease. Multiple mechanisms are likely to be needed to reach different populations, potentially with periodic revaccinations. Special efforts will be required to reach disadvantaged populations. A further challenge to address will be national decision making should a choice of products be available. Many of the principles outlined here, for example on engagement to ensure quality people-centred delivery and public acceptance, and on cross-sectoral collaboration, will be highly relevant to COVID-19 vaccination responses.

Strategic Priority Goal and Objectives

Goal

All people benefit from recommended immunizations throughout the life course, effectively integrated with other essential health services.

Objectives

- Strengthen immunization policies and service delivery throughout the life course, including for appropriate catch-up vaccinations and booster doses.
- Establish integrated delivery points of contact between immunization and other public health interventions for different target age groups.

Context and challenges

While progress has been made in extending vaccination beyond infancy, coverage of vaccines delivered outside the infant schedule is often low. Experience has shown that it takes time to establish and strengthen new platforms for vaccination across the life course. In addition, countries have very different population structures with varying health status, health systems and priorities, and life-course strategies will look very different from country to country. Nevertheless, some general points can be made.

Awareness and prioritization

Increased awareness is needed about vaccination beyond the first year of life. Often, community and healthcare provider perceptions about vaccination are focused on childhood, so a key strategy for the life-course approach is addressing the attitudes of key stakeholders.

The level of political will to address life-course immunization and ensure the availability of resources can vary across countries. Engagement with stakeholders is required to ensure that the needs of particular populations are addressed and that programmes are integrated, where possible.

Immunization decision making

While many vaccines are given in infancy or childhood, immunization will increasingly protect people throughout the life course. In particular, **vaccine development** for multiple diseases will lead to an increasing number of vaccines being delivered to a larger number of people across a wider range of age groups.

This will raise additional challenges for national **immunization decision making**. Advisory and decision-making structures will need to incorporate expertise in reaching groups at different stages of life or through different platforms to reach vulnerable populations.

In addition, immunization decision making may need to consider not just impacts on those vaccinated but also potential indirect or direct benefits to other vulnerable populations, such as those too young to be vaccinated, the immunocompromised and older adults. Additional downstream effects should also be considered – immunization may reduce the risk of non-communicable diseases such as heart attacks and stroke.⁹

Integrated delivery

Vaccination delivery is often versatile, with community- and facility-based delivery approaches. However, reaching 86% of infants is not enough. Therefore, the immunization community needs to reach under-vaccinated children, who have likely missed other health interventions, by working in close collaboration with other health programmes or other groups with a common vision and ability to reach those who are being missed. In many countries, there are few or no vaccine programmes beyond childhood, creating a challenge for reaching those populations, and an opportunity to rethink how vaccines are delivered to the most vulnerable populations.¹⁰

To date, **integration** has frequently focused more on programmatic needs, as a way of reducing programme costs, rather than improving services through **cross-sectoral collaboration** and adoption of more **people-centred** approaches to service delivery.

Due to difficulties in **tracking vaccination status** as a result of poor records or a lack of a home-based record (HBR), many miss out on essential health services. For older age groups, there may be no centralized system of tracking. There is a need to address ways to improve recording, increase HBR retention, and ensure free and equitable access to HBRs for all.

Improved coordination

Evidence from assessments of **missed opportunities for vaccination** and findings from the GVAP indicator on integration suggest that there is an increased need for improved coordination across curative and preventive services. Opportunities to provide catch-up vaccination are not being fully utilized, with many countries either lacking a **policy** for catch-up vaccination, poor health worker understanding of delayed vaccination schedules, or stringent upper age cut-offs for catch-up vaccination.

Furthermore, the increasing number of vaccines intended for school-aged children will require increased collaboration with the education sector. There is also expected to be increasing emphasis on the platforms targeting pregnant women, newborns and 4–7-year-olds, given the potential new Gavi support for vaccines targeting these populations, opportunities for catch-up vaccination and development of new vaccines (e.g. against group B streptococci for pregnant women). Furthermore, efforts to target specific sub-

groups of the adult population, such as health workers and older people, are likely to increase during 2021–2030. These programmes will take time to develop and grow, potentially requiring new partners/settings (e.g. schools) and/or greater coordination across the health sector and beyond.

Indeed, many vaccine-preventable diseases require comprehensive disease-prevention and control strategies that should be promoted together to achieve maximum benefit (e.g. cervical cancer) or based on **cross-sectoral collaboration** (e.g. with water, sanitation and hygiene, WASH, or vector control).

Key focus areas

Mobilizing support

Raise awareness of the benefits of vaccination beyond early childhood, through adolescence and in priority adult groups such as pregnant women, health workers and older adults.

Key evidence and gaps

In the era of SDGs, vaccination is seen as important not just to the health of children under 5 years, but to health at all ages.¹¹ Immunization across the life course protects the individual, but also safeguards others who may be susceptible to disease, such as those who are ill, family members and health workers. The societal value of indirect protection, the economic impact of increased productivity and impact on equity are all important benefits that must be considered and communicated when prioritizing life-course vaccination.¹²

WHO has developed recommendations for immunization across all ages,¹³ for managing delayed vaccination,¹⁴ and for vaccination of health workers.¹⁵ Recommendations are published by individual vaccine.¹⁶ However, many countries have not yet introduced vaccines beyond infancy for reasons including health budget constraints, lack of burden of disease evidence, or because the broader value of a vaccine is not fully recognized.

Vaccination evidence tends to focus on preventing mortality and associated economic costs.¹⁷ To further raise awareness of the benefits of vaccination across the life course, more evidence is needed on wider health impacts on families, communities and society, as well as on the benefits of reduced morbidity and disability.

Vaccination beyond the first year of life also needs active public support. Demand for vaccines in the second year of life and for HPV vaccines have both faced challenges, particularly when communities have not been adequately sensitized to the need for vaccines and healthcare providers are not equipped to communicate benefits effectively. Introduction of new vaccines for older age groups therefore needs to consider social and behavioural determinants of vaccine demand to guide effective

messaging and implementation strategies. Approaches to promotion and messaging will vary across the life course and by country. However, social and behavioural determinants of demand have been inconsistently studied. Research and action is also needed to understand how to create a more people-centred approach to life-course vaccination that satisfies the needs of those using the services.

Strategic interventions

Mobilizing political support will depend on a clear understanding of the full value of immunization at different stages of life. This will mean capturing impacts on a broader set of parameters beyond immediate disease prevention, including impacts on downstream health issues, existing chronic conditions, economic impacts on the individual, health system and society, productivity, and the ability to live life independently. Countries will also want to consider other benefits of disease prevention, including reduction in antibiotic use, freeing of resources for treatment of other diseases, as well as benefits of additional screening or other opportunities for preventive care.

As the benefits of life-course immunization cross sectors, building technical consensus from various perspectives is important. This may be led by National Immunization Technical Advisory Groups (NITAGs), but should include a range of experts in health, different life stages, economics, finance, social sciences, health systems and the private sector.

Countries may generate local evidence or look to the experience of other countries with a similar context that have implemented vaccine programmes beyond the first year of life. Global and regional partners can support analyses on the value of immunization and provide examples of programme successes and challenges to assist countries in life-course immunization decision making. They can also support local efforts to communicate the broader value of protecting populations not traditionally immunized.

Assumptions and risks: Countries may be unable to extend life-course vaccination due to health budget constraints or lack of disease burden evidence, which can affect their ability to make a broader case for supporting the introduction of vaccines across the life course even when a vaccine is recommended by global health agencies.

Evidence-based delivery practices

Identify and evaluate new delivery strategies for increasing coverage of recommended vaccines throughout the life course.

Key evidence and gaps

Vaccination can be delivered through a variety of community- and facility-based service delivery models, via routine, periodic intensification of routine immunization activities (PIRI) or campaigns. In order to encourage community ownership, improve attendance at health sessions and improve health outcomes,

it is important to consider the unique needs of target populations, how they access services, and whether vaccine delivery strategies need to be modified.

Strengthening the delivery of immunization through integration with other services has been included in recent global strategies^{18,19} and guidance documents.^{9,20} As the need for delivery of vaccines beyond infancy increases, expanding and moving beyond vaccination in the second year of life to new delivery platforms in adolescents and adults will require further evidence on alternative types of delivery approaches.

In addition, vaccination in response to outbreaks and pandemics and new vaccines under development for high-burden diseases (e.g. malaria, TB) will require contact points at different ages, emphasizing the need for a life-course approach and new delivery platforms. Furthermore, delivery platforms for pregnant women need to be strengthened in preparation for new maternal immunizations. There may be opportunities to build on influenza programmes, where they exist, to meet the needs of older age groups.

In the past, service delivery considerations have tended to put more emphasis on what worked best for the services, rather than the needs of those using the services. Aligned with the IA2030 core principle of being people-centred, more evidence is needed on what people using these services prefer.

Integrated service delivery approaches to date have frequently focused on what immunization programmes could provide for other programmes, given the typically higher coverage levels achieved within immunization and the repeated contact points throughout infancy. However, recent missed opportunities for vaccination work has highlighted that the benefits can be bi-directional. Reducing missed opportunities for vaccination within health facilities through routine screening of vaccination status during any health contact can help to improve immunization coverage.

Furthermore, the concepts need to evolve beyond programmatic divides and the potential benefits/risks to each programme, but rather focus on how best to meet the health needs of the target population. This aligns with the broader principle of people-centred services.

Strategic interventions

In order to provide quality services that contribute towards stronger primary health care and universal health coverage across the life course, it is important that the design of health systems reflect the needs and preferences of the people using these services. During 2021–2030, the second year of life and adolescent platforms will be of increasing importance. Many countries need to strengthen their second year of life platform for catch-up vaccination, introduction of MCV2 or improvement in MCV2 coverage.

The demand for adolescent delivery platforms for vaccination will likely increase following the global call for action towards cervical cancer elimination, as

well as Gavi support for DTP-containing booster doses and new vaccines (e.g. for TB). Some countries may look to strengthen platforms for annual influenza immunization or other adult vaccines such as pneumococcal or herpes zoster vaccines. These could provide a platform for immunizing older adults once a COVID-19 vaccine becomes available.

For scaling up coverage of recommended vaccines throughout the life course, it is important to learn lessons from vaccine delivery outside of traditional settings, such as during antenatal care or through providers such as pharmacists. Immunization programmes should consider how best to support the strengthening of these other programmes through collaboration and contributions to capacity building. Public healthcare services that are well-connected to other government and non-government services, both within and outside the health sector (e.g. water, sanitation and hygiene (WASH), education and private healthcare providers) can create opportunities for multisectoral collaboration, to establish or strengthen delivery platforms (e.g. school-based vaccination), screen for vaccination status and provide referrals between non-healthcare services and healthcare services.

Increased collaboration between immunization programmes and disease-elimination/eradication initiatives, particularly those with a strong community focus, could improve outreach services, for all ages, by providing more interventions to those who have been missed and/or in hard-to-reach areas.

Assumptions and risks:

Uncoordinated assessment of novel strategies and approaches to vaccine delivery for scaling up coverage could result in multiple in-country pilot tests, generating results that are difficult to compare and creating challenges for decision making. Some approaches could have a potentially negative impact on health programmes.

Missed opportunities

Implement proven approaches to reduce the number of missed opportunities by integrating immunization into other primary health care planning, health registers and other record-keeping systems, and streamline use of all encounters with the health system to verify and provide missed vaccines and other essential health interventions.

Key evidence and gaps

GVAP included an integration indicator, which provided a measure of country efforts to reduce the number of missed opportunities to combine preventive and curative interventions and highlighted opportunities for integration. For many countries, the indicator identified marked differences in coverage levels for a range of health interventions across the continuum of care.

Every contact with the health system is an opportunity to check whether an individual is eligible for a vaccine. Missed opportunities for vaccination²¹ (MOV) are defined as contacts with the health system that do not result in the person receiving the vaccine(s) for which they were eligible. Similarly, missed opportunities for other preventative and curative health interventions can occur during a health facility visit for vaccination.

Strategic interventions

At the country level there is a need for better use of available data (e.g. recent surveys or programme assessments) to inform action in identifying the underlying causes of missed opportunities, as well as identifying further opportunities for integration.

A system mapping exercise could help identify how and where people are being missed, and where programmes have opportunities to integrate. This should be followed by a needs assessment among health workers and people using these services to identify which services would improve their health service encounter experience. This is also important for healthcare at older ages, when there may be less contact with the health system and facilities that routinely provide vaccines. With the availability of stronger evidence, countries can advocate for support in tailoring strategies for integrated approaches to reduce missed opportunities.

At the global, regional and country level, improved cross-sectoral engagement, coordination, funding and planning is required in order to improve the quality of services and integration. Vertical donor funding streams can often lead to missed opportunities. Microplanning can ensure that countries have available funds and supplies to provide quality and integrated services.²²

For health workers, health registers and other record-keeping systems need to be streamlined so that they can be used more effectively to reduce missed opportunities. For those using services, the retention and use of HBRs needs to be strengthened for improved health and health service encounters. A comprehensive national plan for monitoring and evaluation is also key, to generate knowledge of effective approaches to integration. Error! Bookmark not defined.

Additional proven approaches to reduce MOV include ensuring healthcare providers know the proper contraindications for vaccination, training curative care providers to screen for vaccination status, ensuring people know they should bring their vaccination card when visiting health facilities, and ensuring that healthcare providers know the minimum and maximum ages for each vaccination. Regulations may be in place that prevent certain health workers from providing immunization, and opportunities to expand access should be considered.

Assumptions and risks: Success at reducing MOV will depend on the commitment of governments, donors and health workers to integrate immunization with other health programmes. It will also rely on acceptance of the community, which can

often be dependent on a country-specific tailored approach being taken during the design process. Finally, commitment will also be needed to integrate data into national health information systems to monitor changes over time.

Cross-sectoral collaborations

Form collaborations to integrate age-appropriate and catch-up vaccination into public and private health services, emphasizing the reciprocal benefits of receiving vaccines with other health interventions. Establish collaboration beyond the health care sector to ensure integration of immunization into context-specific programmes such as for education, nutrition, water and sanitation, care of older people and women's empowerment.

Key evidence and gaps

Many immunization programmes are initiating or strengthening collaboration and communication with other health programmes in the public and private sector. These collaborations can often be challenging due to different programme objectives and funding streams. Engaging with non-governmental (private providers) can be difficult as they are for-profit, and often do not have the same priorities in terms of monitoring and reporting of vaccination coverage and safety, and disease surveillance.²³ Nevertheless, many successful models of public–private collaboration have been developed and offer lessons on how the two sectors can work together effectively.

Links between immunization and other health programmes, such as nutrition, neglected tropical diseases, malaria control, and family planning,²⁴ can facilitate a broader approach. Certain settings offer opportunities to tailor collaborative initiatives, such as health emergencies, school-based services, child health days, or occupational health services. New programmes and initiatives offer opportunities to link immunization, such as playboxes at immunization services for early childhood development, in line with WHO's Nurturing Care Framework.²⁵ For older adults, given the potential to prevent downstream health effects, facilitating linkages between immunization and programmes addressing the health burden in older adults may help ensure that immunization is integrated into existing programmes addressing older adult health.

Inter-agency Coordinating Committees (ICCs) have been formed in many countries to improve coordination among partners in support of immunization and other health programmes, to promote coherence in achieving common objectives, to avoid duplication of efforts, and to ensure areas of need are prioritized. Beyond health care, incorporating information about immunization into other health programmes could lead to increased awareness and empowerment regarding information and rights to health. In Canada, for example, schools have included immunization as part of health and civic studies.²⁶

Strategic interventions

To achieve impact and identify best practices, concerted efforts are needed for improved engagement, collaboration and coordination between different programmes delivered by public and private health providers.

ICCs and other global and national technical advisory groups should increase coordination within ministries of health and with other sectors (e.g. WASH, education) to create policies that support the primary healthcare approach and emphasize the importance of creating opportunities to deliver integrated care and identifying when individuals have missed preventive care interventions. Countries should create or strengthen multi-sectoral disease control strategies (e.g. cholera control plans) to ensure integration and coordination, thereby making optimal use of limited healthcare resources.

There is a need for continued collaboration across partners and donors to exploit synergies between routine and supplemental immunization activities, particularly in the context of measles, rubella and polio initiatives, and potential for increased use of PIRIs.

School vaccination checks or screening policies and guidelines are needed, emphasizing the importance of collaboration between ministries of health and education.

Assumptions and risks:

Success of cross-sectoral collaborations will depend on the commitment of governments to optimise funding streams and integrate national health information systems. This may require countries to adopt new technologies, which may not yet be fully affordable.

Policy environment

Promote changes in legislation or in the policy of immunization and other programmes to extend the national focus beyond early childhood immunization. Form new collaborations and private-sector partnerships to mobilize financing for vaccination of older age groups.

Key evidence and gaps

In order for countries to promote life-course vaccination, policies, laws and practices for immunization and other programmes may need to be revised or developed. At the global level, WHO's Strategic Advisory Group of Experts on Immunization (SAGE) has been advising WHO since 1999 on overall global policies and strategies, including delivery of immunization and its linkages with other health interventions. A Strategic and Technical Advisory Group of Experts (STAGE) on Maternal, Newborn, Child, Adolescent Health and Nutrition has recently been established. This expert group will provide strategic and technical advice to WHO and will

inform the WHO primary health care and universal health coverage agendas, with a focus on maximizing country impact as well as coordinated global leadership.

While no WHO advisory groups exist to address the ever-growing need for adult immunization platform strengthening or decisions around multiple vaccines, working groups for individual vaccines for older adults have been formed.

At a country level, NITAGs have been established in over 123 countries to promote evidence-informed policymaking. These advisory bodies are a technical resource supplying guidance to national policymakers, lawmakers and programme managers.²⁷ Regional Immunization Technical Advisory Groups (RITAGs) have also been established to advise Regional Directors on regional policies and strategies. It is important that these bodies have the breadth of expertise to consider immunization policy issues across the life course.²⁸

Engagement between expert and technical advisory groups on immunization at global, regional and country level will offer opportunities for promoting or making legislative or policy changes relevant to immunization across the life course. Engagement of NITAGs with other technical advisory groups will assist with the development of collaborations with other health programmes, which will be critical for establishing the integrated life-course approach for vaccination.

In some countries, legal frameworks to promote vaccination across the life course have been introduced, such as vaccination requirement laws for entry into school, with variable evidence of benefit and impact.²⁹ Expanding use of legislation across more countries requires better understanding of the contextual drivers that influence its effectiveness. NITAGs can play an important role by communicating such evidence to local lawmakers.

Strategic interventions

Over the next decade, emphasis should be placed on developing national immunization policies and implementing strategies that go beyond early childhood vaccination, and also include catch-up vaccination.

For the development of evidence-based policy, decision-makers and those producing the evidence need to have a common understanding of the policy question, and of the strengths and weaknesses that evidence can play in decision-making. This can help ensure that the evidence synthesized is relevant, and recommendations are feasible and implementable in practice.

For the life-course approach, policymakers should have a full understanding of how policies can address missed opportunities for vaccination, integrated delivery approaches, and introduction of vaccines across the life course. Information already synthesized around these topic areas at global level should be shared with policymakers for guidance. Identifying unanswered questions will help to guide future research efforts and underpin evidence-based policy.

As vaccination expands beyond early childhood, and integrated approaches are developed with other health programmes, NITAGs and similar bodies need to have strong representation from different health programmes to provide additional insight into the feasibility of new policies and their implications for other services.

Assumptions and risks:

Countries might decide to limit their immunization programmes to infants or to a limited number of delivery platforms due to health budget constraints or a lack of country-specific or relevant evidence. Expertise relating to older age groups may be insufficient to generate a comprehensive evidence case.

Tracking vaccination status

Institute policies for monitoring vaccination coverage at different ages and facilitating administration of vaccines throughout the life course.

Key evidence and gaps

HBRs are key tools to facilitate tracking of vaccination status for both health workers and caregivers. In 2018, WHO released guidelines on HBRs for maternal, newborn and child health. Although the guidelines recommended use of HBRs, the WHO report identified a lack of evidence on their impact, particularly in low-income settings and for their use in adolescence and beyond. In addition, there was insufficient evidence to recommend one HBR format over another.³⁰

A practical guide to the design, use and promotion of HBRs in immunization programmes is available.³¹

However, in several high-priority countries, HBR retention remains a major challenge, with >50% of children missing an HBR. This often restricts their access to health services, and limits promotion of HBR use to facilitate service integration.

In the next decade, the introduction and scale-up of electronic health and immunization registries (EIRs) will become more critical for tracking vaccination status. An important resource is the Pan-American Health Organization (PAHO) guidance on practical considerations for planning, development, implementation and evaluation of EIRs.³² In addition, an EIR Readiness Assessment Tool Facilitators Guide will soon be available.

Strategic interventions

At the country level, financial support and advocacy is needed to promote strengthened and sustained implementation of, access to and utilization of HBRs across the life course, as well as to illustrate the key benefits that would come from the consistent availability of HBRs.

Barriers to HBR use need to be identified and addressed, for example through implementation research to inform best practices on HBR design and ways to increase HBR retention, ensuring budget resources for production, and instituting policies for free and equitable access to HBRs for all. Countries considering use of EIRs will require technical support to facilitate selection of a suitable system and integration into wider health information systems.

To facilitate monitoring across the life course, vaccination information systems will need to align with health sector-based health information systems. These systems will support engagement with global monitoring and evaluation workgroups focused on developing equity and other primary health care performance indicators.

Research is needed to determine the feasibility of traditional household surveys or other approaches to assess vaccination status among older age groups.

Assumptions and risks

Poor design of HBRs, low retention, stock-out issues or lack of policies regarding their free and equitable access could raise issues of equity. Inequities may arise in regions and countries as some fall behind with scaling-up of EIRs due to lack of government commitment to adopt new technologies. Countries may face issues integrating immunization data related to older age groups into national health information systems.

Vaccine development

Generate evidence on the disease burden among older age groups, the potential of vaccines to decrease it and the programmatic implications for introducing the vaccines.

Key evidence and gaps

There are major public health needs for the development of new vaccines for a safer world, for all ages. This includes vaccines against major well-known diseases (e.g. malaria, HIV, TB), and in response to emerging diseases (e.g. COVID-19) and re-emerging diseases (e.g. influenza).³³

For older persons, immune system function is known to wane with time.³³ More evidence is needed on the benefits of immunization at older ages; vaccine benefits may include not only primary prevention of disease, but also preservation of the health and independence of older adults.³⁴

Vaccine development decision-making depends on evidence of the burden of disease, which will help to identify the broader health, economic and social impact of a vaccine. Consideration also needs to be given to equity of access within the general population, in different geographic regions, and in various subpopulations.³⁵

As vaccines are developed for older age groups that have not typically been targeted for vaccination, the programmatic implications for vaccine introductions must be considered. These need to include demand-related factors: it is unclear if introduction of vaccines for older age groups affects perceptions of the importance of childhood vaccinations. It is also unclear how best to communicate the benefits of vaccines to populations that typically consider vaccinations to be for children.

Strategic interventions

In order to identify the public health need for new vaccines in older age groups, strengthened infectious disease surveillance will be required, particularly in low- and middle-income countries, to better understand the epidemiology and burden of disease across the life course.

Modelling of potential impacts and costs could be used to inform country policymakers about the cost-effectiveness of vaccines targeted at older age groups. These activities can build upon existing structures such as the Vaccine Modeling Impact Consortium.

In addition to the development of new vaccines, new ways to deliver a vaccine may be required. Technological advances that simplify delivery of a vaccine or how it is manufactured could dramatically improve coverage or increase the volume of vaccines that could be delivered.

Assumptions and risks

The development of new vaccines in older ages is dependent on evidence of the public health need. However, many low- and middle-income countries still have relatively weak disease surveillance systems that cannot such evidence with reliability. Therefore, if there is insufficient evidence of burden of disease, manufacturers will not see any market interest. In addition, for diseases that largely affect only low- and lower middle-income countries, manufacturers may be reluctant to invest in vaccines unless donors are willing to provide financial incentives. Although there may be biological plausibility for a vaccine, insufficient understanding of natural immunity may be a major obstacle to vaccine development.

Essential Guidelines & Strategies

Mobilizing Support

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Using evidence-based delivery practices

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Tracking vaccination status

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