**After the European Global Vaccination Summit –**

**The Need for Practical Policies to Boost Vaccination Delivery to Children in Europe**

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# Abstract

Background. Low childhood vaccination rates in Europe continue to cause concern and have triggered much policy study. However, regarding children, making immunisation a stand-alone issue cuts across integrated child health services. Most initiatives, including the ten Action Points from the 2019 European-hosted Global Vaccination Summit, are all laudable but high level enablement policies. Delivery processes have been ignored, and key stakeholders not involved in discussions.

Methods. Reviews of policies, literature, and planned actions, leading to identification of further delivery policies needed to facilitate and stimulate practical accomplishments.

Results. Ten aspects are identified where European coordinated action to develop policies, share evidence, and increase standards, would be beneficial. These also fit in with established European Commission strengths, and the incoming Commission’s policies and priorities.

Conclusion**.** The European Commission, Member States, and child health stakeholders should pursue a holistic approach, taking immunisation as a component of integrated child health. Service delivery should be compatible with modern societal challenges and related parenting patterns, and public health processes modernised and reinvigorated. Nursing and societal stakeholders should be brought in, and fit-for-purpose digital support facilitated. This is even more urgent following the diversion of the Covid-19 pandemic.

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Key Words

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**Introduction**

In 2019 the European Commission co-hosted the Global Vaccination Summit [1]. From that came a set of Ten Actions Towards Vaccination for All [2], summarised in Figure 1. These Actions are high level, largely top down policies, with a strong emphasis on monitoring, and do not consider the issues of delivering vaccination at field level. They are not child-focussed or parentally aware.

The Need to Focus on Delivery

There is a big gulf between having plans and vaccines in place, and achieving effective delivery to all individual children, involving also their parents as agents and enablers. The real-world circumstances of individual people, and the resources and challenges of front-line healthcare delivery, need to be addressed if high-level policy is to translate into operational practice and result in optimum population protection.

The participation at the Summit is not published, but from the outline of the formal sessions it is noteworthy that there was no platform representation of nursing, pharmacy dispensing, health care or community health delivery organisations, or patient organisations. Also missing were any representatives of e-health or digital health system developers, even though such applications are looked to in an optimistic but undefined way.

The Importance of Focussing on Children

While all vaccination is important, there is an additional duty of care to provide effective services to protect children. Children are at the beginning of their life trajectory and acquired damage will have a life-long effect, while child death results in huge grief and also the greatest amount of life years lost. The majority of long-lasting vaccinations take place in childhood, yet children are entirely dependent on society to organise vaccination services. Action is also needed to offset the effects of the Covid-19 pandemic in focussing resources on vulnerable adults, and to remedy falls in child immunisation uptake in this period.

The European and Child-focussed Viewpoint

The European Union (EU) has a strong ethos of social solidarity and equity. There is also a practical commitment to public health and e-health research programmes and coordination mechanisms. Recognising the messages of the Vaccine Summit but also the gulf between top-down principles and field-level delivery processes, this paper examines the need for optimal principles for robust and effective delivery systems to ensure a high uptake of child vaccination, in line with Right to Health under the United Nations Convention on the Rights of the Child (UNCRC) [3]. It draws upon an evidence base of recent data, innovative practices, and enduring principles in order to identify key Actions to Boost Vaccination Delivery to Children in Europe.

**Methods**

The European Global Summit on Vaccination [1,2], and a concurrent paper reporting two expert multi-stakeholder workshops on delivery approaches [4] , led to analysis of the policy area, and extended to appraisal of WHO Regional Office for Europe policies, several European Commission initiatives regarding immunisation, and a major European Study of Primary Care delivery for children in the then 28 EU countries [5,6].

**Results**

Even before the anticipated Covid-19 effects, the need to focus on improving vaccination rates for children is clear. Data from the WHO European Health Information Gateway (<https://gateway.euro.who.int/en/>), taking tetanus and measles vaccinations as a examples for 2016 and 2017, show the variation between countries (Table 1). Six countries are highlighted as being in the highest third of the coverage rates for both antigens in 2017, namely Denmark, Greece, Hungary, Luxembourg, Portugal, and Spain. Five of these have stable vaccination rates, with only Denmark being the new star performer, while Poland is the one country to drop from strong positioning. These leader-board countries seem to have little in common at first sight – size, gross domestic product, type of health system, and type of funding are all very different. This lack of any common major characteristic suggests that approaches to vaccination delivery appear to be influences, yet operational policies for vaccination delivery are little talked about.

Also noteworthy in Table 1 is the comparison between tetanus and measles vaccination. Generally measles vaccination is seen as the more contentious in vaccine hesitancy discussions compared with tetanus, yet for five countries - Austria, Bulgaria, Finland, Romania and Slovenia - measles coverage was notably higher than for tetanus, so there must be other factors at play.

The recent tactics of criticism of ‘vaccine scepticism’, and calling for parents to be responsible citizens, therefore seem to be simplistic and somewhat condescending, and not to be adequate in that they do not consider other concerns and practical barriers [4,7]. Individual political responses in a number of countries, such as excluding unvaccinated children from school, or making vaccination mandatory, while understandable at one level, will do nothing to address acceptance as a mental attitude, and while possibly initially increasing reluctant uptake will instead will further disadvantage some children and create deeper health and societal polarisation and inequities. Senior paediatricians in the UK have argued against mandatory vaccination as damaging trust in health systems and professionals 8,9], while ethical discussions in Norway regretted the lack of debate on compulsion but reached a different conclusion [10].

This suggests instead the need for a more focused and innovative vaccination policy approach, combining rediscovery of past good practice and better application of new innovation, and their integration into a set of practical policies focussed on delivery. This paper reviews ten aspects in order to indicate a suite of practical actions to complement and facilitate for children’s vaccination the high-level Actions proposed by the Vaccination Summit.

1. Integrated Child Health

Vaccination too often has been split off for solo topic-specific actions, when it should be part of a holistic approach to the individual child’s health and well-being. Most countries have a planned approach to children’s preventive health and support, compatible with WHO guidance, which since 2005 has made very clear the commitment to a life-course approach [11.12]. Vaccination is seen as an integral part of each stage of the child life-course, not stand-alone. Moreover, the WHO European Vaccine Action Plan (EVAP) 2015-2020 states in Objective 4 that strong immunisation systems are an integral part of a well-functioning health system [13] .

In 2008 the Health Ministers of the WHO Region met and agreed the Tallinn Charter for Health and Wealth [14]. This stated in Section 13:

“Health systems should integrate targeted disease-specific programmes into existing structures and services in order to achieve better and sustainable outcomes.”

and

“Health systems need to ensure a holistic approach to services, involving health promotion, disease preventions …”

This Europe-wide accord, re-confirmed in 2018 [15], clearly strongly underpins the argument for vaccination being part of an integrated approach to preventive health.

A third underpinning of an integrated approach comes from the focus on person-centric integrated care delivery. The introductory Section 1.1 of the WHO roadmap on Strengthening People-Centred Health Systems in the WHO European Region [16] states:

“Coordinated/integrated health services delivery (CIHSD) is defined here as the management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services …”

These three separate but complementary approaches show that preventive health services for children should be firmly embedded into an integrated approach focussed on the individual child.

A necessary policy Action within Europe therefore emerges to:

* **Position Vaccination as a key part of Holistic Integrated Child Health**

2. Appropriate Delivery Systems

A core tenet of healthcare systems is that they should get the right procedure to the right patient at the right time. Much of health care is supplied on demand. Vaccination systems for children are different in that the patient is a minor, and dependent on an agent (parent or legal guardian) to bring them to the service at the right time. Consequently there should be a complementary monitoring system to ensure that all children due are brought forward - this may be a population-based function separate from but interacting with the delivery system. There is also a requirement for a vaccine distribution system.

Thus the delivery system has to have clear points of access to patients, a schedule of vaccination known to all, staff informed to answer all queries and anxieties, enough knowledge about each child in their family context to ensure individual concerns or attendance barriers are addressed. The public health function should also provide means of vaccination of children who are in special circumstances not enrolled with local care providers – including homeless children, refugees, and migrants.

Some countries use schools as a location for vaccine administration as most children are in the one place, but this has to be coordinated with schools’ own requirements. Some countries show other innovations, such as Portugal enabling community pharmacists to give vaccinations on presentation of a medical prescription [17] . There is scope for more cross-European study of new local as well as system initiatives, such as suggested supermarket sessions [9].

Finally, information and computer systems are invaluable in underpinning delivery systems as discussed below. In turn, such data systems can enable further innovation, such as opportunistic vaccination of children behind schedule when they attend other clinical points such as emergency rooms if their immunological history is rapidly available [18] .

Thus there is need for Action to create effective policy to:

* **Create Delivery Systems that are Fit for Purpose.**

These should be related to modern society and patterns of parenting and family life, and be based on a philosophy of child-centricity [19] .

3. The Key Role of Nursing

In most European countries nurses have a key role in preventive child health services, though their designation may be health visitor, public health nurse, community nurse, or home visiting nurse. The key aspect of this role is that the nurse knows the child in the context of the family and the home. They will know which parents are most likely to be vaccine hesitant, but also which parents may have worries about their child’s overall health. The home visiting nurse will also know the single parent, disadvantaged or challenged families and how they might (or cannot) cope with taking a child for vaccination while attending to other responsibilities; families where the parents are working at times when vaccination appointments are offered; or other pressures such as caring for dependent family members.

Secondly, nurses are often the profession which administers the vaccine. According to local policy this may require a doctor to be on the premises, in other countries the nurse is has competency to work autonomously. At the same time most countries are reporting increasing pressures on primary care doctors, and reduction in their numbers, so transfer of responsibilities to nurses where it is effective and safe has additional advantages.

Given this role and skills, nursing should be much more involved in discussions on addressing vaccination. There is need to consider the potentially increased role of nurses in vaccination, linked to consideration of the knowledge and skills needed, given the variation in nurse training and skills across Europe.

To make optimum use of the experienced nursing workforce there is an urgent policy need to:

* **Recognise and systematically develop the key role of Nursing in preventive child health**

4. Understanding Non-Vaccination

It is frequently assumed or implied that that the reason for children not being vaccinated is largely due to vaccine hesitancy by parents. This is a simplistic view, as reason for non-vaccination is not systematically collected. While a number parents do indeed form a view that vaccination carries undue risk, this is by no means the sole reason for non-immunisation. This blaming of parents overlooks the challenges of modern life and parenting, with the normality that both parents work and that from an early age children are in school or pre-school, thus creating temporal and financial costs for parents to take children to health appointments. Indeed, it is often a condition of social welfare support that parents should actively seek employment, and this disregards parenting duties while also adding to parental pressures – disproportionately so for low income families and those in low skilled employment with least flexibility. There are other costs, too, for many including transport costs, while parents may have other children to collect from school and may also have other carer duties. [20, 21] .

Indeed, there is little overall systematic knowledge of economic or practical barriers for families in accessing healthcare for children. The sole EU-wide systematic study is a one-off ad hoc module added to the Survey of Living Conditions for 2017, and its construct is far from ideal. However, it shows that many children are unable to access necessary healthcare [4, 22] .

Overall, it is therefore worrying that there is no systematic process to record the reasons at the case level which would also provide evidence of problems that can be addressed by service redesign. It is an indication of the continued biophysical bias in healthcare that an allergy can be recorded by a standardised data item, but not practical constraints which inhibit bringing the child for vaccination. The necessary enabling Action is to initiate a professional dialogue, potentially including the HL7 Foundation’s International Patient Summary architects and health standards bodies [4, 23], in order to extend standardised records and action policy to:

* **Systematically Record Reason for Non-vaccination to an agreed Taxonomy**

5. Technical Standards for E-Health and Digital Support

There is significant history within Europe of developing e-health systems to support child vaccination [4]. Both the European Commission and WHO have expressed strong commitment to e-health and digital health, but remarkably little consideration has been given to updated e-health applications to support vaccination delivery, despite the proven benefits [24, 25]. The Global Vaccination Summit’s fifth Action refers only to harnessing digital technologies for monitoring, yet use just for monitoring in fact presents an additional burden and cost unless it is a by-product of e-health based delivery systems; computer-based scheduling systems are not mentioned.

Many Member States have developed their own systems, but these are not written up in scientific literature. Many also report the use of case-based child public health systems - six countries have systems which schedule appointments, and eleven national systems advise the primary care professional if a child is overdue for protection (update of [26]). Indeed, of the six best performing nations in Table 1, five have such active systems; conversely only two of the eleven users of active systems are in the lowest ranking countries. The European Centre for Disease Control (ECDC) has called for the implementation of Immunisation Information Systems as a support function to immunisation, and with very similar findings on current provision [27].

Not only are national systems individually specified and built, but there is virtually no use of recognised data standards [28]. Similarly, ECDC has called for the agreement of data standards [27]. In a modern e-health environment there needs to be an agreed specification of optimum data and function definitions for the scheduling and monitoring functions, as well as the antigen tracing needed by ECDC.

An effective policy Action would be to:

* **Enable effective e-Health and Digital Support by setting Standards for Data and Processes**

6. Interconnecting E-Health Systems including Portals and Apps

Not only are e-health systems important for achievement of child-centric records, but inter-connection across the health economy is important to ensure completeness. At present electronic data transfer in child health primary care across components of the health economy is quite limited [26], though this is essential to initiatives such as hospital opportunistic vaccination [14].

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The newest developments are portals giving patient (parent and child) access to live records. Already portal access to vaccination records has been created by Hungary, Iceland, and Portugal; Portugal also has an app version [29] . Other countries with overall health record portals include Denmark, Finland, and the Lombardy region of Italy. Regarding advice rather than individuals’ records, ECDC has responsibility for development of a European vaccination portal [17].

There would be major benefit in developing standards for, and sharing experiences of, these initiatives, and also in assessing them in standardised form as the digital version of the paper European Vaccination Card proposed by the Council of the European Union [30]. which is currently subject to a feasibility study [31].

Thus the next policy Action should be:

* **Ensure Inter-communicating IT Systems across the whole health economy**

7. Harmonisation with Home Based Records

It is a WHO recommendation that countries should implement Home Based Records, held by the parent so they have current details of their child’s record. A recent study showed that 22 of the then 28 EU countries operated such a record, and 20 of these included immunisation [32] . It seems highly desirable for these record systems to be harmonised and integrated into other immunisation (and child health recording) systems.

A necessary policy Action is to initiate discussions on how to:

* **Harmonise vaccination recording with Home Based (parent held) Records**

8. Emergent Autonomy of Older Children

Parents must give informed consent for infants. But as children get older they are encouraged to be responsible in their own health behaviour, and to accept responsibility for their body. For immunisations given in adolescence, it would therefore seem desirable for children to have an informed say in their own vaccination. However, study has shown considerable variation between countries in how they consider the growing autonomy of teenage girls with regard to consent to receive HPV vaccination [33]. While consensus between parent and child is desirable, some countries allow a parent to block a girl’s wish to be protected; or conversely can support compulsory vaccination decreed by the parent. Teenage consent is a sensitive issue, and needs further consideration in informed open discussion as a policy-developing Action to:

* **Implement policies that empower positive** **health behaviour Autonomy of older children**

9. Harness the Power of Social Marketing

Social media and their networking of disseminating views, including facts but also false information, are often seen as a surge which cannot be countered or moderated. However, many health systems have previous robust experience of systematically sharing information on salutogenic behaviour in the form of social marketing, though some argue that the skills are fading [34, 35]. Surprisingly given the concerns about vaccination, this established technique is little mentioned by commentators in the vaccination context, hence there is a need to reinvigorate vaccination social marketing.

There is also the newer concept of apomediation, which focusses on facilitating lay users to appraise information and find best sources [36, 37]. Professionals such as home visiting nurses and other primary care staff are strongly placed to undertake this, but it needs to be developed, and also seen as a constructive use of professional time. These techniques should be explored in a policy Action to;

* **Develop evidence-based policies to harness the power of Social Marketing**

10. Listening to Stakeholders

Europe has initiatives such as the European Joint Action on Vaccination, working in top-down approach to ensure effective vaccine supply, and promotion of trust in vaccines [38] . However, effective delivery to all children in all contexts needs to be fine-tuned to need and to local obstacles. In this context, local stakeholder groups involving client groups and local professionals become important. They should also feed upwards to the national level, to ensure that local needs are paramount in being understood and met by national policies. Stakeholder voices are very important in changing the perception and focus of vaccination delivery from a centrally driven policy to being seen as a support service to children. A European level of stakeholder involvement has recently been advocated by the President of the European Public Health Association (EUPHA) [39]. This necessitates a policy Action to:

* **Create multi-interest Stakeholder Forums on Effective Vaccination Delivery**

The Need for Cohesion

Each of the ten strands identified in this policy development analysis is individually important, but there also needs to be cohesion to bring them together in symbiotic holistic mode. The box in Figure 2 shows the ten actions that Europe, through the Commission and WHO, could and should take. This would complement and give service delivery strength, and would give a necessary priority to children as a group with specific vaccination delivery needs.

**Discussion**

Action is known to be needed to address falling vaccination rates in Europe, particularly regarding children. However, single-topic high-level activity fails to recognise the role of operational systems in delivering vaccine to those needing it, especially children. The journey of antigen from central store to the individual child is intricate, and must take into account the issues of children and parents [20, 21] 20 21. Blaming parents for hesitancy or poor uptake is an inappropriate form of victim shaming, when unsuitable or insensitive systems not geared to parents’ real worlds are often the significant problem.

Elsewhere, Showell and Turner have identified the propensity of senior health professionals and policy makers to design services for ‘People Like Us’, namely middle class persons with good social support, and to ignore the needs of confused and overloaded citizens in difficult circumstances [40, 41]. It is important that service providers should assess whether delivery is optimally designed to meet the needs of all children including the most needy and hard to reach, taking into account local resource, health system structure, socio-economic and cultural factors. At a wider level, Europe should initiate generic actions to support and stimulate that goal.

**Conclusion**

Following Europe’s hosting of the Global Vaccination Summit, and its ten high level Actions, there is opportunity for the European Commission, linked to WHO, to initiate a set of operational policy actions to recognise and support the key role of vaccination delivery systems at the local operational level, as summarised in Figure 2. Such innovation at the current time would also fit well with the declared intention of the incoming President of the European Commission to focus on supporting the European Parliament’s proposed policy of a Child Guarantee of basic services including health care for disadvantaged children in Europe [42, 43] .

The latest complication is the effect of the Covid-19 pandemic on health services. In the short term children’s immunisation rates are falling due to the challenges of accessing health systems during periods of lock-down coinciding with diversion of health resources to directly fighting the pandemic. Once the crisis abates, there will be the need for extensive service redesign, to ensure catch-up and ensure optimal use of stretched resources. The policy proposals outlined in this analysis are now even more necessary.

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