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Commentary

Maintain and increase vaccination coverage in children, adolescents, adults and elderly people: Let's avoid adding epidemics to the pandemic Appeal from the Board of the Vaccination Calendar for Life in Italy: Maintain and increase coverage also by re-organizing vaccination services and reassuring the population



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ABSTRACT

The Board of the Vaccination Calendar for Life (Bonanni et al., 2014, 2017) [1,2]), a coalition of four major scientific and professional societies of public health physicians, pediatricians and general practitioners in Italy, made an appeal to health authorities in order to sustain vaccination in COVID-19 times. The five pillars to maintain and increase vaccination coverage at all ages are described as follows: 1) Guarantee paediatric vaccination coverage to all newborns and paediatric boosters and adolescent immunizations, not interrupting active calls and scheduled sessions. 2) Re-organise the way paediatric and adolescent vaccinations are offered. 3) Set-up recovery programs for vaccinations not carried out after the start of the COVID-19 emergency. 4) Provide the preparation of tenders for the supply of flu vaccines with suitable quantities to increase coverage in all Regions and Autonomous Provinces with extreme urgency. 5) Prepare plans to increase coverage for influenza, pneumococcal, tetanus diphtheria and shingles. The Board of the Calendar for Life appeals to the National and Local Health Authorities for a strong and coordinated commitment in favor of the widest offer and acceptance of vaccinations, whose vital importance for collective health is now even more evident to all, in order to avoid that delays in the necessary initiatives should add damage from other epidemics to those suffered by our population due to the COVID-19 pandemic.

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The current COVID-19 emergency may bring serious consequences for other infectious diseases as well. In April 2020, it became clear that vaccination coverage of children, adolescents and adults had declined in many Italian Regions for a number of concomitant reasons: displacement of staff normally employed in vaccination services to functions related to the management of the pandemic emergency; fear from citizens to access health services for the administration of vaccines; unjustified interruptions

of active calls and decreased requests of vaccine supply in non-emergency situations.

The Board of the Vaccination Calendar for Life views these events with great concern. It has rightly been noted that the lack of a vaccine against a new virus, SARS-CoV2, is the cause of the serious health and economic situation in which the whole world has fallen.

We would experience such emergencies much more frequently in case of un-availability of all the other vaccines. The absence or low impact of diseases like diphtheria, polio, measles, etc. is taken for granted, but is linked to the persistence of high vaccination coverage.

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Vaccination coverage against diseases that have a particular impact on the elderly population and on people of any age suffering from chronic diseases, such as influenza and pneumococcus, become of particular urgency and importance in a possible scenario of resurgence of COVID-19 infections in the next winter season. Adding the difficulties of differential diagnosis of flu-like syndromes (ILI) caused by other infectious agents to the damage of COVID-19, could make the situation highly critical. In other words, it is absolutely urgent to protect fragile populations with all possible tools, first of all vaccines.

In Italy, coverage against influenza in the over-65 s and in chronic patients was about 55% and 25–30% respectively in recent seasons. We need to increase coverage substantially, as must pneumococcal vaccination, whose national average in the elderly and chronically ill is unacceptably low, with an increase in the active and free supply of vaccination including the over-55 s.

Many countries have understood the urgency of such interventions, and have already opted for increased quantities of vaccines for next autumn, with the intention of increasing coverage, and not find themselves competing for a number of doses inevitably limited and probably insufficient to cover all global demands. It should not be forgotten that vaccines are increasingly subject to shortages, also due to the impossibility of increasing the quantities produced in a short time due to the high quality standards and safety requirements to which they are subject.

It is worth remembering that the World Health Organization - European Region (WHO-Euro) issued a guideline last March 20, 2020 that strongly emphasized the following:

'Any disruption of immunization services, even for short periods, will result in an accumulation of susceptible individuals, and a higher likelihood of VPD outbreaks. Such outbreaks may result in VPD-related deaths and an increased burden on health systems already strained by the response to the COVID-19 outbreak' [3–7].

It is therefore clear that the following urgent actions are indispensable:

1. **Ensure keeping up pediatric vaccination coverage in infants, school-age children and adolescents, with no interruption of active calls and scheduled sessions**

In the current phase of foreseeable progressive return to the usual activities, it is necessary to ensure sufficient personnel to carry out immunization activities in all Regions, considering vaccination services as a crucial point to maintain population health.

2. **Re-organize pediatric and adolescent vaccination offer**

The details of the reorganization processes may vary from one Region to another, depending on the different organizational models - also in order to give complete reassurance to citizens that vaccinations can be carried out safely. Some lines of action can be outlined:

- involvement of primary care pediatricians in the administration of vaccination, in order to offer broader ways of application, as it already happens in some Regions. This would allow to reduce movement of families, and encourage administration in concomitance with infant health checks;
- co-administration of more than 2 vaccines in the same session, reminding that in some countries up to 5 different vaccines are administered simultaneously without significantly increasing the frequency of side effects (injections must be made at least 2.5 cm away from each other when administered in the same muscle);

- acceptance by appointment, which must be scheduled in order to avoid simultaneous presence of other subjects in the waiting room, and post-vaccination stay for observation of any adverse events in a suitable environment.

3. **Establish catch-up programs for missed vaccinations after the start of the COVID-19 emergency**

Catch-up actions for children and adolescents who missed any vaccination during the COVID-19 emergency are recommended. This should be accomplished for both mandatory vaccinations for access to school (hexavalent; Measles-Mumps-Rubella-Varicella or MMRV), and for strongly recommended vaccines (conjugated pneumococcus, conjugated meningococcus quadrivalent ACWY/C, meningococcus B, HPV in adolescence). It should be reminded that all co-administrations are possible unless expressly excluded in the Summary of Product Characteristics (SPC); inactivated and live attenuated vaccines can be administered either simultaneously or at any time interval. Two or more live attenuated vaccines should be administered either simultaneously, or at least 4 weeks apart.

For vaccines to be administered in 3 doses as a basic course, the minimum interval between the first and the second dose should be 8 weeks, and at least 4 months between the second and third dose. A discontinued vaccination course should never be re-started since the beginning, regardless of the time elapsed from one or more already administered doses.

4. **Prepare tenders for the supply of flu vaccines with extreme urgency and with suitable quantities to increase coverage in all Regions**

Many countries have opted for increased supplies of flu vaccines for the next winter season. Available doses at the international level are limited in number. The regionalized tendering system for the supply of flu vaccines risks turning into a disaster in Italy in terms of doses availability if Regional health authorities do not forecast quantities well in advance. On April 23, 2020, the Board of the Vaccination Calendar for Life asked for the immediate publication of the Circular letter of the Ministry of Health on Influenza Vaccination for the 2020/2021 Season as a matter of urgency, and called for concrete actions to be taken to promote a high level of uptake in the next autumn, also including healthy children between 6 months and 6 years of age. Once again, it is important to pay attention to the use of the most age-appropriate vaccines, as mentioned in the Ministerial Circulars (quadrivalent vaccines for the population aged 6 months to 75 years; adjuvanted trivalent vaccines for the population ≥ 75 years).

5. **Prepare plans to increase vaccination coverage against influenza, pneumococcal diseases, diphtheria-tetanus-pertussis and herpes zoster**

Strong actions to increase vaccination for pneumococcus, diphtheria-tetanus-pertussis (dTpa) and zoster should also be planned.

In particular, together with the already mentioned proposal to lower the age of active and free offer to subjects ≥ 55 years of age, an earlier and longer duration of the immunization campaign (from the beginning of October to the end of January) should be provided, in order to manage increased access, with an organizational model characterized by social distancing and biocontainment both in the settings of family medicine and in those of vaccination centers. The plan to increase vaccine supply must provide also a central intervention of the State through ad hoc resources, with direct purchase of doses by the Civil Protection. This should aim at supporting the ordinary budgets of the Regions

for the increase in vaccines required for the possible co-circulation of influenza with SARS-CoV-2 in the influenza season 2020/2021.

It is extremely urgent to increase protection for all diseases that could be added to COVID-19. Moreover, there is a great risk of bacterial superinfection after viral infections (such as pneumococcal pneumonia after influenza).

The largely underestimated number of cases of whooping cough in the elderly or chronically ill adults, whose clinical features are similar to those of COVID-19, also poses difficulties in the differential diagnosis between the two pathologies (a problem that also exists for seasonal influenza). Last but not least, the social importance of vaccination against herpes zoster and post-herpetic neuralgia, with treatment issues that might even be more complex in the current situation, should be recalled.

Innovative and concerted ways of offering primary care should be proposed, remembering that co-administration of vaccines against flu, pneumococcal diseases, dTpa and herpes zoster are possible, and vaccination campaigns should last four months. An innovative organizational model should ensure immunizations to the fragile population, both in social and health residential facilities, and at home.

Finally, adequate planning of the supply of personal protective equipment and other devices needed for the prevention and control of contact, droplet-borne and airborne diseases should be provided for healthcare workers and immunization candidates.

Regarding the issue of adding a vaccine against SARS-CoV2 to the existing immunization program, a first element to consider will be what kind of 'effectiveness' the different future licensed vaccines will have. Given for granted that a minimal requirement for a new vaccine is efficacy against severe cases of disease, in a first phase of scarce availability, vaccines will be reserved to essential services workers (like healthcare workers and civil protection) and subjects at risk due to age, chronic diseases or stay in long-term residencies. If one or more vaccines will show to be effective also against infection and contagiousness (community protection effect), evidence about which population group (schoolchildren, adolescents, etc.) is key in the transmission of virus, may indicate a need to implement universal or mass immunization of certain target groups when doses supply will allow [8].

Vaccine hesitancy, which has been a relevant issue in Italy especially in the years 2013–2015, was fought rather successfully with a strong commitment of the scientific and political world in the country. The approval of the National Triennial Vaccination Plan 2017–19 and the simultaneous introduction of vaccination requirements to access school reversed substantially the population sentiment about vaccination, which is today largely a positive one [9].

However, the most ideological anti-vaccination movements, presently not very vocal due to the pandemic emergency, already declared they would never accept immunization with a SARS-CoV2 vaccine, although their characteristics are at present still unknown.

We will need to prepare a carefully-planned communication campaign before implementing any targeted vaccination program against SARS-CoV2.

The Board of the Vaccination Calendar for Life appeals to the National and Local Health Authorities for a strong and coordinated commitment in favor of the widest offer and acceptance of vaccinations, whose vital importance for collective health is now even more evident to all, in order to avoid that delays in the necessary initiatives might add damage from other epidemics to those suffered by our population due to the COVID-19 pandemic.

Board of the Vaccination for Life Calendar:

Italian Society of Hygiene, Preventive Medicine and Public Health - SItI (President: Italo F Angelillo)

Italian Society of Pediatrics - SIP (President: Alberto Villani)

Italian Federation of Paediatricians - FIMP (President: Paolo Biasci)

Italian Federation of General Practitioners - FIMMG (Secretary: Silvestro Scotti)

Scientific Coordination Board Calendar for Life (Coordinator: Paolo Bonanni)

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] Bonanni P, Azzari C, Castiglia P, Chiamenti G, Conforti G, Conversano M, et al. The 2014 Lifetime Immunization Schedule approved by the Italian Scientific Societies. *Epidemiol Prev* 2014;38(6 Suppl 2):131–46.
- [2] Bonanni P, Chiamenti G, Conforti G, Maio T, Odone A, Russo R, et al. Lifetime Immunization Schedule, approved by the Italian scientific societies: a new paradigm to promote vaccination at all ages. *Hum Vaccin Immunother* 2017;13:2531–7.
- [3] World Health Organization (W.H.O) Regional Office for Europe. Guidance on routine immunization services during COVID-19 pandemic in the WHO European Region. 20 March 2020 (available at: <https://apps.who.int/iris/bitstream/handle/10665/334123/WHO-EURO-2020-1059-40805-55114-eng.pdf>).
- [4] Abbas K, Procter SR, van Zandvoort K, Clark A, Funk S, Mengistu T et al. Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit-risk analysis of health benefits versus excess risk of SARS-CoV-2 infection. *Lancet Glob Health*. 2020;17(Jul):S2214-109X(20)30308-9. [https://doi.org/10.1016/S2214-109X\(20\)30308-9](https://doi.org/10.1016/S2214-109X(20)30308-9).
- [5] Bramer CA, Kimmins LM, Swanson R, Kuo J, Vranesich P, Jacques-Carroll LA, et al. Decline in child vaccination coverage during the COVID-19 pandemic - Michigan Care Improvement Registry, May 2016-May 2020. *Am J Transplant* 2020;20:1930–1.
- [6] Bechini A, Garamella G, Giammarco B, Zanella B, Flori V, Bonanni P, et al. Paediatric activities and adherence to vaccinations during the COVID-19 epidemic period in Tuscany, Italy: a survey of paediatricians. *J Prev Med Hyg* 2020;61:E125–9.
- [7] Dinleyici EC, Borrow R, Safadi MAP, van Damme P, Munoz FM. Vaccines and routine immunization strategies during the COVID-19 pandemic. *Hum Vaccin Immunother* 2020;26(Aug):1–8. <https://doi.org/10.1080/21645515.2020.1804776>.
- [8] Matrajt L, Eaton J, Leung T, Brown ER. Vaccine optimization for COVID-19, who to vaccinate first? medRxiv. 2020;Aug 15:2020.08.14.20175257. <https://doi.org/10.1101/2020.08.14.20175257>.
- [9] Bonanni P. Enlarged free childhood vaccination offer in Italy proposed to curb the rise in the growing anti-vaccine message. *Expert Rev Vacc* 2018;1:103–5.