

The beginning of smallpox vaccination in the Duchy of Parma*

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Summary. Maria Luigia (Marie Louise) of Habsburg, daughter of the Austrian Emperor and, as Napoleon Bonaparte's second wife, Empress of the French, after the defeat of the husband in 1814 was relegated to role of Duchesse of Parma, Piacenza and Guastalla. She arrived in Parma in 1816 accompanied by several Austrian army and administrative officials, which were instructing and controlling her, and, willingly, she left to them most of the political and administrative decisions. On the contrary, since the first years she was interested and wanted to take decisions in the field of public health and charity. She opened new specialized hospitals and hospices for poor people, orphans and abandoned children, and, in February of 1820, promulgated the new «Regulations of the vaccinations», an exhaustive and specific code, that was taking into consideration the times, the places, and the people who had to vaccinate or to be vaccinated. Moreover, she fixed the modalities, the incentives, the sanctions, and she also nominated a series of people who had to publicize vaccinations and to help the general population in overcoming fears, prejudices and other causes of distrust. The new dispositions increased the number of vaccinated people in the Duchy, saving it from several epidemics that appeared in the following decades in the neighboring regions (Tuscany, Lombardy). In 1831 and 1832 she issued other two ordinances in which she urged the populations and the doctors to increase the vaccinations, probably after a decrease in interest of both, and introduced new practical arrangements to simplify and to facilitate the practice, ensuring and verifying the outcome. The effectiveness of the provisions of Maria Luigia has been shown by the marked decrease in smallpox epidemics throughout her whole reign, until 1847. Meanwhile after the end of the reign, in the second part of the nineteenth century, there was an increase of epidemics, because the following governments of the Bourbons Duchy (1847-1860) and of the united Italy after 1860 were not as diligent and active on spreading vaccinations. (www.actabiomedica.it)

Key words: immunizations, vaccination, smallpox, cowpox, measles, no-vax movements

When the smallpox vaccination started in the Duchy of Parma, on the first years of the nineteenth century, very short time after Jenner's successful inoculation of James Phipps (1796) and the appearance of his first publication, *An Inquiry into the Causes and Effects of the Variolæ Vaccinæ* (1798) (1), the local population was already aware of the preventive practice of inoculation. Indeed, the previous Duke, Ferdinand of

Bourbon, dead in 1802, had undergone an inoculation when he was a young child (1764), saving his life, because the mother, a sister and the father, all died of this disease just before or after the practice on him (2). The ducal inoculation had a worldwide resonance because he was probably the first heir to an European throne doing it, and because sometime the result could be fatal. It is interesting to know that while the Bourbon

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courts of Spain and Naples were contrary to this medical maneuver (Ferdinand was also an Infant of Spain, that is a heir to Madrid throne), the Austrian Empress Maria Theresa send to the father, Duke Filippo, her congratulations, adding “that she wanted to do the same with her children, but the emperor consort did not want” (3).

The new Jenner’s inoculation was much safer, because done with pus scraped from cowpox blisters and not from the more dangerous and often fatal smallpox. The practice of the new vaccination spread in all the European countries and rapidly also in the Americas and in all the British colonies in every continent. While in the Napoleonic Italian Republic, contemporaneous to the Parma Duchy, at the beginning of the nineteenth century under French influence, the new preventive maneuver was very popular (4), on the contrary in Parma only few people accepted to do it.

In 1805 a virulent smallpox outbreak in the Country and in all North-Italy pushed the French general administrator of Parmesan States; count D  merique Moreau de Saint M  ry, to invite the population to vaccinate themselves and their children, overcoming prejudices and fears. The governmental warning was supported by explanatory invitations to vaccinate by the famous clinician Giacomo Tommasini and by the bishops of Parma and Placentia. The two clerical authorities invited all the priests of the dioceses to convince their parishioners, especially the “idiots”:

*thoughtful persuasion to overcome the prejudices, which could easily arise in the idiots, also to prevent stronger and disgusting measures that the Government would believe in having to take for the public health, (pre-murosa persuasione di vincere i pregiudizi, che potrebbero facilmente insorgere negl’**idioti**, anche per prevenire misure pi   forti e disgustose che il Governo si crederebbe in dovere di prendere per il pubblico bene) (5).*

The word “idiot” in Italian means both “ignorant” and “feeble-minded person”, and today it is used predominantly with the second meaning, but the Parmesan bishop meant ignorant, even if with a disdainful meaning of presumptuous ignorant as the actual people contrary to vaccinations are (6). Criminals as well as idiots, because in this way not only endanger the health and sometimes the lives of their children but, lowering the global coverage of the immunes to less

than 95%, let the diseases circulate, reaping, here and elsewhere, new victims, even hundreds of thousands of lives per year as it happens for measles (7).

In the following years the vaccinations augmented and when in 1809 the Duchy of Parma became Department of Taro, a province and prefecture of the French State, the situation was good and so it remained for a few years thanks to the recruitment of the clergy in advising and convincing the population, and to the awards given to the most intense vaccinators. In 1812, an epidemic interesting Tuscany, Cremona and Padua also touched slightly Parma but was stopped intensifying vaccinations and dividing the city into neighborhoods, each with his vaccine commissioner (5).

Probably in the following period of transition from French to Austrian influence, after the fall of Napoleon, and with the assignment of the Duchy to Maria Luigia of Austria, there was a decline in vaccinations, also favored by an outbreak of epidemic (petechial) typhus that struck the State in 1817, moving attention from smallpox to the other pathology.

Maria Luigia was born in 1791 as Maria Ludovica Leopoldina Franziska Therese Josepha Lucia von Habsburg-Lothringen, first daughter of the future Austrian Emperor Francis II and of Maria Teresa Bourbon of Naples-Sicily. For political reasons, she became the second wife of Napoleone Bonaparte when she was only nineteen, and as such Empress of the French from 1810 to 1814 with the name of Marie Louise. When she arrived in Parma she assumed officially the Italian name of Maria Luigia and so was always cited in the governmental affairs. The new Duchess was young and inexperienced, therefore, the Emperor father, had put good advisers to her side in order to support and guide, but also control her. She willingly leaved to them the state affairs, especially to the futuremorganatic husband Count Adam Albert von Neiperg, but she wanted to personally follow the charitable and health issues.

On February 25, 1820, she promulgated the “Regulations on Vaccinations”, ordinance No. 25 in the *Collection of Laws for the States of Parma, Placentia and Guastalla* of that year, a comprehensive and specific rules that took into account the times, the places and the people who had to vaccinate and to be vaccinated (8). The regulations also provided modalities,

awards and penalties, and all the corollary of people who, while not being active vaccinators (because they were not doctors, surgeons, or the like), had to act to let the population inoculate herself, overcoming fears, preconceptions or other reasons of distrust. The new Government, thanks to the precise Austrian experience in the bureaucratic field, also envisaged all the administrative aspects so that the situation, the statistics, and the progress of the health campaign were always monitored (8).

What were the reasons for this new regulation, what had brought the new Reign to drafting a new legislation? Certainly the fall in the number of immunizations observed in the passage period from French to Austrian influence, moreover the risk, always present, of new outbreaks. Alfredo Frassi, chief health officer of the city at the beginning of the twentieth century, in an interesting "*History of vaccination in Parma*" published in 1913, stated that the Duchess had complained of the falling of the vaccinations, calculating also that in the Country there were at least forty thousand subjects to be inoculated and she hoped that at least half of them should be immunized. Spotting the State and City archives, the health officer noted an immediate increase in the number of vaccinations after the decree that continued throughout the next decade and

perhaps contributed to avoiding the epidemics appeared in many parts of Italy: Bologna (1822), Turin and Chioggia (1823), Urbino and Vicenza (1824), Upper Italy (1826) and Genoa (1829) (5).

He also calculated that at that time the performed vaccinations interested 50% of the newborns, without taking into account the infants dead in the first year of life, and thus a great result for those times.

The ducal decree was divided in 8 parts and started with the heading (8):

We Maria Luigia, Imperial Princess, Archiduchess of Austria, for the grace of God Duchess of Parma, Piacenza and Guastalla, etc, etc, etc, (Noi Maria Luigia, Principessa Imperiale ed Arciduchessa d'Austria, per la grazia di Dio Duchessa di Parma, Piacenza e Guastalla, ecc. ecc. ecc.).

The eight parts concerned: 1. Places and times of vaccinations; 2. Vaccinators; 3. Inoculation fluid; 4. Promoters; 5. Organization; 6. Awards and incentives; 7. Fines and punishments; 8. General provisions. In particular:

1. Each city and village had to find a vaccination room, for Parma the hall was located in the maternity hospice, recently established by the Duchess. The vaccine sessions were two per year, one in the spring and the other in the autumn. The "*Protomedicato*" (the public health management) could promote other sessions in case of danger of new outbreaks.

2. Physicians and surgeons were preferred for the role of vaccinator but, in case of need, also medical students of the last years and midwives with their students.

3. The inoculation fluid had to be preserved all the year round in the foundling hospice for infants, annexed to the maternity hospital. For fluid we have to intend not only the one preserved in tubes (minimal amount) but the one kept constantly in the hospice with regular grafts from one child to another.

The children were the true deposit of the fluid, the small amount preserved in glass tubes was only a reserve in case of failure of engraftment of the vaccinations, thus interrupting the human chain.

Today, such a method would certainly be considered unethical and a serious violation of human rights and of children in particular, but for those times was a normal and completely lawful thing (5).

4. The *promoters* were lay persons selected among the outstanding people of the community in each city and village of the Duchy where a vaccination hall was instituted. They had the task of promoting vaccinations by going *to the domicile of the inhabitants of their municipalities for the exact review of the candidates to the immunization, and to encourage and persuade the shy and ignorant people*. They had also the duty to control that all the candidates underwent vaccination and the doctors did the verification of the right reaction ten days after, moreover, that the unwilling subjects presented themselves to the next sessions, as well as those who did not have the proper reaction to the inoculation.

5. The part on the *organization* concerned the start and end times of the sessions, the roles of government authorities, vaccinators and parish priests, underlining their part in promoting the campaign and persuading people. The local government authorities and officers had to book in advance the vaccine fluid from the deposit, i.e the child of the foundling hospice who will be used for the vaccination which the vaccinators had to perform "*constantly from arm to arm*"

and subsequently register the names of the vaccinees in a special book. Furthermore, this part of the decree concerned also many other aspects as controls for the proper reaction, reports of physicians and authorities, certificates, registrations of private vaccinations and other bureaucratic aspects.

The sixth and seventh section, *Awards and incentives*, and *Fines and punishments* regarded the aspects finalized to incentive vaccinations, the first ones for vaccinators and promoters, the second ones for people who had missed the duty. While the awards were usually money, the punishments were more various and consisted in the impossibility to be admitted, if not vaccinated, to hospices or colleges, boarding-schools, public and private schools including the university. No one could ask for help and relief from the Government and from the various beneficial entities if not immunized, and similar punishments regarded also parents who had not vaccinated their children.

8. The decree concluded with some *general dispositions*, such as the obligation of doctors, surgeons and midwives to report the private vaccinations performed and their outcome, otherwise suspended. Finally, *“the presidents of interior, finance and military departments were responsible for the implementation of the Regulation in each case.”* In appendix were reported the facsimiles of the vaccination book pages and of certificates that could be requested (8).

The immediate following decree, N. 26, regarded the *instructions for vaccinators* and completed the previous (9). The Instructions were compiled by four members of the Protomedicato Council: Giuseppe Basili, Giovanni Rossi, Andrea Rasori and F. Lorenzini. The first and the third had already been quoted in the Moreau de Saint-Mery invitation, respectively one as the secretary of the council and the other as a vaccine doctor.

It was mandatory to use inoculation subdermal needles, while the scarification lancet was prohibited. Vaccinations had to be done by *“from arm to arm graft”*, so the doctors had to make sure that they had just founding children recently vaccinated with the active pustules they could use (usually towards the third to fourth day of inoculation). Then followed the instructions to distinguish the good pustules to use, which should be pointed horizontally to the surface, in order

to release the fluid without squeezing, so as not to pollute them with blood drops and not to cause pain to the child.

At the moment of control of the reactions the decree explained how to distinguish the proper pustules from the other due to infections or traumas, and how to draw up vaccine books, relations to the authorities and certificates. Moreover was a duty of the vaccinator to control both the children used to vaccinate the population and the people who had to be inoculated in order to avoid transmissions of infectious diseases or inappropriate reactions.

Throughout the following decade (1821-1830) the vaccinations were numerous and, as mentioned above, avoided the spread of major epidemics as it did in neighboring regions (Tuscany, Liguria, Lombardy and Veneto). In the decade of 1830-40 vaccinations decreased, but the large number of immunes from the previous period protected the Duchy from major epidemics, while it was not free from cholera epidemics, as in 1831 and especially in 1836 when it struck 21% of the population killing half of them (5).

Causing a likely decline in attention to vaccinations, the Sovereign in June and November 1831 updated the provisions with few variations, urging the population and, above all, the doctors to perform them. Already in 1817, the chairman of the Parma Health and Rescue Committee had complained to the Duchess of the low level of social and administrative commitment of physicians who did not report and denounce the cases of illness undergoing epidemics:

Do you know, Her Majesty (HM), that the doctors or do not report or do little to the account of the typhus sufferers ... It is a good idea to force them to do their duty ... [otherwise] they will be suspended from employment. Those “in private practice” know that HM will never accept requests to obtain public assignments of the art that they are exercising (5).

The following year, on March 16, 1832, from the ducal seat of Piacenza, Maria Luigia issued a new resolution, in which it indicated new dates for public vaccinations: in particular the vaccination was to be done only by *“using arm-to-arm graft”* and reduced vaccination sessions to once a year (10).

Alfredo Frassi in his 1913 article noted that while in Parma was mandatory the *“arm-to-arm graft”*

method, and this obligation was repeated in 1832, the literature and the experience of the epidemics of time advised to resume occasionally the material from the cows pustules, because the prolonged passage in humankind reduced its “*preservative force*” i.e. the immunizing ability. In any case, the diatribe on this aspect continued for almost the whole of the eighteenth century, and only in the last twenty years of the century the fluid of bovine origin was spread worldwide, harvested and preserved and packaged in suitable and recognized laboratories, already industrial (4, 11, 12).

Despite the general enthusiasm for vaccination and the compulsory practice in many nations in the early decades of the nineteenth century, mostly for newborns, because of the many who did not meet the obligation, the disease continued to reap victims in both endemic and virulent epidemics. These were numerous and serious even, or above all, after the unification of Italy. In the year 1871 Frassi reported a death toll of more than 200 people in Parma, and Pietro Corsini, the physician (*medico condotto*) of Pellegrino Parmense’s, reported more than 500 cases of the disease in his municipality. The smallpox epidemics continued throughout the century and began to decline only after 1888, when the vaccination became mandatory at national level (5).

In conclusion, Maria Luigia’s interest in public health matters of her Duchy was evident since from her first legislative procedures and political and private actions.

We do not think that the acts and the various rules in the field of smallpox vaccination were the result of the Duchess’ competence, but of the various experts of the local medicine, however, we must recognize her civil and human interest in these aspects. The effectiveness of her “good” regulation, with decreasing epidemics at that time, has been highlighted by the subsequent increased frequency and virulence of smallpox epidemics in Parma after the Italian national unification (1861), when other problems and especially an economic crisis had lost the attention and concern for these problems.

What is the current situation? The last case of smallpox was recorded in Somalia in 1977 and in 1979 the World Health Organization (WHO) decreed the disappearance of the disease from the world and, con-

sequently, the obligation of vaccinations, which for some years were already been suspended in many industrialized countries, including Italy (13).

The virus, however, is still stored in research laboratories and the danger of terrorist spread is always present to the point that, after the attack on the Twin Towers of September 11th 2001, 350,000 Americans, employed in the armed forces and in the healthcare world, were vaccinated. This late vaccination has highlighted a higher frequency of major side effects, including heart complications such as angina and heart attacks, very rare when vaccinations were mandatory and started in the first year of life (13).

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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