

Chapter Title: Vaccination and the communist state: polio in Eastern Europe

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Book Title: The Politics of Vaccination

Book Subtitle: A Global History

Book Editor(s): Christine Holmberg, Stuart Blume, Paul Greenough

Published by: Manchester University Press. (2017)

Stable URL: <https://www.jstor.org/stable/j.ctt1wn0s1m.9>

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Vaccination and the communist state: polio in Eastern Europe

Dora Vargha

In December 1959, Hungary introduced into its national immunisation programme the Sabin vaccine, the live poliovirus vaccine that has been the tool of the Global Polio Eradication Initiative since 1988. This campaign put Hungary in the front line of polio vaccination with live virus vaccines along with the Soviet Union and Czechoslovakia, where the Sabin vaccine was tested. Czechoslovakia became the first country in the world to practically eradicate polio in 1960¹ and the Hungarian model of annual intensive mass vaccination campaigns became one of the bases on which the WHO built its global strategy of polio eradication.²

How did Eastern Europe come to play such an important role in laying the foundations of polio eradication during the early Cold War? Was there something particular about Eastern European states that made this region especially fitting or receptive to mass trials and vaccination campaigns that then had a global effect?

This chapter aims to get to the heart of this matter by examining Eastern European experiences with polio in the 1950s and early 1960s. Two states played a particularly important part in the history of the Sabin vaccine, and thus stand in the focus of this analysis: Hungary and Czechoslovakia. The vaccine trials and prevention efforts with the Sabin vaccine in the late 1950s and early 1960s are placed in the broader context of experiences with polio in Eastern Europe with the caveat that the description of regional vaccination policies is far from complete. The political diversity of Eastern Europe, paired with the linguistic and

cultural differences in the region make the accessibility of an overall Eastern European experience very challenging. Moreover, the critical history of vaccination programmes and public health organisation have been – until recently – largely unexplored, leaving historians of Eastern European medicine with a Herculean task when attempting to piece an overall narrative together.

In what follows, I argue that Eastern European states saw themselves, as they were seen by the West, to be particularly well suited to test and apply polio prevention with live virus vaccine on a mass scale. State paternalism and disease prevention as the cornerstone of communist public health dogmas on the one hand, and the particular organisation of public health practices and society more broadly on the other, contributed to the region becoming a reference point in scientific debates on the use of the Sabin vaccine and on polio eradication. Although these ideas and concepts rooted in ideology and a Cold War view of Eastern European states were often divorced from realities, such internal and external perceptions of Eastern European states had significant practical consequences not only in polio prevention, but also in building bridges between East and West.

Polio in Eastern Europe

To understand the significance of polio in Cold War Eastern Europe, we must consider the social, economic and political history of the era. In a wider context, the looming threat of a nuclear war overshadowed the Cold War. Military and strategic considerations contributed to the formation of Big Science and affected research funding structures and research practices all over the world.³

While the potential threat of destruction was pervasive, other results arising from the Second World War were equally important: the impact on the economy, on concepts of what citizens' roles are, on beliefs in progress in medicine and science, and on concerns over ethical issues in medicine. Moreover, this time saw the advent of new international agencies, such as the WHO; an era of decolonisation; the establishment of new regimes; and the emergence of particular ideas about what modern societies should be. One of the key sites of new regimes that worked with particular ideas of modernity was Eastern Europe, where, in accordance with the Soviet Union, communist

governments emerged to gain exclusive political control between 1945 and 1952.

One would not expect polio to play a central role in such a setting – especially since, in terms of number of people affected, it was not a major health threat. Even at the climax of an epidemic, the increased incidence numbers were not particularly high when compared to the morbidity and mortality of other diseases of the era. However, as in many post-war societies, population politics became increasingly important in Eastern Europe in the wake of long years of devastating and bloody battles, deportations, genocide and starvation. Moreover, an intensive concentration on heavy industry and material output in the 1950s, and an ideology that placed robust physical workers at the heart of communism's success furthered interest in the reproduction of healthy and productive bodies.

Faced with the after-effects of the Second World War and the economic goals and ideals of the new era, several states enforced a strict pro-natalist policy in the early 1950s, most prominently abortion bans,⁴ in the hope of increasing live births and thereby the number of productive workers. The general idea and goal undergirding pro-natalist policies was a shared attribute in the Eastern Bloc. As historian Gail Kligman put it, 'Mobilization and control of the population were of critical strategic importance for the maximization of development potential, and attention to demographic phenomena was essential to securing long-term interests. In order to meet the relatively high labor needs of such economies, reproduction of the labor force became a priority planning item.'⁵

In all countries of the Eastern Bloc, with the exception of Albania, the bans were lifted after abortion was made possible on request in the Soviet Union in 1955.⁶ The short increase during the years of the abortion ban was soon followed by the decrease in live births. In Hungary, the 1956 Revolution, followed by a massive emigration of dissidents further added to the decrease in the current and future workforce.⁷

The epidemic waves of polio came to Eastern Europe at the time of this demographic shock and challenged the process of social, political and economic reorganisation. The relatively new communist governments that positioned themselves as the answer to a bright and productive future, had to deal with the traumatic effects of polio epidemics, which threatened communist ideals.

A disease that targeted the youngest of the population, leaving them physically disabled and removing them from the potential workforce was an effect that could not be taken lightly, on either sides of the Iron Curtain. From the communist state's point of view, this effect was aggravated when the visibly disabled bodies of polio victims were pitted against the robust bodies of workers and peasants omnipresent in murals, statues, magazines and schoolbooks. Polio simply did not fit the communist utopia.

Severe polio epidemics started to appear in Eastern Europe around the early 1950s. In Romania, epidemics began in 1949 and peaked in 1957 with an incidence rate of a stunning 42.5 cases per 100,000.⁸ In Poland the most severe year was the first, 1951, with an incidence rate of 12.7,⁹ while in Hungary, where epidemics began raising concern in 1952, the worst epidemic year of 1957 produced a relatively high incidence rate in the region: 23.8 per 100,000.¹⁰ In Bulgaria, apart from the epidemic year of 1941, polio began taking its toll every three years from 1951 onwards, reaching a peak in 1957 with a morbidity rate of 13.8 per 100,000 inhabitants.¹¹ An exception to the rule was Czechoslovakia, where 1939 marked the beginning of the polio era.¹² However, in the early 1950s the incidence rate reached its highest peak, rising from 1.52 in the 1930s to 10.03 per 100,000.¹³

Polio, primarily a disease of children, raised the stakes for the state's provider role in public health. While health care was consistently low among spending priorities, and always took a backseat to the development of heavy industry in rebuilding the country after the war, it was also one of the key elements of the communist state that set the East apart from the West.

The ideological stance in public health objectives, which framed theories of health and disease on dialectical-materialist ideas, was based on the post-war Soviet model of public health and was adopted in several Eastern European countries following the communist takeover around 1948.¹⁴ As historian of medicine Bradley Moore points out, preventive and prophylactic interventions against external threats to the health of the body were key in this Eastern European thinking about public health.¹⁵ Moreover, free access to health care for workers provided by the paternalistic state was a fundamental idea in how the system worked, or at least was supposed to work. Polio, with its debilitating effects and its patients' need for long-term treatment, visibly

challenged the provider role that the state set up for itself through policies and communication. More importantly, the fact that polio affected children made it imperative to meet its challenge successfully.

State paternalism and socialised medicine were not unique to the Eastern part of Europe. In the post-war era, national health care schemes and states' strong intervention in health matters were on the rise in countries such as Great Britain, France and Sweden. As Lundberg and Holmberg show (Chapter 10 in this book), it is a historical heritage that countries, like Sweden, still grapple with today.

However, not only was public health in general, and prevention in particular, a cornerstone of the communist ideal, but mass public health programmes, such as prevention of infectious diseases by vaccination were ideal terrains in which the communist state could demonstrate its power and legitimate its authority. If vaccination worked, the result would be immediate and visible. If not, factors unconnected to the state, like science could be blamed.¹⁶

Salk vaccine behind the Iron Curtain

Polio vaccination in Eastern Europe became such an enterprise with vaccines that appeared in the West in the second half of the 1950s. As the incidence of the disease appeared with more frequency and with higher and higher rates around the world, vaccine development became especially pressing and therefore gained priority in securing research funds. The first vaccine to be widely produced and distributed was the Salk vaccine in 1955, developed by Jonas Salk in the USA, which induced immunity to the disease with the help of inactivated or killed poliovirus.

Developing the vaccine was one important step. Establishing its efficiency was quite another. American authorities moved quickly when it came to approving and licensing the Salk vaccine;¹⁷ it took them merely two hours after Thomas Francis, director of the University of Michigan Poliomyelitis Vaccine Evaluation Center, officially announced the results of the field trial involving 1.8 million schoolchildren on 12 April 1954.¹⁸

On 25 April 1955 in California, a child previously inoculated with the Salk vaccine was admitted to the hospital with signs of polio. The following day, five similar cases were reported. All of these patients

received vaccine produced by the Cutter Laboratories, and on 27 April the Surgeon General requested that Cutter recall all its vaccines. In the course of the next two months, 94 vaccinated patients, 126 family contacts and 40 community contacts were diagnosed with poliomyelitis¹⁹ in what would be termed the Cutter incident. This situation had tremendous impact: it shook public trust in the vaccine, changed vaccine regulation and control in the USA and ultimately affected the story of another, live-polio vaccine developed by Albert Sabin.²⁰ While American and worldwide confidence was soon restored in the only available vaccine, in the following years, based on varying experience with its application around the world, the efficacy of the Salk vaccine would be debated at international conferences and on the pages of medical journals well into the 1960s.

These debates did not seem to appear in the decision-making of Eastern European polio vaccine use. In the wake of the threat against the bodies of their citizens and their modernist projects, with a particular, ideological and practical emphasis on disease prevention, most Eastern European countries introduced the Salk vaccine without much public or professional deliberation. This set them apart from many of their western counterparts, where, despite intense state involvement in polio prevention, extensive professional debates surrounded and informed governments' decisions in choosing and implementing vaccination strategies.²¹

The timing of the introduction of polio vaccines in Eastern Europe, however, did follow the same pattern as in the West: governments generally took action only when the imminent threat of a severe epidemic was unfolding. One of the explanations for this is that polio was not an omnipresent threat. It usually caused outbreaks in the summer months, and did not come every year. Another important aspect was the financial commitment vaccination required: importing vaccines was a costly enterprise and setting up domestic vaccine production required significant investment, like building new laboratories, training staff and importing and keeping expensive lab animals.²² This latter, economic aspect was especially important in Eastern Europe, since both vaccine import and the establishment of domestic production required hard currency that was not easy to come by.²³

Czechoslovakia was among the first in the region to introduce inactivated Salk vaccine. While preparations for local polio vaccine

production began in 1956, an atypical epidemic wave in that same year urged the government to change its original plans to start polio vaccination with domestic vaccine at the end of 1957. Instead, Czechoslovakia acquired vaccine from the Canadian Connaught Laboratories and started immunisation in the spring of 1957, before the onset of the epidemic season. Paediatricians and Red Cross volunteers aided the vaccination process. They followed the so-called 'Danish method' of injecting a low vaccine dose intradermally, using 0.1 and 0.15 ml vaccine in two doses.²⁴ The Czechoslovak hygienists were upfront about choosing this method 'to inoculate the maximum number of children with the limited amount of vaccine available.'²⁵ A year later the Czech health authorities calculated the effectiveness of the initial vaccination campaign to be 66 per cent in the Czech regions and 72 per cent in Slovakia for children under the age of 7. They found the results to be promising and decided to continue vaccinations with domestically produced Salk vaccine in 1958.²⁶ However, state hygienists soon became interested in another vaccine developed by Sabin, turning a significant part of the country into a field-testing site.

Like their Czechoslovak counterpart, the Hungarian government chose to import Canadian and American vaccine to begin the immunisation of the population in 1957. Although preparations were also made for domestic vaccine production, the process was significantly delayed, mostly due to the revolution that broke out in the autumn of 1956, while an evaluation study was being prepared. However, there was no time to lose, since the most severe polio epidemic in the history of Hungary was unfolding in the summer of 1957. Thus, mass vaccination began with the imported Salk vaccine, mostly produced by the Canadian Connaught Laboratories, and American manufacturers Eli Lilly and Co. and Parke-Davis and Co.,²⁷ along with shipments from the WHO and smaller contributions from religious organisations.²⁸ In an effort to stretch vaccine supplies as far as possible, the Hungarian Health Ministry also chose the Danish method to administer the vaccine. This method, which used close to 1/10th of the conventional, intramuscular vaccination method came under scrutiny²⁹ when, despite the widespread vaccination campaigns, a new, severe epidemic occurred in 1959, with an incidence rate of 18.3 per 100,000.³⁰ This new epidemic also marked the end of domestic Salk vaccine production in Hungary, which had begun earlier that year.³¹ Instead, the government decided

to rapidly test and then introduce Sabin's new, live vaccine by the end of 1959.

Other Eastern European countries followed similar patterns with the Salk vaccine. Poland began domestic production in 1957 on a small scale³² and started mass production in the second half of 1958. The vaccination was to be covered partially by domestic, and partially by imported, Salk vaccine.³³ As in many countries, an epidemic served as motive for the Bulgarian government to introduce mass vaccination in September 1957. Bulgaria used imported vaccine until 1959 (from the American Merck and Connaught Laboratories), when it switched to the inactivated vaccine produced in the Soviet Union.³⁴ The East German government began vaccination with the inactivated vaccine in 1958, using the so-called 'Berna' vaccine, produced by the Swiss Serum and Vaccine Institute in Bern. In order to spare vaccine, the East German method of choice was also intradermal injection. This method changed with the arrival of Salk vaccine prepared in Moscow – with the availability of larger quantities of more affordable vaccine, East Germany changed to the intramuscular injection of 1 ml vaccine for the first dose.³⁵ Instead of using Salk's polio vaccine, Romania began immunisation with a different inactivated vaccine: the recently released Lépine vaccine, developed in France by Pierre Lépine, physician and biologist, and manufactured by the Pasteur Institute of Paris.³⁶

As the story of Eastern European Salk vaccination shows, the Iron Curtain did not stand in the way of polio prevention. Moreover, it was not only the vaccines that crossed over the firm border dividing West from East. Eastern European scientists were regular participants in the international (European and global) conferences on poliomyelitis, exchanging experiences with vaccination and research on the polio vaccine. In addition, since Salk vaccine production required a particular and strict procedure, along with elaborate laboratory equipments and the keeping of live monkeys, Eastern European virologists and public health specialists crossed to western countries like Denmark and Sweden to gain experience in inactivating the virus and producing the vaccine.³⁷

Sabin vaccine and the Eastern European trials

The scientific interaction across the Iron Curtain continued with the development, testing and implementation of the Sabin vaccine. The

novelty of the new vaccine was that instead of containing killed virus, it aimed to achieve immunity with the presence of live, attenuated virus – that is, poliovirus that had been sufficiently weakened so as not to cause illness, but potent enough to elicit an immune response. Like wild poliovirus strains, the attenuated strains were also excreted by the vaccinees, creating the possibility of indirectly immunising people who had not been vaccinated. The live virus vaccine was also different from the Salk in another important way: it could be administered orally, instead of by injection.

Live poliovirus vaccine was never tested on a mass scale in the USA, for several reasons. First, with the widespread use of the Salk vaccine, the main funding body of polio prevention and care, the National Foundation for Infantile Paralysis, along with US authorities, lost interest in investing greatly in yet another vaccine. Moreover, after the Cutter incident, they were wary of embarking on a potentially risky polio vaccine trial.³⁸ Therefore, live poliovirus trials were, for the most part, conducted outside the USA.

The history of live poliovirus vaccines has been mostly explored through the Cold War cooperation between the American Albert Sabin and the Russian Mikhail Chumakov.³⁹ The common pursuit of these two scientists led to the largest field trial in the history of polio vaccination, involving almost 17 million people in the Soviet Union.⁴⁰ As soon as Sabin finished selecting the most optimal strain for creating the vaccine, he sent samples to Anatol Smorodintsev, Chumakov's colleague in Leningrad. Field trials with the strain started in 1957 on a very small scale with the vaccination of 67 children. This number gradually grew to 150, then to 2,010, and finally to 20,000 in 1958.⁴¹ Parallel to Smorodintsev's trials, another field trial, initiated by Chumakov, then director of the Poliomyelitis Research Institute in Moscow, took off in greater proportions. Chumakov asked Sabin to send him 'the greatest possible amount' of vaccine for testing and producing. Sabin sent enough to vaccinate 300,000 children.⁴² Chumakov started the trial with 20,000 and, following its initial success, was able to conduct the largest field trial to date in the history of polio vaccines.

By the end of 1959, over 15 million people spanning fourteen republics of the Soviet Union were vaccinated in the trial. Smorodintsev and his team immunised more than 1.5 million of the subjects; the rest received vaccine from Chumakov's lab in the Institute for Poliomyelitis

Research in Moscow. The Soviet Union's Minister of Health issued an order on 16 December 1959 for the mass immunisation of the whole population between the ages of two months and 20 years by July 1960. This meant vaccinating 77 million people in a matter of months.⁴³ The *British Medical Journal* deemed this campaign a 'Blitzkrieg against poliomyelitis'.⁴⁴

However, the story of further Eastern European trials, equally important to their Soviet counterparts, remains largely unexplored. Live vaccines fared even worse than the Salk vaccine in creating consensus in vaccine efficiency, and more importantly, safety. Fears that vaccines made with attenuated live viruses could cause or spread disease instead of curbing epidemics were persistent throughout the development of the live vaccines in the 1950s and the early 1960s. Trials in Eastern Europe became important reference points in vaccine efficiency and safety considerations both in scientific debates and in governments' decision-making processes on the introduction of the vaccine.

The Hygiene and Epidemiological Service of Czechoslovakia organised relatively large field trials in 1958 and 1959 with vaccines prepared from the Sabin strains by the Institute of Sera and Vaccines in Prague, with additional batches of vaccines acquired from Chumakov in the Soviet Union.⁴⁵

Sabin, whose help the Czechoslovak scientists requested through the WHO,⁴⁶ personally aided the bureaucratic process of shipping the strains from Cincinnati to Prague in the spring of 1958 and kept a close eye on the trials.⁴⁷ The trials were conducted in four regions (Ústí nad Labem, Liberec, Juhlava and Ostrava)⁴⁸ and in total 140,000 children between the ages of 2 and 6 were vaccinated.⁴⁹

Finding the serological results favourable, and based on studies by mostly Soviet scientists,⁵⁰ the vaccination programme was extended nationwide in 1960. Using domestically produced vaccine from Sabin strains and also vaccine imported from the Soviet Union,⁵¹ 93 per cent of Czechoslovakia's child population was vaccinated, roughly 3.5 million children between the ages of two months and fourteen years.⁵² The mass vaccination was deemed to be an instant success: no confirmed poliomyelitis cases developed in the territory of Czechoslovakia in the first two epidemic seasons after the beginning of the campaign.⁵³

Although less widely known than the field trials and early mass-immunisation programmes in the Soviet Union and Czechoslovakia,

Hungary was also among the Sabin vaccine pioneers. A growing disillusionment with the inactivated vaccine initiated a switch to Sabin's live poliovirus vaccine, making Hungary the first country in the world to begin mass immunisation with the new vaccine on a national level in early December 1959.⁵⁴ Hungarian virologists and public health authorities had been following oral vaccination trials closely throughout the year, and some had been in touch with Albert Sabin personally, meeting regularly at conferences and sharing results.⁵⁵ A turning point in developing serious interest came with the epidemic of the summer of 1959. Trials with vaccine imported from the Soviet Union began in Győr-Moson-Sopron County in 1959 on 3 and 4 November, during which the population between the ages of three months and fifteen years⁵⁶ was vaccinated. Virologists reported the average acceptance rate of the vaccine to be 96 per cent.⁵⁷

The trial was short, and not much time was spent on evaluating the results. The National Public Health Institute analysed 127 stool samples before and after the trial to investigate the presence of the attenuated virus after vaccination; but the overall evaluation of the vaccine and the decision to introduce the vaccine was based on the large-scale field trials conducted by the Soviet Union, as well as the experiences of Czechoslovakia and Singapore with the Sabin, and Poland and the Belgian Congo with the Koprowski strains.⁵⁸ Hungarian virologists, in this sense, drew on an international experiences with live vaccines that not only crossed the dividing lines of the Cold War, but also spanned across continents. They were able to do so thanks to access to international journals and a continuous presence at international polio conferences and symposiums.

On 14 December 1959, nationwide vaccination in Hungary began with the Sabin drops. Immunisation was mandatory for children between three months and two years; for all other age groups, the immunisation was voluntary.⁵⁹ Vaccination was organised in Mother and Infant Protection Offices by the district paediatricians. Children were also vaccinated in day care settings, kindergartens and schools,⁶⁰ which renders the term *voluntary* dubious. By 1960, Hungary had vaccinated 2.5 million people, more than the total in the two years of Salk vaccination. The country thus joined the Soviet Union and Czechoslovakia in being the first countries in the world to organise mass vaccination with the new, live -poliovirus vaccine.

East Germany followed suit with a field trial of the Sabin vaccine in April 1960, citing the favourable results in the Soviet Union, Czechoslovakia, Hungary and Poland as the basis for their own trial. The vaccination was free and voluntary, and German virologists reported a very favourable public acceptance, immunising around 86 per cent of the people between the ages of two months and twenty years. Vaccination with the oral vaccine became compulsory in 1961, reaching 43 per cent of the total population by 1962.⁶¹

It is important to note another large-scale field trial conducted in Poland, using Hilary Koprowski's live poliovirus vaccine. The vaccination began with a small-scale vaccination in October 1958, involving a total population of 8,716 in a small town and three villages. In the next step, after approval from the special committee appointed by the Ministry of Health, all children between the ages of six months and fifteen years were immunised with the type 1 (Chat) strain in two provinces, Krakow and Opole, totalling 643,000 people.⁶² Beginning in autumn 1959, in a mass immunisation campaign, over 7 million people, mostly children, received type 1 (Chat) and type 3 (Fox) strains. By the end of 1960, 26 per cent of the total population was immunised with oral vaccine, including 76 per cent of children between the ages of six months and fifteen years.⁶³ Based on the decrease of the incidence rate of epidemics, Polish virologists determined the vaccine's efficacy to be 82.9 per cent.⁶⁴

Mass vaccination campaigns with the live poliovirus vaccine soon followed in the rest of Eastern Europe: in Bulgaria in 1960, targeting about two million children between two months and fourteen years of age;⁶⁵ in Romania in 1961, administered to the whole population under the age of 30: around ten million people.⁶⁶ Yugoslavia carried out a small field trial with the Sabin vaccine from January to May 1960, involving about eight thousand pre-school children in the city of Kragujevac, and, following a relatively severe epidemic in 1960, began mass vaccination in 1961.⁶⁷

Eastern European governments and the West alike saw the field trials and mass vaccinations in the region as something particular to communist states. On the one hand, participant states in the field trials and early mass vaccination campaigns saw the success in dramatically curbing polio as ultimate proof of the superiority of their ideological and political system. On the other hand, for many researchers and

public health officials of the West, intensive, mass field trials and vaccination campaigns, such as the ones conducted in Eastern Europe and the Soviet Union were inextricably connected with authoritarianism inherent in communist states.

As polio cases began to plummet, communist states were quick to claim credit. This was especially true for the two countries leading vaccination efforts with the Sabin vaccine. Hungary emphasised the importance of the overall communist enterprise in the success of the Sabin vaccine.

At first, official communication on the Sabin vaccination re-evaluated the state's role in vaccine procurement. In the case of the Salk vaccine, the government was portrayed as a hero, which, in spite of all hardships and even running into debt, managed to go out there and get much needed protection for children.⁶⁸ This time, the significance of outside help was emphasised, having arrived from the right side of the Iron Curtain: according to daily newspaper *Népszava*, the Hungarian government. 'asked for the help of the Soviet Union and not without result: We were granted 2.5 million doses of vaccine.'⁶⁹ There was no talk of cost or debt or the feat of the state required to import the vaccine. Later, communist officials contrasted the polio-free world of Eastern Europe with struggling western nations, who, for the sake of free trade and economic hardships were reluctant to switch to the Sabin vaccine and thus were still experiencing polio epidemics.⁷⁰

Czechoslovak scientists and public health officials chose to emphasise their own contribution to vaccine development and the role of the communist state in the project. Vilém Škovránek, chief hygienist, clearly declared the achievement of the Czechoslovak polio prevention strategy to be an evidence of good governing: 'The success of the mass vaccination was a proof of the highly developed organizing abilities of the Czechoslovak Ministry of Health and the profound understanding of our people for health problems. The vaccination campaign was accomplished without any particular troubles and the attendance of the population was very high.'⁷¹

The Czechoslovak sentiments highlight two important aspects of Eastern European polio vaccination campaigns in the Cold War: the question of voluntarism and the advantages of the authoritarian organisation of state and public health. First, as Škovránek emphasised, the fact that citizens happily volunteered for trials and readily complied

with mass vaccination campaigns was crucial in the representation of successful public health interventions, and not only in Czechoslovakia. This fitted very well with western stereotypes of Eastern European citizens being either oppressed by the communist state or being uniform, obedient subjects.

However, it is very difficult to discover how voluntary and compliant the Eastern European population actually was. Official communication on vaccination hardly ever touched on problems or significant challenges, only when unexpected epidemic crises unfolded, did criticism and reluctance surface. Such a case was the 1959 epidemic in Hungary, when the government accused parents of carelessness and scolded them for not vaccinating their children.⁷² Reports reveal that some parents did not trust the new vaccine and their distrust was shared with some physicians as well.⁷³ Since the debacle of 1959 was almost certainly not exclusively caused by low immunisation rates,⁷⁴ it is not clear if large numbers of parents were involved, or if they only became visible as a possible explanation as the government was trying to make sense of an inexplicable situation.

Second, the military-like organisation of preventive public health measures, such as vaccination and the compulsory participation of the population in such enterprises rang alarm bells in the immediate post-war years. In the wake of a horrible war against the Nazi dictatorship that organised itself with utmost efficiency, and with the looming threat of Soviet totalitarianism, engaging with anything remotely authoritarian caused uneasiness in the West when contemplating public health measures. Already in 1948 such sentiments were articulated at the First International Poliomyelitis Conference, where one participant pointed out the tensions between the legacy of dictatorships and the most effective ways of preventing and controlling disease through autocratic measures.⁷⁵ The merit of a high level of state authority in successfully implementing public health policies, especially in times of epidemics, and the frustrations this perception caused in Cold War thinking became a recurring issue in the history of polio.

Reservations about autocratic regimes, disease prevention and scientific knowledge production came to the forefront during the evaluation of the Soviet field trials in 1959. The American virologist, Dorothy Horstmann, representing the WHO in the assessment of the validity of the trials highlighted the role of a centralised and state-operated public

health system in successfully organising such an endeavour. In her report, Horstmann spoke of live virus vaccination programmes and the Eastern European, military-like organisation of public health as being 'peculiarly fitted'.⁷⁶ In the Soviet case, a state and health care system that was centrally controlled top-down seemed ideal in organising a project on a mass scale and at the same time guaranteed that such scientific trials would be meticulous.

Conclusion

For the relatively young communist governments, polio pitted specific challenges to ideas of state paternalism, which permeated health care policies, in a decade that was burdened by Cold War thaws and frosts and revolutions. The stakes did not only regard the health of the population and epidemic control, but also the strength and capability of the new communist system.

Both East and West shared the perception of what the communist state was and its ideal role in polio prevention. Following the appearance and successful application of live poliovirus vaccines, Eastern European states saw themselves as particularly suited to achieve effectiveness in curbing – and eradicating – polio through their part in vaccine development and its distribution. The West, while not endorsing such political regimes ideologically, agreed. Indeed, Czechoslovakia, Hungary and Poland became pioneers in introducing, testing and applying live poliovirus vaccines on a mass scale, while their Eastern European peers were quick to follow in mass vaccination.

From a broader geopolitical perspective, polio raised uncomfortable questions about the positive side of communist regimes (i.e. effective epidemic control) and in a short time came to symbolise 'neutral' science that broke the barriers between East and West. The top-down organisation of vaccine trial organisation and immunisation, which was, at the time, seen as particularly communist and Eastern European, also came to be seen as the most effective way to eradicate polio on a global scale.

Eastern European trials and the mass vaccination methods applied in communist countries became reference points in scientific discussions on the safety and efficacy of the Sabin vaccine. The mass vaccination strategies developed in Hungary, Cuba and later in Brazil became

models for the global polio eradication programme of the WHO.⁷⁷ The long-term effects of Eastern European states' role in live virus vaccine development and disease elimination carried the legacies of how communist states worked and the way in which they were imagined, over the boundaries of Europe and beyond the Cold War to global epidemic management strategies of the present.

Acknowledgements

I would like to express my gratitude to Jessica Reinisch, Ana Antic and David Bryan for inspiring conversations on Eastern Europe's place in the history of international public health. Furthermore, I would like to thank Paul Greenough for pointing out invaluable sources and references. This research was partially funded by the Wellcome Trust.

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