Sanitary and epidemiological surveillance in Poland from 1945 to 1989 (selected issues)

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ABSTRACT

Introduction: In this article, selected issues concerning sanitary and epidemiological surveillance in post-war Poland (until 1989) have been described. Sanitary problems which occurred in Poland directly after the Second World War and the development of infectious diseases' epidemiology have been included.
Purpose: To summarize the establishment, development and modification of sanitary and epidemiological structures, the introduction of vaccinations as well as other medical means of overcoming infectious diseases, improving people's living conditions and health situation.
Materials and methods: Literature related to the topic and archival materials from the Voivodeship Sanitary-Epidemiological Station in Gdansk were used. Archives included a vaccination programme valid between 1975 and 1989 and a two-week specimen report concerning morbidity rates of infectious diseases and chemical poisoning.
Results: Thanks to the archival materials, issues concerning infectious diseases were emphasized. The the utilized literature brought out the National Institute's for Public Health role as an authority in the cooperation with other healthcare institutions, influenced the formation and organization of sanitary and epidemiological service in Poland.
Conclusions: The historical background of this text has been presented as a secondary subject, however, the years 1945-1989 comprising the time-frame of this article were a period of great changes. One of them was the formation of sanitary and epidemiological surveillance.
Key words: Epidemiological surveillance, history, infectious diseases

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INTRODUCTION

The end of World War II posed a challenge to Polish sanitary and health care services. It involved a fight against the soaring epidemic of infectious diseases caused by the enfeebling war, mass relocations, and inner migration resulting from territorial changes in Eastern Europe and the return of forced labourers and prisoners of war to the country.

This situation triggered the creation of an entire sanitary-epidemiological and health service system which transformed over the years, adjusting its work to the naturally changing needs of the society. As time passed, stabilization of the society's living and economic conditions and the improvement of cultural health (especially in rural areas) enabled the introduction of a vaccination system, regular food and water testing and the development of science.

Stabilization of the country's post-war political system, which lasted until the end of the 1970s, brought a number of important changes that improved the society's health condition. Apart from the previously mentioned mental progression of Polish people, blocking mass touristic movements (until the 1970s), limited inner migrations within the country, as well as technological and infrastructural development, finally led to the establishment of proper sanitary conditions in Poland and determined the establishment of suitable health and sanitary services operating at that time.

The occurance of infectious diseases, food poisonings and infections

After the end of World War II, as a result of infrastructural damages, bad sanitary conditions (devastation of waterworks, sewage systems and wells, among others), chronic undernourishment or even hunger, lack of medicaments and vaccines through the first two decades, the basic epidemiological problems were infectious diseases such as: diphtheria, typhus, typhoid, poliomyelitis, pertussis, measles, scarlet fever, tuberculosis, dysentery and diarrhoea [1,2].

Since 1945, these diseases were the most common causes of death, for example mass epidemics of infectious diseases in prisons or work camps resulting in demises of the sick. Only in 1945 in a prison in Gdansk, 1118 prisoners fell ill, whereas in the same year, at Świętochłowice-Zgoda work camp the incidence rate reached 1419 people.

Venereal diseases were a huge problem. At that time in Poland, there was not a single prison or camp where cases of gonorrhoea and syphilis would not occur on a large scale, not mentioning the country's population. In a Commissioner's for Fighting Epidemics report for the year 1945 we can read that "*the lack of public convenience, especially in large cities where street trade exists to this day, fundamentally contradicts the concept of the cities' hygiene*" [3].

It was not until 1949 that the diseases mentioned above were classified on the second place and not until 1953 on the fifth place basing on the occurrence among society members [2]. In the first quarter of 1945, statistics and registration of the appearance of infectious diseases were conducted chaotically; therefore it is difficult to discuss objective data and the actual state of illness occurrence. This was a result of a total lack of sanitary services in liberated territories or their poor organization. In the second quarter, the registration service was streamlined, statistic data became more accurate but it still differed from the reality. It was not until the third quarter of the year that the statistics and registration of infectious diseases gave an accurate overview of the country's epidemics [1].

According to data published in 1945, 16 000 cases and 1300 demises resulting from typhus were registered in Poland [1,2]m approximately 82 000 cases of typhoid fever, 156 cases of bilious typhoid, app. 7 000 cases of dysentery, app. 22 000 cases of diphtheria and app. 13 000 cases of scarlet fever [1]. In 1949, a period of fighting a scarlet fever epidemic began. From 1950 to 1954 the annual number of demises caused by diphtheria fluctuated between 2 and 3 thousand people, reaching in 1954 the highest number, i.e. app. 44 thousand cases. Another epidemic, a poliomyelitis outbreak, appeared in 1951 and afflicted app. 3 000 people. It has been estimated that half of these cases left sufferers permanently disabled. In the year 1954, in turn, the prevalence of hepatitis started to increase rapidly [2].

The 1980s were a period of a growing number of food poisonings caused mainly by zoonotic salmonellosis. 1988 resulted in the highest infection rate, whereas from 1985 to 1989, throughout the entire country, there were 136 mass outbreaks of poisonings and infections, 80 of which took place in hospitals and 56 in sanatoriums [4]. It is worth emphasizing those infections and food poisonings were caused not only by microorganisms such as *Salmonella* but also by bacteria, including *Escherichia coli*, coagulase-positive staphylococci and others [4].

From 1945 to 1950, the official registration did not differentiate the etiology of infections. This led to a situation in which the annual number of cases was a sum total of all diagnosed infections and food poisonings. What is more, it was not until 1951 that the etiology of acute food poisonings among children was studied, taking into consideration mainly Salmonella bacilli. It became clear that mainly young or debilitated children

show particular susceptibility to Salmonella bacteria [5].

In 1955/56 in the Gdansk voivodeship area *Salmonella bacilli*, belonging to types which had not been previously described in Poland, were isolated. This resulted in the establishment of the National Salmonella Centre in 1947, as a part of the Institute of Maritime and Tropical Life in Gdynia [6]. Therefore, since 1951, there was a significant growth of interest in isolating, growing and examining strains of Salmonella bacilli bacteria [7]. According to academic literature (Przybylska) from 1952 to 1956, more infections and poisonings among people were caused by Salmonella bacilli than by pathogenic staphylococci. In the 1960s however, the main cause of poisoning and infections were staphylococci. Nevertheless, the 1970s brought another outbreak of infection caused by Salmonella bacilli and in the 1980s, as it was mentioned above, this tendency grew [8].

To sum up, the apogee of acute infectious diseases occurred directly after World War II. While in the following years the occurrence of these diseases dropped, the number of food poisonings grew. Doubtlessly, the reason of this drop was the establishment of sanitary surveillance (sanitary-epidemiological stations), the National Institute of Hygiene, hospital services, research in the field of analytic and experimental epidemiology and the vaccination system. Sanitary conditions were improved, people were supplied with drinking water, proper waste disposal and sewage systems were created and appropriate hygienic habits were formed [9,10,11].

Fighting against infectious diseases and sanitary-epidemiologial surveillance

In the Polish People's Republic (a period between 1945 and 1986), epidemiological surveillance in the country initially concerned infectious diseases, with emphasis on particular epidemic situations. The surveillance transformed successively, together with changing sanitary-hygienic and living conditions and the progress of science connected with the development of medical studies [11].

Sanitary structures

Unquestionably, the history of epidemiological surveillance in Poland is closely related to the creation and activity of the National Institute of Hygiene [12]. Between the year 1945 and 1951, the Institute was reconstructed and reorganized [13]. Nevertheless, at that time the National Institute of Hygiene had already been cooperating with the Chief Emergency Commissariat for Epidemics Control (CEC) established on November 24th, 1944 and the National Repatriation Office, with its headquarters in Łódź, which was created by the Polish Committee of National Liberation decree from November 7th, 1944 [10,14,15].

In its initial shape, the CEC was established mainly for military purposes, since the army, which was preparing for front-line actions, could not allow an epidemic outbreak. At the end of the war, CEC concentrated on preparing an anti-epidemic campaign, expected because of mass migrations of the country's population, transport difficulties, destroyed aqueducts and sewage systems, lack of medicaments and disinfectants. In January 1945, after the Red Army had begun an offensive on west Vistula's bank, the Chief Emergency Commissariat's operation groups relocated along with the army. Due to this, the process of organizing health care, drug supply and vaccination systems on the newly acquired territories started. A considerable matter was difficulties in supplying sanitary equipment, disinfectants and rebuilding the country's sanitary structure. Operation groups of CEC cooperated with the National Institute of Hygiene and the National Repatriation Office [1].

The National Repatriation Office tasks concerning hygiene included sanitary and medical surveillance during repatriation and relocation processes. The Office's aim was to coordinate, organize and supervise post-war migration movements of the population and then to create organizational structures which would control sanitary and epidemiological issues of migrating people by establishing the Department of Health.

The Department of Health consisted of three sub-departments (organization of health service, sanitary supply, sanitary inspection and fighting epidemics). In a decree from May 7th, 1945, the scope of medical care over repatriates was defined, whereas the National Repatriation Office also took care of migrations of people from the West and East, relocations and foreign population repatriations (to Germany and USRR). From March, 1946 to December, 1947, as a part of the Potsdam displacement process, over two million Germans were relocated from Poland, whereas on the other hand it had been estimated that app. two million repatriates from the East and seven million of other re-emigrants would return to the country.

Repatriation at the end of 1944 and the beginning of 1945 took place without any control or broader organization, in hopeless sanitary conditions favorable for acute infectious diseases to spread, which is why the establishment of the National Repatriation Office was necessary. The National Repatriation Office was supposed to create an effective system of diagnosing infectious diseases, isolating the sick and forcing them to undergo medical treatment. Thanks to this, it was possible to prevent potential mass infections. Since

1946, migration movements had been gradually decreasing, which led to liquidating the National Repatriation Office on March, 31st, 1951 by the Liquidation Committee, which was specially appointed for this purpose [14]. Considering the significant improvement of the country's epidemic situation, in April 1947 the Chief Emergency Commissariat for Epidemic Control was liquidated. After the liquidation of CEC, all cases concerning sanitary and epidemiological actions were taken over by the Sanitary Epidemiological Department of the Dept. of Health [10,15].

The seaside territory was protected in a particular way. After a decree issued by the State National Council had been introduced, the Naval Health Institute, subordinate to the Ministry of Health, was appointed in order to protect sea borders. Tasks of the Naval Health Institute included fighting infectious and socially dangerous diseases in harbours, as well as amongst merchant navy members, and sanitary surveillance of the passengers' transfer, migrations and quarantine periods [16].

Laboratory testing for the Naval Medical Centre was performed by the Naval Sanitary Quarantine Station, which was established in 1945 as a branch of the National Institute of Hygiene in Gdynia. The Naval Health Institute was terminated in 1954 by a decree concerning the State Sanitary Inspection, which took over its duties [10].

The Ministry of Health was established in 1945 but at the beginning its duties were very limited. However, in the same year the CEC central office became an organizational unit of the Ministry, creating a centralized health service apparatus [10].

Between March 1945 until the end of 1951, The National Institute of Hygiene underwent a name restitution, returned to its previous working methods and formed new branches. In that period, actions of the National Institute of Hygiene in the area of fighting infectious diseases consisted of creating a laboratory and diagnostic base and introducing a vaccination campaign, in which most of the used vaccines were produced in the National Institute of Hygiene. The National Institute of Hygiene also dealt with food and drinking water testing. In 1949, the following departments within the Institute were established: the Serra and Vaccination Manufacturing Company, the Medicines Institute and the Institute of Work Hygiene, and in the following years: the Institute of Antibiotics and the National Food and Nutrition Institute [13].

In 1952, mainly on the basis of a branch of the National Institute of Hygiene, voivodeship and county sanitary-epidemiological stations were created and became a foundation for establishing, by a decree issued on August 14th, 1954, the Chief Sanitary Inspectorate. In the following years, the Inspectorate was transformed into an institution endowed with administrative and repressive powers enabling the enforcement of legal requirements concerning sanitary standards. As a result of establishing the Inspectorate, the National Institute of Hygiene became a scientific institute performing studies in the area of microbiology, epidemiology, hygiene, staff training and activity surveillance of sanitary and epidemiological stations [15].

In the 1960s, a system of reporting and registration of illness and demise rates, conducted by sanitary and epidemiological stations, was developed. Data was sent in the form of a report or an overall study to the National Institute of Hygiene. In 1968, the reports concerned 36 disease entities and in 1971 as many as 51 entities. Differences in the sent reports were a result of introducing an infectious diseases act, and the implementation of its amendments. Further modifications of law regulations concerned food poisonings with various etiologies.

A two-week report on the illness rate of infectious diseases and chemical poisonings from 1975 is presented in Table 1 (based on archival material from the Voivodship unit of the State Sanitary Inspection in Gdansk).

Thanks to overall data of this sort, sanitary and epidemiological surveillance was performed showing possible threats, and as a consequence could result in taking preventive actions on a specified territory or in the entire country.

Vaccination system and other health activities

The ongoing epidemiological threat after World War II, connected with the spread of infectious diseases, caused the National Institute of Hygiene to set as their main priority supplying with high quality vaccines and propagating an accurate vaccination policy [12]. Therefore, at the end of 1944 and beginning of 1945, the production of vaccines against typhus (using Weigl's method), typhoid and rabies was launched in the Institute's laboratories. The main suppliers of vaccines were the USRR, UNRRA (United Nations Relief and Rehabilitation Administration) and Sweden. In 1946, due to the National Institute's hard work, Poland became self-sufficient in the field of vaccine production [1].

It is worth mentioning at this point that studies on Rickettsia and on the vaccine against typhus were carried out in Poland by Rudolf Weigl from the beginning of the 1920s, whereas during World War II, before studies on Weigl's vaccine were intensified (this took place at the end of 1941), the Germans had tested its effectiveness on work camp prisoners [17].

However, it has to be remembered that the supply system at that time was insufficient for the

health services' needs, for example during the fight against tuberculosis. Polish people did the best they could. In a Security Authority's report from 1952 it is written that in January of the same year, in a merchant harbour in Gdynia, an illegal transport of 138 ampoules of streptomycin worth about two thousand zlotys in circulation at that time [18].

Since 1964, thanks to the replacement of the ineffective Grasset's vaccine (which had been used for 15 years) for an effective formol-phenolic specific, there was a significant improvement in the typhoid epidemiological situation [9,13].

In 1952, the first Virology Laboratory within the National Institute of Hygiene was created. It was later transformed into the Department of Medical Virology. Medical examination carried out by the Institute, together with sanitary and epidemiological stations, led to the introduction of consecutive vaccines against poliomyelitis and measles and subsequently against diphtheria. During this entire period, the National Institute of Hygiene had been improving vaccination examination methods and analysing infection rates of selected illnesses among people of all age. As a result, the vaccination schedule was introduced [13].

Thanks to archival material published by the Voivodeship Sanitary Epidemiological Station in Gdansk, which was based on the Vaccination Programme valid from 1975 to 1989, changes in the vaccination system can be presented (Table II).

By comparing the tables it can be noticed that in 1989 a vaccination against German measles appeared in the vaccine schedule, whereas a vaccination against smallpox had not been included. In the first half of the 20th century, regular vaccinations against smallpox led to the eradication of this disease, and, as a result, they were stopped [19].

A bit of history – in 1953, at the end of March and the beginning of April, cases of smallpox were reported in Tricity. The disease had been transmitted via sea (a seaport in Gdynia). Due to insufficient isolation of one ill passenger on board, led to a primary infection (6 people). Secondary infections (5 people) were probably caused by a far too short quarantine period for the ship crew, improper surveillance of crew members and their environment during the first phase of an anti-epidemic campaign and improper vaccinations of people in the surrounding area. As a result, 97 people were isolated in secure hospitals and 366 114 people in Tricity and its suburbs were vaccinated. The mass campaign brought results, especially due to common vaccinations and proper isolation of the ill and those who may have had contact with them [20].

During the entire period of introducing new vaccines in the country's territory, the National Institute of Hygiene conducted wide-range epidemiological-laboratory examination of their safety and effectiveness. At the beginning of the 1960s, the Institute began studies in the field of infectious diseases and environmental epidemiology. The end of the 1960s was a time of examining bacterias' resistance to antibiotics, which later developed into studies concerning hospital infections.

In 1966 radiation hygiene examination began. The establishment of the Immunopathology Department within the National Institute of Hygiene took place in 1967. It was in this place that studies concerning HBV, HDC, HCV and HIV were developed. That was, among others, the starting point of creating rules, a prevention and fighting plan of eliminating HBV infections in Poland. At the turn of the 1960s and 1970s, wide-range research was carried out in order to study the negative impact of polluted environment on people. Substances such as pesticides, polychlorinated biphenyls, mercury and polycyclic aromatic hydrocarbons were examined. Moreover, through toxicology testing [1,3], the harmful influence of pesticides on people was studied.

CONCLUSIONS

After the liberation of Polish territories from German occupation, mass migrations and disastrous sanitary and hygienic conditions led to outbreaks of huge epidemics of infectious diseases among the Polish population. Nevertheless, due to hard work and special sanitary groups established during the war, anti-epidemic actions were carried out in the liberated territories. In a country enfeebled by World War II, performing successful sanitary actions and rebuilding an epidemiological surveillance system throughout the liberated territory required a great effort, organizational skills and dedication. Doubtlessly, the most significant part in shaping a successful surveillance system from 1945 to 1989 was played by the National Institute of Hygiene. It was not only a time when proper conditions to destroy the sources of infectious diseases and prevention methods were created, but also a time of successful statistics and registering both infectious and, in the following years, noninfectious diseases. It was an introduction to the currently existing epidemiological surveillance system, based on the continuous, systematic collecting of data on diseases or infections occurring among members of a defined population. Its aim is to recognize alarming health phenomena (especially diseases), predict their further development, determine their causes and mechanisms and, as a consequence, prepare effective systems of control and prevention and remove or minimize their effects.

Conflicts of interest

The authors declare that there is no conflict of interest that could prejudice the impartiality of the review.

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Table 1. An exemplary report on an infection rate from 1975 (on the basis of archival material from the Voivodeship Sanitary Epidemiological Station in Gdansk) the Voivodeship Sanitary Epidemiological Station in Gdansk)

THE MINISTRY OF HEALTH AND HEALTH CARE (the Sanit. Epid. Station stamp)	**FORM E-II-12** **A report on infectious diseases and chemical poisonings rates two-week, quarterly, annual[2])** for a period from…… to ……. 197.. No county……., voivodeship……	**Dep. Insp. Sanit** Sent on……..…….. ……197…… Received on…….. …… 197…….

Section I – INFECTION RATE, NUMBER OF PATIENTS

Disease entity	International classification number	Infection rate	Number of patients	Disease entity			International classification number	Infection rate	Number of patients
1	2	3	4	1			2	3	4
Typhoid	001			Cestode infections			122,123		
Paratyphoid A, B, C	002			Scabies			133.0		
Other salmonellosis (except food poisonings)	003.9			Flu			470-474		
Dysentery	004,006			Food poisonings	Bacterial	Salmonellosis	003.0		
Diarrhoea among children up to 2 years old	008,009					Staphyloccocus enterocin	005.0		
Diphtheria	032					Botulism	005.1		
Pertussis	033					Cl. perfringens	005.2		
Streptococcal pharyngitis	034.0					Other	005.8		
Scarlet fever	034.1				Fungi		N 988.1		
Erysipelas	035				Chemical	In general	N 988.2, N 988.9, N 989		
Tetanus	037,670								
Encephalitis: Menigococcal	036					Including pesticides	N 989.2, N 989.3		
Encephalitis: Other bacteria	320								
Encephalitis: Enteroviral (coxsackie, ECHO), serous, undefined	045			Chemical substances poisonings (except food poisonings)		In general	N 960 – N 987, N 989		
						Including pesticides	N 989.2, N989.3		
Encephalitis: lymphadenoid	079.2			Meningitis, encephalomyelitis as a result of vaccination			N 999.1		
Chickenpox	052			Other**)					
Measles	055								
Rubella	056								
Encephalitis: Arbvirus	062-064								
Encephalitis: Virus, undefined	065								
Encephalitis: Herpetic and others	054.323								
Hepatitis	070,N999.2								
Parotitis	072								

**)
1. Cholera (000)
2. The plague (020)
3. Tularemia (021)
4. Anthrax (022)
5. Brucellosis (023)
6. Malleus (024)
7. Listeriosis (027.0)
8. Erysipelas (027.1)
9. Leprosy (030)
10. Scleroma (031)
11. Poliomyelitis (040-043)
12. Smallpox (050)
13. Yellow fever
14. Rabies (071)
15. Ornithosis (073)
16. Mononucleosis (075)
17. Trachoma (076)
18. Foot-and-mouth disease (079.4)
19. Typhus and other rickettsiosis(080-083)
20. Malaria (084)
21. Pyrexia (088)
22. Treponemal hepatitis and other treponemal infections (100)
23. Favid, ringworm, (110)
24. Trichinosis(124)
25. Toxoplasmosis (130)
26. Cases of animal bites on people, by animals with suspected rabies or contamination by animals' saliva after which anti-rabies vaccination began

Table 2. Obligatory Immunization Programme in 1975 and 1989 (on the basis of archival materials from the Voivodeship Sanitary Epidemiological Station in Gdansk)

1975	**Vaccination against**	**1989**
4-15 days old	Tuberculosis – BCG vaccine	3-15 days old
3 months old 4 months old 5 months old	Diphtheria, tetanus, pertussis – Di Te Per vaccine	
	Diphtheria, tetanus, pertussis – Di Te Per vaccine and simultaneously orally against Poliomyelitis with a polyvalent live vaccine containing three types of viruses(1,2 i 3)	I.3 months old II. After 6 weeks since first vaccination, i.e. in the 4th or 5th month of life III. 6 weeks after the 2nd vaccination, i.e. in the 6th month of life
From 6 to ??? months old	Poliomyelitis – polyvalent vaccine containing three types of viruses (1, 2 i 3)	
11-12 months old	Smallpox	
	Tuberculosis – DCG vaccine	11-12 months old
13-15 months old	Measles	13-15 months old
13-18 months old	Tuberculosis– people with a negative Moro tuberculin test result	
19-24 months old	Poliomyelitis – polyvalent vaccine containing three types of viruses (1, 2 i 3)	
19-24 months old	Diphtheria, tetanus, pertussis – Di Te Per vaccine	
	Diphtheria, tetanus, pertussis – simultaneously and one-time Poliomyelitis with a polyvalent live vaccine containing three types of viruses(1,2 3)	19-24 months old
6 years old	Tuberculosis– people with a negative Mantoux tuberculin test result	6 or 7 years old, before the beginning of school
6- years old	Smallpox	
6 years old	Diphtheria, tetanus – Di Te vaccine	6 or 7 years old, before the beginning of school
10 years old	Tuberculosis– with a negative Mantoux tuberculin test result	12 years old
	Rubella– girls	13 years old, September
14 years old	Diphtheria, tetanus – Di Te vaccine	14 years old
15 years old	Tuberculosis–with a negative Mantoux tuberculin test result	
	Smallpox	
17 years old	Tetanus– Te monovalent vaccine	
19 years old	Tuberculosis– with a negative Mantoux tuberculin test result	18 years old
20 years old	Tetanus – Te monovalent vaccine	20 years old – the last grade of secondary school
Adults	Smallpox	
Adults	Tetanus – Te monovalent vaccine	Adults
Adults	Tuberculosis–with a negative Mantoux tuberculin test result	Adults