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### **Army Forces and epidemic diseases: A travel through the XIXth century International Sanitary Conferences**

***Abstract.** This article involves a critical examination of XIXth century military interventions, as the basic cause of the international contagion. Challenges arising and choices made in a critical reading of the International Sanitary Conferences (ISC) proceedings, reveal case histories and early statistical techniques at use with epidemiological purposes. These episodes in the history of the diseases suggest that relevant military information was circulated among health professionals through the ISCs. Although the evolution of the epidemic process during the latter half of the XIXth century made the Conferences fail to cure the diseases that the Western medicine own expansion engendered. By discussing the ways that prophylactic measures and international interventions were used by medical scientists and diplomats alike, from the detailed records of troop mortality to such ubiquitous terms as "contagion" and "quarantine", the article seriously reflect on what happened when the action taken by military forces was a mass phenomenon. As evidenced from the study of the proceedings when comparing different populations, in the pathologies associated with the mass-transport era the rationale of interaction outlined the challenges involved in the train transport of troops. Also, the existence of an environmental risk factor can answer the question on the action taken by military forces as a mass phenomenon with huge impacts on hospitals, harbors and prisons. Materials intended for these international epidemics studies and commissions were prepared by experimented military and civil medical doctors who believed that evidence and common sense proved epidemic diseases capable of being prevented, treated, and controlled by a military approach. This essay demonstrates that Army forces' capability to take control over their host governing apparatus, emphasizes the importance of their aim to follow and accompany the control of the disease in the imperialist competition for land. It grows out of its specific historical context, which due to its origin could become uniform and international, but constituted the principal obstacle on the road to an international health office.*



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**Keywords:** *communicable diseases; military medicine; international cooperation; cholera; quarantine; XIXth century*

## **Introduction**

For much of the XIXth century (second half), the International Sanitary Conferences (ISC) was the chief route through which news of the propagation of communicable disease by the armies or by bodies of troops in movement was channelled to medical administrators and researchers on cholera, yellow fever, and plague (Harrison, 2006) (Huber, 2006). A principle of internationalism through science argued in this instance in terms of the desirability of loyalty in military affairs, depending on a particular social problem: the community outbreaks of infectious diseases (Ringen, 1979) (Capshew & Rader, 1992). Hence the question is posed if, granted ISC "health reform" aims, it is possible to detect the presence of specific military intervention issues in their Proceedings as in fact the best way of securing them? (Howard-Jones, 1975). From 1851 and until the end of that century these Conferences tried to build an international consensus to prevent the incursion of cholera from Asia, to develop a special relationship between science and diplomacy, and to support at the heart of the polemic the preventive confinement, the quarantine (Rosen, 1993) (Stern & Markel, 2004).

While epidemiology is a discipline dealing with the evolution of knowledge (MacKillop & Sheard, 2019) (Coste, 2019), it would not be unjust to identify attitudes expressed at the ISCs on military regulations and troops' transport as "epidemiologic agents", because the military has kept a detailed record of troop mortality. The description of these historical contexts in which this evolution has taken place (Rosenberg, 1992), give details about the military work and thought in the International Health Conferences between 1851 and 1897. In that sense, the military population serves as a control group, to observe the cause of the disease (Morabia, 2004). Then, it considers contagion as the spread of a crisis from its origins by any means (Siegfried, 1960). And military campaign (Evans, 1988) was one of the main forms of mass migration in the 19th century, if it does mean the fast displacement of many thousands of people in large consolidated groups over long distances. The goal at this level of the analysis is on the identification of the exact cause of interaction with military populations (eg, military advantages in steering quarantine agreements). Along with these Conferences, there was an extensive narrative of information and secret that addresses the military experience during epidemic times (Curtin, 1998), the results of which are showed in this research.

This article is about the causes of the infectious diseases involved in military interventions, as can be read in the printed proceedings of the International Sanitary Conferences in the second half of the 19th century.

## **Research methods**

Attitudes expressed at the International Sanitary Conferences (1851–1897) towards military intervention to prevent the spread of communicable diseases, makes the use of their proceedings like a 'handbook' an extremely pertinent method here. This suggestive procedure classifies the development of diseases by reframing their historical contexts. Accordingly, the explanatory levels of disease reflect its ability to transfer from the military to the civilian population through a variety of channels. The point of view of the history of the diseases and the epidemics, typically narrative and centred in the activities, emerged as one way to gain insight from the prophylactic system of the military quarantines and to what extent a military commander obligated its own forces to danger. Case histories of both disease incidence and distribution of medical services are well documented in the ISC's proceedings, and some examples of military hospitals, military prisons and onboard warships are central issues of concern. These methods for efficient classification and retrieval of medical information across the ISC's proceedings, held that the sanitationist ideas from the last part of the century can be read to the extent that the military medicine was the backbone of the imperial economy. Its central techniques (early statistical data on soldiers, including mandatory notification of diseases) represented the evolution of epidemiologic thought by selecting the military participants as the study population of historical interest.

## **Results and discussion**

To appreciate how many military topics on the agenda of the International Sanitary Conferences (ISC) have been covered in the course of the nineteenth century, a good many new and important results that used to be hidden have been obtained.

At great length, in the birth of the epidemiology of the 19th century (Louis Pasteur, Robert Koch) it was already risen a work program to identify the underlying determinants of human diseases on the base of mass population movements. Because via the movements of large masses of human beings a strong bridge for the infectious diseases spread is consolidated (Siegfried, 1960). And it was especially interesting to note that in the original formulation of the ISCs, the military campaign (Evans, 1988) was one of the main forms of mass migration in the 19th century. The disease was able to transfer from the military to the civilian population through a variety of channels: the occupation of villages and towns, the cantonment of units of the fighting forces, the demobilized troops returning home after the cessation of active hostilities.

From the circulation of scientific information perspective, the main result of these International Sanitary Conferences was to provide a forum among medical administrators and researchers on cholera and other communicable diseases. Together with the International Health Councils in Alexandria (from 1835), Constantinople (1839), Teheran (1865) and Hong-Kong (1894), this forum echoed how much the European armies suffered enormously from the plague in Egypt (International Sanitary Conference, 1885), cholera in India (International Sanitary Conference, 1874), yellow fever in the Caribbean (International Sanitary Conference, 1881). The material in the

present work proves that epidemiology and military intervention is in the same dynamic while in the expansionary phase of the imperialism during the second half of the 19th century. But in spite of the fact that the propagation of disease by the armies or by bodies of troops in movement was well known, it was not subject to control, being the military intervention a determining factor as a cause for international contagion.

In the case of French imperialism, the historical analysis invites us to distinguish between the first period from the Crimean War (1853–1856) to the expedition to Mexico (1867), to the expeditions to China-Conchinchina (1857) and to Syria (1860–1861). A second period, in which control over Africa was established, could extend from the Tunisia protectorate in 1881 to the creation of the military territory of Tchad in 1900. The administration of the British colonies, after the Crimean War, attained control over India in 1858; and the second Opium War (1856–1860) ensured the Crown with the main part of the international commerce from the south of China harbors. After the French-Prussian war, British occupation of Egypt finalized in 1882, and that leads to the takeover of Sudan in 1896-98 and to the South-Africa War in 1899–1902. United States established a little empire in the Caribbean at the end of the century over Puerto-Rico and temporarily over Cuba, as it counted among its weapons with an efficient control of mosquito. The Russian-Turkish War of 1877–1878 and the Sino-Japanese War of 1894–1895 also are important in the proceedings.

Society had a right concerning the fidelity of its citizens facing both epidemiological and military problems, a coincidence fostering statistical research on the Army, given the origins, administration and impact of communicable diseases. In fact, in the history of the registration of the causes of death, it was in the 50's of the 19th century when with the collaboration between John Snow (1813–1858) and William Farr (1807–1883), population thinking and comparison of exposures between groups were interrelated as the two fundamental elements of epidemiology. It was possible to work with mortality tables, by comparing the results obtained from the troops in the Metropolis and outside the Metropolis. Showing clearly that the French colonial experience (from 1830) and the British one (from 1815) were good test cases where medical research could work with comparison groups. Military populations, troops in which mortality were three times higher in Africa and two times higher in India than in Metropolis, probably perceived that the risk in a military campaign was always estimated in higher mortality rates when compared with those remaining in the barracks (frequently between three and ten times higher). As could be seen by using the annual reports from the *Army Medical Department* (from 1816) and the medical statistics of the Colonial and Metropolitan Army from *Ministère de la Guerre* (the War Ministry in Spain published from 1884 a Summary of the health statistics from the Spanish Army (*Resumen de la estadística sanitaria del ejército español*), relevant in the case of the U.S.-Spain war in 1898).

In the second half of the 19th century, the three great blocks constructing epidemiological theory were: local factors (naturals or locals), individual

predisposition and contagion. These elements proved to be multiple and mutually permeable (Hamlin, 1992), especially in the case of the colonies. Because predictions concerning military populations affirmed the existence of universal causes needed to characterize the illness. However, the practice of population control based on military de-centered the application of public-health aspects as referred in laws and international conventions. Thus, for example, during the third quarter of 19th century, Conferences reported that in the British Army on West Africa soil the infectious disease spectrum decimated the military population with a mortality rate between 600 per thousand and 111 per thousand, being 32.13 per thousand the average mortality of the European officers in the last quarter of the century and in the same area (Curtin, 1998). On the contrary, at the time of the Vienna Conference (1874) French troops demonstrated a comparative mortality higher between those staying in metropolis than in Africa concerning cholera, following the statistics of causes of death in the military cantonments in France and Algeria. From the medical point of view, disease and Empire were claiming that there were few colonial wars in which more men died in action than of sickness.

The results of these violent measures characterized the start of tropical medicine as an instrument of the empire (Watts, 1997), although they were an effort that failed to counter the diffusion of the diseases under the general rubric of contagion transmitted by fleas, by mosquitoes or by personal contact (Lederberg, 2000). Which is what eventually led to panic, undermining trade and challenging the social order in a number of specific historical episodes whose reverberation on a large scale facilitates a new perspective on military intervention in the turnover from the 19th to 20th centuries (Peckham, 2013). This fact together with the evidence resulting from the production of an international cooperation system, happened in a time of increasing tensions that at last collapsed with the outbreak of the Crimean War (1854–1855). And this was the military moment at this time, although the second Conference (1859) remained unmoved by the dramatic consequences, with what the Paris spirit who met on 23 July 1851 for the first ISC (Howard-Jones, 1975) did not emerge again until 1866, the opening year of another great epidemic. But even this time the international forum won't hear the echoes of an influential struggle, the battle of Solferino. Inside this context, the paralysis of military health services, injured service men that were not evacuated, was a starting point appealing to the humanitarian conscience, the signal to the modification of military mentality and to the development of Red Cross. The military personalities, the specialists in military medicine, or the politicians with military responsibilities, started to see the benefits of the regulations and procedures internationally accorded, with regard to the evacuation and care of those injured.

After the Franco-Prussian war (1870–1871) and the German crash in 1873, the 1874 Vienna Conference (the first after the 1869 Suez Canal's opening) saw the victory of the anti-quarantinist policy, so promoting medical inspection (Ogawa, 2000). Though generally these Conferences were conducted each seven or eight years, on the occasion of Rome (1885) it was convened just four years after the previous one



(Washington (1881)), because the 1882 unilateral rupture in favor of Great Britain of the dual control of the Egyptian debt provoked that France, its formed partner in Egypt (where cholera reappeared in 1883), to insist on strict quarantine on ships in the Suez Canal. Nevertheless, as soon as the united Germany emerged and the Triple Alliance with Italy and Austria was formed, the new colonial power in East Africa endorsed the British position on Suez (Harrison, 2006). In the Conferences held in Venice (1892) and Dresden (1893), against the background of the 1890–1893 depression in Hamburg, the value of the English system (or neo-quarantinist) was acknowledged, and its techniques were adopted as a base for international preventive action (Hardy, 1993). Again discussions on the winter of 1892–1893 cholera epidemics, that originated in the military hospital in Altona (Hamburg) in Germany, concerned the 1894 Conference and, in 1897 the impacts of pest coming from the first Sino-Japanese war made the attendees work at the sessions of the Tenth conference.

Thus, rivalries among the imperialisms in competition, were determining that disease control focus on information (Bynum, 1993). Considerable controversy was generated within the last third of the 19th century: were the military actions (resulting from the preventive measures) appropriate to validate the validity of contagion as an explanation at the scientific level? or, the taking of control of the apparatus of government by the military forces resulted a specific attribute of the spread of the epidemic? In any case, at least inside the federated structure of the British colonization, the practical effects of this scientific knowledge application would not be felt until the last dates of the century (Briggs, 1961). Ogawa records the fact that in the British army there was very little evidence of a response to the new epidemics, despite the Empire included two main cholera sites, Egypt and India (Ogawa, 2000). Although the health of the European troops in the Egyptian garrison was among the worst in the Empire, the disease was considered endemic and could not attract the international political attention and, as a product of secret, was only rarely subject of open commentary inside the official documents of the British command (Curtin, 1998).

Otherwise, even if one of the belligerent armies was doing all it can to avoid the spread of diseases, its efforts were seriously determined by the existence or not of an equally diligent enemy army medical corps. Because even if a health care staff was successfully protecting their own troops, it was nevertheless sure that an epidemic outbreak would appear between the civil inhabitants in the country were the war was being fought. Barracks and Lazarettos had to be built, the available military medical doctors should be those aware of the hygienic research methodology, and an adequate number of nurses should be ready for service immediately after the early signs of the infectious disease. But for the military authorities (which scarcely were able to comply with all the mandates that the weight of war placed on them), it was not an easy task to deal with the large-scale prevention of the outbreaks of diseases as a consequence of war.

In the quarantinist field, the armies were slowly considering to replace the traditional precautions with those of disinfection and inspection. In this sense the socio-political evolution of military thoughts on contagion associated with epidemic diseases

can be tracked through three institutions: the military hospital, the military prison and the military harbor. To the geography of contagionism and its associated quarantinist attitudes, the determination of the causes of death on the basis of the medical records at the army hospitals were providing valuable data.

Other challenge posed by public dissatisfaction, military prisons often involved new outbreaks of infection. Obviously, those communities where a military correctional facility was established were faced with a very difficult problem, because if infected men were jailed in those prisons the detention centers were promptly identified as focuses of infection. For instance, during the Franco-Prussian war the number of French prisoners who contracted smallpox and succumbed to the disease in the overcrowded prisons in eastern Germany was respectively 34.5 per thousand and 17 per hundred (the highest level of overcrowding was attained in Stettin, where 21.000 detainees were concentrated) (Prinzing, 1916).

From Paris, where the attendees to the 1851 first International Sanitary Conference formulated the first international sanitary convention, the world of the military harbors was directed towards considering the territorial sovereignty on an international basis (International Sanitary Conference, 1852). The fatal disease epidemic could be transported by water tanks like those aboard ships, the risks of disease were multiplied and Auguste Marroin, chief surgeon of the French fleet, described them in his medical history of the Crimean War (Marroin, 1861).

In such a way the communicable disease was an important obstacle to the Naval Supremacy on the basis of the disagreement between France and Great Britain, that affected Europe and the Middle East. A basic disagreement concerning precautions in Suez Canal, as ideologically motivated by commerce and anti-colonialism and that was present in 1892 in Venice, in 1893 in Dresden and in 1894 in Paris. Confronted with the international control of epidemics, the negotiators also raised the use of the epidemiological information coming from the military medical doctors assigned to the fluvial quarantine regimes, when cholera reappeared in Europe in spring 1892. As an example, to patrol the Elbe river each of the 10 stations counted with 2 military medical doctors, who between September 2 and November 29 examined 57.000 ships, disinfected 33.000, and visited 200.000 persons, between whom they identified 108 with symptoms of cholera (International Sanitary Conferences, 1893). The military intervention also considered the relevance of control in the Persian Gulf, and during the last Conference in the century the Ottoman government used a warship aimed at ensuring adequate surveillance of the Strait of Ormuz in facing the 1896 plague epidemic (International Sanitary Conference, 1897).

On the basis of military interventionism, the social management of the epidemics tended to make broadly comparable population groups, taking the view that their territorial sovereignty was considered from a war perspective. It was, of course, a drastic action, because of the suspension of the individual duties for public benefit. But also sanitary cordons bounded by the frontiers could become popular, by demonstrating the efforts of the government and because it only affected the travelers. Other versions

of preventive measures approached in the proceedings also offer subtle examples on interaction in public health under the basis of military interventionism (International Sanitary Conference, 1881).

One of the marvelous science's conquest of nature occurred under the basis of international interventionism, the Cuban medical doctor Carlos Finlay found and affirmed the role of mosquitoes in the transmission of yellow fever; and North American co-workers certified that it was so, at the risk of their lives (Siegfried, 1960).

### **Conclusions**

In the second half of the XIX century, the development of epidemiologic thinking can be found in the proceedings of the International Sanitary Conferences (ISCs), by focusing on the characteristics of the Army Forces. At the heart of their prophylactic measures the military intervention is already out in the open as witnessed by the discussions on military personnel as a large group of men who carried infectious organisms. The common diseases affecting the state of health of the military forces played an important part to establish a statistical information system, by developing an imperial medicine as a central agency of knowledge in the interest of the acquisition of territory by war. Within the quarantinist field, a military point of view to assess the impact of communicable diseases drew heavily on contagionism, prompting cordons and quarantines to stop the circulation of carriers. In so far as any historical information that can be considered in the proceedings covers a long time-span, significant interactions are revealed between the causative agent of the epidemic and the risk factors associated with the military assigned to implement sanitary cordons. The scientific evidence demonstrated that the restrictions aroused by the intervention of the colonial power's army put its emphasis on the comparison between population groups in support of the operational perspective of war. Much consideration on isolating strategies has come of this intensified discussions. That knowledge was provided on the base of the proceedings issued after each ordinary session of the ISC meetings, where the interaction is considered as a preemptive move against disease conducive to the adoption of key strategic decisions, like the need for more direct international intervention. Most military officers did express their profound concern related to the connections between the sanitary guarantees enjoyed by the quarantined population and the information sources available on them as an appreciation for medical care. Priority was therefore given to keep decisions secret mainly due to the fact that the military approach to managing the population in terms of confidentiality help to ensure the unity of action and responsibility specific to the military command. In historical perspective, the ISCs were a context of the interaction between the disease, the military population, and the causal agent, which had its roots in the political traditions with which the prevention, treatment, and control of epidemic diseases have evolved at this time.



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## Енріке Вульф

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### Військові сили та епідемічні захворювання: Екскурс через міжнародні санітарні конференції XIX сторіччя

*Анотація.* Ця стаття присвячена критичному аналізу військових втручань XIX століття, як основної причини розповсюдження інфекцій на міжнародному рівні. Виникаючі проблеми та рішення, одержані в результаті критичного аналізу матеріалів Міжнародних санітарних конференцій (МСК), розкривають історію розвитку хвороб і методи ранньої статистики, які використовувались в епідеміологічних цілях. Ці епізоди в історії хвороб показують, що відповідна військова інформація поширювалася серед медичних працівників через МСК. Хоча еволюція епідемічного процесу в другій половині XIX століття не дозволила конференціям повністю вилікувати хвороби, але вони стимулювали розвиток західної медицини. Обговорюючи способи використання профілактичних заходів і міжнародних втручань як вченими-медиками, так і дипломатами, починаючи з докладних звітів про смертність військ і закінчуючи такими повсюдно використовуваними термінами, як «зараження» і «карантин», в статті критично аналізуються результати дій зроблених військовими силами як масове явище. Як свідчить дослідження процесу, при порівнянні різних груп населення, в патологіях, пов'язаних з епохою масових перевезень, обтрунтування взаємодії виявило проблеми, пов'язані з залізничним перевезенням військ. Крім того, наявність фактора ризику для навколишнього середовища може відповісти на питання про дії, що вживаються збройними силами, як про масове явище, яке має великий вплив на лікарні, гавані і в'язниці. Матеріали, призначені для цих міжнародних досліджень і комісій по епідеміям, були підготовлені досвідченими військовими і цивільними лікарями, які вважали, що докази і здоровий глузд виявили епідемічні захворювання, яким можна запобігти, лікувати і контролювати за підходом військових. Це есе демонструє, що армійські сили були здатні контролювати свій керуючий апарат, підкреслює важливість їх прагнення слідувати і супроводжувати боротьбу з хворобою при імперіалістичній конкуренції за землю. Цей підхід впливає зі свого специфічного історичного контексту, який в силу свого походження міг би стати єдиним і міжнародним, але був головною перешкодою на шляху до створення міжнародного бюро охорони здоров'я.

**Ключові слова:** *заразні захворювання; військова медицина; міжнародне співробітництво; холера; карантин; ХІХ століття*

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### **Военные силы и эпидемические заболевания: Экскурс посредством международных санитарных конференций ХІХ века**

*Аннотация.* Эта статья посвящена критическому анализу военных вмешательств ХІХ века, как основной причины распространения инфекций на международном уровне. Возникающие проблемы и решения, полученные в результате критического анализа материалов Международных санитарных конференций (МСК), и раскрывают истории развития болезней и методы ранней статистики использовавшихся в эпидемиологических целях. Эти эпизоды в истории болезней показывают, что соответствующая военная информация распространялась среди медицинских работников через МСК. Хотя эволюция эпидемического процесса во второй половине ХІХ века не позволила конференциям полностью излечить болезни, но они стимулировали развитие западной медицины. Обсуждая способы использования профилактических мер и международных вмешательств как учеными-медиками, так и дипломатами, начиная с подробных отчетов о смертности войск и заканчивая такими повсеместно используемыми терминами, как «заражение» и «карантин», в статье критически анализируются результаты действий предпринятых военными силами как массовое явление. Как свидетельствует исследование процесса, при сравнении различных групп населения, в патологиях, связанных с эпохой массовых перевозок, обоснование взаимодействия выявило проблемы, связанные с железнодорожной перевозкой войск. Кроме того, наличие фактора риска для окружающей среды может ответить на вопрос о действиях, предпринимаемых вооруженными силами, как о массовом явлении, которое оказывает огромное влияние на больницы, гавани и тюрьмы. Материалы, предназначенные для этих международных исследований и комиссий по эпидемиям, были подготовлены опытными военными и гражданскими врачами, которые полагали, что доказательства и здравый смысл выявили эпидемические заболевания, которые можно предотвратить, лечить и контролировать с подходом военных. Это эссе демонстрирует, что армейские силы были способны контролировать свой управляющий аппарат, подчеркивает важность их стремления следовать и сопровождать борьбу с болезнью при империалистической конкуренции за землю. Этот подход вытекает из своего специфического исторического контекста, который в силу своего происхождения мог бы стать единым и

международным, но являлся главным препятствием на пути к созданию международного бюро здравоохранения.

**Ключевые слова:** передающиеся заболевания; военная медицина; международное сотрудничество; холера; карантин; XIX век

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