

Public health issues and perspectives – between science, politics and bioethics

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Summary

The historical overview of prescribed measures and collective action in relation to health-preserving issues shows the cooperation between the performative and the executive power of the law; of the scientific intervention in determining and obviating dangers and finding possible solutions for danger-related problems; and of the need for social control as a tool for the sustenance of the difficult project of building and developing public health. The question about the way politics can contribute to the improvement of public health is gaining in importance in the intensification of structural and socioeconomic disparities. Public health is an enormously wide-applied and a very versatile project, implementing knowledge, guidelines and practices from medicine, natural sciences and technology, social sciences and politics. Its condition has always been accompanied with (as is also focused on) the socio-economic-political problems of the populations at stake, and it continues to be intensely committed to ensuring conditions for health and safety, thus contributing to the general idea of a potential enhancement of well-being and dignity.

Key-words: public health, medicine, politics

Introduction

Public health is an intertwining field of pluriperspective approaches to medical issues, concerning the health of the communities in its entirety. Its general mission is the assuring of conditions in which people can be healthy, thus focusing mainly on health promotion, disease prevention, workplace safety, effective public access to medical care etc. Some public health measures have always existed in organised societies, but the actual stipulation of mandatory, reasonable public health policies has faced difficulties on the levels of acceptance of the proposed measures and on the implementation of new actions and patterns; and still faces somewhat troubling challenges on the levels of sustainability, development, long-term goals and balancing socio-economic discrepancies.

The long union of reason between health and politics, and with that, between medicine and social sciences, as well as between politics and (bio)ethics, has created a rather interesting history of health promotion public actions, leading to the present endorsement of the World Health Organization goals and of the efforts of separate states, communities, health-professionals, scientists, political analysts and bioethicists, making public health one of the most wide-ranging and pluriperspective projects of humanity so far, with enormous responsibilities for the future.

1. The mission of public health

Public health is the pluriperspective approach to medicine concerned with the health of the community in its entirety. The definitions of public health can range between the emphasis

on “health services to improve and protect community health, especially sanitation, immunization, and preventive medicine”¹, to public health as a compound of “the art and science dealing with the protection and improvement of community health by organized community effort and including preventive medicine, and sanitary and social science”², and the joint theoretical and practical efforts of “the science and practice of protecting and improving the health of a community, as by preventive medicine, health education, control of communicable diseases, application of sanitary measures, and monitoring of environmental hazards”³. The sum of all these formulations may lead to the very broad and imprecise definition of public health being everything that gets done by the public health policy makers and practitioners. Or, it could be noted that the two main elements many of the definitions of public health activity focus on are the health of the “public” taken as the object of action, as well as the fact that the mode of intervention requires participation and action by a significant number of people⁴. The work undertaken by public health, in fact, comprises of “(...) addressing inequalities in health, tackling challenges of renewal and sustainability in our communities, and taking on board the impact of globalization on health”⁵.

¹ public health. *Dictionary.com*. Dictionary.com Unabridged. Random House, Inc. [http://dictionary.reference.com/browse/public health](http://dictionary.reference.com/browse/public%20health) (12 Dec 2010).

² public health. *Dictionary.com. Merriam-Webster's Medical Dictionary*. Merriam-Webster, Inc. [http://dictionary.reference.com/browse/public health](http://dictionary.reference.com/browse/public%20health) (12 Dec 2010).

³ public health. *Dictionary.com. The American Heritage® Stedman's Medical Dictionary*. Houghton Mifflin Company. [http://dictionary.reference.com/browse/public health](http://dictionary.reference.com/browse/public%20health) (December 12, 2010). The definitions above are from English dictionaries, but the definitions in French dictionaries (for example, in any edition of *Le Petit Robert*) are very similar, as are most definitions in reliable dictionaries of romance languages. The Russian equivalent syntagma is “социальная гигиена и организация здравоохранения” corresponding to “social hygiene and organization of health-protection”.

⁴ However, even “public” and “health” pose problems at defining. The ‘public’ can be seen “(...) as the difference between talking about the public (or the public interest) as being different from a well-defined group of specified individuals (and individual aggregated interests).” in A. Dawson, Verweij, M., eds., *Ethics, Prevention and Public Health*, Oxford University Press, Oxford, 2007, p. 24. Logically speaking, and as Dawson and Verweij note, in this sense, it might be referred to “(...) all members of a given community or state, but it need not, as a ‘public’ can also involve a smaller group of persons, as long as the persons are not specified” (Ibid). Whilst it refers to an indefinite number of individuals, it does not mean that any improvement in the area of public health necessarily implies the preservation and/or improvement of the health of many. ‘Public’ theoretically incorporates ‘everyone’, but it gets satisfied with the protection/salvation of even only a few people (for example, the improvement of protection against biohazards or bioterrorist attacks applies to everyone who might get potentially affected – maybe millions of people, but in reality, in a concrete given case, saves the lives of, maybe, only a few people). However, this view is very limited as it overlooks the public health background – the history of interventions that already helped in establishing a better and healthier environment, that, no doubt, does apply to many.

“Health” also poses problems, as it may mean absence of disease; the general condition of soundness of the body or/and the mind (without fully specifying what ‘soundness’ implies); or as it is put in the rather over-demanding definition given by the World Health Organization – “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (*Preamble to the Constitution of the World Health Organization* as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States, Official Records of the World Health Organization, no. 2, p. 100, and entered into force on 7 April 1948).

⁵ Judy Orme, Powell, Jane, Taylor, Pat, Grey, Melanie, “Mapping public health”, *Public Health for the 21st Century*, Judy Orme et al. (eds.), Open University Press, Maidenhead, 2007, p. 8. The quoted passages continues by characterising the aforementioned activities, along with the WHO definition of health, as ‘utopian’ – “It is a utopian ‘goal’ perhaps, but it sets a focus that has significance for the population as a whole, or subgroups within it through collective action” (Ibid.). While it is unclear why “goal” is in quotation marks, when it is exactly a goal the undertaking which is being set, it is clear that the significance for the population as a whole, or represented by its collectively acting subgroups is being underlined, which goes along the mentioned lines of ‘public’ as potentially

The general mission of public health is to fulfil society's interest in assuring conditions in which people can be healthy. So, public health and medicine represent separate and complementary approaches to the protection and improvement of health. Public health could be defined in terms of health promotion by population related measures, which contrasts the aims of medicine, focused mainly on diagnostics and therapy of the individual patients' health⁶. It involves an overwhelming amount of tasks, reducible, for the sake of succinctness, to several points: 1) the assessment and monitoring of the health of communities and determined populations at risk in identifying health problems and priorities; 2) the formulation of public policies designed to solve the identified local and national health priorities and 3) the assurance of access to appropriate and cost-effective care universally and at all times⁷. This includes health promotion and disease prevention services, as well as timely evaluation of the effectiveness of that care. Theoretically, public health can be linked to general public safety (or human security), being a major part of it⁸. As general public safety is impossible without sustainable public health, and public health is dependent on factors like emergency management and civil protection which are parts

belonging to indefinite numbers, but not necessarily to many, or, in given non-paradigmatic cases, not even any. In this sense, as established, "public" is referring to an indefinite number of non-assignable individuals. This could be located by following Bentham's account on "public" in "public offences". Bentham writes, namely: "(...) acts as ought to be made offences, on account of the distant mischief which they threaten to bring upon an un-assignable indefinite multitude of the whole number of individuals of which the community is composed, although no particular individual should appear more likely to be a sufferer by them than another" (Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation*, XVI, I, 10). In the realm of public health this could be transposed to mean that no particular individual should be more likely to need or get salvaged by a public health intervention, but anyone could (potentially) be on the receiving end of that intervention (as in the biohazards example – a prevention in the spreading of a dangerous virus might actually only affect a few people, but potentially it affects all, in what lies public health's vastness of range and responsibility).

⁶ If an attempt to include public health in the vast field of medicine is to be made, it could be considered a part of social medicine, though, along with medical care, preventive medicine and social well-being.

⁷ Again, this intended applicability for everyone and at all times is as vague as any other such formulation, like, for example, the Law examined in a Kafkian "Before the Law" context – law should be accessible equally to everyone and at all times, but the universality of law does not fit with the singularity of the existence; or any human right stipulated by the Human Rights Conventions – while it should apply to everyone, the dialectics of reality certainly does not guarantee it will apply to everyone, and certainly not at all times.

⁸ Public safety is being assured by establishing welfare and by protection of the general public and is usually expressed as a governmental responsibility (again, "welfare" and "public" being difficult to define). Human security gets often defined by UN officials, like, for example: "What do we mean by human security? We mean, in its most simple expression, all those things that men and women anywhere in the world cherish most: enough food for the family; adequate shelter; good health; schooling for the children; protection from violence whether inflicted by man or by nature; and a State which does not oppress its citizens but rules with their consent." – a statement by the United Nations Deputy Secretary-General Louise Frechette to a high-level panel discussion on the occasion of the twentieth anniversary of the Vienna International Centre (VIC), October 9, 1999. <http://www.un.org/News/Press/docs/1999/19991012.dsgsm70.doc.html> (20 Dec 2010); or "Human security, in its broadest sense, embraces far more than the absence of violent conflict. It encompasses human rights, good governance, access to education and health care and ensuring that each individual has opportunities and choices to fulfil his or her potential. Every step in this direction is also a steep towards reducing poverty, achieving economic growth and preventing conflict. Freedom from want, freedom from fear, and the freedom of future generations to inherit a healthy natural environment -- these are the interrelated building blocks of human -- and therefore national -- security" – Kofi Annan. "Secretary-General Salutes International Workshop on Human Security in Mongolia." Two-Day Session in Ulaanbaatar, May 8-10, 2000. Press Release SG/SM/7382.

<http://www.un.org/News/Press/docs/2000/20000508.sgs7382.doc.html> (10 Dec 2010).

of the functioning public safety, they are complementary and inter-dependent (albeit one assuming the other)⁹.

Typically differentiated in disciplines like epidemiology, biostatistics and health services, public health depends on environmental control, a large number of social factors, as well as of facilitation of its mission by other related disciplines and tangent subfields of research, thus becoming severely involved in all aspects of contemporary life. In this sense – the almost overbearing responsibility for numerous different problems to be taken care of by its mission – are found both the difficulty to maintain its sustainability and the enormous advantages of its extent.

Public health can be conceptualized in two ways: public health as actions and public health as resources. Public health actions refer to activities to improve health by professionals and lay people; and by individuals, groups and communities. It is within this idea of public health action that the rationale for partnership and multidisciplinary is established. It involves, among other things: a basis of complex theoretical and methodological debates across disciplines; realignments of engagement and responsibility within the public health profession and community; and a synthesis of various types of evidence into guidance for people working in public health practice. International organizations, agreements and regulations should be deeply involved in triggering and driving the public-health action and in establishing resource-possibilities.

The realm of public health is, undoubtedly, an overlapping field for medicine, science, law and politics, and with that, of medical ethics, ethics of natural sciences, bioethical problems of population, human life, and human rights, dignities and prospects. Its issues are political and legal; its problems – ethical and methodological; its future, under the banner of the scientific and technological development, uncertain¹⁰.

One of public health's main concerns is the control of infectious diseases. This involves a clear view of epidemiological data, of overall morbidity and mortality scales, of access to as many as possible facts concerning the source of the infectious diseases and, certainly, of the best (most effective and far-reaching) ways to eradicate them or keep them under control. This has been done in dealing with the control and improvement of sanitation and the access to clean water, reducing dramatically typhoid and cholera transmitted by ingesting contaminated water in most parts of the world till mid twentieth century (but not in the last few decades – there was an outbreak in Haiti during the course of this Forum, for example)¹¹; by the discovery of antimicrobial drugs largely used in combating tuberculosis

⁹ Health security, treated in the project of public health, is encompassed in the UNDP list of threats to human security: "The list of threats to human security is long, but most can be considered under several main categories: economic security, food security, health security, environmental security, personal security, community security, political security" – United Nations Development Programme (UNDP). *Human Development Report 1994*, Oxford University Press, New York, p. 23.

¹⁰ This relationship is complicated – while the future of the public health measures is dependent on the directions in which science and technology will thrive, the development of science and technology is confined and protected by the guidelines, policies and measures of public health's risk-assessment and risk and danger-prevention.

¹¹ The health and socio-economic benefits of improved access to safe water and adequate sanitation are the most compelling arguments to support resource allocations towards the goal of major contribution expanded access to safe waters, according to the *United Nations Millennium Declaration*. In an analysis (an economic evaluation) the WHO commissioned from the Swiss Tropical Institute, the health benefits, the additional benefits, and the costs of a range of interventions to improve access to safe water supply and sanitation services, were

and STI's; and by the vaccination campaigns, resulting in the eradication of smallpox (variola), the reducing of poliomyelitis cases, of rubella, of diphtheria, again – tuberculosis, tetanus, *Haemophilus influenzae* type b etc¹².

assessed for several WHO regions and at the global level, and put in a time horizon for all interventions until 2015. The two main goals would be: halving the proportion of people without sustainable access to improved water supply and halving the proportion of people without sustainable access to both improved water supply and improved sanitation. The costs of providing access to safe water and adequate sanitation will vary depending on the level of technology and maintenance used. It should be noted that in this analysis, 'improved' water supply and sanitation refer only to low technology improvements, implying a significant increased probability that the water is safe, and more accessible – Water Sanitation and Health (WSH), *Evaluation of the Costs and benefits of water and sanitation improvements at the global level, Executive summary*, World Health Organization 2004,

http://www.who.int/water_sanitation_health/wsh0404summary/en/index.html (10 Dec 2010). In Africa, Asia, Latin America and the Caribbean, nearly 2 billion people in rural areas have no access to improved sanitation facilities. To achieve 2015 sanitation targets in Africa, Asia, Latin America and the Caribbean, an additional 2.2 billion people will have to be provided with sanitation facilities. Polluted water is estimated to affect the health of more than 1.2 billion people, and to contribute to the death of an average 15 million children every year. In 1994, WHO estimated the number of people without access to clean drinking water at 1.3 billion. By 2000, nearly 1.2 billion people lacked access to clean water, while 2.4 billion lacked access to adequate sanitation services. In *Vital Water Graphics, An Overview of the State of the World's Fresh and Marine Waters*, UNEP, 2008, "Inequity in access to clean water and Sanitation", <http://www.unep.org/dewa/vitalwater/article63.html> (10 Dec 2010).

What astonishes is that while cholera had almost disappeared globally by the mid 1950s, it reappeared with a vengeance and spread throughout the world during the last few decades, threatening to appear more and more often with lack of clean-water access due to draughts and floods. (A graphical representation of the number of cholera cases declared per country – <http://www.unep.org/dewa/vitalwater/article197.html>, taken from the *Synthesis Report*, IPCC, 2007).

¹² Toxoids against diphtheria and tetanus were introduced in the early 1900s; the bacillus Calmette-Guérin vaccine (against tuberculosis) in 1927; the Salk polio vaccine in 1955; and vaccines against measles and mumps in the 1960s.

Tuberculosis continues to afflict poor and disadvantaged populations around the globe with alarmingly high mortality rates (95% of the 8.8 million estimated annual new TB cases, and 98% of the 1.6 million estimated deaths from TB, occur in the developing world). The World Health Organization has estimated that despite the growing global incidence of roughly 1% per year, global TB prevalence and death rates had been falling for several years (probably due to the growing caseload in sub-Saharan Africa and countries of the former Soviet Union, as well as population growth). One of the causes of the resurgence in TB worldwide is the increase in HIV infection. The emerging worldwide epidemic of multidrug-resistant and extensively drug-resistant tuberculosis is a by-product of ineffective or poorly organized systems for TB control, in T. H. Holtz, "Tuberculosis Epidemiology", *International Encyclopedia of Public Health*, pp. 382-391.

The global effort to eradicate poliomyelitis led by the WHO and UNICEF, begun in 1988, and has so far reduced the number of annual diagnosed cases from hundreds of thousands to around a thousand. With that, polio is expected to be the next disease successfully eradicated. Up until now, only smallpox, whose global eradication was certified in 1979 (WHO, *Facts Sheets*, "Smallpox") – <http://www.who.int/mediacentre/factsheets/smallpox/en/> and rinderpest (a virus deadly to cattle) whose global eradication was established in October 2010, but is still in await of confirmation ("UN 'confident' disease has been wiped out. BBC". 14 October 2010. <http://www.bbc.co.uk/news/science-environment-11542653> (15 Oct 2010) can claim that status.

The vaccines against the rubella virus have considerably changed the its epidemiology since the 1960's, but, nevertheless, only about half of the world's countries vaccinate against it, and it could be argued that a good solution would be a combination of rubella vaccine with measles vaccine in all campaigns for the control of measles (a mass rubella vaccination using a combined measles-mumps-rubella vaccine), which would result in a low-cost eradication of the congenital rubella syndrome (CRS), in – Stanley A. Plotkin, "Rubella eradication", *Vaccine*, Volume 19, Issues 25-26, 14 May 2001, pp. 3311-3319, and in Elisabeth Miller, "Measles, mumps and rubella: Present and future immunisation policy", *Public Health*, Volume 102, Issue 4, July 1988, pp. 317-321.

To sum up, according to the WHO, "Routine vaccination is now provided in all developing countries against measles, polio, diphtheria, tetanus, pertussis, and tuberculosis. To this basic package of vaccines, which served as the standard for years, have come new additions. Immunization against hepatitis B is now recommended by WHO for all nations, and currently is offered to infants in 147 of 192 WHO Member States. Immunization against *Haemophilus influenzae* type b (Hib) is recommended where resources permit its use and the burden of disease is established; it is provided in 89 countries. Yellow fever vaccine is offered in about two-thirds of the nations at risk

Public health measures involve the care for the safety at the workplaces, as a category of management responsibility in places of employment, and they have been dedicated to the diminishing of work-related illness (like, for example, mine-workers' pneumoconiosis and silicosis, some feeble results in pulmonary and head-and-neck cancer prevention etc.). Work-safety also includes the care for diminishing of work-related injuries and deaths related to mining, construction, transportation, in fact, in any and all hazardous professions¹³.

2. The inauguration of public health measures – an example

The development of public health ideas and measures has not been smoothly propelled by the significance of the aims of health and environment improvement and the striving for a greater good, on the contrary. The road to the stipulation of public health policies was rather bumpy, and in the present the ethical confines exist to determine to which extent science can demand an open space for its endeavours without being reprimanded for public health engenderment, as well as to determine the extent at which certain public health measures can be rightfully and purposefully applied¹⁴.

Medicine – unlike pharmacology, concerned about creating particular drugs not for special individuals, but for the greatest effectiveness for the largest number of affected or potentially affected – works on individual doctor (medical professional)-patient levels. In the past, medicine was even more deeply committed to the individuality of the patients, the prevailing opinions being that each case of disease was unique, the result of a personal

for yellow fever outbreaks. Routine immunization against rubella is provided in 111 countries" – WHO, *Fact Sheets* – "Immunization against diseases of public health importance" <http://www.who.int/mediacentre/factsheets/fs288/en/index.html> (10 Oct 2010).

This sounds promising, but is far from completely satisfying the initial goals. Allocation of funds and gaining governmental support and local endorsement for the adequate and successful application of the funds continue to be one of the biggest problems.

¹³ Public Health improvement deals with these problems also by establishing a strong theoretical base – The World Conference on Injury Prevention and Safety Promotion, held on a biennial basis, is a platform for sharing the latest scientific knowledge on preventing violent and injury-related death and disability. Topics include prevention of violence; prevention of unintentional injuries; occupational safety; and trauma care and disaster management. The tenth conference was held on 21–24 September 2010 in London, United Kingdom.

¹⁴ As medicine focuses primarily on the health of individuals, and public health concentrates on the health of populations, it is expected that public health measures have the potential to impinge upon individual freedom. On the one hand, balancing individual freedoms with the protection of a population's health represents a very important ethical issue of freedom of choice and exercise of rights; and the compulsory immunization statutes, relocations, changes of life-style, the imposed bans and fines for the ones who refuse to go along with the prescribed measures etc. illustrate this clash. On the other hand, if not for the public health measures, designed to protect, not harm, the progress of science and the dangers it produces and the implications of environmental (and political) crises would be left unattended, which would result in realignment of power and subsequent endangerment of the rights and freedoms. So, following John Stuart Mill's formulation: "The only purpose for which power can rightfully be exercised over any member of a civilized community, against his will, is to protect harm to others. His own goal, either physical or moral, is not a sufficient warrant" and "The only part of the conduct of any one, for which he is amenable to society, is that which concerns others. In the part which merely concerns himself, his independence is, of right, absolute. Over himself, over his own body and mind, the individual is sovereign." (John Stuart Mill, *On Liberty*, ch.1, <http://www.utilitarianism.com/ol/one.html>, 10 Dec 2010), public health measures apply (potentially) against the freedom of one, to ensure protection and well-being of the others. The WHO and national committees, however, constantly work on campaigns to educate the public, so as to avoid misunderstandings and non-informed, or worse, ill-informed refusals to concur, and to explain the gains of a public protection against health risks.

imbalance; hence, the main difficulty of the medical profession was to establish precisely each patient's unique situation, case by case. The then (and for a very long period of time) dominant theory of diseases had been highly influenced by ideas of an imbalance of the basic “four humours” in the body, a theory known as theory of dyscrasia, for which the main treatment was bloodlettings¹⁵.

From one point of view this meant more care for the diagnostics and special treatment for each patient within the limited accepted knowledge and circumstances, but from another point, this was one of the cases of the so-called “medical myopia”, because the theories for common diseases suffered greatly in their development, as they conflicted with the established scientific and medical opinions of the time. An excellent example for the struggle the inventors in the fields of epidemiology, internal medicine, preventative paediatrics etc. had to put up against the previously established norms and the “eminence-based medicine”, is the intensity of Ignaz Semmelweis¹⁶ efforts to establish that the mortality rates due to puerperal fever at maternity wards where doctors performed the procedures, much higher than the wards where midwives performed the same actions, were so high simply because the doctors never washed their hands, and would deliver babies right after having performed autopsies¹⁷. Semmelweis' theory was ridiculed, albeit his astonishing

¹⁵ The theory of the four humours dates way back, Hippocrates being the one credited with applying the idea of the four different elements – earth, water, fire and air (which is, actually, an Empedoclean idea) on the field of medicine. This doctrine is, basically, about the four temperaments corresponding to the dominant humour in the body (blood – sanguine; phlegm – phlegmatic; yellow bile – choleric; black bile – melancholic). According to the writings of Galen, the four humours were formed into the body, and ideally balanced temper and impeccable health would be a result of the perfect balance of the humours. According to theory of cellular pathology (as late as 1858) of Rudolf Virchow's (considered the ‘father of modern pathology’, active in the advancement of public health, and one of the founders of social medicine), the humours got ingested by consuming different types of food. In Islamic medicine, Avicenna in *The Canon of Medicine* repeated this theory, and designed tables to represent the humours. It could be thought that the idea of the four humours had sprung from the observation of blood clotting in a transparent container: when blood is drawn in a glass container and left undisturbed for about an hour, four different layers can be seen – a dark clot forms at the bottom (“the black bile”); a layer of red blood cells (the “blood”); a whitish layer of white blood cells (the “phlegm”); and a clear yellow serum (the “yellow bile”). After the invention of the erythrocyte sedimentation rate by Edmund Biernacki in 1897, the same investigation and conclusions were repeated by Robert Sanno Fahraeus two decades later, and he came to this idea of the origin of the theory (more on the subject in the succinct and informative – G. D. Hart, “Descriptions of Blood and Blood Disorders Before The Advent of Laboratory Studies”, *British Journal of Haematology*, 2001, Issue 115, pp. 719-728).

¹⁶ Ignaz Philipp Semmelweis (in Hungarian – Ignác Fülöp Semmelweis, July 1, 1818 – August 13, 1865), became a trainee physician's assistant at the Vienna maternity clinic in July 1844, and in July 1846 he was appointed an ordinary physician's assistant (*ordentlicher Assistentarzt*). In October 1846 his predecessor, Dr. Franz Breit, an obstetrician, unexpectedly returned, and Semmelweis was demoted, but in March 1847, Dr. Breit was appointed professor in Tübingen and Semmelweis resumed the *Assistentarzt* position at the clinic.

¹⁷ He got the idea, in fact, when one of his colleagues, Jakub Kolletschka, died after the same galloping course of disease after having accidentally cut his hand with the instrument he performed an autopsy with. He was appalled by the division's high mortality rate from puerperal fever — 16% of all women giving birth in the years 1841–1843. In contrast, in the Second Division, where midwives or midwifery students did the deliveries, the mortality rate from the fever was much lower, at about 2% (a detailed statistical analysis in T.N. Raju, “Ignac Semmelweis and the etiology of fetal and neonatal sepsis”, *Journal Perinatol*, 1999; 19(4), pp. 307-310). Semmelweis had also noted that puerperal sepsis was rare in women who gave birth before arriving at the hospital, but it took the death of a friend to partially uncover the mystery. While Semmelweis suspected the sepsis on the continent, it is a fact that contagion as the basis for childbed fever was first suspected by a number of British physicians in the late 18th and early 19th centuries. Thomas Watson, Professor of Medicine at King's College Hospital, London, in 1842 wrote: “Wherever puerperal fever is rife, or when a practitioner has attended any one instance of it, he should use most diligent ablution.” Watson recommended handwashing with chlorine solution and changes of clothing for obstetric attendants in order “to prevent the practitioner becoming a vehicle of

results in diminishing the puerperal-fever-caused deaths by washing the hands and the medical instruments with chlorinated lime solution. He would even use mortality rate time series in 1848 to document his success in virtually eliminating puerperal fever from the hospital ward. But this clashed with the then predominantly accepted theories, especially because his findings lacked scientific basis, since he could offer no acceptable explanation for the source of the disease – Pasteur's and Lister's germ-theory of disease would develop only decades after Semmelweis' initial findings¹⁸. His findings also ran against the conventional wisdom that diseases spread in the form of "bad air", also known as miasmas, or vaguely as "unfavourable atmospheric-cosmic-terrestrial influences"¹⁹.

Semmelweis's groundbreaking idea was contrary to all established medical understanding. Furthermore, in the analysis of the mortalities, the autopsy findings in the formative years of modern forensic science also showed a confusing multitude of various physical signs, which emphasised the belief that puerperal fever was not one, but many different, yet unidentified, diseases. Semmelweis' main finding – that all instances of puerperal fever could be traced back to only one single simple cause – lack of cleanliness – was simply unacceptable²⁰.

contagion and death between one patient and another." (in Caroline M. De Costa, "The contagiousness of childbed fever: a short history of puerperal sepsis and its treatment", *Medical Journal of Australia*, 2002, 11/12, pp. 668-671, http://www.mja.com.au/public/issues/177_11_021202/dec10354_fm.html (10 Dec 2010). Unfortunately, Watson's advice seems to have been largely ignored by obstetric practitioners of the time, as it can be concluded by the complete lack of the contagion theory from the contemporary obstetric texts. Dr Oliver Wendell Holmes, pathologist, physician and president of the Boston Society for Medical Improvement developed an interest in the condition after two related cases were presented to his society, namely, a physician and a medical student both died of septicaemia after performing an autopsy on a woman who died of puerperal fever. Holmes read the existing literature, and became convinced that the condition was highly contagious, and that doctors, nurses and midwives were the active agents of its spread. In 1843 he published his classic essay *The Contagiousness of Puerperal Fever* (unlike Semmelweis, Holmes was not mocked, but only ignored). Keeping this in mind, some of the attacks on Semmelweis warnings were focused on the fact that he said nothing new, as others had published on the subject. But, Semmelweis was warning against all decaying organic matter, not just against a specific contagion that originated from victims of childbed fever themselves. This misunderstanding, along with all the others happened also because Semmelweis's work was first known only through second-hand reports written by his colleagues and students, and his book *Etiology, Concept and Prophylaxis of Childbed Fever* came out not before 1861.

¹⁸ In this sense, Semmelweis was criticised for his lack of scientific effort. Alexander Fränkel has critically stated that the discoverer of the causes of puerperal fever should have defended his discovery with facts rather than with fanaticism – Helmut, Wyklicky, Skopec, Manfred, "Ignaz Philipp Semmelweis, the prophet of bacteriology", *Infection Control*, 1983; 4(5), pp. 367-370, <http://www.jstor.org/pss/30142576> (Dec 10 2010). However, "Even though Semmelweis was continually abhorred by the evident statistics and would have been able to prove his discovery through animal experiments, he primarily took to the pen to defend his opinion vehemently. Only the clinical facts proved him right during his lifetime; the triumph of bacteriology which began after his death made him not only the 'saviour of mothers' but also a genial ancestor of bacteriology" – Ibid

¹⁹ The miasmatic theory of disease held that diseases such as cholera, chlamydia or the black plague were caused by a *miasma* ("pollution"), a noxious form of "bad air" – "mala aria". Miasma was considered to be a poisonous vapour or mist filled with particles from decomposed matter (miasmata) that caused illnesses and was identifiable by its foul smell. The noxious effects of the miasma nebulas from swamplands were first described by Vitruvius in the first century. The theory remained popular in the middle ages, and was later used to explain outbreaks of cholera in Europe in the mid nineteenth century. The wide acceptance of miasma theory during the cholera outbreaks overshadowed the partially correct theory of cholera being spread through water brought forth by John Snow, which slowed the application of security measures.

²⁰ As homage to Semmelweis who lost his mental sanity trying to convince the medical community about the dangers of the source of puerperal fever, and died relatively young of septicaemia (the thing he was trying to fight) at an asylum, there is the so-called Semmelweis reflex – a metaphor for a certain type of human behaviour characterized by reflex-like rejection of new knowledge because it contradicts entrenched norms, beliefs or

Precisely right there, between the rejection of a plausible problem-solution and the governmentally instated and legally prescribed universal application of that solution, lays the significance of the intervention of public health.

3. Public health focus and agenda

The question about the way politics can contribute to the improvement of public health is gaining in importance in the intensification of structural and socioeconomic disparities and the question about the manner in which science (the bio-sciences, preventive and curative medicine, the development of technology) reinforces both the stability of a developing public health and its potential endangerment, especially in the era of multiplying bio-hazards and high population-density. The health preservation and the state have a long union of reason.

How do the political structure and attitudes relate to the development of the health civilization, or better, to which extent do custom law, later political policies and finally governmental regulation affect the idea and execution of public health policies?

The *Old Testament* health prescriptions are very close to the main points of modern public health, and they include disease control, bodily cleanliness, control of life-style and anticipation of hazards (the ways of purification are, of course, limited to sacrificial actions and purifying rituals, scarcely ever consistent medical treatment, but there are apparent rules of quarantine and expiration of peril, evidence of knowledge about incubation and contagiousness, and of the need for clean water and food)²¹.

The ideas about health in the ancient world were mainly about bodily and environmental cleanliness having the capacity to help preserve purity and soundness not only on a material level, but also on a spiritual one, helping protect against the dangers of spiritual defilement. There was an idea of building healthy settlements, which can be considered as an early form of sanitary engineering²².

paradigms, of something different even if it's obvious, without giving it serious thought, inspection, or experiment, only because it is radically out of sync with the status quo.

²¹ Just a few examples are sufficient to grasp these early attempts at what was later considered to belong to public health. The Sabbath, time for worship, was also a special time for physical, mental and emotional renewal, the result of which was good health for the members of the community. It could be considered that "the biblical concept of the sabbath has not merely positive and recuperative values for the individual but also serves to guard against disease" (Harrison, *International Standard Bible Encyclopedia*, 2: 642, in Gerhard F. Hasel, "Health and Healing in the Old Testament", *Andrews University Seminary Studies*, Autumn 1983, Vol. 21, No. 3, pp. 193-194). This law extends the idea of sabbath rest to the land, by legislating the land to remain fallow every seventh year (Lev 25:1-7), which is important in terms of environmental preservation.

The promotion and maintenance of good health is in the foreground of the dietary regulations provided in Scripture – the distinction between "clean" and "unclean" animals from the *Leviticus* seems (although it is difficult to claim with certainty) to rest in health considerations. Waters and foods are protected by pollution caused by the carcasses of the unclean animals. These measures serve to reduce the incidence of diseases. As stated by R. K. Harrison, the divine instruction communicated through Moses for the covenant community "was the first of its kind to recognize that infection could be transmitted by both food and water" (op. cit. p.196).

²² In O. Temkin, Temkin C. L., (eds), "The Hippocratic Physician", *Ancient Medicine*, Johns Hopkins University Press, Baltimore, 1967 pp. 87–110, also in Geneve Miller, "'Airs, Waters and Places' in History", *Journal of the History of Medicine and Allied Sciences*, 1962, 17, pp. 129–140. An excellent overview of the development of state-provided health measures is Dorothy Parker, *Health, Civilization and the State – A history of public health from ancient to modern times*, Routledge, London-New York, 1999.

Christianity can be thought of having the first fully publicly directed health preservation measures (as the ancient preservation of individual health belonged to the educated and leisured, and the cult for the pure was enhancing the social status of the governing elite). Health preservation became non-elitist and directed almost as much to everyone and at all times as the contemporary public health project.

In the temporal range between the ancient and the early medieval period, the collective concerns about the preservation of public health shifted and expanded from creating a healthy environment for patrician comfort to care for the poor and underprivileged²³.

As, starting from the eleventh century, European cities started to rapidly grow, to intensify trading and to expand the range of economic and social relations, preservation of health could no longer be but an ideological or cultural agenda, and the concerns about health preservation focused on the dangers of disease spreading in the dense populations, thus becoming an important issue in the advance of urbanization. In the rise of more complex socio-economic relations, hospital care became a prerequisite for the functioning of the developing health care and with the sanction of the Pope, hospitals begun to be founded by the political rulers and philanthropists.

The way the European colonisation devastated the Amerindian populations serves as an excellent example of reckless health endangerment, something that public health keeps constantly in consideration, but has yet to surpass as a threat²⁴. Namely, the vulnerability of the population which had never experienced infections like smallpox, measles, mumps, chickenpox and scarlet fever meant that these diseases would have a massive impact. The pandemics decimated the Caribbean Indians and had a catastrophic impact in the urbanized societies in Mexico and Peru. The disconcerting aspect of this is the impression that this utter lack of public health concerns actually facilitated the Spanish conquest of the Inca and Aztec empires. The infections did not wipe out the population of the northern American nomadic societies as swiftly, but their progress, if not as rapid, was as destructive²⁵. Back in Europe, this “illness trade” meant that infrastructure planning became less

²³ Dorothy Parker, *Health, Civilization and the State – A history of public health from ancient to modern times*, Routledge, London-New York, 1999, p.11

²⁴ And this is not meant in the sense of the devastation of “new” populations, but in the sense of the remaining dangers of some local reckless behaviour having all the possibilities to produce devastating repercussions in the world’s health preservation. Not that the threat of infecting people with diseases they haven’t been in contact with is fully elevated, though. Some newly discovered tribes remain oblivious to the modern way of life and are utterly fragile to its dangers.

Some of the world’s last uncontacted tribes live in total isolation in the dense Amazon rainforest along the Brazilian-Peruvian border. The last scandal concerning the tribes’ preservation is the danger coming from the Peruvian illegal loggers and the fact that the Peruvian President Alan García, who took charge of Peru in July 2006, has even gone on record to say that these tribes do not exist, which leaves the Brazilian authorities and NGOs operating in the area in a very frustrating position about how to protect the groups from the land grabs which could lead to potential extinction – Oliver Pickup, “The Lost Tribe Staring Extinction in the Face – Extraordinary New Pictures of Life in the Depths of the Amazon Jungle”, *Daily Mail*, 1 Feb 2011, <http://www.dailymail.co.uk/news/article-1352174/Amazon-tribe-face-extinction-Pictures-life-depths-jungle.html#ixzz1FFIK1zX2> (1 Feb 2011).

The fact remains that not only the enormous threat to their environment and way of life (an utter atrocity in itself) is worrisome, as contact with other human beings would mean great danger for their health and a re-run of this scenario of the colonisation of sixteenth century and onwards.

²⁵ Possibly 90 per cent of the original pre-Columbian Amerindian population, estimated between 50 and 100 million, was wiped out by the diseases transmitted by Europeans and the slaves they transported from Africa

important and piers and ships sanitary control and an inauguration of triage became a priority.

The geographical exploration and imperial expansion, the trading intensification and the urban development changed the previously established European patterns of population and disease control during the age of Enlightenment. This became a period with an obvious new interest in the social scientific analysis of the health of populations, thus inaugurating the contemporary science-politics-public health relation. The statistical study of human aggregates and their consequences for the physical and moral environment was developed out of the analysis of political arithmetic and “the reform impulse of early ‘social physics’ carried over into the first attempts to make medicine a social science of health and welfare in the mid-nineteenth century”²⁶. It was the medical metaphor comparing the society to living organisms that helped rise nineteenth-century sociology. The twentieth century interest in maintaining the focus on questions about the social solidarity in societies torn by systems of socio-economic stratification meant more interest in the health of populations. That way disease control became a part of the intervention of the governmentally instated political or state medicine. Public safety and occupational hazards safety also became a matter of importance. The methods employed by the ‘new public health’ were compulsory notification of infectious diseases, isolation of sufferers and their families, tracing contacts, laboratory diagnostic testing of ‘carriers’, voluntary immunization, information about workplace safety and environmental impact etc. It is clear how politics intertwines with science in a prescriptive, normative and performative way.

But starting from basic environmental safety (including workplace safety and motor-vehicle and traffic safety), to disease control, family-planning and the need for upholding human rights as a basic minimum, the major problems on the levels of structural and socioeconomic disparities, and the lack of agreement on basic minimums and important definitions, such as “well-being”, “dignity” or “reasonable-cost-effective care” come to light²⁷. When it comes to upholding a functioning egalitarian social policy the

(excellently detailed in P.M. Ashburn, *The Ranks of Death: A Medical History of the Conquest of America*, Coward-McCann, New York, 1947).

The further complication occurred when Europeans replaced the labour of the rapidly dying Amerindian population with slaves they ‘imported’ from Africa, setting in motion a three-way disease exchange. The Africans were partially immune to falciparum malaria they actually imported with the mosquitoes from the ships, but the Europeans and Amerindians were not. Similar goes for the vivax malaria, indigenous among the European populations, but unknown thus far by the Africans and Amerindians – D. Parker, op. cit., p. 46, and, in great extension, in John Duffy, *The Sanitarians. A History of American Public Health*, University of Illinois Press, Chicago, 1990. In this period, conquest meant disease and disease meant conquest. D. Parker has rightfully entitled this chapter of the quoted book “Imperialism and Biology: Disease and Conquest in The Early Modern Period”.

²⁶ D. Parker, op.cit. p. 63

²⁷ The WHO states, in the exposition of its agenda, that it operates in an increasingly complex and rapidly changing landscape and acknowledges that the boundaries of public health action have become blurred, extending into other sectors that influence health opportunities and outcomes, planning to respond to these challenges using a six-point agenda (The WHO agenda, <http://www.who.int/about/agenda/en/index.html>, 10 Dec 2010). These points (in a very restricted exposition) are: 1) *Promoting development*, which would be directed by the ethical principle of equity (access to life-saving or health-promoting interventions should not be denied for unfair reasons, like economic or social), attaining the Millennium Development Goals (more about the *Millennium Declaration* in footnote 11); 2) *Fostering health security* from outbreaks of emerging, potentially (newly) emerging and epidemic-prone diseases; 3) *Strengthening health systems*, which is a high priority, since health services must reach poor and underserved population which they still fail to do); 4) *Harnessing research, information and evidence*, as these provide a theoretical basis for setting priorities, defining strategies and measuring results; 5) *Enhancing*

prevention of disadvantages is of utmost concern. Nowhere is this preference for prevention more vividly illustrated than in the sphere of health, where prevention is pursued primarily through public health policy. And nowhere is this difficulty in levelling statuses and opportunities for life-preservation and life-standard-improvement better pronounced than in the ongoing problems of inequality and the urgent worst case bioethics issues. Having acknowledged the need for orientative value, represented by bioethics, and in an increasing need for bioethical guidance, along with the scientific research, information and evidence, public health will probably become as concerned with the anticipation of ethical issues as with the scientific and political ones. The 21st century perspectives for public health are brighter than they ever were, which does not mean its tasks become less complicated, on the contrary. Its issues do not significantly shift, despite the somewhat easier fields for intervention, like, for example, the existence of evidence based medicine or educational campaigns about hazards and prevention. Its range is greater than ever, and so are its responsibilities.

Conclusion

The mission of public health, its agenda and interventions, its perturbed past and difficult present undoubtedly lead to a rickety future where the socio-economic disparities will only come more steadily into focus and where new dangers, coming from the development of science, from the growth of population density and from the environmental hazards will start posing as new serious issues. But, albeit shaky, public health's future is endowed with great hope – as it is a wide-ranging project encompassing knowledge, expertise and passion from many different sciences, professions, profiles and populations, and has people's health and the ensuring of well-being as goals, it contributes to the general idea for potential augmentation of the possibility for general well-being, which is truly applaudable.

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partnership, as public health truly is a joint effort and the needs for the implementation of programmes within countries to align their activities with best technical guidelines and practices become more pronounced; and 6) *Improving performance*, as public health can only continue to function if it keeps up, so the WHO participates in ongoing reforms aimed at improving efficiency and effectiveness.

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