‘Community Immunology’

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Introduction

In this paper we will do the following:

1. Describe the evolution of the concept of ‘health promotion’
2. Review research challenges formulated by international panels for state-of-the-art health promotion
3. Introduce the concept of ‘community immunology’ as a unifying framework for cutting-edge fundamental and applied social and behavioural scientific inquiry
4. Present the municipality of Horsens, and specifically the Sønderbro neighbourhood, as a readily available ‘action laboratory’ for our planned endeavours
5. Propose an international network modality to connect similar action laboratories in community immunology around the world
6. Describe a line-up of partners committed to this proposal.

Promoting health - from hygienism and victim-blaming to social policy and empowerment

Modern public health, as it was conceived in Western societies in the 19th century, has evolved through a series of stages (Porter, 1999, Hall, 1998, De Leeuw, 2002, but see also Cohen, 1989 for a more profound argument). *Hygienism* was the movement led by engineers, lawyers and politically active medical doctors (Chadwick, Panum, etc.) in the first half of the 19th century pursuing infrastructural as well as legislative measures to secure safe sanitary conditions. The *pathogenic control* paradigm emerged with the discovery of (viral, bacterial) organisms that caused disease (Koch, Pasteur, Semmelweis) and sought public health measures in terms of the prevention of exposure to the pathogens (cleanliness, etc.). The *therapeutic* era pervaded the public health realm with the discovery and development of vaccines and anti-bacterial measures (sulphates, penicillin). Public health evolved into a field of action aimed at population-based therapeutic prevention (immunization

campaigns with as a highpoint the eradication of smallpoxs) in the post-World War II years. With the Framingham studies and similar large cohort investigations, starting in the 1950s, it appeared that behaviour and compound lifestyles have a lot to do with 'diseases of affluence' and their prevention.

From this behavioural health perspective the current emphasis on health promotion emerged. According to the Ottawa Charter for Health Promotion (1986), it is 'the process to enable individuals, groups and communities to increase control over the determinants of health and thereby improve their health'. The notion that people should be able to control the determinants of health leads to a re-conceptualisation of health promotion in terms of empowerment and community action for health.

Social policy is a tool for facilitating and enabling communities and empowerment processes at different levels: in individual, organizational and community level. The philosophy and process of community action emphasizes participation of people in their own development, recognizes and uses people's assets, encourages the participation of people in the generation of information about community needs and assets, empowers people to make choices, and involves people in the political processes that affect their lives. It is also seen as a process that links the health enhancing aspects of social networks and social support with community action on the determinants of health.

Empowerment is a comprehensive construct, which assumes a proactive approach to life, a psychological sense of efficacy and control, self and political efficacy, perceived competence, locus of control and self-esteem as well as socio-political activity, and organizational involvement. The core notion of the empowerment is the concept of power. It is understood that empowerment is the process by which individuals and communities are enabled to take power and act effectively in changing their lives and their environment (Minkler, 1992, Robertson and Minkler (1994). Community empowerment, according to Wallerstein (1992) is a social-action process that promotes participation of people, organizations, and communities towards the goals of increased individual and community control, political efficacy, improved quality of community life, and social justice.

A key concept in scientific endeavours in health promotion, empowerment and community action is that of 'determinants of health'. Traditional epidemiological and behaviourist research has framed such determinants in terms of risk – both as lifestyle-related risk as well as physical environmental risk. Recently, social epidemiology has taken a next analytical step that led to explorations into the social environment as a major contributor to ill health. In this step, *social determinants* of health are identified.

Social determinants are social factors that are related to the health status in populations. Among others, social networks and social support, socio-economic inequalities, and social capital are seen today as some of the key social determinants influencing the health status of population groups (WHO

Commission on Social Determinants of Health, 2008).
In a classic study by Berkman & Breslow (1983) it was found that those with more social connections had lower mortality rates. Another classic study (Cohen et al., 1997) demonstrated that there was a direct dose-response pattern between the diversity of social ties of a person and their susceptibility to viral infection, even extending to the severity of symptoms once infected. Social networks also provide social support. Social support is in most instances positively correlated with positive health status (Berkman & Glass, 2001) and is, in essence, the "content" which social networks provide. These studies have led to the emergence of the new field of 'social neuroscience' (e.g. Cacciopo et al., 2002)
For several decades it has become well documented that socio-economic inequalities in a population also influence health status. Regardless of what indicator of socio-economic status is used (education, income, occupation) differences in these are also correlated with health. For example, Marmot has demonstrated repeatedly in his research on British civil servants that those with lower occupational status have higher rates of various diseases and poorer health behaviours (smoking, drinking) than those of higher occupational status (Marmot et al, 1991, Marmot 1997).
Another element of the social environment that has received considerable attention in the last few years is the concept of "social capital". Several definitions of social capital exist, but in general it is often seen as "a contextual characteristic describing patterns of civic engagement, trust and mutual obligation among persons" (Weitzman & Kawachi, 2000; p. 1936) and is often measured by indicators such as density of membership in voluntary associations, the extent of interpersonal trust between citizens, and perceptions of the availability of mutual aid (Lochner et al, 1999; p. 260). Studies examining aggregate level social capital found it to vary with all-cause mortality (e.g., Kawachi et al, 1997), violent crime (Kennedy et al, 1998) and self-rated health (e.g., Kawachi et al, 1998) with higher levels of social capital being associated with lower mortality, lower crime rates, and higher self-rated health.
Such perspectives have led to at least two important challenges for health promotion: positive health/health resilience, and the question whether comprehensive multi-level social interventions yield more health than lifestyle and risk-oriented activities.
Especially the salutogenic concept (Antonovsky, 1987) provides an approach with a resource-oriented focus to enrich theory development in health promotion. This fundamental new orientation contributes to the development of social systems like communities. It takes in account the salutogenic social determinants influencing the health of the community as a system. This holistic view underlines the importance of the social resources in empowering and health promoting communities. This view has to be applied to communities as only the recognition of all influencing social determinants will provide the opportunity to study and promote community health.

A review of health promotion effectiveness; towards community immunology

Three major studies have been commissioned in recent years to produce inventories of effectiveness of health promotion. The most fundamental approach was taken by the USA *Institute of Medicine* (IOM). IOM charged two of the founding fathers of the new domain of social epidemiology, Smedley & Syme (2000), to make an inventory of the potential contributions of the social and behavioural sciences to health promotion. Their review demonstrated that enormous gains can be achieved through the application of social and behavioural sciences to public health, but that only a fraction of such research is currently undertaken.

Second, a consortium of researchers led by WHO (Rootman et al, 2001) undertook a meta-study into the methodological challenges to health promotion evaluation. Their generic findings were that methodologically more rigorous studies should be undertaken in the health promotion domain.

Finally, the European Union charged the International Union for Health Promotion and Education (IUHPE, 2000a & 2000b, McQueen & Jones, 2007) to collect and analyse the available evidence on health promotion effectiveness.

Not surprisingly, the studies reach unequivocal conclusions. Health promotion is only effective if it takes multi-level perspectives (individual, group, community, society, policy), if it is closely connected to community realities (perceptions of determinants of health, interdependence and mutual trust, respect), if it is based on appropriate (social) epidemiological insights in determinants of health, and if it is theory-based (for instance, by applying 'intervention mapping' cf. Bartholomew et al., 2001).

The current scientific endeavours to study such health promotion actions are yet too compartmentalised to produce comprehensive studies that can indicate how such all-inclusive interventions would have to be developed. We propose the concept of 'community immunology' to unify such research.

Community immunology

Similar to classical immunology (the study of the organs, cells, and chemical components of the immune system; the biological immune system creates both innate and adaptive immune responses) we can now define 'community immunology' as

> *the science and art to study, modify and sustain where required factors in communities and other social environments that are pathogenic and/or salutogenic.*

Community immunology is thus particularly interested in the study of social determinants of health, and in developing methods and strategies to modify such determinants for the benefit of the social health of populations, groups and individuals.

Further research in community immunology is urgent. Following the research challenges presented above (particularly the IOM report) it is obvious that there are some fundamental issues that have to be resolved through a concerted and long-term effort.
Specifically, these issues should be studied:

- what degree of control over (social) determinants of health do communities perceive to have (building on research by Commers, 2001, and others)
- which (social) determinants of health are perceived to be beyond the control of communities and should thus be addressed otherwise?
- is 'social capital' a concept that is susceptible to modification through empowerment strategies and community action?
- How does our understanding of social capital relate to recent findings in the field of social neuroscience?
- which characteristics of empowerment and community health interventions limit or enhance the potential of such interventions to be routinised (cf. Rogers) in organisational development and social policy making?
- which are the pathways between powerlessness, lack of social capital factors, material deprivation, inequities and poor health outcomes?
- which strategies of community interventions are the most effective for increasing community participation, control over conditions of life, and critical awareness and at the same time, build social protective relations within a range of cultural contexts and political environments in order to change conditions of power and enhance community health?
- Can economic assessment tools (such as cost-effectiveness, cost-benefit, or cost-utility analysis) or health technology assessment (HTA) approaches successfully be applied to the domain of social immunology?

A methodological riddle:
to investigate what is not there…

Health promotion, empowerment and community immunology present us with a fascinating problem: we want to study something that, if everything goes as predicted, is *not* there:

- If community immunological interventions work, there would be an absence of lung cancer and cardiovascular disease.
- The attribution of something absent to a complex construct (such as 'empowerment', 'social capital', or 'salutogenesis') is a methodological challenge, to say the least.
- Fortunately, there are chains of (complex and often iterative) pathways of proximal and distal determinants of health between intervention and effect that can be studied by proxy (e.g. Krieger, 2008)
- Guba & Lincoln (1981) propose, in their 'Fourth Generation Evalution' paradigm a methodology that is able to be responsive to such proxies in community realities; this approach is consistent with more recent developments in realist evaluation (e.g. Pawson, 2006).

Research strategy

The new area of community immunology does not easily lend itself to the

formulation of clear research hypotheses, as it is a completely new area of scientific inquiry. However, the exploration of the concepts of empowerment and social capital as notions susceptible to (health) interventions necessitates a fundamentally new interdisciplinary research strategy. This strategy will have to include a time perspective that transcends the traditional three-year PhD projects, and will have to combine insights from social, psychological, economic, political and epidemiological research not yet found either in Denmark or elsewhere in the world. It will have to comprise of a further basic and fundamental operationalisation of the core concepts outlined above. Such operationalisation, employing a '*Fourth Generation Evaluation*' paradigm (Guba & Lincoln, 1981) would *have* to involve communities expressing their social and health needs, a delineation of private, public and volunteer responsibilities, and interactive policy-making. Elsewhere, we have argued for a set of new disciplines required for such research: determinomics, interventionology, and implementology (De Leeuw, 2003).

An international academic incubator

Internationally, there are few institutions that may address community immunology in its comprehensiveness. The (epidemiological) *analysis* of social determinants of health is being undertaken by groups such as those mentioned above (US Institute of Medicine, WHO European Region, International Union for Health Promotion & Education and World Health Organisation) but fundamental questions as to *intervention* development and analysis are rare.
It is therefore our ambition to recombine the existing expertise in Deakin University and the University of Southern Denmark (both in the Faculties of Social as well as Health Sciences), using unique opportunities presented by Sønderbro, as an incubator for the establishment of a cutting-edge Glocal Centre for Community Immunology which by its very nature will become a 'glocal' (global-local) institution: investigating social immunological interventions at the ground or 'settings' (neighbourhood, school, workplace, community) level but disseminating, comparing and testing them at the global level.

Sønderbro (Horsens): an action laboratory for social immunology

An ideal environment for the fundamental inquiry into community immunology has presented itself in the shape of Sønderbro neighbourhood (in the municipality of Horsens). The area – consisting of some 9000 inhabitants from 28 nations of which 78% has no formal employment – is situated in a poor part of the city of Horsens. It appears a deprived neighbourhood. However, due to the engagement of the City in the WHO Healthy Cities Project and a strong commitment in the area to social development, the explosive mixture of poor Danes and diverse ethnic groups has been successfully addressed.
Horsens has identified itself as a city with an adverse social heritage. Sønder-

bro seems doubly affected; and within Sønderbro it is the area of Axelborg that seems most deprived, and yet most successfully dealing with health and social development, in short: Community immunology. Unfortunately, the parameters and valid indicators for this success have never been investigated in any serious manner. Inhabitants and local professionals alike are now strongly committed to such research. A Ph.d.-study on the networks and isolation among the residents at Sønderbro is being carried out in the years 2007-2010.
Locally, four 'ministries' have emerged from the powerful 'Sønderbrogruppen' – a network of 50 key persons from public, private and voluntary sectors (www.soenderbro-horsens.dk/soenderbrogruppen.html) 'Sønderbro Kultur', 'Sønderbro Information', 'Sønderbro Aktivitet', and 'Sønderbro Erhverv og Uddannelse'. A large number of local industries and institutions are investing substantially in the vision of changing Sønderbro to the very *best* part of the city.

Our partners

- Søndermarkskolen
- Deakin University
- SDU (University)
- RUC (University)
- Vitus Bering VIA University College – Gedved Seminarium
- Center for Globalisering og Regionalisering – VIA University College
- Hede Nielsen Co.
- The municipality of Horsens
- An assortment of local community groups

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