

Advancing a theoretical model for public health and health promotion indicator development

Proposal from the EUHPID consortium

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This paper discusses the work of the EUHPID Project to develop a European Health Promotion Monitoring System based on a common set of health promotion indicators. The Project has established three working groups to progress this task – health promotion policy and practice-driven, data-driven and theory-driven. The work of the latter group is reviewed in particular. EUHPID has taken a systems theory approach in order to develop a model as a common frame of reference and a rational basis for the selection, organization and interpretation of health promotion indicators. After reviewing the strengths and weaknesses of those health promotion models currently proposed for indicator development, the paper proposes a general systems model of health development, and specific analytical, socio-ecological models related to public health and health promotion. These are described and discussed in detail. Taking the Ottawa Charter as the preferred framework for health promotion, the socio-ecological model for health promotion adopts its five action areas to form five types of systems. The structure and processes for each of these five systems are proposed to form the basis of a classification system for health promotion indicators. The paper goes on to illustrate such a system with reference to indicators in the workplace setting. The EUHPID Consortium suggest that their socio-ecological model could become a common reference point for the public health field generally, and offer an invitation to interested readers to contribute to this development.

Keywords: Europe, health promotion, indicators, public health, systems theory

The European Health Promotion Indicator Development (EUHPID) Project has the overall aim of contributing to the maintenance and improvement of the health of European citizens, through the development of a common data set of European health promotion indicators, to ensure more effective and efficient health promotion interventions. The Project is coordinated by a Consortium (see Note) of experts from all EU countries, Norway and Switzerland; and managed by a small part-time Secretariat at the University of Brighton, UK. Priority has been given to a detailed international review of health promotion indicator development and the development of a theoretical model as a rationale for the construction, selection and classification of European health promotion indicators.¹

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In indicator development, three general approaches can be distinguished.² In data-driven indicator development the selection of indicators is primarily determined by the availability of data on the desired measurement level (e.g. national data). The policy-driven approach develops indicators for those phenomena that are currently on the political agenda and for which data are requested by policy makers. The theory-driven approach starts from a clear definition of the phenomenon of interest and develops a more detailed theory of it. In practice all three approaches have to be combined in order to arrive at measurable, meaningful indicators that are considered in the policy making process. However, the definition of a clear underlying theory is a key factor in indicator development. It should provide a common frame of reference and a basis for agreeing which indicators to develop, particularly in the context of European-wide efforts, such as the European Community Health Indicator Project³ and the EUHPID Project. More specifically, a model contributes a clear definition of the phenomenon of interest; rational for selecting and organizing appropriate indicators of the phenomenon of interest; and basis for interpretation of single indicators and relations between indicators.

The EUHPID Project defines an indicator as a construct to be expressed in quantitative or qualitative terms, re-

flecting an important unique aspect of an underlying phenomenon. An indicator system is defined as a limited set of quantitative or qualitative measures, which reflect the current status of and changes in a complex system. This paper will introduce and discuss the work in progress to produce a theoretical model for the EUHPID System and set this in the broader context of the EU health information and knowledge framework.

EUROPEAN COMMUNITY HEALTH INDICATOR FRAMEWORK

The EC intends that the various projects funded under the health information and knowledge area, and the indicators that they recommend, should be brought together to form a single comprehensive system for use at Community and member state level (including applicant countries to the EU). Therefore it has established the European Community Indicator (ECHI) framework in an attempt to provide such a common system. The framework offered by the ECHI Project³ sought to define the areas of data and indicators to be included in the system, following a set of explicit criteria, define generic indicators in these areas and subsets of indicators. The ECHI I report defined health as 'a broad issue' and wanted the health indicator set to 'constitute a balanced collection, covering all the major areas within the field of public health'. It divided the main categories of the ECHI indicator set as follows:

- Demographic and socio-economic factors
 - Population,
 - Socio-economic factors.
- Health status
 - Mortality,
 - Morbidity disease-specific,
 - Generic health status,
 - Composite health status measures.
- Determinants of health
 - Personal and biological factors,
 - Health behaviours,
 - Living and working conditions.
- Health services and health promotion
 - Prevention, health protection, health promotion,
 - Health care resources,
 - Health care utilisation,
 - Expenditure and financing,
 - Health care quality.

According to the final report on the ECHI I Project, the designers of the ECHI indicator set based these main categories on considerations of conceptual (logical) coherence; an optimal consensus among the classifications used by other international organizations; and new developments in public health monitoring.

The challenge therefore faced by the EUHPID Consortium was initially to attempt to establish health promotion indicators within the context proposed by the ECHI framework. The conclusions of a comprehensive review of health promotion indicators¹ highlighted the need for development of a comprehensive working model within the context of a wide perspective of (new) public health.

HEALTH PROMOTION

The paradigm underpinning the ECHI framework is the traditional bio-medical/epidemiological/ individual risk factor approach, which has a very narrow conception of health promotion. It perceives health promotion as one topic that is part of the health care system and therefore set narrowly within the health services sector as a tool of preventive medicine. The rationale for this construction may relate to uncertainty of the framework designers as to the scope and purpose of health promotion. It does not reflect internationally accepted best practice in health promotion⁴ nor that health promotion provides a distinctive perspective on health and a distinctive approach to improving health.^{5–10}

On detailed reflection, the EUHPID Consortium considered that there were three major challenges in trying to use the ECHI framework to develop health promotion indicators – it does not communicate a clear underlying theoretical model for its indicator selection; it focuses mainly on the medical/physical domain; and it has a narrow conception of health promotion, seeing it firmly as part of the health care system.

The EUHPID Consortium therefore decided to concentrate their efforts initially on developing a convincing model which emphasizes social/mental system structure, social-cultural environmental structure and social/cultural processes – these are the blank boxes or white space in the ECHI framework. It is felt by the EUHPID Consortium that for ideological, epistemological and political reasons their work should complement the ECHI system and set it within a more holistic health development framework. This would demonstrate how a more holistic health promotion perspective can relate to other public health approaches. It could offer a common frame of reference and a rational basis for the selection, organization and interpretation of indicators. For example, groups of potential indicators could be:

- Healthy public policy and health promotion programmes,
- Societal and community health resources,
- Group and personal health resources,
- Health-related social processes,
- Dimensions of health.

This process would also enable an ongoing dialogue with policy-makers, which is recommended from previous indicator work. The key in this regard is to define stakeholders and potential users and the purpose of EUHPID – policy development, monitoring and evaluation of interventions, defining resources allocation, and public education, for example.

METHOD

The EUHPID Consortium established a series of sub-groups to progress its work. Initially, the 'model development group' reviewed and assessed the strengths and weaknesses of health promotion models currently proposed for indicator development. Four general models were compared to identify principles and features relevant to the construction or selection of health promotion

indicators and to the development of a health promotion indicator system: a health promotion outcome model,¹¹ a generic logic model for planning and evaluating health promotion,⁹ a framework for mapping health promotion action¹² and a health development model for health promotion.¹³ From this review the following conclusions were drawn regarding properties of a future model – be simple and easy to understand and communicate, to aid effective practice; consist of a limited number of distinct elements to avoid misclassifications and redundancies; use clearly defined concepts and terminology familiar to the fields of public health and health promotion; consider health promotion values and principles; consider pathogenic and salutogenic perspectives; consider interaction between individual, social groups, or other social units, and environment; distinguish between ongoing health development and intentional interventions into this developmental process; consider time as a critical dimension both of health as a dynamic phenomenon and of health development as an ongoing process of human life; and understand health promotion as a complex planned, intentional input into the ongoing process of health development.

On this basis, the group developed an agreement on which models are needed for EUHPID within the ECHI context. These models were then refined using feedback from the full EUHPID Consortium. Because health promotion is seen as an intentional and planned activity aiming at sustainable change in the health development process of social groups and individuals, two models are needed, based on a wide perspective of health promotion and public health. First, an analytical socio-ecological model of health development describing and explaining salutogenesis/pathogenesis as ongoing socio-psycho-biological processes. These processes represent unique phenomena of human life and are independent of any intervention or other intentional health-related activity. Secondly a normative socio-ecological model of health promotion describing and prescribing health management or health intervention as an intentional planned input into the salutogenic/pathogenic systems or pathways of collective or personal life. This model incorporates the principles and strategies of the Ottawa Charter⁴ as well as the conceptual framework of the quality theory of health interventions developed by Donabedian¹⁴ and others.

Although the models discussed below are not final products, the EUHPID Consortium decided to present them in their current developmental stage to facilitate input by a broader audience of potential users.

SOCIO-ECOLOGICAL MODEL OF HEALTH DEVELOPMENT

A general systems model of ongoing health development is suggested as a common frame of reference. This systems perspective was chosen because this paradigm seems particularly suitable to account for the complexity of health development and to accommodate the specific ways in which public health disciplines tackle the problems of health and health management.

Health possesses a double-sided quality – positive health and disease, which for humans, following the WHO definition¹⁵ and the Ottawa Charter,⁴ has multi-dimensional meaning and therefore can be observed at least in a physical, a mental and a social dimension. Health relates to the functioning and self-experience of living systems (e.g. human beings or human populations), or in a metaphorical sense to social systems (e.g. families, communities, organizations and societies), based on humans, as well. Health is (re-)produced or developed continuously in time by the process of living. From living results positive health (by salutogenesis), but also illness and disease (by pathogenesis). Living has to be enacted by the system in question within and in interaction with its relevant environment. Therefore health as an unintended or intended outcome of living depends on, or is determined by, qualities of the system and qualities of its environment i.e. dimensions of health promoting potential. In human societies the health care system is an important determinant within the environment of populations as far as the fighting of impairment and disease and its consequences is concerned. But for the genesis of positive health and of impairment and disease many other natural and socio-cultural processes are of greater relevance. These processes can also be made the focus of socially organized political and professional interventions aimed at improving health. That is what health promotion and public health are all about. For specifying indicators of health, health promotion and public health in a theory-driven way, we need a model that allows us to specify at least the above-mentioned features of the phenomenon. Such a model of this ongoing health development process is suggested as a common frame of reference for various public health disciplines. In relation to this model, each discipline can show which elements of the health development process are primary targets of its interventions, thus constituting primary outcome areas for the respective discipline. The term ‘socio-ecological’ model was chosen to emphasize the importance of social and ecological dimensions for health development that often are under-represented in more medically oriented models of public health.

The model has two dimensions or elements (*figure 1*). On the vertical axis, the model discriminates the system whose health is in focus and its socio-ecological environment, which includes other systems, influencing the system in focus. This distinction reflects the importance of the interaction between individuals and their environment in the development of health and constitutes one of the core perspectives in the field of public health. Depending on the particular use of the model, the focal system may be a whole society, a regional or local community, an organized social unit, a group of people or an individual person. The resulting four elements of the model continuously influence each other, resulting in an ongoing process of health development. Depending on the respective constellation of the four elements and their interaction, health development may take a more salutogenic or pathogenic direction.

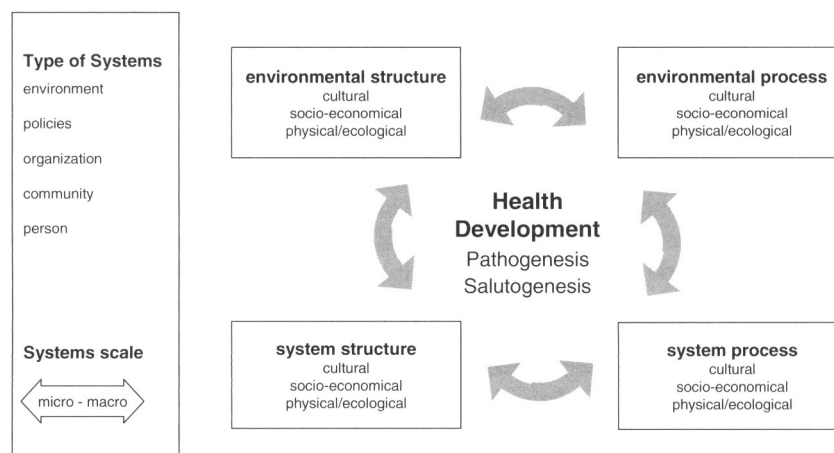


Figure 1 Socio-ecological model of health development

On the horizontal axis, the model distinguishes two different modes or states, the structure and the process of the system and of the environment. By structure, we understand characteristics attributable to an object or a situation that limit or frame processes and events and are fairly stable over time. They are thus usually not easily modifiable by the system alone, but principally can be changed or altered by (other) events and processes in time. Process refers to sequences of events that may demonstrate observable change over time. Structure and process are two different aspects of the same reality, the focal system. From the perspective of intervening, the possibilities, challenges and costs to influence or change structures or processes differ considerably. By using this distinction, we also relate to models prominent in quality theory and practice. These models perceive quality of output or outcome as determined by quality of process, which in turn are determined by quality of structure.¹⁴ We have in our model only specified boxes for systems and relevant environments, structures and processes, which continuously interact with and influence each other and by that produce the valued outcome – health, in a more salutogenic or pathogenic direction. But, contrary to this outcome, health can in principle be influenced directly by health promotion or public health interventions. Health outcomes, attributable to specific interventions or just to passing of time, have to be observed as differences in valued qualities of structures or processes, observed or measured at least at two different points in time in evaluation terminology – baseline and follow-up measurement. The WHO definition of health builds on the three dimensions of physical, social and psychological well-being.¹⁵ Framed more generally, physical/ecological, socio-economic and cultural dimensions are proposed as sub-dimensions of the four elements of the health development model. In case of an individual person, these sub-dimensions might be adapted as follows – cultural dimension = mind, psyche, values, norms or rules, knowledge; socio-economical dimension = social capital and socio-economic status; physical/ecological = body.

Two further properties of a system may be relevant. First, the level of the system on a macro–micro continuum of

various possible socio-ecological units, and second, certain qualitative aspects of the system's structure or process. For example, communities can exist on any level from family, neighbourhood, city, region, nation, to transnational. Similarly, organizations can range from local to transnational levels. People can be considered individually or as larger population groups with common characteristics, for example, socio-economic status, age or gender. Second, systems can be classified regarding their quality in terms of health promoting potential resulting in five distinct types of systems (table 2). The system of an independent individual might be differentiated from community systems characterized by informal social relationships between its members and from organizations as systems with formalized rules and operations.

The terminology of systems theory is open and leaves it up to the user to define the level and quality of the functional system in which he/she is interested, for example the workplace. This includes its structure or processes, and level of organization (for example, local, national or European level). Furthermore, the user can define which larger systems are to be considered, for example, the economic development of the company at that point in time, as the environment is important to the health development process of the system in focus.

Similarly the model does not pre-determine the dimensions and determinants of health to be observed or improved. This decision depends on the perspective of the respective discipline and the specific interest of the user. For instance, the concept of social capital might be considered a determinant of physical health (e.g. cardiovascular fitness or risk) by social epidemiology,¹⁶ whereas in the field of health promotion social capital may be defined as an important dimension of the social health of a community.

SOCIO-ECOLOGICAL MODEL OF PUBLIC HEALTH

Today health promotion is seen as an essential element of new public health. A complete model of public health action includes four strategies of the public health action cycle: assessment, planning, implementation and evaluation. Introducing a time dimension, the socio-ecological

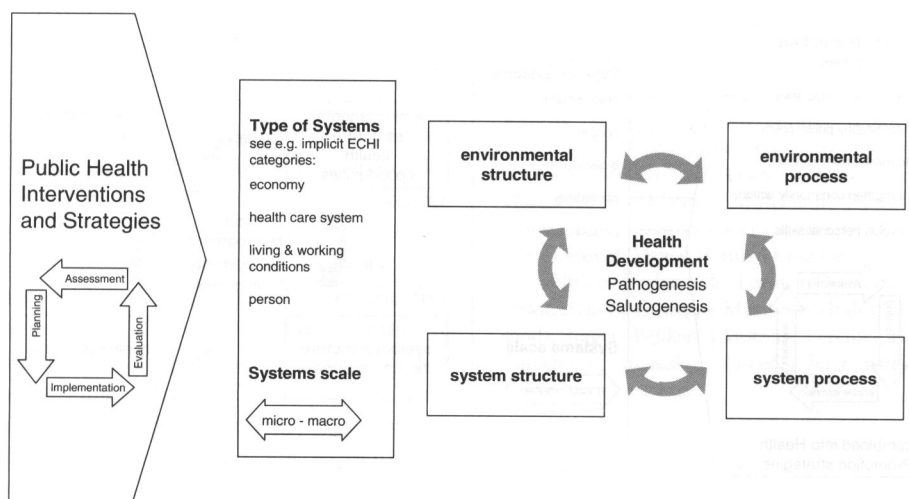


Figure 2 Socio-ecological model of public health

model of public health (figure 2) shows the four phases of public health action. In the assessment phase, health problems and health determinants with a particularly high impact on health are identified. These high impact determinants provide promising leverage points for public health interventions. During the planning phase, public health strategies appropriate for influencing these factors are selected and implemented during the next phase. Finally, evaluation examines changes within the health development cycle between baseline and follow up measurement.

The four elements relevant to the health development process defined in figure 1, form the targets for public health interventions or strategies (i.e. combining interventions) aiming to influence health development in a salutogenic direction or preventing a pathogenic one (figure 2).

With regard to systems levels, for now those systems implied by the current ECHI categories listed above are included. However in the future, the field of general public health and particularly its sub-fields should define more explicitly systems relevant to different public health functions. This specification of systems for the health promotion field will be returned to later in this paper.

Those health determinants and health dimensions targeted by the intervention are considered public health outcome indicators. The four elements of the socio-ecological model of public health can classify these indicators into four groups (table 1). As interventions take place within the four fields of the matrix as well, the matrix

should prove useful for classifying public health process indicators (i.e. measures of ongoing interventions).

SOCIO-ECOLOGICAL MODEL OF HEALTH PROMOTION

Using the example of the health promotion field, this section illustrates how the general socio-ecological model of public health can be adapted to respective public health fields. Health promotion is defined as ‘the process of enabling/empowering individuals and communities to gain control over the determinants of health and thereby improve their health’⁹ Applying the logic of this definition to the socio-ecological model of public health leads to the following health promotion-specific interpretation of the four elements of the model (figure 3). The terminology used on the right of the model mostly follows the terms used in Noack’s more complex health development model.¹³ At present work is currently underway to develop this aspect of the model in more depth and this will be the focus of a future paper.

Accordingly, health promotion is particularly concerned with those system structures, that constitute health capacities. Health capacities are stable properties of the system providing the potential for ‘gaining control over the determinants of health’. System processes are refined as health actions (or health practices). These actions are health capacities in use or intentional or unintentional processes of a system operationalizing the potential for controlling determinants of health.

Environmental structure and processes are considered to be health opportunities, which influence both the level

Table 1 Classification system for public health indicators

Systems level (quality and scope of system to be defined by respective public health discipline)	Indicators of structure	Indicators of processes
Environment (systems relevant to health development of system in focus)	Cultural Socio-economic Physical/ecological	Cultural Socio-economic Physical/ecological
System in focus (e.g. individual)	Cultural Socio-economic Physical/ecological	Cultural Socio-economic Physical/ecological

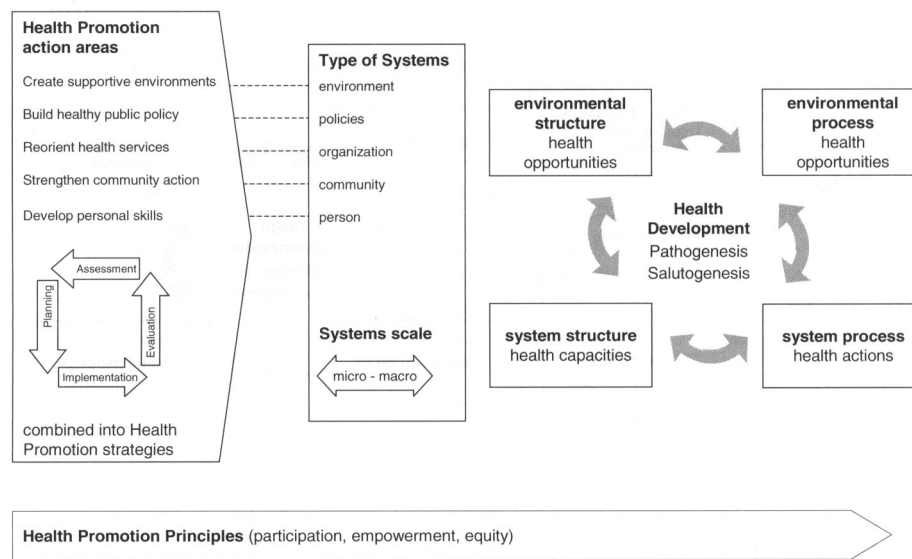


Figure 3 Socio-ecological model of health promotion

of health capacities and of health actions. The term ‘opportunities’ highlights that persisting inequities in health in our societies are in large part due to unequal distribution of these opportunities. Here, the basic principles of health promotion come into play, which consider that health equity will only be realized by participation and empowerment of those people who initially have limited health opportunities. These principles are visualized as the value basis of health promotion practice underlying the entire model. Therefore they are to be considered in planning and implementing health promotion strategies (left-hand side of the model) as well as in assessing the health development cycle (right-hand side of the model).

Looking at health promotion interventions, the Ottawa Charter defines five primary action areas for health promotion practice, which are often combined into

integrated health promotion strategies. For our purposes, these action areas can be used to define five distinct qualities or types of systems (table 2). Each of these systems plays a major role in ongoing health development and thus constitutes a key target for health promotion interventions. Therefore, the five systems are the interface between ongoing health development and influences of intentional health promotion interventions.

A classification system for health promotion indicators can be derived by distinguishing structure and processes for each of these five types of systems (table 3). Again, the cultural, socio-economic, and physical/ecological dimensions might be considered for sub-classification of indicators. Further, the scale of interest has to be defined for each system. For example, health promoting policies might be considered on any level from local organizations, city government, national to international policies.

Table 2 Relation between Ottawa action areas and general types of systems relevant to health promotion practice

Ottawa action areas	General type of systems	Description of system
Create supportive environments	Environment	Larger context into which the other systems are embedded
Build healthy public policy	Policies	Formal regulations
Reorient health services	Organization	Association with formal rules, regulations and practices
Strengthen community action	Community	Group of persons with sense of community, social cohesion, common goals and actions ('social capital')
Develop personal skills	Person	Single person or groups of independent individuals with common characteristics

Table 3 Classification system for health promotion indicators: examples of topic areas to be covered by workplace health promotion outcome indicators (scale: company level)

Type of systems	Indicators of systems structure (health capacities)	Indicators of systems processes (health actions)
Environment	Workplace design	Matching of workplace design to employee needs
Policies	Equal opportunity policy	Equal opportunity policy enacted
Organization	Flat hierarchy	Decision latitude of employees
Community	Social network among colleagues	Social support among colleagues
Person	Employee oriented leadership skills	Employee oriented leadership practice

Regarding the system-environment interaction inherent in the socio-ecological model of health promotion, the classification systems leaves it up to the user to define which is the system in focus and which systems are considered its environment. As discussed for public health indicators, the matrix in *table 3* should be useful for classifying both health promotion process and outcome indicators.

It is important to highlight that not all areas of health promotion practice have equal relevance for the five systems. However even the more narrow example of 'developing health promoting policies' demonstrates that the political environment, the organizations developing and enforcing the policy, the community organizing to advocate policy development and the capacities of persons to organize and lobby, all have an influence on the policy making process. *Table 3* illustrates the classification system by providing examples of topic areas to be covered by workplace health promotion indicators on a company level.

CONCLUSIONS

The socio-ecological model of human life being developed by EUHPID could become a common reference point for the EC Public Health Programme and the public health field generally. It could demonstrate conceptually and practically how the various public health approaches, including health promotion approaches and approaches based on the bio-medical model, are related and complement one another.

In practical policy terms, this would mean investing in a set of key indicators that take account of this model.

A final vision offered by the model could influence policy options and reflect the way society looks at itself and its health. This would include, not just the absence of illness but, more salutogenic entities, such as positive mental health and health promoting scenarios, infrastructures and processes.

To move towards this vision, further detailed development of the model is underway. This work is seen as critical for the enhancement of health promotion impact at European level by means of a health promotion monitoring system based on common indicators. It could also facilitate the improvement of health information and knowledge more generally for the development of public health in Europe.

The EUHPID Consortium (see Note) sends out an open invitation to EC colleagues, and colleagues working on health indicator development projects at Community and member state levels, to contribute actively to this European health development model, in order to move forward knowledge creation, and its effective application, within the wider public health field.

For further detailed information on work in progress see <http://www.health.brighton.ac.uk/euhpid/>

NOTE

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