Network for Evaluation of One Health (NEOH)

A systems approach for better knowledge integration

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Section of Epidemiology

Network for Evaluation of One Health

Network for Evaluation of One Health (NEOH): A systems approach for better knowledge integration

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Network for Evaluation of One Health

- gathers more than 250 researchers, evaluators and policy makers from over 30 countries, diverse disciplines and sectors.
- has identified the characteristics of One Health.
- has developed an evaluation framework to address and describe systematically One Health (OH) initiatives as complex adaptive systems, which was published as a handbook.

The NEOH Handbook

Open Access at

https://www.wageningenacademic.com/neoh

A Systems Approach

A key to implementing One Health initiatives is knowledge integration based on six aspects:

OH thinking – is basically systems thinking, considering multiple dimensions, different scales in time and space, addressing structures rather than events and patterns and seeking the very beginning of a causal chain to provoke change.

OH planning – requires matching tasks, resources and competencies, foreseeing appropriate methods to engage stakeholders, as well as mechanisms to self-assess, learn, reflect and adapt to new knowledge and changing conditions, constraints and opportunities.

OH working – is essentially transdisciplinarity, including shared problem formulation, goals, focus and criteria of success, integration of disciplines and sectors, stakeholder participation, collective reflection and learning.

Sharing – requires appropriate resources to share data, knowledge, staff and resources, formalized internal and external sharing mechanisms, sharing agreements, and resilience of these to change; and also considerations about data quality, storage and accessibility.

Learning – occurs at individual, group and organisational level, and consists of knowledge gathering, storage and distribution within a facilitating working environment providing specific technology, reward systems, and policy.

Systemic Organisation – arises from adaptive and shared leadership, competent with management, social and leadership skills, good team structures and clear attribution of competences to actors.

An assessment protocol entailing detailed questions to assess the these six aspects can be found as supplementary material to the handbook.

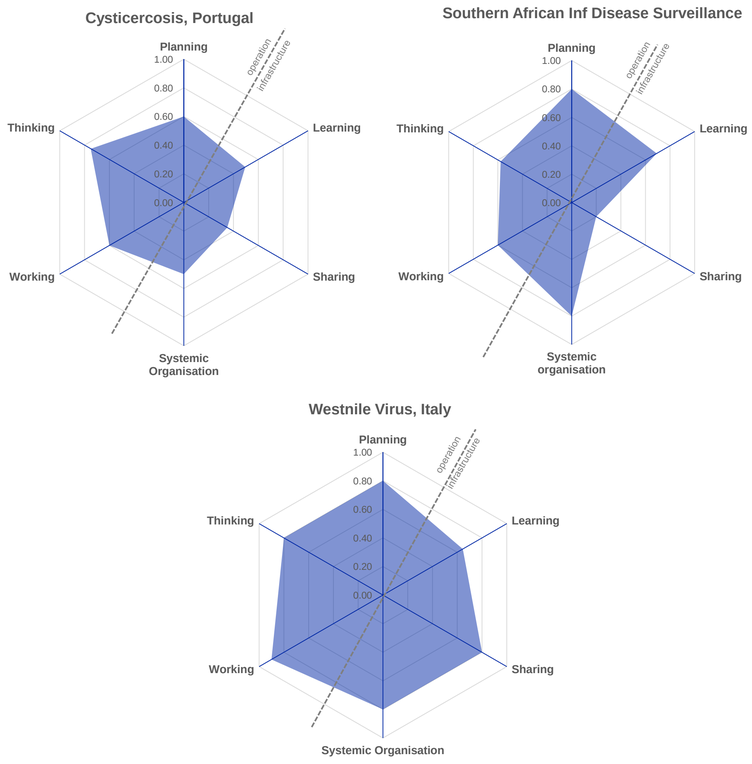
One Health Index and Ratio

The OH-index combines the assessments of the six aspects described in the bottom left box. It corresponds to the surface of a hexagon in which each assessment is represented by a spoke. The spider diagram depicts the operational aspects 'OH thinking', 'OH planning' and 'OH working' opposed to the infrastructure for 'learning', 'sharing' and 'systemic organisation'. Thus, the operational aspects on the top left of the diagonal are opposed to the infrastructure on the bottom right.

Each spoke is scaled to cover a range of values between 0 and 1. Consequently, the plot not only illustrates the degree of integration by the surface, but it also shows the balance between the operation and the supporting means through its symmetry over the diagonal, numerically represented as the One Health Ratio (OHR).

One Health Surveillance

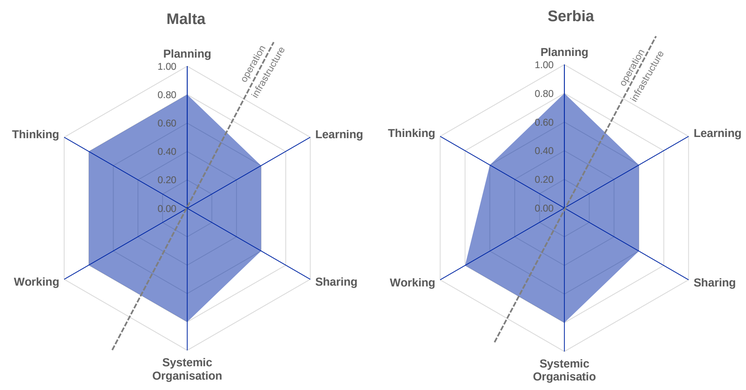
Three NEOH case studies evaluated surveillance of cysticercosis in Portugal, Westnile Virus (WNV) in Italy and infectious diseases in general in five countries of Southern Africa. Cysticercosis is an emerging disease in Portugal and the small surface of the hexagon illustrates an OH initiative in an early stage, while WNV is endemic in Italy and accordingly, infrastructure as well as the systemic approach are well developed, but it is noteworthy that the actors did not recognise themselves as learning organisations. The effort in Southern Africa shows difficulties in sharing data across national borders and the well planned approach seems to struggle with the differences in capacities between participating countries.



These examples show that OH initiatives grow over time, ideas are there first and materialise subsequently. International collaboration is challenging and implies a larger system which requires time to establish.

Brucellosis Control

Efforts in Malta and Serbia to control Brucellosis were compared with the NEOH framework. On the island of Malta, these span over a century of measures and setbacks. The success arrived after an interdisciplinary approach in the 1990ies and relied heavily on legislation. In Serbia, Brucellosis was introduced through uncontrolled importation of animals in the mid 1990s. A transdisciplinary approach was not required as there was no cultural resistance to cull potentially infected herds.



The comparison revealed that the non-scientific community was key in Malta and not in Serbia, because human cases were rare in Serbia. Thus, One Health reinforced exiting unidisciplinary efforts. Also, coordination in time and space was essential.

More Case Studies in detail

Open Access at

https://www.frontiersin.org/research-topics/5479

Conclusions

- The framework provides a **basis for comparison** of different One Health initiatives
- It was found **useful for feedback** to the project participants (formative evaluation)
- Beyond evaluation, it is useful for planning integrated approaches to health.
- **Systems thinking** and associated techniques **require good training** to be effective for project planning and evaluation.
- The scoring relies on individual perceptions and generalisation of results is questionable.
- Evaluation results are strongly context specific.

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