



University
of Basel

Faculty of Medicine
Department of Public Health



IMPACT

SWISS IMPLEMENTATION SCIENCE NETWORK



Pflegewissenschaft
Nursing Science

Workshop Program

Implementation Science meets Systems Science: Harnessing the Power of Systems Thinking and System Dynamics for Effective Implementation in Health Sciences (1 ETCS)

Part 1 Date: Thursday, December 5, 2024 from 09.00 – 16.00

Location: Online via Zoom

Part 2 Date: Thursday, February 27, 2025 from 09.00 – 16.00

Location: University of Basel (room will be indicated)

Workshop overview

Implementation science bridges the gap between research and practice in healthcare, addressing the limited use of evidence-based practices. Despite its growing importance in Switzerland, implementation efforts face challenges in complex real-world settings. Current methodologies often fail to capture this complexity fully.

Integrating systems science, including systems thinking and system dynamics, is seen as a methodological innovation in implementation science. Systems thinking involves among others conceptual methodologies (e.g., causal loop diagrams, group model building) as well as quantitative methodologies such as system dynamics (involving computer simulation models) to understand complex system behavior, which is intimately related to implementation. Stakeholders are typically engaged in mapping, conceptual model development, validation and scenario construction. Systems science methods can be applied throughout all phases of an implementation science project, including development, implementation, evaluation, and sustainment. While widely used

in public health, their application in healthcare implementation science remains limited.

This workshop introduces participants to systems thinking and system dynamics methods, demonstrating their value in enhancing implementation science projects and improving the transfer of evidence-based practices to real-world settings.

Workshop aims

- 1) Introduce systems science including systems thinking and system dynamics methods (i.e., causal loop diagrams and basic system dynamic computer simulation models).
- 2) Reflect on implementation science specific methodological challenges encountered in health sciences that might be suited for use of systems thinking and system dynamic methods.
- 3) Use of implementation science case examples to discuss the application of systems thinking and system dynamics methods.
- 4) Offer a platform for exchange among PhD students, postdocs and senior researchers in health sciences and related fields with an interest in implementation and system science, and to provide the opportunity for consultation.

Workshop format

The workshop features a collaborative and interactive format, incorporating engaging presentations, group work, and discussion sessions. Additionally, consultation session on participant's case example will provide guidance to apply systems thinking and system dynamics methods effectively.

Faculty members *(in alphabetical order)*

- Dr. Catherine Decouttere, Faculty of Economics and Business, Centre for Access-To-Medicines (ATM), KU Leuven, Belgium
- Prof. Dr. Sabina De Geest, Institute of Nursing Science, Department Public Health, University of Basel
- Dr. Juliane Mielke, Institute of Nursing Science, Department Public Health, University of Basel
- Prof. Dr. Nico Vandaele, Faculty of Economics and Business, Centre for Access-To-Medicines (ATM), KU Leuven, Belgium

Participants

The workshop is targeted to PhD students, postdocs and senior researchers from health sciences and related fields. Participants should have at least a basic understanding of implementation science. Max. 20 participants; spaces will be filled on a first come, first served basis.

Registration

Registration link: <https://miejul.wufoo.com/forms/workshop-registration/>

Deadline for registration: November 28, 2024

Contact

Juliane Mielke (juliane.mielke@unibas.ch)

Funding

This workshop is funded by the Swiss National Science Foundation.



Workshop Program

Day 1 – Thursday, December 5, 2024 – 09.00-16.00

09.00 – 09.30	Welcome & Workshop Introduction
09.30 – 10.00	Brief Introduction to Systems Science
10.00 – 10.15	Positioning Implementation Science and opportunities for use of Systems Science
10.15 – 10.30	Break
10.30 – 11.30	Introduction to Systems Thinking (including Causal Loop Diagrams)
11.30 – 12.30	Lunch
12.30 – 13.30	Small Group Activity: Identifying Feedback Structure and Complex System Behavior in a Case Example
13.30 – 14.15	Full Group Share Out and Discussion
14.15 – 14.30	Break
14.30 – 15.30	Introduction to System Dynamics (including Basic Computer Simulation Models)
15.30 – 15.55	Introduction to group work and building of learning groups
15.55 – 16.00	Closing

Day 2 – Thursday, February 27, 2025 – 09.00-16.00

09.00 – 09.20	Recap and Reflections on Day 1
09.20 – 10.20	Consultation Session: Case example 1
10.20 – 10.35	Break
10.35 – 11.35	Consultation Session: Case example 2
11.35 – 12.35	Lunch
12.35 – 13.35	Consultation Session: Case example 3
13.35 – 13.50	Break
13.50 – 14.50	Consultation Session: Case example 4
14.50 – 15.05	Break
15.05 – 15.25	Discussion of Lingering Questions
15.25 – 15.45	Overview of Training Opportunities in Implementation and Systems Science
15.45 – 16.00	Evaluation and Closing Remarks

Workload and Credits

Total of 30 hours (2h preparation, 2x7h attendance, 14h group work). Participants who completed both workshop days will receive a certificate of attendance which can be credited with 1 ETCS.

Consultation Session - Group Work

Between days 1 and 2, participants will work in learning groups on an implementation science case example that is appropriate for the use of systems science. The case example will focus on either an intervention (i.e., procedures, programs, practices, products, policies, pills, principles) that is not being implemented in practice, or a population with unmet needs that should be targeted by an intervention.

If you would like to discuss your case example/project, please submit an abstract that provides a brief case description, along with details about the specific implementation science challenge you seek to address.

Faculty members will carefully review all submitted abstracts and notify you of their acceptance by November 26.

Submission link: <https://miejul.wufoo.com/forms/abstract-submission/>

Deadline for submission: November 22, 2024

Opportunity for further consultation

Participants who have not submitted a case example, have the opportunity, to write a brief reflection (maximum 250-300 words) on one of the following topics: how the application of systems science could have influenced their implementation trajectory, or how it may impact their work in the coming years. The deadline for submission is **February 9, 2024**. Individual feedback will be provided by the course facilitators.

Preparation

Please bring your Laptop and note paper for the interactive workshop elements. Reading materials will be emailed in advance of the workshop.

For the consultation session, participants whose case examples have been accepted will be asked to prepare a brief 3-minute presentation to introduce their project (details will be provided via email).