

What the EVOTION Platform will offer to Policy Making


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Outline

- The need for public health policy in HL management
- Public health policy making and the EVOTION approach
- EVOTION PHPDM models
- Example of PHPDM model
 - Goal & objectives
 - Actions
 - Data, analytics, criteria and modes of execution
 - Validation
- Who could use the EVOTION platform

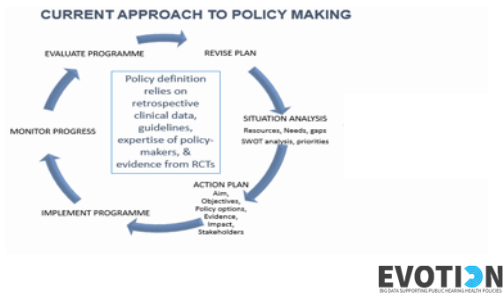


Need for public health policy making in HL management

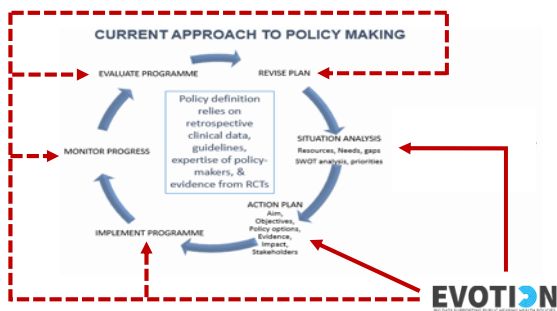
- Hearing loss is a huge and increasing problem in the world, including high income countries.
- Good public health policy decisions
 - are essential in order to develop and implement effective and cost-effective programmes.
 - should be evidenced based.
- Policy monitoring and long term evaluation should also be evidenced based.



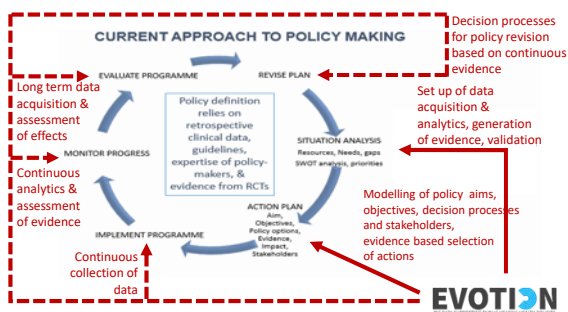
Policy making life cycle and the EVOTION approach



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Policy making life cycle and the EVOTION approach



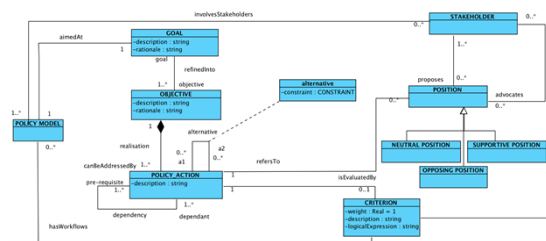
EVOTION Public Health Policy Decision Making Models

EVOTION PHPDM models specify:

- the **overall goal** and the **specific objectives** that public policy needs to address
- the range of **possible actions (interventions)** through which the goals/objectives of the policy can be achieved
- the **evidence** that needs to be gathered to make informed and plausible decisions about the actions (interventions)
- the processes for **analysing** and **establishing the validity** of this **evidence**
- the **stakeholders** who will consider the evidence and decide which actions (interventions) should be undertaken
- the **criteria** that should be used to make decisions based on evidence.

EVOTION
Evidence-based Public Health Policy Decision Making

PHPDM Models Language (Goals and Decisions)



EVOTION
Evidence-based Public Health Policy Decision Making

PHPDM Model Example

Prognosis of effectiveness of HA usage

Goal/need:

- Improve HA usage

Objectives:

- Average HA usage is at least 50% of max time
- Increase average HA usage by at least 30% of max time
- Increase subjective satisfaction of HA users by at least 20% of max value over a period of 3 years
- Enhance clinical practice to monitor potential factors that influence HA use and user reported benefit

EVOTION
Evidence-based Public Health Policy Decision Making

PHPDM Models: Data Analytics and Evidence (cont'd)

Modes of executing analytics

- Upon request
- Periodically
- Continually
 - Shifting windows of data
 - Continually aggregated data
- Automatically triggered by changes in the data profile

EVOTION
EVOTION DATA REPOSITORY

Example: Prognosis of Effectiveness of HA Usage

Data analytics and evidence

- Types of data
 - HL profiles (HL type & cause)
 - use of HA controls for adjustments
 - patient medical and other profiles (e.g., age, education level, cognitive level, lifestyle)
 - HA usage (*periods of usage, data sent to EVOTION data repository*)
 - satisfaction with HA usage - GHABP
- Types of analyses
 - ANOVA to detect factors with a statistically significant effect
 - Statistical regression to quantify effects of factors
 - Neural networks to develop prognostic models
- Decision criteria
 - Identified factors that predict for 10% (?) increase in HA usage
 - Identified factors that predict for 10% (?) increase in HA user satisfaction
 - Statistical significance of model and effect of individual factors

EVOTION
EVOTION DATA REPOSITORY

Example: Prognosis of Effectiveness of HA Usage

Data analytics and evidence: multiple linear regression to explore effect of age and PTA onto volume of HA data sent to EVOTION repository
Observations from 297 patients

Example Data
(outcome of pre-processing)

PTA	Age	MDV
35.5	57	49234
45	49	10225
44.5	59	79371
40.5	75	53496
53	71	72512
35	72	45692
28.5	71	74380
30.5	79	22695
54.5	60	55261
33	78	98959

Multiple Regression analysis outcomes

Regression Statistics							
Multiple R	0.320469168						
R Square	0.102700488						
Adjusted R Square	0.090299409						
Standard Error	19232.42708						
Observations	297						
ANOVA							
	df	SS	MS	F	Significance F		
Regression	2	12418138945	6209069473	16.82489681	1.20726E-07		
Residual	294	1.08498E+11	369045085.5				
Total	296	1.20916E+11					
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	
Intercept	-654.0019678	5448.20421	-0.120039915	0.904533518	-11376.42574	10068.42181	
PTA	-132.090841	70.53701015	-1.872843018	0.062110056	-270.9121105	6.730828494	
Age	383.6011612	73.20844956	5.23984818	3.07134E-07	238.1221235	527.4801989	

PHPDM Example

Stakeholders

- Regional ENT-specialists' Advisory Committee (in their role as prescribing the use of HAs);
- Regional Directorate for Social support (in their role as authorising financial support for purchasing HAs and performing follow-up on administration and use);
- Regional structures of the national Health Insurance Fund (in their role as funding clinical pathways);
- HA vendors/fitting experts (providing follow-up rehab);
- Patients' association – regional repres. of patients controls for adjustments



PHPDM Example

Validation

- Comparison and validation of PHPDM analytic models and their results against literature (based on EVOTION text mining)
- Iterative and/or long term execution of analytic workflows to observe changes in evidence regarding the identified factors and their effects (EVOTION can be set up to do this)
- Set up of data acquisition mechanisms and analytics to generate evidence about the effects of policy actions, e.g.,
 - Effect of new clinical guidelines, campaigns and provision of alerts on HA usage and satisfaction



Who could use the EVOTION platform?

- Policy makers
- Clinicians
- Technology providers
- Patient associations

- EVOTION is generic platform that could be used for the set up, execution and monitoring of data acquisition, analytic and decision making processes of short and long term clinical studies