A framework for monitoring and evaluating

JPI Antimicrobial Resistance.

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A framework for monitoring and evaluating the JPI Antimicrobial Resistance.

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Evaluation is the exercise of assessing whether a JPI has met its goals and what are the reasons for these results.

This framework will describe the dimensions to be evaluated, the most important goals for each dimension, and what indicators and sources of information to use. It will later propose a distribution of tasks to make the evaluation. Some aspects of the evaluation may be done internally by the JPI (some of their bodies in their structure), but some other may be better done by an external agent to prevent conflicts of interest.

The framework is based on three sources of general principles:

- The priorities of the European Research Area (ERA)[1]:
    - More effective national research systems,
    - Optimal transnational co-operation and competition,
    - An open labour market for researchers,
    - Gender equality and gender mainstreaming in research, and
    - Optimal circulation, access to and transfer of scientific knowledge including via digital ERA

    These priorities inform the definition of outcomes of the JPI AMR

- The Framework Conditions (FC)[2]:
    - Peer Review Procedures,
    - Foresight Activities,
    - Evaluation of Joint Programmes,
    - Funding of Cross-border Research by National or Regional Authorities,
    - Optimum Dissemination and Use of Research Findings and Protection,
    - Management and Sharing of Intellectual Property Rights

    The FC underlie the processes to be developed by JPI AMR

- The three basic functions of joint programming which have been discussed during the *JPIs To Co-Work* workshops, and are compatible and inspired in the triple helix theory[3]:
    - Governing policy making,
    - Governing and management of research, and
    - Innovation and responsiveness,

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[1] http://ec.europa.eu/research/era/index_en.htm
[2] http://ec.europa.eu/research/era/docs/en/voluntary_guidelines.pdf
[3] http://www.jpis2cowork.eu/index.php/discussions-public/discussions-document-a-functional-approach-to-joint-programming-initiatives

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These three functions summarize what a research programme needs to do, using the FC in order to achieve the desired outcomes.

Dimensions of the JPI AMR to be evaluated.

The three functions – governing policy making, governing research performance and involving stakeholders to shape the scientific agenda and promote innovation – are the three basic dimensions to be addressed by the evaluation.

- *I Governing research policy making*

  Governing research policy making includes the formation of governing bodies, their Terms of Reference (ToR), Memorandums of Understanding (MoU), and any other provision or agreement on the rules and procedures to define the goals of JPI AMR and take decisions that facilitate their achievement. It includes relevant and coordinated (cross border) funding mechanisms.

- *II Governing research performance*

  Governing research performance includes all necessary incentives and facilitators to guide research performance to the desired outcomes and goals.

- *III Responsiveness to societal needs and innovation*

  Responsiveness to societal needs and innovation includes all measures that ensure the input of potential users of research results, and those that promote the dissemination of research results in a way that facilitates their use by industry, policy makers, health care institutions or citizens.

In the context of a JPI, transnational collaboration in the three dimensions is a basic assumption.

The contents of the three dimensions are exposed in the table below. The table presents the contents classified depending on the source of information, namely structure, process and outcome. The classification is proposed for its explanatory power when analysing the outcomes.

Structure refers to existing procedures, resources, agreements. Process refers to actual activities. Outcome refers to the immediate outputs in each dimension, the outcomes they produce on the users, and their overall societal impact.

Goals, indicators and sources of information for monitoring and evaluation.

Each of the elements of the dimensions to be evaluated is associated with a goal. If the JPI accomplishes a goal, no change is needed related to it. Each goal needs one or more indicators to verify its accomplishment. Each indicator is obtained from a specific source of information. A certain value of the indicator is accepted as a satisfactory achievement of the goal, and is named "criterion". Values below criterion are a recommendation for further analysis and improvement measures.

The goals and indicators proposed correspond to the present moment in the development of JPI AMR. Some of them are likely to be better specified in the future, or new ones may be introduced.

Framework for the evaluation of JPI AMR

Dimensions	Structure	Process	Outcome
I. Governing policy making	**1 Well defined societal challenge** **2 Adequate & functional structures and procedures** **3 Funding quantity & type** **4 Mechanisms for coordination of funding**	**5 Decision making** **6 Leadership** **7 External relations** **8 Coordination of funds at EU level** **9 Coordination of national or institutional agendas** **10 Measures for mobility of researchers**	**11 Satisfaction of MB, SAB, SHAB**
II. Governing research performance	**12 Adequate SRA**	**13 Peer review** **14 Knowledge gaps covered** **15 Low unnecessary duplications** **16 Mobility of researchers** **17 Use of European infrastructures**	**18 Scientific productivity (impact, publications)** **19 Products, tools, devices, molecules, clinical procedures, policy options**
III. Responsiveness & innovation	**20 Adequate interaction mechanisms MB – SHAB**	**21 Input of SHAB is taken into account** **22 Use of Open access** **23 IPR procedures for exploitation**	**24 Innovative products, tools, drugs, procedures up-taken by industry, clinicians, patients, policies** **25 Patients with resistant infections**

GOVERNING POLICY MAKING.

I. Governing policy making		
Structure	**Process**	**Outcome**
1 Well defined societal challenge **2 Adequate & functional structures and procedures** **3 Funding quantity & type** **4 Mechanisms for funding coordination**	**5 Decision making** **6 Leadership** **7 External relations** **8 Coordination of funds at EU level** **9 Coordination of institutional agendas** **10 Measures for mobility of researchers**	**11 Satisfaction of MB, SAB, SHAB**

Structure.

Goal	Indicator	Criterion	Information source
1 Well defined societal challenge.			
1.1 Societal challenge has been defined consulting the SAB and the SHAB 1.2 Social and economic dimensions have been described 1.3 Foresight of next 10 years is included 1.4 Societal consequences of the scientific agenda assessed	Proportion of external reviewers that agree it has (≥3 external reviewers)	2/3 of external reviewers	Vision paper
2 Adequate and functional structures and procedures.			
2.1 SAB members consider countries represented at MB and members of SHAB adequate 2.2 SHAB members consider countries represented at MB and members of SAB to be adequate 2.3 Terms of reference (ToR) are considered adequate by MB, SAB and SHAB	Proportion of MB, SAB or SHAB members that agree	2/3	Survey Interviews to key informants if not achieved
3 Funding quantity and allocation.			
3.1 MB and SAB members consider existing funding sufficient and well coordinated 3.2 MB and SAB members consider existing funding allocation among projects, institutional funding, human resources and infrastructures adequate	Proportion of members that agree	2/3 in each	Survey
4 Mechanisms for coordination of funding			
4.1 There are adequate mechanisms to coordinate funding for projects, institutional agendas, human resources and infrastructures 4.2 MB has defined criteria to award funding as under the JPI AMR 4.3 MB has defined specific targets for coordination of funding under JPI AMR	Number of mechanisms Criteria are defined Targets are defined	At least for 2 of them Approved by MB	MoUs and ToRs Minutes SRA and annual plans

Process.

Goal	Indicator	Criterion	Information source
5. Decision making			
Members of the MB, SAB and SHAB consider decision making follows ToR and is satisfactory	Proportion of members that agree	2/3 in each	Survey Interviews to key informants if not achieved
6. Leadership.			
Members of the MB and SAB consider the JPI is leading research in the field in Europe	Proportion of members that agree	2/3 in each	Survey Interviews to key informants if not achieved
7. External relations.			
JPI AMR has established coordination mechanisms with relevant European initiatives such as H2020, ERA-nets, ESFRI infrastructures and other JPIs	Proportion of external reviewers that agree it has (≥3 reviewers)	2/3	Minutes Annual plans Interviews to key informants if not achieved
8. Coordination of funds at European level.			
8.1 Coordination of funding meets targets	Proportion of funds under JPI AMR according to goal 4.2	Proportion ≥ targets according to 4.3	JPI AMR database + European Commission
8.2 MB has the information on funding of programmes, projects, human resources and infrastructures in AMR from MB member countries	There is a JPI AMR European database	At least data of projects & infrastructures of > 80% MB countries	
9. Coordination of institutional agendas.			
Several institutions from different countries have approved a common research agenda	Number of institutions with a common agenda	≥ 3	MoUs or equivalent
10. Mobility of researchers.			
Members of the JPI AMR adopt the principles of EURAXESS for free mobility of researchers	Proportion of institutions active in AMR that signed the European Charter and Code of Conduct and use EURAXESS portal	≥ 50%	EURAXESS

Outcome.

Goal	Indicator	Criterion	Information source
11. Overall satisfaction of MB, SAB and SHAB.			
Members of the MB, SAB and SHAB are satisfied with JPI AMR	Proportion of members that agree	2/3 in each	Survey

II GOVERNING RESEARCH PERFORMANCE.

II. Research performance		
Structure	**Process**	**Outcome**
12 Adequate SRA	**13 Peer review** **14 Knowledge gaps covered** **15 Low unnecessary duplications** **16 Mobility of researchers** **17 Use of European infrastructures**	**18 Scientific productivity (impact, publications)** **19 Products, tools, devices, molecules, clinical procedures, policy options**

Structure.

Goal	Indicator	Criterion	Information source
12. Adequate SRA.			
Members of the MB, SAB and SHAB consider the SRA to address the societal challenge, be feasible and with clear objectives	Proportion of members that agree	2/3	Survey

Process.

Goal	Indicator	Criterion	Information source
13. Peer review.			
13.1 Evaluation panels formed by competent experts	Proportion of external reviewers that agree (≥ 3 reviewers)	2/3	JPI AMR database
13.2 Peer review procedures tackle conflicts of interest with effectiveness	Proportion of external reviewers that agree (≥ 3 reviewers)	2/3	
	Proportion of redress demands	< 3%	
14. Knowledge gaps covered.			
Gaps identified in the SRA are covered by JPI AMR (goal 4.2) and national member activities	Proportion of external reviewers agree (≥ 3 external reviewers)	2/3 agree gaps covered ≥ 50%	JPI AMR database
15. Low unnecessary duplications.			
Unnecessary duplications are avoided	Proportion of external reviewers agree (≥ 3 external reviewers)	2/3 agree ≤ 50% of duplications are unnecessary	JPI AMR database
16. Mobility of researchers.			
More researchers move for > 3 months	Proportion of AMR researchers moving for > 3 months	> 10%	JPI AMR data base + EC (Marie Curie)
17. Use of European infrastructures.			
Annual targets of collaboration plans are met	Proportion of targets met	>90% of achievement in >75% of targets	JPI AMR data base + EC

Outcomes.

Goal	Indicator	Criterion	Information source
18. Scientific productivity.			
18.1 JPI AMR has information about its scientific production	There is a data base of publications stemming from JPI AMR (see4.2)	Updated ≤ 1 year before	JPI AMR database
18.2 High overall impact factor stemming from JPI AMR activities (see 4.2) 18.3 High number of publications of JPI AMR (see 4.2)	Proportion of SAB members stating it as satisfactory	> 75% of SAB members	Survey
19. Products, tools, devices, molecules, clinical procedures, policy options			
19.1 JPI AMR has information about its outputs	There is a JPI AMR registry of outputs: new products, tools, devices, molecules, clinical procedures – guidelines, policy options	Updated ≤ 1 year before	JPI AMR database
19.2 Number of outputs is satisfactory	Proportion of SAB members stating it as satisfactory	> 75% of SAB members	Survey

III. RESPONSIVENESS AND INNOVATION.

III. Responsiveness & innovation		
Structure	Process	Outcome
20 Adequate interaction mechanisms MB – SHAB	21 Input of SHAB is taken into account 22 Use of Open access 23 IPR procedures for exploitation	24 Innovative products, tools, drugs, procedures up-taken by industry, clinicians, patients, policies 25 Patients with resistant infections

Structure.

Goal	Indicator	Criterion	Information source
20. Adequate interaction mechanisms MB – SHAB			
20.1 MB satisfied with interaction with SHAB 20.2 SHAB satisfied with interaction with MB	Proportion of members that agree	2/3	Survey

Process.

Goal	Indicator	Criterion	Information source
21. Input of SHAB is taken into account			
SHAB agrees	Proportion of members that agree	2/3	Survey
22. Use of Open access			
Targets are set and achieved	Proportion of targets in annual plans or SRA achieved	>75%	JPI AMR databases
23. IPR procedures for exploitation			
Clear procedures are in place	Proportion of SHAB members that agree	2/3	Survey

Outcome.

Goal	Indicator	Criterion	Information source
24 Innovative products, tools, drugs, procedures up-taken by industry, clinicians, patients, policies			
Satisfaction with the number of each with evidence of having been taken up	Proportion of SHAB members stating it is satisfactory	>75% SHAB members	Survey
25 Patients with resistant infections			
JPI AMR has updated incidence rate of AMR in member countries	JPI AMR database includes this figure	≥80% member countries	JPI AMR databases

Information system for monitoring and evaluating JPI AMR.

Sources	Indicators
Surveys	*Management Board* 2.3 ToR adequate 3.1, 3.2 Adequate funding coordination and allocation 5 Decision making according to ToR 6 JPI AMR is leading the field 11 Overall satisfaction with JPI AMR 12 Adequate SRA addressing societal challenge 23.1 Satisfaction with interaction with SHAB
	Scientific Advisory Board 2.1 Adequate MB and SHAB 2.3 Adequate ToR 3.1, 3.2 Adequate funding coordination and allocation 5 Decision making according to ToR 6 JPI AMR is leading the field 11 Overall satisfaction with JPI AMR 12 Adequate SRA addressing societal challenge 18.2, 18.3 Satisfaction with scientific productivity 19.2 Satisfaction with outputs
	Stakeholders Advisory Board 2.2 Adequate MB and SAB 2.3 ToR adequate 5 Decision making according to ToR 11 Overall satisfaction with JPI AMR 12 Adequate SRA addressing societal challenge 20.2 Satisfaction with interaction with MB 23 IPR procedures clear 24 Satisfaction with up-take of JPI AMR outputs
Interviews	2 MB, SAB, SHAB adequate structures and procedures 5 MB, SAB, SHAB decision making 6 MB, SAB JPI AMR leadership 7 Coordination with other European initiatives
Review of JPI AMR documents & databases: • Vision paper • Minutes • Annual plans • JPI AMR databases	*By external reviewers* 1 Well defined societal challenge 7 External relations 13.1, 13.2 Peer review: evaluation panels and conflicts of interest 14 Knowledge gaps covered 15 Unnecessary duplication avoided
	By the Management Board* 4 Mechanisms for coordination of funding 8 Coordination of funds at European level 9 Coordination of institutional agendas 10 Mobility of researchers: adoption of EURAXESS 16 Mobility of researchers 17 Use of European infrastructures 18.1 Data base of publications of JPI AMR 19.1 Data base of outputs of JPI AMR: Products, tools, devices, molecules, clinical guidelines, policy options 22 Use of open access 25 Yearly updated information on the incidence of patients with AMR

* In addition to the supervision of the rest of items

Monitoring & Evaluation.

The task of following up operational activities of JPI AMR is not included in this framework for monitoring and evaluation of JPI AMR. The planning of these operational activities should include their own controls.

Therefore, no clear cut distinction is made between monitoring and evaluation. The items to be assessed are the same for both. The most important distinction comes from the fact that monitoring refers to indicators that can be interpreted after a short time, typically one year, while evaluation includes also indicators whose changes are meaningful only after more than one year. For instance, while funding indicators are relevant every year, avoidance of duplications may only be interpreted after some years.

Timeline.

Initially, surveys will be conducted every two years, unless results recommend more strict surveillance.

JPI AMR projects and general data bases should be updated every year. However, the interpretation of some results may need several years of time series. Yearly updating is required in any case for all items to ensure the availability of information.

SURVEYS.

Management Board members.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The Terms of Reference (ToR)of the JPI AMR are adequate to achieve the mission					
The existing funding amount for AMR in Europe is sufficient					
The existing funding for AMR is well coordinated at European level					
Funding allocation amongst projects, institutional funding, human resources and infrastructures is adequate					
Decision making in the JPI AMR follows the ToR and is satisfactory					
JPI AMR is leading the research in the field in Europe					
I am totally satisfied with the performance of JPI AMR					
The Strategic Research Agenda addresses the societal challenge, is feasible and with clear objectives					
I am satisfied with the interaction between Management Board and Stakeholders Advisory Board					
Please add any comments or suggestion you may have:					

Scientific Advisory Board members:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Representation of countries at the Management Board is most adequate to address AMR					
Stakeholders Advisory Board membership is most adequate to address AMR					
The existing funding amount for AMR in Europe is sufficient					
The existing funding for AMR is well coordinated at European level					
Funding allocation amongst projects, institutional funding, human resources and infrastructures is adequate					
The Terms of Reference of the JPI AMR are adequate to achieve the mission of the JPI AMR					
Decision making in the JPI AMR follows the Terms of Reference and is satisfactory					
JPI AMR is leading research in the field in Europe					
I am totally satisfied with the performance of JPI AMR					
The Strategic Research Agenda addresses the societal challenge, is feasible and with clear objectives					
I am satisfied with the number of publications of JPI AMR					
I am satisfied with the impact factor of JPI AMR					
I am satisfied with the number of outputs of JPI AMR					

Please add any comments or suggestion you may have:

Stakeholders' Advisory Board members:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Representation of countries at the Management Board is most adequate to address AMR					
The Terms of Reference of the JPI AMR are adequate to achieve the mission of the JPI AMR					
Decision making in the JPI AMR follows the Terms of Reference and is satisfactory					
I am totally satisfied with the performance of JPI AMR					
The Strategic Research Agenda addresses the societal challenge, is feasible and with clear objectives					
I am satisfied with the interaction between Management Board and Stakeholders Advisory Board					
Input of SHAB is taken into account					
Procedures to deal with Intellectual Property Rights are clear and adequate to facilitate exploitation of results					
I am satisfied with the number of outputs (products, tools, drugs, clinical guidelines, policy options taken up)					
Please add any comments or suggestion you may have:					

JPI AMR projects database.

AREA	IP & gender	Title	Abstract	Key words	Transnational mobility	Funding	Use of ESFRI infrastructures	Doctoral degrees	Publications	New products	Up-taken by stake-holders
Belgium											
Canada											
Czech R											
Denmark											
Finland											
France											
Germany											
Greece											
Israel											
Italy											
Netherlands											
Norway											
Poland											
Romania											
Spain											
Sweden											
Switzerland											
Turkey											
UK											
JPI AMR											

In order to promote coordination, alignment of agendas, coverage of research gaps and avoidance of duplications, JPI AMR needs to collect and analyse information of the research done on the field under national programmes. The same is valid regarding the information of JPI AMR activities and the assessment of its impact.

JPI AMR and each JPI AMR member country will provide the basic information related to projects - funded under the JPI or the national programme respectively - as follows:

- IP and gender
- Title of the project
- Abstract
- Key words
- Transnational mobility of researchers
- Use of European infrastructures from ESFRI
- Total funding awarded
- Doctoral degrees achieved related to the project
- Publications: papers, books, position papers

In addition, JPI AMR will provide the following information of each funded project, while countries are invited to provide as much as possible:

- New products:
    - drugs
    - diagnostic tools or procedures
    - procedures to prevent or manage AMR
    - policy options to combat AMR
    - clinical guidelines
    - patents

- New products up-taken:
    - New drugs coming from the project in the industry pipeline
    - Diagnostic tools discovered by the project being developed by industry
    - New procedures discovered by the project to prevent or manage AMR adopted by health care institutions
    - New policies for AMR adopted by health ministries
    - New clinical guidelines adopted by scientific societies or health care institutions
    - New patents licensed

This information should be required from all research projects approved for funding, in the grant agreement or similar. Because publications and new products may be delayed in time, the requirement should cover up to two years after finalization of the project.

JPI AMR projects database, and country information is to be annually updated. JPI AMR members should be prepared to collect as much information as possible in advance.

JPI AMR general database.

JPI AMR will maintain a database with the following information:

- AMR incidence in all European countries and Canada, to be provided directly by member countries and ECDC
- Institutional research agendas in the field of AMR, especially in case of transnational inter-institutional agreements, to be provided by member countries
- Research performing organizations in the field of AMR that adhere to the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers