SHEET

Description of the steps for developing care pathway quality indicators

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Key messages

This document describes the various steps for defining, developing and validating care pathway quality indicators (QIs). QIs are tools that can be used by healthcare providers to measure the quality of care and results for patients. This applies to both process and outcome QIs assessed by healthcare professionals. It does not concern quality indicators reported by patients, which will be published in a separate document for each pathway.

The source can be the patient record or equivalent, or national databases.

National databases are medical and administrative databases such as the national health data system[1] (including the National hospital-discharge summaries database system[2] and the Inter-scheme consumption datamart[3]) along with other medicalised national databases (example: platforms dedicated to “chronic diseases” fees). Also, the patient record can be available in several formats, in computer format or in paper format.

Each step is described in detail:

- definition of care pathway quality indicators;
- development of care pathway quality indicators;
- validation of care pathway quality indicators;
- update of care pathway quality indicators.

[1] Système national des données de santé (SNDS)
[2] Programme de médicalisation des systèmes d'information (PMSI)
[3] Datamart de consommation inter régime (DCIR)

Definition of care pathway quality indicators

Definition of the indicators includes a certain number of criteria:

- **clinical relevance** of the indicator: the indicator's potential link with the quality and safety of care (examples: professional, organisational and/or regulatory reference);
- **relevance for improvement**: the indicator's ability to induce improvement in quality of care;
- **content validity** (nosological framework): the indicator's ability to represent the major dimensions of a concept of interest;
- **identification of available sources of data** for calculating the indicator (patient records, practice registers, observatories, cohorts, medical and administrative databases).

> This work is led thanks to an analysis of the literature and a multidisciplinary working group of experts whose members are involved in care pathways.
>
> The expected deliverable is a **description per indicator** (see appendix) meeting all the aforementioned criteria. The data sources are identified in the description. However, at this stage, the codes (procedures CCAM, ICD-10, ATC classification, …) are not covered.

Development of care pathway quality indicators based on national databases

Once defined, the pathway QIs can be **developed**.

Several steps contribute to this:

➔ **A step in which technical specifications for the detection of events and identification of the target population are written, for adjusting/standardising risk factors and for calculating the indicator in the database used.**

> This step is achieved thanks to the mobilisation of experts in nomenclatures, medical and administrative databases and clinicians.

➔ **A step during which the technical specifications are validated and QI preliminary results are produced from statistical analyses.**

This step must lead to the validation of the criteria below:

- **adjustment – standardisation** [application to outcome indicators]: this involves translating the risk factors identified into codes/variables available in the database used and measuring model performance;
- **discriminatory capacity**: the indicator's ability to measure a difference in quality and safety in care and to identify an improvement target in relation to a benchmark;
  - **territorial variability and/or variability between healthcare providers**: the indicator's ability to discriminate between territories / healthcare providers by observing a variability in the result (regions, departments, health territories, healthcare organisations, hospital groups, professional groups, private healthcare professionals, …),

- **deviation from a performance objective**: the indicator's ability to identify room for improvement by observing deviation from a performance threshold (examples: benchmark published in a review of the literature or national reference);

– **stability over time**: the indicator's ability to produce consistent results over time over two consecutive years at national level, or in several regions for example.

> This work is led with statisticians and data managers trained in medical and administrative databases. It is validated with the multidisciplinary working group of experts. The deliverables expected at this stage are various reports describing the **validated technical specifications (detailed description sheet), the national and regional results,** and statistics programmes used to calculate the results.

Validation of care pathway quality indicators based on national databases

It is the last step for **validating an indicator**. It involves analysing the performance of the indicator, step required for any external use, in addition to managing quality for healthcare providers. To do that, it is necessary to meet the **validity** criterion which assesses the indicator's ability to produce results comparable to those produced from the gold standard (patient records, registry of practices, observatory, cohort, etc.). It concerns the ability to identify the events detected in the target population.

The validity of this criterion is assessed using statistical measures (examples: sensitivity, positive or negative predictive value specificity, depending on the frequency of the event measured) compared to the **Gold-Standard**.

> This work is led thanks to structures implementing the ad hoc studies required.
>
> The expected deliverable is a **validation report** on the indicator, including an appropriate statistical measurement (example: predictive value and figures on the false positives/false negatives identified in the Gold-Standard).

Update of technical specifications (algorithm) for calculating the quality indicator (see development)

This step takes place:

– where nomenclatures related to the indicator change;

– after rolling out the indicator to take account of feedback from healthcare professionals.

If necessary, it allows for update of the algorithm for QIs based on national databases.

> This work is led through watch over the change in nomenclatures and the architecture of the databases managed by the Agence technique de l'information sur l'hospitalisation (ATIH) and

the Caisse nationale de l'Assurance Maladie (Cnam), and based on feedback from healthcare professionals further to rolling out of the indicators.

The expected deliverable is an **update** of the technical specifications.

Appendix - Definition / Development/ Validation Description Sheet

Short title		
	Definition	**Development**
Description	Accurately describe what is measured by the indicator.	
Clinical relevance/interest of the indicator	Scientific argument, interest in terms of public health or national policy on which the indicator is based, backed by good practice and organisational guidelines and/or regulatory references etc.	
Relevance for improvement/Objectives/Expected improvements	Describe here what is expected in terms of clinical improvement (example: decrease in the rate of … among patients …) with regard to the literature, critical points defined in the care pathway and the working group's opinion. Identify the value of the published reference where there is one, to determine expected room for improvement.	
Target population **(Content validity)**	Clinical definition.	Technical specifications for identifying the target population (inclusion and exclusion criteria, codes used if the indicator comes from medical and administrative databases, etc.).
Denominator **(Content validity)**	Clinical definition This may involve the target population (example: rate), it may be different from the target population (example: ratio of the number of events observed out of an expected number of events) or may not be applicable (example: time indicators).	Technical specifications for identifying the denominator if different from the target population (inclusion and exclusion criteria, codes used if the indicator comes from medical and administrative databases, etc.).
Numerator **(Content validity)**	Clinical definition This may be measurement of a complication (example of *Patient Safety Indicators*), recommended professional practice … or may not be applicable (example: time indicators).	Technical specifications for identifying the numerator (inclusion and exclusion criteria, codes used if the indicator comes from medical and administrative databases, etc.).

Data sources available	PMSI, DCIR, patient record, register, cohort…	Year(s) of data used.
Type of indicator	Process Outcome (specify whether the indicator needs adjusting)	
Method of expression of the result	Rate, ratio, time, …	
Limitations of measurement	Describe the limitations related to the data used in the databases (examples: availability, exhaustiveness and reliability of the codes used to identify the population targeted and the event searched in the databases…).	Describe: - limitations related to the data used to identify the risk factors in the adjustment in terms of availability, exhaustiveness, reliability of the codes used; - limitations related to interpretation of the results.

Technical specifications must be written during the development phase, during which criteria must also be validated and results produced.	
Adjustment / Standardisation **Stratification**	Specify whether the indicator needs adjusting; If it does, specify the adjustment variables, e.g. age, sex, comorbidities. Where applicable, define several populations on which the indicator can be measured.
Calculation method	Calculation mathematical formula.
Indicator calculation level	Specify the indicator calculation level: healthcare providers (healthcare organisations, groups, professionals), territory, region, department…
Healthcare providers concerned by the indicator	Specify which healthcare professionals or organisations involved in the care pathway (whether in a private practice, health facility, health centre, healthcare organisation, health networks etc.) are concerned by the indicator result.
Restitution of the indicator result to healthcare providers	Restitution methods: e.g. in a secoure platform, in a report, etc. Information returned: value of the indicator with or without additional information to help interpret the result. Restitution format: e.g. return the indicator result in a *funnel plot* type graph.
Indicator version	Indicator date and version.

The uses, besides quality management by healthcare providers, must be defined during the validation phase, and it should also be determined whether the indicator can be attributed to one of the healthcare providers (pending the Methodology report – Validation by comparison to a gold standard: criterion validity)	
Indicator uses	Quality management by healthcare providers, public disclosure, integration in a funding model…
Imputability of the result to the healthcare provider	Justify how the indicator result is attributable or not to the healthcare provider(s) in question. For example: if the indicator result depends on territorial organisation and not professional practices, the result cannot be imputable to the professional, even if they are concerned by the indicator.

This document was written by the HAS Service évaluation et outils pour la qualité et la sécurité des soins (SEvOQSS).

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