Good quality care for chronic conditions: a specification of dimensions, determinants and attributes

SCOPING REVIEW PROTOCOL

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This protocol describes the scoping review.

INTRODUCTION

Non-communicable diseases and other chronic illnesses – or "chronic conditions" – are broadly defined as conditions that last one year or more and require ongoing medical attention or limit activities of daily living or both[1]. Chronic conditions are varied and account for almost three quarters of deaths[2] around the world. Although healthcare providers are expected to deliver healthcare, having a chronic condition would mean that about 95-99% of the care is given by the person who has the chronic condition; they are in-charge of their own health on a day-to-day basis and the daily decisions they make have a huge impact on their health outcomes and quality of life [1]. Thus, the appropriate approach to chronic care includes not only disease prevention and medication prescription activities but also needs to focus on disability limitation, rehabilitation [2] and palliative care, should give special attention to the psychosocial aspects of the person with chronic condition [3], and should involve, enable and engage the person affected (and their families) in taking care of the condition, controlling risks and promoting well-being (self-care) [4]. Additionally, people with chronic conditions should be able to experience "seamless" care, where there is: integration of different care providers ("multidisciplinary care"); integration of acute and chronic care; integration of different levels of care, with proper "upward" and "downward" referral systems; a health information system that follows the person accessing care through time and through different types and levels of health services; and integration with different sectors (e.g., in controlling risks) [5-8].

To our knowledge, there has been, as yet, no systematic attempt to synthesize frameworks of quality of care (including those used by the World Health Organization, WHO) together with available literature on good quality chronic care, considering contexts of low- and middle-income countries (LMICs) in the perspective. Thus, although the activities above are delineated in standards of care for specific chronic conditions (at least in high-income countries), there doesn't seem to be any established ready-to-use definition of what would be considered good quality chronic care, especially for programs and interventions (to be) implemented in LMICs [9]. Current formulations for good quality healthcare and the delivery of good clinical care, including the World Health Organization's quality criteria [10] seem to still need substantial determination tailored to chronic conditions. The latter is key if we want to empower actors, who are committed to achieve "good quality care" defined as the "*right care, at the right time, responding to the service users' needs and preferences, while minimizing harm and resource waste"* [10] and "*increase the likelihood of desired health outcomes"* [11], and who have the mandate to implement specific quality-enhancing interventions specifically for people with chronic conditions. In this undertaking, it will be crucial to give sufficiently tailored, detailed and comprehensive meaning to care integration and continuity of care [12], acknowledge the reality of multimorbidity, and support the need

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[1] https://www.cdc.gov/chronicdisease/about/index.htm

[2] Based on mortality from NCD and HIV/AIDS (https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases and https://www.unaids.org/en/resources/fact-sheet)

of people with chronic conditions considering not only biomedical but also psychosocial aspects *to adapt and self-manage in the face of social, physical, and emotional challenges* [13].

OBJECTIVE AND RESEARCH QUESTION

The main objective of this study is to inform a program of work implemented by the WHO, which will focus on purchasing instruments to strengthen quality health services for chronic conditions, with a particular attention to policy needs of low-and-middle-income countries (LMICs). Purchasing refers to the allocation of pooled funds to healthcare providers for the delivery of health services on behalf of certain groups or an entire population. Purchasing arrangements are defined as any institutional arrangement purposely designed to allocate and channel financial resources from a purchaser to a provider for the provision of health services to reach a health objective. They can target patient groups (e.g., peer educators), individual health workers, health facilities, or networks of health service providers.

The program of work will include the conduct of case studies documenting specific experiences in low-, middle- and high-income countries. For appraising the contribution of the specific purchasing arrangements to quality chronic care, it will be key to take a step back from the implicit or explicit conceptualization of quality of care used by specific schemes (e.g., accreditation, pay-for-performance). Indeed, conceptualization used by the scheme designers are often 'partial' or 'biased'. For their monitoring and evaluation, scheme designers often focus on the dimensions, determinants, and attributes which are thought to be amenable to influence through the mechanisms activated by the scheme (e.g., funding, incentivization or information). However, one knows that some important dimensions of quality of care are not contractable (i.e., measurable and verifiable by a third party). Researchers studying the schemes may also be biased, for instance because of the methods they used (some dimensions of quality are more demanding than others as for data collection strategy) [14, 15].

For these reasons, it has been deemed imperative to equip the analytical team with a sound conceptualization of "quality health services for chronic illnesses". However, as highlighted in the introduction, to our knowledge, there is not, to date, an 'established' framework for good quality care tailored for chronic conditions, as a whole. Even if ultimately, performance is a matter of perspective and of the Theory of Change[3] one wants to activate, building on a more comprehensive and a sounder understanding of quality of chronic care will probably reduce the risks of too partial understanding. Although there are always some normative choices to be made (there is nothing such as one true determination of quality of care),

[3] While a Theory of Change (ToC) is defined as essentially a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context (https://www.theoryofchange.org/what-is-theory-of-change/toc-background/), in this research, ToC is understood in its core and simplest meaning: the main pathway through which an intervention leads to its outcome including the motivation.

equipping the analysts with a well-specified framework will be highly beneficial to their empirical work.

The main objective of this study is to produce a comprehensive overview of quality of care for chronic conditions amenable to specific calibrations afterwards. This can be divided into three research sub-questions:

- ***what are the main healthcare quality dimensions that are significant for chronic conditions and how are they defined?***
- ***what are the determinants of this good quality of care for chronic conditions, and what mediators have been demonstrated to be of importance considering existing health service delivery models[4]?***
- ***how are the different dimensions and determinants of quality of care for chronic conditions captured through measurable attributes?***

Relative to the WHO program of work focusing on purchasing instruments to strengthen quality health services for chronic conditions, the first question will allow us to identify dimensions which should be valued by actors acting on quality of care for chronic conditions (including purchasing agencies financing providers). The second question will inform analysts on how purchasing arrangements can act upon determinants and why these determinants matter. The third question will inform analysts on what is amenable to measurement and thus possibly subject to payment. Answers to these three questions will then have to be reorganised into a framework, in order to reach our main objective. This framework step should of course build on all the conceptualisation which were already done by research and expert communities active in the field of quality in chronic care. Given the focus of the WHO research program on LMICs, particular attention will have to be given to the specific constraints prevailing in these settings, especially for sub-questions 2 and 3 and the framework specification.

CONCEPTUAL ISSUES

The research question raises several issues. Establishing criteria for good quality chronic care can be a "messy" problem as there are varied – and different – chronic conditions. The priorities for each condition to achieve *desired health outcomes* (the "desired effect") may be different. This will require us to consider a spectrum of conditions.

[4] In regard to elements of service delivery models, we refer to actual approaches by which care services are organised and provided in a way that good quality is maintained and/or assured. These approaches may be related to (1) the actual provision of care, e.g., procedures and processes in place; (2) the contents of the services offered, e.g., comprehensiveness and/or absence of any gaps; (3) the level and localisation of care; (4) financing; and (5) regulation, e.g., internal and external mechanisms to assure quality management systems, accreditation and/or appropriate training of healthcare providers, etc. (adapted from : https://www.who.int/hac/techguidance/tools/disrupted_sectors/module_07.pdf)

Another issue is that there are stakeholders and actors with different interests. If such interests matter for quality of care, they may be congruent or competing. One can likewise predict that context would be influential. Furthermore, as already highlighted above, different theories of change do also approach quality of care differently.

Looking into what main dimensions, determinants, and attributes matter for good quality healthcare for chronic conditions therefore requires looking into different perspectives from various data sources making use of different lenses (Figure 1). A better understanding of the different perspectives would lead to a more meaningful determination of what dimensions, determinants and attributes matter in good quality chronic care.

To handle the 'mess', it can also be helpful to structure a bit our understanding of two things: how quality of care is produced and how it is measured. Without being prejudiced on the findings of this research, we propose to focus our conceptual review on what we propose to call the dimensions, determinants and attributes of quality of care.

Figure 1. Proposed methodological framework

We provisionally define dimensions, determinants, and attributes as follows:

1. *Dimension* - any broad category of importance with intrinsic value, for example 'patient empowerment / enablement / engagement' which can be extended to empowerment / enablement / engagement of the relevant social embedding where people need to find care, etc.
2. *Determinant* - any actionable factor which has direct incidence on the quality of care (e.g., motivation of health staff) which may extend to systemic challenges – health

system-wise, including arrangements within a system/model of health service delivery[5] but also the conditions/limitations/opportunities to be found in family, community resources (alternative healers and/or helpers), the environment, and the community itself.

3. *Attribute* - any specific and directly measurable variable of importance, possibly related to a specific chronic condition.

The attributes can be considered as measurable characteristics of the different dimensions or determinants of good quality healthcare.

Over the last decades, there has been considerable work around the definition of quality of care, its core dimensions (in a generic manner) and its determinants. Instead of 'reinventing the wheel', we can start from a quite well-established conceptual 'base'.

For the definition of Quality of Care, we propose to adopt the definition put forward by the Institute of Medicine in 1990 [11]: *Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*. At the same time, we note that there is also a wide consensus that the generic definition needs to be contextualized and tailored to specific applications.

For the core dimensions, since the Institute of Medicine's *Crossing the Quality Chiasm* 2001 report [15], the consensus converges around a list of six: safety, effectiveness, person-centred care[6], timeliness, equity and efficiency. While we are aware that different documents and reports have extended or reorganized this list, we propose to take this list as our starting point.

For the determinants, we propose to start from the broad list of 'foundations' proposed by the WHO in *Delivering quality health services: A global imperative for universal health coverage* [10]: health care workers; health care facilities; medicines, devices and other technologies; information systems; and financing. Again, we take this list as a starting point. Obviously, we aim for a more sophisticated understanding of possible determinants and more particularly how they contribute to quality of care for chronic conditions; we anticipate that this will require, to some extent, acknowledging how chronic care services are delivered, and the service delivery models or elements utilised. However, we deem this crude list sufficient at this stage.

[5] The actionability entails that the variable comes with a causal pathway, which will often be mediated by a service delivery model or contextual arrangements.

[6] Originally referred to as "patient-centred care", the term "person-centred care" is now more preferred. Cf Crossing the Global Quality Chiasm: Improving Health Care Worldwide (2018): https://www.nap.edu/read/25152

We note that the aforementioned are the common dimensions and determinants for good quality healthcare in general. Our objective clearly is to identify specifications of good quality care for chronic conditions, with specific attention to LMICs. This tailoring will be the result of the scoping review and the Delphi surveys. We anticipate that some well-known dimensions (e.g., person-centred care) or sub-dimensions (e.g. patient empowerment) will emerge as very relevant for good quality chronic care. In this program of work, these adaptations will be done by taking three main specific realities into account:

- The distinctive nature of chronic conditions;
- The reality of multiple and different settings with their own specific constraints, and the need for contextualization; and
- The fact that our effort to define quality of care for chronic conditions is required by a specific focus on one type of intervention towards quality improvement: purchasing arrangement.

For the first adaptation, we will rely on a scoping review. There has been a substantial amount published on quality of care for chronic conditions, including conceptual / framework papers. We anticipate that many of these contributions will fit and consolidate the IOM 1990 definition and the IOM (2001, 2018) dimensions and substantially detail the determinants/factors which are required for quality of care for chronic conditions. We expect that many framework papers have established links between different determinants, dimensions, etc.

For the second and third adaptation, we will mainly rely on the Delphi survey (although we also anticipate that the scoping review will identify frameworks developed specifically for quality of care for chronic conditions in different country settings, especially for LMICs).

METHODOLOGY

As a first step, we will conduct a ***scoping review of literature*** to systematically identify and map available information on quality of care for chronic conditions, identifying key concepts, frameworks or theories.[7] We will concentrate on works that have acknowledged and unpacked the plurality of quality in chronic care, and will give more value to literature which are theoretical in nature (e.g., proposing a framework) and/or validations of frameworks or several dimensions of quality. While we value that a framework or its dimensions have been validated by facts, we also welcome ‘thinking’.

We expect to synthesize available information on dimensions, determinants and attributes specifically for good quality care for chronic conditions, especially in low-resource contexts, and utilise this evidence in constructing a draft ‘care quality framework adapted for chronic conditions’.

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[7] Based on the definition of Scoping Review from the Canadian Institutes of Health Research, Guide for Knowledge Synthesis: https://cihr-irsc.gc.ca/e/41382.html

We will retrieve published, white, grey papers, to the extent where these are available, on frameworks of and the main dimensions, determinants and attributes which matter for good quality of care for chronic conditions, in general, and for a number of chronic conditions, specifically[8]; make an inventory of these; and identify conflicting characteristics (e.g., standards, definitions, etc.), if any.

We will conduct the scoping review following PRISMA guidelines (PRISMA extension for scoping reviews).[9]

Scientific publications

Search for scientific publications will be conducted in the PubMed and Science Direct data bases. PubMed comprises more than 33 million citations for biomedical literature from MEDLINE, life science journals, and online books. It features the Medical Subject Headings (MeSH) thesaurus, a controlled and hierarchically-organized vocabulary produced by the National Library of Medicine used for indexing, cataloguing, and searching of biomedical and health-related information. The Science Direct data base features 4,510 journals and 32,063 books and provides a wide variety of subject areas including social sciences.

The following search criteria will be used:

1. Search terms: Specific search terms have been developed for each of these databases (Appendix 1); these will be finalised during implementation.
2. Language: English or French
3. Years of publication: 2002-2021 (2002 was selected as start date as this was when the WHO Innovative Care for Chronic Conditions framework[10] was published.)
4. Study subjects: human (applies to PubMed Data Base only)
5. Database subject areas (applies to Science Direct Data Base only):
    a. Medicine and Dentistry
    b. Nursing and Health Professions
    c. Social Sciences
    d. Pharmacology, Toxicology and Pharmaceutical Science
    e. Biochemistry, Genetics and Molecular Biology
    f. Neuroscience
    g. Psychology

[8] For specific conditions, we suggest to focus on the ones listed by the Global Burden of Diseases (https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30925-9/fulltext) to be among the most important drivers of increasing burden (i.e. the causes that had the largest absolute increases in number of disability-adjusted life-years / DALYs) between 1990 and 2019: CVDs (ischaemic heart disease and stroke), diabetes mellitus, chronic kidney diseases, lung cancer and HIV/AIDS, and to which we add chronic respiratory diseases (chronic obstructive pulmonary disease and bronchial asthma) as per WHO 2000-2019 Global estimates of leading causes of death and disability worldwide. (https://www.who.int/news/item/09-12-2020-who-reveals-leading-causes-of-death-and-disability-worldwide-2000-2019).

[9] Available from: http://www.prisma-statement.org/Extensions/ScopingReviews

[10] Available from: https://www.who.int/chp/knowledge/publications/icccglobalreport.pdf

h. Computer Science (i.e., information and communication technology)
i. Economics, Econometrics and Finance

The following search strategies will be applied

1. For the PubMed search:
    a. MeSH major topics will be used for terms with multiple variations, for instance “chronic disease” (also referred to as “chronic illness”, chronic condition”, etc), “stroke” (also referred to as “cerebrovascular accident”, “apoplexy”, etc).
    b. For each MeSH major topic, the subheadings will be limited to the topics relevant to healthcare delivery and quality in healthcare: (1) Organization and administration; (2) Prevention and control; (3) Rehabilitation; and (4) Therapy.
    c. In formulating the search terms, a MeSH topic may be combined with another MeSH topic, or with specific “key words” in “all fields”.
    d. Key words composed of several words will be enclosed in quotation marks, e.g., “innovative care for chronic conditions”, “chronic obstructive pulmonary disease” so that the search engine will look for this as a single term and not as per word.

2. The Science Direct Data Base does not offer the possibility of using subject headings / MeSH. For this search, combinations of specific key words using all possible variants of each of terms that will elicit the highest yield of results will be used, enclosed in quotation marks as needed.

    However, it is important to note that this Data Base limits search terms to eight boolean phrases only.

    Key word variations may include:

    a. “Chronic disease” OR “chronic condition”[11]
       (note: specifying plural terms is irrelevant, the Data Base will also yield “diseases” and “conditions” in the search results).
    b. "Care quality" OR "quality framework" OR "quality indicator" OR “quality criteria”
    c. "Chronic care model" OR "innovative care for chronic conditions"
    d. Comorbidity OR multimorbidity

[11] Additional variations, e.g., “chronic life-long condition” either does not improve the yield or decreases the yield

Other literature and documents

Search for grey / other literature, such as policies, circulars and publications not available from scientific search engines will be conducted using the same keywords and limitations that were used in the scientific publication search, where possible, in the Google search engine and in the WHO website. Additionally, the WHO and contacts from healthcare regulatory agencies, organizations with chronic disease programs/projects, and from various Ministries of Health and/or connected agencies will be requested to share any documents related to quality of care, specifically for chronic conditions.

Literature sifting

Literature sifting and retrieval of information will be done systematically by two researchers, with any disagreements resolved amongst the two, as needed, through a third researcher. Retrieved scientific publications will initially be screened through the titles. Abstracts (if available) of the chosen documents will be retrieved and individually reviewed. Full articles will be scrutinized and selected; only documents that are relevant to this study will be included in the final selection (Figure 2). Grey literature and other documents will likewise be sifted to identify relevant documents to be reviewed (Figure 3).

If and when literature or documents are about specific chronic conditions, we will only consider CVDs (ischaemic heart disease and stroke), diabetes mellitus (types 1 and 2), chronic kidney diseases, chronic respiratory diseases (chronic obstructive respiratory diseases and bronchial asthma), lung cancer and HIV/AIDS (cf footnote 7).

Data retrieval

Information relevant to the study will be retrieved from the selected scientific articles and other documents following the formulated data extraction framework (Table 1, page 14, subject to further refinement).

The Data Extraction Framework includes the following areas related to chronic care quality:

1. Dimension – as defined in page 4; plus
    a. Definition of specific dimension – description of the nature, scope, or meaning.
2. Determinant – as defined in page 4; plus
    a. Definition – description of the nature, scope, or meaning
3. Health service delivery model/element, with attention to how it connects the determinant and/or attribute(s) to the specific dimension[12]

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[12] It is at this level that we will document the crucial aspect of integration, which can be defined in a number of ways, as mentioned in our introduction (page 1): integration of different care providers ("**multidisciplinary** care"); integration of acute and chronic care; integration of **different levels** of care, with proper "upward" and "downward" referral systems; a **health information system** that follows the person accessing care through time and through different types and levels of health services; and **integration with different sectors** and can be implemented in a number of ways such as: making available different healthcare services and **levels of care** for a patient's **specific disease;** integrating care of different disciplines, different levels of care **and different sectors** (beyond the healthcare services, e.g., social services) for **a group of people with specific chronic conditions;** integrating care of different disciplines and different sectors based on the multiple health needs of the **population.**

Figure 2. Sifting strategy for scientific publications

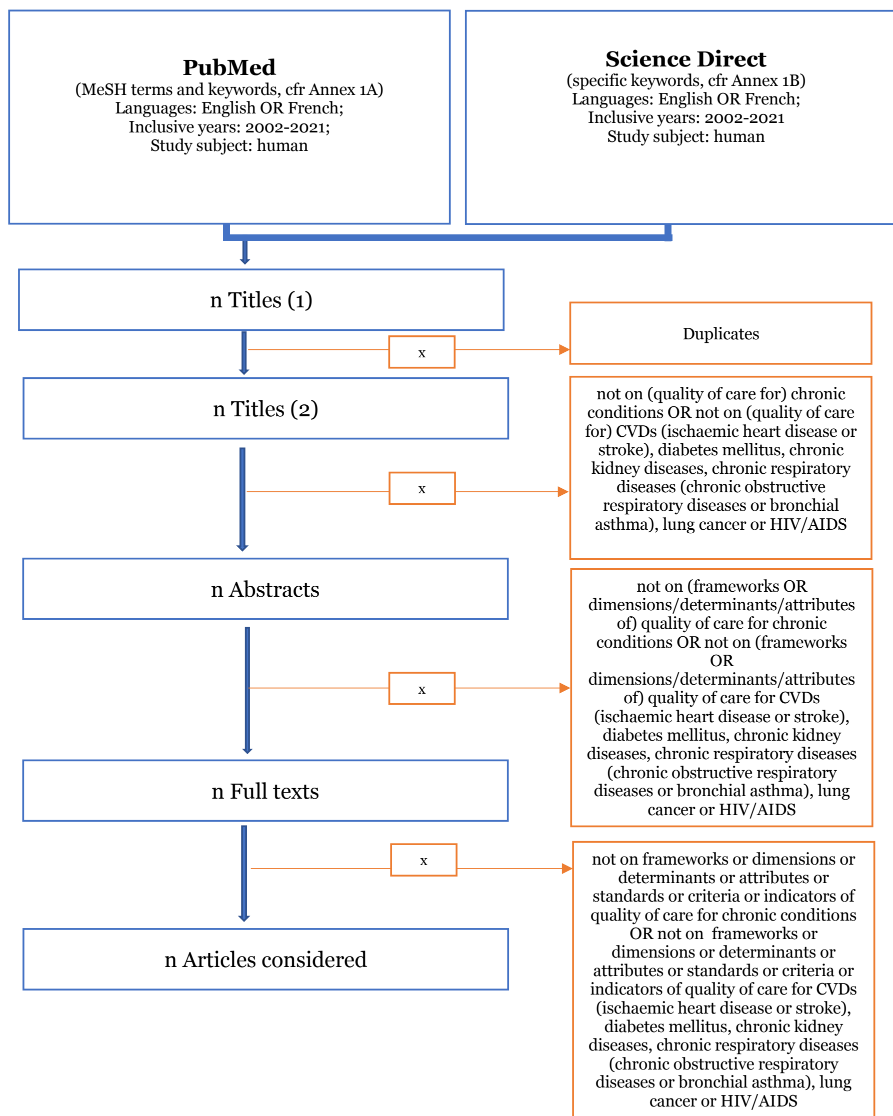
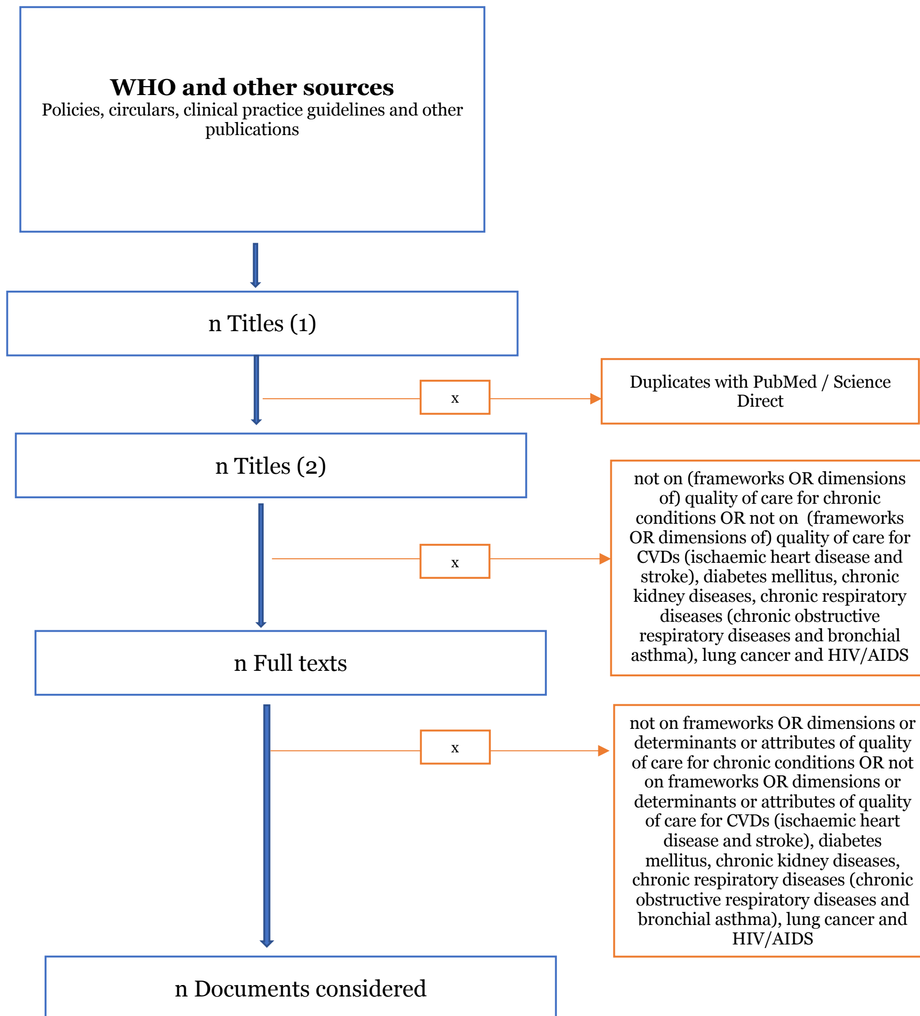


Figure 3. Sifting strategy for grey literature



4. Attribute – as defined in page 4, plus:
    a. Definition – description of the nature, scope, or meaning
    b. Standard – explicit statement(s) of expected quality in the performance of a health care activity as related to the attribute and corresponding determinant and dimension, where available.

    Standards delineate the best possible condition that should exist to achieve good quality. Standards would then set the maximum achievable performance expectations that affect quality of care.
    c. Criteria – include structural, process or outcome elements that can be measured to reliably assess fulfilment of standards.

    Criteria lay down specific actions that need to be done / accomplished to meet the standard.
    d. Indicators – specific examples that provide objective proof of compliance with criteria.

    Indicators are measurable variables or characteristics that can be used to determine the degree of adherence to a standard or to the achievement of quality goals.
4. Critical reading findings – critical examination of the (explicit or implicit) concepts and the arguments used, and the (explicit or implicit) assumptions in which the text and author(s) are embedded or against which they make a case. This relates to the ToC as we use the term in this protocol, including the motivation behind the research/article, which may be stated or implied in the paper (cf footnote 3).
5. Other information – comprehensive description of the article plus additional information not categorized in the preceding.

It is expected that documents/articles cover more than one dimension, and that each dimension will have more than one determinant and/or attribute, and that each of these will have several standards, criteria and indicators; if so, additional rows will be added for each document/article.

It is also possible that identified determinants / attributes cannot be classified under a dimension; if so, the dimension column will be left blank (or "none indicated" written in the box).

Furthermore, we assume that not all of the other information (definitions, standards, criteria, indicators, health service delivery model) to complete the data extraction framework will be available from all retrieved articles and documents, all the time; if so, these will also be left blank (or "none indicated" written in the box).

Any figures presented will likewise be retrieved.

While the data extraction framework seems rigid in its construct, principles of *critical reading* will be applied to individually describe each of the articles and to determine the position of the authors / organization / agency, noting explicit or implicit stands / vision /

values / ideologies and making sense of their justification and rationale (including the assumptions they make and their motivations, cfr our use of the term “ToC”) for defining / establishing criteria for good quality of chronic care as such; these may be explicit or implied. A comprehensive description of each document relative to said assumptions and motivations, and the positions of the authors / organization / agency who were responsible for the project or article will be provided in the last 2 columns.

We give an example in Table 1, where we use a “sample paper” considering the six base dimensions and where we “retrieved” the following information (review was done only partially, simply to give an idea of what would be the contents of the Table):

- The **dimensions** used and definitions;
- **determinants** and their descriptions (where available), and of which there is more than one per dimension;
- specific elements of **health service delivery** and descriptions of any form of **healthcare integration**, where available, to connect the determinants/attributes to the dimension/determinant.
- **attributes**, noting that there is usually more than one attribute per determinant/dimension, with corresponding definitions where provided;
- and **standards** and corresponding **criteria** and **indicators,** where there may be several and are individually defined.
- Based on **critical reading findings**, the (implicit) **motivation** (**ToC**) behind the work was described, and
- additional information, to **position** the author so as to provide more insights regarding the paper (and the conclusions made).

We note that the data extraction framework may still be modified and that we may also add columns should we note of any information that we deem should be included, in the course of our review. Any findings that cannot be classified under the current columns will be discussed among the Team (ITM and WHO), for proper disposition.

All of these information will be brought forward for analysis.

Table 1. Scoping review data extraction framework

Title	Author(s)	Year of publication	Chronic condition(s) covered	Study design	Setting	Dimension & definition	Determinant & definition	Health services delivery model / elements present / implemented in the facility (and descriptions of healthcare integration, if any)	Attribute				Critical reading findings, including "ToC"	Other information
									definition	Standard(s)	Criteria	Indicator(s)		
Improving quality of care at the first line health services of the Veterans Memorial Medical Centre, Philippines	Ku	2008	Not specified	Observational	Philippines	Person-centredness – *Providing care that is respectful of and responsive to individual patient / person preferences, needs, and values and ensuring that patient / a person's values guide all clinical decisions*	Recognition and handling of psychosocial problems through effective communications.	Multidisciplinary care is offered in the medical center (integration of different providers)	None indicated	Attending physicians are trained in the biopsychosocial approach	Certificate of training in biopsychosocial approach	90% of attending physicians trained	The quality framework was adapted for use to internally assess good quality care in a health facility where all levels of care are found in a single facility and first line health services are centralised	Master thesis for improvement of first line healthcare services for Philippine Veterans making use of the Institute of Medicine's six aims of good quality healthcare as framework. The author was an attending physician at the Veterans
										Physicians have developed active listening skills	Certificate of training in active listening	90% of physicians trained		
							Collaborative care – involving patients (as persons) in making decisions for their care			*For both determinants: Longer consultations are significantly associated with better recognition and handling of psychosocial problems and with better patient enablement.	Consultation time	15 minutes consultation time per patient		

EXAMPLE

						Timeliness - *Reducing waits and (sometimes) harmful delays*	None indicated	Laboratory and radiology services are available (integration of different services)	Timeliness of diagnosis through an investigative plan, as supported by laboratory and ancillary procedures.	Timely performance of diagnostic procedures	Turnaround times (TAT) of diagnostic procedures from request to scheduled appointment	Laboratory: maximum 1 week Radiology: maximum 2 weeks		Health Facility.
										Timely issuance of results	TAT from scheduled appointment to issuance of results	Laboratory: maximum 1 day Radiology: maximum 3 days		
								Primary, secondary, tertiary multi-specialty health services are offered in a single health facility (integration of different providers, different levels and different services)	Timeliness of treatment – recognition of when to refer patients to specialists for further treatment, and carrying out said referral to completion	Timely consultations with specialists	TAT of referral to scheduled appointment	Maximum 1 month		
											% needing referrals actually referred (patients' records review)	90% of all records reviewed		
						Effectiveness - *Providing services based*	Relational continuity – the same	Services are provided following	Patient is followed up by the		% patients seen by	Specific patient is seen by the		

EXAMPLE

						on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit; avoiding underuse and overuse, respectively. **SUBDIMENSION**: continuity of care	physician attends to the patient	"group practice" delivery	same healthcare provider		same HCP 70% of the time	same HCP 70% of the time, in 80% of all charts reviewed		
							Informational continuity – health information systems are "unified" / follows the patient	Different patient medical records for out-patient, in-patient and emergency services	Patients' information and data follow them through their journey in healthcare	Singular Health Information Systems (HIS) for the Medical Centre	Singular health records accessible to all services within the facility	Presence / absence of singular HIS, as accessed from different services		
							Management continuity – coordination and collaboration between all levels, disciplines and specialties	Primary, secondary, tertiary multi-specialty health services are offered for free to Veterans and their dependents, in a single health facility (integration of different providers and different levels of care)	Referral and counter-referral systems in place between disciplines and levels of care	Presence of processes for referral and counter-referrals	Referral and counter-referral processes are adhered to	Presence / absence of referral and counter-referral processes Adherence to referral and counter-referral processes in 90% of all referrals reviewed		
						Efficiency	…		…	…	…	…		
						Safety	…		…	…	…	…		
						Equity	…		…	…	…	…		

Data analysis.

Analysis will be done manually.

In the analysis, articles will be grouped (1) whether the frameworks or dimensions/determinants/attributes are theoretical propositions or if these have been validated (with description of the design / how the validation was conducted); (2) the setting of the paper (low-, middle- or high-income setting and in which WHO Region); and the timeframe when the output was produced.

Data will be grouped further according to the identified dimension (if present), determinant(s) and attribute(s) and any related service delivery models or elements, and information retrieved for each will be synthesized and analysed for similarities and the strength of consensus about the dimensions/determinants/attributes, as well as for gaps in available literature and any contradictions (in the definitions, in the standards/criteria/indicators used, etc., and noting of critical reading findings. Determinations on the applicability of these quality dimensions, determinants and attributes to the care of specific chronic conditions especially in low-resource settings will also be done to the extent possible.

A draft Chronic Conditions Care Quality (CCCQ) Framework specifying the quality dimensions, determinants and attributes for good chronic care will be constructed.

The draft CCCQ Framework will be brought forward to the second phase of this research: the Delphi survey with international experts coming from the different WHO regions, and with varying characteristics (policy makers; healthcare providers*;* representatives of healthcare regulatory agencies, health or social insurance agencies, civil society, relevant professional societies, and health institutions providing care for chronic conditions; members of the academe and researchers who are working on chronic conditions; WHO representatives; people with chronic conditions, etc). The CCCQ Framework will be refined after the first round and finalised in the second round of the Delphi.

A separate protocol for the Delphi survey will be developed.

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Appendix A. Keywords

I. PUBMED SEARCH TERMS

Limited to:

- Years: 2002-2021
- Languages: English and French
- Study subjects: human

A. SEARCH STRATEGY: Chronic diseases in general + models for chronic care AND health care quality, quality frameworks, quality indicators, quality criteria

MeSH major topic: **Chronic Disease**

Defined as diseases which have one or more of the following characteristics: they are permanent, leave residual disability, are caused by nonreversible pathological alteration, require special training of the patient for rehabilitation, or may be expected to require a long period of supervision, observation, or care. For epidemiological studies chronic disease often includes HEART DISEASES; STROKE; CANCER; and diabetes (DIABETES MELLITUS, TYPE 2).

This MeSH term also includes the following entry terms:

- Chronic Diseases
- Disease, Chronic
- Chronic Illness
- Chronic Illnesses
- Illness, Chronic
- Chronic Condition
- Chronic Conditions
- Condition, Chronic
- Chronically Ill

AND MeSH subheadings:

a. Organization and administration OR
b. Prevention and control OR
c. Rehabilitation OR
d. Therapy

*This major topic includes "multiple chronic diseases/conditions"

= Search term: ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh]) **AND** any of the following MeSH major topics or keywords

1. **AND** MeSH major topic **Quality of Health Care**

    Definition: The levels of excellence which characterize the health service or health care provided based on accepted standards of quality.

    This MeSH term also includes the following entry terms:

    - Health Care Quality
    - Quality of Healthcare
    - Healthcare Quality
    - Quality of Care
    - Care Quality
    - Pharmacy Audit
    - Audit, Pharmacy
    - Pharmacy Audits

    * Restrict to MeSH Major Topic.

    **Do not include MeSH terms found below this term in the MeSH hierarchy.

    = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality of Health Care"[Majr:NoExp] → **480 results**

2. **AND** MeSH major topic **Quality Indicators, Health Care**

    Definition: Norms, criteria, standards, and other direct qualitative and quantitative measures used in determining the quality of health care.

    This MeSH term also includes the following entry terms:

    - Quality Indicators, Healthcare
    - Healthcare Quality Indicator
    - Healthcare Quality Indicators
    - Indicator, Healthcare Quality
    - Indicators, Healthcare Quality
    - Quality Indicator, Healthcare
    - Health Metrics
    - Health Metric
    - Metrics, Health
    - Global Trigger Tool, Healthcare
    - Healthcare Global Trigger Tool

    = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality Indicators, Health Care"[Mesh] → **508 results**

3. **AND** any of the key words below, searched in "all fields":
   b. **AND** key words, all fields: **quality framework**
   = SEARCH TERM ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])AND (quality framework) → **440 results**

   c. **AND** key words, all fields: **PACIC**[13]
   = SEARCH TERM ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])AND (PACIC) → **48 results**

   d. **AND** key words, all fields: **"innovative care for chronic conditions"**
   = SEARCH TERM ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh]) AND ("innovative care for chronic conditions") → **7 results**

   e. **AND** key words, all fields: **"quality criteria"**
   = SEARCH TERM ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh]) AND ("quality criteria") → **26 results**

   f. **AND** key words, all fields : **"quality standards"**
   = SEARCH TERM ("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh]) AND ("quality standards") → **20 results**

[13] PACIC or Patient Assessment of Chronic Illness Care is a patient self-report instrument to assess the extent to which patients with chronic illness receive care that aligns with the Chronic Care Model—measuring care that is patient-centered, proactive, planned and includes collaborative goal setting; problem-solving and follow-up support. (https://www.familycarenetwork.com/sites/default/files/Development%20and%20Validation%20of%20PACIC.pdf ; http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=2)

B. Comorbidity / multimorbidity search terms

1. MeSH major topics:

   Chronic Disease (as previously defined) **AND** **Quality of Health Care** (as previously defined)

   AND either of the two keywords below:

   b. **AND** key word, all fields: **comorbidity**
   = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality of Health Care"[Majr:NoExp] AND comorbidity → **48 results**

   c. **AND** key word, all fields: **multimorbidity**
   = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality of Health Care"[Majr:NoExp] AND multimorbidity → **14 results**

2. MeSH major topics:

   Chronic Disease (as previously defined) **AND** **Quality Indicators, Health Care** (as previously defined)

   AND either of the two keywords below:

   b. **AND** key word, all fields: **comorbidity**
   = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality Indicators, Health Care"[Mesh] AND comorbidity → **66 results**

   c. **AND** key word, all fields: **multimorbidity**
   = SEARCH TERM (("Chronic Disease/organization and administration"[Mesh] OR "Chronic Disease/prevention and control"[Mesh] OR "Chronic Disease/rehabilitation"[Mesh] OR "Chronic Disease/therapy"[Mesh])) AND "Quality Indicators, Health Care"[Mesh] AND multimorbidity → **10 results**

C. Quality of care for specific chronic condition search strategy: (MeSH major topic AND MeSH major topic) OR (MeSH major topic AND specific chronic condition in All Fields)

1. In separate searches:
   MeSH major topic **Quality of Health Care** (as previously defined) OR
   MeSH major topic **Quality Indicators, Health Care** (as previously defined)

2. **AND** one of the following specific chronic conditions[14], either as MeSH major topic or as a keyword search in all fields

   a. **AND** MeSH major topic: **Myocardial Ischemia**

      Definition: A disorder of cardiac function caused by insufficient blood flow to the muscle tissue of the heart. The decreased blood flow may be due to narrowing of the coronary arteries (CORONARY ARTERY DISEASE), to obstruction by a thrombus (CORONARY THROMBOSIS), or less commonly, to diffuse narrowing of arterioles and other small vessels within the heart. Severe interruption of the blood supply to the myocardial tissue may result in necrosis of cardiac muscle (MYOCARDIAL INFARCTION).

      This MeSH term also includes the following entry terms:

      - Ischemia, Myocardial
      - Ischemias, Myocardial
      - Myocardial Ischemias
      - Ischemic Heart Disease
      - Heart Disease, Ischemic
      - Disease, Ischemic Heart
      - Diseases, Ischemic Heart
      - Heart Diseases, Ischemic
      - Ischemic Heart Diseases

      And, under its hierarchy, includes the following terms (non-exhaustive list)

      - Acute Coronary Syndrome
      - Angina Pectoris
      - Myocardial Infarction

[14] For specific chronic conditions, we utilise MeSH terms if there are different nomenclature for the same condition (e.g., ischemic heart disease) and use key words search in all fields if not (e.g., diabetes mellitus)

AND MeSH subheadings:

(a) Organization and administration
(b) Prevention and control
(c) Rehabilitation
(d) Therapy

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND ("Myocardial Ischemia/organization and administration"[Mesh] OR "Myocardial Ischemia/prevention and control"[Mesh] OR "Myocardial Ischemia/rehabilitation"[Mesh] OR "Myocardial Ischemia/therapy"[Mesh]))
→ **345 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh] AND ("Myocardial Ischemia/organization and administration"[Mesh] OR "Myocardial Ischemia/prevention and control"[Mesh] OR "Myocardial Ischemia/rehabilitation"[Mesh] OR "Myocardial Ischemia/therapy"[Mesh]))
→ **616 results**

b. **AND** MeSH major topic: **Stroke**
Definition: A group of pathological conditions characterized by sudden, non-convulsive loss of neurological function due to BRAIN ISCHEMIA or INTRACRANIAL HEMORRHAGES. Stroke is classified by the type of tissue NECROSIS, such as the anatomic location, vasculature involved, etiology, age of the affected individual, and hemorrhagic vs. non-hemorrhagic nature.

This MeSH term also includes the following entry terms:

- Strokes
- Cerebrovascular Accident
- Cerebrovascular Accidents
- CVA (Cerebrovascular Accident)
- CVAs (Cerebrovascular Accident)
- Cerebrovascular Apoplexy
- Apoplexy, Cerebrovascular
- Vascular Accident, Brain
- Brain Vascular Accident
- Brain Vascular Accidents
- Vascular Accidents, Brain
- Cerebrovascular Stroke
- Cerebrovascular Strokes

- Stroke, Cerebrovascular
- Strokes, Cerebrovascular
- Apoplexy
- Cerebral Stroke
- Cerebral Strokes
- Stroke, Cerebral
- Strokes, Cerebral
- Stroke, Acute
- Acute Stroke
- Acute Strokes
- Strokes, Acute
- Cerebrovascular Accident, Acute
- Acute Cerebrovascular Accident
- Acute Cerebrovascular Accidents
- Cerebrovascular Accidents, Acute

AND MeSH subheadings:

(a) Organization and administration
(b) Prevention and control
(c) Rehabilitation
(d) Therapy

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND ("Stroke/organization and administration"[Mesh] OR "Stroke/prevention and control"[Mesh] OR "Stroke/rehabilitation"[Mesh] OR "Stroke/therapy"[Mesh])) → **226 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND ("Stroke/organization and administration"[Mesh] OR "Stroke/prevention and control"[Mesh] OR "Stroke/rehabilitation"[Mesh] OR "Stroke/therapy"[Mesh])) → **331 results**

c. **AND** MeSH major topic **<u>Renal Insufficiency, Chronic</u>**

Definition: Conditions in which the KIDNEYS perform below the normal level for more than three months. Chronic kidney insufficiency is classified by five stages according to the decline in GLOMERULAR FILTRATION RATE and the degree of kidney damage (as measured by the level of PROTEINURIA). The most severe form is the end-stage renal disease (CHRONIC KIDNEY FAILURE)

This MeSH term also includes the following entry terms:

- Chronic Renal Insufficiencies
- Renal Insufficiencies, Chronic
- Chronic Renal Insufficiency
- Kidney Insufficiency, Chronic
- Chronic Kidney Insufficiency
- Chronic Kidney Insufficiencies
- Kidney Insufficiencies, Chronic
- Chronic Kidney Diseases
- Chronic Kidney Disease
- Disease, Chronic Kidney
- Diseases, Chronic Kidney
- Kidney Disease, Chronic
- Kidney Diseases, Chronic
- Chronic Renal Diseases
- Chronic Renal Disease
- Disease, Chronic Renal
- Diseases, Chronic Renal
- Renal Disease, Chronic
- Renal Diseases, Chronic

AND MeSH subheadings:

(a) Organization and administration
(b) Prevention and control
(c) Rehabilitation
(d) Therapy

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND ("Renal Insufficiency, Chronic/organization and administration"[Mesh] OR "Renal Insufficiency, Chronic/prevention and control"[Mesh] OR "Renal Insufficiency, Chronic/rehabilitation"[Mesh] OR "Renal Insufficiency, Chronic/therapy"[Mesh]) → **139 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND ("Renal Insufficiency, Chronic/organization and administration"[Mesh] OR "Renal Insufficiency, Chronic/prevention and control"[Mesh] OR "Renal Insufficiency, Chronic/rehabilitation"[Mesh] OR "Renal Insufficiency, Chronic/therapy"[Mesh]) → **207 results**

d. **AND** key words, all fields: “**diabetes mellitus”**

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND (diabetes mellitus)) → **819 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND (diabetes mellitus)) → **757 results**

e. **AND** key words, all fields: “**lung cancer”**

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND (“lung cancer”)) → **86 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND (lung cancer)) → **160 results**

f. **AND** key words, all fields: **bronchial asthma**[15]

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND (bronchial asthma)) → **226 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND (bronchial asthma)) → **178 results**

g. AND key words, all fields, **“chronic obstructive pulmonary diseases”**

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND ("chronic obstructive pulmonary disease")) →**114 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND ("chronic obstructive pulmonary disease")) → **157 results**

[15] Note: enclosing in quotation marks gives zero results; there could be some articles on skin asthma in the yield, which will be removed during article sifting

h. **AND** key words, all fields: HIV/AIDS

= SEARCH TERM (("Quality of Health Care"[Majr:NoExp]) AND (HIV/AIDS)) → **193 results**

= SEARCH TERM (("Quality Indicators, Health Care"[Mesh]) AND (HIV/AIDS)) → **58 results**

II. Science Direct Data Base

Refined by: Year: 2002-2021

Limited to the following database subject areas:
1. Medicine and Dentistry
2. Nursing and Health Professions
3. Social Sciences
4. Pharmacology, Toxicology and Pharmaceutical Science
5. Biochemistry, Genetics and Molecular Biology
6. Neuroscience
7. Psychology
8. Computer Science
9. Economics, Econometrics & Finance

SEARCH TERMS:

1. Chronic disease and quality in health care = ("chronic disease" OR "chronic condition") AND ("care quality" OR "quality framework" OR "quality indicator" OR “quality criteria” OR “quality standards”) → **4676 results**

2. Comorbid or multimorbid chronic disease and quality in health care = (chronic disease" OR "chronic condition") AND ("care quality" OR "quality framework" OR "quality indicator" OR “quality criteria” OR “quality standards”) AND (comorbidity OR multimorbidity) → **2469 results**

3. Chronic disease and quality and models for chronic care = ("chronic disease" OR "chronic condition") AND (quality) AND ("chronic care model" OR "innovative care for chronic conditions model") → **892 results**