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Community pharmacy and primary health care - Types of integration and their applicability: A narrative review

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ABSTRACT

Background: There is an urgent need for health care systems to be more efficient and efficacious. An approach to integrate public and private provider organizations such as community pharmacies and public primary health care (PHC) merits consideration. The objective of this review was to identify the types of integration in health care settings and discuss their applicability to the potential integration of community pharmacy and PHC.
Methods: A narrative review using Medline, Scopus and SciELO databases was performed in which terms related to health were combined with terms related to integration.
Levels and Types of integration: 14 types of integration were identified (two in breadth, seven as enablers and five in system levels). A model was created which classifies and assigns the types of integration to the different levels of the health system and to the breadth, intensity, and enablers of the integration process. Due to the nature of community pharmacy and PHC system, a horizontal integration at the micro level, supported by meso and macro levels policy, is suggested. The different elements of intensity and enablers can significantly influence the process.
Conclusion: The application of principles, concepts and types of integration suggest that it might be feasible and practical to integrate community pharmacies and PHC. However, the conflictive historical context would need to be overcome with appropriate policy and incentives.

1. Background

Health care systems are facing important challenges with the rise in demand and uncoordinated response to the management of chronic diseases,[1] development of new technologies,[2] innovative high-cost therapies,[3,4] increasing competition for financial resources and recently, a pandemic.[5] An approach to integrate private and public providers and their organizations[6,7] in a holistic system perspective for health care, particularly in primary health care, could lead to a more efficient and efficacious system.

2. Primary health care

Primary health care (PHC) is a critical point of contact to address the health care needs of the population. It forms an essential part of a national health care system. Health systems with stronger focus on PHC have improved health, financial and equity outcomes.[8] International trends suggest that PHC systems are incorporating concepts and services such as interdisciplinary coordination, integrated care, preventative services, self-care, and self-management,[9] all of which may optimize health care and contribute to the sustainability of the health care system.

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3. Community pharmacy

Community pharmacists provide accessible PHC services and products and are considered to be one of the most accessible health care providers.[10] Community pharmacies are predominantly privately owned[11–14] whose current scope of practice and business continues to economically depend on the provision of medications through dispensing[12–14] and selling other products. In many countries community pharmacists are becoming increasingly patient oriented by providing professional services such as vaccination, medication adherence management, medication management review, minor ailments management or smoking cessation.[11–14,17] These changes have been mainly driven by governmental policies, with the main objectives being to encourage the population to enter the health care systems at an appropriate level of care and to optimize the rational use of medication, thereby increasing safety, efficacy and efficiency.[18]

The level of integration of community pharmacy in many health care systems is limited, as highlighted in a series of papers.[19] Until recently, most governments' viewed community pharmacies only as providers of medications, reflected in existing contractual arrangements. Several factors are suggested to contribute to the lack of integration of community pharmacies in health care systems, including that community pharmacies are private businesses, either owned by individual pharmacists or corporations[14] depending on national government legislation, with contractual obligations to dispense medications.[11–14] Nevertheless, organizations representing the profession, community pharmacy and pharmacists aspire to be integrated into the health care system and to be recognized as part of primary health care providers.[19–21]

4. Integration

Health care system reforms have increasingly focused on systems integration and integrated care to overcome fragmentation, improve quality, and strengthen primary care services.[22,23] However, in the literature the term integration is used interchangeably, with terms such as integrated care, interprofessional collaboration, cooperation or coordination and this can lead to confusion.[24–26]

The integration process is suggested to be a continuum, involving several stages[27–29] and culminating in full integration. The stages include: fragmentation, linkage/communication, coordination in networks, collaboration between professionals, collaboration through the organizational management and governance processes and structures.[25–33]

Some authors, e.g., Kodner,[26] Nolte,[31] and Valentijn,[34] have grouped the types of integration according to their function. However, criteria did differ. Valentijn et al.,[34] assigned the types of integration to the different levels of the health system; i.e., (a) system integration at macro level; (b) professional and organizational integration at meso level; and (c) clinical and service integration at micro level. They also suggested functional and normative types of integration to link the different levels of the health system.

This article aims to synthesize and analyze the different types of integration described in the health literature in order to build a model that shows their interrelationships, and to discuss their applicability to the integration of community pharmacy and PHC.

5. Methods

The concept and term of integration has been widely used in the literature with diverse definitions which have evolved over time depending on the context or author.[24] Given this variability in definitions and types a narrative review was considered the most appropriate option.[35] A similar approach was used by Valentijn et al. in a narrative review in 2013.[34] Using this narrative review as a starting base, a search was conducted in June 2022 using Medline, Scopus and SciELO databases in which the query ("health care system" OR "primary care") AND ("systems integration" OR "delivery health care, integrated" OR "integration" OR "integrated care") AND ("type*" OR "dimension*") has been applied. An additional search was applied through Google, using the same query as in the aforementioned databases. Papers published in English containing definitions or descriptions of the different types of integration were retrieved. In addition, references from all the selected articles were also reviewed from which any additional descriptions/-definitions of all the types of integration found were extracted.

6. Results

6.1. Levels and types of integration

Fifty-five articles containing descriptions of 14 types and 5 subtypes of integration were found (Fig. 1, Table 1 and appendix). Two were classified as being related to breadth (vertical and horizontal integration), seven as enablers (which would facilitate integration) and five in system levels with their subtypes. Adding to the conceptual approach of Valentijn et al.,[34] a new model was created which classified the types of integration whose objective was to integrate practices, services, professionals, and organizations. Other types in the model describe the breadth in which integration can occur, the constructs that drive the intensity of the integration, and enablers for integration (Fig. 2).

The model is thus composed of four components: breadth, enablers, intensity and types of integration classified by the levels of health care system, which are all described below.

6.2. Breadth

Vertical and **horizontal integration** represents the breadth of integration. Vertical integration is governed by a mechanism in which a single entity manages the decisions at the different levels of the organizational hierarchy.[36,37] The entity assumes the coordination and control of functions, activities, or operating units of the various stages in the process of providing health care.[22,38–40] Through vertical integration, attempts are made to facilitate communication between health care professionals[26,41] and to increase efficiency.[36] Coordination of health care professionals in vertical integration is achieved through a common management hierarchy,[33,42] maintaining separate eligibility criteria, service responsibilities, and financing.[26] This requires sophisticated systems to interconnect providers for reporting and monitoring.[40] An example of this type of integration would occur between hospitals and primary care health centers which are at different hierarchical levels.

On the other hand, horizontal integration requires collaboration, i.e., a coordination without the mechanisms of organizational hierarchy.[26,31,42,43] This type of integration is described as the management of functions, activities or operational units that are at the same hierarchical level of the process of providing health care.[22,38–40] Its objective is to facilitate collaboration and communication between health care providers who are responsible for providing services,[41] achieved through voluntary agreements and mutual adjustments.[33,42] This may require processes of consultation, information exchange, collaboration or conflict resolution between the different providers and organizational units involved.[34,40] An example of this type would be the integration between various group practices of physicians or clinics that agree to work together with a similar health care vision.

6.3. Enablers

Enablers act to facilitate integration by encouraging health providers, administrators, and their systems to have same goals and improve workflow. Seven types of integration were identified to act as enablers (Table 1).

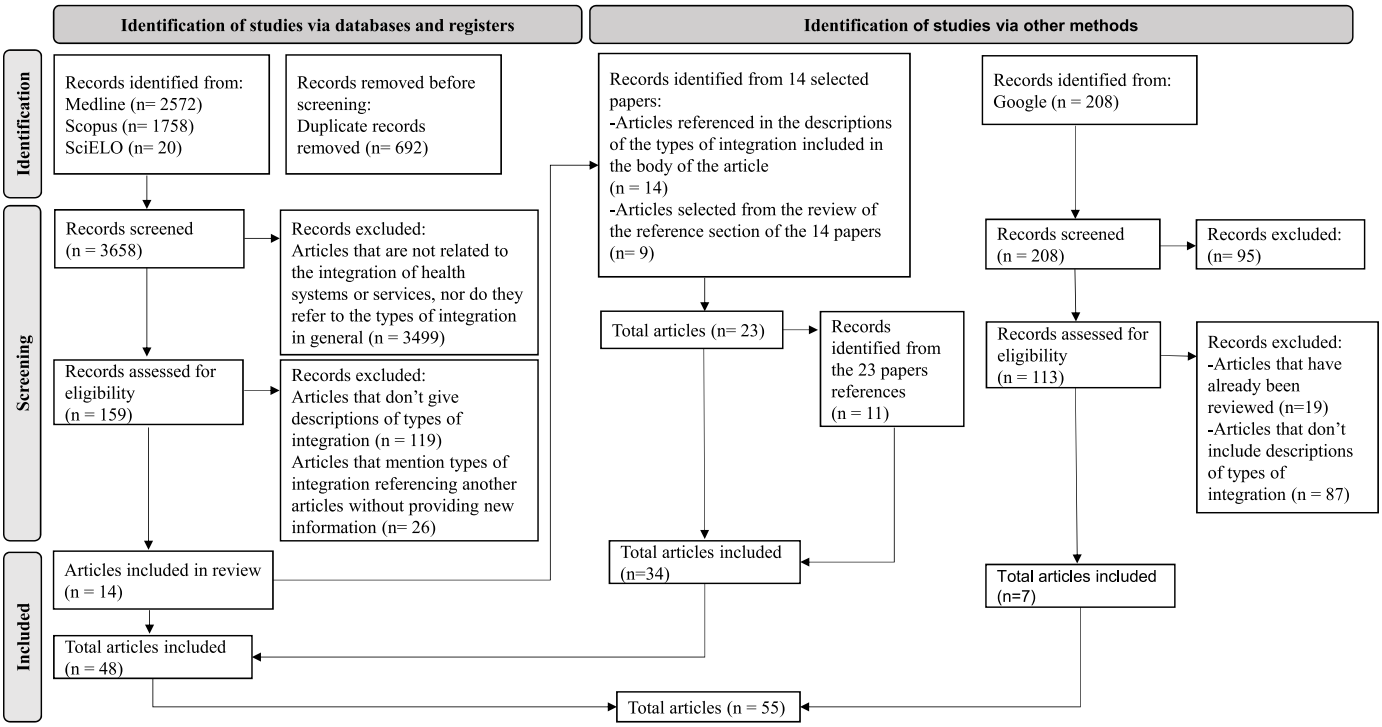

Fig. 1. Literature search flowchart.

Table 1
Descriptions of types of integration that act as enablers.

Type of integration	Author* and other references of the definition/description	Description
Functional/ Administrative integration	Gillies et al., 1993[31,35,36,38,44–46]	"Functional integration is defined as the extent to which key support functions and activities (such as financial management, human resources, strategic planning, information management, marketing, and quality improvement) are coordinated across operating units so as to add the greatest overall value to the system."
	Oostra et al., 2021[47]	"Functional enablers are for example communication tools that can be used by all the professionals and organizations in a network."
Normative integration	Contandriopoulos et al., 2003[43]	"Normative integration is intended to ensure consistency between the collective system of stakeholders' representations and values, and, at the same time, the organizational methods of the integrated system and the clinical system."
	Oostra et al., 2021[47]	"Normative enablers refer to the development and maintenance of a common goal or plans for improvement."
Financial integration	Bazzoli et al., 1999[48]	"Financial integration implies the assumption of fiscal and clinical responsibility for a continuum of services for a defined set of enrollees."
	Pike and Mongan, 2014[46]	"Financial: the budgetary and payment systems in place across the participating organisations."
Contextual integration	May 2006[49]	"Refers to the capacity of an organization to understand and agree the allocation of control and infrastructure resources to implementing a complex intervention, and to negotiating its integration into existing patterns of activity."
Informational integration	Santana and Costa, 2008[37]	"The integration of the information dimension can be defined by the automated interconnection of all the activity developed, using information technologies that make it possible to collect, process and analyse data and information, in order to guarantee a process of strategic and operational decision-making with the least possible degree of associated risk and consequently enhance the creation of value and knowledge for the organization and its customers."
	Pike and Mongan, 2014[46]	"Informational: the clinical and managerial information systems to support practice across different care settings …."
Cultural integration	Fabbricotti, 2007[50] [46]	"Cultural integration and fragmentation processes reflect the convergence and divergence of the values, norms, working methods, approaches and symbols of the actors involved".
	Nolte and McKee, 2008[31]	"Cultural integration (convergence of values, norms, working methods, approaches and symbols adopted by the (various) actors)."
Structural integration	Sobczak, 2002[51]	"Structural integration, i.e. creation of complex organisations or inter-organisational networks in vertical or horizontal configuration."
	Singer et al., 2020[52]	"Structural integration refers to physical, operational, financial, or legal ties among teams and organizations in a health system."

(*) This table cites the original author and their definition/description. Additional definition descriptions by other authors are included in appendix.

6.4. Intensity

Intensity refers to the degree of integration within each of the constructs of consensus, connectivity, communication, and trust.[53] Consensus in system objectives, health strategies and sharing decision-making contribute to the degree of integration.[33,54,55] Using the same or interoperable technologies allows connectivity i.e., sharing knowledge and information.[29,33,54] Increasing direct and bidirectional communication[29,33,54,56] increases the intensity of integration. Participation in the integration processes leads to improved trust,[29,33,54,56] respect,[33,54] and recognition of roles.[33,55,56] The level of depth of these four constructs would determine the degree of intensity of the integration.

6.5. System levels and integration

In agreement with Valentijn et al.[34] and others[47,57–59] the types of integration are applied at the different hierarchical levels of the health care system.

6.5.1. Macro level: system integration

Macro level focuses on the highest level of a national health care system where policy, resources and governance issues are determined.[60,61] **System integration** involves the coordination, coherence and alignment of goals, norms, interests, policies, resources, and regulatory frameworks at the various levels of the health care system or organization.[25,34,52,62] System integration relies on the decision of policy makers about the planning, management and governance of the system, and of health workers.[63] The objective is to improve the efficiency and quality of care,[34] and to operate sustainably.[43] Decisions taken at this level have a major impact on the meso and micro levels. Physician-system integration is a subtype of this type of integration (Appendix).

6.5.2. Meso level: professional and organizational integration

Meso level focuses on the organizational aspects at a regional level, where normally there are organizational and sometimes operational structures for large populations which consider local and regional needs.[60,61] **Professional** and **organizational integration** have been classified by many authors at the meso level of the health system[34,47,57,58,64] as other subtypes such as relational or social integration. Professional integration is described as associations of professionals based on shared competencies, roles, responsibilities and accountability[57,65,66] to provide comprehensive continuous care by coordinating services across various disciplines. This occurs in the form of joint work, mergers (for example, group practices), contracting or strategic alliances between health professionals and through the formation, operation and maintenance of multidisciplinary teams.[31,32,43,46,64] According to Andersson and Karlberg,[45] relationships occur through three types of bonding processes: communication, balance and decision making. 'Relational integration', refers to the network of relationships between professionals and patients[49]; and 'social integration', refers to the social relationships between the actors involved in integration[31,50] (Appendix).

Organizational integration is described as joint coordination structures, governance systems and working relationships between organizations, within and between health agencies.[25,46] This type of integration can operationally occur in the form of networks, mergers or strategic alliances, by developing formal and informal contractual or cooperative arrangements, such as joint budgets, implementation of practice-based commissioning, or developing umbrella organizational structures, such as primary care federations or local clinical partnerships.[22,31,65,67,68]

Organizational integration can optimize resources and overall efficiency, and improve capacity for a 'seamless care', producing and delivering services in an interconnected way.[45] Institutional integration[69] and sectoral integration[70] are also included within this type of integration since they are subtypes of organizational integration (Appendix).

6.5.3. Micro level: clinical and service integration

Micro level focuses on the individual experiences that take place in and around clinical encounters including patients, caregivers, pharmacists and physicians.[60,61] **Clinical** and **service integration** have been suggested to occur at the micro level.[34,64] Clinical integration is described as the extent to which, in the process of providing care to patients, services have continuity, cooperation, and coherence among the various providers, functions, activities, processes, environments and operating units of the system to obtain maximum value for the people for whom the system has assumed responsibility.[36,38,45,63] On the other hand, service integration refers to the coordination of services that are provided in a single process, at one location and are managed by the same administration.[26,69] These two types of integration are closely linked but different. While clinical integration goes beyond service integration as it targets the process and focuses more on the creation of protocols, access to information and clinical planning[37,68]; service integration is more focused on the accessibility, availability and flexibility[62,67] of services and training providers.

7. Discussion

7.1. Applicability to the integration of community pharmacy and primary health care

In order to debate the relevance of these types of integration to PHC and community pharmacy, it is important to consider that each country has its unique health system and community pharmacy network, historical molded by political, legal, cultural, economic and social context. For example, England[11] and Spain[12] have a National Health System in which health costs are predominantly covered by taxes, offering a broad portfolio of services with minimal or no patient co-payments. Similarly, Australia[13] and Canada[14] have adopted a universal primary care system which offers reimbursement against the cost of medical care with or without patient co-payments. In Germany,[15] there are mandatory health insurance companies, which offer private insurance through a Statutory Health Insurance (SHI) scheme with contributions-based patient income. In the USA,[16] the health system is predominantly thought of as private and competitive free market ideology, without universal health coverage, highly dependent on private health insurers and limited federal and state funding through Medicaid[71] and Medicare.[72]

Regardless of the health system, the vast majority of community pharmacies are privately owned businesses,[11–14] managed by corporations, small business enterprises, groups of pharmacists or independent pharmacists. Ownership and location rules vary considerably from country to country, from the Mediterranean model of one pharmacist owner per pharmacy and strict location rules to the American model[16] of 'open' ownership with no limitation on the number and no locations restrictions. Variations on these criteria occur for example in the Australian[13] and Canadian[14] health care system. Additionally, the breadth of the scope of practice for community pharmacists would vary by country and thus would have an impact on the type of integration.

Despite these country differences, there are certain principles and concepts, that could be useful in debating the type of integration that might feasible and practically achievable. Community pharmacy can be considered to be at the same organizational hierarchical level as other providers of primary care and therefore some form of intensity of **horizontal integration** could be feasible. However, due to the private ownership of community pharmacy versus the public ownership of health centers and primary care services in many countries, there would be a need to generate contractual agreements that could include some form of governance structures aligning the overall health care policy objectives. Interestingly these types of agreements occur where general

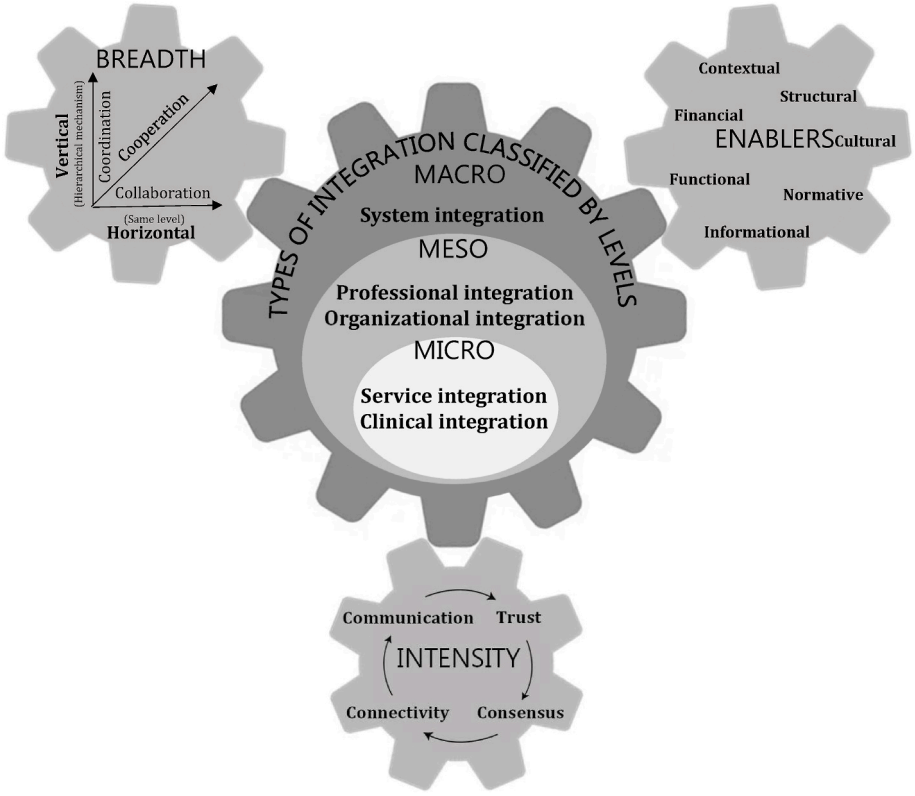

Fig. 2. Types of integration and their interconnectivity.

medical practitioners are contractors and are not employees of the state.[73] These policies could be implemented through macro level decisions which impact organizationally the meso level with the establishment of regional or local health organizations (e.g., Primary Care Trusts in England,[74] and Primary Health Networks in Australia[75]). Horizontally integrating community pharmacies in these organizational structures would certainly be valuable. Although the intensity of these macro level policies may not provide full integration, there could be support for common objectives, interoperable systems of communication, coordination, data sharing and value-based payments. On the other hand, vertical integration is difficult to conceive since private funding for community pharmacies impede giving management control to public entities and vice versa.

Integrating at a micro level could involve either single or networks of community pharmacies with primary health care centers or clinics. **Service** or **clinical integration** with organizational and patient focused objectives could be the basis for achieving outcomes such as commonality of health care objectives at a local level and integrated care. Critically the different elements of intensity and the enablers of integration would significantly influence and impact the process. Enablers such as the **cultural**, **contextual**, **normative**, and **financial** could be levers used to promulgate the process and outcomes of integration. In addition, it would be required to evaluate the extent of the level of consensus, connectivity, communication and trust.[53] To achieve the greatest intensity of integration, there is a need to reach a **consensus** between the community pharmacy and the PHC with common objectives, participating in decision-making and sharing health strategies; to share information through the same technologies creating **connectivity**; to create bidirectional **communication**; but above all, to work to increase and improve **trust**, respect and role recognition to enhance interprofessional relationships. The professional relationships between community pharmacists, medical practitioners and nurses have, in some countries, been fraught with difficulties.[29,33,54,56] Service and clinical integration, leading to organizational changes and integrated care, would require political support, collaborative teamwork, and co-dependency, all of which are not currently present.

7.2. Limitations

Narrative reviews have the limitation that they are difficult to reproduce and may not gather all the available evidence on a given topic. Nevertheless, narrative reviews are key in providing a deep understanding, interpretation and appraisal together with critical reflection in the scientific community. Due to the lack of consistent and standardized terminology and definitions, a systematic review could not be conducted, presenting a limitation to the research.

8. Conclusion

The classification of the 14 types and the five subtypes of integration lends itself to be applied to the country specific context. Health care systems under resource pressure and with questions of long-term sustainability would clearly benefit by the incorporation of highly accessible community pharmacies through horizontal integration and at the micro level with clinical and service integration. In addition, working on the intensity constructs and enablers would allow a more sustainable integration. Nevertheless, the historical, political, financial, and professionally conflictive contexts would need to be overcome with appropriate policy and incentives.

The fundamental changes proposed will inevitably advance at a pace which will be dictated by the willingness of the two sectors. The pharmacy profession has been vociferous in its call for integration whilst primary health care organizations while most governments do not appear to have stated their position. It would be useful to undertake further research on the use of models, theories or frameworks of integration providing a theoretical basis to guide to the practical implementation of the types of integration.

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Conflicts of interest

None.

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APPENDIX

Descriptions for the 14 Types and 5 Subtypes of Integration.

Type of integration	Author and other references of the definition/description	Description
Vertical integration	Gillies et al., 1993[38]	"Vertical integration refers to the coordination of functions, activities, or operating units that are at different stages in the process of delivery services."
	Conrad et al., 1996[36]	"Vertical integration refers to the combination in a single firm of (or a strong interorganizational alliance between) two or more firms that were previously separate but whose products or services are inputs to, or outputs from, the production of one another's services. Reasons for vertical integration: 1.to lower transaction costs between separate production processes; 2.to reduce average production costs by sharing common inputs across related production processes."
	Simoens et al., 1999[41]	"Vertical integration in the health care sector can be defined as a governance structure designed to enhance coordination and control of health care services that are at different stages of the health care value chain and to facilitate interorganisational collaboration and communication between health care providers that are involved in the delivery of those services."
	Mitchell et al., 2000[76]	"In the case of ownership, the services provided by a partnership in pursuit of its objectives can be carried out by arranging for it as an entity to own the assets of the service delivery unit. The economics literature typically refers to this as vertical integration."
	Gröne et al., 2001[39]	"The bringing together of services operating at different levels is typically denoted as vertical integration."
	Wang et al., 2001[77]	"Hospital's vertical integration as the affiliation under an umbrella of organizations that provide different levels of care."
	Axelsson, 2002[40]	"Vertical integration concerns the processes of supervision and control in order to coordinate the decisions made on the different levels of the organizational hierarchy. This coordination requires more or less binding guidelines, instructions, rules and regulations. It also requires elaborate systems for reporting, monitoring and auditing the performance of individuals and units on different hierarchical levels."
	Fleury et al., 2002[78]	"Vertical integration refers to a hierarchical organization in which a specific provider offers a majority of diversified services to a given clientele and coordinates the basic aspects of the other services offered to that clientele within the system (e.g., health maintenance organizations, community mental health centers)."
	Sobczak, 2002[51]	"In health care, vertical integration commonly refers to the ability of one provider system (i.e., owner or controlling entity) to provide all levels and intensities of service to patients and health care consumers from a geographically contiguous region when these clients present themselves to that system."
	Contandriopoulos et al., 2003[43]	"In the field of economics, integration refers, first and foremost, to actions that extend the coordination of a business to production cycles located upstream or downstream from its specific activities (in the other words, outside the business in question). This type of situation involves vertical integration."

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(*continued*)

Type of integration	Author and other references of the definition/description	Description
	Fulop et al., 2005[62]	"Vertical integration- It is the process of extending the scope of an organisation's activities by moving up or down the 'value chain'. Two types of vertical integration: - Where agencies involved with patients at different stages of the care pathway are part of a single organisation - Where the payer function is integrated with provision as in the 'pre-paid group practice' models such as Kaiser Permanente."
	Fleury, 2005[79]	"Vertical level, means taking into account service needs between different periods of care (i.e., pre- and post- hospitalization)."
	Axelsson et al., 2006[32,42]	"Vertical integration takes place between organisations or organisational units on different levels of a hierarchical structure"
	Santana et al., 2008[37]	"It is said that we are in the presence of vertical integration when an organization has control of at least two organizations, at least one of which uses the output of the other as input. (…) Vertical integration consists of the creation of a single management entity (ownership and control) of two or more entities that provide services at different levels of care in order to improve the general health status of a population in a given regional geo-demographic context."
	Nolte et al., 2008[31]	"Vertical integration brings together organizations at different levels of a hierarchical structure."
	Kodner, 2009[26]	"Vertical integration, which involves the combination of different organizations/units at different levels (e.g., hospital, community health centre, home care agency and nursing home)."
	Lewis et al., 2010[68]	"Networks of provider organisations operating under a single organisational merger ('real' integration) to bring together different care sectors."
	Curry et al., 2010[80]	"Vertical integration occurs when two or more organisations or services delivering care at different levels come together."
	Pan American Health Organisation, 2010[63]	"Vertical integration refers to the coordination of services among operating units that are at different stages of the process of delivering services."
	Shaw et al., 2011[25]	"Vertical integration focuses on networks and groups at different stages of care within the health economy (what some commentators refer to as the supply chain or care pathway) and might involve, for instance, the drawing together of a hospital with local community services."
	Ham et al., 2011[81]	"Integration may take place between providers working at different levels, known as vertical integration."
	Valentijn et al., 2013[35]	"Vertical integration is related to the idea that diseases are treated at different (vertical) levels of specialisation (i.e., disease-focused view). This involves the integration of care across sectors, e.g., integration of primary care services with secondary and tertiary care services."
	Pike et al., 2014[46]	"Vertical integration refers to the coming together for the delivery of care by services at different levels, for instance hospitals, long-term care facilities, rehabilitation and community-based organisations to create a single geographically based entity for health services."
	Goodwin, 2016[82]	"Vertical integration- Integrated care across primary, community, hospital and tertiary care services manifest in protocol-driven (best practice) care pathways for people with specific diseases (such as COPD and diabetes) and/or care transitions between hospitals to intermediate and community-based care providers."
	WHO, 2016[22]	"Vertical integration implies coordination of services among operating units that are at different stages in the process of delivering services. Vertical integration brings together organizations at different levels of the hierarchical structure under one management umbrella."
	European commission, 2017[32]	"Vertical integration brings together organisations at different levels of a hierarchical structure under one management umbrella, e.g., primary care and secondary care."

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Type of integration	Author and other references of the definition/description	Description
	Heeringa et al., 2020[83]	"Vertical integration, when organizations acquire or integrate with organizations offering different levels of care, services, or functions such as hospital ownership of physician practices."
Horizontal integration	Gillies et al., 1993[38,63]	"Horizontal integration refers to the coordination of functions, activities, or operating units that are at the same stage in the process of delivery services."
	Conrad et al., 1996[36]	"Horizontal integration occurs when two or more separate firms, producing either the same service or services that are close substitutes, join to become either a single firm or a strong interorganizational alliance. Principal "drivers" behind these horizontal linkages are potential economies of scale and a desire to increase market power."
	Simoens et al., 1999[41]	"Horizontal integration in the health care sector can be defined as a governance structure designed to enhance coordination and control of health care services that are at the same stage of health care value chain and to facilitate inter-organisational collaboration and communication between health care providers that are involved in the delivery of those services."
	Grone et al., 2001[43]	"Linking services on the same level, are often referred to as horizontal integration."
	Axelsson, 2002[40]	"Horizontal integration concerns the coordination of work between different individuals or organizational units on the same hierarchical level. This means a coordination without the mechanisms of the organizational hierarchy. It may instead require processes of consultation, information exchange, collaboration or conflict resolution between the different organizational units concerned."
	Sobczak, 2002[51]	"Horizontal integration is enlargement of size and activity scope of a sector through acquisition or other forms of cooperation (cooperative chains) with the providers offering similar kind and range of services. "Lately, the horizontal integration, which dominated health care (in USA) during the 1970s, appears to be waning in popularity'.""
	Contandriopoulos et al., 2003[43]	"Horizontal integration involves grouping similar organizations together, primarily to attain economies of scale."
	Fleury, 2005[79]	"Horizontal level, means taking into account services provided within a period of care (i.e. psychosocial community support, housing and employment). (Conrad DA, 1996)"
	Axelsson et al., 2006[31,33,42]	"Horizontal integration takes place between organisations or units that are on the same hierarchical level or have the same status."
	Kodner, 2009[26]	"Horizontal integration, wherein similar organizations/units at the same level join together (e.g., two hospitals)."
	Curry et al., 2010[80]	"Horizontal integration occurs when two or more organisations or services delivering care at a similar level come together."
	Shaw et al., 2011[25]	"Horizontal integration focuses on competing or collaborating organisations, networks or groups in the health economy and might involve, for instance, grouping outpatient clinics within a geographic network of providers."
	Ham et al., 2011[6]*	"Integration may take place between providers operating at the same level, often referred to as horizontal integration."
	Yeo et al., 2012[84]	"Horizontal integration is observed as healthcare professionals that are usually from secondary care are brought together through agreements with the DSS and IDPL."
	Valentijn et al., 2013[35]	"Horizontal integration is improving the overall health of people and populations (i.e., holistic-focused view) by peer-based and cross-sectorial collaboration."
	Pike et al., 2014[46]	"Horizontal integration refers to the coordination of care for an individual across different care settings which are at the same level, e.g. community-based services such as general practices, community nursing services and social services; mergers of acute hospitals; or the formation of organisations such as care trusts that bring together health and social care."

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Type of integration	Author and other references of the definition/description	Description
	Goodwin, 2016[82]	Horizontal integration- "Integrated care between health services, social services and other care providers that is usually based on the development of multi-disciplinary teams and/or care networks that support a specific client group (e.g. for older people with complex needs)."
	WHO, 2016[22]	"Horizontal integration occurs when activities across operating units and/or organizations that are at the same stage in the process of delivering services come together."
	European commission, 2017[32]	"Horizontal integration: links services that are on the same level in the process of health care, e.g. general practice and community care."
	Heeringa et al., 2020[83]	"Horizontal integration, when organizations acquire or integrate with other organizations that provide the same or similar services such as multihospital systems or multispecialty practice organizations."
Functional/ Administrative integration	Gillies et al., 1993[31,35,36,38,44–46]	"Functional integration is defined as the extent to which key support functions and activities (such as financial management, human resources, strategic planning, information management, marketing, and quality improvement) are co-ordinated across operating units so as to add the greatest overall value to the system."
	Delnoij et al., 2002[64,85]	"Functional integration on the macro level of a health care system, i.e., mainstreaming of the financing and regulation of cure, care, prevention, and social services."
	Kodner and Spreeuwenberg, 2002[67]	"Administrative integration: The manner in which government regulatory and administrative functions are structured and devolved can help eliminate program complexities, streamline eligibility and access, and better manage system resources."
	Fleury and Mercier, 2002[78]	"Functional integration groups together procedures that align mechanisms of governance, management, resource allocation, and data collection and processing, with the workings of an integrated system or a group of organizations."
	Sobczak, 2002[51]	"Functional integration, i.e., co-ordination of clinical activities which contribute directly to effectiveness of health care and health gains as well as organisational/ managerial actions which link different subsystems and contribute to organisational productivity and prosperity."
	Contandriopoulos et al., 2003[43]	"The purpose of functional integration is to overlap the funding, information and management systems within a health care system."
	Fulop et al., 2005[62,22,26,46,68,80]	"Functional integration – where non-clinical support and back-office functions are integrated."
	Ahgren and Axelsson, 2005[28]	"Functional integration, which includes clinical integration as well as integration of information systems and financial arrangements. This functional integration may lead to integration synergy, which in turn may influence the integration effectiveness."
	Fleury, 2005[79]	"In functional/administrative integration, we find strategies such as electronic client information and management systems as well as methods for allocating and managing material, financial and personnel resources. Planning, inter-organizational protocols (memorandum of understanding), grouping of institutions and a single point of entry are featured as well."
	Suter et al., 2007[86]	"Functional (coordination of administrative and support function across service groups)."
	Santana and Costa, 2008[37]	"Functional integration consists of effective coordination, communication and cooperation of the basic functions and activities carried out in the operational units of the production system through the provision of health care with value for the user."

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Type of integration	Author and other references of the definition/description	Description
	Pan American Health Organisation, 2010[63]	"Functional Integration: The extent to which key support functions and activities such as financing, human resources, strategic planning, information management, marketing and quality assurance/improvement are coordinated across all system's units. Functional integration does not imply that all activities should be centralized or standardized. Similarly, functional integration does not mean that all functions and activities should be reorganized simultaneously. However, certain functions like strategic planning should start as soon as possible."
	Shaw et al., 2011[25] [46]	"Administrative integration: Aligning back-office functions, budgets and financial systems across integrating units for example, developing shared accountability mechanisms, funding processes or information systems."
	Yeo et al., 2012[84]	"Functional integration is supported by the DOT IT system that enables sharing of patient information between the specialists, GPs and CDMO."
	Valentijn et al., 2013[35,57,58,65,87,88]	"Functional integration is defined as follows: Key support functions and activities (i.e., financial, management and information systems) structured around the primary process of service delivery, to coordinate and support accountability and decision-making between organisations and professionals to add overall value to the system."
	European commission, 2017[32]	"Functional integration: integration of key support functions and activities, e.g., financial management, strategic planning and human resources management".
	Angus and Valentijn, 2018[66]	"Functional integration: Use of information technology and performance data, supportive payment structures."
	Singer et al., 2020[52]	"Functional integration refers to formal, written policies and protocols for activities that coordinate and support accountability and decision making among organizations and individuals. Functional integration focuses on protocols for activities (e.g., specified policies for how personnel share information) rather than on structures (e.g., interoperable information systems). These activities include joint financial management, information management, strategic planning, and quality improvement efforts as well as human resource management, feedback on performance indicators, service management, and electronic information exchange with patients for communication and self-management."
	Dickinson and Joos, 2021[59]	"Functional integration: is perhaps best understood as the practical tools required for integration: the mechanisms which link data, financing and the management of human resources, strategic planning, information and quality improvement."
	Oostra et al., 2021[47]	"Functional enablers are for example communication tools that can be used by all the professionals and organizations in a network."
Normative integration]	Contandriopoulos et al., 2003[43]	"Normative integration is intended to ensure consistency between the collective system of stakeholders' representations and values, and, at the same time, the organizational methods of the integrated system and the clinical system."
	Fulop et al., 2005[62]	"Normative integration: the role of shared values in co-ordinating work and securing collaboration in the delivery of healthcare."
	Santana and Costa, 2008[37]	"When integration is reduced to a set of procedures and written norms known by all the elements that constitute it, we are in the presence of a normative integration movement."
	Kodner, 2009[26]	"Normative integration (shared mission, work values and organizational/professional culture)."
	Lewis et al., 2010[68,64,80]	"Normative integration, where an ethos of shared values and commitment to coordinating work enables trust and collaboration in delivering healthcare."
	Shaw et al., 2011[2546]	"Normative integration: Developing shared values, culture and vision across organisations, professional groups and individuals for example, developing common integration goals, identifying and addressing communication gaps, building clinical relationships and trust through local events, or involving service users and the wider community."

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Type of integration	Author and other references of the definition/description	Description
	Yeo et al., 2012[84]	"Normative integration is demonstrated by the shared vision among healthcare providers."
	Valentijn et al., 2013[35,57–59,65,87,88]	"Normative integration is defined as follows: The development and maintenance of a common frame of reference (i.e., shared mission, vision, values and culture) between organisations, professional groups and individuals."
	Pike and Mongan, 2014[46]	"Normative – the extent to which mission, work values etc. are shared within a system."
	WHO, 2016[22]	"When integration is based on shared values for coordination and collaboration that is seen as normative integration."
	European commission, 2017[32]	"Normative integration occurs when shared values are at the core of implemented changes."
	Angus and Valentijn, 2018[66]	"Normative integration: Shared goals and culture, leadership, vision."
	Singer et al., 2020[52]	"Normative integration refers both to sharing a common culture and to exhibiting a culture that prioritizes integrating patient care across units and organizations within a health system. Prior research in this area has focused on elements of common culture, such as shared vision and mission, collective attitude, sense of urgency, and various forms of leadership, which we extend by highlighting the need to consider which cultural elements are horizontally and vertically shared."
	Oostra et al., 2021[47]	"Normative enablers refer to the development and maintenance of a common goal or plans for improvement."
Financial integration	Bazzoli et al., 1999[48]	"Financial integration implies the assumption of fiscal and clinical responsibility for a continuum of services for a defined set of enrolees."
	Kodner and Spreeuwenberg, 2002[67]	"Funding: More often than not, form follows financing. This means that the division, structure and flow of funds for health and social care and related services can affect virtually all aspects of integrated care."
	Santana and Costa, 2008[37]	"In conceptual terms, financial integration corresponds to the coordination of activities carried out in order to obtain the regular and timely financial resources necessary for the functioning of the organization, as well as to maximize the profitability of these same resources throughout the continuum of disease."
	Pike and Mongan, 2014[46]	"Financial – the budgetary and payment systems in place across the participating organisations."
Contextual integration	May 2006[49]	"Refers to the capacity of an organization to understand and agree the allocation of control and infrastructure resources to implementing a complex intervention, and to negotiating its integration into existing patterns of activity."
Informational integration	Santana and Costa, 2008[37]	"The integration of the information dimension can be defined by the automated interconnection of all the activity developed, using information technologies that make it possible to collect, process and analyse data and information, in order to guarantee a process of strategic and operational decision-making with the least possible degree of associated risk and consequently enhance the creation of value and knowledge for the organization and its customers."
	Pike and Mongan, 2014[46]	"Informational – the clinical and managerial information systems to support practice across different care settings. Developing clinical and managerial information systems to support aligned practice across different care settings. Communication between clinical teams, outcome measurement and performance management."
Cultural integration	Fabbricotti, 2007[46,50]	"Cultural integration. Cultural integration and fragmentation processes reflect the convergence and divergence of the values, norms, working methods, approaches and symbols of the actors involved. Cultural differences often put a strain on actors' willingness to work together and to develop new structures since most sought to retain their own culture whilst rejecting those of others. (Something that gain professional integration, normative, functional …)."

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Type of integration	Author and other references of the definition/description	Description
	Nolte and McKee, 2008[31]	"Cultural integration (convergence of values, norms, working methods, approaches and symbols adopted by the (various) actors)."
Structural integration	Sobczak, 2002[51]	"Structural integration, i.e. creation of complex organisations or inter-organisational networks in vertical or horizontal configuration."
	Fabbricotti, 2007[31,50]	"Structural integration. Structures are developed to align tasks, activities and functions."
	Nolte and McKee, 2008[31]	"Structural integration (the alignment of tasks, functions and activities of organizations and healthcare professionals)."
	Singer et al., 2020[52]	"Structural integration refers to physical, operational, financial, or legal ties among teams and organizations in a health system. Structural integration is under delivery system leaders' direct control and includes, for example, the composition of leadership teams, interoperable information systems, and governance mechanisms ranging from direct ownership by one entity of another, legal contracts arranging for some form of cooperation, and informal alliances."
System integration	Contandriopoulos et al., 2003[43]	"Systemic integration is required in order for an integrated system of care to operate in a sustainable manner."
	Fulop et al., 2005[62,32,68]	"Systemic integration – the coherence of rules and policies at the various levels of organisation."
	Kodner, 2009[26]	"Systemic integration (alignment of policies and incentives at the organizational level)"
	Lewis et al., 2010[68,22,46,80]	"Systemic integration, where there is coherence of rules and policies at all organisational levels. This is sometimes termed an 'integrated delivery system'."
	Pan American Health Organisation, 2010[63]	"Health Worker-System Integration: The extent to which health workers are committed to the system; use its facilities and services; and participate actively in system planning, management and governance."
	Shaw et al., 2011[25,46]	"Systemic-Coordinating and aligning policies, rules and regulatory frameworks for example, policy levers emphasising better coordinated care outside of hospitals, central impetus for diversity of providers, development of national incentive schemes (for example the Quality and Outcomes Framework) or financial incentives to promote downward substitution."
	Valentijn et al., 2013[35]	"System integration refers to the alignment of rules and policies within a system. System integration is considered to enhance efficiency, quality of care, quality of life and consumer satisfaction."
	Pike et al., 2014[46]	"Systemic –EO: Integration of objectives, interests, power and resources of the (various) actors."
	Valentijn et al., 2015[65,57,88]	"Macro System integration: A horizontal and vertical integrated system, based on a coherent set of (informal and formal) rules and policies between care providers and external stakeholders for the benefit of people and populations."
	Goodwin, 2016[82]	"Whole-system integration: Integrated care that embraces public health to support both a population based and person-centred approach to care. This is integrated care at its most ambitious since it focuses on the multiple needs of whole populations, not just to care groups or diseases."
	Angus et al., 2018[66]	"System integration: Coherent set of (informal and formal) political arrangements to facilitate professionals and organisations to deliver a comprehensive continuum of care."
	Oostra et al., 2021[47]	"Implementation of new policies and regulations (system integration)"
Subtype of System integration: Physician-system integration	Gillies et al., 1993[36,38,44]	"Physician-system integration is defined as the extent to which physicians are economically linked to a system; use its facilities and services; and actively participate in its planning, management, and governance."
	Shortell et al., 1994[44,45]	"Physician-system integration is defined as the extent to which physicians identify with a system, use the system, and actively participate in its planning, management, and governance."

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Type of integration	Author and other references of the definition/description	Description
	Suter et al., 2007[86]	"Community/physician integration (linkages of physicians to the system)"
Professional integration	Delnoij et al., 2002[64,85]	"Professional integration on the meso level of health care systems, e.g. in the form of mergers (e.g. group practices), contracting or strategic alliances between health care professionals."
	Fleury et al., 2002[78]	"Integration of professional regulation consists in structuring the division of work, training and modes of remuneration accordingly with the network system objectives."
	Contandriopoulos et al., 2003[43]	"Clinical team integration encompasses two dimensions: - The first concerns the functioning of multidisciplinary teams made up of professionals (physicians, nurses, other professionals, community workers, etc.) - The second dimension involves the formation and maintenance of multidisciplinary teams that bring together general practitioners and specialists as well as other professionals."
	WHO, 2008[69]	"Professional integration happens when different health professions or specialties work together to provide joined-up services."
	Nolte et al., 2008[31,32,46]	"Professional integration (e.g. joint working, group practices, contracting or strategic alliances of healthcare professionals within and between institutions and organizations)."
	Kodner, 2009[26]	"Professional integration (provider relationships within and between organizations)."
	Valentijn et al., 2013[35]	"Professional integration: Refers to extent to which professionals coordinate services across various disciplines."
	Valentijn et al., 2015[65,57,66,87,88]	"Meso Professional integration: Inter-professional partnerships based on shared competences, roles, responsibilities and accountability to deliver a comprehensive continuum of care to a defined population."
	Singer et al., 2020[52]	"Interpersonal integration refers to collaboration or teamwork among health care professionals, nonprofessional caregivers, and patients. It derives from common reference in the extant literature to "professional integration," which is characterized by teamwork and collaboration across professionals of one or more disciplines and organizations. *(We have thus used the term "interpersonal" rather than "professional" to acknowledge explicitly the substantial role of patients, families, and other nonprofessional caregivers, and to emphasize the need for professionals and nonprofessionals to collaborate in complex patient care.)"
	Oostra et al., 2021[47]	"Collaboration between healthcare professionals (professional integration)"
Subtype of Professional integration: Relational integration	May 2006[49]	"Refers to the network of relations in which clinical encounters between professionals and patients are located, and through which knowledge and practice relating to a complex intervention is defined and mediated."
Subtype of Professional integration:	Fabbricotti, 2007[50]	"Social integration. These are defined as processes whereby the social relationships between actors intensify positively or negatively. To ensure that actors establish positive relationships exchanges are organised and information is disseminated."
Social integration	Nolte et al., 2008[31,46]	"Social integration (the intensification of social relationships between the (various) actors)."
Organizational integration	Delnoij et al., 2002[64,31,46,69,85]	"Organisational integration on the meso level of health systems, e.g. in the form of mergers, contracting or strategic alliances between health care institutions."
	Kodner et al., 2002[67]	"Organisational: Networking, both vertically and horizontally and through formal or informal means, is a major method to improve how organisations work together. Joint working relationships within and between agencies in the health and social care sectors can optimise resources, facilitate overall efficiency, and enhance the capacity for 'seamless care,' that is, the smooth and uninterrupted provision of necessary care."
	Fulop et al., 2005[62]	"Organisational integration (or how the organisation is formally structured) – for example, by mergers and/or structural change or virtually through contracts between separate organisations."

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Type of integration	Author and other references of the definition/description	Description
	Nolte et al., 2008[31]	"Organizational integration (e.g. creation of networks, mergers, contracting or strategic alliances between healthcare institutions)."
	Kodner, 2009[26]	"Organizational integration (relationships between healthcare organizations)."
	Lewis et al., 2010[68,22,46,80]	"Organisational integration, where organisations are brought together formally by mergers or though 'collectives' and/or virtually through coordinated provider networks or via contracts between separate organisations brokered by a purchaser."
	Shaw et al., 2011[25,46]	"Organisational-Coordinating structures, governance systems and relationships across organisations for example, developing formal and informal contractual or cooperative arrangements such as pooled budgets or practice-based commissioning; or developing umbrella organisational structures such as primary care federations or local clinical partnerships."
	Valentijn et al., 2013[35]	"Organisational integration refers to the extent that services are produced and delivered in a linked-up fashion."
	Pike et al., 2014[46]	"Organisational – the coordinating structures, governance systems and relationships across different organisations."
	Valentijn et al., 2015[65,57,66,87,88]	"Meso Organisational integration: Inter-organisational relationships (e.g. contracting, strategic alliances, knowledge networks, mergers), including common governance mechanisms, to deliver comprehensive services to a defined population."
	European commission, 2017[32]	"Organisational: e.g. creation of networks, mergers, contracting."
	Oostra et al., 2021[47]	"Collaboration between healthcare organizations (organizational integration)."
Subtype of Organizational integration:	WHO, 2008[69]	"Integration can mean working across sectors. It occurs when there are institutionalized mechanisms to enable cross-sectoral funding, regulation or service delivery. In industrialized countries, this concept is frequently applied to the coordination of health and social services, such as for long term care for the elderly."
Sectoral integration	Goodwin N, 2016[82]	"Sectoral integration. Integrated care within one sector, for example combining horizontal and vertical programmes of integrated care within mental health services through multi-professional teams and networks of primary, community and secondary care providers."
Subtype of Organizational integration: Institutional integration	Trouvé et al., 2010[70]	"Institutional integration would be translated by common values, standards and rules across the authorities that regulate the healthcare and social services system. In this way, the institutionalism approach makes it possible to think simultaneously about normative integration and functional integration, two components of systemic integration."
Clinical integration	Gillies et al., 1993[38,44,45,63]	"Clinical integration is defined as the extent to which patient care services are coordinated across the various functions, activities, and operating units of system. Clinical integration subsumes both horizontal and vertical integration."
	Conrad et al., 1996[36]	"Clinical integration: the coordination of the health services across providers, functions, activities, processes, and settings in order to realize maximum value for persons for whom the system has assumed responsibility."
	Andersson et al., 2000[31,42,46]	"Clinical integration is defined as the extent to which care is co-ordinated across various personnel, functions, activities, and operating units of the organisation."
	Delnoij et al., 2002[64,10]*	"Clinical integration on the micro level of health care systems, i.e. continuity, co-operation and coherence in the primary process of care delivery to individual patients."
	Kodner et al., 2002[67]	"Clinical: Shared understanding of patient needs, common professional language and criteria, the use of specific, agreed-upon practices and standards throughout the lifecycle of a particular disease or condition, and the maintenance of ongoing patient-provider communication and feedback are essential quality ingredients in integrated care."

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	Fleury et al., 2002[78]	"Clinical integration groups together various intervention practices and procedures that facilitate coordination and continuity of the care and activities needed to treat a population."
	Fulop et al., 2005[62]	"Clinical integration – at the clinical team level, is care for patients integrated in a single process both intra and interprofessionally through, for example, the use of shared guidelines along the whole pathway of care."
	Suter et al., 2007[86]	"Clinical (coordination of patient/client care across service groups)."
	Santana et al., 2008[37]	"Clinical integration can be understood as the degree of coordination of health care provision that respects the functions, activities and operating units of a system, being made up of six basic components (Devers et al., 1994): - Development of clinical protocols. - Uniformity and accessibility of medical records. - Collection and use of clinical results. - The programming effort and clinical planning. - Sharing of clinical support services. - Sharing clinical production lines."
	Kodner, 2009[26]	"Service or clinical integration (coordination of services and the integration of care in a single process across time, place and discipline)."
	Lewis et al., 2010[68,22,46,80]	"Clinical integration, where care by professionals and providers to patients is integrated into a single or coherent process within and/or across professions, such as through use of shared guidelines and protocols."
	Shaw et al., 2011[25,46]	"Clinical-Coordinating information and services and integrating patient care within a single process for example, developing extended clinical roles, guidelines and inter-professional education, or facilitating the role of patients in shared decision-making."
	Yeo et al., 2012[84]	"Clinical integration is present as care by providers is integrated into a coherent process across professions with a clear programme structure."
	Valentijn et al., 2013[35]	"Clinical integration: Refers to the extent to which care services are coordinated."
	Pike et al., 2014[46]	"Clinical/service – how care services are coordinated."
	Valentijn et al., 2015[65,57,88]	"Micro Clinical integration: The coordination of person-focused care in a single process across time, place and discipline."
	European commission, 2017[32]	"Clinical: integration of different components of clinical processes, e.g. coordination of care services for individual health care service users, care pathways."
	Angus et al., 2018[66]	"Clinical integration: Coordination of care for a complex need at stake in a single process across time, place and discipline."
	Singer et al., 2020[52]	"Process integration (or clinical integration) refers to courses of organizational actions or activities intended to integrate patient care services into a single coordinated process across people, functions, and operating units over time, and it is often referred to as clinical integration. This includes activities such as use of shared care plans. Courses of action that demonstrate clinical integration include appointments kept, referral loops closed, test results communicated, and patients empanelled to providers."
Service integration	Randolph F, 1997[89]	"Services integration can be defined in terms of the different service system levels toward which activities are directed. Kagan (8) identified four levels of services integration: the direct service delivery level, the program level, the policy level, and the organizational level."
	Kodner et al., 2002[67]	"Service delivery: The mode of service delivery and management—how staff are trained, perform their responsibilities and tasks, work together, and relate to patients and family carers and their needs—have a major impact on a number of critical variables in integrated care. Such variables include service access, availability and flexibility, continuity and co-ordination of care, consumer satisfaction, and quality and cost outcomes."
	Fulop et al., 2005[62]	"Service integration – at the organisational level, how are the clinical services offered by the organisation integrated with each other?"

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	WHO, 2008[69]	"Integrated health service can refer to multi-purpose service delivery points – a range of services for a catchment population is provided at one location and under one overall manager. A feature of this form of integration from the client's perspective is the opportunity to receive coordinated care, rather than having separate visits for separate interventions."
	Kodner, 2009[26]	"Service or clinical integration (coordination of services and the integration of care in a single process across time, place and discipline)."
	Lewis et al., 2010[68,22,80]	"Service integration, where different clinical services provided are integrated at an organisational level, such as through teams of multi-disciplinary professionals."

References

1. World Health Organization. *Ageing and Health*; 2021. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health. Accessed June 20, 2022.
2. Smith B, Magnani JW. New technologies, new disparities: the intersection of electronic health and digital health literacy. *Int J Cardiol.* 2019;292:280–282. https://doi.org/10.1016/j.ijcard.2019.05.066.
3. Miliotou AN, Papadopoulou LC. CAR T-cell therapy: a new era in cancer immunotherapy. *Curr Pharmaceut Biotechnol.* 2018;19:5–18. https://doi.org/10.2174/1389201019666180418095526.
4. Giotta Lucifero A, Luzzi S, Brambilla I, et al. Innovative therapies for malignant brain tumors: the road to a tailored cure. *Acta Biomed.* 2020;91:5–17. https://doi.org/10.23750/abm.v91i7-S.9951.
5. Haldane V, De Foo C, Abdalla SM, et al. Health systems resilience in managing the COVID-19 pandemic: lessons from 28 countries. *Nat Med.* 2021;27:964–980. https://doi.org/10.1038/s41591-021-01381-y.
6. Department of Health and Social Care, Uk Government. *Integration and Innovation: Working Together to Improve Health and Social Care for All (HTML Version)*; 2021. https://www.gov.uk/government/publications/working-together-to-improve-health-and- social-care-for-all/integration-and-innovation-working-together-to-improve-health-and- social-care-for-all-html-version. Accessed June 25, 2022.
7. Poku MK, Kagan CM, Yehia B. Moving from care coordination to care integration. *J Gen Intern Med.* 2019;34:1906–1909. https://doi.org/10.1007/s11606-019-05029-z.
8. Ramalho A, Castro P, Gonçalves-Pinho M, et al. Primary health care quality indicators: an umbrella review. *PLoS One.* 2019;14, e0220888. https://doi.org/10.1371/journal.pone.0220888.
9. Van Weel C, Kidd MR. Why strengthening primary health care is essential to achieving universal health coverage. *Can Med Assoc J.* 2018;190:E463–E466. https://doi.org/10.1503/cmaj.170784.
10. Tsuyuki RT, Beahm NP, Okada H, Al Hamarneh YN. Pharmacists as accessible primary health care providers: review of the evidence. *Can Pharm J.* 2018;151:4–5. https://doi.org/10.1177/1715163517745517.
11. Anderson C, Sharma R. Primary health care policy and vision for community pharmacy and pharmacists in England. *Pharm Pract.* 2020;18:1870. https://doi.org/10.18549/PharmPract.2020.1.1870.
12. Gastelurrutia MA, Faus MJ, Martínez-Martínez F. Primary health care policy and vision for community pharmacy and pharmacists in Spain. *Pharm Pract.* 2020;18:1999. https://doi.org/10.18549/PharmPract.2020.2.1999.
13. Dineen-Griffin S, Benrimoj SI, Garcia-Cardenas V. Primary health care policy and vision for community pharmacy and pharmacists in Australia. *Pharm Pract.* 2020;18:1967. https://doi.org/10.18549/PharmPract.2020.2.1967.
14. Raiche T, Pammett R, Dattani S, et al. Community pharmacists' evolving role in Canadian primary health care: a vision of harmonization in a patchwork system. *Pharm Pract.* 2020;18:2171. https://doi.org/10.18549/PharmPract.2020.4.2171.
15. Eickhoff C, Griese-Mammen N, Müeller U, Said A, Schulz M. Primary healthcare policy and vision for community pharmacy and pharmacists in Germany. *Pharm Pract.* 2021;19:2248. https://doi.org/10.18549/PharmPract.2021.1.2248.
16. Salgado TM, Rosenthal MM, Coe AB, Kaefer TN, Dixon DL, Farris KB. Primary healthcare policy and vision for community pharmacy and pharmacists in the United States. *Pharm Pract.* 2020;18:2160. https://doi.org/10.18549/PharmPract.2020.3.2160.
17. Hansen RN, Nørgaard LS, Hedegaard U, et al. Integration of and visions for community pharmacy in primary health care in Denmark. *Pharm Pract.* 2021;19:2212. https://doi.org/10.18549/PharmPract.2021.1.2212.
18. Latif A. Community pharmacy medicines use review: current challenges. *Integrated Pharm Res Pract.* 2018;7:83–92. https://doi.org/10.2147/IPRP.S148765.
19. Benrimoj SI, Fernandez-Llimos F. An international series on the integration of community pharmacy in primary health care. *Pharm Pract.* 2020;18:1878. https://doi.org/10.18549/PharmPract.2020.1.1878.
20. Goundrey-Smith S. The connected community pharmacy: benefits for healthcare and implications for health policy. *Front Pharmacol.* 2018;9:1352. https://doi.org/10.3389/fphar.2018.01352.
21. World Health Organization. *The Legal and Regulatory Framework for Community Pharmacies in the WHO European Region*; 2019. https://apps.who.int/iris/bitstream/handle/10665/326394/9789289054249-eng.pdf?sequence=1&isAllowed=y. Accessed July 24, 2022.
22. World Health Organization. *Integrated Care Models: An Overview*; 2016. https://www.euro.who.int/_data/assets/pdf_file/0005/322475/Integrated-care-models-overview.pdf. Accessed July 10, 2022.
23. Department of Health and Social Care, Uk Government. *Health and Social Care Integration: Joining up Care for People, Places and Populations*; 2022. https://www.gov.uk/government/publications/health-and-social-care-integration-joining-up-care-for-people-places-and-populations/health-and-social-care-integration-joining-up-care-for-people-places-and-populations. Accessed June 11, 2022.
24. Armitage GD, Suter E, Oelke ND, Adair CE. Health systems integration: state of the evidence. *Int J Integrated Care.* 2009;9:e82. https://doi.org/10.5334/ijic.316.
25. Shaw S, Rosen R, Rumbold B. *What Is Integrated Care? Research Report.* Nuffield Trust; 2011. https://www.nuffieldtrust.org.uk/files/2017-01/what-is-integrated-care-report-web-final.pdf. Accessed July 19, 2022.
26. Kodner DL. All together now: a conceptual exploration of integrated care. *Healthc Q.* 2009;13:6–15. https://doi.org/10.12927/hcq.2009.21091.
27. Leutz WN. Five laws for integrating medical and social services: lessons from the United States and the United Kingdom. *Milbank Q.* 1999;77:77–110. https://doi.org/10.1111/1468-0009.00125. iv-v.
28. Ahgren B, Axelsson R. Evaluating integrated health care: a model for measurement. *Int J Integrated Care.* 2005;5:e01. https://doi.org/10.5334/ijic.134. ; discussion e03, e09.
29. Bradley F, Elvey R, Ashcroft DM, et al. The challenge of integrating community pharmacists into the primary health care team: a case study of local pharmaceutical services (LPS) pilots and interprofessional collaboration. *J Interprof Care.* 2008;22:387–398. https://doi.org/10.1080/13561820802137005.
30. Nies H. Integrated Care: concepts and background. In: Nies H, Berman PC, eds. *Integrating Services for Older People: A Resource Book for Managers.* Dublin: Ehma; 2004:17–32.
31. Nolte E, McKee M. Integration and chronic care: a review. In: Nolte E, McKee M, eds. *Caring for People with Chronic Conditions: A Health System Perspective.* 2008:64–91.
32. European Commission. *Blocks: Tools and Methodologies to Assess Integrated Care in Europe.* 2017. https://doi.org/10.2875/69305.
33. Bradley F, Ashcroft DM, Noyce PR. Integration and differentiation: a conceptual model of general practitioner and community pharmacist collaboration. *Res Soc Adm Pharm.* 2012;8:36–46. https://doi.org/10.1016/j.sapharm.2010.12.005.
34. Valentijn PP, Schepman SM, Opheij W, Bruijnzeels MA. Understanding integrated care: a comprehensive conceptual framework based on the integrative functions of primary care. *Int J Integrated Care.* 2013;13, e010. https://doi.org/10.5334/ijic.886.
35. Green BN, Johnson CD, Adams A. Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. *J Chiropr Med.* 2006;5:101–117. https://doi.org/10.1016/S0899-3467(07)60142-6.
36. Conrad DA, Shortell SM. Integrated health systems: promise and performance. *Front Health Serv Manag.* 1996;13:3–40.
37. Santana R, Costa C. A integração vertical de cuidados de saúde: aspetos conceptuais e organizacionais. [The vertical integration of health care: conceptual and organizational aspects]. *Port J Public Health.* 2008;7, 29-5. [in Portuguese].
38. Gillies RR, Shortell SM, Anderson DA, Mitchell JB, Morgan KL. Conceptualizing and measuring integration: findings from the health systems integration study. *Hosp Health Serv Adm.* 1993;38:467–489.
39. Gröne O, Garcia-Barbero M. WHO European office for integrated health care services. Integrated care: a position paper of the WHO European office for integrated health care services. *Int J Integrated Care.* 2001;1:e21.

40. Axelsson R. Institutional developments in the Russian system of social security: organizational and interorganizational aspects. *Soc Pol Adm*. 2002;36:142–155. https://doi.org/10.1111/1467-9515.00276.
41. Simoens S, Scott A. *Towards a Definition and Taxonomy of Integration in Primary Care*. HERU: University of Aberdeen; 1999. Discussion paper. Aberdeen.
42. Axelsson R, Axelsson SB. Integration and collaboration in public health-a conceptual framework. *Int J Health Plann Manag*. 2006;21:75–88. https://doi.org/10.1002/hpm.826.
43. Contandriopoulos AP, Denis JL, Touati N, Rodriguez C. *The Integration of Health Care: Dimensions and Implementation*. Montréal: Université de Montréal; 2003. http://catalogue.iugm.qc.ca/GED_IUG/194387991256/gris.PDF. Accessed July 17, 2022.
44. Shortell SM, Gillies RR, Anderson DA. The new world of managed care: creating organized delivery systems. *Health Aff*. 1994;13:46–64. https://doi.org/10.1377/hlthaff.13.5.46.
45. Andersson G, Karlberg I. Integrated care for the elderly: the background and effects of the reform of Swedish care of the elderly. *Int J Integrated Care*. 2000;1:e01.
46. Pike B, Mongan D. *The Integration of Health and Social Care Services*. European Public Health Association, Health Research Board (HRB); 2014:137.
47. Oostra DL, Harmsen A, Nieuwboer MS, Rikkert MGMO, Perry M. Care integration in primary dementia care networks: a longitudinal mixed-methods study. *Int J Integrated Care*. 2021;21:29. https://doi.org/10.5334/ijic.5675.
48. Bazzoli GJ, Shortell SM, Dubbs N, Chan C, Kralovec P. A taxonomy of health networks and systems: bringing order out of chaos. *BMC Health Serv Res*. 1999;33:1683–1717.
49. May C. A rational model for assessing and evaluating complex interventions in health care. *BMC Health Serv Res*. 2006;6:86. https://doi.org/10.1186/1472-6963-6-86.
50. Fabbricotti I. Taking care of integrated care: integration and fragmentation in the development of integrated care arrangements. *Int J Integrated Care*. 2007;7:e09. https://doi.org/10.5334/ijic.179.
51. Sobczak A. Opportunities for and constraints to integration of health services in Poland. *Int J Integrated Care*. 2002;2:e23. https://doi.org/10.5334/ijic.58.
52. Singer SJ, Kerrissey M, Friedberg M, Phillips R. A comprehensive theory of integration. *Med Care Res Rev*. 2020;77:196–207. https://doi.org/10.1177/1077558718767000.
53. Piquer-Martinez C, Urionagüena A, Benrimoj SI, et al. Integration of community pharmacy in primary health care: the challenge. *Res Soc Adm Pharm*. 2021;S1551–7411(21). https://doi.org/10.1016/j.sapharm.2021.12.005, 00404-00406.
54. Lake JD, Rosenberg-Yunger ZRS, Dainty KN, Rolf von den Baumen T, Everall AC, Guilcher SJT. Understanding perceptions of involving community pharmacy within an integrated care model: a qualitative study. *BMC Health Serv Res*. 2020;20:396. https://doi.org/10.1186/s12913-020-05237-y.
55. Hindi AMK, Schafheutle EI, Jacobs S. Community pharmacy integration within the primary care pathway for people with long-term conditions: a focus group study of patients', pharmacists' and GPs' experiences and expectations. *BMC Fam Pract*. 2019;20:26. https://doi.org/10.1186/s12875-019-0912-0.
56. Ryan K, Patel N, Lau WM, Abu-Elmagd H, Stretch G, Pinney H. Pharmacists in general practice: a qualitative interview case study of stakeholders' experiences in a West London GP federation. *BMC Health Serv Res*. 2018;18:234. https://doi.org/10.1186/s12913-018-3056-3.
57. Steele Gray C, Grudniewicz A, Armas A, Mold J, Im J, Boeckxstaens P. Goal-oriented care: a catalyst for person-centred system integration. *Int J Integrated Care*. 2020;20:8. https://doi.org/10.5334/ijic.5520.
58. Fineide MJ, Haug E, Bjørkquist C. Organisational and professional integration between specialist and primary healthcare services: a municipal perspective. *Int J Integrated Care*. 2021;21:21. https://doi.org/10.5334/ijic.5606.
59. Dickinson A, Joos S. Barriers to integration of primary care into emergency care: experiences in Germany. *Int J Integrated Care*. 2021;21:11. https://doi.org/10.5334/ijic.5442.
60. Krawczyk M, Sawatzky R, Schick-Makaroff K, et al. Micro-meso-macro practice tensions in using patient-reported outcome and experience measures in hospital palliative care. *Qual Health Res*. 2019;29:510–521. https://doi.org/10.1177/1049732318761366.
61. Incident Analysis Collaborating Parties. *Canadian Incident Analysis Framework*. Edmonton, AB: Canadian Patient Safety Institute; 2012.
62. Fulop N, Mowlem A, Edwards N. *Building Integrated Care: Lessons from the UK and Elsewhere*. London: The NHS Confederation; 2005. https://akademia.nfz.gov.pl/wp-content/uploads/2016/08/Building-integrated-care.pdf. Accessed July 4, 2022.
63. Pan American Health Organization. Renewing primary health care in the americas: integrated health service delivery networks. Concepts policy options and a road map for implementation in the americas. https://paho.org/hq/dmdocuments/2011/PHC_IHSD-2011Serie4.pdf; 2011. Accessed August 11, 2022.
64. Delnoij D, Klazinga N, Glasgow IK. Integrated care in an international perspective. *Int J Integrated Care*. 2002;2:e04. https://doi.org/10.5334/ijic.62.
65. Valentijn PP, Boesveld IC, van der Klauw DM, et al. Towards a taxonomy for integrated care: a mixed-methods study. *Int J Integrated Care*. 2015;15:e003. https://doi.org/10.5334/ijic.1513.
66. Angus L, Valentijn PP. From micro to macro: assessing implementation of integrated care in Australia. *Aust J Prim Health*. 2018;24:59–65. https://doi.org/10.1071/PY17024.
67. Kodner DL, Spreeuwenberg C. Integrated care: meaning, logic, applications, and implications-a discussion paper. *Int J Integrated Care*. 2002;2:e12. https://doi.org/10.5334/ijic.67.
68. Lewis RQ, Rosen R, Goodwin N, Dixon J. *Where Next for Integrated Care Organisations in the English NHS?* London: The Nuffield Trust; 2010. https://www.nuffieldtrust.org.uk/files/2017-01/where-next-integrated-care-english-nhs-web-final.pdf. Accessed July 24, 2022.
69. World Health Organization. Integrated health services-what and why?. https://terrance.who.int/mediacentre/data/sage/SAGE_Docs_Ppt_Apr2014/10_session_child_health_services/Apr2014_session10_integrated_health_services.pdf; 2008. Accessed August 15, 2022.
70. Trouvé H, Couturier Y, Etheridge F, Saint-Jean O, Somme D. The path dependency theory: analytical framework to study institutional integration. The case of France. *Int J Integrated Care*. 2010;10:e049. https://doi.org/10.5334/ijic.544.
71. *Medicaid.gov. Medicaid*; 2022. https://www.medicaid.gov/medicaid/index.html. Accessed August 27, 2022.
72. Medicare.gov.What's Medicare?. https://www.medicare.gov/what-medicare-covers/your-medicare-coverage-choices/whats-medicare. Accessed June 10, 2022.
73. British Medical Association, Nhs England. Update to the GP contract agreement 2020/21-2023/24. https://www.bma.org.uk/media/2024/gp-contract-agreement-feb-2020.pdf. Accessed September 2, 2022.
74. Nhs England. *Primary Care Support England*; 2022. https://www.pcse.england.nhs.uk. Accessed August 20, 2022.
75. Department of Health. Australian Government. Primary Health Networks https://www.health.gov.au/initiatives-and-programs/phn; 2022. Accessed August 20, 2022.
76. Mitchell SM, Shortell SM. The governance and management of effective community health partnerships: a typology for research, policy, and practice. *Milbank Q*. 2000;78:241–289. https://doi.org/10.1111/1468-0009.00170, 151.
77. Wang BB, Wan TT, Clement J, Begun J. Managed care, vertical integration strategies and hospital performance. *Health Care Manag Sci*. 2001;4:181–191. https://doi.org/10.1023/a:1011492731396.
78. Fleury MJ, Mercier C. Integrated local networks as a model for organizing mental health services. Administration and policy in mental health and mental health services research, 30:55-73 https://doi.org/10.1023/a:1021227600823; 2002.
79. Fleury MJ. Quebec mental health services networks: models and implementation. *Int J Integrated Care*. 2005;5:e07. https://doi.org/10.5334/ijic.127.
80. Curry N, Ham C. *Clinical and Service Integration: The Route to Improved Outcomes*. King's Fund; 2010. https://www.kingsfund.org.uk/sites/default/files/Clinical-and-service-integration-Natasha-Curry-Chris-Ham-22-November-2010.pdf. Accessed January 16, 2022.
81. Ham C, Curry N. Integrated care. What is it? Does it work? What does it mean for the NHS? The King's Fund. https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/integrated-care-summary-chris-ham-sep11.pdf; 2011. Accessed January 25, 2022.
82. Goodwin N. Understanding integrated care. *Int J Integrated Care*. 2016;16:6. https://doi.org/10.5334/ijic.2530.
83. Heeringa J, Mutti A, Furukawa MF, Lechner A, Maurer KA, Rich E. Horizontal and vertical integration of health care providers: a framework for understanding various provider organizational structures. *Int J Integrated Care*. 2020;20:2. https://doi.org/10.5334/ijic.4635.
84. Yeo SQ, Harris M, Majeed FA. Integrated care for diabetes-a Singapore approach. *Int J Integrated Care*. 2012;12:e8. https://doi.org/10.5334/ijic.810.
85. Lloyd J, Wait S. *Integrated Care: A Guide for Policymakers*. London: Alliance for Health and Future; 2005. https://ilcuk.org.uk/wp-content/uploads/2018/10/IntegratedCare.pdf. Accessed January 22, 2022.
86. Suter E, Hyman M, Oelke N. Measuring key integration outcomes: a case study of a large urban health center. *Health Care Manag Rev*. 2007;32:226–235. https://doi.org/10.1097/01.HMR.0000281624.43611.dd.
87. Brown LJ, Oliver-Baxter J. Six elements of integrated primary healthcare. *Aust Fam Physician*. 2016;45:149–152.
88. Breton M, Wankah P, Guillette M, et al. Multiple perspectives analysis of the implementation of an integrated care model for older adults in quebec. *Int J Integrated Care*. 2019;19:6. https://doi.org/10.5334/ijic.4634.
89. Randolph F, Blasinsky M, Leginski W, Parker LB, Goldman HH. Creating integrated service systems for homeless persons with mental illness: the ACCESS Program. Access to Community Care and Effective Services and Supports. *Psychiatr Serv*. 1997;48:369–373. https://doi.org/10.1176/ps.48.3.369.