Health Care Co-production: Co-creation of Value in Flexible Boundary Spheres

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Abstract. Mounting pressure on governments to understand how well they can promote the health of their population is forcing national health systems to reconfigure their service delivery processes. The latest piece in the organisational puzzle is co-production: a concept that co-opts patients and informal caregivers in the self-management, realization and delivery of specific health care processes. Service management principles, especially those of value creation and co-production, acknowledge the need to engage the user and their personal network in a joint production effort. The paper supports this timely claim using the Outpatient Parenteral Antibiotic Therapy (or OPAT) illustrative case study to show how the concept of customer value-in-exchange and value-in-use applied to the successful health care co-production practice necessarily casts the patients and their informal caregivers as co-creators of value. From the theoretical perspective, the study shows how the provider sphere is not a closed dimension that limits itself to offering a value proposition. The study underlines the need for management to pay greater attention to the informal caregivers, given that these actors need to be orchestrated and that their role is set to become even more pivotal.

Keywords: Value · Co-creation · Service-dominant logic · Co-production · Public sector organizations · Healthcare · Home therapy · Informal caregivers

1 Introduction

Public management research is reaching agreement that the time is ripe to take a public service-dominant approach to both the discourse and the practice of innovation in the delivery of citizen services, ditching the transactional approach that has predominated up to now [1]. This is the thinking from which the paper takes its cue to make the central argument that service science and public management share many unharvested contact points, setting aside the differences between public and private organizations that prevent the transfer of *tout court* business practices to the public sector [2]. A particularly insightful work by Grönroos and Voima mines precisely the value creation concept to extract the

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opportunities offered by a ‘cross-cutting phenomenon’ [3] such as co-production in the context of a public service delivery [4].

Co-production is when a public service organization (PSO) expands its in-house production boundaries to jointly produce services with external entities, partnering with other public organizations, third sector, service users [5]. Co-production is a logical step taken by many kinds of public services [6], particularly in the health care sector which most OECD countries rate high priority [7, 8]. In many countries co-production is the flagbearer of an authentic paradigm shift especially to treat long-term conditions [8]. This means that the service must satisfy “the needs of current providers and recipients to engage in mutual value co-creation without decreasing the quality of future value co-creation” [9: 1209] - and encourage “ongoing and patient-tailored care” [10: 1450], taking into account that this personalisation requires “suppliers to have a complex strategic vision of customer’s value in use” [11: 927].

Despite the scholars’ valuable efforts, the challenge posed by the multi-dimensional nature of co-production within complex public service systems recently brought the research to a standstill as the sum of the parts is not adding up to a consummate whole. Most service management research has barely glanced at social and public services [9], which is surprising given the discipline’s long intellectual history in the concepts of co-production, value-in-exchange and value-in-use. Academia has written much about the potential of the co-delivery of healthcare services, e.g., peer support groups, nurse-family partnerships [12: 39]. Nevertheless, this body of research seems to only skim the surface, going no further than the initial goal to optimise health outcomes. What does it mean – in terms of value creation - to embrace co-production integrating the provider’s resources with those of the user instead of the mere “add-in” of new tasks to the PSO’s organizational system? Which service provision phases generate true value for the service recipients?

These are tough questions to answer and the first logical step on this research path is to draw a timely, more complete picture by integrating the different views. The purpose of this qualitative paper is to build upon recent developments in the public management and service literatures to better understand health care co-production efforts. To usefully contribute to the ongoing debate on the OECD-wide shift towards the so-called New Public Governance (NPG) [13], the paper extends the Gronroos and Voima framework [4], highlighting how the informal caregivers involved in the home production of health care work alongside the PSO to create potential value for the patient-user.

To organize our discussion, the paper is split into six sections. After the introduction Sect. 2 discusses public services, co-production and value formation, from the managerial and the service science perspectives. Section 3 illustrates the chosen research method of a ‘most-likely’ case design, using a number of international studies as the empirical base. Section 4 analyses the provider, joint and customer spheres of the value-creation processes as applied to the Outpatient Parenteral Antibiotic Therapy (or OPAT). Section 5 discusses the findings. Section 6 sets out the implications and conclusions.

2 Public Services, Co-production and Value Formation

The theoretical roots of co-production are embedded in various traditions [3]. In the public management literature, Osborne and colleagues [1, 14] were among the first to notice that the growing fragmentation of society and citizen needs [1: 424] makes it paramount for PSOs to regain their service orientation and to take a public-service-dominant approach.

Recognising the inter-organisational dimension of public service delivery, the authors also seek to push past what has been defined as a "current short-term, transactional and product-oriented focus" [15]. Osborne and colleagues support their reasoning by pointing to the fundamentals of service theory and offer a conceptual model (called SERVICE framework) which incorporates co-production as an "inalienable element".

The SERVICE framework – like the concept of "service system" developed eight years earlier by Maglio and Spohrer [16] - assumes that the PSO can house diverse "configurations of people, technologies and additional resources" [17]. In the presence of multiple variables, the value that the providers and receivers create together (co-creating and re-creating) can vary considerably from one situation to the next. In addition, SERVICE emphasizes the need for the public providers to focus on external value creation and not just internal efficiency [1: 424]. Health care is highly cited as an example to show how the decision to put the patient at the centre (service user) of the clinical decision-making and service delivery effort not only raises patient service experience quality, but also the clinical outcomes [14]. Equally valid examples of how the PSOs "offer a service promise of what is to be delivered" can be found in diverse sectors: from social work to education, from community development to refuse collection (ibidem).

Exploring the nature of value creation in public services from the managerial perspective led Bovaird and Loeffler [12: 40] to propose a reworking of the value chain analysis of Porter [18]. The authors make a distinction between 'primary' and 'support' activities in the PSO production processes, where the former are performed sequentially in order to make the service available, and the latter sustain the appropriate performance of the primary activities. The new model offers an original approach on at least two counts. First, all the activities performed by the PSO are seen to be potentially co-produced by users and their community. Second, the value chain of a PSO is embedded within a wider "value system" consisting of both its 'upstream' supply chain of activities and its "downstream" customer value chain. For example, when the health care users use telecare systems or self-administer their drugs, these customer value chains can generate further value added for other citizens, such as informal caregivers, i.e., the family members and friends who provide care [19], and; for other users who can use the example to learn how to make better use of the service; for other individuals indirectly affected. In other words, any link in the co-production value chain can generate additional value and that it is entwined with the user value. However, the users are not motivated to co-produce merely by self-interest, but also because they are convinced it is an opportunity to "increase other elements of value", including social inclusion and/or community cohesion [12: 43-44].

The service literature treats the concept of co-production as being subordinate to that of value creation [20]. The latter takes place in the usage/consumption stage; the former may take place within the production process which precedes the usage stage (ibidem, p. 98).

Recent work by Grönroos and Voima [4] has conceptually unbundled the value creation processes in the services sector, identifying three separate spheres: the *provider sphere*, the only value facilitator (in which the supplier delivers the resources and organizational capabilities to be used by users-consumers to self-create value); the *joint sphere* (which sees supplier and customer get together to co-produce the service and co-create value); and the *customer sphere* (in which the customer is an independent value creator). Informed by a customer-grounded view, the authors focus on the inherent dynamicity of the size of the value spheres: for example, when the PSO invites the customer to join as a co-producer at different points of the production process, the service user crosses the boundary into the provider sphere [4: 141]. Conversely, the PSO can set up a call centre to encourage dialogue with users. In such situations, the provider and the customer spheres move closer to thus increase the potential value for the customer.

Grönroos and Voima observe that the dyadic interaction in the joint sphere can generate positive, negative or neutral impacts on the value creation process, which is influenced by the many satellites that orbit the sphere of the provider's jurisdiction but over which it has no sway [4]. The health care services delivered to chronically ill patients are a clear example of such an ecosystem. In fact, Sharma and colleagues [21: 23] claim that people with long-term conditions (LTC) are likely to have many contacts with various clinicians and health professionals in other services as they face different LTC-related choices and challenges over many years. The care setting of the chronically ill depends increasingly on informal caregivers who behave like formal care providers and medical personnel [7, 19].

In a nutshell, the value creation and co-creation processes occur in 'different spatial and temporal settings' [4] which emphasize the patient's experiences and logic. By interacting with the PSO and third parties, the customers co-create value [22]. Therefore, to fully grasp how the value creation processes unfold it is essential to analyse the shift in its real-life conditions, a factor that the next sections explore in more depth.

3 Research Approach

The present work aggregates a number of recent peer-reviewed studies of a widely adopted co-production clinical practice called Outpatient Parental Antibiotic Therapy (OPAT), which enables eligible patients to leave the clinical setting to administer their antibiotic treatment at home and participate in the care process. OPAT has been chosen as an illustrative example of a value-generating process for health care patient-customers because it can deliver the same therapeutic success as hospitalization; enable financial savings; and improve the patient's quality of life [23, 24].

Methodologically, the exploratory nature of this study leads us to address our research questions by means of a 'most-likely' case design, i.e., based on cases that are judged ex-ante to fit the theory [25]. The empirical base is made up of a number of international qualitative and quantitative studies developed in the healthcare field, some of which stem from comprehensive literature reviews. As exemplars of co-production applied to the clinical practice in question, such studies are ideally suited

to a critical examination of the outcomes from the value perspective developed by Grönroos and Voima [4].

The authors believe that the research approach chosen can help clarify two key aspects of the OPAT in terms of how the scholars address this co-production clinical practice, and its connection with the empirical world, and have applied a triangulation approach to analyse and interpret the studies cited here.

4 Value Creation Processes: The Example of OPAT

OPAT is composed of five key service areas: multidisciplinary team setting; patient selection; antimicrobial management and drug delivery; monitoring of the patient during home therapy; outcome monitoring and clinical governance [26]. OPAT begins with the hospitalised patient's request to continue their final phase of antibiotic treatment at home. The patient has to satisfy specific eligibility criteria (average seriousness and absence of antibiotic-adverse reactions above all). This requires a multidisciplinary health care team to assess their clinical conditions and a physician and a social worker to ascertain the adequacy of the patient's home environment and that one or more caregivers are on hand to provide 24/7 monitoring throughout the treatment cycle. The transition from nursed patient to self-managed patient takes around 4/5 days. It starts with the OPAT-eligible patient receiving their first intravenous antibiotic therapy (IAT) in hospital alongside a targeted training course, when the nurse gives them the information and training needed to self-manage the complete OPAT cycle at home. The patient is not discharged until they have passed the OPAT-self-management course and the requisite drugs have been obtained from the hospital pharmacy.

The next step is for the nurse to schedule the haematological tests and blood chemistries and the clinical and physiotherapy check-ups scripted during the intensive hospital-administered IAT. The physician then sets the patient's Day Hospital check-up appointment to dovetail with the end of their home treatment course; this is the phase when the patient risks being readmitted to hospital if they show no improvement.

The goal of OPAT is to devise a course of reliable treatment that enables the lay person to administer intravenous medications with low-risk complications [27]. About 25 % of patients are estimated to suffer OPAT-related adverse events, mainly antibiotic reactions, intravenous access complications, or hospital readmission. The patients undergo regular follow-ups, including clinical and laboratory monitoring, to minimize complications [27].

Recognized internationally as a safe and effective way to manage selected patients [28], the risks related to patient/carer-administered OPAT are still a matter for concern. Many interrelated issues stop the mainstream from embarking on co-production, including the fact that the co-producing users rarely have the level of technical experience needed to deal with complications, that their behaviour is considered more unpredictable and less understood than that of more passive users [12: 47], and that the research has yet to fully enquire into the nature and quality of how the formal providers and informal caregivers interact [19]. A further checkpoint on the road to home-based

OPAT is the unwillingness of the public managers and health care professionals to relinquish the high ground [12, 29].

4.1 Provider Sphere

Generally speaking, the value-generating potential of the provider sphere is later turned into real value (-in-use) by the customers [4]. In the case of OPAT, the public hospital is the producer of the resources needed by the user to create value but, above all, is the enabler of a service, what is also termed a "value facilitator" (ibidem). For example, the hospital's multidisciplinary care team will not agree to a course of home care before first ascertaining the feasibility of this option from several viewpoints, not least the compatibility of the effort required and the psycho-physical conditions of the patient; personal skills and resources; the patient's home setting and type of facilities installed; and the presence or absence of informal caregivers. The latter "are asked to play an active role as member of the patient care team in managing care and carrying out medical interventions" [19: 141].

Not all patients are likely to engage in the different activities [30]. On the one hand, the hospital must build capability to identify motivated customers with the requisites to participate in service innovation [22]. On the other, it must invest in getting the stakeholders (OPAT service, primary care team, patient, informal caregivers) to reach mutual agreement on formulating a definitive care program. One of the key points in choosing a home treatment regimen is to keep the plan as simple as possible [27]. It also requires a dedicated administrative structure, supported ideally by an information system.

Moreover, the hospital needs to [31] ensure that all the interdisciplinary team members continue their professional development. A core aspect of ongoing education is keeping apprised of developments in antimicrobial stewardship and infection prevention and control as they relate to OPAT practice, which applies to everyone on the team, especially the non-medical prescribers.

In short, the shift to home therapy calls for: (a) redesigning the service processes; (b) rewiring the process interdependencies to chime with the activities redistributed among the extended cast of hospital and external stakeholders, and (c) bringing on board new actors without upsetting the continuity of care [29, 32, 33].

4.2 Joint Sphere

OPAT shows clearly that "organizational and client co-production are *interdependent*; the task cannot actually be performed without some contribution from both parties" (emphasis in the original) [34: 180]. The joint sphere creates a stream of continuous communication between the hospital and the "downstream care providers" [35]. To get the highest benefit from the co-producing relationship, the provider must make an effort to learn about the patient and their personal and collective situation, which, in turn, affects the value creation potential of both the joint sphere and the customer sphere [4].

Vice versa, the active customer may also venture across the frontier of the provider sphere to reshape the boundaries of the joint sphere and set the scene for a greater *platform* of *interaction* (or engagement [36]), thus enabling the organisation to sow the

seeds of more joint value co-creation opportunities. The intensity of interactions is shaped by a continuum of cognitive, emotional and/or behavioural engagement (ibidem). When the value (-in-use) is created mainly in the customer sphere (e.g., at home) without direct interactions, the hospital is reduced to mostly or exclusively a value facilitator, providing *potentia*l value to service users [4].

As the "interactions between formal providers and informal caregivers may profoundly affect providers, caregivers and patients" [19: 141] so the provider's interaction - their engagement with customer interactions - has a positive, negative or no influence at all on the customer's value creation. In fact it can even lead to the destruction of value. Examples of this are when the effective quality of the outcomes is far from that recommended by the clinical protocols, when adverse events arise, or the patient has to be readmitted to hospital. The organization thus misses opportunities to create value, such as when healthcare professionals neglect informal caregivers' needs or concerns [19], when a misalignment forms, or when the provider and the receiver spheres fail to reciprocate either partly or in full. To the contrary, successful practices construct an integrated circle of clinicians who constantly assess and engage patients: "When the pieces fall into place, patients receive timely appointments, understand their plan of care, and take the initiative for preventive measures, which is especially important for those with chronic illnesses" [37: s89].

4.3 Customer Sphere

Value creation in the customer sphere, or experiential sphere, is sole or independent, meaning that the customer creates self-value without tapping into the provider's processes. The customer interacts solely with the PSO-delivered resources, using other physical, virtual, and/or mental resources wholly unrelated to the provider [4]. Because the individual and the collective dimensions contain multiple temporal, spatial, physical, and social customer sub-dimensions, independent value creation is context-specific.

Given that the patient is the one to accrue the most benefits from home therapy [29], what the patient actually does when they create or co-create value depends on their personal characteristics and medical conditions. The decision of which one of the five practice styles of value co-creation elaborated by [30] - i.e., Team management, Insular controlling, Partnering, Pragmatic adapting, and Passive compliance – to opt for also is tied to the effective abilities of the patient to become involved in the process.

Tasks or points of the production process that substitute or supplement professional staff affect both the customer sphere and the joint sphere, such as in the case of administering the antibiotic or controlling specific parameters during treatment. In other cases, inputs from the user and/or informal caregivers can help the staff to achieve their care goals, e.g., with regular visits to a physiotherapist or with healthier eating habits. "Downstream care providers" [35] interact with patient's resources in a social value creation process [4].

5 Discussion

Individual service in health care does not have the capacity to produce the same overall value for patients as the entire sequence of activities does. Shuttling the patient around a complex, fragmented system fails to increase patient value. To the contrary, the practice must be organized in tailored facilities taking account of the person's medical conditions. A combination of co-creation and co-delivery of care [6: 1108] is a determining factor in the quality of the patient's life and their ability to lead a normal existence.

The first source of customer value of home therapy is increased patient choice thanks to the provision of alternative models of appropriate care. Additional sources of value include: more rapid return to normality (work, education); greater comfort and privacy; nutritional and psychological benefits; reduced risk of hospital associated infection [26]. Interestingly, "normalization of illness" is how Bertocchi et al. [32][1] depict the first source of value.

The OPAT model describes "an equal collaboration between service users and providers in a way that uses the patient's experience … in designing and delivery of services" [21]. The studies analysed inform that one type of interaction is particularly significant in the co-production of potential value process, that between the formal and the informal caregivers.

In particular, the efficacious implementation of OPAT primarily depends on seamless communication between the hospital and the "downstream care providers" [35] to coordinate the tasks, which include the scheduling of appointments or arranging patient transportation. Again, training programmes held at the hospital or via web-based applications and the exchange of information on the patient's conditions [38] are another factor (e.g., when the outcomes of the therapy need to be monitored and reviewed during and after the treatment). Interaction between clinicians and informal caregivers is expected to enable effective knowledge transfer and shared decision making. In the words of Frow and colleagues [36: 473], this latter requires not only *cognitive* engagement – the acknowledgement and provision of own resources to the lead actor and/or its offering, but also engagement at the *behavioural* level (i.e., it impacts individual behaviour) and the *emotional* level (such as when the person "is committed and willing to invest and expend discretionary effort in engaging with the lead actor and its offering"). As the main resource integrator, the hospital draws on the contribution of the informal caregivers and ends up influencing the customer's value creation process.

When patients and families get involved in co-producing of care, the value of what they bring from their own daily experiences [39] is particularly evident in the customer sphere. Here informal carers are asked to contribute on a day to day basis, which means they must be mentally and emotionally prepared to get involved; curious enough to want to learn more; have the mindset to turn challenges into opportunities for improvement; have the ability to listen to everyone, learning and enacting what is relevant; and be ready to participate at a highly personal level [39: i90].

[1] Special recognition for this reference given to Chiara Guglielmetti (University of Milano).

6 Implications and Conclusions

This paper has explored the potential of co-creation and co-production of value in healthcare, using the customer value perspective to analyse the OPAT practice. Using the model developed by Gronroos and Voima [4] as our springboard, the study argues, first, that a successful co-creation of value assumes the fullest integration of PSO and patient tasks, and, second, that the true value for the service recipients is indirectly generated by the interaction between the formal and informal caregivers. The active engagement of the latter is therefore a determining factor also outside the customer sphere, given that it enables the hospital to deploy the resources needed to produce the service and to allow its use by the receivers.

From the theoretical perspective, the study shows how the provider sphere is not a closed dimension that limits itself to offering a value proposition. Rather, it is an open place in which the resources produced autonomously by the provider - *in combination with* the resources of the informal caregivers – make customer value creation possible. However, further studies are needed to explore the logics of the interaction platforms where the various categories of caregivers converse and shape the potential value.

The study underlines the need for management to pay greater attention to the informal caregivers, given that these actors need to be orchestrated and that their role is set to become even more pivotal [7]. In a nutshell, expanding the focus to incorporate organizational coordination and ongoing feedback is essential to create an offering of authentic sustainable value for the patient - from the cognitive, emotional and behavioural standpoint – and for the home caregivers.

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