Community health centres as complex adaptive systems – the link with quality improvement.

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Abstract

Context: Collaboration within a multidisciplinary primary care practice demands extensive governance to provide high quality care. Equally important is to invest sufficiently in the health of the company itself and the wellbeing of its employees. In order to maintain these objectives timely, effective and valuable forms of reflection, redesign and quality improvement are imperative. Amongst the numerous different approaches to quality improvement lays also the framework of complex adaptive systems (CAS). This trend in system thinking, that depicts a system as a dynamic and complex network of interacting and interdepend agents, has already been linked and applied to multidisciplinary primary care practices in various studies.

Research question: To what extent can the complexity framework assist in the onset, execution and evaluation of new valuable quality improvements initiatives, through the utilization of the CAL-OCQ® tool, within the unique setting of community health centres.

Method: This thesis discusses one community health centre in depth, yet is a part of larger study which included 5 centres. This study applied a mixed method approach using the complex adaptive leadership (CAL) organisational capability questionnaire (OCQ), group discussions and individual interviews. To guide the quality improvement initiatives the FOCUS-PDCA model was exemplified to the centre.

Results: The results of both the interviews as the group discussions were able to delineate several insights into how the CAL-OCQ can be used to identify meaningful quality improvement initiatives, into the process of operationalizing these initiatives and into the outcomes after implementing these projects. The questionnaires made participants aware of several team functioning characteristics that they implicitly already knew but that because they were now quantified were made accessible for discussion. The study was perceived to be an evaluation on where they stood as a young centre, where they felt their bottlenecks, priorities and most important possible points of improvement where and to assist in determining which initiatives they should develop next. During the follow up most of the projects perceived to be producing favourable results, some had already resulted in new follow up projects or spin-offs. In the first few months following the group discussions there was also a heightened awareness on quality and communication within the centre.

Conclusion: To our knowledge this is the first study to use the CAL OCQ's as a tool in primary care practices. This study suggests that the CAL OCQ's, with the accompanying procedure that goes along with it as described in this thesis, could be a feasible and promising tool for assessing the daily functioning in complex adaptive healthcare teams at a certain point in time and for pinpointing valuable starting points for quality improvement initiatives that might be worthwhile exploring further.

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Introduction

Collaboration within a multidisciplinary practice demands extensive governance to warrant an efficient organisation that provides high quality care for all patients. Additionally it is of equal importance to invest sufficient energy in the health of the company itself. Every employee needs to feel comfortable in their work-environment and to be continuously stimulated to thrive, grow and fulfil their job with eager and satisfaction. In order to achieve these goals within an organisation timely, effective and valuable forms of reflection, redesign and quality improvement are imperative. Despite its importance within an organisation and the numerous studies on quality improvement in primary care, it is not yet clear what the best methods and strategies are for quality improvement. [1] Amongst the various approaches to quality improvement in healthcare, an upcoming trend in systems thinking that has been receiving increasing attention in this field is that of complexity science and complex adaptive systems (CAS). This framework, that depicts a system as a dynamic and complex network of interacting and interdepend agents, has already been linked and applied to primary care practices in various studies. [2] Within this thesis we attempt to explore to what extent a complex adaptive system framework can assist in the onset, execution and evaluation of new valuable quality improvements initiatives. We did so by utilising a tool, the CAL-OCQ®, and a process that focusses on the interactions between co-workers and between co-workers and the system. Within a complex adaptive system the focus on collaboration and functioning attempts not only to have a valuable effect on the health of the company and its co-workers but also a more indirect positive effect on other outcome measures such as delivered care.

Literature study

Method

Two different literature studies where performed, one concerning quality improvement in primary care and a second on complex adaptive systems and in particular complex adaptive systems in healthcare. Additionally to these literature studies separate sources were used to write brief chapters elaborating on community health centres, community health centres as complex adaptive systems and the method for quality improvement used in the field study (FOCUS-PDCA). The first literature search was performed in the PubMed database using the MeSH terms ‘primary care’, ‘primary healthcare’, ‘primary health care’ and ‘primary care practice’ connected through the Boolean operator AND with the MeSH term ‘quality improvement’. Only articles in English of which the full text was available and which described quality improvement in primary care in general were included. Studies performed in hospital setting were excluded as were studies describing specific quality improvement initiatives, since the main focus in this literature study was quality improvement in primary care in general rather than the results of individual studies. A second literature search was performed in the PubMed database using the MeSH terms ‘CAS’, ‘complex adaptive system’ or ‘complex adaptive systems’ linked through the Boolean operator ‘AND’ with the MeSH terms ‘healthcare’, ‘health care’, ‘primary care’, ‘primary healthcare’ or ‘primary health care’ on the 18’th of September 2018. Only articles that explicitly stated complexity, complex adaptive systems and CAS informed intervention designs were included. Articles that discussed health itself as a complex adaptive system rather than healthcare or healthcare organisations were deemed less relevant for this thesis and were excluded. Articles of which the full text was not available, articles older than 20 years and articles in other languages than English were also excluded. Additionally 5 separate sources were also included, namely Nick Obolensky’s ‘Complex Adaptive Leadership, embracing Paradox and Uncertainty’, Lies Leroy’s ‘CAS for care organizations: and application in community health centres’, the website of the official association of community health centres in Belgium and two supporting papers on performance improvement and the FOCUS-PDCA model.

Results

Quality improvement in primary care

The concept of quality improvement in primary care is multi-dimensional and is most commonly referred to as an intentional effort to employ a systematic approach with the aim to improve practice processes and outcomes. [3] [4] Despite this seemingly well-defined description, studies reveal a significant heterogeneity when inquiring about the meaning of quality improvement in primary care amongst physicians and practices. [5]

Primary care practices operate within a rapidly changing environment where not only the technology, the medical field itself, and their relationships with other healthcare systems but also the expectations and needs of the patients are constantly evolving. In order to keep up in such an environment primary care practices need to adapt and change the way they practice medicine and deliver optimal care through timely redesign and improvement initiatives. [1] Contrarywise practices often tend to operate within the comfort of their daily routines and their familiar ways of thinking and acting. The scarcity or absence of reflection on the effectiveness and efficiency of the given care, for instance due to a lack of time or simply for the sake of finishing the daily tasks, can cause a practice to become stagnant and rigid with possible negative implications for the practices' functioning, patient outcomes and staff satisfaction. [1] [5]

Understanding the process of practice improvement in primary care in order to better facilitate it has proven difficult. This is partially due to its complex nature yet also enhanced by its fragmented structure. A considerable amount of primary care is provided by dispersed separate practices run by individual professionals or small teams. This may bolster a wide variation in performance and bring about delays in implementing appropriate clinical care and evidence based medicine or even foster invalid and unacceptable patterns of care. Additionally, the majority of physicians never received any noteworthy education in quality improvement principles and methodology, which can further impede the process of successful practice improvement. [6] [1] [5] [3]

Organisational cultures in general have been described to be intrinsically resistant to change. Partly as a result of this characteristic, the changes that are most often implemented in primary care practices are simple technical changes for as not to threaten existing processes and culture (e.g. a switch from paper to digital billing). These changes are often triggered by an administrative or technical need (e.g. a pile up of paper bills fostering mistakes and inaccuracies). However, in order to evoke sustainable change, more complex changes are often required. Little is certain about how to best effectuate such a transformation. [1]

Several studies have attempted to identify the key aspects and requirements that foster adaptability and the successful uptake of new quality improvement projects. A clear understanding of a common vision supported by the entire team, attention to reflection, investments in enhanced learning and the congregating of various perspectives and expertise were found to be crucial in facilitating quality improvement efforts. [3] [7] It is not only the organisational structure and culture, but also adequate resources and infrastructure, internal policies and composition that influence these efforts. From a more macro perspective external systems, events and environmental characteristics as well as political and economic circumstances impacting the healthcare environment will also influence the practice as well as how they see themselves, how they perceive their opportunities for both short- and long-term changes and how they manage quality improvement. [1]

The methods used to develop and carry out quality improvement interventions in daily practice define the implementation strategy. [7] Despite a wealth of possible implementation strategies, little is known about what works best in what setting. Identifying the best quality improvement methods for these small practices remains a challenge. [5] Research postulates that quality improvement has a substantially larger chance at bringing forth valuable change when it is tailored to local circumstances of the practice and takes notice of the practices' broader policy context. There is no 'one size fits all'

implementation strategy [7] Research suggests a benefit of informing the development of implementation strategies by theoretical frameworks. [7] In this study we explore the potential use of complex adaptive systems as such a framework and observe its possible value in supporting the initiation of new quality improvement initiatives.

Complex adaptive systems

An introduction to complexity

The mechanical metaphor

The mechanical metaphor has been the dominant one for underpinning management strategies and reforms within organisations since its inception over half a century ago. [8] Adhering to this metaphor the rules, tasks and boundaries are well established and clearly defined. [9] For a considerable period of time it was assumed that a well aligned, predictable and tightly controlled organisational structure delivers the most efficient, qualitative and cost-effective outcomes. This approach has without a doubt abundantly proven its value as the golden standard in situations where there is a clear, simple and programmable process, a need for a standardised output and the transformational process from input to output is straightforward and well understood. However, a large portion of the present-day organisational structures, including most areas in healthcare, do not meet these demands. Consequently this approach might not be as effective in these settings and may even have adverse effects on the processes as well as on the outcomes. [8]

Opposed to this mechanical metaphor, complex adaptive systems are characterised by their dynamic, unpredictable and constantly adapting nature. [9] There is no single unified theory, it's a way of seeking to describe how a system behaves. [8]

Complex

Complex systems consist of multiple interconnecting parts interacting in a dynamic and non-linear way each affecting each other in an open interactive and iterative process. This process cannot be fully controlled or predicted and produces a constant exchange of information. [10] [11] [12]. Its complexity arises from the interdependencies that not only define the system but also render it dynamic and which are seen as networks rather than hierarchies. [10] [13] These systems are characterised by a certain degree of messiness and operate under fuzzy boundaries. The interacting agents do so according to a set of internal rules that adapt, interact and co-evolve with other systems. [14] Even under many seemingly simple processes in a complex adaptive system presumably lies a complex dynamical system, which at the same time abides simple underlying rules. [10] Drawn from these characteristics, it is evident that the way a complex system operates cannot be understood by simply understanding the system's structure without observing the interactions of its components. [12]

Adaptive

Complex systems have a high degree of awareness of their local context and will act adaptively through internal change as a response to changes in the environment within which they exist. [10] Their conditions are far from an equilibrium, meaning they utilize a continuous 'sense and respond' approach to effectuate changes within the system. [11] The ability to naturally transform through adaptation is one of the core elements of complex adaptive systems. To change and adjust itself as a response to external and internal pressures is described as the reactive potential of a complex system. Within the framework of complexity, individual agents in the system will self-organize through local interactions, leading to the emergence of new patterns of behaviours throughout the system. The capability to self-organize facilitates adaptation and can contribute to positive system transformation. Adaptation through dialogue and discussion is considered key in the process of

influencing emergent behaviours and enabling the creation of local solutions tailored to the unique challenges faced by the practitioners. [15] In addition to this emergent adaptation we can also observe actors undergoing intentional adaptation to manage uncertainty and achieve system adaptation. This is facilitated by taking up specific behaviours, actions and roles to promote system adaptation and is (unlike emergent adaptation) a unique characteristics of CAS in human systems. [13]

System

In this context one refers to an organisation as a 'system' when the extent of the connectivity between actors fosters interdependency on one another, and when the actions of any actor carries weight and brings about implications for the connected actors. [13]

Complex Adaptive Systems

The study of complex adaptive systems is a divarication among the studies of systems thinking derived from complexity theory, a relatively young interdisciplinary theory originating from the natural sciences that examine uncertainty and non-linearity (disproportionate cause-effect, further elaborated below). [10] The theory of complex adaptive system resulted from observations made in specific situations in nature such as ant hills and ecosystems, but can also be seen in artificial systems such as the financial market. When examining such systems we observe that despite consisting out of a multitude of different autonomous components they tend to function, adapt, and self-organise as a whole quite effectively despite the absence of clear rules, or a clear hierarchy or chain of command. [11] When we 'translate' the framework of complexity towards specific organizations, they as well are characterized as living organisms existing within a complex ecosystem [15]

A complex adaptive system is a collection of individual agents with freedom to act independently and autonomously, yet equally interconnected and coexisting with other agents. Each agent's actions changes the context for other agents and they depend on each other for the maintenance of the whole system. [9] [2] [15] Since every system is intertwined and connected with all the other systems, each system will influence and be influenced by the other systems. Consequentially this makes it impossible to accurately predict the behaviour of one system by simply studying individual elements of the system without reference to the others. [9] [2] These complex interactions are often more important than the actions of the individual parts themselves and will result in a system wide governance emanating from influence being executed both by the system on the units as by the units on the system (mutual causation). [2] Due to these complex interactions and interdependencies the resulting behaviour will be more than the mere sum of all the individual parts but rather a continuous development of new behaviour. [9] [2] A productive relationship occurs when interactions among different agents produce new, valuable and unpredictable traits and capabilities that are not inherent to any of the individual parts. [16]

Characteristics of complex adaptive systems

Non-linearity

Within complex adaptive systems the inputs are not related to changes and outputs in a linear way, cause-and-effect is unpredictable and unintended consequences are not uncommon. Although the input is often known, the outputs are dependent on a variety of factors regarding the state of the system at that time and cannot be predicted by simply apprehending the magnitude of the inputs. A CAS can effectuate considerable changes as a result of a minor input but might otherwise also stay almost completely indifferent to major inputs or external pressures. This non-linearity contributes to many of the characteristics of CAS such as 'sensitivity to initial conditions' (as illustrated below). [9] [17] [18] [19]

Variation

Rather than striving towards conformity, complexity thinking highlights the positive dimension of variation within a system. In a system where many different factors are in constant interaction with each other, variation is not only natural but desired and a driving force behind change and innovation. This statement however must be nuanced by pointing out that although variation is embraced within this system, it may paradoxically be an undesirable element for issues where there is a clear need for a high degree of certainty regarding the outcomes of an action. [16]

Simple rules and minimum specifications

The unpredictability, self-management and high-degree of autonomy affiliated with complex systems, also illustrates their need to operate within some agreed parameters guided by a set of simple rules and principles designed to steer the system whilst also encouraging innovation and experimentation. These guiding principles are not only deemed profitable to assist system functioning but have also proven to be necessary for the organisation to operate properly [15] This being said, imposing strict external or centralised guidelines will often be met with resistance and impede the system's ability to let progress emerge naturally from within. [9] Therefor the design of a limited amount of rules and specifications, whilst still allowing the emergence of creative progress, are preferred over complicated and detailed plans that would fail to take advantage of the organisation's naturally embedded creativity and potential for advancement through unpredictability [16] Rather than a pre-ordained package such specifications are often the result of organizational dialogue. As a result they are inherently flawed and incomplete with a need to constantly keep evolving and adapting over time. [16] An additional purpose of a clear set of minimum specifications underpinning an organisation is for them to act as a support for its agents to cope with the uncertainty and anxiety that often goes hand in hand with the previously mentioned paradox and tension that are inherit to complex adaptive systems. [16]

Sensitive dependence on initial conditions

A typical property appearing in all complex systems is that of 'sensitive dependence on initial conditions'. This premise originates from the non-linearity of complex systems and states that a small difference in initial variables can lead to huge differences in outcome. [9]

Internalized rule sets

Within a complex adaptive system, the agent's actions in daily functioning, as a response to internal trepidations or in response to changes in their environment are guided by their internal representations of how things work, generating an internalized set of rules. Such mental models usually are not shared, explicit or even logical when viewed by other agents and often evolve over time. [9]

Emergent behaviour

In complex systems each element, although interdependent, has a certain level of autonomy and independence. These attributes facilitate non-linear interactions between the elements, allowing the system to adapt to its environment. In order to bring about this process of adaptation a complex system produces what has been described as 'emergent behaviour'. [1] Emergent behaviours are spontaneous responses generated from adaptation, self-organisation and the multiplicity of relatively simple interactions between the elements within the system and between these elements and the system's context. Such behaviour cannot be predicted nor can it be fully understood by simply understanding how each of these elements in the system work separately. [8][10][11] [20] These patterns and structures are unplanned, unintentional and tend to be self-perpetuating. Through these spontaneous behaviours innovative pathways of governance and self-organisation can emerge. [2] [17]

Attractors

In a system where the elements are changeable, the relationships non-linear, the behaviour is emergent and with a sensitive dependence of initial conditions the behaviour is inherently unpredictable. [9] Nevertheless, there are often patterns of behaviour that can be seen over time and that may be used to make generally true and practically useful statements about the behaviour that is too be expected in a particular complex system. [9] [21] Certain aspects of complex systems, which are unique to each individual system, are seen to influence the patterns of behaviour emerging in that system. In workplace settings these include to a certain extent the rules, but more importantly the internal beliefs and values that the different parts of the system share and that steer the nature of the interactions between the agents in the system. [21] These patterns of behaviour in any CAS, observed over time, is said to describe the systems 'attractor'. [8] Attractor patterns provide a comparatively simple understanding of what at first seems to be very complex behaviour and can be used to try and predict behaviour, to identify potentially profitable areas for a variety of interventions and to shift behaviour towards new and potentially better-adapted operating patterns. [9] [15]

Dependency on local context

A complex system cannot be assessed independently from its unique local context by which they are constantly affected. These systems of various interdependent elements are constantly changing, growing, repairing, adapting and evolving through reciprocal complex interactions. [15]

Cognition and reflexivity

As previously stated, principles of complex adaptive systems were originally derived from observations made in natural systems where adaptation occurs as emergent responses to internal and external pressures. Actors within these systems are naturally unaware of the system in which they operate and not cognizant of the systems adaptability. In human systems we distinguish both a similar form of emergent adaptation through slow incremental change as also rapidly occurring adaptation as a response to a substantial perturbation of the system. So unlike in natural systems adaptation can have emergent but also intentional properties where change is concerted in an attempt to further innovation and improvement more rapidly (whilst considering the social and political structures in which the system is embedded). [13] The implication of intentional transformation efforts is partially driven by the fact that within human systems the system's actors are conscious of the system in which they reside and recognize it as being complex. This introduces the element of reflexivity, a concept that acknowledges how human perceptions and actions as a response to system dynamics, can themselves become a cause of these dynamics. Simultaneously, unintended consequences will always result from intentional efforts on account of there always being elements of human systems of which actors will never be fully conscious and where emergent adaptations will continue to occur through unintentional actions. [13]

The ambiguity of applying concepts derived from observations in natural systems to socially constructed human system, where this important factor of cognition has to be taken into account, must be recognized. In order to comprehensively include this factor an understanding of which factors apply to intentional change and transformation plays an important role. [13]

The certainty-agreement diagram

Ralph Stacey developed a tool to adopt and adapt processes more effectively, the certainty-agreement diagram. This layout depicts complexity as one of the four generic types of dynamic behaviour that a system can exhibit, alongside stasis, order and chaos. [8] The vertical axis of the diagram indicates increasing agreement (level of agreement team members have on the relationship between action and outcome) whereas the horizontal line indicates increasing certainty (will a certain action lead to a specific outcome). [8] [18] The result is a visual representation of the different types of behaviour. Stasis, as a separate state of being, portrays the absence of dynamic behaviour.

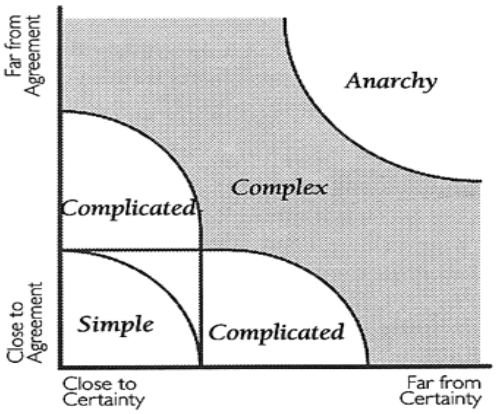


Fig 1. The certainty-agreement diagram (Stacey diagram) [22]

At the left bottom corner of the diagram (fig1) with a high level of certainty and agreement we find order (simple). This is behaviour that is predictable, rational, linear and stereotypical. [8] Here we find a high level of agreement and certainty on the causal relationship between action and outcome. Often in these systems, a straightforward task oriented hierarchical model operating in a mechanistic way with clear directions and orders being given and executed, is the most efficient approach. [9] [18] At the upper right corner resides chaos (anarchy), systems with the greatest instability and the least agreement and certainty where behaviour appears random. [8] In systems that lean towards chaos, team members have no agreement and the relationship between actions and outcomes is almost non-existent. [18] These attributes make traditional methods of planning and performance ineffective and call for an attempt to identify patterns and attempt to move the system to a new more certain and predictable position.[8] [18]

Between these two extremes reside complexity, in which we can once more distinguish two major deviations; firstly in the upper left corner we find systems with ample certainty yet where agreement regarding the desired outcomes is lacking. In this area dialogue and the strive for unanimity regarding political decision making is imperative to a successful management strategy. Secondly, in the lower right corner, we find systems with a high degree of agreement toward the desired goals but little certainty about how these should be achieved. In this area management strategy needs to prompt the organisation towards an agreed direction through ideological clarity, without overly specifying the way in which to do so. [8] [18] The zone labelled 'complicated' is the transition zone between order and complexity. [22]

The agreement certainty diagram attempts to map out the systems in order to be able to assess the degree of uncertainty within the given system, in a way that might suggest the right management approach to best suit that system. [18] Once we have determined the place of a system on the diagram, a more suiting management strategy can be proposed. [8] [18] A great deal of the situations and systems in healthcare reside within the complexity zone, also meaning that unlike in simple linear systems the degree of agreement and certainty are often insufficient to easily and accurately predict the most efficient series of actions towards a certain goal. This would imply that creativity, experimentation and trying out different approaches, while maintaining continuous interaction and deliberation between agents, is likely to be the most efficient strategy to handle situations in this zone. This 'trial and error' approach requires one to critically and continuously monitor the effects of changes and actions on the process and dynamically adjust the next step accordingly. [18] In order to effectuate sustainable change within these systems, complexity suggests that one should resist to instinctively practice reductionist thinking. This would mean attempting to break down the ambiguity, resolve the paradox and achieve more certainty and agreement in order to try and move towards a simple system in the utmost bottom left corner. Within such reductionist thinking the first instinct would be to try to troubleshoot and fix. Yet complexity suggests that within the zone of

complexity, sampling multiple approaches and adjusting gradually directed by observing the changes caused by the approach and shifting time and attention towards those that seem to be working best would be more profitable. Important to note when selecting an approach strategy is that not all problems, even in complex systems, lie in the zone of complexity (e.g. the execution of a set protocol when encountering a patient with suspicion of a myocardial infarction). [8][18]

The value of complexity

Traditional explanatory models within health care often operate starting from a (fairly reductionist) cause-effect relationship between isolated events. Although this might be a valuable approach in many complicated and often analytical issues, more complex, unpredictable, non-linear systems characterised by interdependency, interaction an adaptation (as depicted above) argue the need for an alternative conceptual framework. [18] The complex adaptive system framework can help to explain how organizations are sustained, how they self-organize and how outcomes emerge. [15] This 'system mindset' acknowledges the changing interrelationships between agents and adaptations to unexpected changes. The complexity framework serves no purpose in attempting to resolve these tensions, but it is postulated that such a framework might be used to embrace these uncertainties in order to research the system and help steer them towards creative, reflexive and collaborative ways of working. [14] Reviewing the literature regarding complexity theory one might theorize that this framework could inform and aid the development of interventions sensitive to change and emergence within a particular complex adaptive system. [21]

CAS in healthcare

Complexity thinking is also increasingly being embraced as a theoretical framework to better understand complex situations within healthcare. This movement is driven by the acknowledgement that healthcare is complex and thus warrants complex responses which embrace unpredictability, respect (and utilize) autonomy and creativity, and respond flexibly to emerging patterns and opportunities rather than attempting to apply linear models and implement traditional reductionist solutions. The complexity framework in healthcare focusses on the relationships and interconnections between the different components rather than on the individual components themselves, both in regards to clinical processes (such as the diagnostic process and physiological processes and diseases) as its organisational systems (such as hospitals). Complexity thinking both acknowledges and embraces the 'messiness' in healthcare that traditional approaches often seek to control, trying to see the challenges arising from this messiness as opportunities for adaptation and innovative solutions. In order for these opportunities to enable new ideas and behaviours to emerge and spread across the system, the system must acknowledge that these adaptive actions are a natural and important part of system behaviour. [9] [13] [18] [23] The independent clinical microsystems of primary care practices, often consisting of small groups of professionals with a common vision and goal and their own interdependencies, interconnections and self-organization, are within a multitude of studies also described as complex adaptive systems by themselves. [1] [3]

Clinical governance

Clinical governance is a framework through which health organisations continuously improve their quality of patient care. This covers everything related to creating an environment and enforcing activities that help sustain and improve these standards of care.

Within complex adaptive systems the implementation of clinical governance is just as much characterised by an inescapable level of uncertainty and unpredictability. In order to implement clinical governance more effectively the interaction between agents in the system must be taken into account. The emergent behaviour that defines the systems attractors, patterns of behaviour and

activities, comes forth from the nature and intensity of those interactions. [8] Applying CAS principles in clinical governance requires identification of the core values that anchor the system and on which a platform for progress can be built. This is referred to as the system's attractor state, which is found in the sense of purpose, direction or vision embraced by the organisation and its different components. If the different components of the system do not share the same attractors this can compromise the coherence in which the system functions. Strengthening its attractor state by nurturing a common understanding of the global sense of direction can positively influence the emergent behaviour within the system. [8] By extension some literature suggests that (when possible) goals should also be established and resources utilised with a view towards the whole system, rather than artificially allocating them to parts of the system and risking the overall aim to get lost. [16]

CAS and quality improvement

A CAS framework could assist primary care organisations to map out and explore quality improvement programmes and workplace learning as dynamic and emergent behaviours. This model might provide additional insights that might be useful in improving the quality improvement process. [2] [23] Complexity might help to understand how change occurs, how these changes can be facilitated and how to implement large-scale changes that adapt to the rapidly changing environment. [8]

Quality improvement through a CAS lens aims to embrace uncertainty and adapt innovatively by reducing emphasis on standardized processes (such as checklists) and explore a multitude of potential solutions to encourage alternative approaches to quality improvement. [13] Innovation in CAS is provoked by using appropriate stimuli to increase creativity appealing to the systems' natural potential for adaptation, encourage the development of new relationships and create conditions within which agents and teams can self-organise so that change can emerge rather than by engineering change through detailed planning and instructions. [15]

Complexity as a property of the intervention recognizes that complex interventions themselves consist of multiple components working both independently and interdependently, making it a difficult task to identify crucial mechanisms of change. Furthermore the system in which the intervention is implemented is comprised of individual agents modifying their behaviour and actions required to implement the intervention relative to their own perspective and their own objectives in an attempt to improve the outcomes. Partially as a result of this manner of adaptation, interventions and their impact within the system may deviate from their original intentions. [24]

When selecting a suitable improvement strategies a grasp on the systems' different patterns of emergent behaviour, interactions and interdependence can assist in understanding local patterns of self-organization and pinpointing possible bottlenecks that might require extra attention. [25] Understanding these patterns as well as the interactions and interconnectedness between different components and proactively attempting to anticipate to possible effects of the implemented policies can help predict both positive and negative effects of policy decisions and avoid unintended negative consequences and unsuccessful policy implementation. [26]

Often approaches to deliver and understand healthcare attempt to standardise the process driven by reductive solutions. [13] However when taking into account the characteristics of a CAS as described above, recommendations regarding policy implementation would rather suggest a 'bottom-up' approach with emphasis on maximizing the autonomy of implementers. [27] CAS-informed approaches require a connectionist perspective, where interaction, behaviour and improvement is dynamic, diffuse and adaptive to local conditions. [13] Several authors propose a complexity interventions approach in terms of impacting system interdependencies, relating as well to the

processes utilized to accomplish work in the system (e.g. care pathways or protocols), as to the resources available in the system (e.g. physical layout of a centre) as to the relationship infrastructure among individuals in the system. There is a constant reciprocal interaction between processes, resources and relationships, reinforcing one aspect will strengthen each of them and the other way around. [25] A planned interaction and it's context are also interrelated and reciprocally interacting, the system in which it is implemented will always in some way have to adapt to accommodate it. [14]

Policy resistance

Often the implementation of a policy does not reach the expected or intended results. One of the important obstacles in all systems, amongst many other possible contributing factors, is an unanticipated opposing movement from the system in response to the intervention itself (policy resistance). Complexity thinking asserts this could partially be explained by a mismatch between the complexity of the system and the implementor's ability to understand it. [13] [26] The ability to anticipate such counter movements is lacking in many models since they fail to consider the degree of adaptation a system will undergo as a reaction to the intervention. It is this process of adaptation to both direct and indirect changes introduced by the intervention that might complicate the effective development and implementation of sustainable interventions. It requires the intervention itself to also be able to adapt over time and across various settings. [24] Due to the systems complexity and the multitude of linkages between components of the system and the intervention itself system-level outcomes are often non-linear, emergent and difficult to predict. This makes both its design, implementation and evaluation difficult, demanding often increasingly complex (not complicated!) interventions and a broader approach. [24]

Attractor patterns and triggers for change

An important observation in quality improvement is that natural changes and patterns of emergent behaviour within a system tend to outline certain attractor patterns. Insight into these attractor patterns can help clarify why some innovations are met with resistance by certain employees whilst other initiatives are well-received and accepted by those same people. Understanding how behaviour in the system follows these natural attractor patterns, rather than focusing on resistance to change, can be further explored using the CAS model and is thought to be more important to effectuate meaningful intentional change than battling the experienced resistances. In order to do so the policymaker must recognize the natural occurrence of change, the variety of reasons why co-workers engage in specific efforts and the patterns reflected in past quality improvement efforts. [16]

Besides an elementary understanding of a systems attractors, a system on one hand needs to feel the need for change described as 'tension for changes'. On the other hand, in order to initiate the change, the system tends to require an extra push described in complexity literature as 'trigger for change'. By creating an environment that disseminates information, ideas and insight into options for improvement and provides the agents within the system with insight and information regarding their own attractors or even the tools to create new attractors, may evoke the system to feel the 'tension for change' and furthermore allow the agents within the systems to adapt and innovate in ways that are most meaningful to them. [16]

Local context

Intrinsic to a complexity informed intervention is also the realisation that an intervention preformed within a particular system is unlikely to produce the same behavioural outcome when replicated into another unique setting. [21] The settings in which complex adaptive systems reside, who themselves often also act as complex, dynamic, unpredictable and nonlinear systems, are in constant interaction with the complex adaptive system and are of vital importance if an intervention is going to be successful. Each behaviour that emerges within a complex adaptive system is particular to its history, dynamics and relational properties and the way these interact with the intervention. Therefor when studying complex adaptive systems, especially in relation to interventions, one can never do so independently from its context. Predicting the effect of external inputs on the intervention is, partly due to the many different interactions between different components and agents within the systems, often difficult. New interventions must attempt to identify the relations between the system and its context and work with or support them. Whilst doing so they must take into account both the dynamic and relational properties of the system as its particular history. [21]

Leadership

As one would expect when reviewing the attributes and characteristics of complex adaptive systems as described above, leadership from a complexity perspective is also notably different than the classical concept of leadership used in the mechanical metaphor. Leadership in a complex adaptive system is emergent in nature, shaped by the rich and dynamic interactions between the different parts of the system. Rather than in a hierarchical fashion, leadership tasks are accomplished through relational dialogue between different agents and by providing their team with necessary space, time and resources to facilitate proper functioning and enable innovation. Previously discussed adaptive responses to system pressures are key in cultivating such an environment. Complexity leadership attempts to inspire adaptive responses, local interactions and emergent behaviour to further sensemaking and the exploration of various strategic options and innovative ideas by fostering these relationships between co-workers and promoting experimentation and reciprocal learning. [13] As such complexity leaders should supress the cultivated tendency to troubleshoot and fix, but rather explore a variety of approaches and slowly shift time and attention to the solutions that seem most effective. [8] [13] Successful management strives to create a unified direction and vision, guided by a simple set of rules, that is experienced by the system as a shared perspective rather than one imposed by authority. Such an objective can be achieved by applying simple design principles, by ensuring that communication flows freely and uninhibited across the network and by appreciating and monitoring the implications of feedback and non-linear and mutual causation as a necessary trait within a CAS. [2] It is important to note that leadership within these systems, like the systems themselves, is dynamic and adaptable. Different objectives and settings might require different types of leadership (e.g. in a process where standardization and control is required, traditional leadership may be warranted even within a CAS). [8] [13]

This type of leadership closely resembles that of ‘distributed leadership’, describing leadership as a social process and as a part of the organisation rather than an entity somehow above it trying to manage it. [10] [13]

Community health centres

The Belgian Community health centres are a separate entity in primary care which distinguishes themselves through several key aspects (see table 1). These multidisciplinary health centres work by a system of capitation and attempt to contribute to an open, solidary, just and durable society with attention for equity and diversity in all its forms. The organisation and delivery of care in such centres operates according to the principles of 'proportionate universalism', the offered care is adjusted to the needs of each patient. [28]

Table 1: main characteristics of Belgian Community health centres [28]

Primary care	The groundwork consists of continuous, integrated and comprehensive patient centred care.
Interdisciplinary (within the same organization)	Inherent to the organisation is the complementary collaboration of different professions (eg doctors, nurses, social workers, etc.) in order to provide accessible integrated care through the convergence of different competences, perspectives, strategies and approaches.
Capitation	Opposed to the classical fee-for-service system, Community health centres are not payed for each service or consultation. The centres receive a monthly fee for each patient under their care (adjusted for certain parameters for the expected need for care such as age, chronic disease, etc.) regardless of the amount of services delivered. This system is based on a certain degree of solidarity, where the healthy patient contributes towards those with a higher need for care. This system of payment promotes preventive action and health promotion, reduces the financial threshold for certain patients, stimulates the pursuit of patient empowerment, and promotes task-shifting (most suited person for each job) in order to reach optimal efficiency and cost effectiveness.
Accessible care	Financially: due to the use of capitation as a payment system, patients can consult the different profession without having to pay for each service and thus without an additional financial threshold for seeking care. Physically: all patients live within a limited distance of the community health centre Socially/culturally: attention for a receptive attitude towards cultural, social and ethnic differences are highly valuated amongst these organizations.
Health promotion	A community health centre works as a whole, whether or not regulated by a health promotor, to pro-actively influence the health of their population not only by treating diseases but also by attempting to educate, promote and encourage healthy behaviour and a healthy lifestyle.
A community-oriented vision	Health is approached from a community level rather than strictly individual. A community health centre attempts to aid the betterment and positive development of the community, and in doing so actively improves and protects the well-being of its individual members as well. Cooperation with local organizations is a crucial aspect of detecting and tackling the most prominent local needs.
Well-defined working area	The community health centre limits itself to a circumscribed geographical area.
Regard towards development and research.	Strengthening and further developing better primary care by actively participating in scientific research, supporting new projects and aiding in the schooling of new healthcare professionals (for instance by offering internships) are also valued within these centres.
Non-profit	Its surplus is consistently reinvested to contribute to the betterment of the given care rather than distributed among shareholders.
Pluralistic and independent	Community health centres work pluralistic and do not follow along specific political or ideological lines.
Participation	A Community health centre works bottom-up, involvement of all disciplines in policy and decision making is encouraged and integrated in its governing.
Proactive culture of quality.	Sufficient attention for constant growth, adaptation and redesign towards safe and quality care.

Community health centres as complex adaptive systems

Rowe A. and Hogarth A. state that many health care organizations continue to be designed with the assumption that a good organization is built like a well-oiled machine in line with the principles of Taylor's scientific management theory (Morgan 1986). Within this metaphor there is a clear hierarchy with a manager (usually the chief executive) who defines the specific parts and the roles they ought to play. Within these system there's usually a high level of bureaucracy with a senior management team in charge of creating detailed instructions to be carried out by those 'below them'. Extending this metaphor, middle management, as roll of the engineers, will monitor and maintain the machine identifying issues and fixing small breakdowns. This structure steers the organization as a predictable and linear process controlled by upper management who initiate change and improvement through top-down planning. [15]

In opposition to this classic system, a community health centre is asserted to function as a complex adaptive system. In an exploratory research paper by Leroy L. (2012) in 4 Community health centres in Gent (Belgium) the author assessed through questionnaires and in-depth interviewing how staff members perceived their work-environment and their own organisation. Both intercommunication and interaction between colleagues as organisational aspects, decision-making, task distribution, the possibility to improvise and innovate and their prospective regarding the organisation were taken into account. A conclusion was formulated based on the model of Anderson and McDaniel. A Community health centre was portrayed as a learning organisation where diversity is encouraged, where there is room for uncertainty, with attention for complexity, where there is room for deviation of the norm and creativity and establishing solid relations is seen as an essential element in its functioning. [29]

Based on the limited amount of empirical data available, the author derived that employees of a community health centre perceive their own organisation as functioning largely as a complex adaptive system. [29] In her discussion the author proposed that there would be an added value to expanding the research towards more centres. [29] Following the premise that a community health centre functions largely as a CAS, assessing how CAS principles are implemented within Community health centres and identifying the ways of self-organisation, adaptability and workplace learning, could be a way to guide new quality improvement initiatives within these centres.

Quality improvement models - FOCUS-PDCA

Many healthcare organisations utilise the principles of performance improvement to assess their current level of care, pinpoint gaps and possible improvements, and attempt to grow towards better and more efficient care. [30] Viewing quality improvement through a complexity lens influences how the researchers should be positioned, how the questions are framed and dictates a different methodology to the answers being sought. [13] The core characteristics of complex systems would suggest that the gold standard, randomized controlled trials, will address only a fraction of the results and underlying processes relating to healthcare organizations and systems. Considering that conventional scientific methods partially rely on certainty, predictability and linearity, it is suggested that because the system is dynamic these methods might be lacking to interpret all the results of a complexity informed quality improvement initiative. [14]

Complexity informed quality improvement would seek to acknowledge tension and uncertainty rather than attempt to resolve it. Several authors suggest that one way of pairing quality improvement with these attributes would be the 'act-then-look' approach, where innovation through learning is attained by acting first and then seeking feedback. This approach is described by the same authors as similar to the plan-do-study-act approach (fig 2), where after the preliminary plan faze (preceded by 'FOCUS') small changes are implemented, usually at a small scale first, to determine which actions seem beneficial and merit system level spread. Following complexity principles this form of learning in an iterative way from emerging conditions could reach more optimal and compliant policy implementation than theory driven policy creating. This approach seeks to direct innovations in order to improve the adaptability of the system, not by mapping out the entire process but rather by managing initial conditions whilst monitoring for the emergence of new behaviour and innovation. [13]

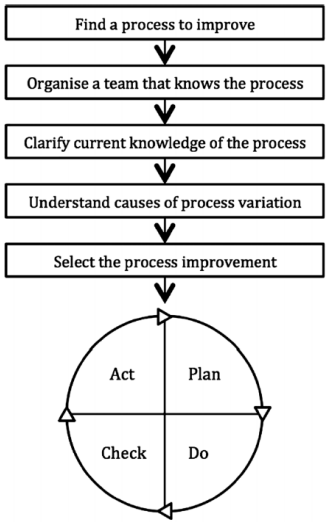


Fig 2. Taylor M. et al. FOCUS-PDCA cycle [31]

The FOCUS-PDCA model originates from the concepts of continuous quality improvement (CQI) and focusses mainly on the process rather than a single outcome. [32] A key characteristic of this model is the implementation of the intervention on a smaller scale in order to be able to receive rapid feedback, promptly detect adverse results and progression and instantaneously adjust accordingly. These results can thereafter be reproduced on a larger scale, or larger improvements can be realized by the cumulative effects of undergoing several small PDCA cycles. [32] Within an interdisciplinary team, this model can be applied within a wide range of areas of improvement and simply requires following a series of simple steps and utilising basic data collections and reporting tools. [32]

Focus – developing an action plan	
F = Find a problem	Clearly define a relevant problem or process with potential for improvement and for which results and progression can be measured. [32] Setting priorities and choosing the most suitable problem may be derived from strategic initiatives, key-processes, results of already executed assessments, etc. [30]
O = Organize a team	Compile a suitable team well known with the problem or process in question, within which a facilitator or leader may be desirable but is not always necessary. Clearly defined roles, a set of ground rules and the authority to make the necessary changes in the process are imperative. [30] [32]
C = Clarify the problem	Attempt to understand the problem as well as possible by acquiring comprehensive knowledge regarding the process (different steps, related processes, influencing factors, performance indicators, customers and suppliers, etc.). Visually portraying the process on a flow-chart, depicting the different steps, may be helpful and might assist in contemplating the best methodology, in deciding which additional data might be necessary, in determining how to collect this data and to verify if the team's composition is sufficient to implement the necessary interventions. [30] [32]
U = Understand the problem	Assemble and interpret the acquired data in order to make a contemplated decision regarding how to improve the chosen problem or process. [32] Specify (and if needed narrow) and measure the main focus of the pursued improvement. [30]
S = Select an intervention	Identify and define the exact improvements or interventions that need to be implemented from the different substantiated proposals, founded on the gathered knowledge. Select the most suited strategy based on the foreseen obstructing and facilitating factors, the expected potency, feasibility and the estimated costs. [30] [32]

PDCA – implementing an action plan	
P = Plan	The action plan to improve the chosen problem or process is defined in detail . [32]
D = Do	When properly defined the action plan is thereafter executed. In the course of its execution data must continuously be collected in order to assess the progress and the results. The need for small adjustments and modifications may already become apparent in this stage and can be implemented straight away as long as they are properly described in the collected data. [32]
C = Check	After the intervention has been implemented, and sufficient time has passed, the composed team will analyse the gathered data. The result of this interpretation is set side by side with the estimated or anticipated results and measured in terms of effectivity towards solving or bettering the chosen problem/process. [30] [32]
A = Act	The assessment preformed in the previous step will now determine if the intervention will be preserved, adjusted or discontinued. Based on the analyses and summarization of the results the organisation will choose to either make the necessary changes and restart the PDCA cycle, reproduce the preformed intervention on a larger scale or completely abandon the chosen intervention and start over. The goal of the final step in the cycle is to generate quality improvement by preserving the improvements that were made in the previous cycle and taking them along towards the beginning of a (partially) new cycle. This process is repeated and continuously recorded and evaluated until the intervention is ready to expand upon. [32] Once the desired results have been met, the process will be standardized, continued and a continues evaluation tool will need to be implemented in case the process is re-destabilised in the future and needs to be re-examined. [30]

Field study

Project setup

This thesis is a part of larger study which included 5 purposefully selected community health centres. The setup was to make an assessment of daily functioning within these centres, focusing on interaction, using a CAS framework and the corresponding CAL-OCQ's. Taking the assessment as a starting point the centre itself could subsequently form their conclusions, set their priorities and autonomously initiate new quality improvement projects. The setup did not intent to oversee or govern the initiatives themselves nor to impose rigid guidelines. Rather it would attempt to foster certain new insights within the centre, in regard to for instance internal interactions, ways of collaboration, possible bottlenecks and where they perceive their strengths and possibilities for change to lie and then observe where the centre in question takes it from there. An important aspect of these result are not just the outcomes of the initial project but also the emergence of spin-offs and new projects as the centre and it's context changes and their priorities shift. Important observations as well are the influence this process has on the team, how they experience it and how the centre takes ownership of this process and develop it.

Overall aim of the project:

To study to what extent the complexity framework can be used for quality improvement within the unique setting of community health centres – a pilot study.

Research questions:

1. How can querying team members using the CAL-questionnaire lead to identifying meaningful quality improvement initiatives?
2. What is the process of operationalization (into projects) of the quality improvement initiatives, with respect to the organisation?
3. Which outcomes (intended and unintended) can be observed by implementing these projects, concerning collaboration and quality of care?
4. How does the director experience this process and which part does he play in the development and implementation of the initiatives within the organisation and in relation to his management type.

The different steps that were carried out to perform this study are depicted in figure 3 below and further elaborated upon in the chapter 'data collection'.

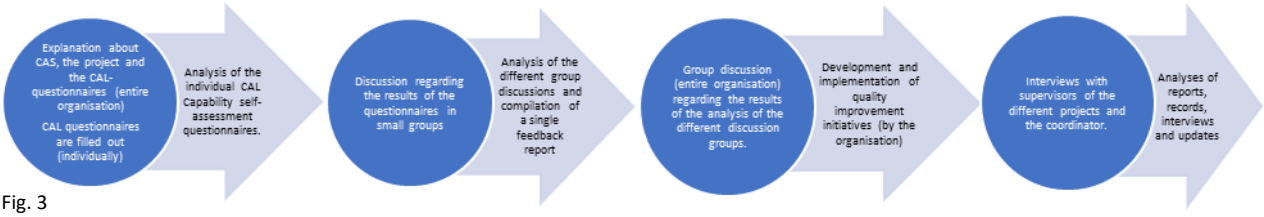


Fig. 3

Setting and participant selection

The research population of the pilot study was restricted to community health centres which were selected and approached based on their size, composition and several practical aspects such as geographical location and their interest in this study. For this thesis a single community health centre was followed up in depth. Which centre was a pragmatic choice based on the timing at which the various projects and meetings could be carried out in the different centres, taking into account the deadline for this thesis.

Background information regarding the community health centre in question:

The community health centre described in this thesis was founded in the beginning of 2017. It was initiated by a group practice of 4 general practitioners who decided to take the leap towards creating a new community health centre, the first in West Flanders. In the following years they grew as a multidisciplinary health centre which now employs 5 regular doctors, 1 temporary general practitioner, 5 nurses, 1 patient care assistant, 1 director, 2 receptionists/administrative workers, 1 dietician, 1 psychologist, 1 volunteer, 1 social worker and 1 general practitioner in training. The centre works with a system of capitation and holds the same values and characteristics as described above (supra. Table 1).

Data collection

The centre discussed in this thesis was first given a brief introduction to complexity after which the particular goal and course of the pilot study was laid out for the entire team. This was also further elucidated upon in the information documents that were handed out to each participant, accompanied by the informed consent forms that where read and signed by each participant (appendix 3).

Questionnaires

Following the introduction, the complex adaptive leadership (CAL) organisational capability questionnaire (OCQ) (figure 4) was briefly explained and handed out to all the centre's employees of every discipline. Several important features such as age, gender, discipline, experience, etc. were inquired after which approximately 30 minutes were given to fill in the 16 question long questionnaire.

In order to assess functioning within a CAS, it is assumed that observation alone does not suffice, considering the importance of not only the daily interactions but also the perception and internalization of the agents in regards to the system they operate in.

The further exploration and analysis of the functioning of healthcare teams using a complexity framework has, so far, been superficial and mainly descriptive. A tool that attempts to quantify team functioning and interprofessional relationships, such as the CAL-OCQ's, might be of added value in understanding and optimizing team functioning. [18] In order to evaluate the functioning of the healthcare teams within the zone of complexity and gain insight into the perception of the member's daily interactions and their perception of the organization, using CAS principles as a theoretical framework, the CAL-OCQ's where used to make an assessment. [18] The complex Adaptive Leadership (CAL) Organisational Capability Questionnaire (OCQ) was developed by Nick Obolensky, and has already been widely used as a tool in corporate teams and organization for improving organisational-wide leadership capability, innovation and enabling effective change. [18] [33] This tool is used to evaluate how the team operates as a complex adaptive system and how its individual agents perceive their functioning as an organisation. [18] The questionnaire consist of 16 questions on a 10 point Likert Scale ranging from 'completely agree' to 'completely disagree'. [18] Full copyright and all rights are reserved to the author and the use of the questionnaire (figure 4) was with full permission. [18] [10]

Group discussions

During a second meeting between the entire team of the community health centre and the research team, a feedback report of the results of these questionnaires was provided. This was to serve as a catalyst for dialogue and discussion. The results were first presented to the entire team and then more extensively discussed in smaller groups. For these discussions the centre was split up into 3 different groups each consisting of staff-members from as many different disciplines as possible and each guided by a moderator (Pype P, Mertens F. and D'hondt A.) who attempted to facilitate and coordinate the meetings without interfering in the discussions themselves

In a third meeting with the entire team of the community health centre in question a feedback report regarding the results of the different group discussions was presented and discussed by the organisation as a whole. Based on this report a few major topics were withheld by the organisation based on what they perceived to be the current priorities. The researchers introduced and elaborated on FOCUS-PDCA as a possible method to guide their quality improvement projects. From this initial report the researchers followed-up on how the centre went to work with these results, which steps they undertook to make a selection, what worked and what didn't work and how they developed, implemented and where necessary readjusted their initiatives.

Interviews

In the year following the initiation of the quality improvement initiatives derived from the feedback report, these projects were followed up through a series of skype interviews. These included 4 interviews with the centre's director and 1 with both the appointed point of contact in the nurses team and in the doctors team (separately). All three of those interviewed had been in the centre since the first stages of their transition to a community health centre and the doctor was already a

Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) - Nederlandstalige versie

Denk over iedere vraag hieronder na vanuit uw eigen organisatie. Voor elke vraag zijn er vijf mogelijke antwoorden (van *Helemaal oneens* tot *Helemaal eens*) en voor elk antwoord zijn er twee mogelijke scores. Bijvoorbeeld, als u in vraag 1 Neutraal aanduidt, dan kiest u ofwel 5 (als uw antwoord naar "oneens" neigt) of 6 (als uw antwoord naar "eens" neigt).

1. Medewerkers binnen de organisatie hebben een sterk, gedeeld gevoel een gemeenschappelijk doel na te streven.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

2. Iedere medewerker heeft duidelijke en meetbare individuele doelstellingen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

3. Medewerkers worden aangemoedigd om initiatieven te nemen als zich daartoe opportuniteiten aandienen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

4. De grenzen van verantwoordelijkheden tussen mensen en teams/afdelingen zijn duidelijk.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

5. Medewerkers zijn goed opgeleid en beschikken over de vereiste vaardigheden om hun werk te doen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

6. De regels die binnen de organisatie gelden, zijn duidelijk en worden door iedereen begrepen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

7. Er is een doeltreffend en goed beschreven proces voor permanente feedback.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

8. Hoewel er enige chaos heerst binnen de organisatie, lijkt alles vlot te lopen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

9. De organisatie heeft een gedeelde visie op hoe ze tot de samenleving/bredere wereld bijdraagt.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

10. Iedereen weet wat van hen verwacht wordt en wat ze moeten bereiken.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

11. Medewerkers kunnen zelf beslissen hoe ze hun werk doen en hebben niet het gevoel gecontroleerd te worden.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

12. De verantwoordelijkheden van elk team en van elke afdeling/eenheid zijn duidelijk.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

13. Medewerkers binnen deze organisatie zijn erg gemotiveerd.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

14. De organisatie telt niet veel regels, maar de bestaande regels zijn wel doeltreffend.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

15. Er is een zekere onduidelijkheid over hoe bepaalde zaken worden verwezenlijkt, maar de doelstellingen worden gehaald.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

16. Individuele medewerkers weten op ieder moment hoever ze staan in het bereiken van hun doelstellingen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
1 of 2	3 of 4	5 of 6	7 of 8	9 of 10

Tel de scores op. Dit zou een leidraad moeten zijn:

Meer dan 120 = Uitstekende score

100 – 120 = Goed

60 – 100 = Gevarenzone

Minder dan 30 = Bestaat de organisatie nog?

(Fig 4. Obolensky, N. (2017). *Complex adaptive leadership: Embracing paradox and uncertainty*. Routledge)

part of the group practice before their transition. Partially due to a lack of resources and time on both sides (as well in the centre as in the research group) the decision was made to limit the interviews to the director and these key figures within the initiatives rather than interviewing the entire team. The topic guide described below was used to support these interviews and provide some structure.

Topic guide for the interviews:

Interviews with point of contact for the separate projects:

- How did you become responsible for this project?
- How did you experience this?
- In regards to the project:
    - What's the state of business?
    - What is going well?
    - What's going difficult and why?
    - What did you do to adjust your course?
    - Did anything change?
- What changed in the teams collaboration as a result of the project.
    - Within the project group?
    - Within the discipline?
    - Within the organisation?
- How was it for you to be responsible for this project?
- Did anything change in your relation with the team members due to the project? What changed?

Interviews with the director:

- How did you experience – in your role as director – the way these projects came about
- How are the project going? What do you think of these projects?
- What is your role within these projects? How do you experience this role.
- In what way do you believe these projects to have an effect on the collaboration within the team?
- How do these projects influence the collaboration between you and the other team members? Which changes did you experience, if there were any?

Data analyses

Questionnaires

The results were anonymously listed in an SPSS database and processed using descriptive statistics. The centre's responses to different questions were graphically represented in individual boxplots, so that when presented each graph clearly showed the minimum, maximum range and dispersion of the different answers.

Group discussions

With permission of the participants the discussions were recorded and the 3 transcripts from these discussions were used to create one clear summary containing the variously discussed subjects. This report displayed the content of the discussions whilst refraining from any interpretation about what was said by the moderator. This feedback report was used in the next group meeting to initiate the final discussion that led to the selection of the quality improvement projects.

Interviews

A qualitative data analysis of the interviews was performed. The conducting of the interviews was not continued until data saturation was achieved, nor was this the studies design. The interviews were recorded, transcribed, imported into Nvivo and coded, meaning the different parts of the transcripts were divided into a series of unstandardized nodes or subjects. Some of these subjects were determined prior to the interviews (deductive) based on the major topics derived from the topic guides for the interviews. However most of the coding was done inductively, meaning the different categories where determined whilst processing the information rather than allocating the information to pre-determined categories. The categories were predominantly determined in function of the research questions. Once coded, these clusters of information were used to attempt to answer the research questions and obtain the results as described below.

Results

Questionnaires

As described above, the centre in question filled in the CAL-OCQ's, discussed a brief overview of these results in small groups and then based on a report of these group discussions selected, as an organization, priorities from which to initiate new quality improvement projects. During and after the group discussions several participants indicated that discussing these questionnaires made them aware of several team functioning characteristics that they implicitly already knew but that because they were now quantified were made accessible for discussion. Attaching meaning and significance to the scores helped define these characteristics, and spelling them out and discussing them subsequently accommodated the possibility to act on them. After reviewing the results of the questionnaires, the groups themselves chose which items to prioritize in the group discussions. Most groups members chose to select topics based on lowest scores, highest discrepancies between scores, surprising results and items that were perceived by them as being important bottlenecks in team functioning.

Group discussions

A number of different themes were withheld from the group discussions by the researchers and fed back to the centre in a report. Amongst these were for instance a few aspects of a certain experienced chaos in the workplace, yet the organisation felt like they were handling these pretty well. Other factors discussed were for instance some that foster the atmosphere and group feeling. A few infrastructural and spatial factors that impact the smooth organisation of delivered care were also discussed as well as elements that promote the sense of involvement amongst co-workers. The possibilities for the optimization of the information flow both between different healthcare professionals as well as between the governing bodies and the entire team, that is both time efficient and thorough, was also reviewed. Also the amount of rules, their explicitness, their values, their exceptions and the transparency of different points of contact were considered. Lastly the alignment of expectations and task division between both individuals as different disciplines was a point of debate as was the subject of feedback both within as between different disciplines.

Selection of quality improvement initiatives

The report that was synthesized from the group discussions was thereafter discussed with the entire organization. One primary focus, interdisciplinary communication, was selected and further explored. From this main topic the organisation used a Ishikawa-diagram (or fishbone diagram) to map out the flow of information with its potentially facilitating and impeding factors and possible points for improvement. From this diagram they subtracted different subdivisions such as the systematization

and optimization of the passing of information, efficiency and unanimity concerning agreements and communication towards patients in the management of prescriptions for chronic medication, fine tuning some practical administrative tasks such as file management and the availability of necessary information at the necessary time and reviewing and elucidating convention concerning exceptions in lab applications. During this meeting 4 improvement projects regarding interdisciplinary communication were selected to develop further. Besides these 4 initial projects regarding interdisciplinary communication a fifth project was initiated briefly thereafter focussing on the topic of feedback, as well within as in between different disciplines. For these themes new quality improvement initiatives were set up and whilst being supported by the entire team they were developed, spear headed and fed back to the group by smaller multidisciplinary project groups.

Interviews

Regular interviews with the centre's director and interviews with the points of contact from the nurses and the doctors group were used as a means to further follow up the quality improvement projects.

A few of the smaller projects were developed, realized and when deemed necessary adjusted in a relatively short period of time. At one of the earlier follow-up interviews these were already running smoothly and perceived to be producing the desired effects in regards to the targeted issue, some of these had even already resulted in new follow up projects. No objective evaluation system was implemented. The larger projects were still in full swing after one year but were also perceived by those interviewed to already be producing favourable results. One of the larger projects was initiated but was put on hold for now since it was no longer perceived as a priority by its target group. They had been able to manage just fine regarding this subject so far and several new and more pressing initiatives had taken priority. This decision was supported by the entire team. In the first few months following the group discussions and corresponding report some of the interviewees mentioned that they were under the impression that, beside the new initiatives, there was also a heightened awareness and focus on quality and communication within the centre. Partially due to the quickly evolving landscape regarding quality improvement initiatives and the spear heading of new projects initiated by the group, this study was quickly no longer explicitly mentioned or in mind when working on quality improvement.

> *"Everything we're working on, it didn't all come directly from the CAS report, but one project naturally flowed into the initiation of new projects and so on." (Doctor, 2020)*

The different subtitles below depict how the study was experienced by the centre as a whole (system), how the director experienced handing over control to the different team members regarding quality improvement and how the different team-members responsible for certain initiatives experienced steering a project and being in that position amongst their peers (based on the interviews).

System

The community health centre in question indicated during the interviews to have experienced the study as a starting point from where new projects could be initiated. However these where quickly intersected by both new initiatives as spin-off's from either the already initiated projects or revision of the initial report. The centre was, also before the study, already putting considerable efforts in quality improvement and into seizing new opportunities for possibly valuable new initiatives.

Those interviewed, both amongst the caregivers as the director, indicated that as a relatively young multidisciplinary practice they were still continuously growing and fine-tuning their management structures, formats for communication and deliberation and the assigning of functions and mandates to the different governing bodies and disciplines. They expressed that they perceived the

development of this framework as a natural process within the growth towards a multidisciplinary centre with a horizontal management structure and self-governing teams with an evenly experienced sense of ownership and involvement across the different disciplines. Marking out tasks, responsibilities and mandates among the different colleagues in this former primary care practice had proven to be a dynamic process in which the exact position of the director seemed equally adaptable and evolving over time with very diverse expectations amongst different team members and disciplines. The transition towards self-governing teams, which is very different from the previous settings in which most team members used to work, has required motivation and an attempt at alignment from all team members in order to tailor a system that functions as well as possible for this unique context and composition.

Both the director as the health care workers that were interviewed also indicated that, during the follow-up in the past year, beside the daily perturbations and characteristics of daily functioning that influence the performance and ways of collaboration within a work environment there were a few distinct more major changes with an acute impact on the centres functioning. Most prominent among these changes was the relocation to a new building. The changes in infrastructure and spatial planning had an immediately noticeable effect on previously experienced issues and initiated several changes in functioning, organisation and collaboration. For example, the fact that within the new compound everyone had their consultation room in the same hallway fostered a growth in contact and lowered the threshold for deliberation both within as between different disciplines, which for the interviewees a clear and positive impact in the way of collaborating and providing care.

> *"I can't speak for everyone, but in my experience I perceive there to be a lowered threshold to pop in one of the open consultation rooms when they aren't busy and ask a quick question or favour, which makes for a smoother and more efficient collaboration" (Doctor, 2020)*

The physical proximity to each other also promoted the sense of involvement amongst several team members. Even a few practical implications by themselves such as simply having more available offices improved the experienced chaos, the way of working and the way of communicating and collaborating within and between different disciplines. The new infrastructure also allowed them to completely separate the lunch area from any working area, whereas in the previous building the lunch area also served as the main conference room. This both fixed a few practical problems and had a positive impact on the moral and experienced value of their breaks. The director also described the move as an additional step towards promoting the 'us' feeling and the common sense of ownership amongst all staff members within a new shared centre.

> *"As we panned out the move I had the expectation that our relocation to a new building, from our organisation, would foster our shared feeling of ownership. In the future I will also continuously attempt to encourage taking further steps into this direction of shared responsibilities and maintenance and strengthening the 'us' feeling." (Director, 2019)*

Independently of the move there were also several shifts within the teams compositions which inevitably went hand in hand with changes in dynamics, ways of collaboration, functioning and prioritizing.

Individual

As experienced by the director

The director mentioned to already have a company culture that inherently greatly valued quality and quality improvement.

> *"I don't think we should proclaim it to be more than it is, without this study we would have still invested in quality improvement. I do have the impression that the feedback report based on the group discussions was used within the centre as, in a way, an evaluation on where we stand as a young centre and what could be or should be or next priorities, our next possible*

points of improvement and our next projects to go to work with next in the following period. Without labelling it a policy plan, it can be seen as a baseline from where to reflect on as an organisation, where our frustrations lie or what we wish to improve, and as such the report can be seen as an important milestone." (Director, 2019)

Control, ownership and responsibility of quality improvement was dispersed and belonged to the different members of the teams themselves across disciplines. The director maintained an overview and practiced a supportive function in quality improvement initiatives. In some cases he requested timely updates and feedback towards to entire group in order for him to better follow up and assist in perpetuating the different initiatives rather than attempt to control or effectuate them himself. It became apparent as well from the interviews with the director, as the interviews with caregivers as from the reports from the group discussions that different disciplines had diverse expectations regarding the tasks of the director. Nevertheless the different disciplines did consistently perceive the degree of control they were allowed to wield regarding their own quality improvement initiatives as favourable.

As experienced by other team members

The caregivers who were interviewed expressed that those chosen to be responsible for a project were perceived by the group as a point of contact and had a delegating function rather than an authoritarian one within their project. Important decisions were discussed and certified by the larger group, it was the individual's job to also represent the opinion of their entire discipline within the project group rather than just their own. They also reported that this dynamic was inherently present in several subgroups but had to be cultivated over a longer period of time in others. Those at the front of their projects felt supported by the entire team in their actions and endeavours and attempted to represent their disciplines within the projects as well as the projects within their disciplines. Yet during the interviews it was also indicated that in certain instances in the past, taking a certain position within a project or governing body was accompanied by discrete unspoken and difficult to pinpoint shifts in both taken responsibilities and their position and dynamic towards the group. This was also noted to be strongly subjected to history and established dynamics within various subgroups and consequently showed improvements when their functions were revised or elucidated.

Who takes responsibility for which project grows naturally from personal interests among the individual team members and the needs felt by the entire team. The centre attempts to stay vigilant in making sure no excessive amount of different projects is initiated at the same time as to not jeopardize the quality of the already active projects. Nevertheless it is expected of every team member to take an active part in quality improvement. Already during the group discussions regarding the CAL-OCQ's multiple team members from various disciplines argued a lack of time being one of the most important obstacles in quality improvement. Deadlines for several projects were often not met in the agreed upon time. In order to facilitate this process the doctor group had recently appointed someone to be responsible for supporting and following up on the different initiatives and to explore any obstacles such as a deficit of time or participants, too high thresholds, etc.

Discussion

This study attempts to evaluate to what extent the team members experienced the gained insights from the CAL-OCQ questionnaires as valuable in the context of quality improvement and to estimate its consequences to new quality improvement projects. By doing so we tried to assess how the CAL-OCQ can be used to identify meaningful quality improvement initiatives, to clarify the process of operationalization of these initiatives and to determine which outcomes can be observed by implementing these projects, from the perspective of both the centre as whole as from the perspective of the individual team members. Additional consideration went to how the director experienced this process and which part he played in the development and implementation of the initiatives.

Several aspects of these results can be linked back to the characteristics of complex adaptive systems and CAS in quality improvement, as elaborated upon in different subheading in the discussion below.

Those interviewed asserted that as a centre they inherently already had a company culture that values and invests in quality improvement, autonomy and multidisciplinary collaboration. These characteristics presumably created a favourable setting for this study. In the first few months, the study was explicitly mentioned whilst working on the related projects, yet this faded quickly as new initiatives supplemented or intersected the initial projects. This could illustrate on the one hand how the implemented methods used in the project were to some extent intrinsically already being administered in the centre and on the other hand how the dynamics in a complex adaptive system are in constant motion which continually leads to new ways of thinking about and organising care. The fact that they quickly incorporated the new initiatives into their daily practice and continued with adding complementary and new projects shows that the study was successful in keeping ownership and impel of all the projects with the centre rather than making it dependent on the research team.

Attractors and policy resistance

Attempting to derive priorities and initiatives from within the group rather than to impose them top-down might prove beneficial when considering the concepts of attractor patterns and policy resistance as described above. By allowing the priorities to arise from within the entire group we attempt to initiate not just projects where the group feels a need for change but where the set up follows a format indicated by the team itself. By attempting to follow their attractor patterns and implementing a project supported by the entire group we might observe less resistance and a better adherence towards the newly implemented changes.

Triggers for change

One of the initiated projects was put on hold for a while. Although the team still recognized the intervention as useful they felt that on one hand their priorities had shifted in the passing months toward new initiatives and they didn't feel a need for change as much concerning this subject and on the other hand they didn't want to risk messing with the good understanding that had worked so far. When reviewing the CAS principles, although there might be a potential for valuable change here, at this moment the team is still managing perfectly without the initiative and therefor lack a trigger for change concerning this project. As they indicated themselves no compelling need was felt at that moment to act as a trigger to prioritize this project at this moment in time. Literature suggests that actively trying to identify what makes a particular factor likely to become a tipping point for major change within a complex adaptive system at a certain time might prove valuable in future quality improvement efforts [26]

Adaptivity and emergent behaviour

As a relatively young centre they still experience continues changes and adaptations in parts of their daily functioning, which illustrates their reactive potential to change and adjust as response to internal and external pressures. This adaptivity can lead the different agents within the system to self-organize through local interactions, leading to the emergence of new patterns of behaviours and the implementation of new system or organisational habits throughout the centre. Within this complex adaptive system employees indicated that as change occurs (for instance within their context, collaboration, care, vision or the centre itself) there are spontaneous responses that express themselves through, amongst other things, new quality improvement initiatives (supplementing, replacing or coinciding with already initiated projects). Within a complexity framework these actions can be described as emergent behaviour. Both the director as the caregivers indicated that all team members were being provided with sufficient freedom to allow such behaviours and self-organisation to occur. Literature regarding complexity in quality improvement suggests that innovation has a considerably larger chance of producing a sustainable change in behaviour if it allows and facilitates self-organisation of new patterns of behaviour in the workplace. [21]

Dependence on local context and initial conditions.

The different changes within the group dynamic and ways of operating that followed the relocation to a new building were already partially described by those interviewed and were already extensive, yet the full impact of these changes is difficult to predict. The non-linearity within the system and multiplicity of interactions between the system and its context presumes that the system is sensitive even to a small difference in initial conditions (such as work environment). These changes in initial conditions can lead to substantial and often unpredictable differences in outcome. Amongst these initial conditions resides not only their physical context but also the background of co-workers as well as the history between co-workers and disciplines which, as the different people interviewed reported, strongly influence the way these groups communicate, collaborate and offer feedback to one another.

Internalized rules

Differences in history and background also impact the different co-workers' internal representations of how things work and consequently the internalized set of rules they wield. This in its turn impacts their way of functioning and collaborating within the setting. The influence of these internalised rule sets was for instance illustrated by the indicated difference between the doctor-group, that had been working together for many years and had already managed to cultivate an effective way of communicating and giving feedback amongst each other, and the nurses-team that was relatively new in comparison and was still actively fine-tuning how they communicate and conform as well amongst each other as in regard to the other disciplines. These internalized rules evolve over time and greatly influence the way of functioning and the coherency within the organisation. Literature suggest that recognizing these models and in the case of this centre also the differences in these patterns amongst certain subgroups might assist policy makers (to certain extent) to try anticipate and predict behaviours and responses to for instance new quality improvement projects. [9] Here we used the CAL OCQ's to initiate reflection and group discussion in regard to their internalized rules (amongst other things). Plsek PE et al. stated that utilising a framework that might aid agents within the system to understand, explore and gain insight into their internal rule sets might also facilitate valuable change and innovation. [9]

Connectivity and interdependence

Within such relatively small systems in which every actor interacts with one another and is connected and interdependent with one another it was observed that the relations and interactions between disciplines, groups and even individuals have a substantial impact on the organisation's functioning, the adopting and redistributing of tasks and responsibilities, the way of practicing care, the way of collaborating and consequently the initialisation of new quality improvement projects. As is described in the literature; within complex systems clinical governance is implemented by large number of different agents influenced by their history and context both at macro level (eg. political dissatisfaction) as well as locally as well as by the multitude of interactions both between individual agents as between parts of the system. These interactions are rich and diverse, any element in the system can be influenced by and can influence any other. [8]

Leadership

The director of the centre employs a leadership approach that attempts to further exploration of various strategic options from bottom up by seeking to inspire adaptive responses and local interactions within the team, rather than using a hierarchical approach. He attempts to oversee the organizational aspects as well as the individual and group functioning whilst providing the team with the necessary space, time and resources to facilitate proper functioning and enable innovation. New improvement initiatives arise and are elaborated by different team members themselves through relational dialogue between different agents rather than a director imposing new projects upon the team. Team members themselves indicated that they prefer to largely take control of their own quality improvement projects and to adjust and adjoin initiatives from their own perspectives and expertise. They feel this approach strengthens agile adaptivity and rapid innovation. Within its unique composition, and local context and history, these bottom up tailored and integrated interventions could prove to have added value in effectuating meaningful change rather than a pre-ordained protocol. As confirmed by literature, the more standard and generally applicable research protocols with clear directions, milestones and a pre-determined step-by-step plan have proven to be a less than optimal approach when attempting to effectuate meaningful quality improvement in within a healthcare system. [14] In this study the setup is rather to attempt to offer a framework that could guide quality improvement initiatives, implementation and evaluation rather than impose them.

Simple rules and minimum specifications.

Within the centre each individual gave notice of having a high degree of self-management and autonomy, however whilst still being a part of a whole that needs to function within some agreed parameters to avoid chaos, inefficiency and mistakes. Therefor their actions are guided by a minimal set of simple rules and principles designed to effectuate alignment of the entire team whilst still encouraging innovation and experimentation. During interviews the extent to which individual employees wished to be autonomous or preferred to be self-governing or rather needed a stricter framework tended to differ. These differences are, among other things, influenced by their vision, history and professional background. This makes the setup of these rules difficult and sometimes unclear (which was also expressed several times during the group discussion). The centre was still fine tuning their balance between setting up clear and sufficient rules without impeding their autonomy and in such a way that everyone felt comfortable. To institute such specifications, rather than having a pre-ordained package, is the result of organizational dialogue. Because of this partially touch-and-go approach they are flexible and tailored to the individual centre but also naturally flawed and incomplete with an undeniable need to constantly keep evolving and adapting over time (as also described by Plesk P. et al. [16])

Conclusion

To our knowledge this is the second study to use the CAL OCQ's as a tool for the quantitative evaluation of the functioning of health care teams as complex adaptive systems. A similar study was performed by Pype P, et al. in palliative home-care teams. It is important to note that before the questionnaire can be used as an indicator to determine to what extent healthcare teams are able to function as a CAS there is a clear need for further testing towards its validity and reliability. Along the same line, the use of the questionnaire in these teams as an initiator for dialogue and discussion that can lead to emergent outcomes also needs to be further evaluated.

The setup of this project was for the different team members to engage each other in dialogue concerning the results of the CAL-OCQ's in order to spark debate and consequently elicit new bottom up quality improvement initiatives. The actual performance of the teams was not evaluated nor was it linked to the questionnaire scores neither before nor after the quality improvement initiatives. These questionnaire scores were only meant to be catalysts for the group discussions. The OCQ scores were discussed in regards to daily functioning and in the light of the organizations common vision and goals. This approach to quality improvement might inspire more involvement and produce projects that are carried more by the entire team than classical top-down initiatives. It is presumed by the CAS theory that disseminating information and providing co-workers with insight and information regarding their own attractors may evoke the system to adapt and innovate in ways that are most meaningful to them. [16] The quality improvement projects were directly implemented in their daily routine, so rather than a project evaluation they performed an evaluation of daily functioning with the newly enforced project (action quality improvement). Both the CAL-OCQ as the following discussions were focused on interaction and collaboration rather than for instance patient outcomes. Possible benefits of the CAS approach, where we start at the interaction underneath rather than the eventual outcomes, might be the emergence of additional unexpected and unpredictable benefits derived from the same project. From a CAS point of view it is assumed that improving collaboration and functioning has an indirect positive effect on patient outcomes and might be an equally valuable approach as the outcome and patient focused approach. Additionally within this approach the entire team was involved and al projects were chosen, valued and set up after being discussed by the entire organisation. Most innovations and quality improvement projects focus mostly on changes within individual parts rather than the system as a whole. This approach may be valuable but might also fragment the process and risk the overall aim to get lost. This approach with whole system targets and pooled budgets might encourage generative relationships among the various stakeholders that may provoke more creative ideas. [16]

After reviewing the results the limited data might suggest that the questionnaire, and the process that goes along with it as described above, could be a feasible and promising tool for assessing daily functioning within interprofessional healthcare teams at a certain point in time and might be a viable manner of pinpointing valuable starting points for quality improvement that might be worthwhile exploring further. In this study it was perceived by both the research team as those interviewed that this may be a valid method to introduce new quality improvement initiatives that tackle relevant subjects for the team.

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Appendix 1: Approved protocol

KU LEUVEN · UNIVERSITEIT GENT · Universiteit Antwerpen · Vrije Universiteit Brussel

VERZOEK TOT ADVIES VAN HET ETHISCH COMITE BETREFFENDE EEN ONDERZOEKSPROJECT BIJ DE MENS IN HET KADER VAN DE MASTER-NA-MASTER HUISARTSGENEESKUNDE

1. TITEL VAN HET ONDERZOEK

WIJKGEZONDHEIDSCENTRA ALS COMPLEX ADAPTIVE SYSTEMS – DE LINK MET KWALITEITSVERBETERING

2. GEGEVENS VAN DE BEGELEIDENDE EN SUPERVISERENDE ONDERZOEKER(S)

PROMOTOR

- NAAM: DR PYPE PETER
- FUNCTIE: ZELFSTANDIG ACADEMISCH PERSONEEL
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- FAX: ...
- E-MAIL: PETER.PYPE@UGENT.BE
- NAAM VAKGROEPVOORZITTER: SARA WILLEMS

CO-PROMOTOR

- NAAM: DR MERTENS FIEN
- FUNCTIE: ZELFSTANDIG ACADEMISCH PERSONEEL
- UNIVERSITEIT: UNIVERSITEIT GENT
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- NAAM VAKGROEPVOORZITTER: SARA WILLEMS

3. GEGEVENS VAN DE ONDERZOEKER; HUISARTS-IN-OPLEIDING.

- NAAM: D'HONDT AYRON
- UNIVERSITEIT VAN INSCHRIJVING: UNIVERSITEIT GENT
- FACULTEIT: GENEESKUNDE
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4. GEGEVENS VAN DE OPLEIDINGSPRAKTIJK VAN DE HUISARTS-IN-OPLEIDING.

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- TELEFOONNUMMER: 09 223 29 23
- E-MAIL: FIENTJE.MERTENS@UGENT.BE
- TYPE-PRAKTIJK: WIJKGEZONDHEIDSCENTRUM

5. INDIEN HET MASTERPROJECT AANSLUIT BIJ EEN LOPEND ONDERZOEK

NIET VAN TOEPASSING

- PROJECTNUMMER ETHISCHE COMMISSIE: B670201837527
- NAAM ONDERZOEKER: DR PETER PYPE
- DATUM GOEDKEURING: 17/10/2018

6. PERIODE (BEGIN- EN EINDDATUM MAAND/JAAR)

- START ONDERZOEK: 01/12/2018
- EINDE ONDERZOEK: 01/05/2020

7. SOORT ONDERZOEK

- ❑ PROSPECTIEF OBSERVATIONEEL ONDERZOEK
  - ❑ VERZAMELEN VAN PATIËNTENGEGEVENS, DIE KLINISCH STANDAARD GEGEVEN ZIJN (=GEEN ENKEL AANVULLEND ONDERZOEK, BLOED- OF ANDERE STAALAFNAME)
  - X VRAGENLIJSTEN
  - X INTERVIEW (NB INTERVIEWS KUNNEN GEPLAND WORDEN, AFHANKELIJK VAN DE INTERVENTIES IN DE BETREFFENDE CENTRA. TOPICS ZULLEN RELATEREN AAN ERVARINGEN M.B.T. ONTWIKKELING EN IMPLEMENTATIE VAN DE INTERVENTIE, ERVAREN BARRIÈRES EN FACILITATOREN)
- ❑ RETROSPECTIEF ONDERZOEK
  - ❑ GEGEVENSVERZAMELING VAN PATIËNTEN DOOR U PERSOONLIJK BEHANDELD
  - ❑ GEGEVENSVERZAMELING VAN EEN GROEP PATIËNTEN VAN DE OPLEIDINGSPRAKTIJK WAAR U STAGE LOOPT MET EEN BEPAALDE PATHOLOGIE
    - ❑ WELKE PERIODE: ….
- ❑ INTERVENTIONEEL ONDERZOEK
  - ❑ MET GENEESMIDDEL (ALLE ITEMS VAN TOEPASSING AANDUIDEN)
    - ❑ FASE I
    - ❑ FASE II
    - ❑ FASE III
    - ❑ FASE IV
    - ❑ PROEF VOOR GENTHERAPIE EN SOMATISCHE CELTHERAPIE
    - ❑ PROEF MET GENEESMIDDELEN DIE GENETISCH GEWIJZIGDE ORGANISMEN BEVATTEN
    - ❑ PROEF MET CELTHERAPIE MET XENOGENEN
  - ❑ ANDERE SPECIFICEER (VB MEDICAL DEVICE, BLOEDAFNAME, RX,…)
    - ❑ MEDICAL DEVICE
    - ❑ BLOEDAFNAME, RX,…

8. GEEF EEN KORTE SAMENVATTING VAN HET PROTOCOL (MINIMUM 30 ZINNEN/ EEN HALVE PAGINA EN MAXIMUM ÉÉN PAGINA), VERSTAANBAAR VOOR MENSEN NIET GESPECIALISEERD IN DE MATERIE, VERWIJS NIET ALLEEN NAAR EEN BIJGEVOEGD PROTOCOL.

ACHTERGROND: SAMENWERKEN IN COMPLEXE MULTIDISCIPLINAIRE PRAKTIJKEN VRAAGT HEEL WAT MANAGEMENT. ENERZIJDS MOET GEZORGD WORDEN VOOR EEN EFFICIËNTE ORGANISATIE MET OOG VOOR HET EINDPRODUCT: HOOG KWALITEITSVOLLE GEZONDHEIDSZORG VOOR ALLE PATIËNTEN. ANDERZIJDS MOET GEZORGD WORDEN VOOR DE GEZONDHEID VAN DE ORGANISATIE: IEDEREEN DIE ER WERKT MOET ZICH GOED VOELEN IN ZIJN JOB EN OP EEN DUURZAME MANIER GESTIMULEERD WORDEN OM HET BESTE VAN ZICHZELF TE KUNNEN GEVEN EN TE BLIJVEN GROEIEN. ER BESTAAN VERSCHILLENDE MANAGEMENTSTRUCTUREN DIE ELK VOOR- EN NADELEN HEBBEN BETREFFENDE DEZE THEMA'S. GLOBAAL KAN MEN EEN ONDERSCHEID MAKEN TUSSEN DE EERDER HIËRARCHISCH GESTRUCTUREERDE MANAGEMENTSTRUCTUREN EN DE MANAGEMENTSTRUCTUREN DIE MINDER HIËRARCHISCH GESTRUCTUREERD ZIJN EN MEER GEBASEERD ZIJN OP ZELF-ORGANISERENDE ACTIVITEIT BINNEN EEN ORGANISATIE. TOT DEZE LAATSTE GROEP BEHOORT HET LEIDERSCHAP DAT OP COMPLEXITY SCIENCE GEBASEERD IS EN EEN ORGANISATIE BESCHOUWT ALS COMPLEX ADAPTIVE SYSTEM (CAS) (HTTP://WWW.COMPLEXADAPTIVELEADERSHIP.COM/). DEZE MANIER OM EEN ORGANISATIE TE LEIDEN HOUDT REKENING MET DE SNEL VERANDERENDE, ONZEKERE, COMPLEXE EN SOMS DUBBELZINNIGE CONTEXT WAARIN DE GEZONDHEIDSZORG FUNCTIONEERT. DIT GEBEURT DOOR AANDACHT TE SCHENKEN AAN HET FEIT DAT ELK DEEL/LID VAN DE ORGANISATIE OP EEN AUTONOME MANIER MOET KUNNEN FUNCTIONEREN EN EEN INBRENG MOET KUNNEN HEBBEN IN DE WERKING VAN DE ORGANISATIE WAARDOOR HET AANPASSINGSVERMOGEN VAN DE ORGANISATIE IN ZIJN GEHEEL VERHOOGT EN EEN PERMANENTE KWALITEITSVERBETERING MET ZICH MEEBRENGT, IN EEN VEELEISENDE EN STEEDS VERANDERENDE CONTEXT. HET FUNCTIONEREN VAN WIJKGEZONDHEIDSCENTRA (WGC) ALS CAS WERD REEDS AANGETOOND IN EERDER ONDERZOEK (MASTERPROEF L. LEROY, OLV PROF P. GEMMEL EN PROF J. DE MAESENEER). EEN EVALUATIE VAN DE MANIER WAAROP DE CAS PRINCIPES GEÏMPLEMENTEERD WORDEN IN WGC, EN HOE HET ZELF-ORGANISEREND EN LEREND EFFECT ER VAN HERKENBAAR IS, ZAL HET MOGELIJK MAKEN OM GERICHTE KWALITEITSVERBETERINGSINITIATIEVEN TE NEMEN.

DOELSTELLING EVALUEREN VAN HET FUNCTIONEREN VAN WGC ALS CAS EN HOE DIT KAN LEIDEN TOT KWALITEITSVERBETERINGSINITIATIEVEN. INITIATIE EN EVALUATIE VAN KWALITEITSVERBETERINGSINITIATIEVEN.

METHODE

DEELNEMERS: 5 WGC'S WORDEN DOELGERICHT GESELECTEERD.

DEEL I: EEN INTRODUCTIESESSIE WORDT GEGEVEN VOOR DE DEELNEMERS. EEN VRAGENLIJST (ZIE BIJLAGE: COMPLEX ADAPTIVE LEADERSHIP (CALT) ORGANISATIONAL CAPABILITY QUESTIONNAIRE (OCQ))(16 VRAGEN - 30 MINUTEN) WORDT INGEVULD DOOR ELK LID, VAN ELKE DISCIPLINE, VAN ELK DEELNEMEND WGC. KENMERKEN VAN DE LEDEN WORDEN VERZAMELD (OA LEEFTIJD, GESLACHT, DISCIPLINE, AANTAL JAREN IN DIT WGC). KENMERKEN VAN HET WGC (OA AANTAL PERSONEELSLEDEN, DUUR VAN SAMENWERKING, DUUR VAN BESTAAN VAN WGC, INFO OVER BESTUUR EN BESTUURSVORM, AANTAL OPERATIONELE KENMERKEN EN UITKOMSTMATEN OP PATIËNTNIVEAU) WORDEN VERZAMELD. EEN TWEEDE VRAGENLIJST (ZIE BIJLAGE: THE INDIVIDUAL CAL CAPABILITY SELF-ASSESSMENT - COMPLEX ADAPTIVE LEADERSHIP INDICATOR) (16 VRAGEN – 45 MINUTEN) WORDT INGEVULD DOOR DE LEIDINGGEVENDE VAN ELK WGC. EVALUATIE VAN DEZE GEGEVENS ZAL INZICHTEN GEVEN IN BASISVOORWAARDEN EN RANDVOORWAARDEN DIE GECORRELEERD ZIJN MET HET FUNCTIONEREN ALS CAS. PER DEELNEMEND WGC ZAL EEN FEEDBACK RAPPORT OVERHANDIGD WORDEN DAT ALS BASIS KAN DIENEN VOOR KWALITEITSVERBETERINGSINITIATIEVEN. DE VRAGENLIJST KAN IN DIT OPZICHT ALS AUDITINSTRUMENT FUNCTIONEREN. DE BESPREKING VAN DE RESULTATEN WORDT BEGELEID DOOR DE ONDERZOEKERS.

DEEL II:

TIJDENS DE GROEPSBESPREKING VAN HET FEEDBACK RAPPORT ZULLEN EEN AANTAL INITIATIEVEN GEFORMULEERD WORDEN OP BASIS VAN THEMA'S WAAR HET WGC LAAG IN SCOORDE OP DE VRAGENLIJST EN IN FUNCTIE VAN DE PRIORITEITEN EN VOORKEUREN VAN HET BETREFFENDE CENTRUM. OP DEZELFDE MANIER ZAL EEN DENKOEFENING GEBEUREN MET DE LEIDINGGEVENDE. TIJDENS DE DAAROPVOLGENDE 6 - 12 MAAND ZULLEN DEZE INITIATIEVEN UITGEWERKT EN GEÏMPLEMENTEERD WORDEN. EEN PERMANENTE REGISTRATIE EN PROCESBESCHRIJVING VAN DE INITIATIEVEN ZAL GEBEUREN. BIJKOMENDE OBSERVATIES, INTERVIEWS OF FOCUSGROEPEN KUNNEN GEPLAND WORDEN ALS PROCESEVALUATIE, AFHANKELIJK DE GEKOZEN INITIATIEVEN.

DEEL III:

VERVOLGENS ZULLEN 1 TOT 2 KWALITEITSVERBETERPROJECTEN UITGEKOZEN WORDEN OM NADER OP TE VOLGEN EN VERDER UIT TE WERKEN VOLGENS DE FOCUS-PDCA CYCLUS. NA EVALUATIE VAN DEZE PROJECTEN KAN DE POTENTIËLE DOELTREFFENDHEID VAN HET GEBRUIK VAN CALT OCQ TER IDENTIFICATIE VAN DE PRIORITEITEN VAN ELK UNIEK CENTRUM, EN ALZO DE OPSTART VAN GERICHTE KWALITEITSVERBETERPROJECTEN, BESCHREVEN WORDEN. MET DE RESULTATEN VAN HET FEEDBACKGESPREK EN DE INDIVIDUELE KENMERKEN VAN ELK CENTRUM, KUNNEN DE VERSCHILLEN TUSSEN DE CENTRA IN ZOWEL HET (OP)STELLEN VAN DE PRIORITEITEN ALS DE RESULTATEN VAN KWALITEITSVERBETERPROJECTEN EVENEENS WAARDEVOLLE INFORMATIE OPLEVEREN OMTRENT DE FACILITATOREN EN BARRIÈRES VOOR/IN KWALITEITSVERBETERING.

DEEL IV:

AL DAN NIET NOG ALS DEEL VAN DEZE MASTERPROEF ZULLEN NA 1 JAAR DE VRAGENLIJST OPNIEUW INGEVULD WORDEN. EEN NIEUW FEEDBACK RAPPORT WORDT OPGESTELD. PROCES-EVALUATIE EN -BESCHRIJVING VAN DE GESELECTEERDE WGC KAN DIENEN ALS DRAAIBOEK VOOR PERMANENTE KWALITEITSVERBETERING

RESULTAAT GEOPTIMALISEERDE WERKING VAN EEN WGC OM ALS CAS TE FUNCTIONEREN. INZICHT IN HET FUNCTIONEREN VAN ELK PERSONEELSLID AFZONDERLIJK. INZICHT IN HET FUNCTIONEREN VAN WGC ALS MULTIDISCIPLINAIR TEAM. DE GEVOLGEN VAN DE KWALITEITSVERBETERINGSINITIATIEVEN OP PERSONEELSNIVEAU (INZICHT VERKRIJGEN IN EIGEN FUNCTIONEREN BINNEN DE ORGANISATIE) EN OP PATIËNTNIVEAU (EINDPRODUCT . VERBETERING DOOR ZELF-ORGANISATIE VAN HET TEAM AANGEPAST AAN DE SPECIFIEKE CONTEXT) KUNNEN EEN EFFECT HEBBEN OP DE GELEVERDE ZORGKWALITEIT.

9. IS HET ONDERZOEK

- ❑ DIAGNOSTISCH
- ❑ FYSIOLOGISCH
- ❑ MORFOLOGISCH
- ❑ THERAPEUTISCH
- ❑ FYSIOPATHOLOGISCH
- X EPIDEMIOLOGISCH

10. ZIJN ER ZIEKENHUISDIENSTEN BETROKKEN?

- ❑ JA
- X NEEN

INDIEN JA

- ❑ 1 ZIEKENHUISDIENST
- ❑ MEERDERE ZIEKENHUISDIENSTEN
  - NAAM, ADRES, TEL, FAX EN E-MAIL VAN HET CENTRAAL ETHISCH COMITÉ: …
  - NAAM, ADRES,TEL, FAX EN E-MAIL VAN ANDERE ETHISCHE COMITÉ(S) DIE MEEWERKEN AAN HET ONDERZOEK + NAAM VAN DE LOKALE ONDERZOEKER: …

11. WIE IS DE OPDRACHTGEVER VAN DE NIET INDUSTRIE GESPONSORDE STUDIE

FACULTEIT GENEESKUNDE UNIVERSITEIT GENT

12. KEUZE VAN DE PROEFPERSONEN : NIET VAN TOEPASSING

A. GEZONDE PROEFPERSONEN ?

- X JA
- ❑ NEEN

PATIËNTEN LIJDEND AAN :

- X PERSONEEL

B. ZWANGERE VROUWEN OF VROUWEN DIE TIJDENS HET ONDERZOEK ZWANGER KUNNEN WORDEN ?

- X JA
- ❑ NEEN

C. AANTAL PROEFPERSONEN: ALLE MEDEWERKERS VAN DE 5 WGC'S DIE INSTEMMEN MET DEELNAME AAN HET ONDERZOEK (MAXIMAAL 200)

D. LEEFTIJD : 18-65 JAAR

E. GESLACHT : MAN EN VROUW

F. HOE WORDEN ZE GEREKRUTEERD?

DOELGERICHTE SELECTIE VAN VLAAMSE WIJKGEZONDHEIDSCENTRA (WGC'S), OP BASIS VAN REGIO, GROOTTE, JAAR VAN OPRICHTING, IN SAMENWERKING MET DE VERENIGING VOOR WIJKGEZONDHEIDSCENTRA.
DE COÖRDINATOREN VAN DE BETREFFENDE WGC'S ZULLEN PER E-MAIL VIA DE VERENIGING VOOR WIJKGEZONDHEIDSCENTRA OP DE HOOGTE GESTELD WORDEN VAN HET ONDERZOEKSPROJECT EN KORT NADIEN DOOR DE ONDERZOEKERS TELEFONISCH GECONTACTEERD WORDEN. EEN INFORMATIEMOMENT VOOR DE COÖRDINATOREN (OF EVENTUELE ANDERE MEDEWERKERS) VAN GEÏNTERESSEERDE CENTRA ZAL GEORGANISEERD WORDEN OM HET ONDERZOEKSPROJECT TOE TE LICHTEN EN VRAGEN TE BEANTWOORDEN. DAARNA BESLISSEN DE WIJKGEZONDHEIDSCENTRA TOT DEELNAME – NA GOEDKEURING DOOR HET BETROKKEN DAGELIJKS BESTUUR EN RAAD VAN BESTUUR. RECRUTERING VOLGENS DEZE PROCEDURE TOT 5 WIJKGEZONDHEIDSCENTRA INSTEMMEN.
PER DEELNEMEND CENTRUM ZAL HET ONDERZOEKSPROJECT VERVOLGENS MONDELING TOEGELICHT WORDEN TIJDENS EEN TEAMBESPREKING. INFORMED CONSENT VAN DE MEDEWERKERS ZAL AANSLUITEND GEVRAAGD WORDEN.

OPGELET: HET EXPERIMENT IS ENKEL VERZEKERD VOOR HET HIER OPGEGEVEN AANTAL. INDIEN MEN EXTRA DEELNEMERS WIL INCLUDEREN, ZAL MEN DIT VIA EEN AMENDEMENT MOETEN AANVRAGEN.

13. INFORMATIE EN TOESTEMMING VAN DE PROEFPERSONEN

A. GAAT HET OM WILSBEKWAME VOLWASSENEN?

X JA
❑ NEEN

WORDT DE TOESTEMMING VAN DE PROEFPERSONEN BEKOMEN NA EEN KLARE EN OBJECTIEVE UITEENZETTING VAN HET DOEL VAN HET ONDERZOEK ?

SCHRIFTELIJK :

X JA
❑ NEEN

MONDELING :

X JA
❑ NEEN

ZO NEEN, WAAROM NIET ? ...

WORDT IN DIT LAATSTE GEVAL DE TOESTEMMING GEGEVEN DOOR ANDEREN DAN DE PROEFPERSONEN ?

❑ JA
X NEEN

ZO JA, DOOR WIE ? ...

ZIJN ER SPECIALE GROEPEN : EIGEN STUDENTEN, EIGEN PERSONEEL ? DE ONDERZOCHTE POPULATIE ZAL BESTAAN UIT DE VERSCHILLENDE GROEPEN VAN PROFESSIONALS BINNEN DE VERSCHILLENDE DISCIPLINES (ARTSEN, VERPLEGING, KINESISTEN, ETC.) VAN DE BETROKKEN WGC'S, DOCH HET ONDERZOEK ZAL ZICH RICHTEN TOT DE ORGANISATIE IN ZIJN GEHEEL EERDER DAN PER DISCIPLINE.

B. GAAT HET OM WILSONBEKWAME VOLWASSENEN? (= SOMMIGE PSYCHIATRISCHE PATIENTEN, PERSONEN IN DE ONMOGELIJKHEID HUN WIL TE UITEN, ...)

❑ JA
X NEEN

WORDT DE TOESTEMMING GEGEVEN DOOR ANDEREN DAN DE PROEFPERSONEN ?

❑ JA
❑ NEEN

ZO JA, DOOR WIE ?

C. GAAT HET OM KINDEREN?

❑ JA
X NEEN

WORDT DE TOESTEMMING GEVRAAGD VAN HUN WETTELIJKE VERANTWOORDELIJKEN ?

❑ JA
❑ NEEN

IS ER EEN INFORMATIE- EN TOESTEMMINGSFORMULIER VOOR KINDEREN VANAF 12 JAAR VOORZIEN?

❑ JA
❑ NEEN

14. IS HET INFORMATIEFORMULIER VOOR DE PROEFPERSONEN IN BIJLAGE GEVOEGD

X JA
❑ NEEN

ZO NEEN, WAAROM NIET ? ...

15. IS HET FORMULIER VOOR SCHRIFTELIJKE TOESTEMMING IN BIJLAGE GEVOEGD ?

X JA
❑ NEEN

ZO NEEN, WAAROM NIET ? ...

16. VERZEKERING

IN PRINCIPE IS HET DE VERZEKERING VAN DE UNIVERSITEIT WAARAAN UW PROMOTOR VERBONDEN IS WAARDOOR U GEDEKT BENT.
WANNEER U EN/OF UW PROMOTOR EEN ANDERE VERZEKERING HEBBEN AFGESLOTEN, GELIEVE DAN DE VERZEKERINGSPOLIS BIJ TE VOEGEN.

17. WERD EEN ANALOOG ONDERZOEK REEDS ELDERS UITGEVOERD, HETZIJ IN ZIJN GEHEEL, HETZIJ GEDEELTELIJK ?

JA, GEDEELTELIJK. EEN VERGELIJKBAAR ONDERZOEK WERD UITGEVOERD BINNEN DE CONTEXT VAN HET PALLIATIEF ZORG TEAM. 'HEALTHARE TEAMS AS COMPLEX ADAPTIVE SYSTEMS: FOCUS ON INTERPERSONAL INTERACTION. PYPE P, KRYSTALLIDOU D, DEVEUGELE M, MERTENS F, RUBINELLI S, DEVISCH I.'

18. WANNEER VERWACHT MEN VOORDEEL VOOR DE DEELNEMER

A. HEEFT HET EXPERIMENT EEN DIAGNOSTISCH OF THERAPEUTISCH DOEL DAT ONMIDDELLIJK VOORDEEL AAN DE ONDERZOCHTE ZAL BRENGEN ?

❑ JA
X NEEN

B. MAAKT HET EXPERIMENT DEEL UIT VAN EEN DIAGNOSTISCH EN THERAPEUTISCH PLAN WAARVAN MEN MAG VERWACHTEN DAT DE RESULTATEN BINNEN AFZIENBARE TIJD VOOR ANDERE ZIEKEN NUTTIG ZULLEN ZIJN ?

❑ JA
X NEEN

C. MAAKT HET EXPERIMENT DEEL UIT VAN EEN GEHEEL VAN ONDERZOEKEN WAARVAN HET DIAGNOSTISCH OF THERAPEUTISCH BELANG NIET ONMIDDELLIJK DUIDELIJK IS, MAAR WAARVAN MAG WORDEN VERWACHT DAT DE RESULTATEN LATER TOT DIAGNOSTISCHE OF THERAPEUTISCHE TOEPASSINGEN OF TOT EEN BETERE KENNIS VAN DE FYSIOPATHOLOGISCHE MECHANISMEN ZULLEN LEIDEN ?

❑ JA
X NEEN

19. REKENING HOUDEND MET DE HUIDIGE STAND VAN ZAKEN VAN DE WETENSCHAP:

A. MEENT U DAT DEZE STUDIE:

X WAARSCHIJNLIJK GEEN ENKEL RISICO INHOUDT
❑ EEN MOGELIJK RISICO INHOUDT.

WELK RISICO EN DE FREQUENTIE : ...

❑ ZEER WAARSCHIJNLIJK EEN RISICO INHOUDT.

WELK RISICO EN DE FREQUENTIE : ...

B. WELKE ZIJN DE MEEST VOORKOMENDE BIJWERKINGEN VAN HET PREPARAAT ONDER STUDIE ?
(DE BIJWERKINGEN MOETEN EVENEENS DUIDELIJK VERMELD WORDEN IN HET INFORMATIE- EN TOESTEMMINGSFORMULIER VAN DE DEELNEMER)

NIET VAN TOEPASSING

20. ZULLEN DE PERSONEN IN DE LOOP VAN DEZE STUDIE VOORTDUREND ONDER MEDISCH TOEZICHT STAAN

❑ JA
X NEEN

A. WIE IS DE TOEZICHTHOUDENDE ARTS ? ...

B. ZAL DIT TOEZICHT, ZO NODIG, VERZEKERD KUNNEN WORDEN TIJDENS DE UREN DIE OP DE STUDIE VOLGEN ?

❑ JA
❑ NEEN

C. ALS DE PERSOON NAAR HUIS TERUGKEERT TIJDENS DE UREN DIE OP HET ONDERZOEK VOLGEN, ZAL IN GEVAL VAN NOOD SNEL CONTACT MET EEN ARTS KUNNEN OPGENOMEN WORDEN ?

❑ JA
❑ NEEN

D. NAAM VAN DEZE ARTS ? ...

INDIEN UW ONDERZOEK EEN INTERVENTIE BEVAT DIE AFWIJKT VAN STANDAARDDIAGNOSTISCH ONDERZOEK OF STANDAARDBELEID, GELIEVE OOK ONDERSTAANDE VRAGEN IN TE VULLEN (INTERVENTIONEEL ONDERZOEK)

NIET VAN TOEPASSING

21. WELKE ZIJN DE ARGUMENTEN (THEORETISCHE, EXPERIMENTELE OF ANDERE) DIE EEN VOORDEEL LATEN VERWACHTEN VAN DE TE TESTEN NIEUWE METHODE, VAN HET TE TESTEN NIEUWE PREPARAAT, ETC. BOVEN DE GEKENDE EN REEDS GEBRUIKTE ?

NIET VAN TOEPASSING

22. ZAL EEN CHEMISCHE SUBSTANTIE TOEGEDIEND WORDEN ?

❑ JA
X NEEN

ZO JA: ...

A. LANGS WELKE WEG ? ...

B. NAAM EN OORSPRONG VAN DE SUBSTANTIE : ...

C. AAN WIE WORDT DE ONTVANGST, OPSLAG, VERDELING EN TERUGSTUREN VAN NIET-GEBRUIKTE CHEMISCHE SUBSTANTIES TOEVERTROUWD ? ...

D. ZULLEN RADIO-ISOTOPEN TOEGEDIEND WORDEN ?

❑ JA

WELKE ? ...

❑ NEEN

23. INDIEN HET OM EEN NIEUWE SUBSTANTIE GAAT, HEEFT DE ONDERZOEKER KENNIS GENOMEN VAN HET VOLLEDIG TOXICOLOGISCH, DIERFARMACOLOGISCH EN HUMAAN DOSSIER ?

☐ JA
☐ NEEN

ZO NEEN, LEG UIT : ...

24. WELKE INTERVENTIES ZIJN SPECIFIEK VOOR DE STUDIE (NAAST DE STANDAARDBEHANDELINGEN), HOE FREQUENT EN GEDURENDE WELKE TIJD ?

A. ZUIVER KLINISCHE EVALUATIES, OM DE .....

B. FUNCTIETESTS OF DYNAMISCHE PROEVEN

WELKE .....

OM DE .....

C. RADIOGRAFISCHE EN/OF ISOTOPISCHE INVESTIGATIES

WELKE .....

OM DE .....

D. BLOEDAFNAMEN : .....

.....

.....

E. WEEFSELAFNAME : .....

F. ANDERE : .....

25. FINANCIËLE OVEREENKOMST

(INDIEN EEN DEFINITIEVE FINANCIËLE OVEREENKOMST NOG NIET BESCHIKBAAR IS, DAN KAN EEN BUDGET PROPOSAL DAT TEGENGETEKEND IS DOOR EEN VERTEGENWOORDIGER VAN DE FINANCIERDER + ONDERZOEKER VOLSTAAN) INDIEN HET BEDRAG VAN DE DEFINITIEVE FINANCIËLE OVEREENKOMST HOGER IS DAN HET INGEDIENDE "BUDGET PROPOSAL", MOET DEZE DEFINITIEVE FINANCIËLE OVEREENKOMST ALSNOG TER GOEDKEURING VOORGELEGD WORDEN AAN HET ETHISCH COMITÉ)

X NIET VAN TOEPASSING
☐ AANWEZIG MET VOLGENDE ONDERVERDELING:

☐ ERELOON:
☐ VERGOEDING VOOR TECHNISCHE PRESTATIES:

IK VERKLAAR DE GEHELE VERANTWOORDELIJKHEID VAN HET HIERBOVEN VERMELD PROJECT OP MIJ TE NEMEN EN BEVESTIG DAT DE GEGEVEN INLICHTINGEN MET DE WERKELIJKHEID OVEREENSTEMMEN.

HUISARTS-IN-OPLEIDING
DATUM : 14/02/2019
NAAM : D'hondt Ayron
HANDTEKENING :

PRAKTIJKOPLEIDER
DATUM : 14/2/19
NAAM : FIEN MERTENS
HANDTEKENING :

PROMOTOR

DATUM :
NAAM :
HANDTEKENING :

CO-PROMOTOR

DATUM : 14/2/19
NAAM :
HANDTEKENING :
FIEN MORTIERS

DIENSTHOOFD VAKGROEP HUISARTSGENEESKUNDE UNIVERSITEIT WAARAAN PROMOTOR VERBONDEN (VOOR AKKOORD)

DATUM :
NAAM :
HANDTEKENING :

Appendix 2: Approval ethical committee

Afz.: Commissie voor Medische Ethiek

Huisartsgeneeskunde en Eerstelijnsgezondheidszorg
Kliniekgebouw 3 - 6de Verdieping
Dr. Peter PYPE
ALHIER

contact	telefoon	e-mail
Sandra De Paepe Commissie voor medische Ethiek	+32 (0)9 332 26 88	Ethisch.comite@uzgent.be sandra.depaepe@uzgent.be

Ons kenmerk	Uw kenmerk	datum	pagina
2019/0359		9-apr-19	1/2

Betreft :

Advies voor monocentrische studie met als titel:
Wijkgezondheidscentra als complex adaptive systems - De link met kwaliteitsverbetering (Manama Ayron D'Hondt)

Belgisch Registratienummer: B670201939705

* Adviesaanvraagformulier
versie 1 dd. 1/03/2019 (volledig ontvangen dd. 06/03/2019)

Advies werd gevraagd door:
Dr. P. PYPE ; Hoofdonderzoeker

BOVENVERMELDE DOCUMENTEN WERDEN DOOR HET ETHISCH COMITÉ BEOORDEELD. ER WERD EEN POSITIEF ADVIES GEGEVEN OVER DIT PROTOCOL OP 3/04/2019. INDIEN DE STUDIE NIET WORDT OPGESTART VOOR 2/04/2020, VERVALT HET ADVIES EN MOET HET PROJECT TERUG INGEDIEND WORDEN.

Vooraleer het onderzoek te starten dient contact te worden genomen met Bimetra Clinics (09/332 05 00).

THE ABOVE MENTIONED DOCUMENTS HAVE BEEN REVIEWED BY THE ETHICS COMMITTEE.
A POSITIVE ADVICE WAS GIVEN FOR THIS PROTOCOL ON 3/04/2019. IN CASE THIS STUDY IS NOT STARTED BY 2/04/2020, THIS ADVICE WILL BE NO LONGER VALID AND THE PROJECT MUST BE RESUBMITTED.
Before initiating the study, please contact Bimetra Clinics (09/332 05 00).

DIT ADVIES WORDT OPGENOMEN IN HET VERSLAG VAN DE VERGADERING VAN HET ETHISCH COMITE VAN 16/04/2019

THIS ADVICE WILL APPEAR IN THE PROCEEDINGS OF THE MEETING OF THE ETHICS COMMITTEE OF 16/04/2019

ALGEMENE DIRECTIE
Commissie voor Medische Ethiek

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- *Het Ethisch Comité werkt volgens 'ICH Good Clinical Practice' - regels*
- *Het Ethisch Comité beklemtoont dat een gunstig advies niet betekent dat het Comité de verantwoordelijkheid voor het onderzoek op zich neemt. Bovendien dient U er over te waken dat Uw mening als betrokken onderzoeker wordt weergegeven in publicaties, rapporten voor de overheid enz., die het resultaat zijn van dit onderzoek.*
- *In het kader van 'Good Clinical Practice' moet de mogelijkheid bestaan dat het farmaceutisch bedrijf en de autoriteiten inzage krijgen van de originele data. In dit verband dienen de onderzoekers erover te waken dat dit gebeurt zonder schending van de privacy van de proefpersonen.*
- *Het Ethisch Comité benadrukt dat het de promotor is die garant dient te staan voor de conformiteit van de anderstalige informatie- en toestemmingsformulieren met de nederlandstalige documenten.*
- *Geen enkele onderzoeker betrokken bij deze studie is lid van het Ethisch Comité.*
- *Alle leden van het Ethisch Comité hebben dit project beoordeeld. (De ledenlijst is bijgevoegd)*

- *The Ethics Committee is organized and operates according to the 'ICH Good Clinical Practice' rules.*
- *The Ethics Committee stresses that approval of a study does not mean that the Committee accepts responsibility for it. Moreover, please keep in mind that your opinion as investigator is presented in the publications, reports to the government, etc., that are a result of this research.*
- *In the framework of 'Good Clinical Practice', the pharmaceutical company and the authorities have the right to inspect the original data. The investigators have to assure that the privacy of the subjects is respected.*
- *The Ethics Committee stresses that it is the responsibility of the promotor to guarantee the conformity of the non-dutch informed consent forms with the dutch documents.*
- *None of the investigators involved in this study is a member of the Ethics Committee.*
- *All members of the Ethics Committee have reviewed this project. (The list of the members is enclosed)*

Namens het Ethisch Comité / On behalf of the Ethics Committee

Prof. dr. Rubens

Prof. dr. D. MATTHYS
Voorzitter / Chairman

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Appendix 3: Information letter and informed consent form for participants

Informatiebrief voor de deelnemers

Titel van de studie:

Wijkgezondheidscentra als Complex Adaptive Systems – de link met praktijkverbetering

Beste,

U wordt uitgenodigd om deel te nemen aan een studie. Neem, voor u beslist deel te nemen aan deze studie, voldoende tijd om deze informatiebrief aandachtig te lezen en dit te bespreken met de arts-onderzoeker of zijn/haar vertegenwoordiger. Neem ook de tijd om vragen te stellen indien er onduidelijkheden zijn of indien u bijkomende informatie wenst. Dit proces wordt 'informed consent' of 'geïnformeerde toestemming' genoemd. Eens u beslist heeft om deel te nemen aan de studie zal men u vragen om het toestemmingsformulier achteraan te ondertekenen.

1. BESCHRIJVING EN DOEL VAN DE STUDIE

Achtergrond:

Samenwerken in complexe multidisciplinaire praktijken vraagt heel wat management. Enerzijds moet gezorgd worden voor een efficiënte organisatie met oog voor het eindproduct: hoog kwaliteitsvolle gezondheidszorg voor alle patiënten. Anderzijds moet gezorgd worden voor de gezondheid van de organisatie: iedereen die er werkt moet zich goed voelen in zijn job en op een duurzame manier gestimuleerd worden om het beste van zichzelf te kunnen geven en te blijven groeien.

Er bestaan verschillende managementstructuren die elk voor- en nadelen hebben betreffende deze thema's. Globaal kan men een onderscheid maken tussen de eerder hiërarchisch gestructureerde managementstructuren en de managementstructuren die minder hiërarchisch gestructureerd zijn en meer gebaseerd zijn op zelf-organiserende activiteit binnen een organisatie. Tot deze laatste groep behoort het leiderschap dat op complexity science gebaseerd is en een organisatie beschouwt als Complex Adaptive System (CAS) (http://www.complexadaptiveleadership.com/). Deze manier om een organisatie te leiden houdt rekening met de snel veranderende, onzekere, complexe en soms dubbelzinnige context waarin de gezondheidszorg functioneert. Dit gebeurt door aandacht te schenken aan het feit dat elk deel/lid van de organisatie op een autonome manier moet kunnen functioneren en een inbreng moet kunnen hebben in de werking van de organisatie waardoor het aanpassingsvermogen van de organisatie in zijn geheel verhoogt en een permanente kwaliteitsverbetering met zich meebrengt, in een veeleisende en steeds veranderende context.

Het functioneren van wijkgezondheidscentra (WGC) als CAS werd reeds aangetoond in eerder onderzoek (Masterproef L. Leroy, olv Prof P. Gemmel en Prof J. De Maeseneer). Een evaluatie van de manier waarop de CAS principes geïmplementeerd worden in WGC, en hoe het zelf-organiserend en lerend effect er van herkenbaar is, zal het mogelijk maken om gerichte kwaliteitsverbeteringsinitiatieven te nemen.

Doelstelling

Evalueren van het functioneren van WGC als CAS en hoe dit kan leiden tot kwaliteitsverbeteringsinitiatieven. Initiatie en evaluatie van kwaliteitsverbeteringsinitiatieven.

Methode

Deel I: invullen van een vragenlijst door elke medewerker.

Na analyse van de vragenlijsten door de onderzoekers zal een feedback rapport overhandigd worden dat als basis kan dienen voor kwaliteitsverbeteringsinitiatieven. De vragenlijst kan in dit opzicht als audit-instrument functioneren. De bespreking van de resultaten wordt begeleid door de onderzoekers.

Deel II:

Tijdens de groepsbespreking van het feedback rapport zullen een aantal initiatieven geformuleerd worden op basis van thema's waar het WGC laag in scoorde op de vragenlijst en in functie van de prioriteiten en voorkeuren van het betreffende centrum. Tijdens de daaropvolgende 6 – 12 maand zullen deze initiatieven uitgewerkt, geïmplementeerd en geëvalueerd worden.

Deel III:

Na 1 jaar wordt de vragenlijst opnieuw ingevuld.

Een nieuw feedback rapport wordt opgesteld. Procesevaluatie en -beschrijving van de geselecteerde WGC kan dienen als draaiboek voor permanente kwaliteitsverbetering.

Wij vragen u vriendelijk of u de tijd zou willen nemen om een vragenlijst voor ons in te vullen. Dit zal ongeveer 30 minuten van uw tijd in beslag nemen.

Deze studie werd vooraf goedgekeurd door een onafhankelijke Commissie voor Medische Ethiek verbonden aan het Universitair Ziekenhuis van Gent en de Universiteit Gent. De studie wordt uitgevoerd volgens de richtlijnen voor de goede klinische praktijk (ICH/GCP) en de verklaring van Helsinki opgesteld ter bescherming van mensen deelnemend aan klinische studies.

Deze verzameling van gegevens wordt uitgevoerd onder supervisie van Prof. Dr. Peter Pype.

2. TOESTEMMING EN WEIGERING

De deelname aan deze studie is volledig vrijwillig. U kunt weigeren om de vragenlijsten in te vullen zonder dat u hiervoor een reden moet opgeven.

3. VOORDELEN

Deelname aan deze studie brengt voor u waarschijnlijk geen voordeel met zich mee. De verkregen resultaten kunnen echter leiden tot kwaliteitsverbetering van de praktijkorganisatie.

4. KOSTEN

Uw deelname aan deze studie brengt geen extra kosten mee voor u, maar biedt ook geen financieel voordeel.

5. VERTROUWELIJKHEID

In overeenstemming met de Belgische wet van 8 december 1992 met betrekking tot de bescherming van de privacy, de Belgische wet van 22 augustus 2002 betreffende de rechten van de patiënt en de Algemene Verordening Gegevensbescherming (of GDPR) (EU) 2016/679 van 27 april 2016, zal uw persoonlijke levenssfeer worden gerespecteerd en zal u toegang krijgen tot de verzamelde gegevens. Elk onjuist gegeven kan op uw verzoek verbeterd worden.

Alle informatie die tijdens deze studie verzameld wordt zal gepseudonimiseerd worden (hierbij kan men uw gegevens nog terug koppelen naar uw persoon) In het geval van pseudonimisering zal de sleutel tot deze codes enkel toegankelijk zijn voor de onderzoekende en behandelende arts of de door hem aangestelde vervanger. Enkel de gepseudonimiseerde gegevens zullen gebruikt worden in alle documentatie, rapporten of publicaties (in medische tijdschriften of congressen) over de studie. Vertrouwelijkheid van uw gegevens wordt dus steeds gegarandeerd. Zowel persoonlijke gegevens als gegevens aangaande uw gezondheid zullen verwerkt en bewaard worden gedurende minstens 20 jaar. De verwerkingsverantwoordelijke van de gegevens is de hoofdonderzoeker, Prof. Dr. Peter Pype. Het onderzoeksteam van de hoofdonderzoeker zal toegang krijgen tot mijn persoonsgegevens. De Data Protection Officer kan u desgewenst meer informatie verschaffen over de bescherming van uw persoonsgegevens. Contactgegevens: privacy@ugent.be.

Vertegenwoordigers van de opdrachtgever, auditoren, de Commissie voor Medische Ethiek en de bevoegde overheden, allen gebonden door het beroepsgeheim, hebben rechtstreeks toegang tot uw medische dossiers om de procedures van de studie en/of de gegevens te controleren, zonder de vertrouwelijkheid te schenden. Dit kan enkel binnen de grenzen die door de betreffende wetten zijn toegestaan. Door het toestemmingsformulier, na voorafgaande uitleg, te ondertekenen, stemt u in met deze toegang.

U heeft het recht om een klacht in te dienen over hoe uw informatie wordt behandeld, bij de Belgische toezichthoudende instantie die verantwoordelijk is voor het handhaven van de wetgeving inzake gegevensbescherming:

Gegevensbeschermingsautoriteit (GBA)
Drukpersstraat 35 – 1000 Brussel
Tel. +32 2 274 48 00
e-mail: contact@apd-gba.be
Website: www.gegevensbeschermingsautoriteit.be

6. VERZEKERING

De opdrachtgever voorziet in een vergoeding en/of medische behandeling in het geval van schade en/of letsel ten gevolge van deelname aan deze klinische studie. Voor dit doeleinde is een verzekering afgesloten met foutloze aansprakelijkheid conform de wet inzake experimenten op de menselijke persoon van 7 mei 2004 Allianz Global Corporate & Specialty; Uitbreidingstraat 86, 2600 Berchem; Tel: +32 33 04 16 00; polisnummer BEL000862).

TOESTEMMINGSFORMULIER VOOR DE DEELNEMERS

Aankruisen door de deelnemer indien akkoord

Ik heb het document “Informatiebrief voor de deelnemers” pagina 1 tot en met 4 gelezen en begrepen en ik heb er een kopij van gekregen. Ik heb uitleg gekregen over de aard, het doel en de duur van de studie en over wat men van mij verwacht.	
Ik stem ermee in om deel te nemen aan deze studie.	
Ik begrijp dat deelname aan de studie vrijwillig is en dat ik mij op elk ogenblik uit de studie mag terugtrekken zonder een reden voor deze beslissing op te geven.	
Ik ben me ervan bewust dat deze studie werd goedgekeurd door een onafhankelijke Commissie voor Medische Ethiek verbonden aan het UZ Gent en de Universiteit Gent en dat deze studie zal uitgevoerd worden volgens de richtlijnen voor de goede klinische praktijk (ICH/GCP) en de verklaring van Helsinki, opgesteld ter bescherming van mensen deelnemend aan experimenten. Deze goedkeuring was in geen geval de aanzet om te beslissen om deel te nemen aan deze studie.	
Men heeft mij ingelicht dat zowel persoonlijke gegevens worden verwerkt en bewaard gedurende minstens 20 jaar. Ik stem hiermee in en ben op de hoogte dat ik recht heb op toegang en op verbetering van deze gegevens. Aangezien deze gegevens verwerkt worden in het kader van medisch-wetenschappelijke doeleinden, begrijp ik dat de toegang tot mijn gegevens kan uitgesteld worden tot na beëindiging van het onderzoek. Indien ik toegang wil tot mijn gegevens, zal ik mij richten tot de arts-onderzoeker die verantwoordelijk is voor de verwerking ervan.	

Naam en voornaam van de deelnemer	Handtekening	Datum
Naam en voornaam van de arts-onderzoeker*	Handtekening	Datum

2 kopieën dienen te worden vervolledigd. Het origineel wordt door de onderzoeker bewaard in het ziekenhuis gedurende 20 jaar, de kopie wordt aan de deelnemer gegeven.

* Aankruisen door de onderzoeker indien akkoord

Ik verklaar de benodigde informatie inzake deze studie (de aard, het doel, en de te voorziene effecten) mondeling te hebben verstrekt evenals een exemplaar van het informatiedocument aan de deelnemer te hebben verstrekt.	
Ik bevestig dat geen enkele druk op de deelnemer is uitgeoefend om hem/haar te doen toestemmen tot deelname aan de studie en ik ben bereid om op alle eventuele bijkomende vragen te antwoorden.	