

Clinical Change Management

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Abstract: The health care system and especially the hospitals are exposed to an increased demand for change. However hospitals still are almost unchanged. This is caused by limited possibility for standardization in patient care, meshed structures and responsibilities, distinctive hierarchical differences etc. Hence the common approaches of change management are only partially effective. Obviously, any change needs to be supported by the management and the staff. In addition, special requirements and clinical ambient conditions have to be considered. For sustainable changes a systemic approach is needed which includes all involved persons and processes, numerous variations and the anticipating of obstacles and all hindering persons. A closed-loop feedback system, as a possible future concept would allow a considerable simplification and, at the same time, a clearer focus to system control.

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1. Situation

The health care system and especially hospitals are characterized by a peculiar, historically grown pattern – motivated by charity but having its organizational roots in the military.

During the last decades the surrounding conditions changed dramatically. Aiming at maximum performance in the past, nowadays a suitable balance between performance and cost is sought. This requires new forms of control for efficiency and for awareness of costs. Additionally the composition of patients changes towards an increasing number of chronically ill patients with more and more cost intensive treatment. This requires the hospital structures to adapt to changes permanently and increases the pressure for change (Bellabarba, 1996). As a situation is never stationary a continuous readiness for changes on the organizational level as well as on the individual level needs to be established in order to keep hospitals up to date.

However hospitals still show almost unchanged organizational structures and usually resist against any type of outside pressure by referring to medical demands.

2. Cause analysis

The three domains in the hospital with physicians, nurses and administration staff run their own equal divisions independently. The supply of medical services is organized in different divisions, in which medical, nursing and administrative personnel have to work together coordinately (Feuerstein, 1996). Within the domain and within the departments a distinct hierarchical structure is found that still keeps a lot of tradition. Executives concentrate a high degree of medical, organizational and staff matter authority in one person. Residents can be squeezed to a large extent by a strong hierarchy and the obedience to the head physician which controls task assignment and, by this way, also controls the chance to acquire qualification credits required for later board exam. For the implementation of changes this means that employees will only support changes that confirm the (assumed) opinion of the head physician.

Another barrier for changes can be found in the complex dependencies between the different departments:

- Concerning the organization they stay **equal** and **independent** next to each other.
- Concerning patient treatment they **co-operate** and they require services of each other (e.g. request of an x-ray for the procedure of the surgeon).
- Concerning the available resources (finances, OR time, personnel) they **compete** against each other.

The co-operation between the departments and especially between the head physicians is grown and depends on their individual relationship. Such a form of co-operation is an unstable equilibrium - any change may destabilize it. Due to the fact that total system power remains constant, everyone risks to loose power and authority with change. Thus, most staff members feel most secure with the status quo.

For the implementation of changes two different approaches may be applied:

Top-down approaches are controlled by the management. Typically it is used in form of budgeting. As an essential advantage all power is concentrated to the management. But, on the other hand this restricts flexibility of patient care and tends towards a standardization. But patients, which are all above the most determinant factor, may not be completely standardized. Thus it is possible to undermine almost all organizational rules with reference to the individual patients needs. In this way the lower hierarchical levels may block most organizational changes if they do not share its relevance.

Bottom-up approaches start at the level of the employees and, thus, prove to be very powerful for interface and friction optimization on a local level (Marsolek & Friesdorf, 2001). On the other hand, extensive changes in more than one department and affecting more than one hierarchal level can not be controlled by the management anymore. Due to this attribute, most executives prefer top-down approaches.

Interim result: Due to the fact that work processes and decision authorities interact a lot, sustainable changes can only be established, if they are supported by employees as well as managers in all involved departments and domains. Indeed, changes which benefit all affected persons are hardly to find in real environment.

3 Requirements for change analysis in hospitals

Adapting clinical work processes and organizational structures to a changed environment requires at first, a target state to be defined. Secondly, the process of managing the way from the actual state to the target state has to be planned, executed and finally controlled for success. Possible risks of an intended change management process should be considered already during the target definition phase (Krafft, 2003).

- Because of **shared responsibilities** in the clinical work flow the responsibility of comprehensive changes has to be shared between different persons, requiring special diligence to plan the reorganization process.
- The work system has continuously to be **ready for action**. For this reason interruptions to execute the changing process are intolerable just like variations for the purpose of tests.
- The process of design should be performed as **systematically** as possible, because of the high costs for reorganization and further high subsequent and indirect costs to correct or "undo" unsuccessful changes.
- Due to the fact that any modeling is somewhat **simplified** and partially flawed, any change planning risks to generate an "illusory" result which can not be transformed to a real environment. In this case, it can not be distinguished whether it failed the target planning or the transformation process.
- Practical bottlenecks in form of limited disposability of specific **personnel resources** (e.g. particularly qualified physicians and nurses) must be considered for implementation.

- Changed work processes and authorities require an adapted **qualification** of the involved person, particularly concerning aspects of organization and co-operation. If selected persons do not have such qualification they need to be qualified for their new role in parallel to the continuing ("old") work process and during a manageable period of time.

4. Change Management strategy

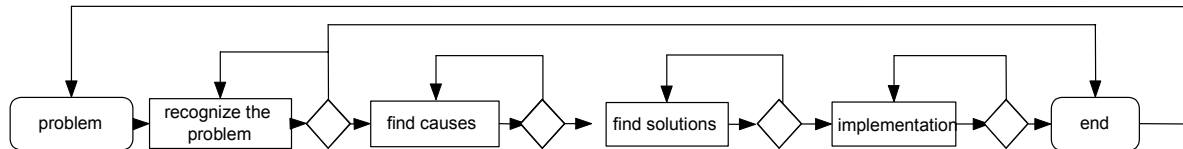


Figure 1: Reorganization cycle

Almost any type of systematically performed change management follows a general problem solving cycle as it is shown in figure 1. In contrast or in addition to the basic systems engineering approach the following attributes have to be considered for clinical work systems:

- Objects to change include a factual level, a personal level and an organizational level. All three levels have to be considered for possible changes, and a transformation between different levels during one step is possible, in many cases even necessary.
- Each step itself consists of an iterative sequence of actions and assessment, as well as a subsequent decision between the different alternatives to proceed, such as focusing on an aspect more detailed, proceed to next step, search another way, terminate (e.g. because there is no chance to succeed).
- As a base for any decision, possible (future) effects of any alternative has to be anticipated (e.g. on the basis of personal experience, or with adjustment by a second opinion). Generally, the expected success (yield, and probability of realization), the expected effort (duration, costs) and expectable barriers and risks have to be estimated. In a real environment any risks (e.g. that efforts fail or that budget limitations were exceeded) play a dominant role for decision making. Hence, the selection between alternatives depends mostly on the probability of success, making the anticipation of barriers the most important planning task.
- Result may be a changed process as well as changed boundary conditions (e.g. organizational structures).
- Concerning total strategy in an open socio-economic system, the problem solving cycle may either be performed in a very elaborated way (making large steps), or it may be performed less perfect, but more quickly (making smaller steps) and accepting possibly iteration loops.

Clinical work flow, from a medical as well as from an organizational point of view, has numerous sources of variation. This impedes any approach of analysis and optimization. For example, a system analysis based on the occurrence of predefined events and benchmark measures and quantitative statistics is hardly to master and tends toward a reduced view in terms of standard processes and a tayloristic control. The system immanent variances will always cause a discrepancy between plan and reality. The more complex a system is to be controlled, the more interferences and, followingly, the more (unaccountable) discrepancies occur. A more abstract view, for example in form of weighted average measures, does not allow the identification of cause-effect-relations on the level of individual actions.

5. Future Approach: The clinical work system as a closed-loop feedback system

A closed-loop feedback system concept would allow a considerable simplification and at the same time a focus to system control. According to the behavior of individuals, actions of system elements would be represented in a way that they primarily try to keep or re-establish a steady state. This elementary principle would consistently be assumed from the level of organ functions up to the control of the whole hospital. By this way, a hospital represents a cascaded and intermeshed closed-loop feedback system through all the levels. Each work person acts as a controller in the different partial control circuits. In addition to the well known description of human action planning by hierarchically and sequentially organized control loop units (Miller, 1973; Hacker, 1986; Volpert, 1982), analysis methods of linear control loop systems were applied:

- system and sub-system stability: reaction on shifting targets and external disturbance
- transform function and step response: adaptation rate and accuracy
- self adaptivity: learning by experience, anticipation of characteristics of other control units
- nesting of sub-systems: congruence of the command signal

The analysis of the clinical (re-)organization as a control loop model explains, among other effects, the tendency of system elements or individuals to persist against any change: As long as a system runs in a stable state, it adapts autonomously (if control parameters were suitable adjusted). Any intervention (e.g. attempts of reorganization) acts like a sudden disturbance or a target bounce, risking to destabilize the smooth system and costing effort to rearrange control parameters in order to re-obtain a stable state. For sustainable changes the state of stability has to be moved. Basically this can be performed by two types of approach:

Smooth or Micro-step optimizations would slowly stimulate gradual changes in a way that an existing equilibrium would not be destabilized, but could adapt by smooth control reactions. Such interventions can be implemented simply for local changes.

Discrete or macroscopic changes are induced by shifting targets and/or environmental conditions in a way that a temporary destabilization is provoked and, thus, hard persistencies can be overcome. The strategy to reorganize a hospital by divestiture of existing structures is an extreme form of destabilization because it risks to (re-)stabilize in an uneven state.

Adaptation characteristics depend on the controller's sensitivity and reaction time. Highly sensitive and fast controllers react immediately on changes, but risk to overshoot, and possibly to destabilize. During economical crisis enterprises typically react by this way. Slow responding controllers are very stable but they adapt delayed to environmental changes (sometimes too late). Systems like the civil service react this way.

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