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Clinical Treatment Process: Optimising Effectiveness

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When there is an increasing oversupply of imaging examination methods, services which foreseeably do not influence further treatment of the patient are superfluous, present unjustified exposure, and are economically pointless. Such services can only be avoided if the optimisation of the overall treatment process for medical quality, service quality and profitability is the focus.

This requires:

- a new definition of the processes

(Imaging Pathway);

- a new organisational structure (Imaging Centre);
- and a new way of thinking by the staff involved.

The incentive and motivation system must change from rewarding volume to rewarding the service and process quality.

Practitioners are aware of allegedly urgent examinations, which were done and the findings never read, and requests for ultrasonography and CT or MRI examinations of the same region where the doctors did not wait for the results of one method.

Retrospective analyses of treatment processes are generally only undertaken in cases of problematic clinical outcome or sub-optimal encryption. Even when the clinical outcome is excellent and encryption is good, the treatment pathway may contain numerous unnecessary imaging examinations, which are economically pointless, and constitute additional exposure and risk for the patient. Critical retrospective analysis is still very unfamiliar to medical practitioners, but consequences for future processes must be drawn from this analysis.

Classification of the clinical value of examination methods is difficult in the context of the large number of quickly developing imaging procedures, as it requires continual review. Current medical request culture is geared towards ensuring that no diagnostic possibility is missed. Limits are set by examination capacity rather than critically assessing, retrospectively or prospectively, examinations according to their usefulness on the road to a diagnosis, and which examinations may be avoided in future.

Enhancements of the diagnostic quality of imaging methods have almost always led to “both ... and...”, hardly ever to “instead of...” in the treatment process. Guidelines are helpful if they take the current state of diagnostic possibilities into account. In quality handbooks, the processes of CT and MRI examinations are described in detail, the undertaking of all examinations is requested in checklists, but it is rare that the necessity of an examination is questioned on the basis of evidence.

The Clinical Principal Point of View

Every additional parallel examination contains the possibility of a diagnostic surplus, even if repeated within a short time. If the probability of a pathological finding is not included in the indication, this means that to be on the safe side all methods of all areas are used in parallel. Especially with ultrasound, MRI and CT examinations, this uncritical parallel application leads to constantly increasing examination frequency per patient. Clinical principals believe, partly justly, that low quality of the findings of individual examinations is counter-balanced by the number of different examination methods. In this case, however, the solution is to increase the quality of the findings.

The number of examinations is frequently not limited by medical necessity but by equipment and staff capacity. Additional free capacity through new equipment or more personnel is generally directly taken up by additional diagnostic requests.

Clinical departments usually refuse to tolerate critical inquiries by the radiologist about the necessity of examinations. Recommendations by the radiologist on the further diagnostic approach are considered rather annoying, and the diagnostician is powerless in many cases. While the review of the justifying indication by the radiologist is a stipulation of the X-Ray Regulation, there is probably hardly any radiologist who can remember a correction of the request by clinical colleagues. Thus one settled into a "both ... and ..." world until capacity is exhausted. Radiologists have enough examinations and the clinician is not required to make any hard decisions. This is the demand-oriented increase in examination numbers. The solution must be readiness to face a critical discussion under the criteria of medical quality, patient safety/patient exposure and profitability.

The Diagnostician Point of View

The demand-stimulated increase of examination numbers is driven by the zone of "both ... and ..." with the clinical practitioner as well, until capacity is exhausted

Generally, the view of the radiologist is geared to the requested individual examination. After implementation and diagnosis, the imaging is usually over. The task has been completed with the examination, or further imaging is recommended and undertaken. The target is to answer the question of the clinical practitioner to the imaging centre with high medical quality, service quality, but also profitability. For the diagnostician a continual reflection on findings and recommendations compared to the clinic and to other imaging methods is also required in this process.

The Solution

Where is the motivation and incentive for clinicians and diagnosticians to assume a higher degree of personal responsibility and thus risk in avoiding unnecessary examinations?

From an ethical point of view, a starting point could be the Hippocratic Oath, i.e. avoiding unnecessary exposure for the patient. From an economic point of view, the existence of the hospital in competition is a prerequisite for successful medical action.

Effective financial incentives (e.g. internal service netting) must lead to an optimised use of resources (number of necessary services). Experience with a bonus-oriented internal service netting at Krankenhaus der Barmherzigen Brüder Trier showed some surprising results. Requests were reduced dramatically, but there was no change in clinical outcome. A radiological department cannot be established on the basis of unnecessary service requests. In budget talks with hospital management, it is not requests for a volume limitation, but requests for a defined high productivity (costs per examination), which constitute the frame requirements for the service provider (imaging centre).

The future lies in netting of imaging processes, as already expressed in the calculation of diagnosis-related group (DRG) shares. For the modern strategy of thinking and acting in overall treatment processes, suitable processes must be defined, the corresponding structures created, and employees must be aligned with this target by means of systematic personnel development.

Cost-Sensitive, Evidence- Based Treatment Pathways i.e. Thinking, Managing and Optimising in Overall Processes

Treatment pathways make recommendations according to defined transparent rules on the basis of the best available knowledge. In optimisation strategies, treatment pathways constitute a technical and organisational grid, which makes processes on average describable, calculable and thus capable of optimisation.

The advantages of standardised treatment pathways have been discussed for at least 10 years, but there has never been wide adoption in everyday hospital life. Generally, developments and applications failed because of complexity and overly high expectations. Treatment pathways were supposed to depict the processes in great detail, to show the best medical way methodically (evidence-based), and to demonstrate all costs (process cost calculation). The result, at best, was a 'Model Treatment Pathway'. The personnel resources required for implementation, process cost calculation and monitoring did not exist.

The most frequent problems in developing treatment pathways are:

- A frenzy of descriptions, generally in the scope of certifications without any further consequences;

- Mono-disciplinary developments;
- 'GOBSAT': Good Old Boys Sitting Around

The Table;

- Unstructured decision making;
- The loudest and most powerful person gets his/her way;
- Absent evidence base;
- Lack of monitoring (substantiation of deviations);
- Lack of cost sensitivity;
- No continuous documentation;
- No (regular) evaluation of the treatment pathway;
- No information concept.

Treatment pathways must be simple, clear, pragmatic and capable of being implemented and monitored with little effort. The clinical treatment pathway can be structured into the following levels:

1. Preparation of the patient (reception);
2. Undertaking of the necessary diagnostics;
3. Therapy;
4. Diagnostic follow-up (discharge).

Imaging, as part of the diagnostics pathway, is a suitable starting point for the development of the overall treatment pathway. Expansion to the standardised clinical undertaking of examination (which reception parameters, which sequence, administration of contrast agents?) is important. The organisational implementation (how) comes at the end of development.

Figure 2 shows the clarification of a newly discovered liver nodule as treatment pathway "Imaging".

The use of resources for a treatment case is determined by the effectiveness and efficiency of the individual steps. In a fixed fee system, both aspects must be taken into consideration.

Described treatment pathways without continual monitoring may be useful for certification, but they are pointless for optimisation of daily treatment processes. A good radiology information system (RIS) allows for automatic monitoring of the imaging pathway. Figure 4 shows the imaging pathway of DRG G60B (Rectal Carcinoma) for a patient. When have which examinations been performed?

More differentiated evaluations can be undertaken: when has what been done on average? Were the recommendations of the diagnostician taken into consideration? Which deviations from the agreed treatment pathway took place?

If possible, the development of treatment pathways should be made on the basis of evidence. Cost sensitivity is generally sufficient, meaning that in case of equivalence of the medical results, the choice of the methods should take into account the scale of the use of resources (e.g., in case of equal medical informational value, ultrasound should be preferred to an MRI examination).

Standardised, evidence-based and cost sensitive treatment pathways are a prerequisite for a successful optimisation strategy under the frame conditions of the DRG world. They render processes definable and measurable, despite all substantiated exceptions. Patients and the hospital benefit from this.

As a healthcare system with flat fee compensation is already reality, there is no choice for this survival strategy. Structures and ways of thinking are marked by a series of optimised individual services. Management criterion is the service volume under the predetermined volume limit. Almost always services rendered were rewarded by additional revenue, personnel and equipment – not the avoided necessary services, i.e. the overall process quality. Even today, the internal bonus allocation (pool), which is mainly fed by the additional revenue, operates according to this principle.

This principle is no longer successful in case of flat-fee compensation. Let this be illustrated by an example: In order to optimise the requested examinations, the head radiologist attends clinical rounds as consultant. This is supposed to happen in the scope of the overall treatment

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process under medical aspects (Another MRI? Again?), service aspects (possible appointments – longer waiting periods for MRI examinations) and economic aspects (a cheaper ultrasound will provide the same medical results as a CT examination in this case). This consultation makes sense in the process optimisation of the necessary procedures. During this time, however, the head doctor is not able to contribute to the budget of the department through his/her own billable services. According to the target agreements (service volume per full-time doctor) or the next management consultancy with the criterion “examinations per doctor”, however, this would lead to a staff reduction. This example illustrates that the existing incentive and motivation system is not yet aligned with the new frame conditions. Personnel investments in higher process quality of the overall treatment do not pay off for individual departments; rather, they constitute a threat to the achievement of the department-specific targets.

How to reward the service rendered must evolve into the main idea: How to additionally reward the avoided unnecessary service or the choice of the medically equivalent, but cheaper examination.

In sum:

How to reward the economic thinking in the diagnosis-based fixed compensation system of the hospital without decreasing the quality of the medical care.

Therefore, a clinical department is not a “practice within the hospital”. How should the “bonus system” for avoided services look in case of a practice within the hospital? When managing overall processes new ideas for the motivation and incentive system are required. The success of the overall treatment process must be the centrepiece, not just the individual partial service. Process quality is rewarded, not the amount of services!

Thinking and acting in overall processes requires appropriate structures, the establishment of centres and in central patient management.

The central interdisciplinary ultrasonography constitutes a new organisational form in Germany. In this section, ultrasonography specialists (internists, angiologists, surgeons, radiologists, nuclear medicine experts) work with top of the range equipment. The ultrasonography training for the entire hospital is done here. Ultrasound images and sequences (CE ultrasonography) are a fixed part of the PACS system and are demonstrated on par with radiological images of experts during clinical conferences. Ultrasonography is not merely an orientational initial diagnostic tool prior to a targeted use of more elaborate methods (e.g. CT, MRI, PET); ultrasonography diagnostics rank as a reference method which renders further imaging diagnostics superfluous in many cases.

In the future process organisation must be more aligned with the treatment pathways. Apart from the execution of directly requested services, the interdisciplinary consultation prior to the diagnostics and the therapy of clinical pictures (e.g. vascular diseases) together with recommendations for medically and economically efficient diagnostic and treatment pathways must be the priority. A CT examination avoided due to set treatment pathways or interdisciplinary talks constitutes a benefit, both for the patient individually and for the value chain of the hospital. The disadvantage of the “island view” of radiology (fewer services = less staff = reduction of the department) should be a thing of the past. The Centre must continually offer new applications with additional revenue (e.g. virtual colonoscopy, cardio CT, full body MRI, spectroscopy), and invest any freed up personnel resources into an improvement of the process quality (e.g. shortening the waiting periods, period to the drawing up of the written result – increase of customer satisfaction). The target is the achievement of a continual improvement of the quality of processes, structures and results.

When selecting appropriate examination methods, the strategy ranges from “both ... and ...” to “either ... or ...” and “if required”. The strategy should be encouraged to shift from an automatic parallelism to a well-organised and structured succession of necessary imaging procedures. The entire imaging process must be optimised (you have a diagnostic problem – we will solve this problem in an optimal medical and economic overall process). The target of the Imaging Centre is: one medical question – one appointment – and overall responsibility of the Centre for the imaging process. In this process, the radiologist must assume the role of the guide in the imaging process under medical, organisational and economic aspects in close coordination with the clinical practitioners.

Monitoring and optimisation of the imaging pathways place high demands on the quality of the processes in the Imaging Centre in this context.

In order to ensure a high processing speed, examinations must be booked. The examinations are selected and undertaken the Imaging Centre in accordance with the agreed imaging pathway.

Example: Imaging Pathway Rectal Carcinoma Booking (Prophylactically):

1. Endoscopy
2. MRI Pelvis (Day 1)
3. X-Ray Thorax (Day 1)
4. CT Pelvis+Thorax (Day 2)

5. Ultrasound Liver (Day 2)

The process organisation requires a same-day result and in some cases direct transfer of the patient to another examination in the Imaging Center. For the Imaging Pathway Rectal Carcinoma this would mean:

Endoscopy: if possible, together with the rectoscopy

1. Day: MR Pelvis (same-day result) Direct transfer to X-Ray Thorax (T< 3c)

2. Day: CT Abdomen (same-day result)

+ CT Thorax - T>=3c

- Suspicion of Lung Filiae

- Suspicion of Liver Metastases

In case of an unclear liver result, direct transfer to CE ultrasound (CEUS)

3. Day: Overall Result Center TNM

Conclusion

A trend-setting answer of modern hospitals to continually evolving frame conditions such as the introduction of the diagnosis-based group fixed compensation (DRG) lies in a process-oriented new alignment of structures, organisational forms and processes. Based on the previous improvement of individual treatment steps, the optimisation of the entire treatment and value chain along the DRG is required. The new alignment and restructuring according to the overall processes must be tackled in the short run as the frame conditions of the diagnosis-based fixed compensation of treatment processes will gain more momentum in the foreseeable future and good solutions require a longer implementation time. This is an exciting time for new ideas, visions and suggestions.

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