Errors, communication and a learning feedback-loop for development

Structure:

1) New categories of errors
2) 'Personal medicine' considers the feedback-loop of communicative self-regulation
3) Learning from errors systemically

Different criteria for errors

Before we talk about how to handle or avoid 'medical errors' we should clarify what they are.

Is it an error, when a doctor doesn't diagnose an angina caused by streptococcus A, when a child has a sore throat, and does not prescribe penicillin? Is it still an error, when the child becomes healthy after a week? Was it an error, when the child gets an endocarditis rheumatica after two weeks? Or on the other way: when the doctor diagnoses a streptococcus infection and prescribe penicillin and the child gets an allergic shock – was at a medical error? Or the streptococcus become resistant against penicillin and the child gets an endocarditis – was it an error?

Criteria for defining errors are related to the desired outcome of the medical interventions. Analogous to the doctor's aims the criteria for errors differ at least in three categories: 1. Well-being of the patient, 2. Disappearance of the symptoms or disease, and 3. Diagnosis and treatment corresponding to a cultural defined standard (e.g. the EBM guide-lines).

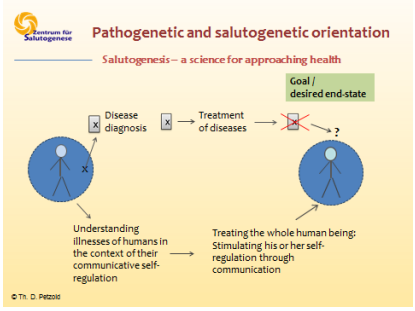
In relation to the attractive goal you take in the centre of your attention and your intention you will find different kinds of errors with different kinds of harm. In our example with the child with sore throat there is no error under 1st and 2nd criterion, when the child becomes and stays healthy again after one week – unconsidered it got penicillin or not. There is an error, when the child gets a complication of this infection also under the 1st and 2nd criterion. Under the 3rd criterion there is an error when it doesn't get antibiotics, unconsidered it gets healthy or a complication. And when the doctor prescribes penicillin, it was an error under the 1st criterion, but not under the 2nd and 3rd, when the child gets allergic or severe intestinal reactions.

So you can see, a doctor is acting always in the dilemma, that – so it seems to make no difference what he is doing – he only can make mistakes, either in the eye of the patient or under the criterion of EBM; and this even in such a simple daily case of sore throat.

The angina itself doesn't need a specific treatment but only the danger of complications requires antibiotics. It becomes not only a complicated but also a

complex problem, when we try to consider the individual constitution for possible complications of our treatment decision. Later we will see how shared decision making helps us in those cases to make less errors or at least errors with less severe sequelae.

But first we will take it as simple as many people (even health-professionals) see it: There are streptococcus A as the cause of sore throat and scarlet fever with sometimes rheumatic endocarditis etc. We can fight these bacteria with penicillin and evaluate the outcome. The positive effect is about 70 %. Here is not the place to discuss the outcome in detail compared with other antibiotics. I take this only as an example to illustrate a very (may be the most) common way to think about causal medical treatment of diseases. Summing up, it may be said, that a common way of medical statistical logic takes this way: First you have to make the right disease diagnosis, than you have to find the means against this disease and at last you hope that the patient will get well.



This way of medical procedure we can call a “short circuit decision making” analogous to the electric short circuit, because it uses the very short cut from disease diagnosis to the treatment – like a computer can do it – without observing the patients conditions. Most of research is done in this ‘short circuit treatment’ and their results we find in the EBM and in the number needed to treat NNT.

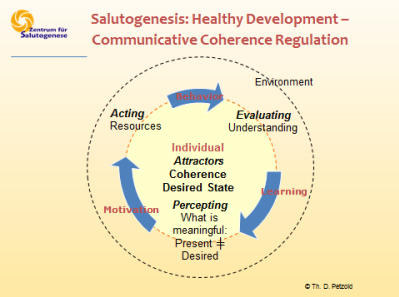
May be, that we can recognize the level of systemic errors by looking at the number needed to treat NNT. The NNT shows us that a treatment benefit for one person costs the harm of other persons (adverse effects, material costs). So the benefit for one person statistically depends on the errors in the treatment of several other persons. The NNT by hypertension with a beta-blocker or … is posed with 86 by an outcome of a longer life, and 35 by an outcome of a stroke (…??). So – looking for a longer life – 85 people have to take the medicine in vain therefore one is a winner. About 13 patients of the 86 suffer about side-effects of the medicine. So the NNT gives us an idea of systemic errors in treatment of hypertension. Under the 1st criterion we have about 13 errors and 2-3 hits (included the fewer strokes). Under the 2nd criterion we find nearly only hits (the symptom of high blood pressure disappears) and the same under the 3rd.

Is the NNT also a number of errors?

For example it is obvious in the case of hypertension or a tumour, that disappears by medical treatment resp. after operation and chemo-therapy, and in contrast the patient may suffer from the side effects of the treatment more than from the hypertension resp. tumour.

Do we need a new strategy for more complex cases?

This ‘short circuit strategy’ works quite well, if the disease is mainly determined by a limited circumstance they figured out as a cause, like bacteria, a poison, tumour, bullet, deficiency of a hormone, vitamin or mineral etc. This strategy doesn’t work well, if the disease in regard to health is mainly determined by more complex and interacting individual and socio-cultural factors like distress, lifestyle, motivation and behaviour etc., e.g. hypertension, diabetes type 2, many cases of cancer, many mental disorders etc. In all these cases – and these are about 60-80 % of the patients of a general practice and internal medicine and even more in the treatment of elder people (e.g. by Medicare recipients) – it seems we need a different strategy, a new way of thinking about treatment and have to work out a corresponding practice. This new strategy should include and consider the personal conditions, how you can find them in the dynamic model of communicative healthy self-regulation. It is a model of a feedback-loop in relationship.



This healthy feedback-loop of self-regulation starts with *perceiving* the discrepancy between the desired state (‘attractor’, the goal) and the present state. In a physiological dimension, for example, one perceives the discrepancy between present blood-sugar level (say 60 mg %) and the desired value of 100 mg%. If it is meaningful hunger ensues and one becomes motivated to look for something to eat. In this discrepancy between desired and present state (e.g. well-being and suffering) we find the motivational aspect of meaningfulness. Meaningfulness can be a physical, emotional, cultural, or spiritual issue. That depends on the at a time for a person relevant attractor.

In the feedback-loop the step following the perception of meaningfulness and the connected motivation is that of *action*, the pursuit of the (aim?) goal - the advance towards the attractor - like health. This action is regarded as ”manageability”.

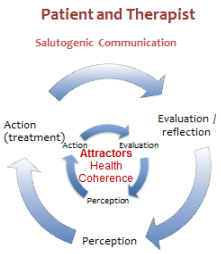
For example, every breath we take shows the pursuit of the desired values of oxygen and acidity in our blood. After breathing or eating our organism evaluates whether the action was successful: Am I closer to my desired state? Or was the inhaled air bad for my lungs? Am I still hungry following my meal or am I satisfied? Or do I feel sick? With regard to the evaluation we learn in order to prepare for upcoming similar situations. So if I feel sick after meal I will surely eat something different the next time I´m hungry. In this phase we can recognize errors and learn from them.

So many patients have made already good and bad experiences with different diseases and treatments. At last they have to take the medicine, or to walk, or to eat diet… So we have to bear in mind their self-regulation, their wishes and resources.

The same feedback-loop of communicative self-regulation is active in all systems and dimensions of life, the physical/somatic, social/emotional, the cultural/mental and the global/universal/spiritual dimensions.

Regarding the theme of this conference: when we recognize the discrepancy between our medical aim of healthiness and the huge number of 'adverse events' we begin to learn – remembering our attractive aim.

So the required strategy for treating patients suffering of more complex conditions focuses the healthy self-regulation and strives to stimulate and promote it. Diseases and illnesses are not seen any longer as separable entities but as dynamical interactive processes of human beings, which we desire to progress in direction of health.



Therapists accompany patients during their self-regulated healthy development by communication. At first they reflect and evaluate why the patient needs help (anamnesis). Then they perceive the actual state (self-perception and examination by the doctor). In the next phase they look for the resources they have for treatment, for managing the next step towards health and make a shared decision. At last in the consultation you can already make an evaluation by imaging the result of your action resp. treatment. At the next appointment you will do the real evaluation.

How we can learn from errors quickly and minimize severe sequelae of errors

In this way of communication you can find many possible errors before they happen by imaging, and other errors like adverse effects you can find very early when you take account of the patient's self-perception seriously. So we can use the implicit knowledge of the patients by evaluating a planned activity in imagination.

For example: We make a shared decision that the patient will walk each day for 30 minutes and take a beta-blocker to treat his hypertension. Then we ask him or her to imagine these actions in their daily life: are they coherent with their feeling and with their daily routine? One may answer that he is afraid to take the beta-blocker in cause of the side effects and another may answer that he prefer to stay in bed in the morning than to walk. So we can change eventually the decision before acting out a possible error (may be also an inadherence). Thus, the doctor-patient communication

in this way ('salutogenic communication') is a cooperative learning feedback-loop for healthy development.

Another example is Mr. Leo A., a 42 years old carpenter with higher business-goals. He was suffering of a high-tone tinnitus on his right side. The ENT-physician couldn't find pathological variances and suggested him ten infusions and pentoxyfillin for three months. Leo A. refused that suggestion and we talked about his ear noise in detail. It appears when he has stressful appointments and it disappears, when he gets a relaxing rest after lunch (reflecting). So he is motivated to change his lifestyle in regard to a well-feeling rhythm of relaxation and a concentrate working. Ensuing this dialogue he hasn't had a problem with tinnitus.

The error of the ENT-physician is obvious. It happens, when we act following the 'short circuit decision making' from a disease diagnosis to a treatment without acknowledging the individual conditions.

Conclusion

If we appreciate the perceiving of our patient, and demand and promote it, and complete it with our findings, we minimize errors in the diagnosis. By this way we even make a new type of holistic diagnosis possible, which include the resources and the self-healing-capacity of the patient.

When we understand medical care as salutogenically accompanying the patients in their healthy self-regulation and as a stimulation of this development, we can use the implicit and explicit capacity and skills of the patient as resources for the pursuit of the health goals. The relationship between doctor and patient is a cooperative one. The doctor asks the patient for subjective perceptions considering the development of the healing process resp. side effects very early. In this way of salutogenic communication the decrease of errors with undesired severe harms will be a desired by-effect.

In a cultural systemic dimension we can reflect and evaluate the systemic medical way of treatment based on the statistical EBM. We have to know the outcome of standardised disease treatment compared with individual regarded personal treatment under the attractive criteria of 'years of well-being'. Only by this comparison we will be able to recognize the possible real volume of the systemic error and will be able to learn for an advance in a more effective medicine.

E.g. the sore throat: We have to compare the outcomes of

1. every child with streptococcus-A-angina gets penicillin, with

2. personal treatment, which take account of the child's conditions, the quality of cooperation (adherence, perception and control examinations, anxiety, stress of the family… etc.).

Here we need much research to find the most important factors for a healthy self-regulation. Several healing factors we find in the communication.