Using Case-Based Reasoning to Investigate Therapy Inefficacy

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In medical practice, therapies prescribed according to a certain diagnosis sometimes do not give desired results. Sometimes therapies are effective for some time but suddenly stop helping any more. There are many different reasons. A diagnosis might be erroneous, the state of a patient might have changed completely, a patient might have caught an additional disease, some other complication might have occurred, or a patient might have changed his/her lifestyle (e.g. started a diet) etc.

For long-term therapy support in the endocrine domain and in psychiatry, we have developed a Case-Based Reasoning system, that not only performs typical therapeutic tasks but also especially deals with situations where therapies become ineffective. Therefore, it first attempts to find causes for inefficacy and subsequently computes new therapy recommendations that should perform better than those administered before.

Our system, called ISOR, deals with the following tasks:

- choose appropriate (initial) therapies,
- compute doses for chosen therapies,
- update dose recommendations according to laboratory test results,
- establish new doses of prescribed medicine according to changes in a patient’s medical status or lifestyle,
- find out reasons why administered therapies are not as efficient as they should,
- test obtained reasons for inefficacy and make sure that they are the real cause, and
- suggest recommendations to avoid inefficacy of prescribed therapies.