



The Karolinska Institute improves patient health with SAS® Analytics

Industry

Healthcare Providers

Business Issue

Huge increases in the cost of rheumatoid arthritis medicine, coupled with hard-to-find scientific documentation on its efficacy and a lack of general information on the Web, make it hard for patients to know what impact it could have on their well-being.

Solution

Using SAS® BI Server, the Karolinska Institute relies on a Web-based patient self-help application and predictive modeling to determine which treatments will be most effective for certain groups of RA sufferers.

Benefits

Patients have access to advanced analytics that help them improve their lifestyles; doctors can more accurately prescribe the right treatment for each individual patient.

The Karolinska Institute in Sweden sought a way to examine the scientifically demonstrated effects of drugs, other treatments and lifestyle factors on patients with rheumatoid arthritis. With help from SAS, a leader in decision-support solutions of which advanced analysis is an integral part, the Karolinska Institute has produced two applications: One enables rheumatism patients to examine the factors that affect their health, and the other helps rheumatologists select the best treatment for each patient.

“The two development projects are based on the need of patients and doctors to better predict the effect of various treatments and lifestyle factors,” says Staffan Lindblad, Director of the Health Information Centre (HIC), run by the Karolinska Institute and Stockholm County Council.

SAS provides a comprehensive system for retrieving, storing, analyzing and presenting information. Sophisticated SAS Analytics proved to be the most important component used in providing patient-customized solutions.

“People with chronic illnesses like rheumatism receive advice from every quarter about what could improve their health. As a layman it is difficult to sort through this advice. The Patient’s Scientific Toolbox enables patients to scientifically test what works themselves,” says Lindblad.

A factor analysis is made using software from SAS to test various hypotheses with the support of randomized trials to find the best combination of various

lifestyle factors, thus testing hypotheses scientifically in every individual case.

Patients must choose what they would prefer to improve, such as pain, and up to four independent lifestyle factors such as exercise, diet and sleeping habits which might conceivably reduce pain. The Web-based program generates a test plan that the patient prints out as a diary of what should be tested each day. At the end of the period, the program calculates which combination of factors provided the best lifestyle impact.

“For us it is important that the tool measures the right things correctly, that it is sensitive and practical and simple for patients to use. Moreover, its recommendations must be of practical application in everyday life,” says Lindblad.

One of the crucial reasons why HIC chose SAS for the project was access to the sophisticated calculations needed to perform a factor analysis in a scientific manner.

“Other reasons included the easy integration of SAS with the Web interface, its user-friendliness and its excellent visualization of results. Moreover, many county councils, hospitals and the Swedish National Board of Health and Welfare already use systems from SAS, which is an advantage when it comes to drumming up interest for the solutions in the country,” says Lindblad.

“We chose SAS for the sophisticated calculations needed to carry out a scientific factor analysis.”

Staffan Lindblad, MD, PhD
Director of the Health Information Centre (HIC)

As early as 1995, Lindblad started an “RA register” used for following up on medical consultations and the effects of various treatments on patients with rheumatoid arthritis. Each time patients consult with their doctors, they enter into the register how they’ve been feeling. Doctors then consider this information against the results of their own examinations and record information about medication and other treatment in the same database.

All of Sweden’s 54 rheumatology clinics use the Web-based register, and 10 of them have touch-sensitive screens for patients to use during medical consultations. The Karolinska Institute uses a SAS database to analyze the information collected.

“The next step is for patients to fill in information at home in a secure Internet

environment via the Healthcare Guide Web site,” says Lindblad.

Today, 26,500 patients with 144,000 consultations are registered in the RA register database. This is a comprehensive collection of practical experience. Meanwhile, using SAS, the Karolinska Institute relies on predictive modeling to underpin all that experience with scientific analysis.

The model uses patient data recorded prior to consultations as the basis for predicting the results of administering various drugs and combinations of drugs, thus assisting doctors in choosing the best treatment for each patient.

“Traditionally doctors have followed guidelines from the Swedish National Board of Health and Welfare when choosing treatment. These guidelines were drawn up based

on clinical trials with ‘normal patients’ and do not always suit the individual patient at an ordinary clinic,” says Lindblad.

The predictive model uses the 20 most common drug combinations to obtain adequate critical mass for a good decision-making basis. Using the predictive model also allows healthcare providers to save money. Costs have increased dramatically while rheumatologists have started to prescribe expensive biological drugs, the effects of which vary among each individual. By identifying which drugs are most effective for a unique patient group, the best-suited treatment can be prescribed in each case.

In the next step, information from the two analysis solutions will be used in the Swedish Rheumatology Register to improve patient health throughout the country.



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