New risk tools spot patients at high risk of diabetes complications

Two new risk prediction tools can identify patients with diabetes who are at high risk of blindness and amputation - two serious complications of diabetes, finds a study published in The BMJ this week.

The tools are based on variables that patients are likely to know, or that are routinely recorded in general practice computer systems, and will help to personalise care and advice and to target resources at those in greatest need.

Patients with type 1 or type 2 diabetes are at increased risk of blindness and amputation. Diabetic eye disease is now the second most common cause of blindness in people of working age in the United Kingdom, while more than 7,000 diabetes related amputations take place annually in England.

Despite the frequency of these complications and their effect on patients, methods of identifying those at greatest risk are lacking.

So Professor Julia Hippisley-Cox and Professor Carol Coupland at the University of Nottingham set out to develop and validate a new risk prediction algorithm to predict the absolute risk of developing these complications over a 10 year period in men and women with diabetes.
Using data derived from electronic patient records, their analysis is based on around 455,000 people with diabetes aged 25-84 years from 763 general practices in England.

Individual risk factors that could influence the results, such as ethnicity, smoking, body mass index, blood pressure and cholesterol levels were taken into account.

Mathematical models were then used to calculate separate risk equations for the 10 year risk of blindness and amputation.

Data from a further 611 general practices were used to validate the two models, which performed well, explaining around 41% and 32% of the variation in time to amputation and blindness, respectively.

The authors also developed a web based calculator so that clinicians can enter their patients’ data, and patients can enter their own data, to determine the 10 year risk of these complications.

“To our knowledge, these are the first tools for predicting the 10 year risk of both blindness and amputation, two of the complications that most concern patients with diabetes and affect quality of life,” say the authors.

They point to some study weaknesses, including the lack of formal adjudication of diagnoses and the potential for bias due to missing data.

Nevertheless, they say more accurate individualised information on the risk of complications “may help patients to make more informed decisions about the balance of risks and benefits of treatment options reflecting their own values and choices.”

For clinicians and the health service, more accurate methods for stratifying patients according to their absolute risk of complications “could enable screening programmes to be
tailored to an individual’s level of risk and support the more rational use of scarce resources,” they conclude.

In an accompanying editorial, Professor Azeem Majeed and Mariam Molokhia say the new risk prediction models “can help to provide the basis of a more individualised and holistic method of tackling these complications in patients.”

They point out the need to test the models in actual practice - and to test their impact outside the UK, particularly in countries with the highest prevalence of diabetes.

However, they say the tools “are one example of the value of the data held by the NHS in its electronic medical records and administrative databases.” These data “have great potential to improve NHS clinical care as well as giving patients information to help them make better decisions about their own health.”

[Ends]

**Notes to Editors:**
Research: Development and validation of risk prediction equations to estimate future risk of blindness and lower limb amputation in patients with diabetes: cohort study
http://www.bmj.com/cgi/doi/10.1136/bmj.h5441

Editorial: Identifying people with diabetes at high risk of blindness and amputation
http://www.bmj.com/cgi/doi/10.1136/bmj.h5643

The web calculator to calculate the absolute risk of complications among patients with diabetes is available at:
http://qdiabetes.org/amputation-blindness/index.php

Link to the QResearch database used for the research:
www.qresearch.org
About BMJ
BMJ is a healthcare knowledge provider that aims to advance healthcare worldwide by sharing knowledge and expertise to improve experiences, outcomes and value. For a full list of BMJ products and services, please visit bmj.com

Media Coverage

Tools spot those at high risk of diabetes complications - Nursing Times

Risk Prediction Equations Created for Diabetes Complications - Doctors Lounge

New tools can predict blindness, amputation risk in diabetics - Business Standard