Integration of the CRA Health Risk Engine with Epic’s Electronic Health Record Software

Breast Cancer Risk Assessment: Seamless implementation of breast cancer risk models and guidelines to improve medical care

Breast cancer is the most common cancer seen in women in the United States, affecting over 250,000 patients and causing the death of over 40,000 women annually. To date, the most effective way to decrease breast cancer mortality has been to find cancer at an earlier, more treatable stage. While our use of screening mammography in accordance with current guidelines has been effective in helping us fight this disease, it is not a complete solution. There are many women at demonstrably high risk of breast cancer who will benefit from additional care beyond annual mammography starting at age 40.

Identifying this cohort is the goal of risk-based screening, and with proven risk-reducing interventions available, this approach has significant potential to reduce breast cancer mortality. For high-risk women identified before getting cancer, not only can we choose the best screening modality and frequency, but we can also add preventive measures such as chemoprevention (with drugs such as Tamoxifen or Reloxifen) and even prophylactic surgery for the highest at-risk patients. This represents an important and timely opportunity to help this underserved population. It is encouraging that this approach is consistent with the goals of the Affordable Care Act: emphasizing the importance of screening and prevention and mandated coverage for appropriate mammography, genetic testing and chemoprevention.

There is no simple sign or symptom that easily allows us to identify high risk patients. This can only be done by collecting a thorough family history and all relevant risk factors and then analyzing the interaction of these elements to determine a risk level. The complexity of the analysis makes computer-based expert systems the only viable approach. For this reason, risk models have been developed.

The major models are BRCAPRO, Tyrer-Cuzick, Gail, Claus and Myriad. Each model has its strengths and weaknesses. For example, Gail is approved by the FDA to determine need for chemoprevention, but is not useful for identifying women who need screening MRI or genetic testing.

The integration of CRA Health technology with Epic represents a best case scenario in order to provide clinicians the tools that to make risk based screening reality.

In order to determine which patients need earlier screening, screening MRI or other advanced modalities including genetic testing, chemoprevention or...
Integration of the CRA Health Risk Engine

prophylactic surgery, all models should be run on all women early in life, and repeatedly as their factors change over time.

Most of the risk models were developed as part of academic research projects at various institutions around the world. Running even a single model using the existing academic risk tools on a given patient population can be very time consuming. Running multiple models requires redundant data entry across multiple software applications, which effectively rules out this activity for all but the most proactive clinicians. For this reason, CRA Health, the world leader in breast cancer risk assessment software has teamed up with Epic to make the best risk assessment possible for all women.

Clinicians can use functionality in Epic to collect family history and other risk factors for breast cancer as structured data. With CRA Health integration into the Epic EHR, this structured data is sent to CRA Health Risk Engine where up-to-date versions of all major models are run for all patients. The Risk Engine returns the results of these analyses to Epic, where they are displayed for the clinician who will now have the data they need to determine the best course of screening and prevention:

- Women under 40 at elevated risk by any model can be offered earlier screening.
- Women with a 5 to 10% or greater risk of a BRCA1 or BRCA2 mutation by BRCAPRO, Tyrer-Cuzick or Myriad can be considered for genetic testing. (Those with mutations may consider more intensive screening, chemoprevention or even prophylactic surgery.
- Women with a 20% or greater lifetime risk of breast cancer by BRCAPRO, Tyrer-Cuzick or Claus can be considered for MRI screening.
- Women with a 1.66% or greater 5 year risk of breast cancer by any model can be considered for chemoprevention with tamoxifen or other drugs.

With the challenges and complexity of modern healthcare, physicians require new tools for analysis, care planning, and clinical decision support. The translation of clinically relevant models and patient care guidelines, into practical tools that are actually useful, while minimizing impact on staff is the focus of the collaboration between CRA Health and Epic.
Resources


7 Polubriaginof F et al. Implications of following the guidelines for genetic testing and MRI use for breast cancer. ASCO 2014.