


# Supercharge your risk assessment with the Cardiometabolic Calculator







Our most  
powerful risk  
calculator



# Risk assessment that's ahead of the curve

The life & health insurance industry has long relied on traditional clinical factors like BMI and blood pressure to evaluate health risks. Re/insurers have categorised applicants into broad, discrete buckets of risk and relied on relatively static age and amount grids to make underwriting decisions.

But, the landscape of risk assessment is changing before our eyes:

- **Insurers now have the data, tools and data science skill sets to translate mortality and morbidity studies into holistic, multiplicative ratings**

- **New clinical tests and biomarkers are emerging that can provide more precise and dynamic reflections of risk**

- **The explosion of wearables opens the door to reliably track and measure health and lifestyle data**

It's essential that our approach to assessing risk follows suit. At Swiss Re, we have been at the forefront of risk assessment for more than 150 years; we've helped underwriters quickly and easily assess complex risk with multivariable calculators. That's because we know how to innovate, transform and adapt.

## The best is now better: introducing the Cardiometabolic Calculator

The Cardiometabolic Calculator (CMC) is built on Life Guide's industry-leading evidence base, trusted by underwriters in more than 100 countries. It combines medical and underwriting expertise with actuarial and analytical know-how to supercharge risk assessment. The CMC

is built to handle complex cases with multiple impairments to provide a better understanding of the multifaceted, interactive nature of risk. Powered by state-of-the-art technology, it's fast and easy to use – saving your underwriters time and frustration.

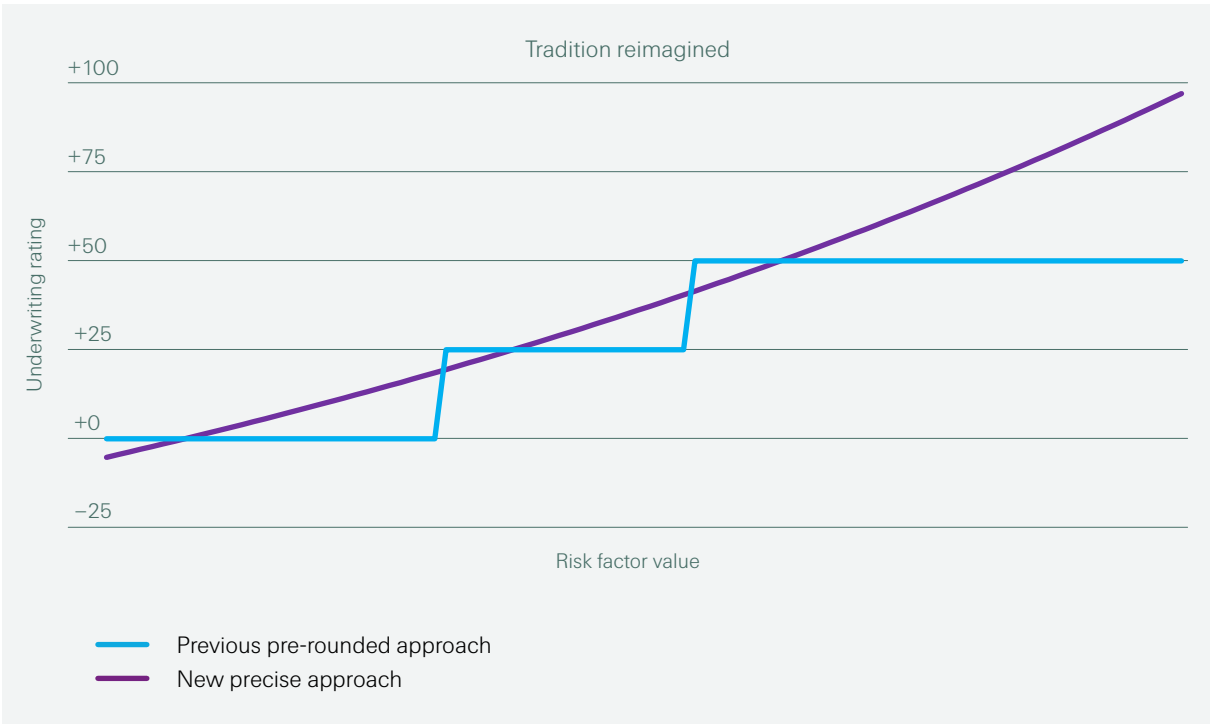
# Tradition reimaged: reflecting the continuous and interactive nature of risk

## Does it make sense for a 59-year old's rating to significantly change overnight when they turn 60?

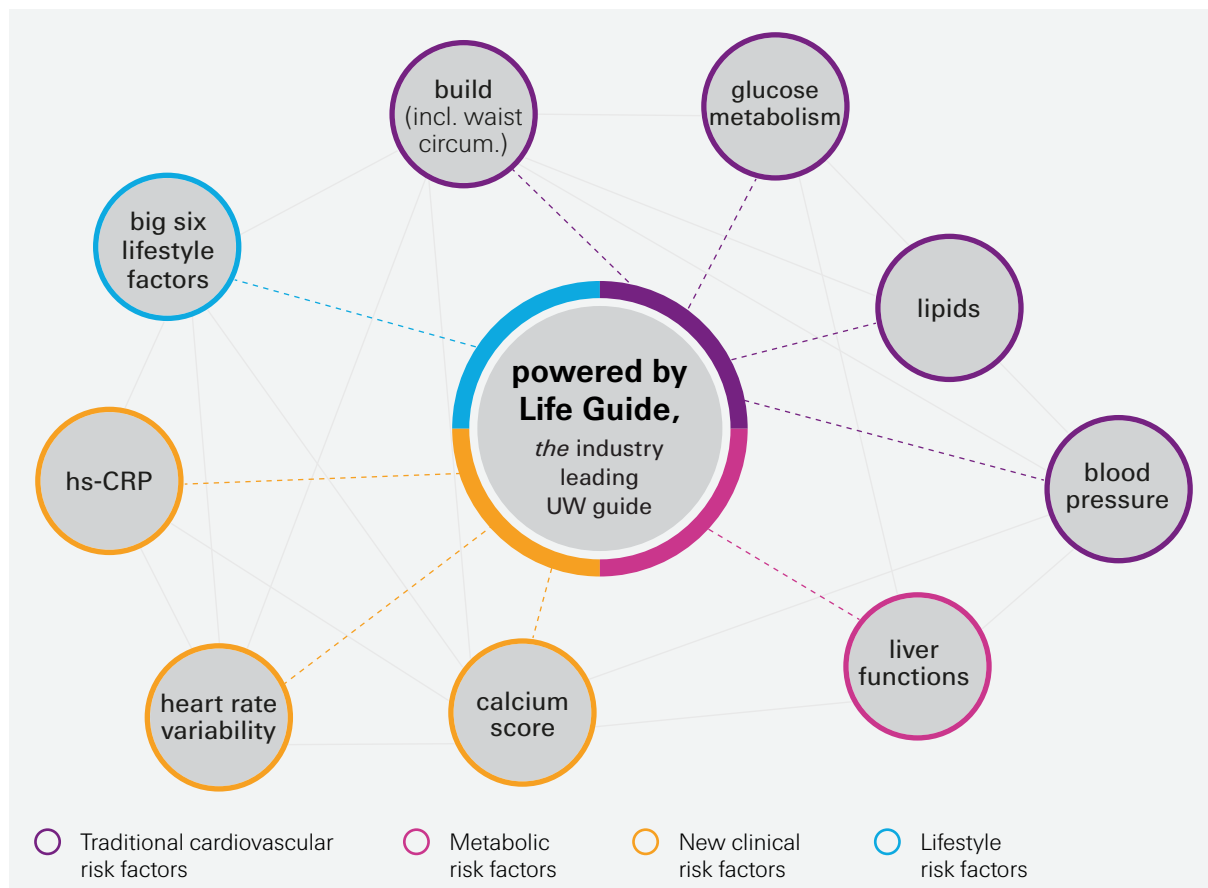
Re/insurers have long used +25 rating increments to account for risk factor variations. The CMC re-imagines traditional approaches – moving from 'big jumps' to smoother, more continuous risk curves. The CMC breaks down age bands and provides different ratings for each individual age, so underwriters get more personalised, precise risk insights. The same logic applies to every CMC risk factor; smaller more incremental changes in risk factor values enable more transparent and refined ratings.

Another limitation of traditional underwriting practices is that risk factors do not exist in isolation. An individual's body-mass-index (BMI) likely influences their blood pressure and vice versa. The same complex interactions exist for other common risk factors used in underwriting. Understanding and quantifying these interactions are key to building a more holistic view of an individual's risk.

**Thanks to rigorous research and statistical modelling underpinning the CMC, underwriters can finally assess the multiplicative interactions between risk factors all in one place.**



# Accounting for the most important risk factors – today and tomorrow



**Cardiovascular risk factors have been and will continue to be fundamental to risk assessment. We've updated and expanded the most protective factors based on the latest scientific evidence from leading peer-reviewed journals.**

- **Build** – body-mass-index can overestimate or underestimate risk, particularly when applied to large age bands. In addition to moving towards more continuous, granular ratings by individual age to counteract this trend, the CMC includes waist circumference to augment BMI risk differentiation. The outcome? A more precise view of risk.
- **Blood pressure** – contrary to traditional underwriting protocol, systolic and diastolic blood pressure levels impact risk differently, particularly with age. Recognising their independence improves rating consistency and accounts for a broader range of blood pressure profiles like isolated systolic or diastolic hypertension.
- **Lipids** – we've included guidance for apolipoprotein so we can offer the best rating with whatever information an underwriter has, alongside a review of what constitutes the 'optimal' cholesterol and triglyceride values.
- **Diabetes & glucose metabolism** – Diagnostic thresholds are not a perfect reflection of mortality and morbidity outcomes; The CMC uses continuous risk curves related to glycaemia exposure for more accurate rating parameters.

**Cardiovascular health is just one aspect of health. We're placing an added focus on metabolic health to provide you with a convenient, one-stop shop for risk assessment.**







- **Liver functions** – We're embedding liver functions within the CMC to reflect the role they play in metabolic syndrome. Equally, by including more risk factors that are often underwritten together, we can help underwriters make faster, more consistent decisions.

**New realities demand new support. The CMC incorporates new clinical risk factors so underwriters have information on emerging tests and technology at their fingertips.**

- **Coronary artery calcium (CAC) score** – CAC score is a strong marker of cardiovascular-related mortality and morbidity. When available, it can greatly enhance risk assessment.
- **Heart rate variability** – heart rate variability is increasingly available from wearable devices. New ratings give underwriters confidence to navigate the changing risk landscape as new data sources and technologies become available.
- **High-sensitivity C-reactive protein (hs-CRP)** – hs-CRP is a strong inflammatory marker independently associated with mortality & morbidity risk linked to cardiovascular disease. Increasingly, medical records now include hs-CRP. The CMC includes rating guidance for this emerging biomarker.

**Our Big Six Lifestyle Factors** Research revealed the importance of lifestyle factors in health and wellness – and solidified their increasing value in risk assessment. The CMC includes optional lifestyle factors.

**The BIG 6 Lifestyle Factors**

-  **Physical activity**
-  **Sleep**
-  **Nutrition**
-  **Substance Use**
-  **Mental Wellbeing**
-  **Environment**



# Leveraging our leading evidence-base and expertise

## **Evidence and transparency are at the heart of everything we do.**

Unlike other industry risk calculators, the CMC is not a 'black box'. We provide rating tables behind the CMC so you understand the driving factors behind every decision. Plus, clients get access to our experts 24/7 and support with legal or regulatory questions.

Better yet, our evidence base behind the CMC is tried and tested. Distribution data, both from in-house and external sources, was used to ensure our ratings fall in line with an expected insured

population experience. We used a combination of clinical data, regression testing and statistical modelling to stress test the CMC. 100 000 manual and 2.5 million automated synthetic underwriting cases were run through the CMC to test the logic and outcomes. Finally, internal forecasting models drawing on large longitudinal health datasets were used to validate the most important clinical risk factors in the CMC.

**The CMC is available to clients through our award-winning Life Guide and Magnum offerings. It will also power a range of innovative client solutions.**

**Interested?**  
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