The Hilltop Institute

Prediction Tools

Frequently Asked Questions

March 2026

1. What does the "Avoidable Hospital Events (Pre-AH)" score mean?

This score represents the risk that a particular individual will have an inpatient hospital admission or emergency department (ED) visit for one of ten potentially avoidable conditions in the near future. Individuals with higher risk scores are more likely to incur an avoidable hospital event in the coming months than individuals with lower risk scores. This score is based on the Hilltop Pre-AH Model™, which uses over 200 risk factors spanning five domains: conditions, utilization, demographics, pharmacy, and environmental characteristics.

2. What does the "Severe Diabetes Complications (Pre-DC)" score mean?

This score represents the risk that a particular individual will have an inpatient hospital admission or ED visit for severe complications of type 2 diabetes in the near future. Individuals with higher risk scores are more likely to incur severe type 2 diabetes complications in the coming months than individuals with lower risk scores. This score is based on the Hilltop Pre-DC Model, which uses over 200 risk factors spanning five domains: conditions, utilization, demographics, pharmacy, and environmental characteristics.

3. What's the difference between the "Avoidable Hospital Events (Pre-AH)" and the "Severe Diabetes Complications (Pre-DC)" score?

The Avoidable Hospital Events (Pre-AH) score is optimized to identify those hospital events that should be preventable with timely, high-quality primary care. The underlying conditions span several different disease states, including multiple forms of diabetes. These are not necessarily the most medically severe conditions, but they have been deemed by the Agency for Healthcare Research and Quality to be potentially preventable. The Severe Diabetes Complications (Pre-DC) score, however, is calibrated to capture hospital events for severe complications of type 2 diabetes and spans six domains of complications. There is relatively little overlap in the two outcomes—avoidable hospital events and severe type 2 diabetes complications—and the scores capture conceptually distinct risk profiles.

4. What does the "Hospice Eligibility and Advanced Care Planning (Pre-HE)" score mean?

This score represents the risk of eligibility for hospice for a particular individual and is only available for MDPCP-attributed beneficiaries through the MDPCP Reporting Suite. Individuals with higher risk scores are more likely to be appropriate candidates for hospice care than individuals with lower risk scores;

these scores and the accompanying reasons for risk are intended to provide care teams with information that can guide the sensitive and difficult conversations about end-of-life care with patients and their families. This score is based on the Hilltop Pre-HE Model, which uses over 200 risk factors spanning five domains: conditions, utilization, demographics, pharmacy, and environmental characteristics.

5. Why does a certain patient have a very high score?

Each risk score is a function of approximately 200 risk factors based on a patient's clinical history, demographics, and geographic factors. The relationship between each risk factor and the likelihood of having a given outcome is estimated in historical data, and those relationships are then applied to current data. If a patient has a very high risk score, then it is likely that they have several risk factors that have a large contribution to risk.

6. Why does a certain patient's risk score change?

Patient-level risk tends to persist across time: that is, higher-risk patients tend to remain at a high-risk from one month to the next, while lower-risk patients tend to remain at a lower-risk. However, large month-to-month changes in risk scores can occur for two main reasons. First, using a given set of risk factors coefficients, any changes in underlying risk factors will lead to changes in patients' predicted risk. For example, if an attributed patient meets the conditions for heart failure beginning in July 2025, then their risk score will likely increase significantly because of that underlying change. Second, Hilltop estimates new risk factor coefficients every quarter in model retraining. As a result, the relationship between a given risk factor and the model-specific outcome events can also change upon retraining. To continue the previous example, if the risk factor coefficient for heart failure rises after the model is retrained, the individual's risk score would rise not only because they have a new heart failure risk factor, but also because the heart failure risk factor has risen in predictive importance based on the new coefficients.

7. What is the best way to use these risk scores?

Providers now have access to multiple sets of risk scores that capture distinct risk profiles for their patients. These scores are intended to augment clinical judgement so that users can easily identify the patients at the highest risk of incurring a future avoidable hospital event or the patients at the highest risk of incurring hospital care for severe type 2 diabetes complications. Providers can use these prioritized lists in addition to their clinical judgement to design individualized care plans.

8. How often should I check these risk scores?

These scores will be updated once per month with the regular update to the reporting suite, usually by mid-month.

9. How should I interpret the "reasons for risk"?

The reasons for risk are the top actionable risk factors underlying each patient's predicted risk of incurring a given outcome. It is important to note that these are not necessarily causal; that is, just because a patient has a certain risk factor does not mean that the risk factor *causes* them to have increased risk. However, these risk factors have been statistically validated as being strongly *associated* with increased risk of incurring a given outcome—for example, an avoidable hospital event—and can equip providers and care managers with a useful starting point in the delivery of advanced primary care to high-risk patients.

10. Why do patients without diabetes have a Pre-DC score?

The Pre-DC scores are designed to help care teams proactively identify high-risk individuals and allocate limited care management resources. Consequently, all included Medicare and Medicaid beneficiaries receive a Pre-DC score, regardless of whether they have a recent claim with a diabetes diagnosis. Requiring a diagnosis may exclude individuals with undiagnosed diabetes or those who have not recently received diabetes care but who may still be at risk for severe type 2 diabetes complications. Additionally, the model estimates risk for conditions considered severe complications for type 2 diabetes based on the Diabetes Complications Severity Index.[1] Some of these conditions are specific to type 2 diabetes, such as "type 2 diabetes with ketoacidosis with coma," while others, like "gas gangrene," are more general. Therefore, it is possible for a patient without type 2 diabetes to have a higher Pre-DC score due to the risk for one of the more general complications. The Pre-DC scores and accompanying reasons for risk are intended to supplement, not replace, providers' clinical judgement and personal experience with their patients.

11. How well do these risk scores perform, and where can I find more information about their evaluation?

The Hilltop Institute gauges the predictive accuracy of the Pre- Models by looking at how well the risk score rankings for a given month (for example, May 2025) correspond to who actually experiences the outcome event in the following month (for example, June 2025) using new data. By using this approach, we can determine that, for example, 50% of the riskiest individuals as ranked by the Pre-DC Model in May 2025 incurred a diabetes complication event in the following month. This example would be suggestive of good model performance: the individuals that our model predicts to be very risky do, in fact, have a high risk of incurring the model specific event. We focus on the percentage of events incurred by patients with the top 10% of risk scores for each outcome in the month following the score release.

The table below summarizes the median model performance from recent performance monitoring reports, and more detail can be found in "Risk Score Specifications and Codebook for The Hilltop

[1] Young, et al. (2008). In *The American Journal of Managed Care*, *14*(1), 15–23.

Institute's Pre- Models" on Hilltop's website. Each value can be interpreted as the percentage of events incurred by the top 10% riskiest patients in the month after the scores are released.

Model	MDPCP	Medicare FFS	HealthChoice	Medicaid FFS
Pre-AH	47.66%	50.10%	55.87%	52.98%
Pre-DC	56.26%	60.38%	82.55%	70.14%
Pre-HE	62.01%	N/A	N/A	N/A

12. What are the differences between the Pre- Model risk scores provided in the MDPCP and Multi-payer Reporting Suites?

Each individual patient's risk score, which represents their risk of experiencing a given outcome in the near future, will be the same in both Reporting Suites; however, their relative risk ranking will likely differ. In the MDPCP Reporting Suite, rankings are determined based on each patient's risk level relative to the pool of Medicare fee-for-service (FFS) beneficiaries attributed to each MDPCP practice. In contrast, risk rankings in the Multi-Payer Reporting Suite are based on each individual's risk level relative to practice-defined patient panels that include patients insured by either Medicare or Medicaid. Additionally, Pre-HE scores are currently only available in the MDPCP Reporting Suite for Medicare FFS beneficiaries attributed to MDPCP-participating practices.

13. Which patients on my Multi-Payer Reporting Suite panel will have Pre-AH and Pre-DC scores?

Pre-AH and Pre-DC risk scores will be generated each month for the following groups of Medicare and Medicaid beneficiaries who live in Maryland. Patients must be ***currently*** enrolled in one of these groups to have a risk score generated for them:

- Medicare FFS beneficiaries who have Traditional Medicare (concurrent enrollment in both Part A and Part B) and are not enrolled in a Medicare Advantage plan
- Medicaid beneficiaries enrolled in the HealthChoice managed care program
- Medicaid FFS beneficiaries with full benefit coverage (i.e., not in a limited benefit coverage group)

Currently, only Medicare claims will be used to generate scores for patients who are dual eligible for Medicare and Medicaid.

Patients who do not meet these criteria will not have a risk score generated for them. For example, a Medicare beneficiary with only Part A coverage or a beneficiary with prior Medicaid coverage who is not currently enrolled will not have risk scores available.

14. Who should I ask when I have a question?

First, please consult the documentation in the "Help" tab within either the MDPCP or Multi-Payer Reporting Suites. The risk scores and underlying models are addressed extensively in the full technical documentation on CRISP. Please submit any questions to report-support@crisphealth.org. If you are transmitting PHI via email, please be sure to use your organization's digital encryption service.