# Health Trixss RAF Calculator API Test

Health Trixss RAF Calculator API Testing Guide

## Overview

Health Trixss has developed a **Risk Adjustment Factor (RAF) Calculator API** that enables users to calculate risk scores for Medicare members. This document outlines the requirements and procedures for testing the **public API**, ensuring accurate verification of risk score calculations.

**Request Structure**

The API request requires a **JSON payload** containing details of:

1. **Payment Year** – Specifies the risk model year.

2. **Memberships** – A list of members with demographic and eligibility details.

3. **Diagnoses** – A list of diagnosis codes for each member, including dates of service.

## Example API Request

*Request Body:*

```json
{
  "payment_year": 2025,
  "memberships": [
    {
      "MemberID": "M00912",
      "DOB": "1985-10-13",
      "Gender": "M",
      "RAType": "CP",
      "Hospice": "N",
      "LTIMCAID": "N",
      "NEMCAID": "N",
      "OREC": "0"
    },
    {
      "MemberID": "M00913",
      "DOB": "1938-06-16",
      "Gender": "F",
      "RAType": "CN",
      "Hospice": "N",
      "LTIMCAID": "N",
      "NEMCAID": "N",
      "OREC": "0"
    }
  ],
  "diagnoses": [
    {
      "MemberID": "M00912",
      "FromDOS": "2024-08-18",
      "ThruDOS": "2024-08-21",
      "DxCode": "F13229"
    },
    {
      "MemberID": "M00912",
      "FromDOS": "2024-01-06",
      "ThruDOS": "2024-01-10",
      "DxCode": "S62X5"
    }
  ]
}
```

## Request Parameters

### 1. Payment Year (payment_year)

- Specifies the applicable **Medicare risk adjustment model year**.
- Example: 2025 (only PY 2024 and 2025 are currently supported)

### 2. Memberships (memberships)

A list of **member records**, each containing:

- **MemberID** *(string)* – Unique identifier for the member.
- **DOB** *(YYYY-MM-DD)* – Date of birth.
- **Gender** *(M/F)* – Male or Female.
- **RAType** *(string)* – Risk adjustment model type.
  - Example: "CP" (Community, Partial Dual), "CN" (Community, Non-Dual) – See RAFT Type Reference for support codes.
- **Hospice** *(Y/N)* – Indicates if the member is in hospice.
- **LTIMCAID** *(Y/N)* – Long-term institutional Medicaid eligibility.
- **NEMCAID** *(Y/N)* – Non-emergent Medicaid eligibility.
- **OREC** *(string)* – Original reason for Medicare eligibility.
  - Example: "0" (Aged), "1" (Disability), "2" (ESRD)

### 3. Diagnoses (diagnoses)

A list of **diagnosis records**, each containing:

- **MemberID** *(string)* – The corresponding **MemberID** from the memberships list.
- **FromDOS** *(YYYY-MM-DD)* – Start date of service.
- **ThruDOS** *(YYYY-MM-DD)* – End date of service.
- **DxCode** *(string)* – Diagnosis code (ICD-10).

## Expected Response

Upon a successful request, the API returns a structured JSON response containing the **risk adjustment calculations** for each member. The response includes demographic details, model versions, and RAF score breakdowns.

**Response Structure**

- **status** *(string)* – Indicates the success or failure of the request ("success" if processed correctly).

- **message** *(string)* – Provides additional context on the processing outcome.

- **cache_status** *(string)* – Specifies if the data was retrieved from cache ("Cache hit" or "Cache miss").

- **count** *(integer)* – Number of records processed.

- **results** *(array)* – A list of risk score calculations for each member.

- **timestamp** *(string, ISO format)* – The date and time of response generation.

## Example API Response

```
{
    "status": "success",
    "message": "Data processed successfully",
    "cache_status": "Cache hit",
    "count": 6,
    "results": [
        {
            "Payment_Year": 2025,
            "Member_Id": "M00912",
            "BirthDate_Org": "1985-10-13",
            "BirthDate": "1985-10-13",
            "Age": 39,
            "Age_Band": "35_44",
            "Gender_Org": "M",
            "Gender": "M",
            "RAType_Org": "CP",
            "RAType": "CPD",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "1",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "CPD_M35_44, HCC137",
            "RAF_Demographic": 0.261,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.348,
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.609,
            "Model": "HCC Model-Regular",
            "Clinical_Version": "V28",
            "Active_Score": 0
        },
        {
            "Payment_Year": 2025,
            "Member_Id": "M00912",
            "BirthDate_Org": "1985-10-13",
```

```
            "BirthDate": "1985-10-13",
            "Age": 39,
            "Age_Band": "35_44",
            "Gender_Org": "M",
            "Gender": "M",
            "RAType_Org": "CP",
            "RAType": "CPD",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "1",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "CPD_M35_44, HCC55",
            "RAF_Demographic": 0.282,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.275,
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.557,
            "Model": "HCC Model-Regular",
            "Clinical_Version": "V24",
            "Active_Score": 0
        },
        {
            "Payment_Year": 2025,
            "Member_Id": "M00912",
            "BirthDate_Org": "1985-10-13",
            "BirthDate": "1985-10-13",
            "Age": 39,
            "Age_Band": "35_44",
            "Gender_Org": "M",
            "Gender": "M",
            "RAType_Org": "CP",
            "RAType": "CPD",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
```

```
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "1",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "V24 ( CPD_M35_44, HCC55 ) and V28 (
CPD_M35_44, HCC137 )",
            "RAF_Demographic": 0.233416,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.28402,
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.517435,
            "Model": "67.0000% of HCC Model-Regular V28 /
33.0000% of HCC Model-Regular V24",
            "Clinical_Version": "V28 / V24",
            "Active_Score": 1
        },
        {
            "Payment_Year": 2025,
            "Member_Id": "M00913",
            "BirthDate_Org": "1938-06-16",
            "BirthDate": "1938-06-16",
            "Age": 86,
            "Age_Band": "85_89",
            "Gender_Org": "F",
            "Gender": "F",
            "RAType_Org": "CN",
            "RAType": "CNA",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "0",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "CNA_F85_89",
            "RAF_Demographic": 0.624,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.0,
```

```
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.624,
            "Model": "HCC Model-Regular",
            "Clinical_Version": "V28",
            "Active_Score": 0
        },
        {
            "Payment_Year": 2025,
            "Member_Id": "M00913",
            "BirthDate_Org": "1938-06-16",
            "BirthDate": "1938-06-16",
            "Age": 86,
            "Age_Band": "85_89",
            "Gender_Org": "F",
            "Gender": "F",
            "RAType_Org": "CN",
            "RAType": "CNA",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "0",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "CNA_F85_89",
            "RAF_Demographic": 0.641,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.0,
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.641,
            "Model": "HCC Model-Regular",
            "Clinical_Version": "V24",
            "Active_Score": 0
        },
        {
            "Payment_Year": 2025,
            "Member_Id": "M00913",
```

```
            "BirthDate_Org": "1938-06-16",
            "BirthDate": "1938-06-16",
            "Age": 86,
            "Age_Band": "85_89",
            "Gender_Org": "F",
            "Gender": "F",
            "RAType_Org": "CN",
            "RAType": "CNA",
            "Hospice_Org": "N",
            "Hospice": "N",
            "LTIMCAID_Org": "N",
            "LTIMCAID": "N",
            "NEMCAID_Org": "N",
            "NEMCAID": "N",
            "OREC_Org": "0",
            "OREC": "0",
            "Originally_Disabled": "N",
            "Originally_ESRD": "0",
            "RA_Variable": "V24 ( CNA_F85_89 ) and V28 (
CNA_F85_89 )",
            "RAF_Demographic": 0.549109,
            "RAF_Demographic_Interaction_With_Medicaid_Or_OREC":
0.0,
            "RAF_Disease": 0.0,
            "RAF_Disease_Count": 0.0,
            "RAF_Disease_Interaction_With_Disease": 0.0,

"RAF_Disease_Interaction_With_Disability_Or_NonAged": 0.0,
            "RAF_Total": 0.549109,
            "Model": "67.0000% of HCC Model-Regular V28 /
33.0000% of HCC Model-Regular V24",
            "Clinical_Version": "V28 / V24",
            "Active_Score": 1
        }
    ],
    "timestamp": "2025-02-22T18:36:00.540933"

}
```

*Response Parameters*

| Field | Description |
|---|---|
| **status** | Indicates request success ("success") or failure. |
| **message** | Descriptive message about processing status. |

| Field | Description |
|---|---|
| cache_status | Specifies if the result was retrieved from cache. |
| count | Total number of members processed. |
| timestamp | Date and time of response. |
| results | Array of risk adjustment calculations per member. |

*Key Fields in results*

| Field | Description |
|---|---|
| Payment_Year | The model year used for risk adjustment calculations. |
| Member_Id | Unique identifier of the member. |
| BirthDate_Org | Original date of birth from the source data. |
| BirthDate | Standardized date of birth used in calculations. |
| Age | Member's calculated age. |
| Age_Band | Age group category. |
| Gender_Org | Original gender value from the source data. |
| Gender | Standardized gender value ("M" or "F"). |
| RAType_Org | Original risk adjustment type from the source data. |
| RAType | Standardized risk adjustment type (e.g., "CPD", "CNA"). |
| Hospice_Org | Original hospice indicator from the source data. |
| Hospice | Standardized indicator if the member is in hospice ("Y" or "N"). |
| LTIMCAID_Org | Original long-term institutional Medicaid status from the source data. |

| Field | Description |
|---|---|
| **LTIMCAID** | Standardized long-term institutional Medicaid status. |
| **NEMCAID_Org** | Original non-emergent Medicaid eligibility from the source data. |
| **NEMCAID** | Standardized non-emergent Medicaid eligibility. |
| **OREC_Org** | Original reason for Medicare eligibility from the source data. |
| **OREC** | Standardized reason for Medicare eligibility. |
| **Originally_Disabled** | Indicates if the member was originally eligible due to disability ("Y" or "N"). |
| **Originally_ESRD** | Indicates if the member has End-Stage Renal Disease ("0" = No, "1" = Yes"). |
| **RA_Variable** | Categorization of member's risk adjustment factors, combining type and age band. |
| **RAF_Demographic** | The RAF contribution from demographic factors. |
| **RAF_Demographic_Interaction_With_Medicaid_Or_OREC** | Additional RAF contribution due to interaction between demographics, Medicaid status, and/or OREC. |
| **RAF_Disease** | The RAF contribution from hierarchical condition categories (HCCs). |
| **RAF_Disease_Count** | Count of HCC conditions contributing to RAF. |
| **RAF_Disease_Interaction_With_Disease** | Additional RAF contribution due to interactions between different diseases. |
| **RAF_Disease_Interaction_With_Disability_Or_NonAged** | Additional RAF contribution due to interactions between diseases and disability or non-aged status. |
| **RAF_Total** | Final calculated RAF score for the member. |

| Field | Description |
|---|---|
| Model | The risk adjustment model applied (e.g., "HCC Model-Regular"). |
| Clinical_Version | Version of the clinical model used (e.g., "V28"). |
| Active_Score | Indicator for active risk score usage. |

## Interpreting the Response

- **Risk Scores (RAF_Total)**
  The **RAF_Total** represents the final **risk adjustment factor** score for each member, incorporating both **demographic** and **diagnosis-based** adjustments.

- **Clinical Model Versions (Clinical_Version)**
  Some members may have **multiple risk model versions applied**, such as "V28 / V24", indicating a blended calculation.

- **Risk Categories (RA_Variable)**
  This field details the **age and HCC category variables** contributing to the member's risk score.

- **Model Type (Model)**
  Identifies whether the **HCC Model-Regular** or other variations were used for the calculation.

- **Active Row -** where an active row has a value of 1 this score is considered a paid raft score that includes blending and normalization adjustments. When the active row value 0 this is a raw score the documents the underlying data for the final score

**Conclusion**

This response structure provides detailed risk adjustment factor calculations for each member. Users can leverage this data for **risk stratification, premium calculations, and compliance with CMS risk adjustment guidelines**.

For any discrepancies or additional support, please contact the **Health Trixss development team**.

## Testing Instructions

1. **Prepare the Request:**

   o Ensure you have a valid **JSON payload** following the structure outlined above.

   o Verify the **payment year** and ensure it aligns with the applicable risk model.

   o Double-check **MemberID** and **diagnosis codes** to ensure accuracy.

2. **Send the Request:**

   o Use a tool such as **Postman**, **cURL**, or any **API client** to make a POST request to the API endpoint.

   o Set the **Content-Type** header to application/json.

3. **Validate the Response:**

   o Confirm that the API returns a **valid JSON response**.

   o Ensure the **risk scores** are calculated correctly based on the provided **member details and diagnoses**.

   o If errors occur, review the request for **missing or incorrect fields**.

## Troubleshooting & Common Errors

| Error Message | Possible Cause | Solution |
|---|---|---|
| **400 Bad Request** | Incorrect JSON format | Ensure JSON syntax is valid. |
| **401 Unauthorized** | Invalid API key (if applicable) | Verify authentication requirements. |
| **404 Not Found** | Incorrect endpoint URL | Double-check the base URL. |
| **500 Internal Server Error** | Issue with API processing | Retry after a few minutes or check server status. |

## Conclusion

This document provides a structured guide to testing the **Health Trixss RAF Calculator API**. By following the outlined request format and validation steps, users can efficiently verify RAF score calculations and integrate the API into their workflows. For further support, contact the Health Trixss development team.

# Appendix

## RAF Type Codes

This is a list of available raft type codes based on the CMS PCG for the MMR. The only raft type codes that the risk calculator will process are those where the implemented column is set to yes.

| RATYPE | Description | ESRD | Supported |
|---|---|---|---|
| CF | Community Full Dual | NO | YES |
| PI | PACE Community Full Dual | NO | NO |
| C | Community (Adjustments before 2017; PACE only beginning 1/2017 and ending 12/2019) | NO | NO |
| CN | Community Non-Dual | NO | YES |
| PK | PACE Community Non-Dual | NO | NO |
| CP | Community Partial Dual | NO | YES |
| PJ | PACE Community Partial Dual | NO | NO |
| D1 | Dialysis (ESRD) Full Dual | YES | YES |
| D2 | Dialysis (ESRD) Partial Dual or Non-dual | YES | YES |
| I3 | Institutional Dialysis (ESRD) Full Dual | YES | YES |
| I4 | Institutional Dialysis (ESRD) Partial or Non-Dual | YES | YES |
| ED | New Enrollee Dialysis (ESRD) | YES | YES |
| C3 | Community Post Graft 4-9 (ESRD) Full Dual | YES | YES |
| C6 | Community Post Graft 10+ (ESRD) Full Dual | YES | YES |
| I1 | Institutional Post Graft 4-9 (ESRD) (Adjustments before 2023) | YES | YES |
| I5 | Institutional Post Graft 4-9 (ESRD) Full Dual | YES | YES |
| I6 | Institutional Post Graft 4-9 (ESRD) Partial Dual | YES | YES |
| I7 | Institutional Post Graft 4-9 (ESRD) Non-Dual | YES | YES |

| RATYPE | Description | ESRD | Supported |
|--------|-------------|------|-----------|
| I8 | Institutional Post Graft 10+ (ESRD) Full Dual | YES | YES |
| I9 | Institutional Post Graft 10+ (ESRD) Partial Dual | YES | YES |
| IA | Institutional Post Graft 10+ (ESRD) Non-Dual | YES | YES |
| E1 | New Enrollee Post Graft 4-9 (ESRD) | YES | YES |
| E2 | New Enrollee Post Graft 10+ (ESRD) | YES | YES |
| C4 | Community Post Graft 4-9 (ESRD) Partial Dual | YES | YES |
| C5 | Community Post Graft 4-9 (ESRD) Non-Dual | YES | YES |
| C7 | Community Post Graft 10+ (ESRD) Partial Dual | YES | YES |
| C8 | Community Post Graft 10+ (ESRD) Non-Dual | YES | YES |
| I | Institutional | NO | YES |
| E | New Enrollee | NO | YES |
| SE | New Enrollee Chronic Care SNP | NO | NO |
| G1 | Graft I (ESRD) | YES | YES |
| G2 | Graft II (ESRD) | YES | YES |
| C1 | Community Post Graft 4-9 (ESRD) (Adjustments before 2023) | YES | NO |
| C2 | Community Post Graft 10+ (ESRD) (Adjustments before 2023) | YES | NO |
| D | Dialysis (ESRD) (Adjustments before 2023) | YES | NO |
| I2 | Institutional Post Graft 10+ (ESRD) (Adjustments before 2023) | YES | NO |
| PA | PACE Dialysis Factor | YES | NO |
| PB | PACE New Enrollee Dialysis Factor | YES | NO |
| PC | PACE Community Post Graft 4-9 | YES | NO |
| PD | PACE Institutional Post Graft 4-9 | YES | NO |

| RATYPE | Description | ESRD | Supported |
|--------|-------------|------|-----------|
| PE | PACE New Enrollee Post Graft 4-9 | YES | NO |
| PF | PACE Community Post Graft 10+ | YES | NO |
| PG | PACE Institutional Post Graft 10+ | YES | NO |
| PH | PACE New Enrollee Post Graft 10+ | YES | NO |
| PL | PACE Graft I | YES | NO |
| PM | PACE Graft II | YES | NO |