

FindACode HCC Risk Score Calculator

API Documentation

About HCC Risk Score Calculation

A patient's risk score is calculated using:

- ICD-10-CM diagnoses (that represent chronic illnesses that the patient has), and
- Demographic factors (such as age, gender, disability status, care setting, etc)

These diagnoses and demographic factors are used as inputs to the Risk Score Calculation APIs. The output is a risk score that roughly indicates the “sickness” of the individual, which could be used to, for example, translate to a dollar amount that could be expected for medical care costs.

Changelog

Version 10

- Add HCCs and descriptions to output

Version 9

- Added CMS v28. Expanded Endpoint Parameter table.

Version 8

- Deprecated `normalization_metadata`: `coding_differences_factor`, added `coding_pattern_adjustment` and `coding_pattern_adjustment_factor`

Version 7

- Added ESRD v24 and Rx v08. Expanded Endpoint Parameter table.

Version 6

- Added section about request information
- Flattened JSON request structure for single and bulk endpoints
- Updated documentation requiring `application/x-ndjson` in bulk endpoints
- Updated screenshot to match new UI
- Removed deprecated “report” endpoints

Version 5

- Added support for CMS v24 and HHS v07. Updated examples.

Version 4

- Added support for HHS v05 “drugs” input

Version 3

- Namespaced API endpoints under `/api/hcc-calc`
- Modified `bulk/status` and `bulk/retrieve` to use a GET parameter for id field
- Added `ref_id` as an optional field for `single-calc` endpoint
- Updated json for single and bulk calc endpoints to be copy&paste ready

Version 2

- Endpoints `/single/calc` and `/bulk/calc` now require “model” and “version” as separate parameters.
- Endpoints `/single/calc` and `/bulk/calc` now require “code_set” parameter
- Added `/single/calc` response format

Version 1

- Initial documentation

API Request Information

The API supports HTTP requests.

Authorization

Authorization is done via a HTTP header “bearer” token in this format:

```
Authorization: Bearer 255|eZlrhMYgIl3og[...]
```

You will be able to generate bearer tokens from the main dashboard at <https://api3.findacode.com> after you have registered and been granted access to one or more API endpoints.

Security note: Protect this token! Don’t let your users have access to this authorization token, as they would be able to make API requests directly on your behalf. If you need to rotate your tokens, simply log in to <https://api3.findacode.com> and from the dashboard there you can create a new token and delete old tokens.

Input Format

The API supports “application/json” or “application/x-ndjson” encoded data requests, using appropriate “Content-Type” headers. See individual endpoints for more information.

API Endpoints Summary

Method	Endpoint	Description	Accepted content types
GET	/hcc-calc	Presents a webpage for single HCC calculation	n/a
POST	/api/hcc-calc/single/calc	Processes a single HCC calculation	application/json
POST	/api/hcc-calc/bulk/calc	Processes calculations in bulk	application/x-ndjson
GET	/api/hcc-calc/bulk/status	Gives status on bulk calculations	n/a
GET	/api/hcc-calc/bulk/retrieve	Retrieves bulk calculation results	n/a

API Endpoints Detail

Endpoint GET */hcc-calc*

Description: Presents a webpage for single HCC calculation

HCC Risk Calculator

Instructions: Enter ICD diagnoses in the boxes below, and demographic information for the enrollee. Click the "Add" links for additional diagnosis boxes. When done, click the "Calculate" button. The resultant HCC Risk Score will display below the form.

Bearer token	<input type="text"/>	
Diagnosis Year	<input type="text" value="2021"/>	Note: Changing the year will refresh the page.
Model	<input type="text" value="CMS-24"/>	
Code Set	<input type="text" value="ICD-10"/>	
Diagnoses	<div><u>Codes</u> <input type="text"/></div> <div><u>HCC (will appear for codes)</u></div>	
Gender	<input type="text" value="Female"/>	
Age	<input type="text" value="65"/> (0-124)	
Dual Eligible Status	<input type="text" value="99 - Unknown"/>	
OREC	<input type="text" value="Age"/>	Original Reason for Medicare Entitlement
New Enrollee	<input type="text" value="No"/>	If the person is a New Enrollee in Medicare
Medicaid	<input type="text" value="No"/>	If months in Medicaid in base year > 0 (payment year for new enrollees)
Institutional:	<input type="text" value="No"/>	If the person is cared for in an institutional setting
Special Needs Plan:	<input type="text" value="No"/>	If the person is an enrollee in a Chronic Disease Special Needs Plan (SNP)
<div><input type="button" value="Calculate"/> <input type="button" value="Add to Bulk Calc Request"/> <input type="button" value="Clear"/></div>		

Note: Under the covers, this page calls </api/hcc-calc/single/calc> and </api/hcc-calc/bulk/calc> for HCC scoring.

Endpoint: POST */api/hcc-calc/single/calc*

Description: Processes a single HCC calculation

Parameters: depends on model, see [“Endpoint Parameters”](#) below

Accepted request content type: **application/json**

Request example:

```
{
  "ref_id": "ABC123", "year": 2021, "model": "CMS", "code_set": "ICD10CM",
  "version": "24", "diagnoses": ["B20"], "age": 65, "gender": "M",
  "institutional": "N", "medicaid": "N", "OREC": 0, "new_enrollee": "N",
  "special_needs_plan": "N", "dual_eligible": "NA"1
}
```

Response content type: application/json

Response format (Non-ESRD):

```
{
  "success": true,
  "model": "CMS",
  "version": "24",
  "score": 0.48,
  "factors": [
    { "descr": "Demographic base factor: [...]", "Factor": "0.316" },
    { "descr": "HCC 115 risk factor", "Factor": "0.164" }
  ],
  "hccs_by_dx": { "B20": [ { "hcc": 1, "title": "HIV\AIDS" } ] },
  "hierarchy_overrides": []
}
```

Response format (ESRD - adds “months_since_transplant_addon_factors”):

```
{
  "success": true, "model": "ESRD", "version": "21", "score": 0.446,
  "factors": [
    { "descr": "HCC 115 risk factor", "factor": "0.155" },
    { "descr": "Demographic base [...]", "factor": "0.291" }
  ],
  "hccs_by_dx": { "B20": [ { "hcc": 1, "title": "HIV\AIDS" } ] },
  "months_since_transplant_addon_factors": {
    "1": "5.815",
    "2": "0.880",
    "3": "0.880",
    "4-9": "2.635",
    "10+": "1.268"
  },
  "hierarchy_overrides": []
}
```

Response format (ESRD v24, no top level 'score' attribute, use 'score_by_months_since_transplant' instead):

```
{
  "success": true,
  "model": "ESRD",
  "version": "24",
  "ref_id": null,
  "factors": [
    {"descr": "Demographic base factor: Functioning Graft...", "factor": 0.301},
    {"descr": "Partial Benefit Dual Status (65+)", "factor": 0.162},
    {"descr": "HCC 18 risk factor", "factor": 0.219}
  ],
  "hccs_by_dx": {"B20": [{"hcc": 1, "title": "HIV\\AIDS"}]},
  "adjustments": [],
  "hierarchy_overrides": [],
  "score_by_months_since_transplant": {
    "1": {
      "score": 5.985,
      "total": 5.985,
      "normalized_total": 5.788
    },
    "2": {
      "score": 0.941,
      "total": 0.941,
      "normalized_total": 0.91
    },
    "3": {
      "score": 0.941,
      "total": 0.941,
      "normalized_total": 0.91
    },
    "4-9": {
      "score": 2.529,
      "total": 3.211,
      "normalized_total": 2.883
    },
    "10+": {
      "score": 0.905,
      "total": 1.587,
      "normalized_total": 1.425
    }
  },
  "normalization_metadata": {
    "payment_year": "2023",
    "esrd_dialysis_normalization_factor": 1.034,
    "esrd_graft_normalization_factor": 1.048,
    "coding_differences_factor": 0.059,
    "coding_pattern_adjustment": "-5.9%",
    "coding_pattern_adjustment_factor": 0.941
  }
}
```

Note: "normalization_metadata.coding_differences_factor" is deprecated and will be removed in a future release. Please use coding_pattern_adjustment and coding_pattern_adjustment_factor instead.

Endpoint: POST ***/api/hcc-calc/bulk/calc***

Description: Processes HCC calculations in bulk

Parameters: depends on model, see [“Endpoint Parameters”](#) below

Accepted request content types: **application/x-ndjson**

Request structure:

Same as “/api/hcc-calc/single/calc” above, but with multiple calcs submitted, delimited with newlines (\n). [Read more about ndjson here.](#)

Example:

```
{ "year": 2021, "model": "CMS", "version": 24, "code_set": "ICD10CM", "ref_id": "ab12", "diagnoses": ["A01.03"], "drugs": [], "age": 65, "gender": "F", "OREC": 0, "new_enrollee": "N", "medicaid": "N", "institutional": "N", "dual_eligible": "NA", "special_needs_plan": "N" }
{ "year": 2021, "model": "CMS", "version": 24, "code_set": "ICD10CM", "ref_id": "ab13", "diagnoses": ["E11.21"], "drugs": [], "age": 68, "gender": "M", "OREC": 3, "new_enrollee": "N", "medicaid": "N", "institutional": "N", "dual_eligible": "NA", "special_needs_plan": "N" }
```

Response content type: application/json

Response format:

```
{
  "success" : true,
  "calc-id" : "{calc-id}",
  "url" : "/api/hcc-calc/bulk/status?id={calc-id}"
}
```

Note: Bulk files are limited to 100,000 calculations and 100MB at a time.

Endpoint: GET ***/api/hcc-calc/bulk/status?id={calc-id}***

Description: Retrieves the status for a bulk calculation

Parameters: calc-id, the id for the calculation as returned from the /bulk/calc call

Response content type: application/json

Response format:

```
{
  "success": true,
  "status" : "requested|running|failed|completed",
  "url" : "/bulk/retrieve?id={calc-id}"
}
```

Endpoint: GET */api/hcc-calc/bulk/retrieve?id={calc-id}*

Description: Retrieves the output file of a bulk calculation

Parameters: calc-id, the id for the calculation as returned from the /bulk/calc call

Response content type: application/x-ndjson

Response format:

```
{ "ref_id": "ab12", "year": 2021, "model": "CMS", "version": 24, "code_set": "ICD10CM", "diagnoses": [ "A01.03" ], "drugs": [ ], "age": 65, "gender": "F", "OREC": 0, "new_enrollee": "N", "medicaid": "N", "institutional": "N", "dual_eligible": "NA", "special_needs_plan": "N", "score": 0.453, "log": "" }
{ "ref_id": "ab13", "year": 2021, "model": "CMS", "version": 24, "code_set": "ICD10CM", "diagnoses": [ "E11.21" ], "drugs": [ ], "age": 68, "gender": "M", "OREC": 3, "new_enrollee": "N", "medicaid": "N", "institutional": "N", "dual_eligible": "NA", "special_needs_plan": "N", "score": 0.61, "log": "" }
```

Note 1: Score factor details are not available with bulk calculations.

Note 2: if there was a problem with processing, this endpoint will return a 400 http code and application/json of the following format:

```
{
  "success": false,
  "message" : "Error message here",
}
```


Endpoint Parameters - Summary

Param	Valid Values	CMS		ESRD		Rx	HHS	
Version		21,22	24,28	21	24	05,08	03,04	05,07
year	2011 - present	Y	Y	Y	Y	Y	Y	Y
model	CMS, ESRD, Rx, HHS	Y	Y	Y	Y	Y	Y	Y
version	21, 22, 23, 24, 28, 03, 04, 05, 07, 08	Y	Y	Y	Y	Y	Y	Y
code_set	ICD10CM, ICD9	Y	Y	Y	Y	Y	Y	Y
ref_id	Any string	Y	Y	Y	Y	Y	Y	Y
diagnoses	list of ICD10CM	Y	Y	Y	Y	Y	Y	Y
age	0 - 124	Y	Y	Y	Y	Y	Y	Y
gender	M, F	Y	Y	Y	Y	Y	Y	Y
OREC	0, 1, 2, 3	Y	Y	Y	Y	Y		
new_enrollee	Y, N	Y	Y	Y	Y	Y		
medicaid	Y, N	Y	Y	Y		Y		
institutional	Y, N	Y	Y	Y	Y	Y		
dual_eligible	NA,00,01,02,03,04,05,06,08,09,**		Y		Y			
special_needs_plan	Y, N	Y	Y					
kidney_status	functioning_graft, dialysis			Y	Y			
low_income	Y, N					Y		
esrd	Y, N					Y		
metal	P, G, S, B, C						Y	Y
enrollment_duration	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12						Y	Y
drugs	list of HCPCS/NDC codes							Y

Endpoint Parameters - Details

Field: **year**

Description: the base year for this calculation

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

Integer, 2011 to present year

Field: **model**

Description: the statistical model used for the calculation

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

CMS - Medicare

ESRD - Medicare ESRD

Rx - Medicare Rx

HHS - U.S. Department of Health & Human Services

Field: **version**

Description: the version of the statistical model used for the calculation

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

21: Valid for CMS, ESRD

22: Valid for CMS

23: Valid for CMS

24: Valid for CMS, ESRD

28: Valid for CMS

03: Valid for Rx, HHS

04: Valid for HHS

05: Valid for Rx, HHS

07: Valid for HHS

08: Valid for Rx

Field: **code_set**

Description: the ICD code set for the submitted diagnoses

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

ICD10CM - The ICD-10-CM code set

ICD9 - The ICD-9 vol. 1 code set

Field: **ref_id**

Description: an identifier for this record. Optional for single calcs.

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

Any alphanumeric string

Field: ***diagnoses***

Description: list of ICD10CM diagnoses

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

Each diagnosis is 3 - 8 characters long, periods included. Example:

```
diagnoses: ["A01.03", "B20", "E11.11"]
```

Field: ***age***

Description: the age of the patient.

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

Integers from 0 - 124, inclusive

Field: ***gender***

Description: the gender of the patient.

Applicable Models: All (CMS, ESRD, Rx, HHS)

Valid Values:

M - male

F - female

Field: ***OREC***

Description: the Original Reason for Medicare Entitlement

Applicable Models: CMS, ESRD, Rx

Valid Values:

0 - Age

1 - Disability/DIB

2 - ESRD

3 - Both DIB and ESRD

Field: ***new_enrollee***

Description: If the patient is a new enrollee in Medicare

Applicable Models: CMS, ESRD, Rx

Valid Values:

Y - Yes

N - No

Field: ***medicaid***

Description: If months in Medicaid in base year > 0 (payment year for new enrollees)

Applicable Models: CMS, ESRD v21, Rx

Valid Values:

Y - Yes

N - No

Field: ***institutional***

Description: If the person is cared for in an institutional setting

Applicable Models: CMS, ESRD, Rx

Valid Values:

Y - Yes

N - No

Field: ***dual_eligible***

Description: If the patient is dual-eligible for Medicaid/Medicare/Other

Applicable Models: CMS versions 22, 23, 24, 28, ESRD v24

Valid Values:

NA - Non-Medicaid

00 - Not Medicare enrolled for the month

01 - Qualified Medicare Beneficiary (QMB)-only

02 - QMB and full Medicaid coverage, including Rx

03 - Specified Low-Income Medicare Beneficiary (SLMB)-only

04 - SLMB and full Medicaid coverage, including Rx

05 - Qualified Disabled Working Individual (QDWI)

06 - Qualifying Individuals (QI)

08 - Other Dual Eligibles (not QMP/SLMB/QWDI/QI) with full Medicaid coverage, incl. Rx

09 - Other Dual Eligibles but without Medicaid coverage

99 - Unknown

** - Enrolled in Medicare A and/or B, but no Part D enrollment data

Field: ***special_needs_plan***

Description: If the person is an enrollee in a Chronic Disease Special Needs Plan (SNP)

Applicable Models: CMS

Valid Values:

Y - Yes

N - No

Field: ***kidney_status***

Description: If the person is currently on dialysis, or has a functioning graft (transplant)

Applicable Models: ESRD

Valid Values:

functioning_graft - Patient has a functioning kidney transplant

dialysis - Patient is on dialysis

Field: ***low_income***

Description: If the person is considered low-income.

Applicable Models: Rx

Valid Values:

Y - Yes

N - No

Field: **esrd**

Description: if person is in any of the following statuses: ESRD dialysis, transplant, post graft.

Applicable Models: Rx

Valid Values:

Y - Yes

N - No

Field: **metal**

Description: ACA Metal Level

Applicable Models: HHS

Valid Values:

P - Platinum

G - Gold

S - Silver

B - Bronze

C - Catastrophic

Field: **enrollment_duration**

Description: # of months of enrollment in benefit year

Applicable Models: HHS

Valid Values:

1 - 1 month

2 - 2 months

3 - 3 months

4 - 4 months

5 - 5 months

6 - 6 months

7 - 7 months

8 - 8 months

9 - 9 months

10 - 10 months

11 - 11 months

12 - all year

Field: **drugs**

Description: Codes representing the medication the user takes.

Applicable Models: HHS versions 05, 07

Valid Values: any valid 5-character HCPCS code or 11-character NDC code (no dashes).

Example:

```
drugs: ["J0282", "00002140701"]
```