

Private and Confidential



## Workbench Overview

## Contents

Sm8rtHealth Rule Editing Functionality overview .....	4
Products .....	4
Custom Data.....	5
Product Languages.....	6
Medical Disclosures .....	7
Disclosure Family Search.....	9
Disclosure Family view .....	10
Disclosure Question Flow view .....	11
Working with Rules .....	13
Upload a ZIP Package .....	14
Upload Language File .....	14
Package All .....	14
Package Modified.....	14
Reset Modified .....	15
Test Rules .....	15
Download Test Report .....	16
Bulk Upload Template.....	16
Rebuild Cache .....	18
Rule Buttons.....	18
Download .....	18
Delete.....	18
Diagram.....	19

Capture an image of a rule diagram .....	20
Versions.....	22
Sections .....	23
Diagram.....	24
Rule Editing .....	25
Rule sheet tabs.....	25
Master .....	25
Rules.....	26
Language .....	27
Families and Paths .....	28
Codes.....	29
Comorbidity Logic .....	30
Path Tables.....	31
Calculations.....	32






















## Sm8rtHealth Rule Editing Functionality overview

Sm8rtHealth was designed to let Underwriters build fully underwritten Insurance products with the option to Manual Underwriting depending on the User circumstance

Underwriting rules are the core of the Sm8 platform. All of the functionality identified in this document are available via API for integration into a 3<sup>rd</sup> party platform **OR** the Sm8rtHealth workbench can be used. The data for the Rule Render is available via API, the 3<sup>rd</sup> party would choose its own visual tools to render this information.

## Products

The first step is to define a Product, a Client can have many Products. Products can be manually created **OR** built from an existing package. Allowing a base product to be loaded and then modified to suit.

Short Description ▼	Internal Name ▼	Product ▼	Created Packages	Loaded Packages	Rules	Sections	Description ▼	Ruleset ▼	Product ▼	Last Loaded Build ▼	Loaded By ▼	Loaded Date ▼	Delete Product
 Life Insurance	SM8RTBaseLife						Risk assessment for life cover with options for Critical Illness, TPD, and Accidental death	BaseLifeRuleSet	BaseLife	BJ6MA0L	clivedemo	24 Jun 22 07:05	
 Health Insurance	SM8RTBaseHealth						Risk assessment for health or medical cover for pre-existing medical conditions	BaseHealthRuleSet	BaseHealth	RJRKLQ	clivedemo	24 Jun 22 07:33	
 Travel Insurance	SM8RTBaseTravel						Risk assessment for travel insurance with for pre-existing medical conditions	BaseTravelRuleSet	BaseTravel	NM2LK3M	clivedemo	24 Jun 22 07:51	

## Custom Data

The product can be customised with Custom Data, this data is usually the Data passed to the Application when its created and is available for and used in the various rules to be configured

Delete	Language ▼	Key ▼	Description ▼	Mand ▼	Data Type	Data For ▼	Applicant Type ▼	For Benefit ▼	Default ▼	DropDownList Codes ▼	DropDownList Description ▼	Min ▼	Max ▼	Order
	en_US	ApplicantType	Applicant Type	<input checked="" type="checkbox"/>	DropDown	Applicant			PolicyHolder	PolicyHolder,Partner,Adult,Child				10
	en_US	Gender	Gender	<input checked="" type="checkbox"/>	DropDown	Applicant			Male	Male,Female				20
	en_US	DateOfBirth	Date of Birth	<input checked="" type="checkbox"/>	DateTime	Applicant			15 Aug 1998					30
	en_US	LifeCoverAmount	Life Cover Amount	<input type="checkbox"/>	Decimal	Applicant		LIFE	100000					40
	en_US	CiCoverAmount	Critical Illness Cover Amount	<input type="checkbox"/>	Decimal	Applicant		CI	200000					50
	en_US	TpdCoverAmount	Total Permanent Disability Cover Amount	<input type="checkbox"/>	Decimal	Applicant		TPD	300000					60
	en_US	AdcCoverAmount	Accidental Death Cover Amount	<input type="checkbox"/>	Decimal	Applicant		ADC	400000					70

## Product Languages

Specify the Languages available for this product

[Product Detail](#) [Custom Data](#) [Benefits](#) [Languages](#) [Path Alias](#)

Edit

Delete	Language Code	Description	Short Description	Declaration	Declaration Header
	English [en_US]	Risk assessment for life cover with options for Critical Illness, TPD, and Accidental death	Life Insurance	<p>It's your responsibility to be absolutely truthful with us and to disclose all information that is relevant to our decision to provide you cover. If not, #Company# may refuse to pay any claim and/or change the terms of this policy or be entitled to void this policy.</p> <p>By checking the box, you confirm that;</p> <p>The information in this application is true and correct; and</p> <p>You are aware of no other circumstance which might render you more likely than an average member of the community to suffer a disability or illness covered under this policy; and</p> <p>You are aware of no other circumstance which might render you to have longevity less than the average member of the community; and</p> <p>You aware of no other information which might be relevant to #Company# decision to offer you cover; and</p> <p>You have read and understood this life cover policy and you agree to abide by the terms as set out in the policy document statement.</p>	Personal declaration

## Medical Disclosures

At the heart of Sm8rtHealth are medical disclosures, these are the conditions that a Applicant may wish to divulge during the Application process. A Product can be configured with an essentially unlimited number of Medical Disclosures, once configured Rules are attached to the Disclosures.

Disclosures are broken down into Disclosure Families, and can also be grouped by Disclosure Class with a rule attached at either the Family or Class, depending on the Disclosure. For example you may have 2 Disclosures “left ankle fracture” and “right ankle fracture”, so instead of writing 2 separate rules for each, you can assigned a Class to the Disclosures and write a single rule attached to the Class that covers both Disclosures, with the disclosure phrase being a placeholder in any question wording.

Disclosures can be added individually as part of a rule upload, OR Sm8rtHealth allows for Bulk Uploading of Disclosures using Excel. Disclosure families can also be referenced by multiple Disclosure terms, which in effect are different medical wordings for the SAME medical condition. In the example below if the Applicant was to select “adrenal cancer” and “adrenal gland cancer” in an elastic search, they would only receive ONE set of questions and ONE outcome (i.e. Load/Exclude etc) for that Disclosure.

## Disclosure browser

By Class

By Category

- ▶ BaseHealthRuleSet RuleSet
- ▶ BaseLifeRuleSet RuleSet
- ▼ BaseTravelRuleSet RuleSet
  - ▼ BaseTravel Product
    - ▶ BLO Blood and Endocrine 148 families
    - ▼ CAN Cancer, tumours or abnormal growth 169 families
      - ▼ CMT Cancer including malignant tumour [87 families]
        - ▼ CAN01
          - ▶ [A8900 - \(CAN01\) Abdominal cancer \[1 disclosure\]](#)
          - ▶ [A8670 - \(CAN01\) Abdominal wall cancer \[1 disclosure\]](#)
          - ▶ [A8671 - \(CAN01\) Adnexal cancer \[1 disclosure\]](#)
          - ▼ [A8052 - \(CAN01\) Adrenal gland cancer \[5 disclosures\]](#)
            - ▶ 8636 adrenal cancer
            - ▶ 8637 adrenal gland cancer
            - ▶ 8641 adrenocortical cancer
            - ▶ 8874 cortical malignant neoplasm adrenal gland
            - ▶ 8859 malignant neoplasm of adrenal gland
          - ▶ [A8847 - \(CAN01\) Bartholin's gland cancer \[1 disclosure\]](#)
          - ▶ [A8248 - \(CAN01\) Biliary cancer \[5 disclosures\]](#)
          - ▶ [A8078 - \(CAN01\) Bladder cancer \[11 disclosures\]](#)



## Disclosure Family Search

Once Disclosures are configured, Underwriters can easily search for medical disclosures to see how each has been setup, and the Rule for each

Rule Set

BaseTravelRuleSet

Disclosure Term Search

adrena

adrenal gland - A0229 (BaseTravelRuleSet) [ adrenal crisis , adrenal disorder , adrenal gland disease , adre

adrenal gland - Addison - A2234 (BaseTravelRuleSet)

adrenal gland - Conn - A2255 (BaseTravelRuleSet)

adrenal gland - hyper - A2238 (BaseTravelRuleSet) [ adrenal gland hyperfunction ]

adrenal gland - hypo - A2239 (BaseTravelRuleSet) [ adrenal gland insufficiency ]

Adrenal gland cancer - A8052 (BaseTravelRuleSet) [ adrenal cancer , adrenal gland cancer , cortical malign


Adrenal gland tumour - A8038 (BaseTravelRuleSet) [ adrenal adenoma , adrenal gland tumour , adrenal hy

Tuberculosis - A5026 (BaseTravelRuleSet) [ adrenal tuberculosis ]

## Disclosure Family view

Family Details

Question Flow

 A0229 Travel Insurance (BaseTravelRuleSet)

Family Code

A0229

Family Name

adrenal gland

Category Code

BLO - ADR

Category

Other glandular disease

Parent Category

Blood and Endocrine

Class Code

BLO05

Update Paths for Travel Insurance (BaseTravelRuleSet)

Existing medical conditions [Primary] (EMC)

EMC

(A)

(J)

(K)

(L)

Exclude

10

50

100

Update Weighting

Current Weighting

20

Update

Delete

Enable

Disclosures for adrenal gland - A0229

All Disclosures

adrenal crisis - 2235

adrenal disorder - 2236

adrenal gland disease - 2237

adrenalectomy - 2241

adrenocortical atrophy - 2242

adrenocortical calcification - 2243

adrenocortical haemorrhage - 2244

adrenocortical infarction - 2247

Adrenogenital disorders - 2249

adrenogenital syndrome - 2250

aldosteronism - 2254

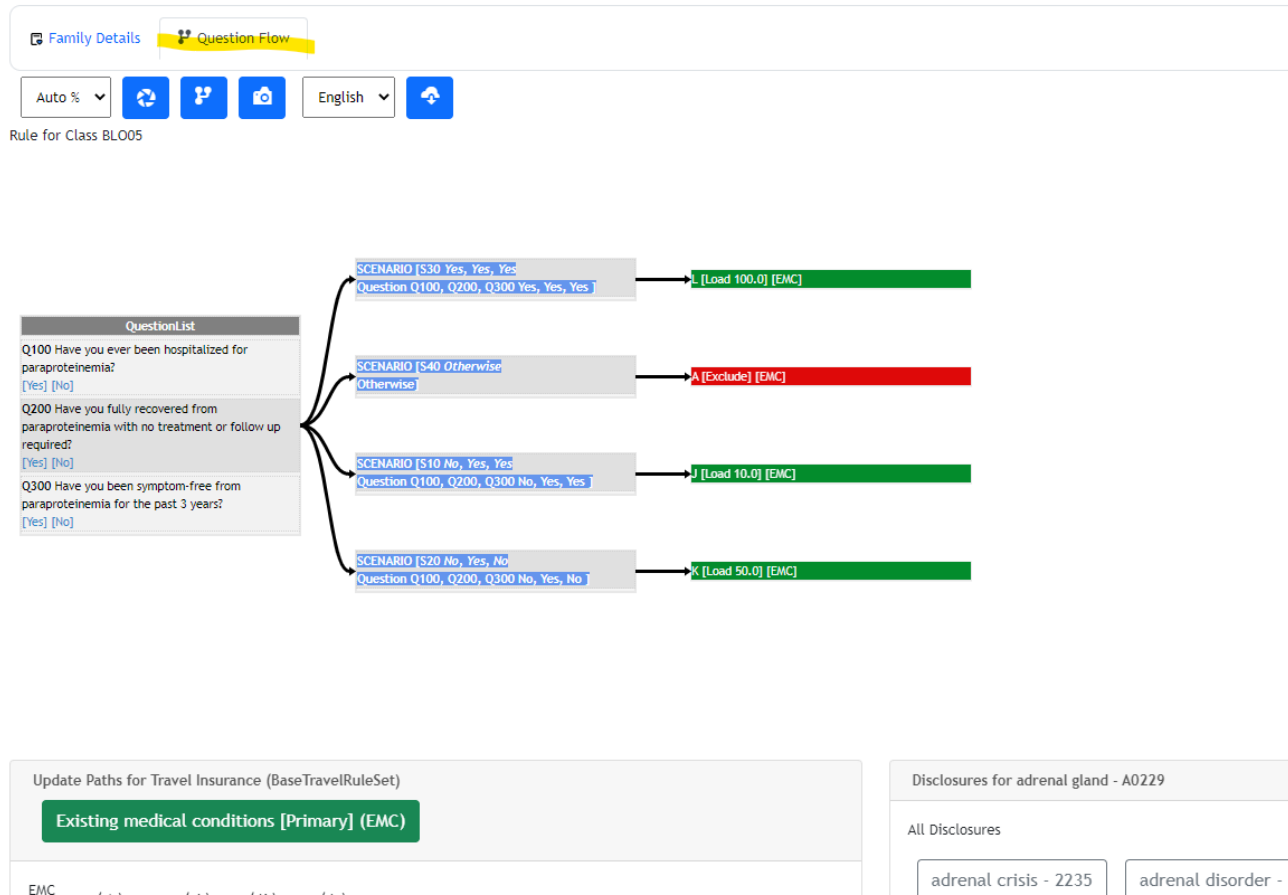
Disorder of adrenal gland - 2256

increased production of cortisol - 2262

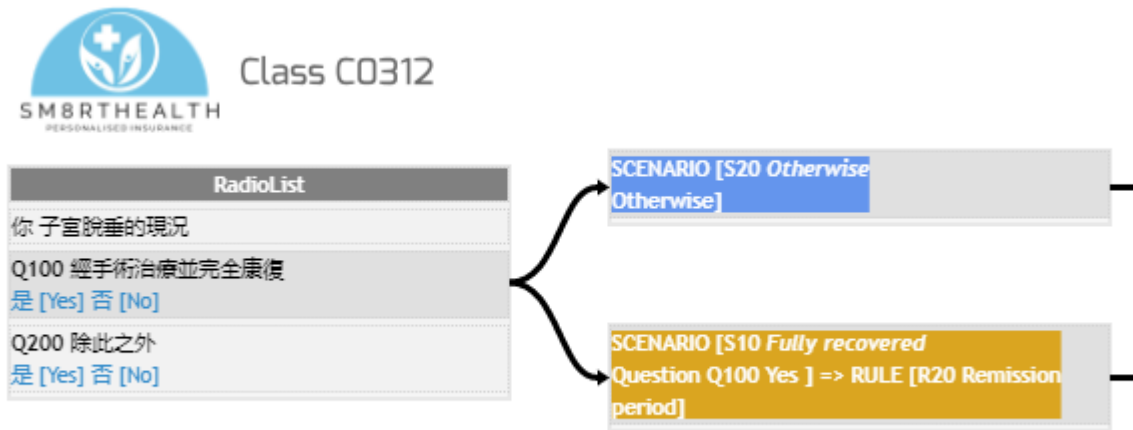
medullo-adrenal hyperfunction - 0229

## Disclosure Question Flow view

The Question Flow Tab displays the Rule associated with this Family or Class, the rule can be viewed in any of the Languages your product supports




Example of a Chinese rendering of a rule



The rule can be download from here using the Download button, modified and reuploaded

## Working with Rules

All rules can be listed on the Rules page.

 Health Insurance (BaseHealthRuleSet)

Upload a ZIP package

Choose File No file chosen

Upload Language file

























Choose File No file chosen

Bulk Upload

Choose File No file chosen

Create Language TemplatePackage AllPackage ModifiedReset ModifiedTest rulesDownload Test ReportBulk Upload TemplateRebuild Cache

Permutations : 4716 Families : 1814 Disclosures : 7886 Paths : 5393

Download	Delete	Rebuild Render	Diagram	Versions	Code	Version	Rule Type	Created By	Effective Date	Description	Section	Test
					MIS01	3 	Class	silviabase	20 Sep 22 11:00	Major infectious	Miscellaneous	✓ Permutations: 8
					BloodEndocrineSystem	3 	Section	silviabase	17 Aug 22 07:43	Blood & Endocrine System	BloodEndocrineSystem	✓ Permutations: 15
					<a href="#">A9539</a>	3 	Family	silviabase	09 Aug 22 11:32	Abnormal liver function test results	Digestive	✓ Permutations: 66
					<a href="#">A1904</a>	4 	Family	silviabase	09 Aug 22 11:31	Hepatitis C	Digestive	✓ Permutations: 18

### Upload a ZIP Package

Rules in this product can be updated by providing a Built Package from another environment, this is typically used to Bulk load rules or modified rules from say Development environment to UAT Environment, then Production environment (functionality is available via API for automated deployment via a 3<sup>rd</sup> party platform if needed)

### Upload Language File

Sm8rtHealth supports multiple languages. This is achieved by first building your product in English, then using the “Create Language Template” option above which creates a Excel spreadsheet of every piece of text that needs converting with a placeholder foreach language. File can be given to a native language speaker or service to update. Once updated with other languages, this file can be loaded here. The Language file contains various sections like

Language	Code		
en_US	A1001	1001	bladder cancer
zh_HK	A1001	1001	膀胱癌
en_US	A1002	1002	bone cancer
zh_HK	A1002	1002	骨癌
en_US	A1003	1003	brain cancer
zh_HK	A1003	1003	腦癌
en_US	A1004	1004	breast cancer
zh_HK	A1004	1004	乳癌
en_US	A1005	1005	cervix cancer
zh_HK	A1005	1005	子宮頸癌
en_US	A1006	1006	endometrial cancer
zh_HK	A1006	1006	子宮內膜癌
en_US	A1007	1007	kidney cancer
zh_HK	A1007	1007	腎臟癌

this.

### Package All

Builds a Package of ALL rules, suitable for deployment to another environment

### Package Modified

Builds a Package of Modified rules only, suitable for deployment to another environment

## Reset Modified

Resets any modified flags, (used in conjunction with the Package Modified function above). Once your package has been deployed, you would press this.

## Test Rules

A key aspect of having many hundreds of Underwriter Created rules is HOW do you test these to ensure functionality has not been broken, or if any changes to functionality in the Underwriting engine has broken any aspect of a rule. Manually tested every single rule is in most cases not practical every time a code release is made.

The Test Rules functionality runs the Underwriting Engine in a virtual mode, analysing every possible outcome from a Underwriting rule, and ensure these outcomes match the definition the Underwriter previously defined. With any errors displaying in the “Test” column of the rules. “Permutations” indicates the number of virtual applications that were created to fully test a rule.

As you can see above, the Total Permutations for this rule set is 4716, meaning if manual tested was done, then 4716 Applications would have needed to be created to test every possible path and outcome of all rules. Automation of this process, removes that need.

This process also allows Sm8rtHealth Developers to add additional Validation rules to the System in case a rule bug is detected, or a rule has been misused in some way by a Rule Writer. This process will then identify other rules that would have this same issue and need to be resolved.

## Download Test Report

A test report can be downloaded as a PDF, this is useful for clients as part of their own Deployment processes



Created 26 Jan 2023 by clivebase from SM8RTBASERULES, printed 26 Jan 2023

Total tests run 4,716

Tests For SM8RTBASERULES SM8RTBaseHealth using ruleset BaseHealthRuleSet							
A0009	Family	B12 deficiency	silviabase	13 Jul 22	BloodAndEndocrine	10 tests run	• Tested Ok
A0028	Family	iron deficiency	silviabase	13 Jul 22	BloodAndEndocrine	16 tests run	• Tested Ok
A0071	Family	ITP	silviabase	13 Jul 22	BloodAndEndocrine	12 tests run	• Tested Ok
A0168	Family	DM	silviabase	15 Jul 22	BloodAndEndocrine	42 tests run	• Tested Ok
A0741	Family	underactive or overactive thyroid	silviabase	17 Jul 22	BloodAndEndocrine	14 tests run	• Tested Ok

## Bulk Upload Template

Bulk upload is a process whereby large changes can be made across your RuleSet, everything from moving Families around Classes to updating wordings, normalising paths etc.

As Rulesets can be large, having to manually update individual families or add data can be very time consuming if you had 10's or several hundred items to do.

Bulk upload lets the rule write make changes, and comes with predefined types of bulk uploads they can do.

This button lets you download a template, which once populated is uploaded using the "Bulk Upload" button above.

The template includes Help about the functionality available and how to use it, there are many functions available, and more can be added if needed.



UploadType	
1 UploadType	Column1
Add a Disclosure to a Family (Will be added as English to add multi lingual later, download the Language file)	
2	Family Code (can be ex
3	reference to a NEW on
4	Upload, ie NEW1
5	ADDDISCLOSURE
6	NEW1
7	
8	
9 UploadType	Column1
Create a new Parent Category (These codes are then used for Elastic Search)	
10	Category Code (ALL Up
11	No Slashes, No Numbe
12	EMPL
13	CREATECATEGORY
14	
15	
16	
17 UploadType	Column1
Create a New Disclosure Family	
18	NEW1 (Increment for e
19	NEW1, NEW2)
20	NEW1
21	CREATEFAMILY
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### Rebuild Cache

Rebuilds the internal Sm8rtHealth Cache, only used if some direct updates have been applied to the Database. Generally this is not used.

### Rule Buttons

#### Download

Downloads the latest version of this rule in an Excel template that can be modified and reuploaded

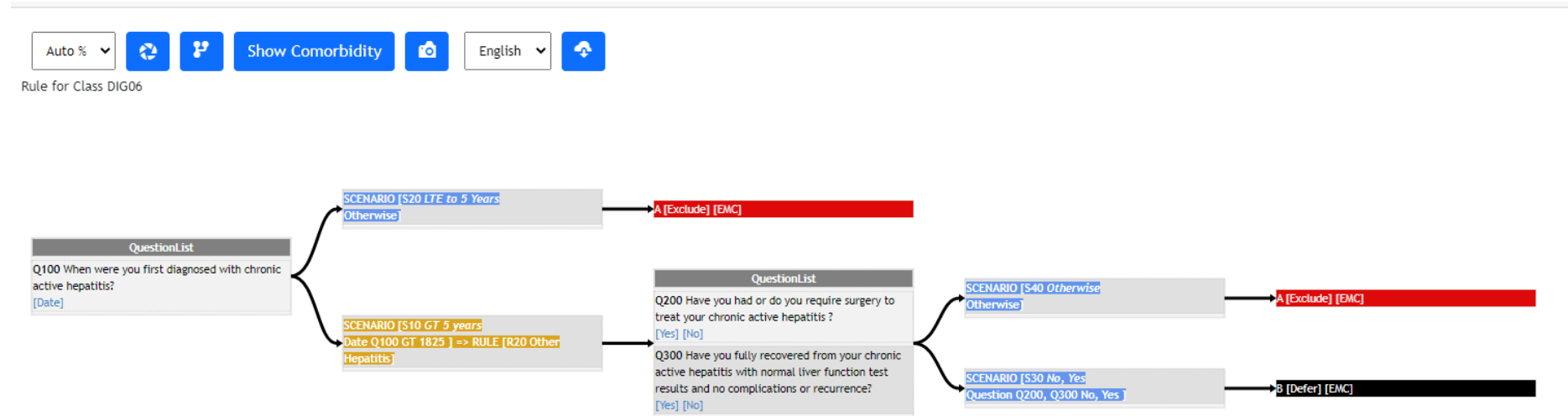
#### Delete

Deletes this rule

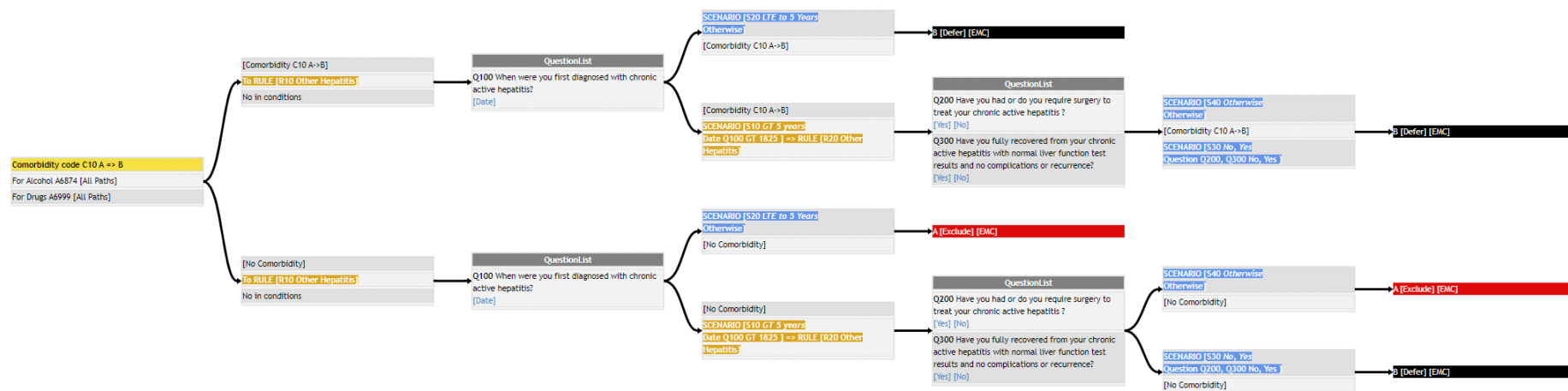
## Diagram

A rule diagram can be displayed which is generated from the Rule definition you upload.

The diagram displays the flow of questions and the “path” outcomes



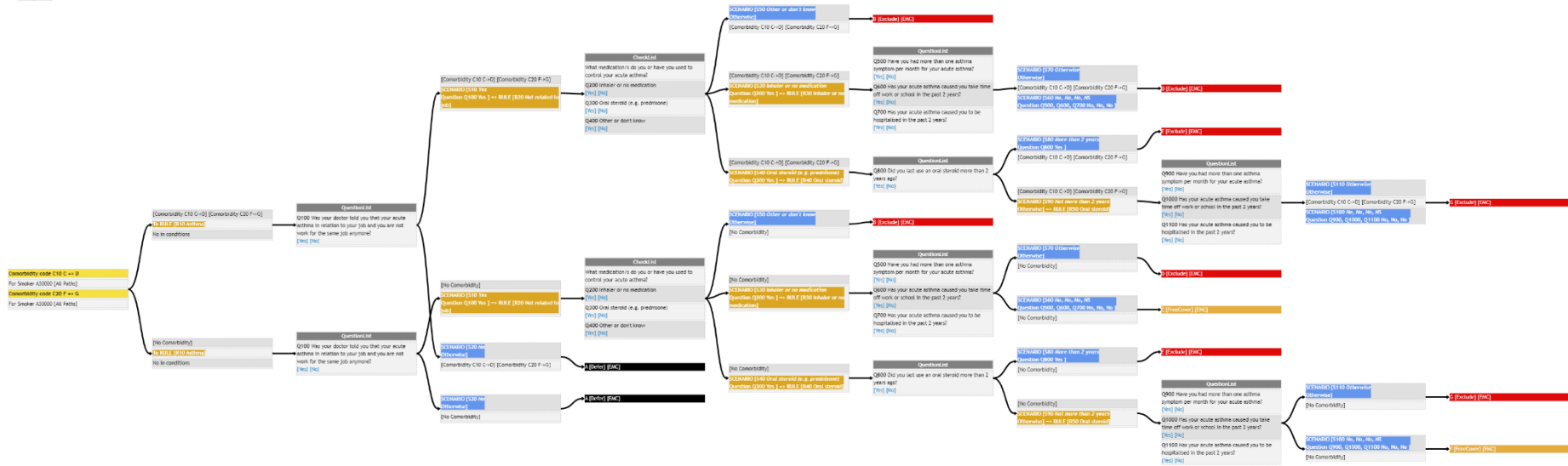
If configured for a rule, and rule can contain Comorbidities which are other disclosures than if combined with this disclosure will alter the outcome of the rule, pressing the “Show Comorbidity” button will display these, Rule will now render with the flow IF a comorbidity was active.



Capture an image of a rule diagram

As Rule Diagrams can potentially be very large, you can either scroll around on screen, OR download a image of this rule using the Camera button above




Attached is an example of a larger question flow when downloaded as a .png file



## Versioning

Prior uploaded versions of this rule can be accessed here. Click the button will display a popup of versions available to download/view.

Previous rule versions for SM8RTBaseHealth DIG04


Download	Date Created	FileName
	09 Aug 22 10:57	RULE-BaseHealthRuleSet-BaseHealth-DIG04-(2022-08-08T22:57:11)-V5-silviabase-RULEID4046.xlsx
	28 Jul 22 10:18	RULE-BaseHealthRuleSet-BaseHealth-DIG04-(2022-07-27T22:18:54)-V4-silviabase-RULEID3803.xlsx
	07 Jul 22 09:59	RULE-BaseHealthRuleSet-BaseHealth-DIG04-(2022-07-06T21:59:50)-V3-silviabase-RULEID3248.xlsx
	04 Jul 22 09:00	RULE-BaseHealthRuleSet-BaseHealth-DIG04-(2022-07-03T21:00:02)-V2-silviabase-RULEID3070.xlsx

## Sections

A Section is essentially a High-Level rule that is the glue between the individual disclosures. Its very similar to a Disclosure rule but operates slightly differently.



















Your product can be broken down into Sections, and API consumer can choose to work with any of the Sections individually, OR they can operate the product end to end, the Section order is defined by the Rule Writer. Sections can also be enabled or disabled as needed.

Sections can be available for all product “benefits” OR for specific benefits, For example your Product may have a Add on for something like “Extended cover”, a Section can be defined that will ONLY run when the Application has this Benefit added, you can also specifically Exclude Sections IF a specific Benefit has been added to an Application.

 Health Insurance (BaseHealthRuleSet)

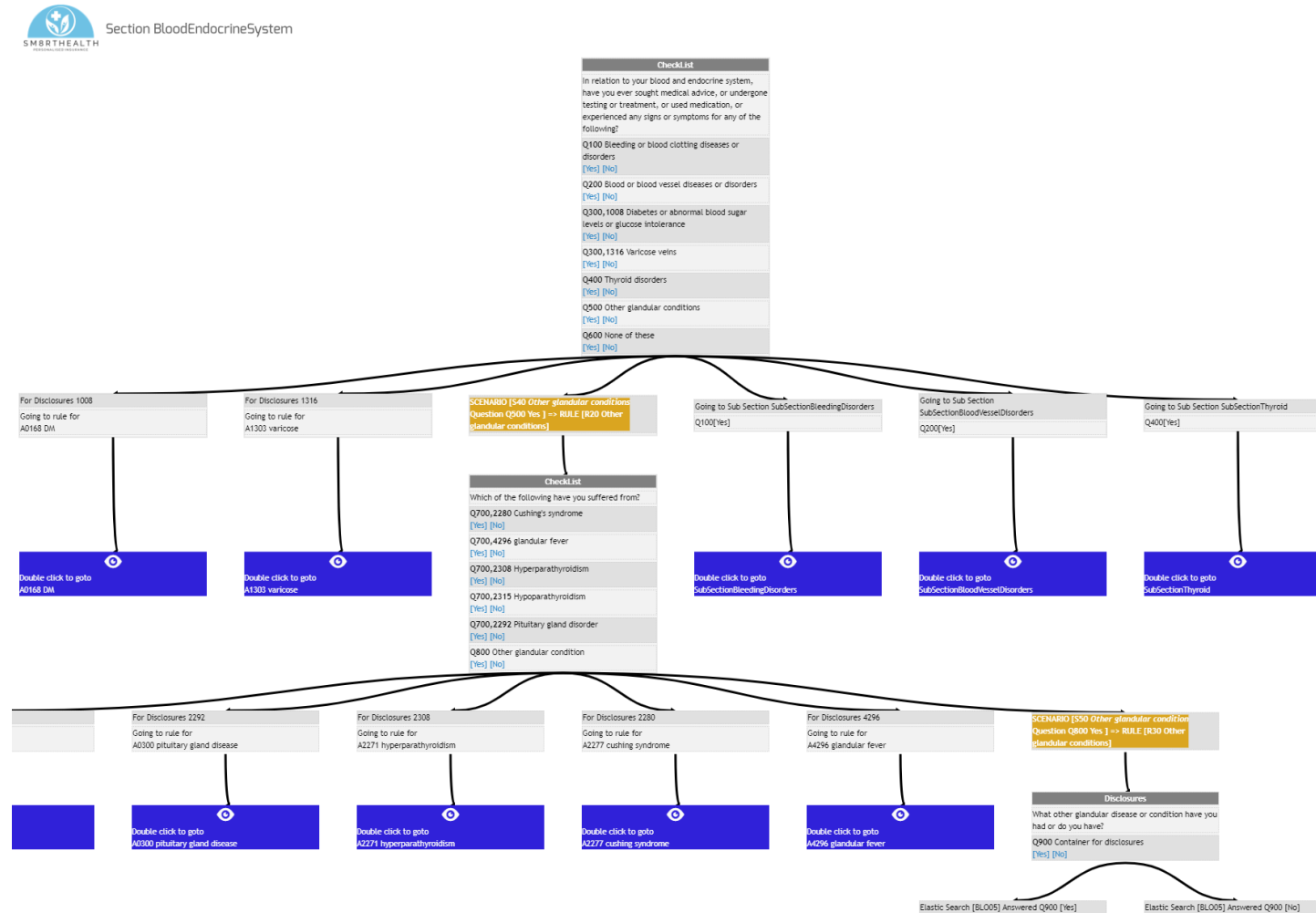
[Download New Template](#)

[Edit](#)

Rule	Description	Runs For Benefit	Wont Run For Benefit	Section Order ↑	Active	Download	Regenerate	Diagram
GeneralSection	BMI Gender Smoker and Assisted Living	EMC		10	<input checked="" type="checkbox"/>			
CirculatorySection	Heart conditions including cholesterol and blood pressure conditions	EMC		20	<input checked="" type="checkbox"/>			
DigestiveSystem	Digestive system including gallbladders, liver, pancreas, hernias, digestive ulcers and other gastrointestinal disorders and conditions	EMC		30	<input checked="" type="checkbox"/>			
RespiratorySystem	Respiratory conditions including asthma, sleep apnoea and other lung, chest and breathing problems	EMC		40	<input checked="" type="checkbox"/>			
CancerSection	Cancer Section	EMC		50	<input checked="" type="checkbox"/>			
BloodEndocrineSystem	Blood and endocrine including diabetes, blood and bleeding disorders and glandular conditions	EMC		60	<input checked="" type="checkbox"/>			

## Diagram

The diagram rendered is very similar to that of the Disclosure diagram, except it renders top down for clarity and to differentiate for a Disclosure rule.



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## Rule Editing

All rules in Sm8rtHealth are edited using Excel, its worth noting the system does not run on Excel, it uses Excel as a convenient and fast way to modify rules, a visual web based rule editor is very slow when compared to using a Excel approach as a Underwriter would have 100's of rules to write, and using Excel allows Rule Writers to pick bits and pieces from other rules, or take a similar rule and change rather than starting from scratch each time

There is extensive validation for these Excel rules to ensure Rule Writers don't make mistakes, combined with renumbering and recreation of Rule templates once uploaded to ensure Rules are consistent

### Rule sheet tabs

Master

Contains the parent definition for the rule

	A	B	C	D	E	F	
1	Type	Sub Type	Code	Business Channel	Product	RuleSet	Se
2	Family	Underwriting	A1904	SM8RTBASERULES	BaseHealth	BaseHealthRuleSet	Di
3							
4							
5							
6							
7							
8							
9							
	<div>1.Master 2.Rules 3.Language 4.Families &amp; Paths 5.Codes 6.Combo L ...</div>						

## Rules

The rules tab is where the rule is specified. In the this example. The rule (R10) is for a “QuestionList” of 3 Questions Q100,Q200,Q300, each question has available answers of Yes and No.

This rule has 2 Scenarios, Scenario S10 is defined in the ANSWER section using the “specific rule” question which runs and if the condition of Q100,Q200,Q300 of No,Yes,No was answered leads to the “Outcome” for the SCENARIO of “A” , Path “A” is defined in the Disclosure family for this rule and would be something like Exclude,Load

If Scenario S10 was NOT satisfied , then Scenario S20 would run and as Scenario S20 is defined as “IsOtherwise” True, would add the Path “B” to the Application. For Disclosure rules, Scenarios run top to bottom and stop running once a Scenario Matches, ensure only a SINGLE outcome for a Disclosure Family is found.

A Rule can also lead to other rules, Other questions etc. below is a simple example of 3 questions leading to 2 possible Outcomes

	A	B	C	D	E	F	G	H	I	J	
1	Type	Rule	QuestionType	QuestionType	Question Sort Order	Description					
2	RULE	R10	QuestionList		QuestionNumber	Hepatitis C					
3											
4	Type	Rule	Question	Gender	Question Text	Clears	Header	Header Help	Help	Answers	Sum
5	QUESTION	R10	Q100		Has your <disclosure> first diagnosed in the past year?	False				Yes,No	
6	QUESTION	R10	Q200		Has your last 3 liver function tests been normal?	False				Yes,No	
7	QUESTION	R10	Q300		Has your <disclosure> caused liver cirrhosis, liver fibrosis or liver failure?	False				Yes,No	
8											
9	Type	Rule	Scenario Id	Description	Outcome	Destination	Destination	Destination	IsOtherwise		
10	SCENARIO	R10	S10	Not in the past year,Normal,No	A				False		
11	SCENARIO	R10	S20	Otherwise	B				True		
12											
13	Type	Rule	Scenario Id	Question Number	Specific Rule	Answer/Oper	Variable	Variable2	Variable3	Variable4	Var
14	ANSWER	R10	S10	Q100,Q200,Q300	Question	No,Yes,No					
15											
16											
17											
18											
19											
20											
21											
22											
23											

## Language

The Language tab contains any language specific elements of the Disclosure Family and its rule, including any wordings Help texts etc.

A	B	C	D	E	F	G
Type	Family Code	Language Code	Text Type	Text		
FAMILY	A1904	en_US	Family	Hepatitis C		
Type	Family Code	Gender	Identifier	Language Code	Text	
DISCLOSURE	A1904	Undefined	1904	en_US	hepatitis C	
DISCLOSURE	A1904	Undefined	3892	en_US	hepatitis C virus carrier	
DISCLOSURE	A1904	Undefined	3893	en_US	hepatitis C virus positive	
Type	Family Code	Benefit	Text Type	Language Code	Path Code	Wording
PATH	A1904	EMC	Wording	en_US	A	Any consultations, investigations or treatment in relation to <disclosure> and/or any underlying cause and associated manifestation and/or any complications thereof.
Type	Language Code	Question Number	Question Text	Question	Help	Header Help
QUESTION	en_US	Q100	Has your <disclosure> first			
QUESTION	en_US	Q200	Has your last 3 liver function			
QUESTION	en_US	Q300	Has your <disclosure>			

1.Master
2.Rules
3.Language
4.Families & Paths
5.Codes
6.Combo Logic
7.Path Table ...

## Families and Paths

The families and paths contains the definition for the Disclosure family (A1904).

All the possible paths used in the rule are listed here, for example Path A for Benefit EMC would be a “Exclude”

	A	B	C	D	E	F	G	H	I
1	Type	Family	Description	Category	Category Description	SubCategory	SubCategory Description	Enabled	Weighting
2	FAMILY	A1904	Hepatitis C	DIG	Digestive	HEC	Hepatitis C	True	20
3									
4	Type	Family	Benefit	Path	Type	Number	Text	Order	
5	PATH	A1904	EMC	A	Exclude			0	
6	PATH	A1904	EMC	B	Defer			0	
7									
8									
9									
10									
11									
12									
13									

1.Master2.Rules3.Language4.Families & Paths5.Codes...

## Codes

Attached to each family can be an optional set of Codes. Underwriters often want to associate Disclosures and Outcomes with industry specific codes such as SnowMed Codes, or IcdCodes, or some variation of an internal code, any sort of Code is supported.

These codes will be provided back to the API as part of the Applicant Outcome from an Application if this Disclosure was disclosed by the Applicant

Codes are specific to a “Path”

F12										
	A	B	C	D	E	F	G	H	I	J
1	Type	Family Code	Path	Benefit	Code Group Name	Code Group Description	Code	Description	Value	Primary (one only)
2	CODE	A4044	A	EMC	GovCode	GovCode	GovCode		614	False
3	CODE	A4044	A	EMC	IcdCode	IcdCode	IcdCode		Z82	False
4	CODE	A4044	A	EMC	TimePeriod	TimePeriod	TimePeriod		0	False
5	CODE	A4044	B	EMC	GovCode	GovCode	GovCode		614	False
6	CODE	A4044	B	EMC	IcdCode	IcdCode	IcdCode		Z82	False
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
1.Master 2.Rules 3.Language 4.Families & Paths 5.Codes 6.Combo L ...										

## Comorbidity Logic

Comorbidity is when you have one medical condition, that when combined with a different medical condition can result in a different outcome. These comorbidities can be setup against any disclosure and will run IF an applicant selects this Disclosure in combination with another.

In this example, if the Applicant had the disclosure in this rule, and combined with any of the other Disclosure Family or Classes specific in COMBOSCENARIO which resulted in a Path A, that would be remapped to a Path B, in this example Path A was an Exclude, and Path B was a Defer. (specified on Families and paths sheet)

	A	B	C	D	E	F	G	H
1	Type	ComboRule	Description	Path From	Path To			
2	COMBO	C10	Alcohol and Drugs	A	B			
3								
4	Type	ComboRule	Description	Combo Type	Family/Class	Include FreeCover		
5	COMBOSCENARIO	C10	Alcohol	Family	A6874	True		
6	COMBOSCENARIO	C10	Drugs	Family	A6999	True		
7	COMBOSCENARIO	C10	Hep B	Family	A1903	True		
8	COMBOSCENARIO	C10	Hep D	Family	A3894	True		
9								
10								
11								
12								
13								
14								
<div> <span>◀ ▶</span> <span>1.Master</span> <span>2.Rules</span> <span>3.Language</span> <span>4.Families &amp; Paths</span> <span>5.Codes</span> <span>6.Combo Logic</span> <span>7.Path Tables</span> </div>								

## Path Tables

Path Tables is where the Rule Writer can create Tables of data to lookup values based on medical data, for example BloodPressure, Lipids, BMI, Cholesterol etc. In this example of a BMI table, you can see for Age Range 12-40 if their BMI was in the range of 0-17 they would get a Path of J (J being defined on the Families and Paths sheet). Then we have BMI ranges for Age 40 to 50, and so on.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Code	Identifier	Family Code	Benefit	Path	Type	Table Description	YRange	XRange	Default			
2	TABLESET	TABLESET10	A42000	EMC	A	Bmi	Age	BMI		H			
3													
4	Code	Table Set Identifier	Identifier	Benefit	Family Code	Path	Description	Range	Range				
5	TABLE	TABLESET10	TABLE10	EMC	A42000	A	Age from 12 to 40	12	40				
6													
7	Code	Table Set Identifier	Table Identifier	Benefit	Family Code	Table Path	Description	YRange	YRange	XRange	XRange End	Destination Path	
8	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 0 to 17	0	17			J	
9	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 17 to 30	17	30			B	
10	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 30 to 35	30	35			I	
11	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 35 to 37	35	37			E	
12	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 37 to 40	37	40			F	
13	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 40 to 45	40	45			G	
14	ROW	TABLESET10	TABLE10	EMC	A42000	A	BMI 45 to 999	45	999			H	
15													
16	Code	Table Set Identifier	Identifier	Benefit	Family Code	Path	Description	Range	Range				
17	TABLE	TABLESET10	TABLE20	EMC	A42000	A	Age from 40 to 50	40	50				
18													
19	Code	Table Set Identifier	Table Identifier	Benefit	Family Code	Table Path	Description	YRange	YRange	XRange	XRange End	Destination Path	
20	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 0 to 17	0	17			J	
21	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 17 to 30	17	30			B	
22	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 30 to 35	30	35			I	
23	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 35 to 38	35	38			D	
24	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 38 to 40	38	40			E	
25	ROW	TABLESET10	TABLE20	EMC	A42000	A	BMI 40 to 45	40	45			G	

## Calculations

Calculated values can be specified on the Calculations tab, Calculated values are then able to be used in the Rule flow, or to determine any sort of Risk Score for example, or other mathematical calculation.

Below is an example of calculating a Travel Risk Score. CALCULATIONVARIABLES each use the predefined “Type” method, which takes the arguments from the other columns, instructions on how to use each method is on the “Rule Help” sheet.

In this example we have the CALCULATIONVARIABLES V10,V20,V30 being used in the CALCULATIONSCENARIO to produce 2 values “GrossTravelScore” and “TravelRiskScore”

We also have 2 CALCULATIONVARIABLE’s to calculate “Days Before Departure” and “Trip Duration in Days”

	A	B	C	D	E	F	G	H	I	J	K
1	Type	Identif	Description	BenefitCodes							
2	RULECALCULATION	C10	Calculate Travel Score	EMC							
3											
4	Type	Identif	Calc Scenario Id	Description	Formula	Save Result	Output Field				
5	CALCULATIONSCENARIO	C10	E10	Gross Travel Score	(CurrentLoad + CurrentWeighting)	True	GrossTravelScore				
6	CALCULATIONSCENARIO	C10	E20	Travel Risk Score	GrossTravelScore*TravelFactor	True	TravelRiskScore				
7											
8	Type	Identif	Calc Scenario Id	Question	Specific Rule	Answer/Operator	Variable	Variable2	Variable3	Variable4	Variable5
9											
10	Type	Identif	Variable Id	Description	Save Result	Variable Name	Type	Variable1	Variable2	Variable3	Variable4
11	CALCULATIONVARIABLE	C10	V10	Calculate Total Loading	False	CurrentLoad	Loading	Current	Load		
12	CALCULATIONVARIABLE	C10	V20	Calculate Total Weightings	False	CurrentWeighting	Weighting	Current			
13	CALCULATIONVARIABLE	C10	V30	Calculated Travel Factor	True	TravelFactor	Loading	Current	Score		Travel Factor
14	CALCULATIONVARIABLE	C10	V40	Days before Departure	True	DaysBeforeDeparture	DateDiff	DateCreated	DepartureDate		
15	CALCULATIONVARIABLE	C10	V50	Trip Duration in Days	True	TripDuration	DateDiff	DepartureDate	ReturnDate		
16											
17											
18											
19											
20											
21											

These calculations run and are available in the Application Outcome, currently displayed when viewing a completed Application in the workbench



Calculations	
Calculated Travel Factor	0.6
Days before Departure	126
Trip Duration in Days	8
Gross Travel Score	355
Travel Risk Score	213

With a breakdown of that information contained in a separate Calculations Page for the Application, containing more technical information

[Application](#)[Underwriting](#)[PDS](#)[Calculations](#)[Raw Response](#)[Update Custom](#)

## Existing medical conditions (EMC) Applicant Calculations

Rule	Type	Field	Identifier	Value	Valid	Formula	CalculatedFormula	Description
TravelRiskScore	Variable	TravelFactor	C10/V30	0.6	True	Loading	.6	Calculated Travel Factor
TravelRiskScore	Variable	DaysBeforeDeparture	C10/V40	126	True	DateDiff	126	Days before Departure
TravelRiskScore	Variable	TripDuration	C10/V50	8	True	DateDiff	8	Trip Duration in Days
TravelRiskScore	Formula	GrossTravelScore	C10/E10	355	True	(CurrentLoad + CurrentWeighting)	(275.0 + 80)	Gross Travel Score
TravelRiskScore	Formula	TravelRiskScore	C10/E20	213	True	GrossTravelScore*TravelFactor	355.0*0.6	Travel Risk Score