



User manual for the Roach Formula

Version 2.0, July 2026, in English



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1. The Evidencio platform

The Evidencio platform facilitates the creation, use, validation and implementation of medical prediction algorithms and clinical decision support tools. This User Manual specifically relates to the Roach Formula. The User Manual can also be referred to as the Instructions For Use (IFU). The Roach Formula meets the requirements laid down in: Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU. Compliance with the applicable regulations is provided by means of declaration of conformity.

Throughout this manual CE-marked content and the term medical device are used interchangeably.

2. Disclaimer

Evidencio provides certain CE-marked information, calculators, equations, and algorithms (tools) on any of its websites, applications, apps, or services. These tools may only be used in accordance with the intended use / intended purpose that has been published with the respective CE-marked tool.

In general, and unless explicitly stated otherwise, CE-marked tools on Evidencio are only to be used by healthcare professionals and are not for patient use.

The CE-marked content on the platform is to be regarded as a specific set of tools, apart from the general platform content. Any available content, on any of the websites, applications, apps, or services provided by Evidencio that is not clearly labelled as a CE-marked tool is explicitly not covered by this disclaimer for CE-marked content, the general Evidencio Disclaimer for non-CE-marked content applies.

CE-marked tools may provide limited professional advice to the intended user(s). However, the intended user must exercise their clinical judgment as to the information these tools provide.

Evidencio does not assume any liability or responsibility for damage or injury (including death) to you, other persons, or property arising from any misuse of any product, information, idea, or instruction contained in the tools provided to you.

The disclaimer for non-CE-marked content is available on the Evidencio website: <https://www.evidencio.com/disclaimer>.

Your use of the websites, applications, apps, or services provided by Evidencio is subject to our Terms & Conditions, which can be found here: <https://www.evidencio.com/terms-conditions>.



3. Warnings for CE-marked content

Calculations alone should never dictate patient care, and are no substitute for professional judgement. See our full disclaimer on: <https://www.evidencio.com/disclaimer>. This tool is only to be used by healthcare professionals, and is not for patient use.

Always read the intended use before using this tool.

Always make sure the patient complies with the clinical indications and clinical contra-indications as stated on the Evidencio website, and in **paragraphs 6.3.1** and **6.3.2** of this user manual respectively.

Before reading the result, double check the filled in values to prevent errors.

Results that concern risk percentages, do not guarantee certain outcomes. When there is a risk present, do not expect an event to not occur at all, even if the risk is very small. Conversely, a high risk does not guarantee that an event will occur.

This algorithm is only intended for use in settings where the usage and result of an algorithm are never immediately needed.

The data used to perform the calculations is stored by Evidencio to enhance algorithm function and allow issues to be traceable for further improvements. For details, see the privacy policy on our website at: <https://www.evidencio.com/privacy-policy>.

3.1. Notice to the user

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the country in which you, the reader, are established. A competent authority is the institute that governs all issues related to medical devices in a country.

Please contact Evidencio when you suspect any malfunction or changes in the performance of a medical device. Do not use the device, until Evidencio replies to your message that it is safe to start using it again.

4. Device description Roach Formula

The Roach Formula is an algorithm intended to use pre-treatment prostate specific antigen (PSA) and the Gleason Score to estimate the risk that an extended Pelvic Lymph Node Dissection (ePLND) and biopsy would identify positive for a tumour in patients with clinically localized Prostate Cancer (PCa), in order to support healthcare professionals with decisions surrounding lymph node dissection. It is intended for patients with clinically localized prostate cancer, eligible for radical prostatectomy.

The Roach Formula is implemented as a custom calculation on the Evidencio platform. The underlying mathematical formula of the Roach Formula concerns a linear equation. The formula provides a percentage to the user of the risk of lymph node involvement.

The calculation of the algorithm is performed by communication with the Evidencio platform, hosted at www.evidencio.com. The algorithm is also accessible by 3rd party applications through the API and iFrame implementation. The Evidencio platform is managed under Evidencio's certified quality management system that ensures the correctness of calculations and availability of its services.

The Summary of Safety and Performance for this device will be made available via EUDAMED once the relevant module is fully operational. In the meantime, the Summary of Safety and Performance can be requested from the manufacturer and will be provided without undue delay.

4.1. Lifetime, residual risks and side effects

The Roach Formula is software, and does not expire. The lifetime is initially set at 5 years from certification, if the state of the art does not change in such a way as to negatively affect the benefit-risk of the device, the lifetime can be extended.

No steps are required to be undertaken by the user to decommission a product when it is taken off the market. If the lifetime is not extended, a notice will be placed on the algorithm page on the platform. When a device is taken off the market, users may be informed about this (e.g. through e-mail).

Evidencio has identified a series of risks associated with the use of this algorithm.

The Roach Formula is a low-risk device, there are no noticeable risks involved outside of possible mis-estimation of patient risk for lymph node involvement, and all residual risks are accepted.

Most risks can be defined into two main groups, depending on their outcome.

- a) The risk calculation was wrong or;
- b) The MDSW prediction algorithm is inaccessible.

A wrong risk calculation can be the result of erroneous input values or an error in the mathematical calculation. Technical risks, including the erroneous calculations or the inaccessibility due to a technical error, have been mitigated when possible. These measures focussed on reducing the risks' probability and severity. Concluding that the risks could not be mitigated further, the residual risks were classified as *low-level and acceptable*. The Roach Formula does not have any direct side effects.

5. Electronic label

The electronic label of this device contains the following information:

	Name of the device	Roach Formula
	Manufacturer information	Evidencio B.V., Irenesingel 19 7481 GJ Haaksbergen, The Netherlands
	LOT number	V-1.7-761.26.07.29
	UDI number	(01)08720938015069(8012)v1.7(4326)260729(240)761
	IVD indication	<i>In vitro</i> diagnostic medical device

The electronic label can be found on the Evidencio website, see also section **I** and **Error! Reference source not found.** in **Chapter 8**.

The electronic label on the website further contains the option to download the **User Manual** and **Declaration of conformity** (DoC).

5.1. LOT number

The LOT number indicates the algorithm version, the algorithm identifier, and the algorithm publication date. Publication date is indicated as YY.MM.DD.

5.2. UDI number

Stands for Unique Device Identifier (UDI) number, which is an international tool that helps users identify and find information on products. Evidencio's UDI's have the following format:

(01)[UDI-DI number](8012)[versionnumber](4326)[releasedate](240)[identificationnumber]

The UDI-DI (Device Identifier) number is a unique numeric code. For each medical device of Evidencio, a unique UDI-DI is ascribed. This UDI-DI is used as an "access key" for information stored in a unique device identification database (UDID). Information on Evidencio's medical devices can be found by searching for the UDI-DI number in the following data base: <https://gepir.gs1.org/index.php/search-by-gtin>.

6. Intended purpose

6.1. Intended use

The Roach Formula is an algorithm intended to use pre-treatment prostate specific antigen (PSA) and the Gleason Score to estimate the risk that an extended Pelvic Lymph Node Dissection (ePLND) and biopsy would identify positive for a tumour in patients with clinically localised Prostate Cancer (PCa), in order to support healthcare professionals with decisions surrounding lymph node dissection.

The Roach Formula is medical device software that automates the calculation of the formula. It requires quantitative inputs to provide a quantitative output.

The Roach Formula is not intended to replace clinical decision-making; it can only provide information to the healthcare professional on the estimation of the probability of pelvic lymph node involvement. The healthcare professional can use this information to support clinical decision-making regarding optimal treatment options for the patient. In practice, this typically entails the decision to perform an extended lymph node dissection.

6.2. Clinical benefit

The benefits and risks associated with the use of the Roach Formula for the patient are indirect. The benefits arise from clinical decisions made using the Roach Formula in combination with other clinical and patient-specific factors. Correct functioning of the Roach Formula can result in these clinical benefits:

- The Roach formula can assist in risk stratification for patients.

6.3. Intended target population and exclusion

The Roach Formula should be used for patients with clinically localized prostate cancer. The Roach Formula is intended to be used only for a specific group of patients, corresponding to the below indications and contra-indications.

6.3.1. Clinical indications

The Roach Formula should be used for patients who meet the following inclusion criteria:

- Patients with clinically localized prostate cancer, eligible for radical prostatectomy.

6.3.2. Clinical contra-indications

The Roach Formula should not be used for patients who meet the following exclusion criteria:

- Patients with missing PSA or Gleason score data.

6.4. Intended users

The intended users are healthcare professionals. Results shall always be reviewed and interpreted by healthcare professionals, in the context of the patient's clinical history and other diagnostic test results. Healthcare professionals do not require additional training prior to the use of the medical device. The device is not intended for use by patients on their own.

6.5. Intended use environment

The MDSW can be used as made available on the Evidencio platform in any actively supported web-browser on personal computers, mobile devices, or tablet PCs. Users can manually enter the required input data through the user interface. In addition, the MDSW is available as an embedded view via Evidencio's iFrame representation. Automated calculation of the device is enabled through Evidencio's API. The device is only intended for use in healthcare settings where the immediate application and outcomes of the device are not required. The device is not intended to be used at the bedside of the patient.

6.6. Physical interaction

The MDSW is stand-alone software and does not come into contact with any bodily or other material of the patient, user or otherwise.

6.7. History/ versions of the MDSW

The version of the Roach Formula concerns the initial version of MDSW of which Evidencio is the manufacturer.

7. Additional information

7.1. Details

Algorithm author	T.A. Hueting
Root algorithm ID	761
Version	1.7
Revision date	2026-JUL-29
Speciality	Oncology, Urology
Algorithm type	Custom calculation (conditional)
MeSH terms	- Prostate cancer - Lymphadenectomy - Gleason score - Prostate Specific Antigen

7.2. Input variables

To perform the calculations successfully, the Roach Formula requires the input variables as listed in **Table 1**

Table 1. Variables used as input for the Roach Formula.

Name	Description	Type	Range (step size)	Units
PSA	Pre-treatment Prostate Specific Antigen	Continuous	1-100 (0.1)	Ng/mL
Gleason score	Gleason grading system	Categorical	2, 3, 4, 5, 6, 7, 8, 9, 10	[-]

7.3. Formula

The algorithm of the Roach Formula, for estimated probability of lymph node involvement, consists of a linear equation as shown below:

The formula for the Roach Formula is: $\left(\frac{2}{3}\right) \times PSA + (Gleason\ score - 6) \times 10$

For the value for PSA is limited to 50 ng/mL, meaning that if e.g. 60 ng/mL is given as an input value, 50 ng/mL will be used in the calculation. Similarly, the value of 4 is used when Gleason scores input is 2, 3, and 4 and the maximum Gleason score is set at 8 for the Gleason score inputs of 8, 9, and 10. These maximums result in a calculation of the maximum estimated risk at 53%.

7.4. Result interpretation

Primary outcome

The primary output of this device is given as the calculated risk for lymph node involvement as a percentage with one decimal.

Conditional information

In the original paper by Roach et al. (1994) a cohort of 212 patients of whom the pre-operative prostate specific antigen values and Gleason scores were available, was used to derive the Roach Formula. They identified 145 patients with a calculated risk of positive nodes of <15%, classified as low risk, and 67 patients with a calculated risk ≥15%.

The observed incidence of positive nodes was 6% and 40% among the low and high risk groups respectively ($p < 0.001$).

Calculations alone should never dictate patient care, and are no substitute for professional judgement. See the Evidencio website for the full disclaimer; <https://www.evidencio.com/disclaimer>.

7.5. Study characteristics

The derivation study used data from 212 male patients. For potential variables the clinical stage, pre-treatment PSA, and the pre-treatment Gleason score were considered, resulting in a formula incorporating the pre-treatment PSA level and Gleason score. In this study the maximum PSA value of 40 ng/mL was used, and the Gleason scores of 2 to 4 were set to a value of 4 while 8 to 10 were set to a value of 8.

The implementation of the Roach Formula implements a slight change, where the maximum PSA value is increased to 50 ng/mL increasing the maximum estimated risk from 47% to 53%.

7.6. Supporting publication & Related files

Several relevant studies, such as the original derivation study by Roach et al. (1994) are contained in **Table 2**. These publications have tags to identify their link with the algorithm. Examples of relevant tags are; "Peer review", "Internal validation", "External validation", and "TRIPOD". Publications that have the tags: "Internal validation" or "External validation", contain data on the performance characteristics of the device.

Table 2. Overview of selection of supporting publications & Related files.

Original calculator Roach Formula	Predicting the risk of lymph node involvement using the pre-treatment prostate specific antigen and gleason score in men with clinically localized prostate cancer (1994)
Internal validation	<i>M Roach 3rd 1, C Marquez, H S Yuo, P Narayan, L Coleman, U O Nseyo, Z Navvab, P R Carroll</i>
Peer review	DOI: https://doi.org/10.1016/0360-3016(94)90138-4

7.7. Analytical performance characteristics

To demonstrate the analytical performance of the Roach Formula, evidence was collected based on four requirements. This led to the following results:

- A code review and functional test showed that the calculation of the online tool provides the exact same results as described in the paper by Roach *et al.* (1994).
- Monthly uptime reports show that the device is available online with an uptime of at least 99%.
- The calculation time is within 2 minutes, otherwise an error is given to the manufacturer, this is analysed each 6 months in the analysis of quality data.
- Absence of unacceptable cybersecurity vulnerabilities.

7.8. Clinical performance characteristics

A total of 10 studies were identified that assessed the performance and clinical utility of the Roach Formula. The studies used clinical data that were collected in local and teaching hospitals, as well as from the SEER database. Combined, the studies were able to include clinical data of a total of approximately 15725 PCa patients.

Statistical performance characteristics

To directly compare the Roach Formula and the Briganti on discrimination, the identified performance on C-statistic were pooled in a meta-analysis to obtain an overall performance measure.

The Roach Formula (C-statistic = 0.69 (95% CI: 0.63, 0.74)) performed worse than the Briganti Nomogram (0.80 (95% CI: 0.76, 0.84) for Briganti 2012, 0.79 (95% CI: 0.75, 0.83) for Briganti 2017, 0.76 (95% CI: 0.72, 0.80) for Briganti 2019). However, the Briganti Nomograms also require a far greater amount of input than the Roach Formula. PSA and Gleason staging information are readily available, while the data for the Briganti Nomograms, or another popular option, the MSKCC Models, require more complicated biopsy information, or, in the case of the 2019 Briganti model, MRI-based information on the tumour. Therefore, while the performance may be lower than other models that are part of the state of the art, the simplicity of the underlying equation and readily availability of the necessary data makes the Roach a competitive option, especially in situations where more advanced data is not available.

Benefit assessment

The benefits of Evidencio's Roach Formula can be seen as two separate factors. The use of the Roach Formula for the calculation of the risk of Lymph Node Involvement and the associated clinical benefit of accurate prediction, as well as a certain level of risk mitigation by providing a validated and monitored method of reliably calculating this risk digitally, rather than necessitating paper calculations or unreliable technology.

For the Roach Formula, though it is mentioned in the State of the Art to be used in some situations, there is no data available in the form of impact studies, and only one paper was identified that used Decision Curve analysis. Nevertheless, its discriminatory capacity is still acceptable, the calibration is good in a European population, and the simplicity of the model makes it very easy to use and applicable for almost all clinically localised PCa patients. The paper which used decision curve analysis to investigate the Roach Formula, by Abdollah et al. (2013), showed that it performs better than reference strategies and other, similar algorithms.

7.9. Release notes

The release notes for each publicly available version of the device can be found on the Evidencio website page for the Roach Formula: <https://www.evidencio.com/models/show/761>, selecting the correct device (version), and clicking on Release Notes. It is recommended to read these notes after a version update to see if these changes are relevant to you. Please make sure the correct algorithm version is selected.

8. Using the algorithm on the Evidencio website

Using the tool on the Evidencio website requires a stable internet connection. The tool was developed to work on the four most commonly used internet browsers; Google Chrome (version 135.0.7049.115 and higher), Mozilla Firefox (version 137.0.2 and higher), Microsoft Edge (version 135.0.3179.98 and higher), and Apple Safari (version 18.4 and higher). The medical device cannot be used in combination with Internet Explorer.

The tool can also be accessed on mobile devices running the most recent versions of the Android (version 15 and higher) and iOS (version 18.4.1 and higher) operating systems.

Correct functioning of the tool with earlier versions of these browsers cannot be guaranteed.

The personal computers, laptops, tablets or smartphones used should at least be able to have an internet connection and use the browsers mentioned above.

Furthermore, the algorithm may be used through the Evidencio iFrame representation of the calculator, as an embedded view, provided that the specific Evidencio guidelines for iFrame implementations of that algorithm are adhered to.

The Evidencio MDSW algorithms can be used with any browser settings that don't distort the regular display of websites, with a 50% to 500% zoom rate, and at a display minimal screen resolution starting from 800x600. However, factory recommended browser settings, 100% zoom rate and regular display resolution are recommended.

The MDSW is intended for authorised users only, and should not be used by unauthorised personnel.

This algorithm is only intended for use in settings where the usage and result of an algorithm are never immediately needed.

8.1. General algorithm landing page

An example of a medical device algorithm interface on the Evidencio platform is shown in **Figure 1**. The different sections indicated are explained in this chapter.

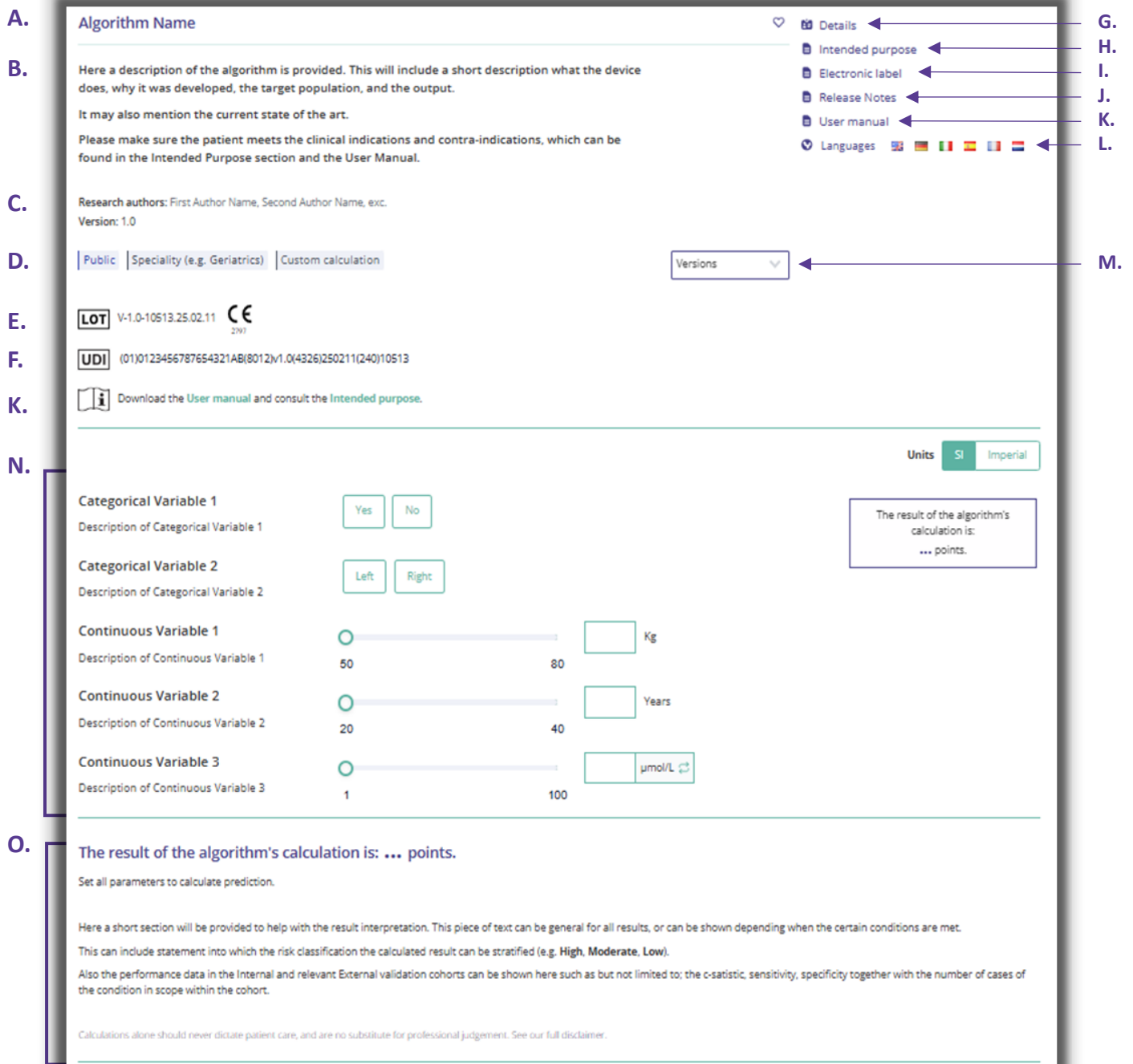


Figure 1. Example of an algorithm landing page on the Evidencio website.

A. Algorithm title

This is the title and name of the algorithm.

B. Algorithm description

This is a short description of the algorithm.

C. Research authors

These are the research authors of the paper that originally published the algorithm.

D. Algorithm tags

These are the tags that are assigned to the algorithm. Evidencio has the following status tags: "Draft", "Public", "Private", "Under review". Evidencio has the following algorithm type tags: "Composite algorithm", "Sequential algorithm", "API algorithm". Evidencio has the following calculation method tags: "Linear regression", "Logistic regression", "Cox regression", "RScript" and "Custom calculation". Next to this, there are tags that indicate the specialty e.g. "Cardiology".

E. LOT number

The LOT number indicated the algorithm version, the algorithm identifier, and the algorithm publication date. Publication date is indicated as YY.MM.DD.

Additionally, the CE mark is displayed next to the LOT number. This way, medical devices can be easily recognized.

F. UDI Number

For information on the UDI Number see **Section 5.2** on **page 5** of this user manual.

G. Details button

On the top right of the algorithm page, several clickable buttons are displayed that show a pop-up when clicked. The first button opens a pop-up concerning additional information about the algorithm. This pop-up has three sections: Details, Study characteristics and Supporting publications & related files.

Details

The first part of the additional information concerns the details of the algorithm as shown in **Figure 2**. This section may show the calculation if it is built as a mathematical formula and, if applicable, shows the conditions at which certain formulas are used.

Details		
Algorithm author	Evidencio	Status Draft
Algorithm ID	10513	Share f t in
Version	1.0	
Revision date	2025-02-11	
Specialty	Cardiology , Geriatrics , Vascular medicine	
Algorithm type	Custom calculation (Conditional)	
MeSH terms	- Heart Failure - Diabetes Mellitus - Elderly	
Condition	Formula	
Categorical Variable 1=Yes	$\text{Categorical Variable 1} + \text{Categorical Variable 2}^2 + \frac{3 \cdot \text{Continuous Variable 1}}{\text{Continuous Variable 2}}$	
Categorical Variable 1=No	$\sqrt{\text{Continuous Variable 1}} + \frac{2 \cdot \text{Continuous Variable 2}}{\text{Continuous Variable 3}}$	

Figure 2. Example of first part of Details section.

Study Characteristics

Below the 'Details section' the section labelled "Study characteristics" provides information on the characteristics of the patient data used to derive and validate the algorithm. Additional information is provided on the methods used to develop and/or validate the algorithm. An example of the Study characteristics section can be seen in **Figure 3**.

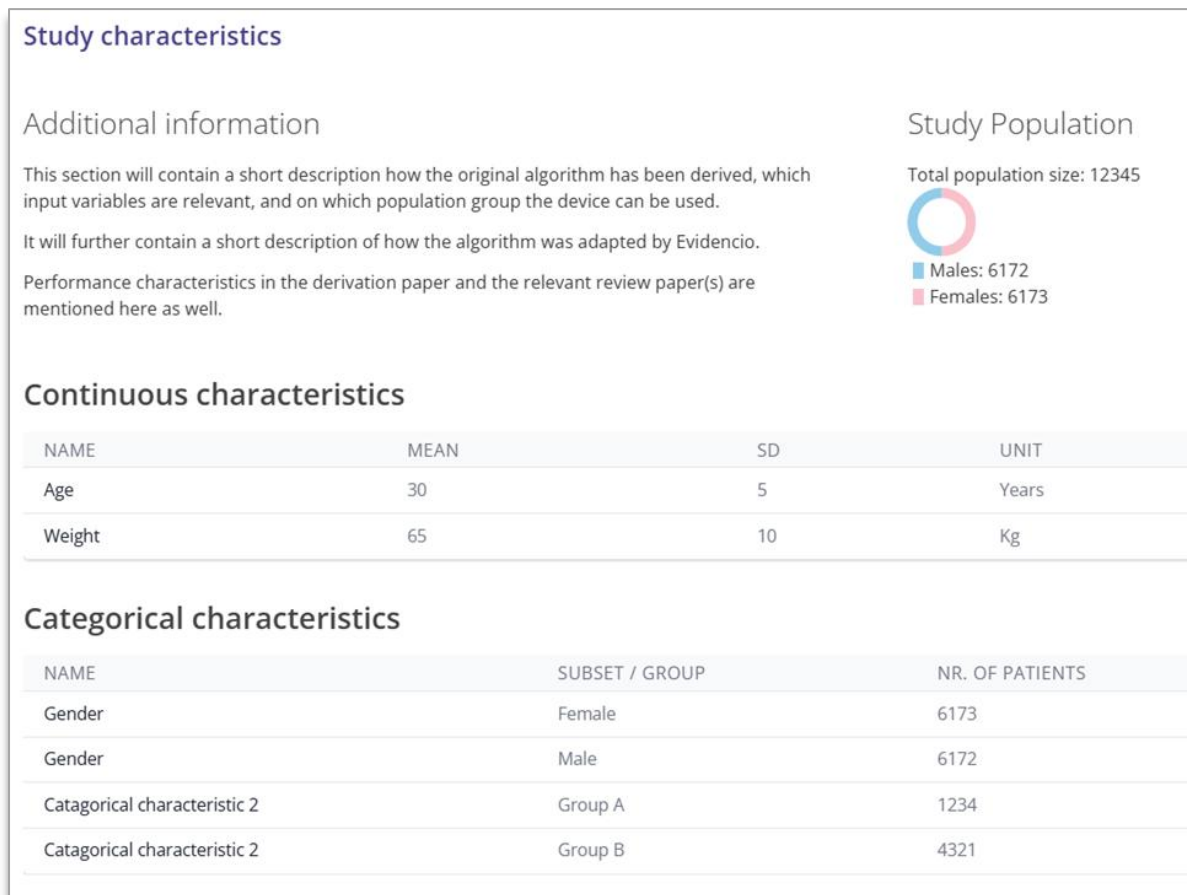


Figure 3. Example of the study characteristics section under the Details tab.

Supporting publications & Related files

An important part of the Study characteristics is the information on Supporting publications and related files. The list of related files and relevant tags can also be found in **Paragraph 7.6**. These sections can be found at the bottom of the Details-pop-up as shown in **Figure 4**.

Supporting Publications

Title or description

Title Derivation Paper
DOI: DOI: 10.1234/ABCD.1234.5678

Title External Validation
DOI: DOI: 10.1234/ABCD.1234.5678

Title Peer Review Paper
DOI: DOI: 10.1234/ABCD.1234.5678

Tags

- Original calculator
- Internal validation
- External validation
- Peer review

Related files

Preview	Name	Tags
	Derivation Paper.pdf 24.93 KB	Original calculator Internal validation
	External Validation.pdf 24.93 KB	External validation
	Peer Review Paper.pdf 24.93 KB	Peer review

Figure 4. Example of the Supporting publication & Related files section under the Details tab.

H. Intended purpose

Under this tab, the intended purpose can be found, containing a lot of information regarding the algorithm, its user, target population, clinical benefit, etc. This information is also provided in this manual and can be found in **Chapter 6** on **page 5**.

I. Electronic label

The electronic label button opens a pop-up with the location and address of Evidencio, the LOT number, the UDI number, the CE-mark, the medical device logo and a download link for the declaration of conformity of the medical device. The example of the electronic label is shown in **Error! Reference source not found..**

Extra Information

Intended purpose

Electronic label

Release Notes

Roach Formula



Evidencio B.V., Irenesingel 19, 7481 GJ Haaksbergen, The Netherlands



V-1.6-761.26.04.29



(01)08720938015069(8012)v1.6(4326)260429(240)761



Download the [User manual](#)



In vitro diagnostic medical device

Figure 5. Example electronic label

J. Release notes

Under this tab the most recent release notes can be found, noting the most significant changes between the versions of the algorithm found on the Evidencio website.

The 'Release Notes' button opens a pop-up with the latest release notes of the algorithm. Here you can find a list of the most significant changes over the different versions of the algorithm. Additionally, if there are any known residual

anomalies the user should be aware of, they are listed here. It is recommended to read these notes after a version update to see if these changes are relevant to you.

K. User manual

This user manual can be found in three places: 1) under the short description of the algorithm on the Evidencio algorithm page, 2) on the right of the algorithm page, and 3) as a tab in the electronic label screen. Additionally, all versions of the user manual can be found in the general page for all user manuals for medical devices. The page can be found under the 'About' drop-down menu button as shown in **Figure 6**. The user manual page is shown in **Figure 7**. This version of the manual can be printed if required. If necessary, a paper version of the manual can be requested to be sent to you by mail. Evidencio's contact details are listed in **Chapter 11** of this user manual.

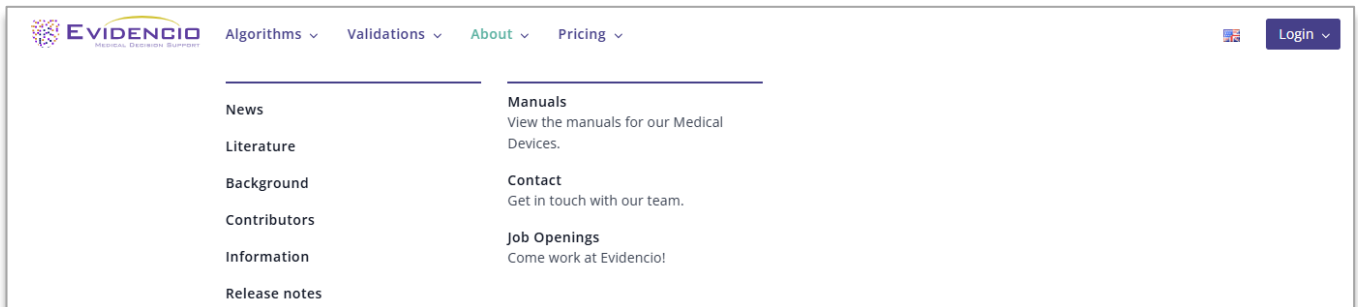


Figure 5. The drop-down menu where the user manual page can be found.

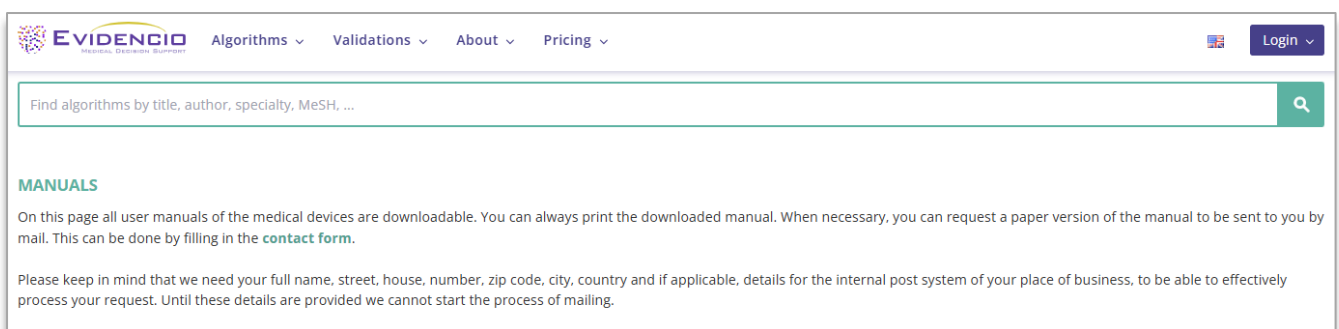


Figure 6. The user manual page for all user manuals.

L. Languages

Here an overview of languages in which the Roach Formula is available is provided, any of which can be selected by clicking on the corresponding flag icon. The standard language on the Evidencio website is English.

Please note that, if a language is selected, only the user interface of the specific algorithm will be translated, other general features and information on the site might still be set to one of our primary languages English, German, and Dutch.

When you find mistranslations, irregularities, confusing or ambiguous use of language in English or any other language on the Evidencio website or in one of our manuals, please do not hesitate to contact us using the contact information provided at the end of this manual.

M. Version selection

If available, clicking on the Version tab allows the user to select a different version of the Roach Formula from a list as displayed in **Figure 8**. Please note that the algorithm currently selected is not presented in the dropdown menu.

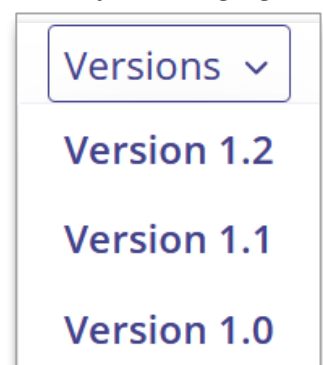


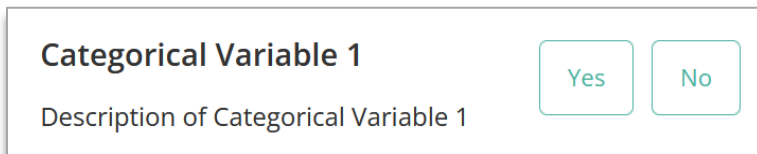
Figure 7. Example of version selection tab.

N. Input section

The Evidencio platform allows two separate input variables; categorical variables and continuous variables.

Categorical variables

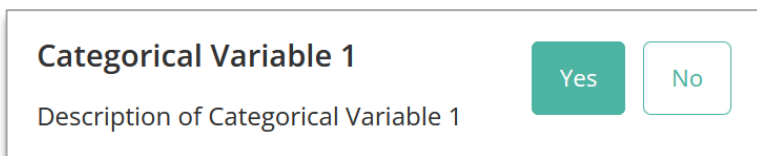
In the example shown in **Figure 8** and **Figure 9**, the example **Categorical Variable 1** concerns a categorical variable. The input that is wished to be used can be entered by clicking on either button. The selected button changes to green, as seen in **Figure 9**.



Categorical Variable 1
Description of Categorical Variable 1

Yes No

Figure 8. Example of a categorical variable, no button has been clicked and thus no input has been provided by the user.



Categorical Variable 1
Description of Categorical Variable 1

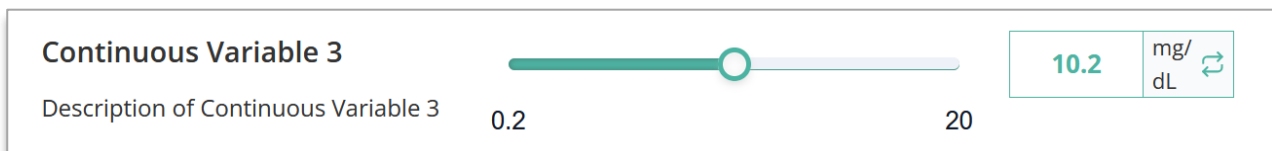
Yes No

Figure 9. Example of a categorical variable, where the "Yes" button has been clicked.

Continuous variables

In the example shown in **Figure 10**, the **Continuous Variable 3**, exemplifies a continuous variable. The plausible ranges for which the algorithm is tested and deemed valid are used.

The details for a patient can be entered by sliding the button to the correct value, or by entering the correct value in the box on the right-hand side (i.e., where the 10.2 mg/dL is entered for the **Continuous Variable 3**).



Continuous Variable 3
Description of Continuous Variable 3

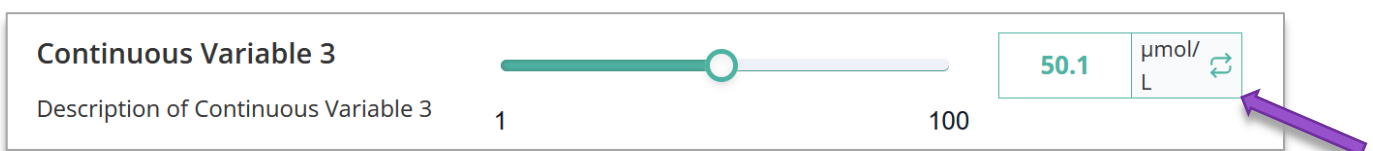
0.2 20

10.2 mg/dL

Figure 10. Example of a continuous variable, where "10.2 mg/dL" has been entered.

Unit conversion

Sometimes it is possible to use a unit conversion, by clicking on the unit when the green arrows are present. See **Figure 11** below where the unit has been clicked and switched.



Continuous Variable 3
Description of Continuous Variable 3

1 100

50.1 μmol/L

Figure 11. Example of a continuous variable where "50.1 μmol/L" has been entered.

Details on variable measurements

Directly underneath the name for each variable, additional details can be provided on, for example, the methods required to enter the correct value for each variable. Details may include but are not limited to; more detailed explanation of the variable, the ranges of the variables (for healthy individuals), or a description when a continuous variable should be true or false (cut-off values).

O. Result section

At the bottom of the algorithm landing page, the results of the algorithm are shown.

Calculations alone should never dictate patient care, and are no substitute for professional judgement. See our full disclaimer on: <https://www.evidencio.com/disclaimer>.

Result calculation

When all variables are filled in, and the user presses calculate, a result can be calculated. No result is displayed until all variables are filled in and the result section will indicate; *"Set all parameters to calculate prediction."*

Result interpretation

In the result interpretation, a stratification may be provided based on the calculated results. Additional information about this stratification and the classification as found in the derivation and important validation cohorts may also be provided. An example of the information is shown in **Figure 13**.

The result of the algorithm's calculation is: ... points.

Set all parameters to calculate prediction.

Here a short section will be provided to help with the result interpretation. This piece of text can be general for all results, or can be shown depending when the certain conditions are met.

This can include statement into which the risk classification the calculated result can be stratified (e.g. **High, Moderate, Low**).

Also the performance data in the Internal and relevant External validation cohorts can be shown here such as but not limited to; the c-satistic, sensitivity, specificity together with the number of cases of the condition in scope within the cohort.

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Figure 12. Example of the result display and information section.

9. Implementation of the algorithm through an API

The Roach Formula can be used through Evidencio's API to allow for (automated) calculation of the Risk of lymph node involvement. In the case of use of the MDSW through the API, the user should take into account the different inputs for the algorithm, in order to properly interpret the results.

The information provided over the API is the same as the information that is displayed in the graphical user interface on the web application provided by Evidencio. In **Box 1** below, an example of a result from the Roach Formula over the API is shown. The result concerns a JSON formatted text. The API for the Roach Formula leverages the generic API that is provided for the Evidencio platform and therefore contains information that may be applicable for different software algorithms and devices. This means that not all of the details provided over the API may be relevant for the Roach Formula.

```
{
  "CIPercentage": 0,
  "id": 761,
  "author": "T. A. Hueting",
  "title": "Roach Formula",
  "variables": {
    "9007": 88,
    "8805": 5
  },
  "min": 23,
  "max": 23,
  "additionalResultSet": [],
  "mintxt": "23",
  "maxtxt": "23",
  "result": "23",
  "resultText": "The calculated risk for lymph node involvement is:",
  "postresultText": "%",
  "formulaSegments": [],
  "conditionalResultArray": [],
  "conditionalResultText": "",
  "UDI": "(01)08720938015069(8012)v1.7(4326)260729(240)761",
  "medicalDevice": "This is an in vitro diagnostic medical device. The electronic label is available at:
https://www.evidencio.com/models/show/761?v=1.7",
  "userManual": "Always refer to the user manual for correct use of the in vitro diagnostic medical device. The user manual can be
found at: https://www.evidencio.com/manuals"
}
```

Box 1: Example of an API output for the Roach Formula.

Table 3 shows a match between the separately listed items in the API output with the items listed on the graphical user interface on the Evidencio website (elaborated in **Chapter 8**).

Table 3. Agreement between the API output and the graphical user interface on the Evidencio website.

API Item	GUI item	Comment
CIPercentage	N/A	Not applicable for the Roach Formula as this feature is not used for the Roach Formula.
id	Algorithm ID under 'details' ID used in the URL (www.evidencio.com/models/show/761)	The ID is the Evidencio specific identification number of the algorithm.
author	Algorithm author under 'details'	Name of the Evidencio user who created the algorithm on the Evidencio platform.
title	Title of the algorithm (part A of figure 1).	-
variables	Input variables and their entered value. (part N. of figure 1)	The API displays the variables as unique IDs.
min	N/A	Depicts the lowest value when the result of the algorithm is a range. Since the Roach Formula always displays a single value as a result, this value is the same as the 'result'.
max	N/A	Depicts the highest value when the result of the algorithm is a range. Since the Roach Formula always displays a single value as a result, this value is the same as the 'result'.
additionalResultSet	N/A	N/A
mintxt	N/A	Same as 'min', but as a string.
maxtxt	N/A	Same as 'max', but as a string.
result	The main result of the algorithm, the Roach Formula.	-
resultText	The text displayed in front of the main result	e.g. "The calculated risk for lymph node involvement is:"
postresultText	The text displayed behind the main result	- e.g. "%"
formulaSegments	N/A	-
conditionalResultArray	N/A	-
conditionalResultText	N/A	-
UDI	Same as the UDI displayed in the GUI (section F. in figure 1).	-
medicalDevice	The electronic label (section I. in figure 1).	The API refers to the electronic label on the graphical user interface.
userManual	The user manual (section K. in figure 1).	The API refers to the location of the user manual at the user interface & Evidencio website).

Instructions on how to implement the API within a system are included in a separate document that is made available to the party performing the technical implementation. The party performing the integration of the Roach Formula using the API should adhere to the requirements outlined in **761-DOC-45 Instructions for API integration Roach Formula**.

10. User manual revision history

Version	Revision notes
V1.0 APR-2026	Original version
V2.0 JUL-2026	Added translations to DE, FR, IT, ES, and NL

11. Manufacturer details

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