

A tool for the staging of cachexia in cancer patients: Cachexia SCORe (CASCO)



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Staging cachexia

- Cachexia has been defined but the definition does not consider the problem of staging it. **Classification of patients is important when considering therapy.**
- The objective of the **CAchexia SCORE (CASCO)** is to fulfill the existing gap in the classification of cachectic cancer patients.

Casco web page

Biochemistry and Molecular Biology of Cancer Research Group

Cachexia is defined as a state of malnutrition and physical exhaustion and includes weight loss (up to 80% of lean and fat mass) due to a chronic disease. Cachexia occurs in many diseases such as cancer, acquired immunodeficiency syndrome, sepsis, diabetes, states immobilization, severe burns, chronic obstructive pulmonary disease, cardiovascular disease or old age, among others. Several studies associate the presence of wasting in patients with a decreased ability to survive. This means that there is a growing interest in developing drugs capable of dealing with this syndrome, drugs that would allow patients to cope with this disease and possess a higher quality of life in the meantime.

Nowadays there is no effective pharmaceutical treatment on the market that can resolve cachexia. Today, patients suffering with cachexia receive treatments (that is, if they are treated; it is not a common hospital practice) based on different types of drugs, which are mainly derived from progesterone (in particular, megestrol acetate) and steroids such as testosterone, nandrolone or ostarine.

Our research aims are the following:

- a) To develop a combined therapy to stop muscle wasting associated with cancer cachexia.
- b) To develop a score to be able to stage the cachectic syndrome taking into consideration both the metabolic and functional changes that take place during cancer cachexia.

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CASCO Identification

Login

[Forgot password](#)

[Contact for access to CASCO](#)



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Casco web page

Initial step

- 1) If the patient's weight has **DECREASED** more than **5% of his/her body weight** over the last 6 months, then go to either **CASCO** or **MiniCASCO** for the evaluation of the **degree of cachexia** of the patient. The only difference between the two is the number of items required. However, we strongly recommend --for the routine determination of the cachexia stage-- the use of **MiniCASCO** since it represents a simplified version of CASCO that correlates perfectly well with CASCO

Casco web page



Initial step

- 2) If the patient's weight has **NOT DECREASED** more than **5% of his/her body weight** over the last 6 months, then go to **CASC-IN** to determine if the patient is either **NON-CACHECTIC** or **PRE-CACHECTIC**.

Use of CASC-IN

- 1) If the questionnaire is assessed positively, then a message will appear on the screen :

"Plasma CRP should be measured"

Go to the next screen and introduce the CRP value. The next screen will inform you if the patient is **pre-cachectic** or **non-cachectic**.

- 2) If the questionnaire is assessed negatively, a message will appear.

*"No further evaluation is required, the patient is **non-cachectic**"*

Use of miniCASCO/CASCO

1) Follow the sequence:

PATIENT ► ☐ BWC ► ☐ IMD ► ☐ PHP ► ☐ ANO ► ☐ QoL

2) Enter the different data, as requested.

3) After entering all the different data, press "*Show Results*". The score will appear on the screen. Press "*Export*" for a printable form of the patient's data and cachectic score.

4) Use the "*DashBoard*" tool to obtain different graphical presentations of the results.

The use of CASCO tool implies to accept the following statement

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PATIENT INFORMATION

Follow the example:
BRASBR20011972

COUNTRY(3letters)first letters of name and surname
birthdate (DDMMYYYY).

CASCO

Welcome Casco

Patient	BWC	IMD	PHP	ANO	QoL
---------	-----	-----	-----	-----	-----

Change to miniCASCO

New

Save


Export

View result

View patient history

View patient graphic

Exit



Patient information

Identification Number*

Date*

Country

Birthdate

Gender

Cancer type

Tumour stage

Date of cancer diagnosis

Comorbidities

Underlying Disease

Treatment (Drugs, nutrition, other)

Only for validation

Before applying CASCO, what is your perception of severity of patient's cachexia according to the following scale (normal, absence of cachexia) 0 1 2 3 4 5 6 7 8 9 10 (terminal, evident cachexia)

Index of cachexia

* required parameters

Body weight and lean body mass loss

CASCO

Welcome Casco

Patient

BWC

IMD

PHP

ANO

Col

Change to miniCASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

LIBERTAS PERVINET.

OMNIA LVCE

BODY WEIGHT LOSS AND COMPOSITION (BWC)

Body Weight Loss

Initial Weight

0

Final Weight

0

% Weight loss

Weight loss < to 5%

Lean Body Mass

Lean Body Mass

☒ No change in LBM

☐ Loss of LBM > 10%

Methodology

Bioelectrical impedance analysis (BIA)

Dual-energy X-ray absorptiometry (DEXA)

Regional computed tomography (CT)

Magnetic resonance imaging (MRI)

Values

<5%

≥5%, mild

≥10%, moderate

≥15%, severe

≥20%, terminal

Body weight and lean body mass loss (BWC)

40%

CASCO
Welcome Casco

Patient	BWC	IMD	PHP	ANO	QoI
---------	-----	-----	-----	-----	-----

Change to miniCASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

INFLAMMATION / METABOLIC DISTURBANCES / IMMUNOSUPPRESSION (IMD)

	Plasma CRP	Plasma IL6
Inflammation	<input type="radio"/> 5 mg/l <= CRP <= 10 mg/l	<input type="radio"/> 4 pg/ml <= IL6 <=10 pg/ml
	<input type="radio"/> 10 mg/l < CRP <=20 mg/l	<input type="radio"/> 10 pg/ml <= IL6 <=30 pg/ml
	<input type="radio"/> CRP > 20 mg/l	<input type="radio"/> IL6 > 30 pg/ml
	<input checked="" type="radio"/> Not Tested	<input checked="" type="radio"/> Not Tested

Metabolic disturbances*	<input type="checkbox"/> Plasma Albumin < 3.2 g/dL	<input type="checkbox"/> Anemia: Hb < 12 g/dL
	<input type="checkbox"/> Plasma Pre-Albumin < 1.6 mg/dL	<input type="checkbox"/> Plasma Urea > 50 mg/dL
	<input type="checkbox"/> Plasma Lactate > 2.2 mM	<input type="checkbox"/> ROS plasma levels > 300 FORT U
	<input type="checkbox"/> Plasma Triglycerides > 200 mg/dL	<input type="checkbox"/> Glucose Tolerance test / HOMA index altered

Immunosuppression* ☐ Absolute lymphocyte number < 1200/uL

* not tested parameters should be left blank

Physical performance

CASCO

Welcome Casco

Patient

BWC

IMD

PHP

ANO

QoI

Change to miniCASCO

New

Save

Export


View result

View patient history

View patient graphic

Exit

LIBERTAS PERFVNDET



OMNIA LVCE

PHYSICAL PERFORMANCE (PHP)

During the past week...

Not at all

A little

Quite a bit

Very Much

1. Have you noticed any particular decrease in the physical activities (i.e. at work, at home, at leisure etc) that you normally carry out during the day?

☒

☐

☐

☐

2. Have you had any problem doing strenuous activities, like carrying a heavy shopping bag or a suitcase?

☒

☐

☐

☐

3. Have you noticed any loss of handgrip force?

☒

☐

☐

☐

4. Did you have to put more effort on climbing stairs?

☒

☐

☐

☐

5. Have you felt tired after walking approximately half a kilometre?

☒

☐

☐

☐

Question 2 copyright of 1995 EORTC Quality of Life Group. Extracted from QLQ-C30 and used with permission

Physical performance (PHP)

15%

Anorexia

CASCO

Welcome Casco

Patient

BWC

IMD

PHP

ANO

QoI

Change to miniCASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

LIBERTAS PERFVNDET.

OMNIA LVCE

ANOREXIA (ANO)

1. My appetite is:

☐ Very Poor

☐ Poor

☐ Average

☐ Good

☒ Very Good

2. When I eat:

☐ I feel full after eating only a few mouthfuls

☐ I feel full after eating about a third of a meal

☐ I feel full after eating over half a meal.

☐ I feel full after eating most of the meal

☒ I hardly ever feel full

3. Food tastes:

☐ Very bad

☐ Bad

☐ Average

☐ Good

☒ Very good

4. Normally I eat:

☐ Less than one meal a day

☐ One meal a day

☐ Two meals a day

☐ Three meals a day

☒ More than three meals a day

Questions from 1-4 extracted from SNAQ of St. Louis GRECC Program of St. Louis VA Medical Center. Used with permission.

Simplified Nutrition Assessment Questionnaire (SNAQ)

Anorexia (ANO)

15%

Quality of life

CASCO Welcome Casco ✓

CASCO Welcome Casco ✓

CASCO Welcome Casco ✓

Char Patient BWC IMD PHP ANO QoL

Char

Change to miniCASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

QUALITY OF LIFE (QoL)

During the past week...	Excelent	Fine	Poor	Very Poor
24. How do you rate your overall health during the past week?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. How do you rate your overall quality of life during the past week?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[View previous](#) Showing questions from 24 to 25

Questions 1-25 copyright of 1995 EORTC Quality of Life Group. Extracted from QLQ-C30 and used with permission.

Quality of Life Questionnaire [QLQ]-C30

Quality of life (QoL)

10%

miniCASCO (CASCO's short form)

miniCASCO

Welcome Casco

Patient	BWC	IMD	PHP	ANO	QoL
---------	-----	-----	-----	-----	-----

Change to CASCO

New

Save

Export

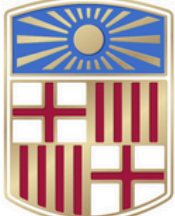
View result

View patient history

View patient graphic

Exit

LIBERTAS PERFVNDET.



OMNIA LVCE

BODY WEIGHT LOSS AND COMPOSITION (BWC)

Initial Weight

0

Final Weight

0

% Weight loss

Weight loss < to 5%

Lean Body Mass

Lean Body Mass

No change in LBM

Loss of LBM > 10%

Methodology

CASCO
(2 items)

=

miniCASCO
(2 items)

miniCASCO (CASCO's short form)

miniCASCO Welcome Casco

Patient BWC **IMD** PHP ANO QoL

Change to CASCO

New
Save
Export
View result

View patient history
View patient graphic

Exit

LIBERTAS PERVINET.
* OMNIA LVCE *

INFLAMMATION / METABOLIC DISTURBANCES / IMMUNOSUPPRESSION (IMD)

Plasma CRP

Inflammation

☐ 5 mg/l <= CRP <= 10 mg/l
☐ 10 mg/l < CRP <= 20 mg/l
☐ CRP > 20 mg/l
☐ Not Tested

Metabolic disturbances*

☐ Plasma Albumin < 3.2 g/dL ☐ Anemia: Hb < 12 g/dL

Immunosuppression*

☐ Absolute lymphocyte number < 1200/uL

* not tested parameters should be left blank

CASCO
(11 items)

miniCASCO
(4 items)

miniCASCO (CASCO's short form)

miniCASCO

Welcome Casco

Patient	BWC	IMD	PHP	ANO	Qo1
---------	-----	-----	-----	-----	-----

Change to CASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

PHYSICAL PERFORMANCE (PHP)

During the past week...

Not at all

A little

Quite a bit

Very Much

1. Did you have to put more effort on climbing stairs?

☒

☐

☐

☐

2. Have you felt tired after walking approximately half a kilometre?


☒

☐

☐

☐

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LIBERTAS PERFVNDET.
OMNIA LVCE


CASCO
(5 items)

→

miniCASCO
(2 items)

miniCASCO (CASCO's short form)

miniCASCO

Welcome Casco 

Patient

BWC

IMD

PHP

ANO

QoI

Change to CASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

ANOREXIA (ANO)

1. My appetite is:

☐ Very Poor

☐ Poor

☐ Average

☐ Good

☒ Very Good

2. When I eat:

☐ I feel full after eating only a few mouthfuls

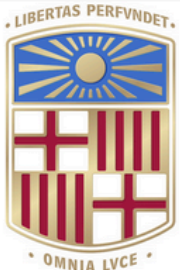
☐ I feel full after eating about a third of a meal

☐ I feel full after eating over half a meal.

☐ I feel full after eating most of the meal

☒ I hardly ever feel full

Questions from 1-4 extracted from SNAQ of St. Louis GRECC Program of St. Louis VA Medical Center. Used with permission.



CASCO
(4 items)

→

miniCASCO
(2 items)

miniCASCO (CASCO's short form)

The screenshot displays the miniCASCO web application interface. At the top, a red header bar contains the text "miniCASCO" and "Welcome Casco" with a pencil icon. Below this, a navigation bar shows tabs for Patient, BWC, IMD, PHP, ANO, and QoL. The QoL tab is selected. A sidebar on the left contains a menu with options: Change to CASCO, New, Save, Export, View result, View patient history, View patient graphic, and Exit. The main content area is titled "QUALITY OF LIFE (QoL)" and contains two questions with rating scales from "Excellent" to "Very Poor". Question 10 asks "How do you rate your overall health during the past week?" and Question 11 asks "How do you rate your overall quality of life during the past week?". Both questions have a "View previous" button and a "Showing questions 10 and 11" message. Below the questions, a "RESULT" section shows a table with scores for BWC, IMD, PHP, ANO, and QoL. The scores are 0, 0, 3, 3, and 3 respectively. Below the table, the text "CACHEXIA SCORE 9, classified as NON-CACHECTIC" is displayed. At the bottom, a blue box contains the text "CASCO (25 items)" and an orange arrow points to another blue box containing the text "miniCASCO (11 items)".

miniCASCO

Welcome Casco

Patient BWC IMD PHP ANO QoL

miniCASCO

Welcome Casco

Patient

Change to CASCO

New

Save

Export

View result

View patient history

View patient graphic

Exit

Change to CASCO

New

Save

Export

Hide Result

View patient history

View patient graphic

Exit

QUALITY OF LIFE (QoL)

During the past week...

Excellent Fine Poor Very Poor

10. How do you rate your overall health during the past week?

11. How do you rate your overall quality of life during the past week?

View previous

Showing questions 10 and 11

Questions 1-25 copyright of 1995 EORTC Quality of Life Group. Extracted from QLQ-C30 and used with permission.

RESULT

BWC	IMD	PHP	ANO	QoL
0	0	3	3	3

CACHEXIA SCORE 9, classified as NON-CACHECTIC

CASCO (25 items)

miniCASCO (11 items)