

Weighing health against characteristics of beneficiaries: the use of discrete choice methods within the Social Value of a QALY (SVQ) project

Cam Donaldson

Health Foundation Chair in Health Economics

Director, Institute of Health and Society

NIHR Senior Investigator

Research Professor, University of Calgary

In England...

- NICE makes recommendations to rest of NHS
- Requires judgements about value of QALY gains
- The mythical £30,000 per QALY!!
- What determines whether something above the ‘threshold’ might be accepted?
- What weights might be attached to QALY gains in different situations? Citizen perspective

These questions led to the Social Value of a QALY (SVQ) project?

A QALY is a QALY is a QALY



QALY



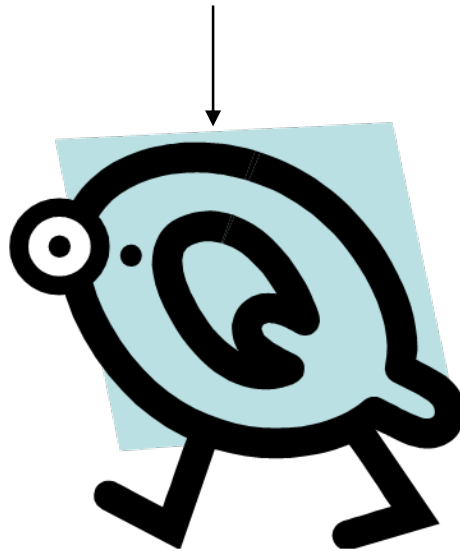
QALY



QALY

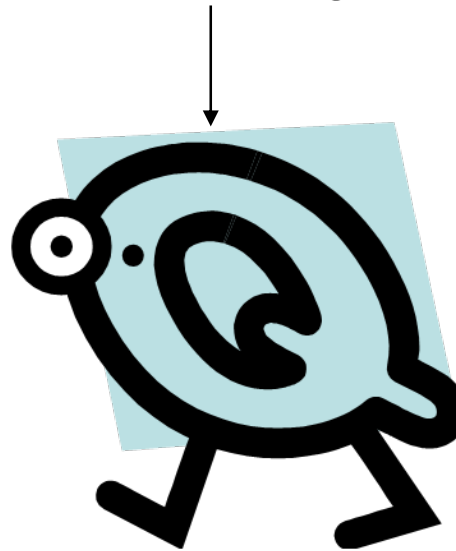
A QALY is a QALY is a QALY

Child



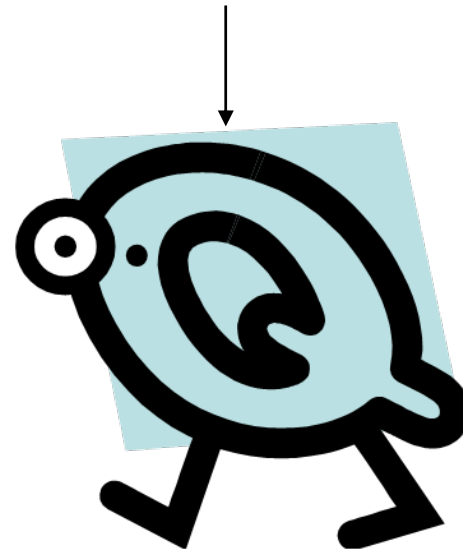
QALY

Middle age



QALY

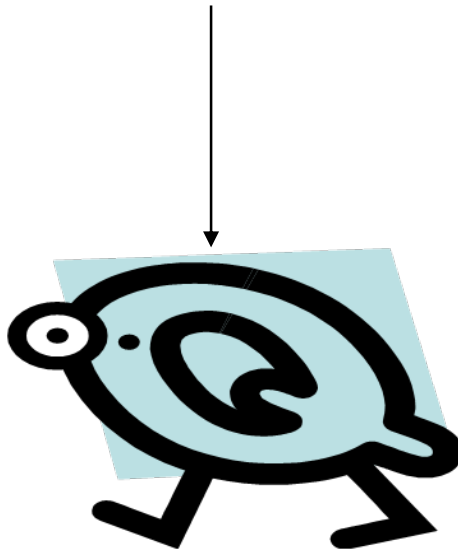
Senior



QALY

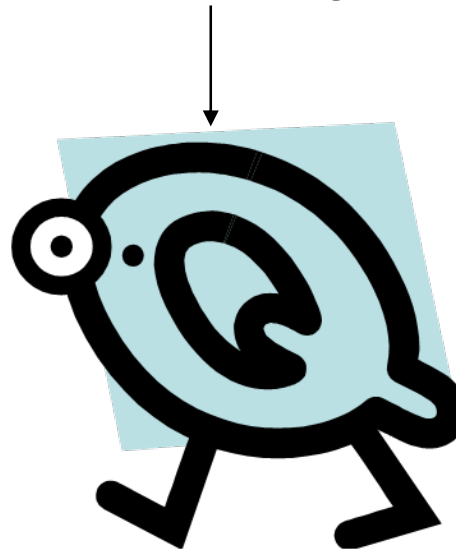
**A QALY is a QALY is a QALY:
or is it?**

Child



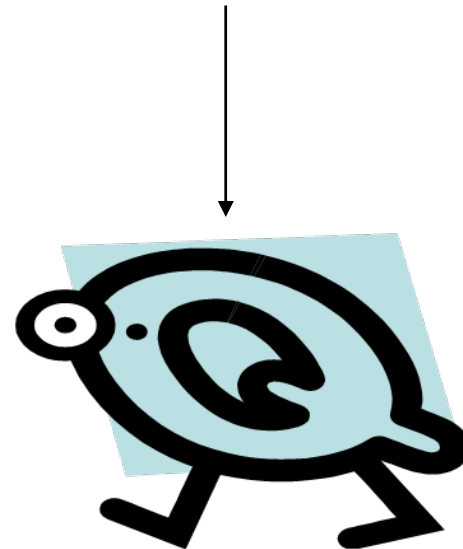
QALY

Middle age



QALY

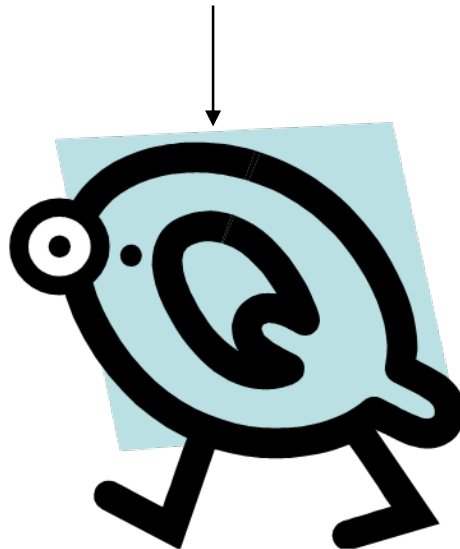
Senior



QALY

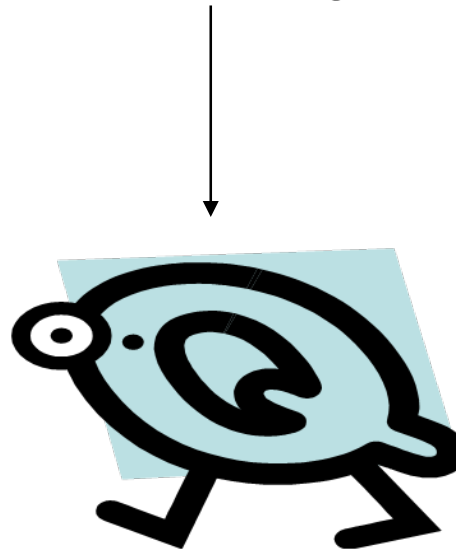
**A QALY is a QALY is a QALY:
or is it?**

Child



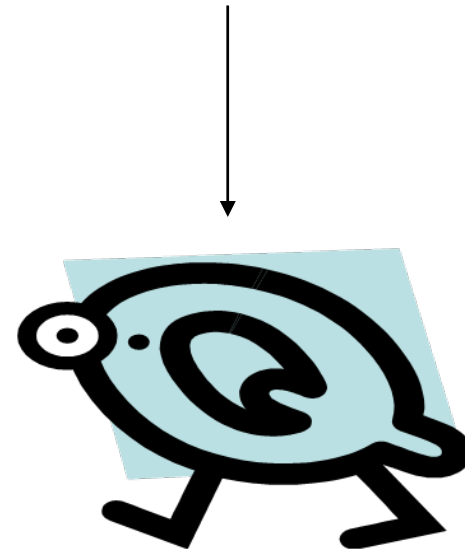
QALY

Middle age



QALY

Senior



QALY

How has this been done?

- Person Trade Offs (PTOs)
- Discrete Choice methods (DCMs)

SVQ looked at both methods

Representative sample of 587 members of population in England

Preceded by one year of qualitative work to:

- establish attributes ('age' and 'severity')
- test the questionnaire which was in form of CAPI



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Public priorities for health survey



About the interview

- In this interview I am going to ask you about different ways that medical treatments might improve people's health.
- I am going to use pictures to illustrate various possibilities.
- During the next few minutes, I will explain how those pictures work.



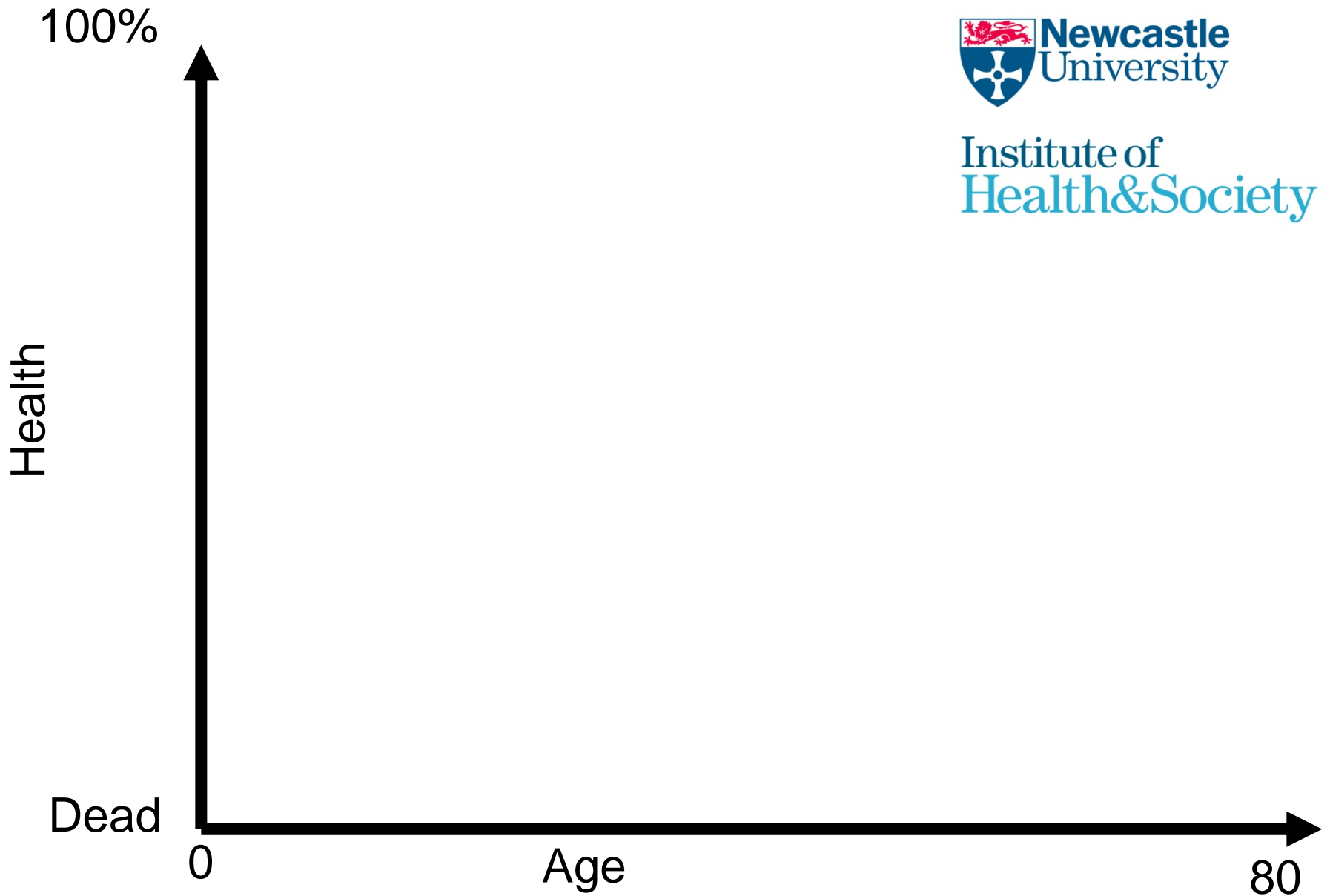
We can represent how long someone lives with a line starting from their birth and going on into later life.



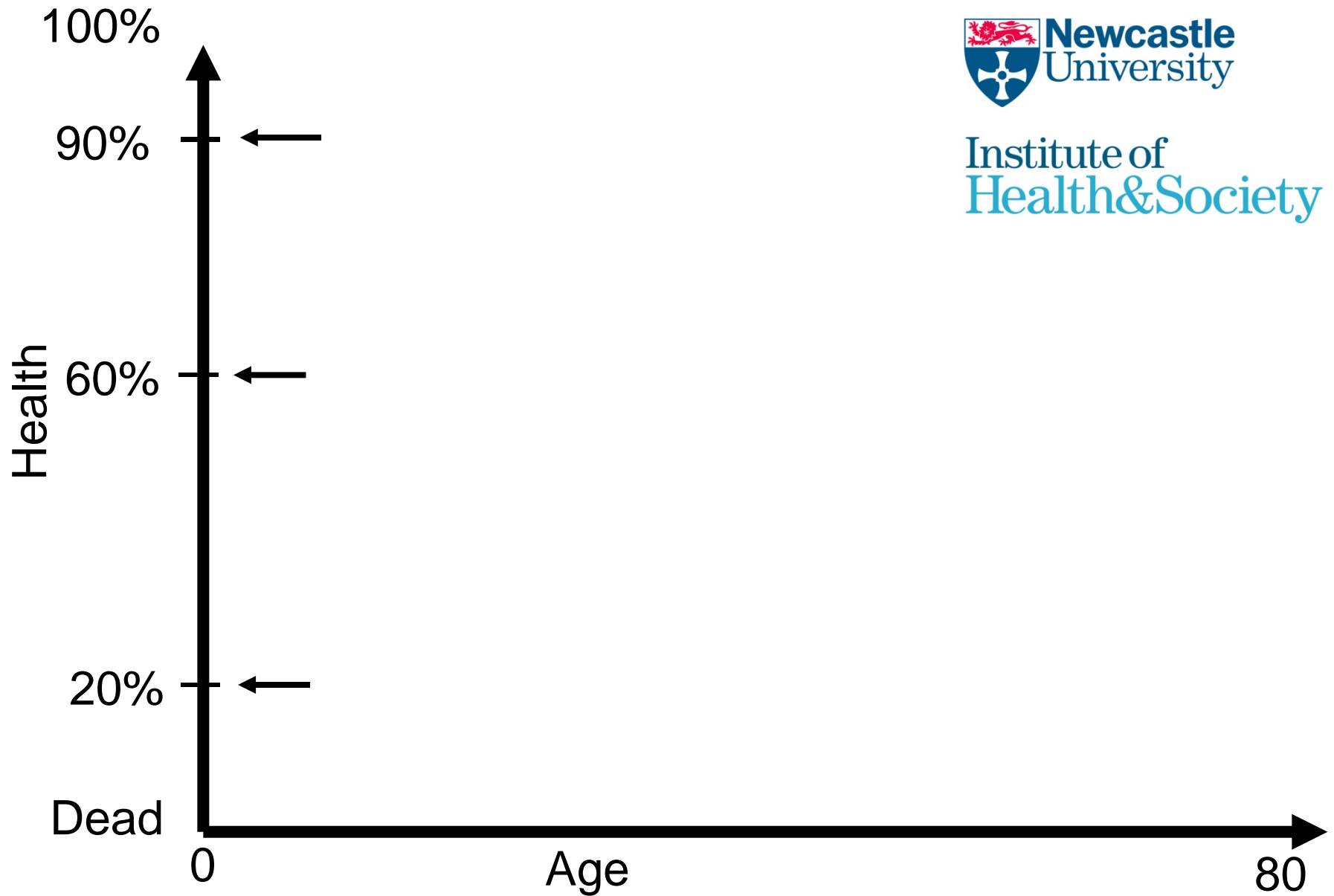
Let's suppose that the average person lives to about 80 years old, so we are going to mark this line as going from birth to age 80.



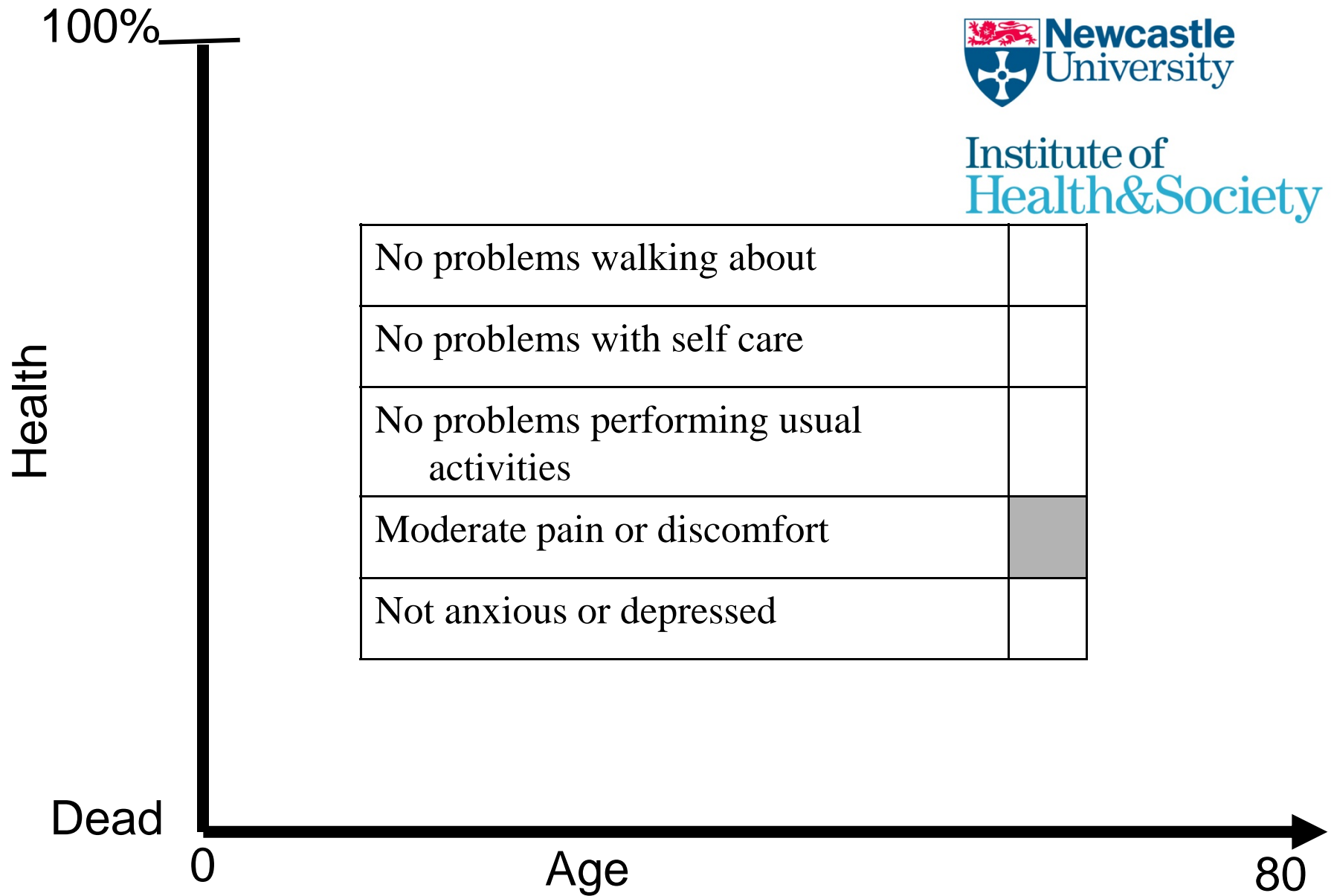
Now let's think about how good a person's health is at a particular time in their life.



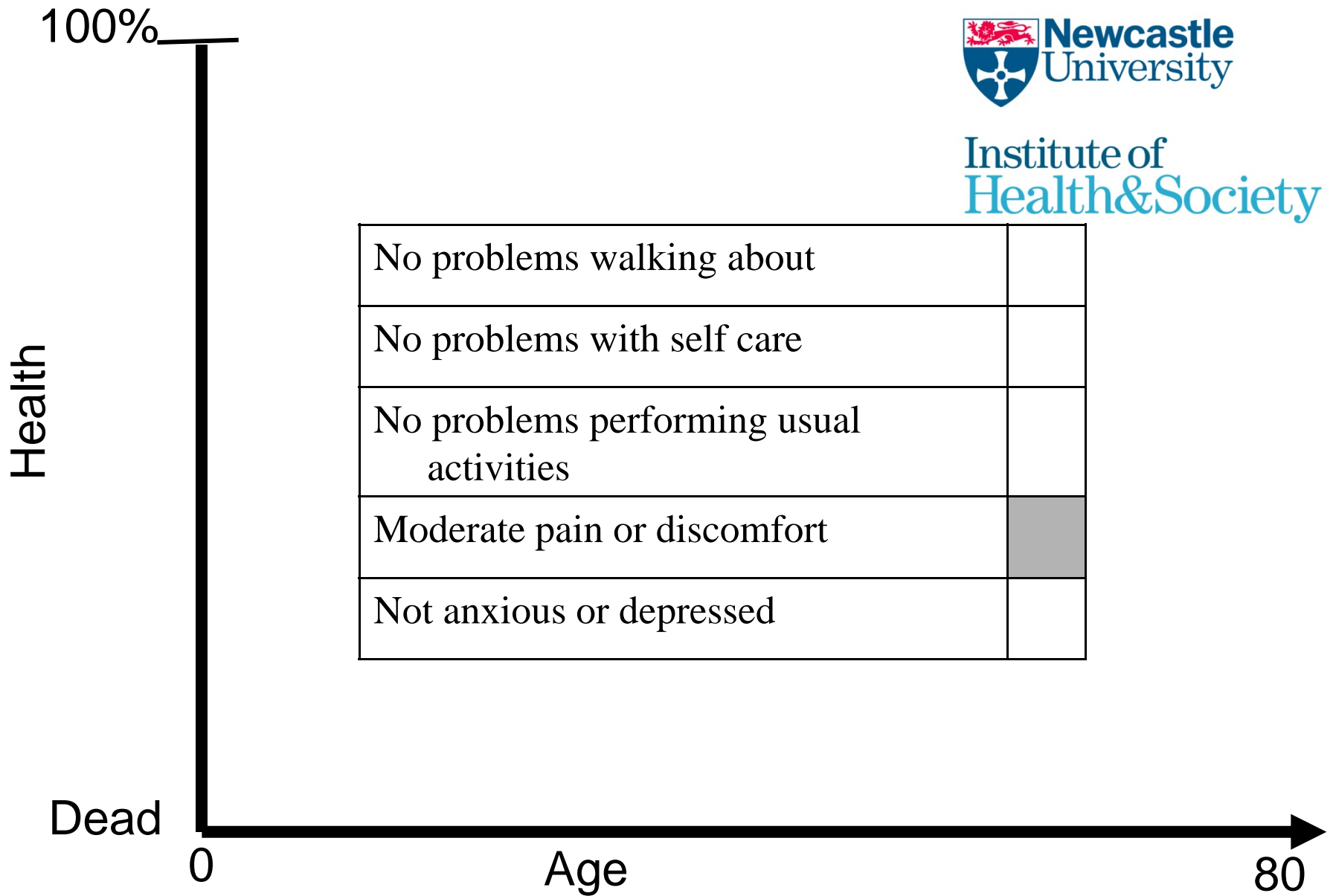
We can show this with what you might think of as a 'health thermometer', where dead is zero and normal good health is marked as 100%.



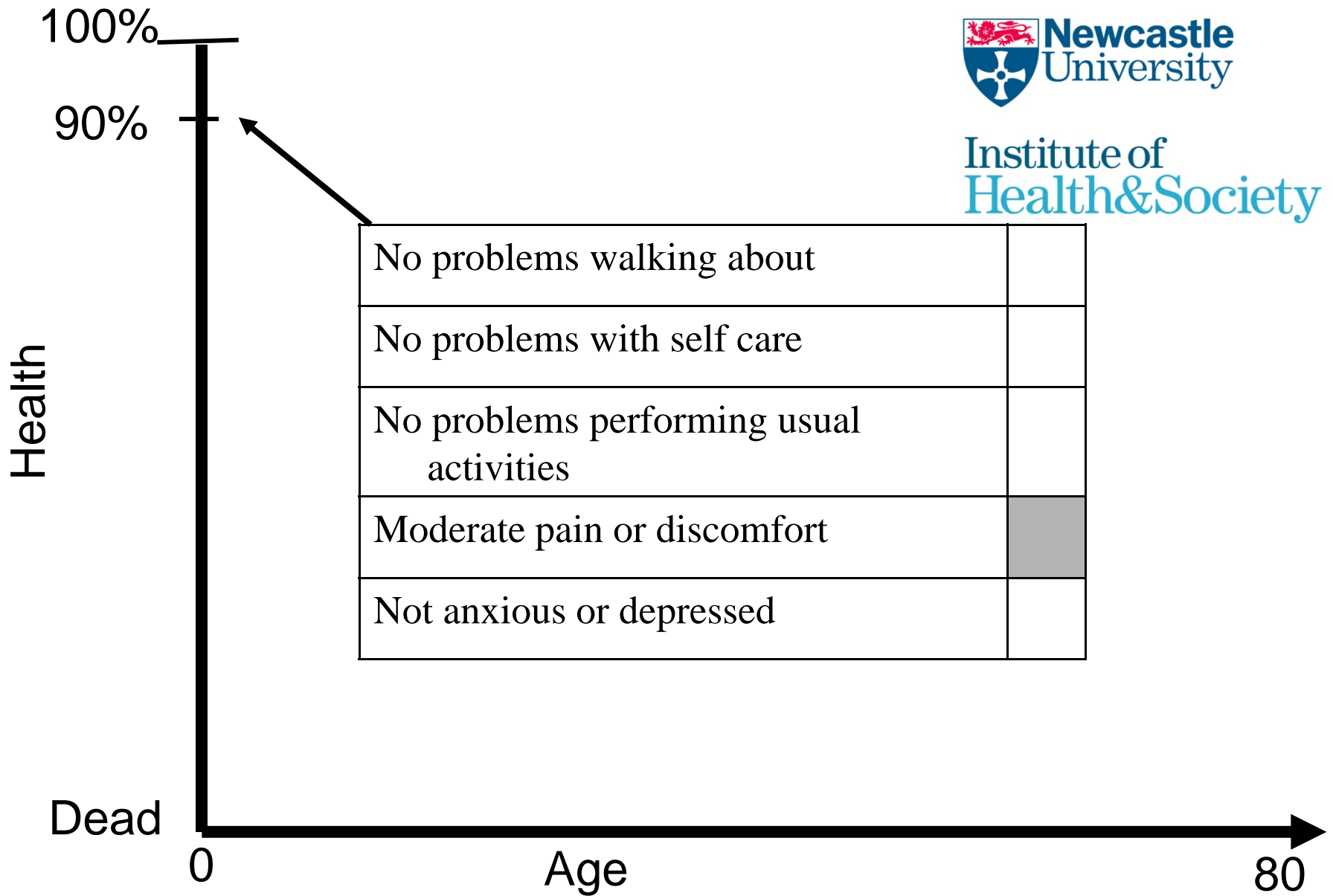
Between zero and 100 there are different levels of health which are shown as different points on the 'health thermometer'.



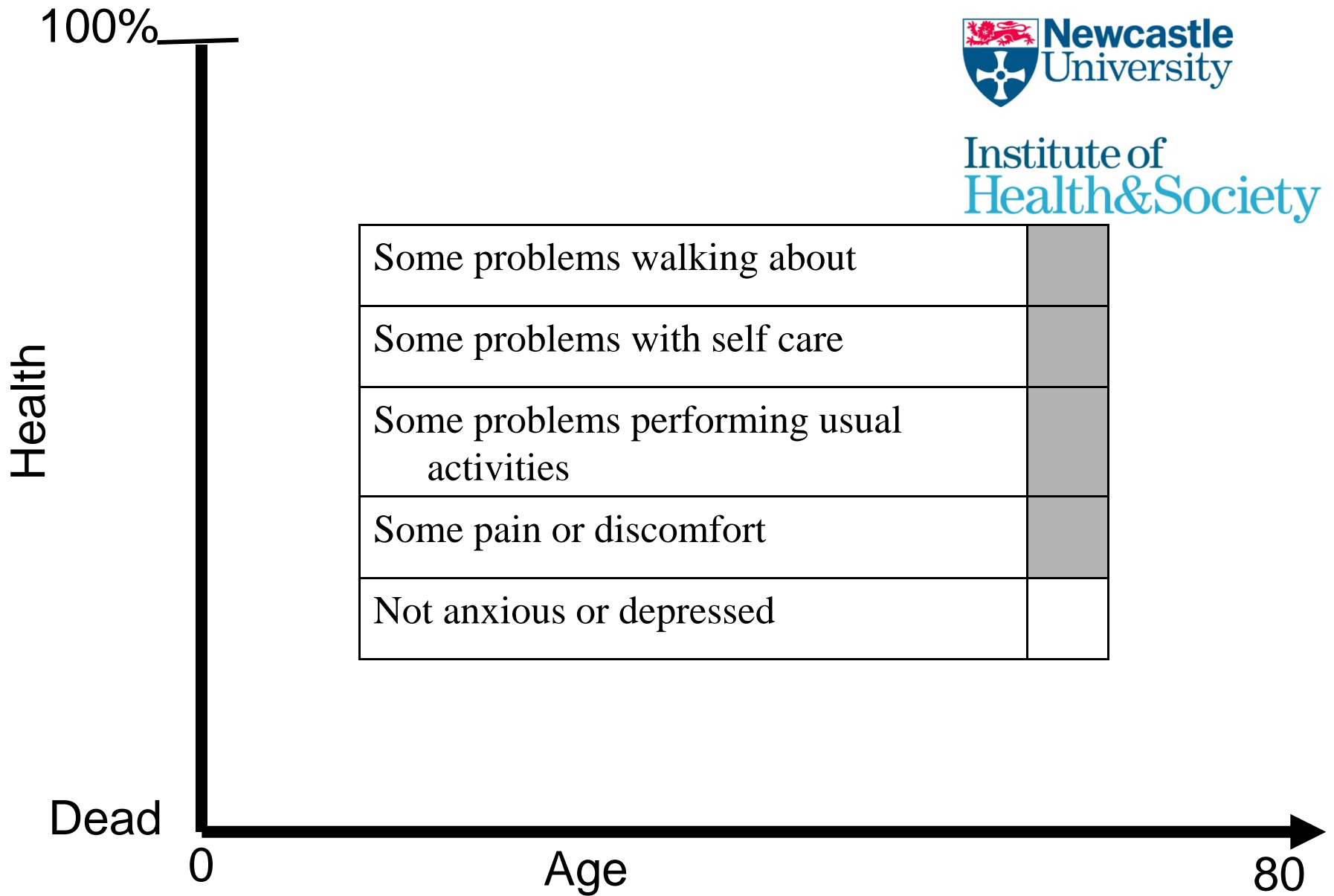
To help explain the 'health thermometer', here is a description of someone whose health is OK but not as good as it could be (*read text in table above*).



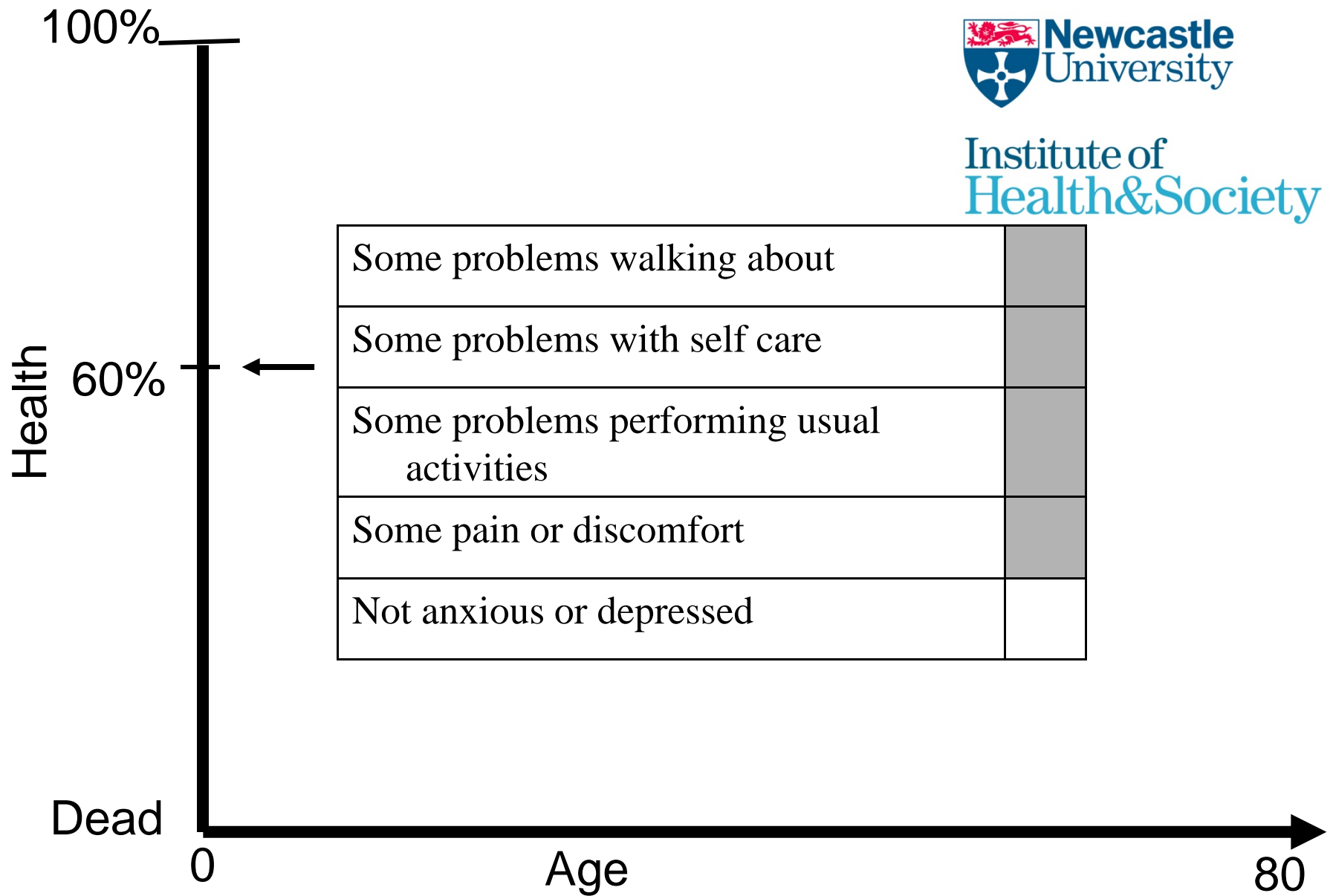
Notice that the shading of the boxes on the right of the table indicate the level of problems someone has: white means no problems, grey means some problems and black shading would mean severe problems.



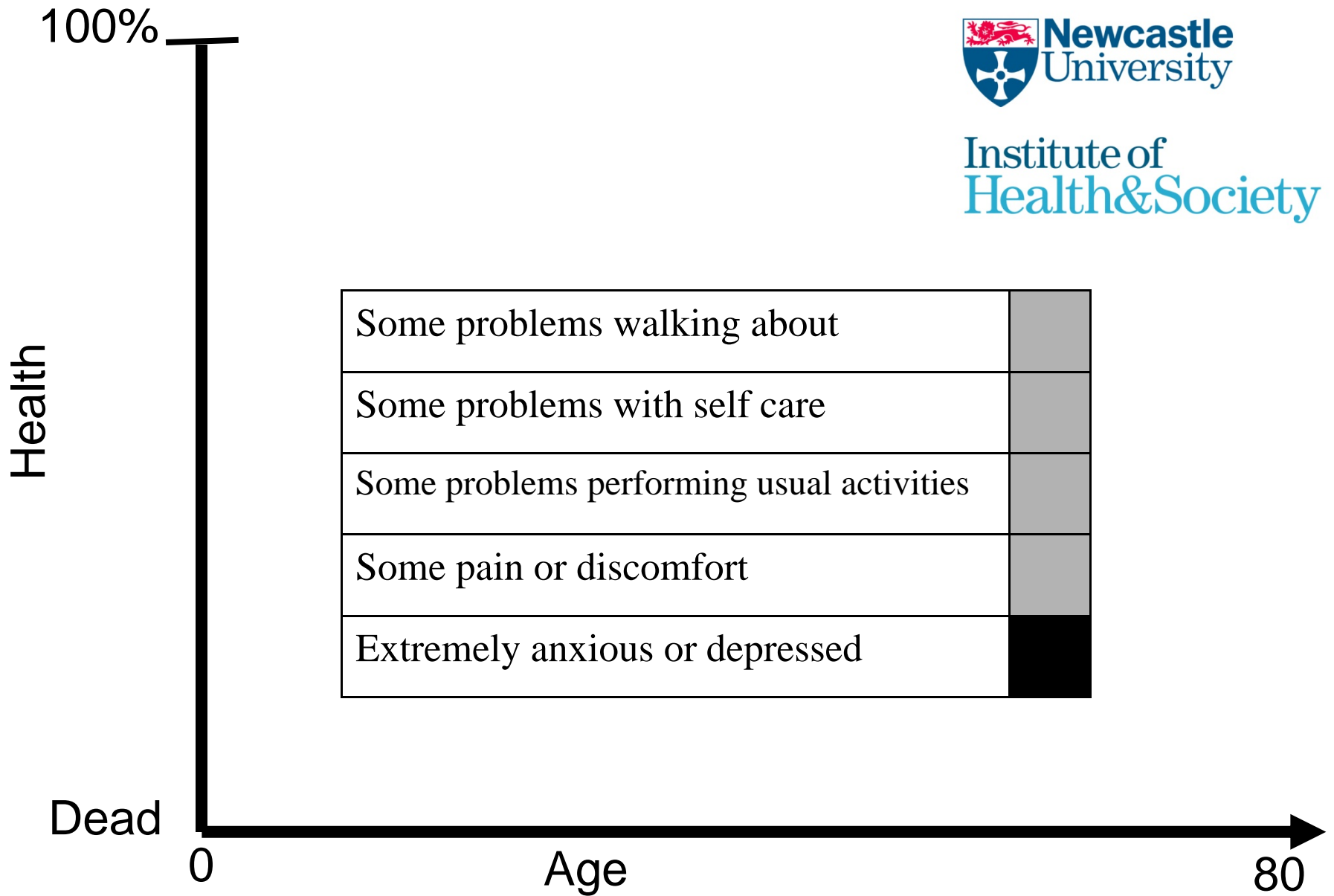
When we showed this description to people, on average they thought it represented about 90% of normal health.



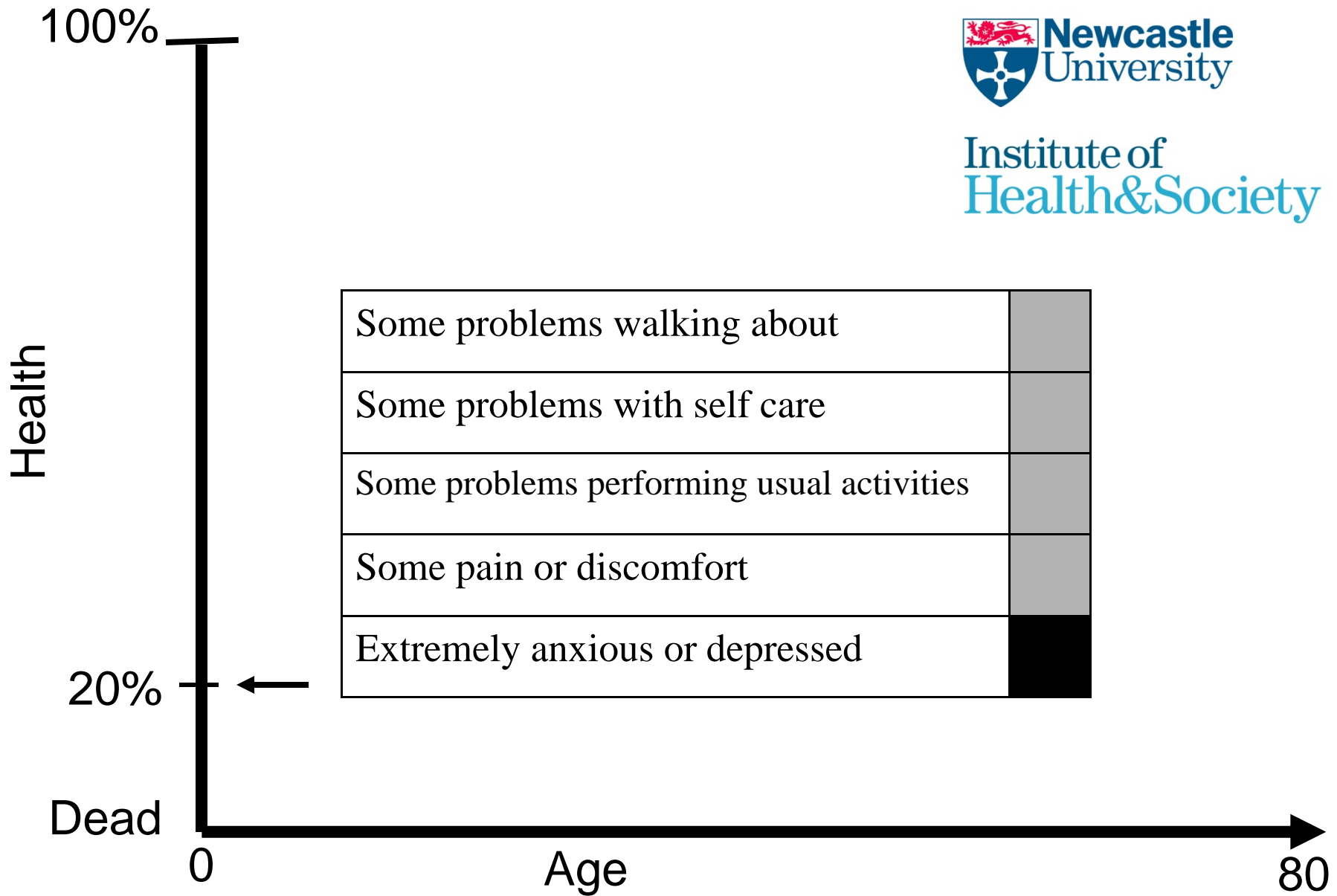
Here is another description of someone with more health problems (*read text in table above*)



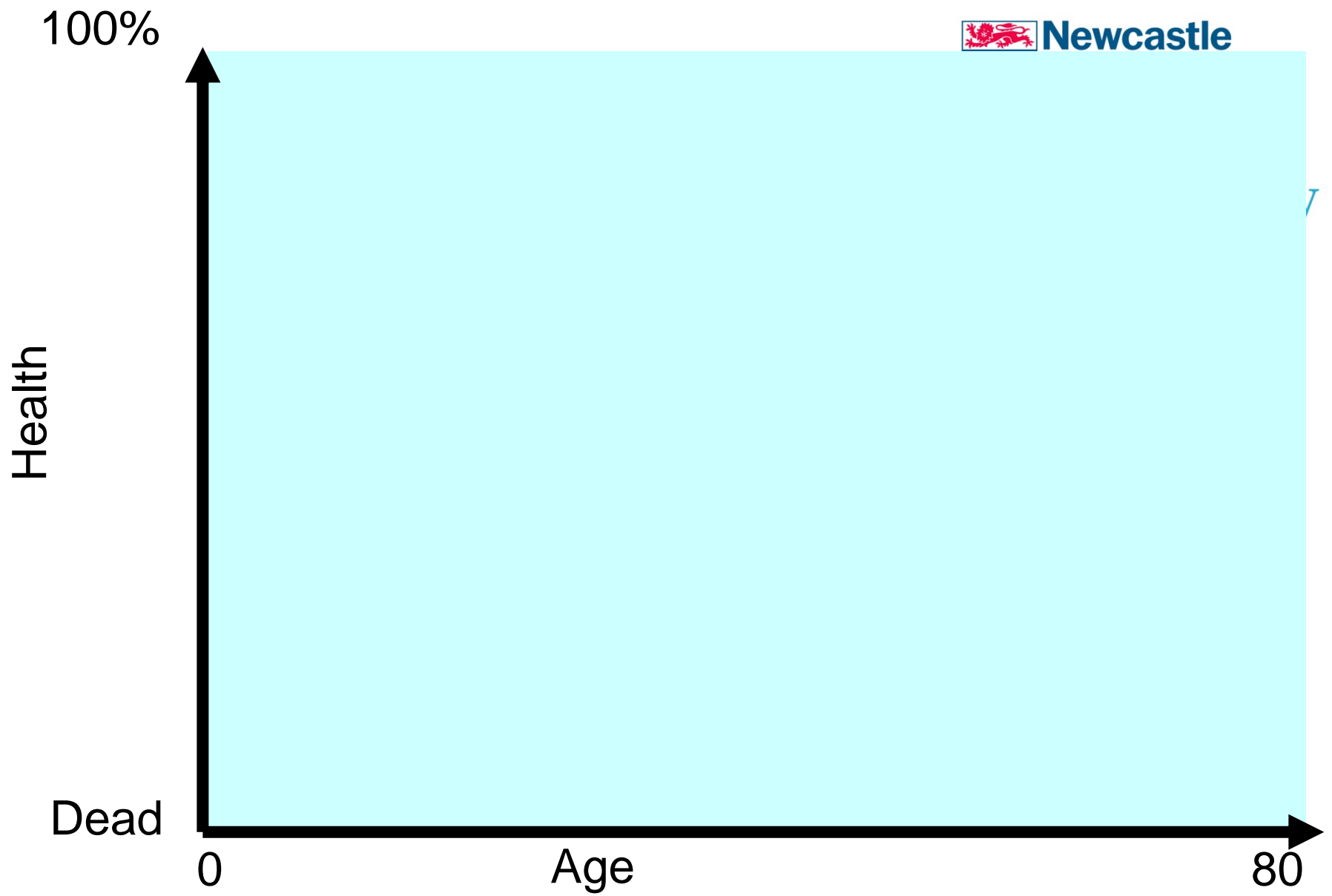
On average, people in a survey put this one at about 60% of normal health.



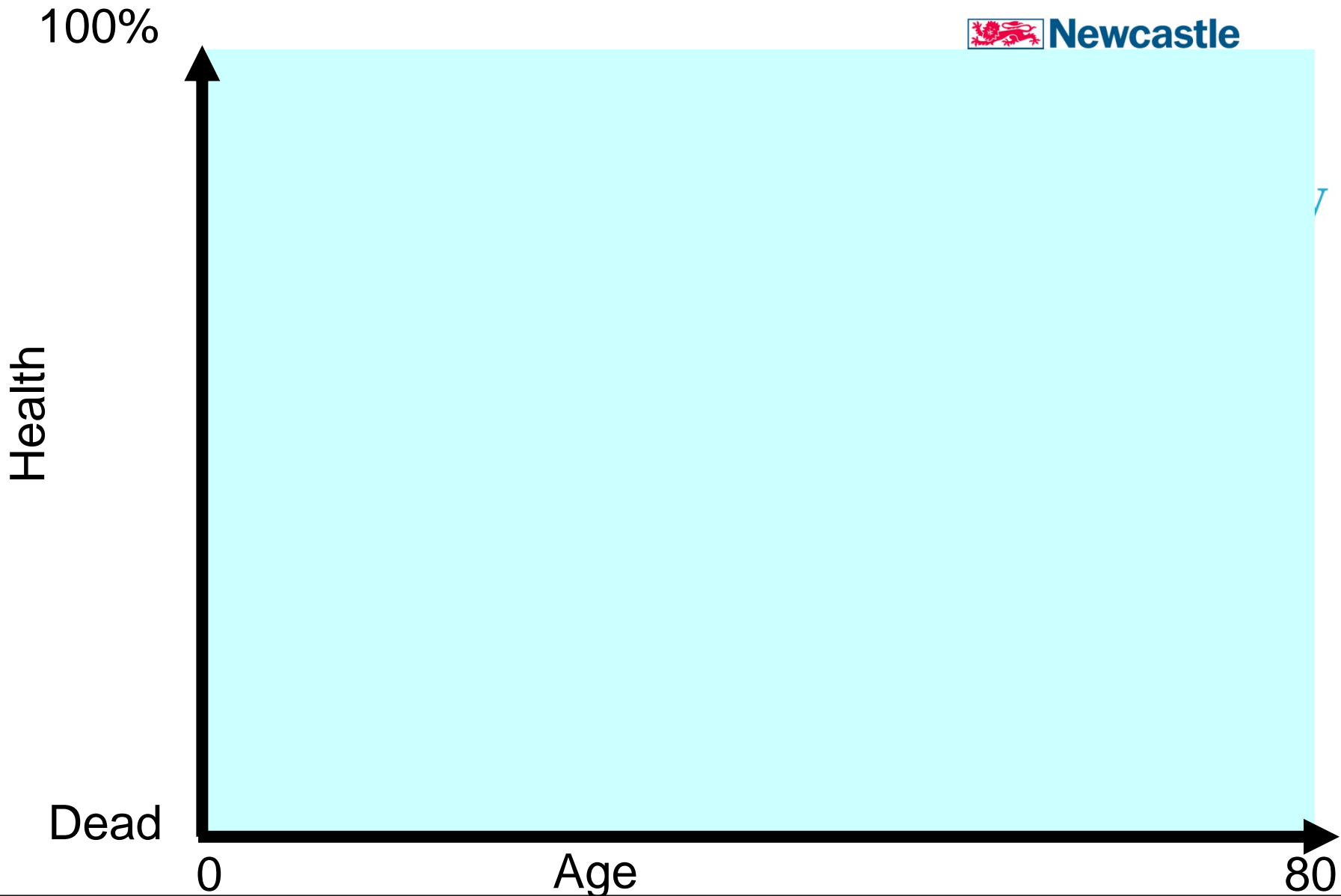
And here is a description of someone with even more health problems (*read text in table above*).



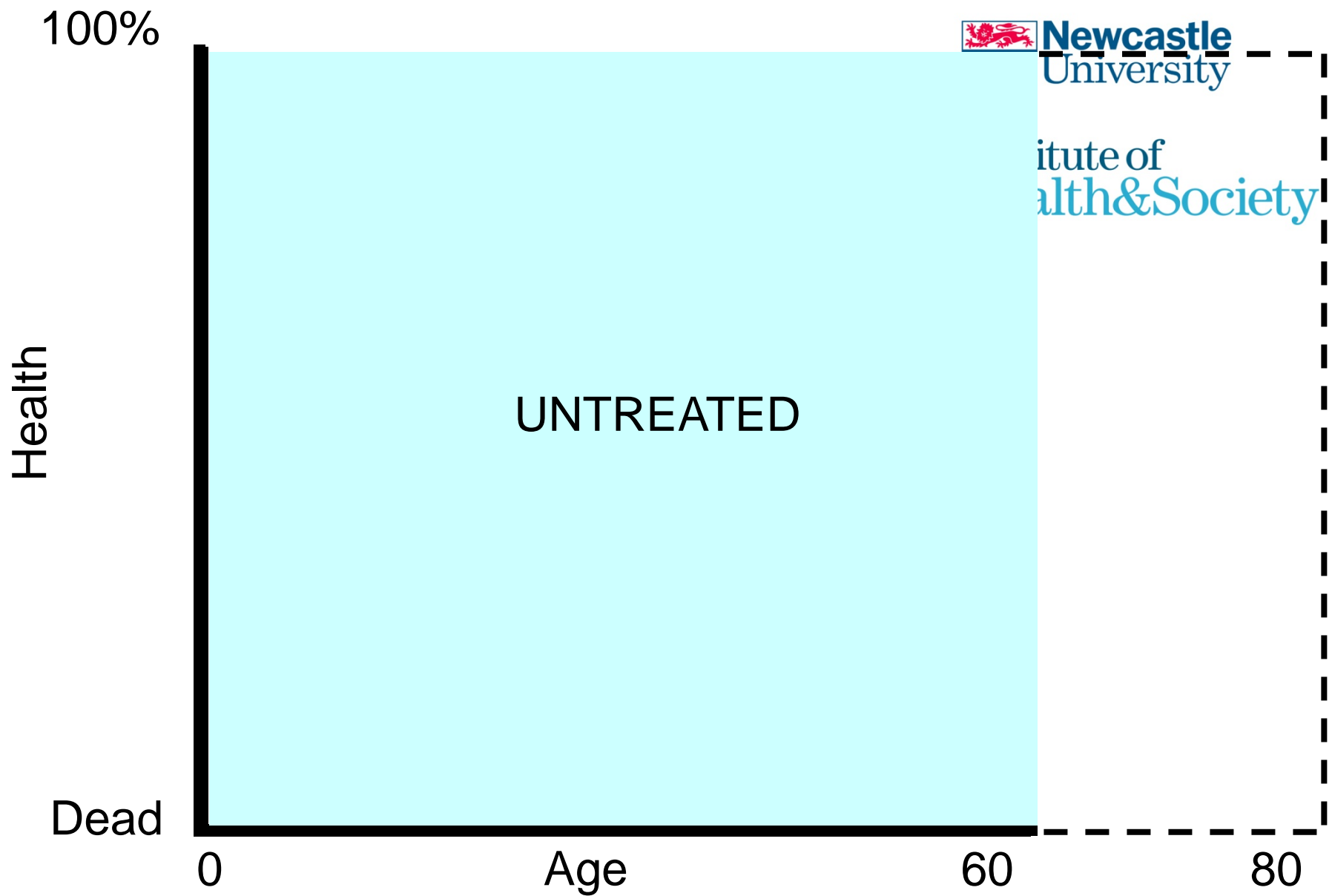
On average, people rated this at about 20%.



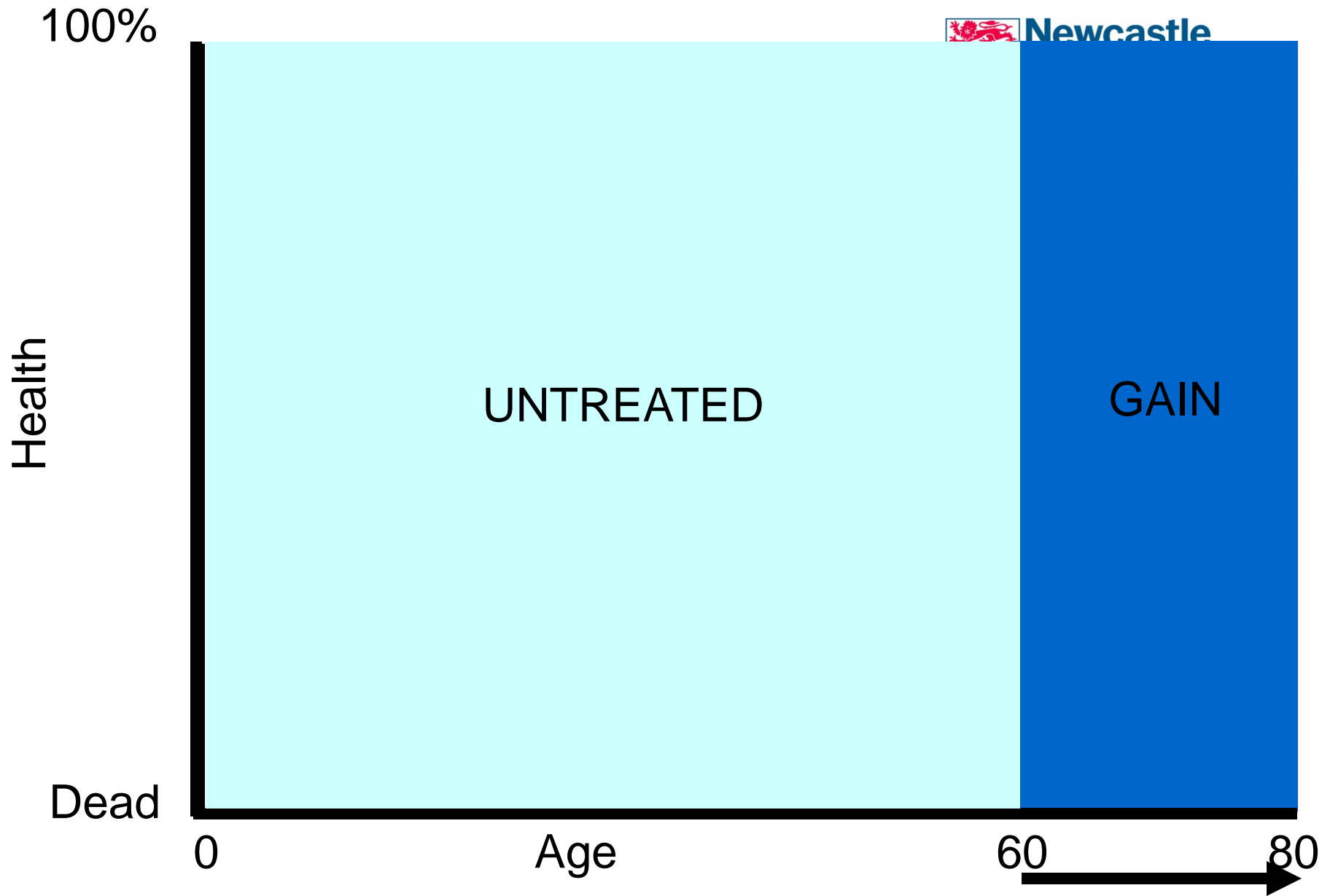
This picture shows someone in normal good health throughout their life up to their death at the age of 80.



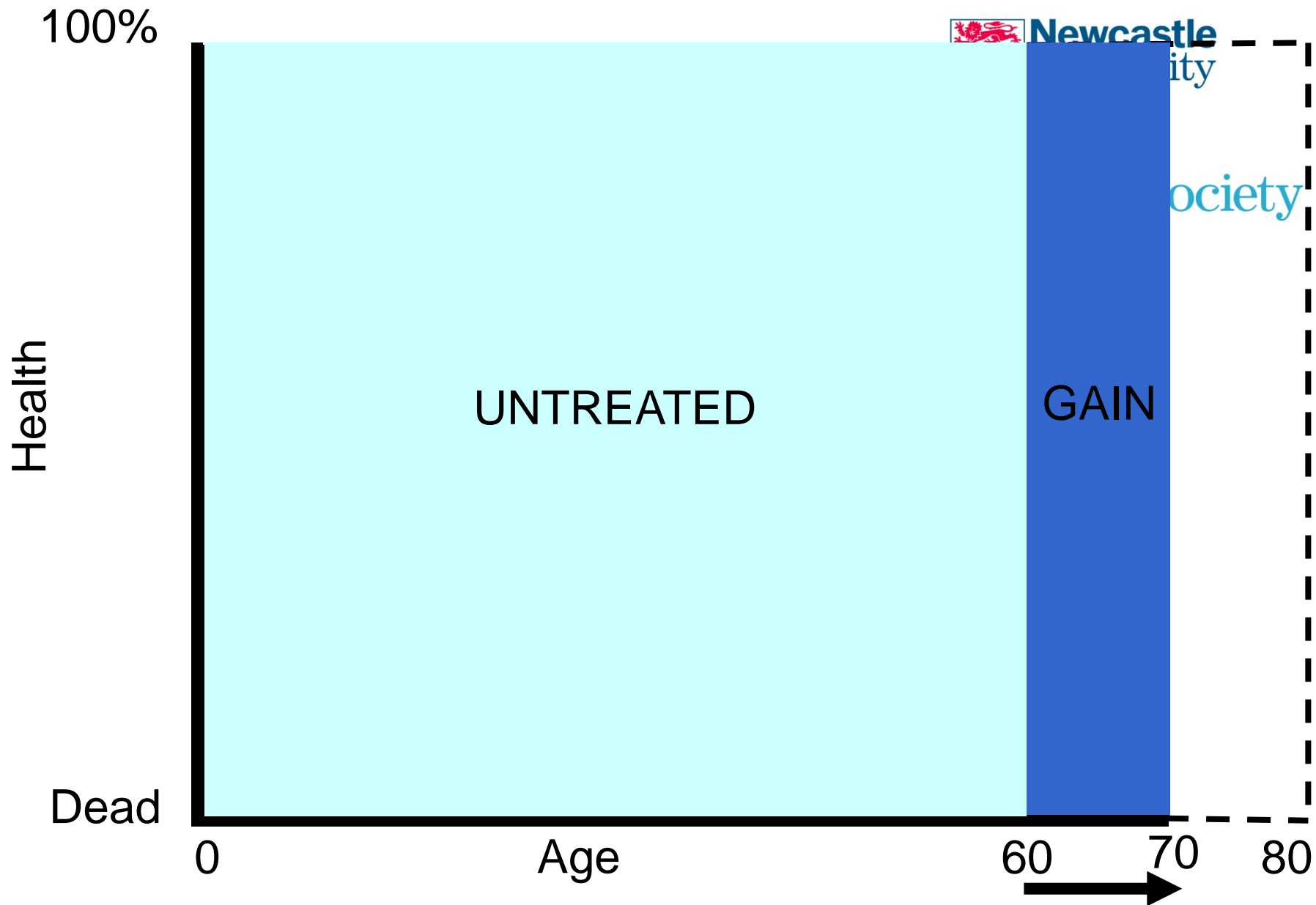
Of course, good health for a young person is different to good health for an elderly person. But to keep things simple, we show good health for all age groups as 100%



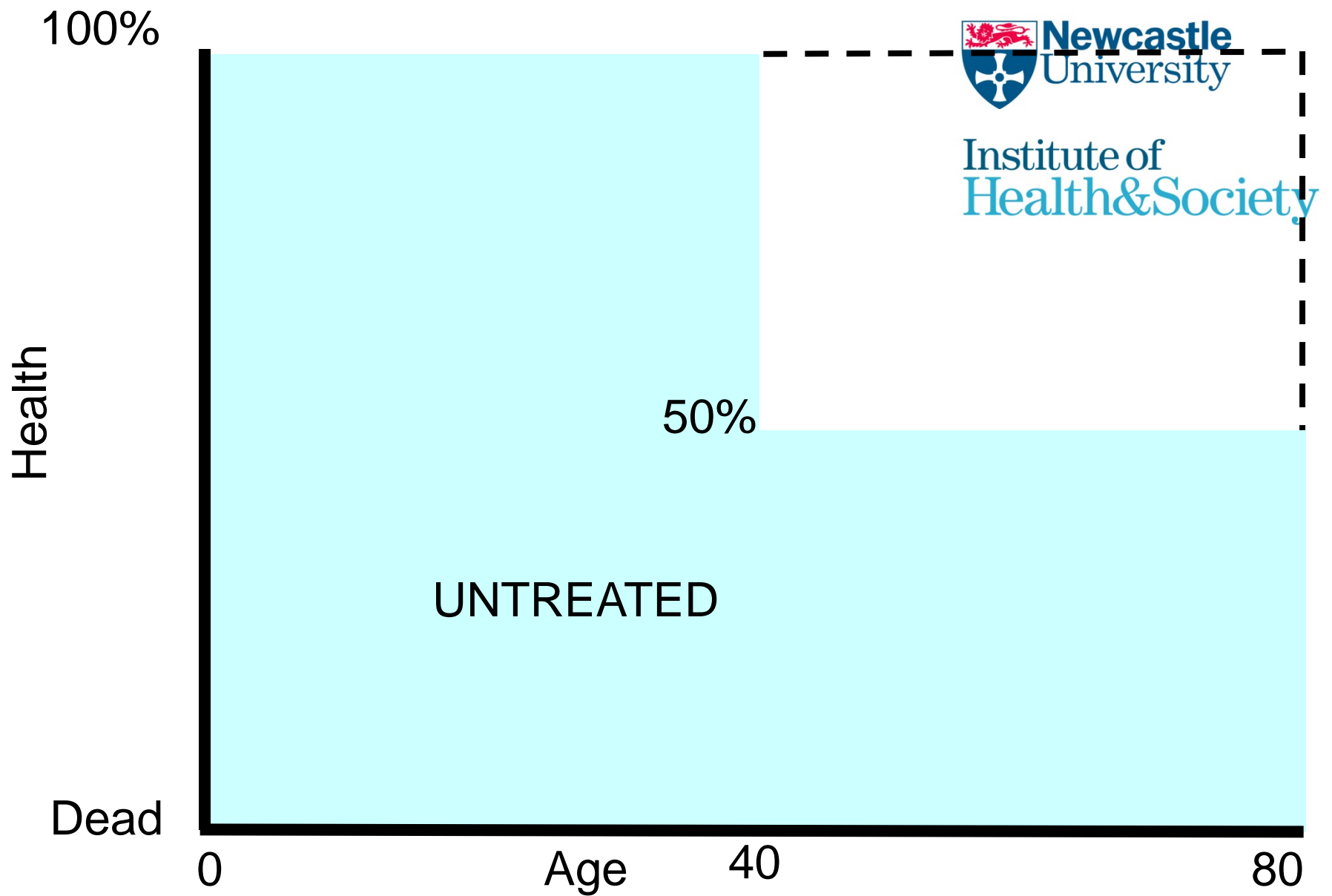
This picture shows someone with a life threatening medical condition which means that, untreated, they will die at the age of 60.



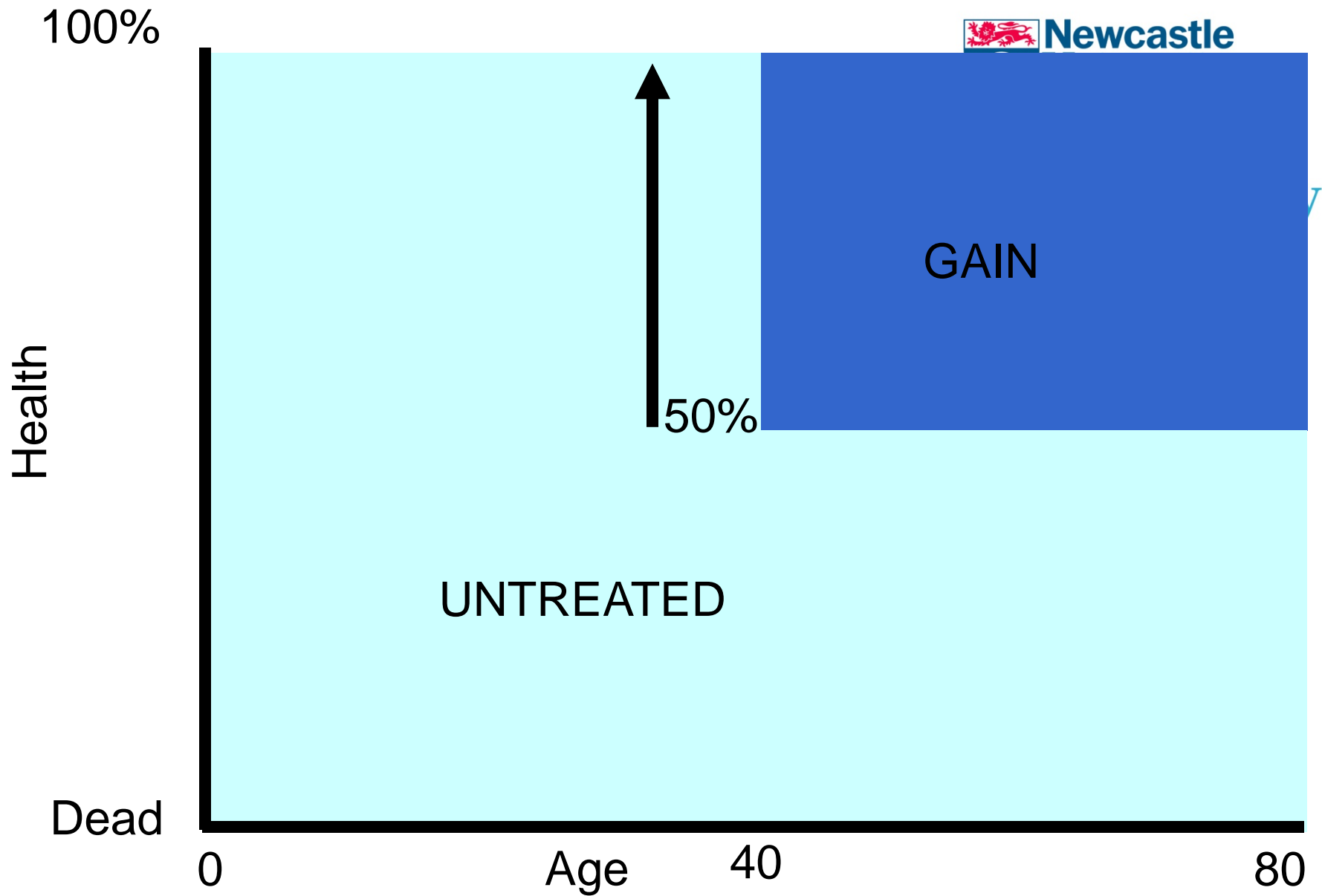
This picture shows a successful treatment for that condition. The treatment gives them an extra 20 years life expectancy shown by the dark blue area.



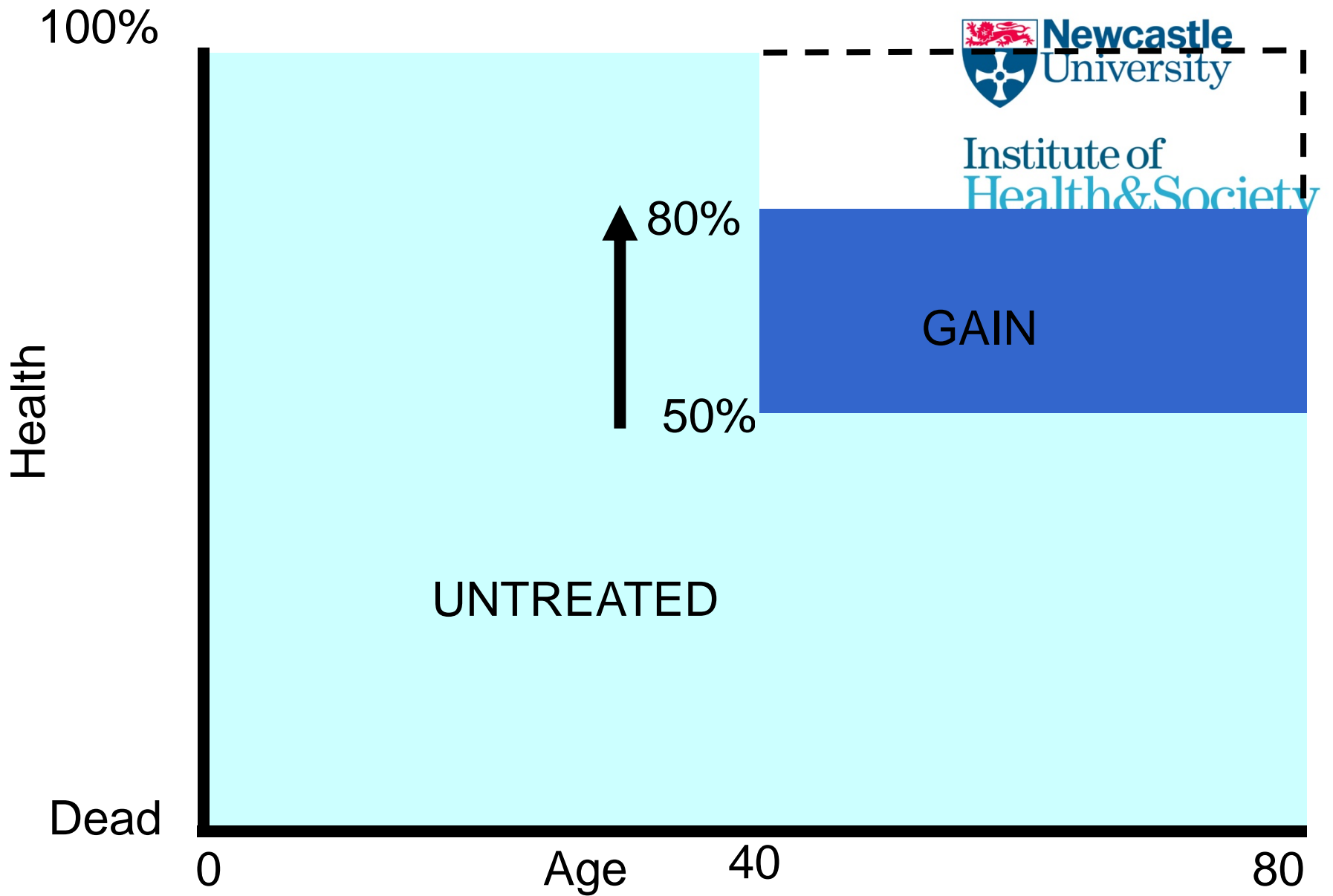
This picture shows a PARTLY successful treatment. It extends their life expectancy to 70 years, giving them a further ten years in normal health.



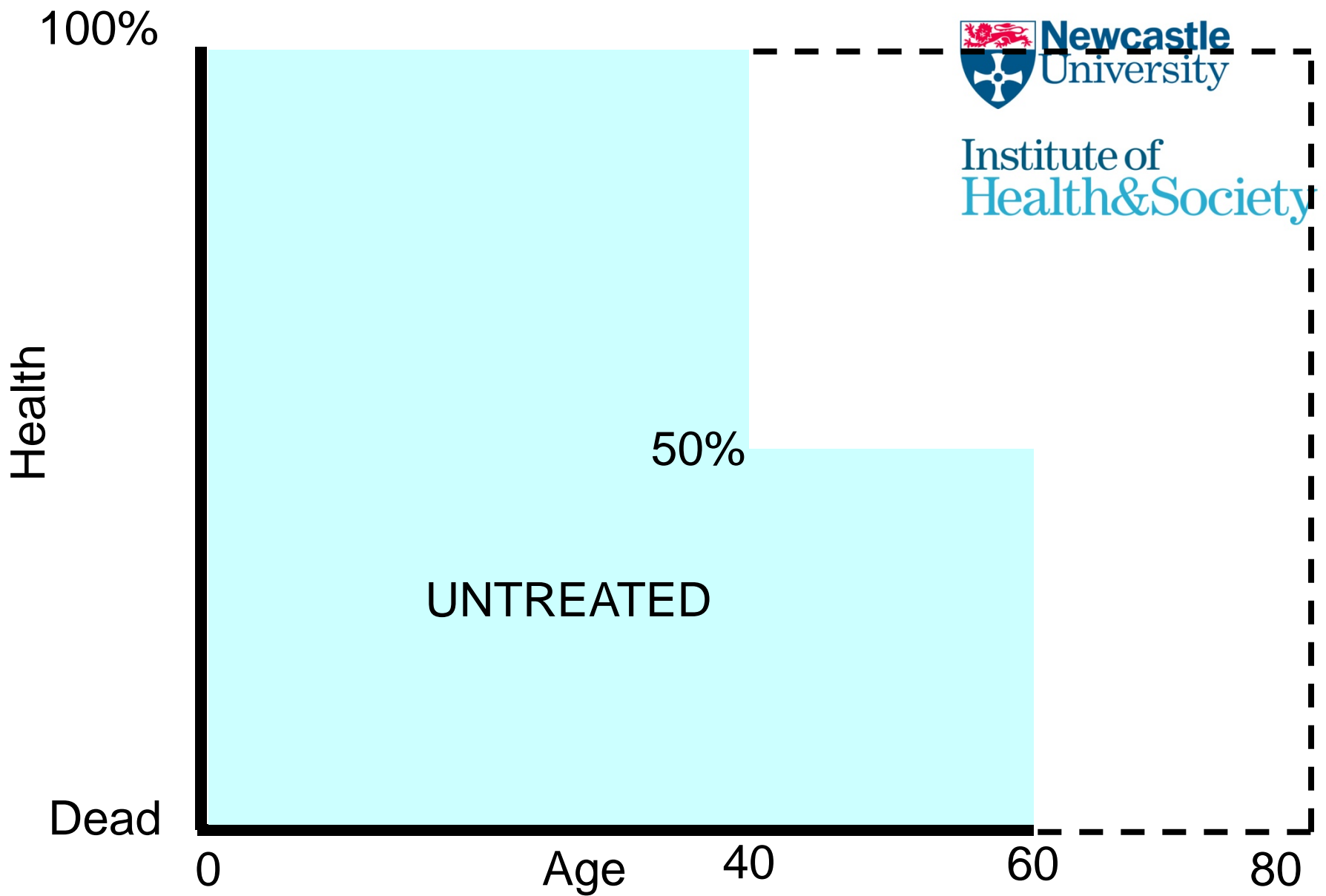
Some medical conditions do not affect life expectancy. This picture shows someone aged 40 who suffers a condition which reduces their health from 100% to 50% for the rest of their life.



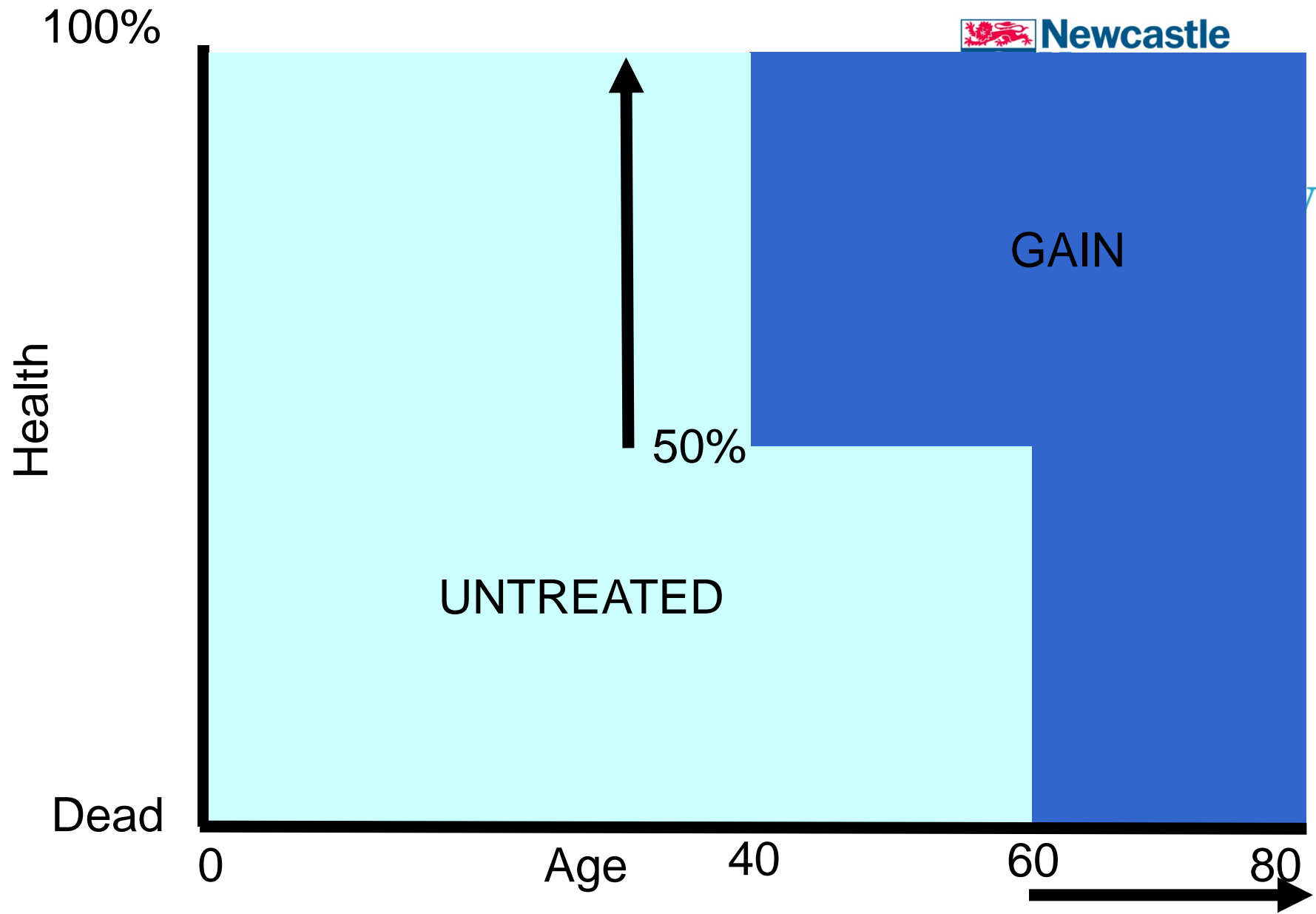
With successful treatment their health can be restored to 100%.



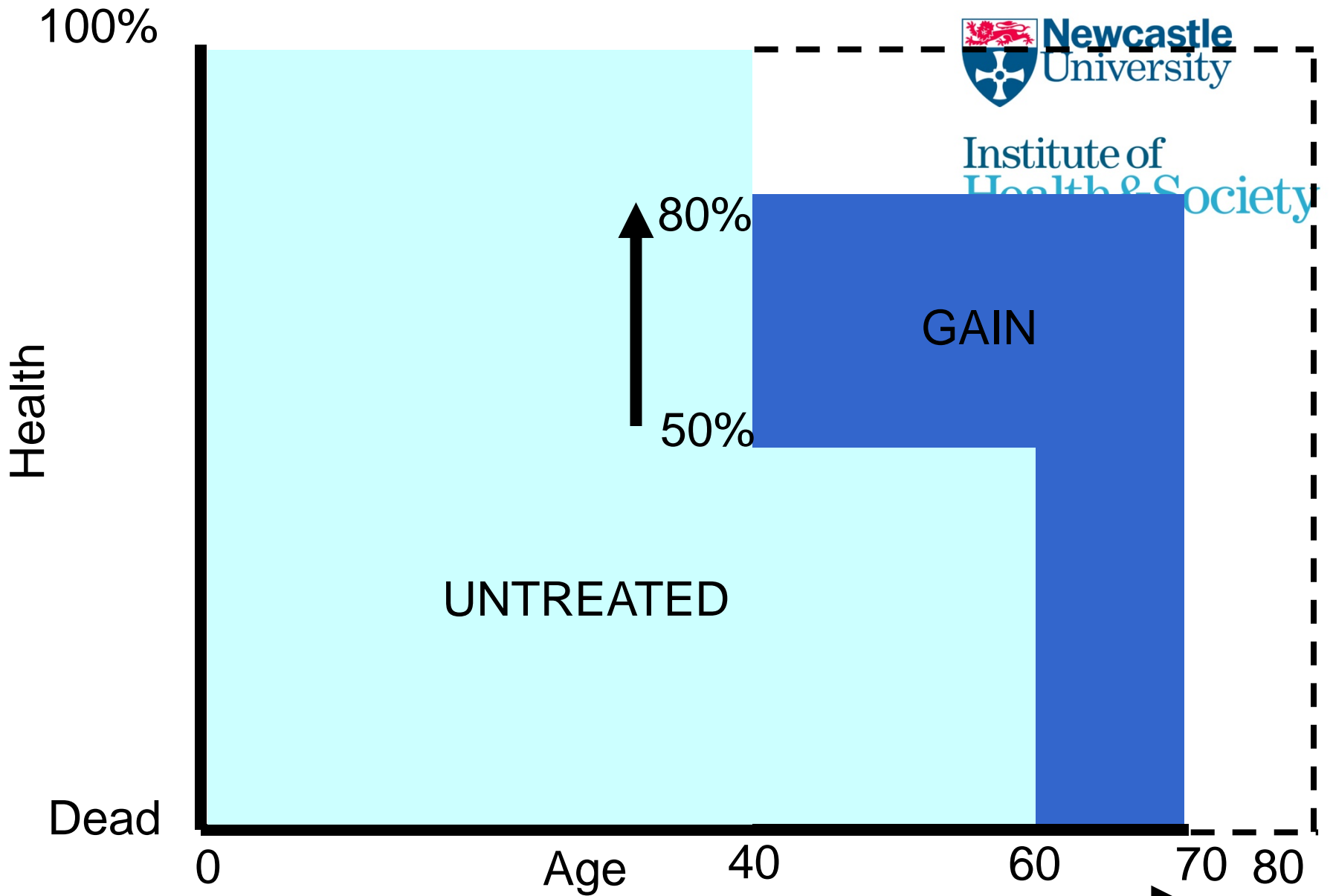
Not all problems can be cured entirely. In this picture, their health is improved to SOME extent, raising it to 80% of normal health for the rest of their life.



In this picture, a condition occurring at age 40 reduces their health from 100% to 50% AND also reduces their life expectancy from 80 to 60 years.



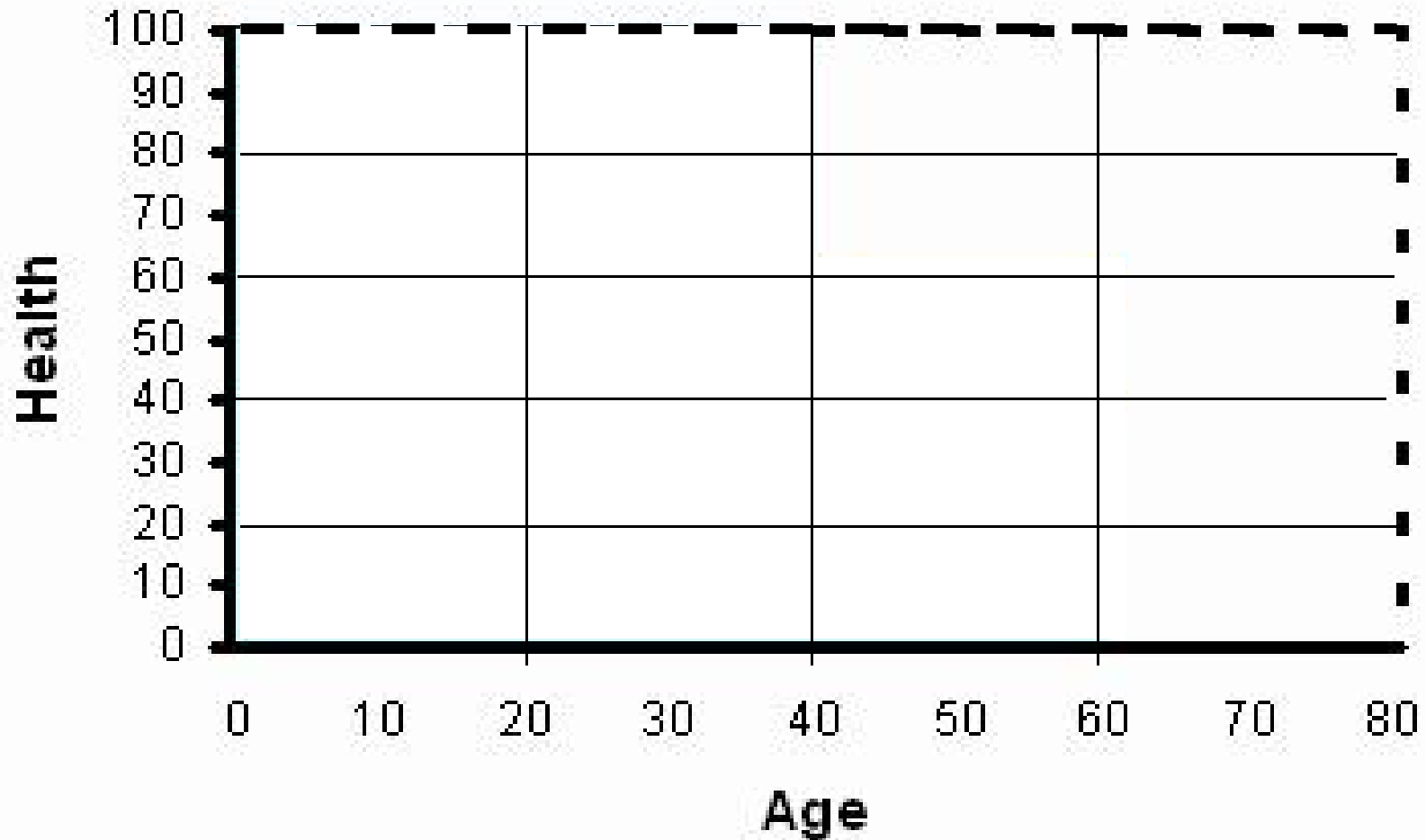
In the case shown here a successful treatment restores their health to 100% and restores their life expectancy to 80.



Some treatments may not be fully successful. In this case, health is restored to SOME extent, raising it to 80% of normal health and life expectancy is extended to age 70

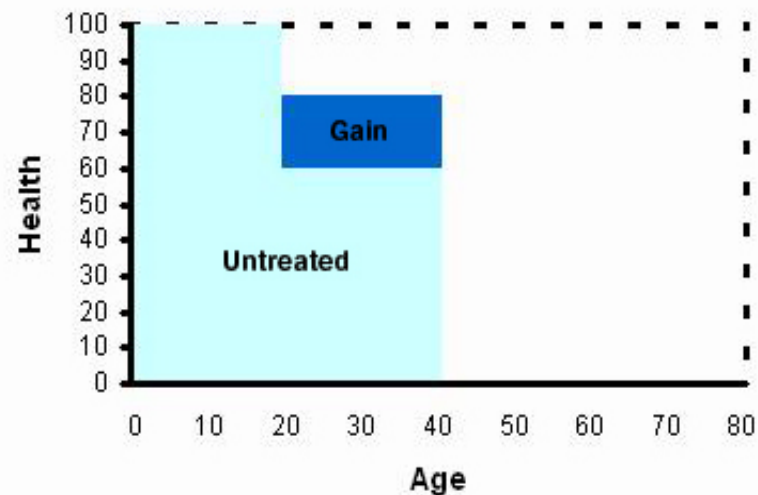
- What we are going to do now is to look at TWO different treatments for TWO different groups of people suffering different conditions.
- In each case, I am going to ask you to suppose that it is not possible to treat BOTH groups of people.
- So it will be necessary to decide which group gets priority.
- In each case, I am going to ask you which group YOU think should get priority.

QALY grid



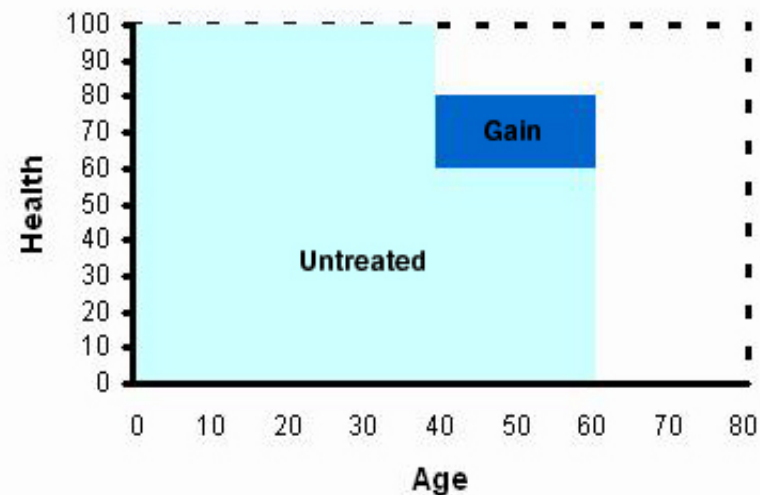
CONDITION A: WITH TREATMENT

100 PEOPLE



CONDITION B: WITH TREATMENT

100 PEOPLE



Now would you give priority to treating:

100 people with condition A: Health improves from 60% to 80% between the ages of 20 to 40 OR
100 people with condition B: Health improves from 60% to 80% between the ages of 40 to 60?



CONDITION A



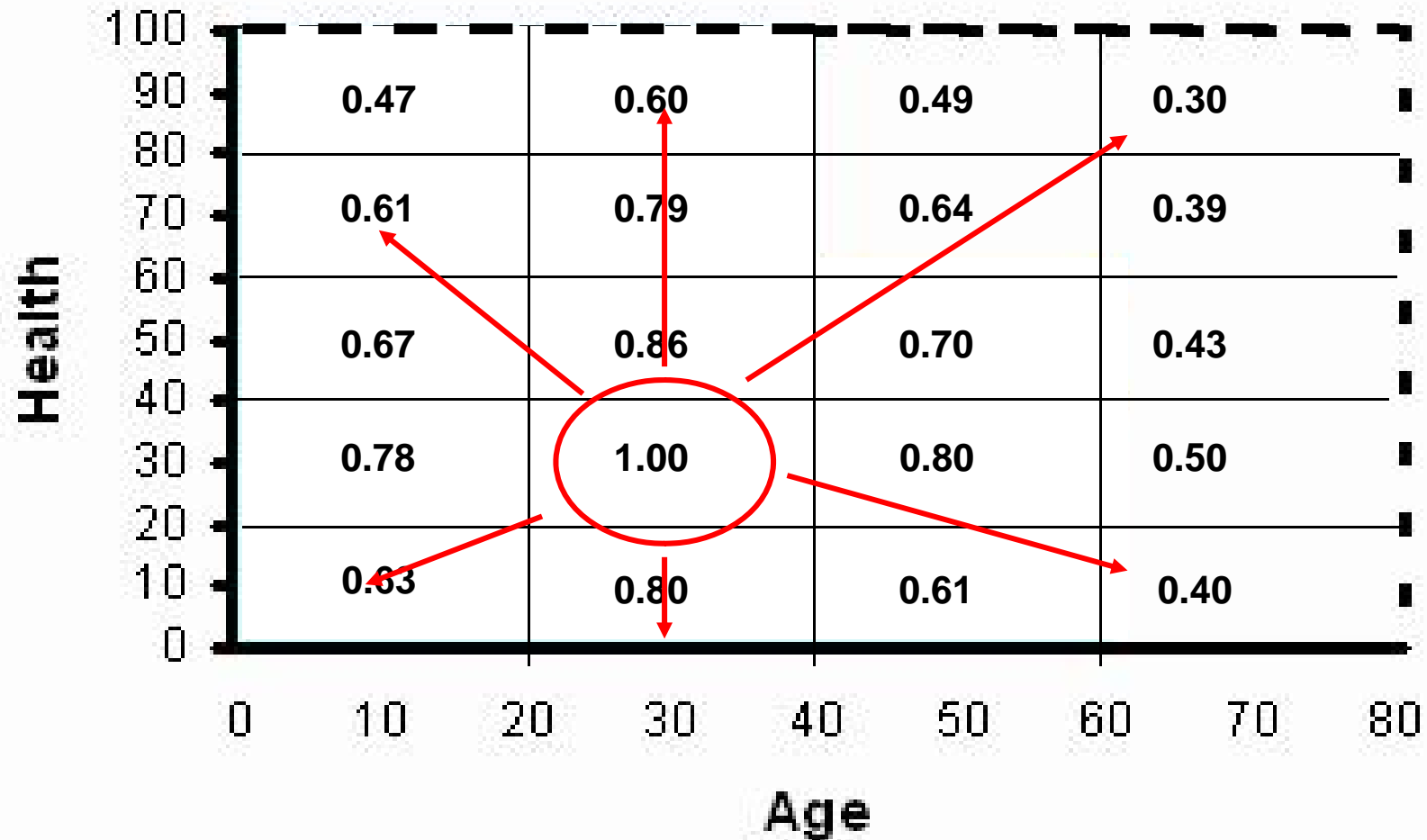
CONDITION B

A11CH057

A

B11C0062

Implied weights: PTO



Is an older person worth less than a younger person?



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“It's unconscionable to relax regulations based on the calculation that seniors' lives are worth 63% as much as the lives of younger people,” said Jim Dawson, a 67-year-old Torrance activist with the Gray Panthers who brought his 87-year-old mother, Doris, to the demonstration in her wheelchair. “What family do you know that would put a price on the life of a grandparent?”

Reported in the Los Angeles Times

SVQ DCM

- Because DCMs are attribute based, they would seem like a good candidate for examining the issue of QALY weights
- Considered different sizes of health (QALY) gain alongside age and severity

The attributes and levels

Description of attribute

Levels

Age at onset (years)

1 10 20 40 60 70

Age at death if untreated (yrs)

1 10 20 40 60 70 80

Gain in life expectancy (yrs)

0 1 5 10 20 40 60 79

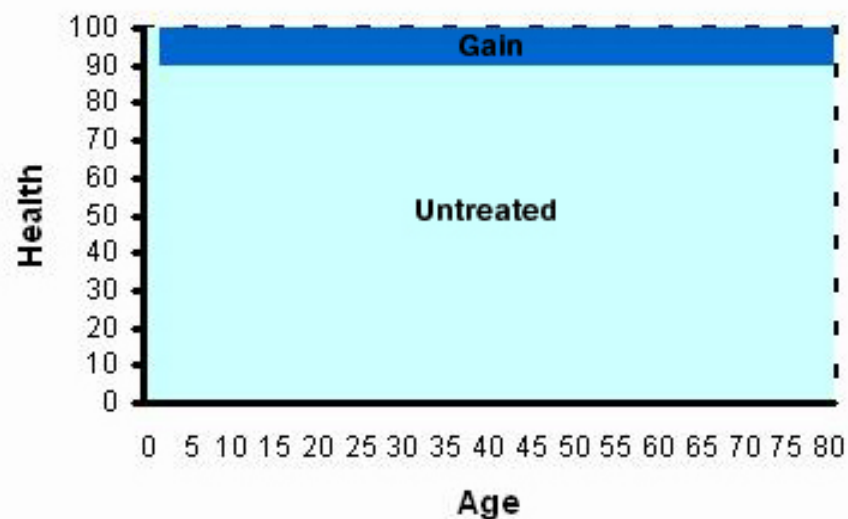
Qol if untreated (represented as %)

0 30 60 90

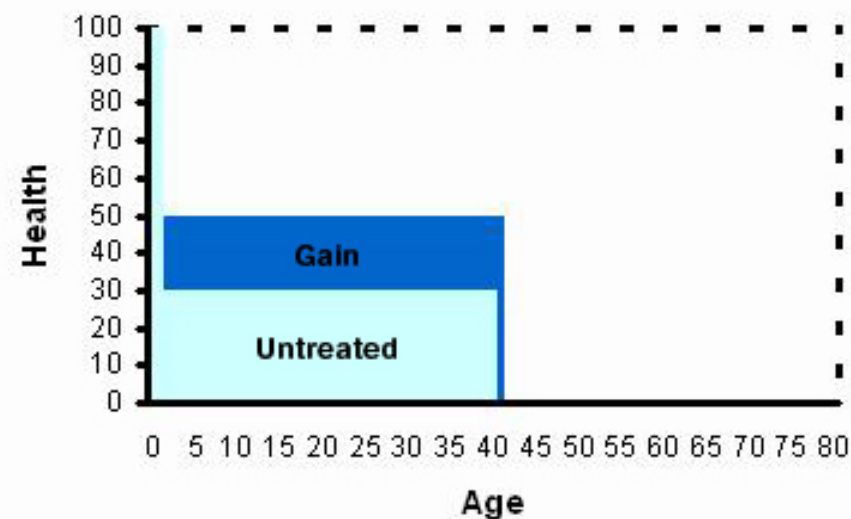
Gain in Qol with treatment (%)

0 10 20 40 70 100

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT



Now, would you give priority to treating the same number of people with:

Condition A: Health improves from 90% to 100% between the ages of 1 to 80 OR

Condition B: Health improves from 30% to 50%. Life expectancy extends from 40 to 41?

CONDITION A

CONDITION B

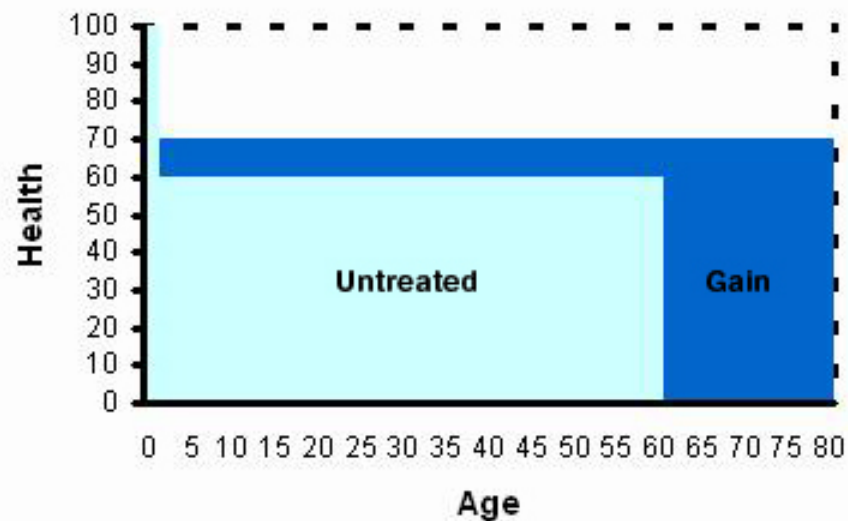
D55IN108

1

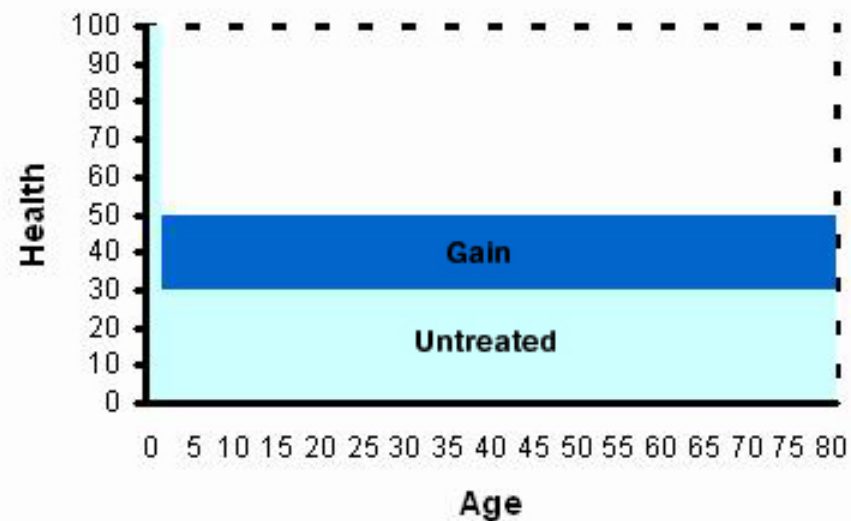
Continue

D12CH111

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT



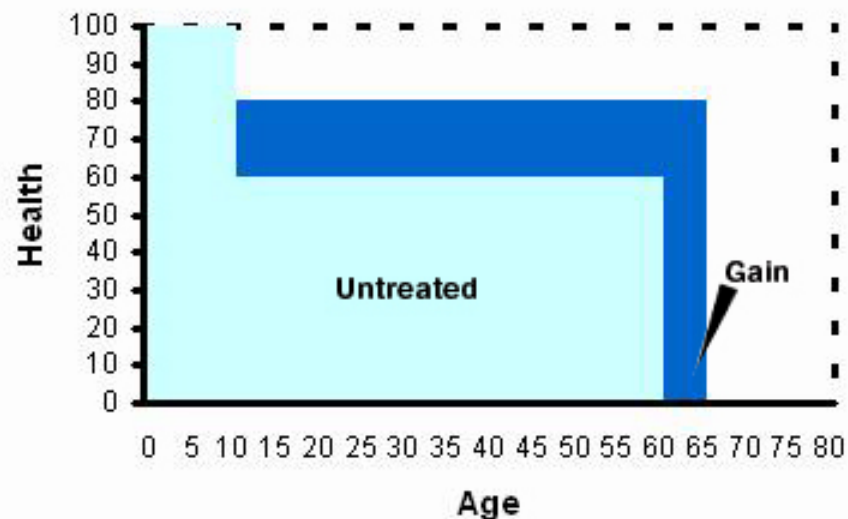
Now, would you give priority to treating the same number of people with:

Condition A: Health improves from 60% to 70%. Life expectancy extends from 60 to 80 OR
 Condition B: Health improves from 30% to 50% between the ages of 1 to 80?

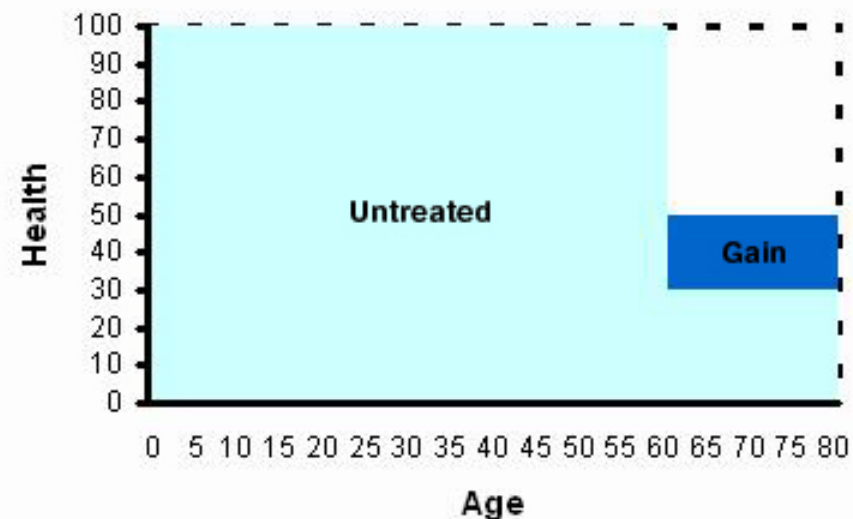
CONDITION A

CONDITION B

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT

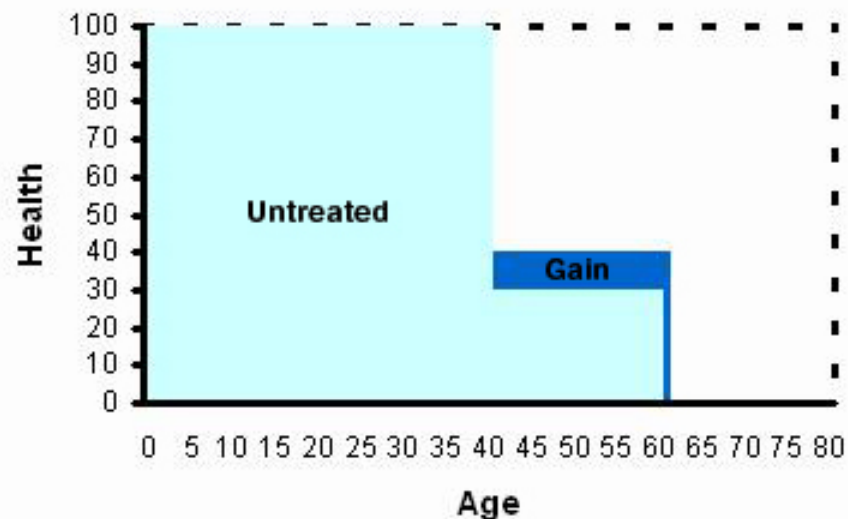


Suppose that there are equal numbers of people in each group and both treatments cost the same, but you could not provide BOTH. If you HAD to choose only one treatment, would you give priority to treating people with condition A and improve THEIR health from 60% to 80% and life expectancy from the age of 60 to 65 OR would you give priority to treating people with condition B and improve THEIR health from 30% to 50% between the ages of 60 to 80?

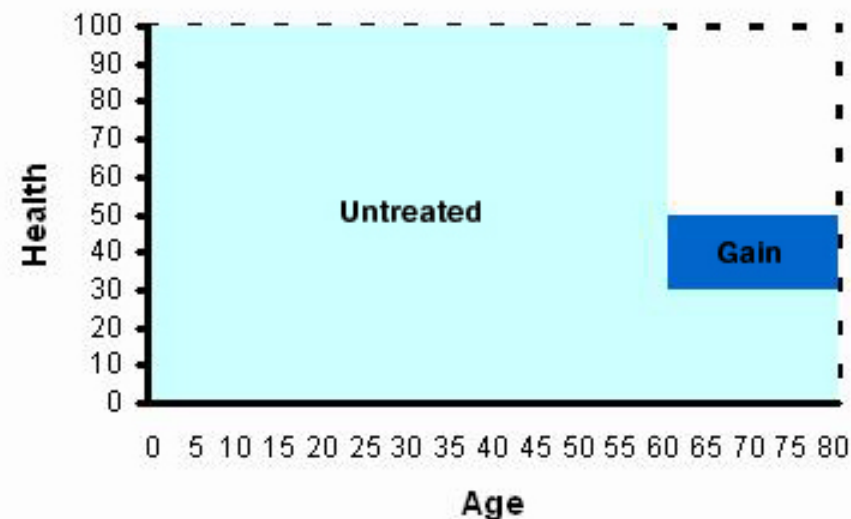
CONDITION A

CONDITION B

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT



Suppose that there are equal numbers of people in each group and both treatments cost the same, but you could not provide BOTH. If you HAD to choose only one treatment, would you give priority to treating people with condition A and improve THEIR health from 30% to 40% and life expectancy from the age of 60 to 61 OR would you give priority to treating people with condition B and improve THEIR health from 30% to 50% between the ages of 60 to 80?

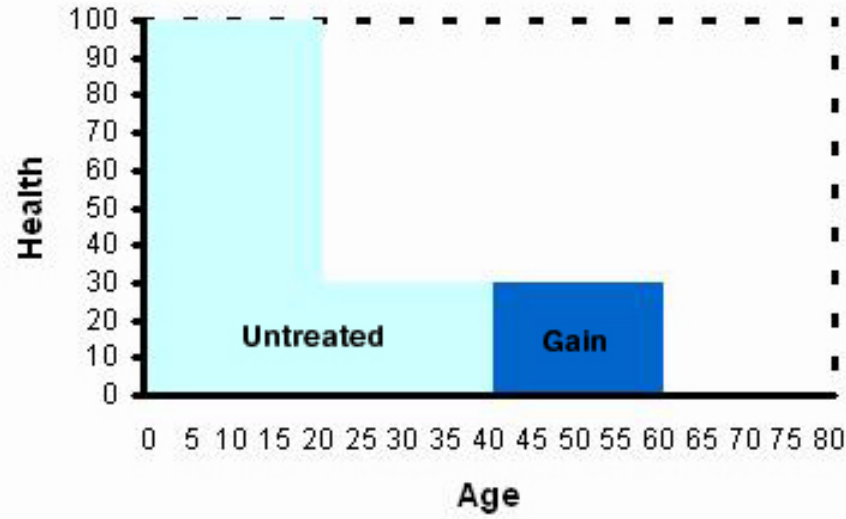


CONDITION A

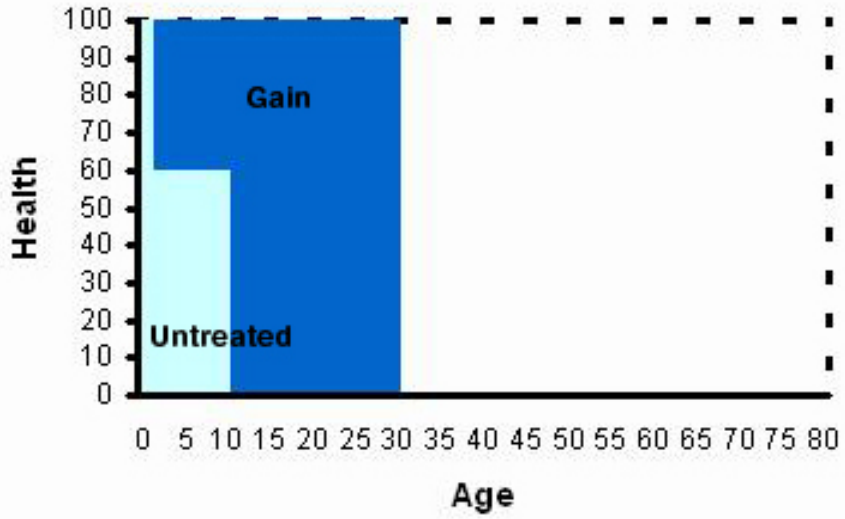


CONDITION B

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT

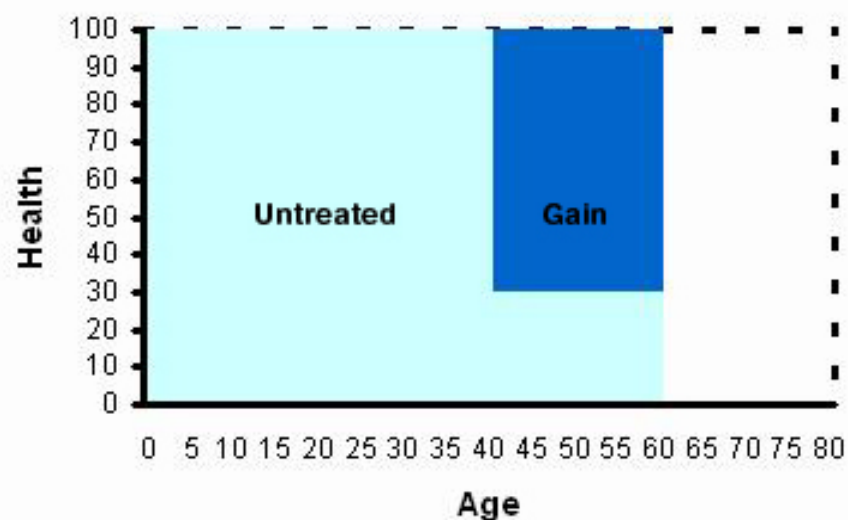


Suppose that there are equal numbers of people in each group and both treatments cost the same, but you could not provide BOTH. If you HAD to choose only one treatment, would you give priority to treating people with condition A and extend THEIR life expectancy from 40 to 60 at 30% health OR would you give priority to treating people with condition B and improve THEIR health from 60% to 100% and life expectancy from the age of 10 to 30.

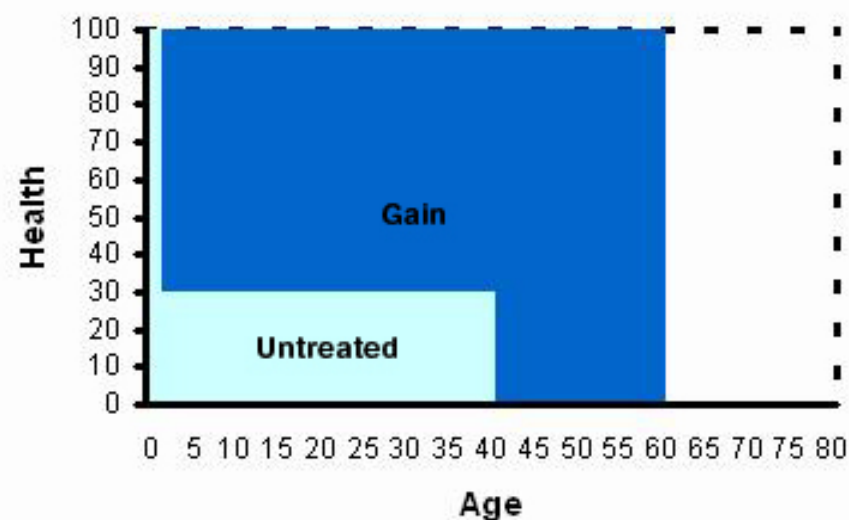
CONDITION A

CONDITION B

CONDITION A: WITH TREATMENT



CONDITION B: WITH TREATMENT



Now, would you give priority to treating the same number of people with:

Condition A: Health improves from 30% to 100% between the ages of 40 to 60 OR

Condition B: Health improves from 30% to 100%. Life expectancy extends from 40 to 60?

CONDITION A

CONDITION B

D55IN114

1

Continue

D12CH117

Main challenges of DCMs

- Implausible combinations of attributes (19% plausible)
- Empirical estimation of a model:
 - 4696 choices in total
 - Calculate the probability of choosing any scenario compared to another scenario
 - ‘Unpick’ the effect of severity and age on choice

The model

- Create a QALY variable:

$$V=f(AO, AD, QL, \mathbf{QALY})$$

- But cannot be additive:

$$\text{Log}(V) = \beta_1 \log(AO) + \beta_2 \log(AD) + \beta_3 (\log QL) \\ + \beta_4 (\log QALY)$$

- Model is then differenced and also tried to account for higher order non-linearities

Challenges and results

- Main challenge is multi-collinearity
- But, main result is that QALYs dominate the model in terms of size of coefficient and statistical significance (i.e. health gain is most important; age and severity drop out)
- This result needs confirmation (or contradiction) with future DCE studies