



Public Health
England

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NHS Health Checks: QRISK[®]3 Explained

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1. Introduction

Adults aged 40 to 74 who attend an NHS Health Check should have their cardiovascular disease risk score calculated using the QRISK calculator. ClinRisk Ltd replaced the current version of the calculator, QRISK®2, with QRISK®3.¹ This update meant that the calculator required seven additional fields of data. None of these data fields are routinely collected as part of an NHS Health Check. Therefore, the Medicines and Healthcare Products Regulatory Agency (MHRA), Public Health England (PHE) and ClinRisk Ltd have agreed how QRISK®3 should be used in the context of the NHS Health Check programme.

Advice from the three organisations was considered by the NHS Health Check Expert Scientific and Clinical Advisory Panel (ESCAP) in September 2019. ESCAP's recommendations are summarised in the programme's 2019 Best Practice Guidance.² However, a number of questions about using QRISK®3 as part of an NHS Health Check have been raised by local commissioners and providers. Therefore, this document aims to provide commissioners and providers with more information on using QRISK®3 as part of an NHS Health Check.

2. Background

QRISK is an algorithm which calculates an individual's 10-year risk of having a heart attack or stroke. It was developed by doctors and academics and is based on routinely collected data from many thousands of General Practices (GP) across the country via the QResearch database. The algorithm is owned by ClinRisk Ltd.

ClinRisk Ltd routinely update the QRISK algorithm, usually every April, and in a review of its cardiovascular disease guidance the National Institute for Health and Care Excellence (NICE) recommended ClinRisk Ltd consider including severe mental illness in the algorithm.³ In conducting this update ClinRisk Ltd also identified that there were a number of other areas which enhanced the precision of the algorithm. As a result, the QRISK algorithm was updated so that QRISK®3 became the standard version of the QRISK algorithm.¹

Currently the NICE guidance recommendation is to "use the QRISK®2 risk assessment tool to assess CVD risk for the primary prevention of CVD in people up to and including age 84 years."³ However, a surveillance review of the NICE guidance in January 2018 concluded that a partial update of the guidance is warranted to provide advice on the use of QRISK® 3.⁴ This update is not expected to report until 2023.

3. Differences between QRISK®3 and QRISK®2

QRISK®3 includes an expanded definition of chronic kidney disease and seven variables which are not included in QRISK®2. These are a diagnosis of:

1. migraine
2. systemic lupus erythematosus (SLE)
3. severe mental illness
4. erectile dysfunction (or being treated for)

Prescriptions for:

5. corticosteroids
6. atypical antipsychotics

and:

7. a measure of systolic blood pressure variability.

The science underpinning these additions in to the QRISK algorithm have been published in the British Medical Journal and considered by the NHS Health Check ESCAP.⁵

4. Transitioning to QRISK®3

QRISK®3 is already available as a web version and one GP clinical system supplier, Vision, has already started to include it on their system. As QRISK®3 is now the standard version of QRISK® it will be part of the ClinRisk Ltd software development kits. As these updates are deployed, all implementations will become QRISK®3 by default.¹ Where QRISK has been integrated into operating systems, transition is dependent on the licensee scheduling an update as part of their own release cycle. Therefore, until all clinical system providers have released QRISK®3 on their system, different NHS Health Check scenarios can co-exist both within and between unitary local authorities, these include:

- a) GP clinical system does not use QRISK® 3: continue using QRISK® 2
- b) GP clinical system is updated to QRISK® 3 and there is no third party supplier delivering NHS Health Checks: If a person has any of the newly included variables recorded in the clinical system medical records this information should automatically be pulled through into the QRISK® 3 calculator. The resulting QRISK® 3 score can be acted upon according to the outcome
- c) Third party supplier updated to QRISK® 3 and patient's GP clinical system updated to QRISK® 3: QRISK® 3 may, for the time being, be used with the QRISK® 2 fields only. A score calculated in this way is considered a 'limited QRISK® 3 score.' See section 5
- d) Third party supplier updated to QRISK® 3 and patient's GP clinical system using QRISK®2 or vice versa: QRISK® 3 may, for the time being, be used with the QRISK® 2 fields only. A score calculated in this way is considered a 'limited QRISK®3 score.'

During this transition period a web-based version of QRISK®2 remains available to access.⁶

Local commissioners should continue to ensure that their Provider is delivering NHS Health Checks as per the mandatory elements detailed in their current local Service Specification. This Service Specification should specify that data is collected as prescribed in the NHS Health Check Best Practice Guidance² and these should be entered into the QRISK®3 system. Commissioners should stipulate that the additional seven fields of data for QRISK®3 do not need to be collected, see section 5.

5. Using QRISK®3

The data prescribed in the NHS Health Check Best Practice Guidance² should be entered into the QRISK®3 algorithm. None of the seven new variables or the new chronic kidney disease definition form part of the mandatory questions, tests, or measurements of an NHS Health Check. People with a diagnosis of chronic kidney disease would not be eligible for an NHS Health Check.

Where QRISK®3 is used on a clinical system it will automatically pull information on the new variables from a person's medical record into the algorithm to calculate their 10-year CVD risk score. To enable this ClinRisk Ltd have provided licensees of QRISK with the Systematized Nomenclature of Medicine Clinical Terms (SNOMED codes) that underpin the data for the algorithm.

It is important to consider that if a person does have any of the new variables coded on their medical record, and QRISK®3 is used, then their 10-year CVD risk will be higher than if QRISK®2 had been used. Therefore, providers using QRISK®3 should be supported to develop appropriate knowledge on the communication of risk.

Where NHS Health Checks are delivered outside of general practice and there is no way to automatically pull information on the new variables into QRISK®3, then it may for the time being be used with the QRISK®2 fields only. A score calculated in this way is considered a 'limited QRISK®3 score'. Therefore, whoever is delivering the NHS Health Check and communicating risk should explain to patients that their risk score and clinical pathway might alter when their information is entered into their records in general practice.

There is a possibility that using a limited QRISK®3 score could contribute towards increasing health inequalities as the seven additional variables are not being taken into account, this should be considered as part of a local impact assessment.

There is no limited QRISK®3 SNOMED code, when the risk factors are entered into a patient's practice record a full QRISK®3 will automatically be calculated. Local commissioners need to ensure that any staff delivering checks in community settings

have knowledge and understanding of this. It is important that this is covered in local training.

It is for local commissioners to decide and develop the appropriate training programmes if they want to consider completing the full QRISK®3 outside of the GP setting. Information on licencing QRISK can be found [here](#).

6. Individual's CVD risk and its management

As part of the validation process by ClinRisk Ltd, it was established that¹:

- a) The two calculators identify a similar number of people at >20% risk of CVD
- b) That both algorithms underestimate CVD risk
- c) Due to the additional fields, QRISK®3 is more precise which means that some people could move between risk categories (low, moderate, high).

The ClinRisk Ltd validation work reports that of those people classified by QRISK®2 as at risk of CVD over a 10-year period (a risk score of 10% or more) 2.4% (10,948 people) would be reclassified as low risk (using a version of QRISK®3 with the additional fields except the measure of systolic blood pressure variability). Conversely, of those identified by QRISK®2 at low risk over a 10-year period (a risk score less than 10%) 0.5% (11,554) would be classified as high risk. This indicates that while the change to QRISK®3 is likely to result in similar numbers of people identified at high risk, QRISK®3 is more precise than its predecessor. Therefore, while there is little impact at a population level, for the small number of people with one of the conditions reflected in the additional fields, using QRISK®3 could mean the difference between treatment or not.

For example:

A white male, aged 58, with severe mental illness and on atypical antipsychotic medication:

- QRISK®2 score not taking severe mental illness into consideration = 9.1%
- QRISK®3 score including severe mental illness clinical information = 10.4%.

NICE CVD guidelines for statin prescribing for the primary prevention of CVD remains unchanged and states that:

- When using the risk score to inform drug treatment decisions, particularly if it is near to the threshold for treatment, take into account other factors that:
 - may predispose the person to premature CVD and
 - may not be included in calculated risk scores [2008, amended 2014].⁴

- Recognise that standard CVD risk scores will underestimate risk in people who have additional risk because of underlying medical conditions or treatments. These groups include:
 - people treated for HIV
 - people with Serious Mental Illness (SMI)
 - people taking medicines that can cause dyslipidaemia such as antipsychotic medication, corticosteroids or immunosuppressant drugs
 - people with autoimmune disorders such as systemic lupus erythematosus, and other systemic inflammatory disorders [2008, amended 2014].⁴

7. Summary

Commissioners and providers should continue to ensure that NHS Health Checks are delivered as prescribed in the NHS Health Check Best Practice Guidance.² The use of QRISK®3 is compatible with the delivery of NHS Health Checks as it can be used with only the QRISK®2 fields of data. Where QRISK®3 is used in general practice it will make a difference to individuals care.

Where QRISK®3 is used on the clinical system, commissioners should ensure that staff delivering NHS Health Checks are supported to develop appropriate knowledge on the communication of risk.

It is for commissioners to decide and develop the appropriate training programmes if they want to consider completing the full QRISK®3 outside of the GP setting.

8. References

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