HEALTH SYSTEMS RESEARCH UNIT

A RAPID EVIDENCE SYNTHESIS REPORT

Final

Date: 03 May 2017

SYNTHESIS REQUEST

How should risk assessment and screening for Hypertension, Type 2 Diabetes Mellitus (T2DM) and Dyslipidemia be done for undiagnosed patients who present at primary healthcare facilities?

KEY MESSAGES

1. No tool was found for the simultaneous risk assessment and screening of Hypertension, T2DM and Dyslipidemia.
2. In general, risk assessment tools are moderately successful in identifying apparently healthy people who are at an increased risk of a disease.
3. Internationally, there is a proliferation of risk assessment tools. However, none of those found were developed in sub-Saharan Africa.
4. Five risk assessment tools for T2DM have been validated in a study among a mixed-ancestry population in South Africa, with modest-to-acceptable discriminatory ability in predicting prevalent undiagnosed Diabetes, overall in the population, and within subgroups.
4. The South African National Department of Health is in the process of developing standard operating procedures for risk assessment, screening and diagnostic testing for Diabetes and Hypertension in primary healthcare (PHC) facilities and within communities.

PROBLEM STATEMENT AND SYNTHESIS AIM

In PHC facilities in the Western Cape Department of Health and nationally, standard care requires every patient to present at the preparation room for certain tests or assessments before going to a consultation room. These assessments include checking and recording weight, blood pressure (BP), pulse and temperature[1]. This practice is problematic, firstly because it is time-consuming and creates a workflow bottleneck, and secondly, because there is often little consistency in how this is done across facilities, or patients. This synthesis aims to

Who requested the synthesis?

Dr. Hassan Mohamed, a public health specialist at the Western Cape Department of Health.

✓ Included in the synthesis

- A summary of results from five systematic reviews and two primary studies.
- A summary of risk assessment guidelines.

X Not included in this synthesis

An analysis of results found in the included studies.

Preparing the synthesis

We prioritised systematic review evidence applicable to low-and-middle income countries but also included experimental and non-experimental primary studies. We also consulted with experts. Two reviewers duplicate-screened all titles, abstracts and full texts. Two reviewers verified each other's summaries of results and quality appraisals of the included studies. The synthesis was peer-reviewed by external content experts.

provide evidence on good risk assessment and screening practices for three asymptomatic conditions, namely Hypertension, T2DM and Dyslipidemia.

BACKGROUND

Risk assessment uses easily identifiable characteristics (such as weight and age) which are associated with an increased risk of developing the disease[2,3], to identify those that should then be screened. Risk assessment tools provide a risk score, which is an objective evaluation of the probability of the presence, or future development of, an illness[4-6]. Screening is testing apparently well people to find those at increased risk of having a disease or disorder[2]. It is slightly more time consuming and invasive assessments, such as blood glucose or BP measurements. Diagnostic testing is then required to provide a definitive diagnosis, for example, the multiple BP measurements required for the diagnosis of Hypertension to be confirmed. Although immediate definitive diagnostic testing might have more intuitive appeal, given costs this is not always worthwhile. Consequently, screening and risk assessment are used to determine which people require diagnostic testing. For this synthesis, we defined guidelines as statements that aim to standardise medical care and promote uniformity in healthcare practice[7].

SYNTHESIS

General health checks[8,9]

1. In unselected adult populations in Europe and the United States, general health checks for early detection of illness in someone who does not feel ill, did not reduce mortality or morbidity over a median follow up of 9 years (Caveat: This is based on mainly old studies)
2. These health checks are likely to increase the number of diagnoses, but this is poorly recorded in studies. (Caveat: This is based on mainly old studies)
3. From the above it can be concluded that measuring the temperature of chronic patients at every outpatient visit is not necessary, as temperature is typically only present for symptomatic conditions.

Hypertension

Guidelines[10, 11]

1. It is recommended that all adults ≥ 18 years old should be screened for the risk of having Hypertension.
2. Systemic Hypertension is common in T2DM and likely to affect most diabetic patients at some point. Therefore, for diabetic patients, BP should be measured at every clinic visit, after the patient has been seated and rested for at least five minutes.
3. The guidelines developed by the *Southern African Hypertension Society* (SAHS) are based on a simplified version of the *European Hypertension Guidelines*, but have not been validated in South Africa.
4. The SA National Department of Health (NDoH) recently agreed that the SAHS guidelines be nationally adopted and enforced through the *Essential Drug List*.

Risk assessment[9]

1. No risk assessment tool for Hypertension was found.
2. There is no evidence of the benefit of blanket risk assessment, i.e. population-wide assessment of everybody, irrespective age, gender and health status, for Hypertension and/or Diabetes, compared to targeted or opportunistic assessments, in low- and middle-income settings.

T2DM

Guidelines

1. The *Canadian Task Force on Preventive Health Care*[12] (CTF) recommends:
   - ✓ Using FINDRISC, the Finnish risk assessment tool (one of the most cited risk assessment tools[3,4]; find a copy attached)
   - ✓ Risk calculations at least every 3-5 years for adults ≥ 18 years of age
   - ✓ No routine diagnostic tests for adults at low to moderate risk (FINDRISC score) for T2DM (CTF rating: weak recommendation because it is based on low-quality evidence)
   - ✓ Adults at high risk (FINDRISC score) must undergo diagnostic tests every 3 to 5 years with the A1C blood test (CTF rating: weak recommendation because it is based on low-quality evidence). This test is at least 2 to 3 times more expensive than a standard glucose test, and therefore not recommended in resource-limited settings. Also, the test is affected by haemoglobinopathies, which may be common in Africa. However, it is a more convenient test that an oral glucose tolerance test and does not require an overnight fast nor a 2-hour glucose test[13]
   - ✓ Adults at very high risk of Diabetes (FINDRISC score) must undergo diagnostic tests annually, using the A1C blood test (CTF rating: weak recommendation because it is based on low-quality evidence)

Risk assessment

1. There is no optimal universal risk assessment tool because a tool's effectiveness is a function of its statistical properties and context in which it was developed[3,4].
2. Overall, risk assessment tools are moderately successful[3-5], with no evidence that any particular one is clearly superior to others[5].
3. No tools have been found that were developed in sub-Saharan Africa[5].
4. In a recent study[14], five non-invasive risk assessment tools were validated in a sample of 737 adults of mixed-ancestry in the Western Cape. These tools were: the Cambridge Risk Score; the Kuwaiti Risk Score; the Omani Diabetes Risk Score, the Rotterdam Predictive Model; and FINDRISC.
   - ✓ All tools included age as a predictor, with a range of other predictor variables such as sex, body mass index, being on Hypertension medication, family history of Diabetes, waist circumference, and current or past smoking
   - ✓ The Cambridge and Finnish tools performed at the lower end of accuracy compared to validations elsewhere; the Rotterdam tool performed similarly to other validation studies; the Omani tool underperformed compared to one validation conducted elsewhere; and no other validation scores were found for the Kuwaiti tool
   - ✓ The study confirmed other research[5] in its conclusion that risk assessment tools developed within a given population tend to be less precise and sensitive when validated in other populations
5. Diabetes is associated with an increased risk of TB, and assessing the risk for Diabetes among TB patients, and vice versa, is recommended in areas with a high TB prevalence[15].

Dyslipidemia

Guidelines[16]

1. Because of the high prevalence of familial hypercholesterolaemia in SA, particularly in the White population, each person should be diagnostically tested with a full lipogram, at least once in young adulthood (from 20 years of age). The Black population usually had very good lipid profiles but these are now slowly worsening because of changes in diet, and perhaps due to the influence of HIV infection and antiretroviral therapy[13].
2. Finger prick tests are appropriate screening tests to recommend lifestyle interventions, but not sufficient to commit a patient to lifelong treatment.

Risk assessment

1. No risk assessment tool was found.
2. The *South African Dyslipidemia Guideline*[16] recommends using the *Framingham Risk Score* to detect cardiovascular disease in patients with Dyslipidemia, which includes cholesterol and blood pressure measurements.

NDoH[17]

1. The *Non-communicable diseases Cluster* developed a draft standard operating procedure (SOP) that details risk assessment and diagnostic testing procedures. The SOP is pending the development of a policy on risk assessment, screening and diagnostic testing for Diabetes and Hypertension.
2. The algorithms in the SOP are informed by existing clinical guidelines from the Department and relevant organisations, the *Adult Primary Care Tool*, and consultation with experts.

Tips for reviewing the usefulness of risk assessment tools[18]

1. Tools should be simple, safe, precise and validated.
2. A policy and sufficient resources should be in place for further diagnostic tests and treatment.
3. Tool development should be supported with evidence that the complete risk assessment cascade (including diagnostic procedures and treatment) is clinically, socially and ethically acceptable to health professionals and the public.
4. If a tool is used for opportunistic assessments, the score must reflect the structure and timeframe of such encounters, and the competencies of the healthcare worker using the tool[6].

IMPLICATIONS

In the absence of validated risk assessment tools for the South African context, there is no easy solution to rapidly identify patients in Western Cape PHC facilities who have, or are at high risk of developing, Hypertension, Type 2 Diabetes Mellitus or Dyslipidemia. Some of the guidelines offered in the synthesis provide information on the frequency of diagnostic tests, which may be of value to address congestion in preparation rooms. While it seems that Diabetes patients should have their blood pressure measured at every visit[1], it is not clear that it is necessary for other patients, for example those with Hypertension or HIV/AIDS. It may therefore be advisable to measure blood pressure less frequently on stable patients, but this need to be confirmed in further research. It is important to balance the effort and resources currently used in risk assessment and screening in the preparation room, with the actual 'yield' of new patients, and whether those new patients are successfully transferred into long term care.

SYNTHESIS TEAM

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