

PICO question 3: Should cardiovascular risk assessment be used to guide initiation of antihypertensive medications?

	CRITERIA	JUDGEMENTS	RESEARCH EVIDENCE/PANEL INPUT
VALUES	Is there important uncertainty or variability about how much people value the main outcomes?	Important uncertainty or variability <input type="checkbox"/> Possibly important uncertainty or variability <input checked="" type="checkbox"/> Probably no important uncertainty or variability <input type="checkbox"/> No important uncertainty or variability <input type="checkbox"/> No known undesirable outcomes <input type="checkbox"/> Detailed judgements	RESEARCH EVIDENCE There is no scientific evidence about how patients or healthcare providers value conducting a CVD risk assessment prior to starting pharmacological treatment. PANEL INPUT Communication with patients may change their perspective. Patients' perspectives may vary on the setting. In high-resource settings, patients may put more value on long-term outcomes compared to patients in low-resource settings, where they may focus more on immediate treatment without having to bear more costs.
	What is the overall certainty of the evidence of effects?	No included studies <input type="checkbox"/> Very low <input type="checkbox"/> Low <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> High <input type="checkbox"/> Detailed judgements	RESEARCH EVIDENCE The certainty of evidence is low/moderate for the outcome of CV events avoided. Risk assessment can potentially prevent 310 MACE events in 1000 people over five years. This evidence is indirect however, for many reasons. This benefit is moderate to large. These effects depend on BP at presentation (graphs diverge at higher level of BP, compared with starting meds without risk assessment). ²⁷
	How substantial are the desirable anticipated effects?	Don't know <input type="checkbox"/> Trivial <input type="checkbox"/> Small <input type="checkbox"/> Moderate <input type="checkbox"/> large <input checked="" type="checkbox"/> Varies <input type="checkbox"/> Detailed judgements	No evidence is provided of undesirable anticipated effects. However, delay in initiating care and loss to follow up are important concerns to be considered, especially in low-resource settings. PANEL INPUT Benefits of risk assessment may not all be attributable to risk assessment per se, rather, to the various treatments provided for risk factors identified during risk assessment.
	How substantial are the undesirable anticipated effects?	Don't know <input type="checkbox"/> Trivial <input type="checkbox"/> Small <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> large <input type="checkbox"/> Varies <input type="checkbox"/> Detailed judgements	It is not very clear whether non-lab-based risk assessment is inferior to more sophisticated or lab-based risk assessment.

	<p>Do the desirable effects outweigh the undesirable effects?</p> <p>No Probably No Don't know Probably Yes Yes Varies</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Detailed judgements</p>	
RESOURCE USE	<p>How large are the resource requirements?</p> <p>Large costs Moderate costs Small Moderate savings Large savings Varies</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>Detailed judgements</p>	<p>RESEARCH EVIDENCE</p> <p>The systematic review revealed moderate costs for treatment of HTN (USD 22/mth) as compared to treatment of CVD outcomes (up to USD 5000/episode) were HTN not treated.²⁸ However, the cost of implementation of CVD risk assessment should also include capacity building of healthcare providers and the time taken to do so for each patient.</p>
	<p>How large is the incremental cost relative to the net benefit?</p> <p>Very large ICER Large ICER Moderate ICER Small ICER Savings Varies</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p>Detailed judgements</p>	<p>RESEARCH EVIDENCE</p> <p>There is no direct evidence of whether treatment of HTN with or without risk stratification is more cost effective.</p> <p>Cost of testing and delay in initiating care can be significant following a CVD risk stratification strategy in low-resource settings. Gaziano et al modelling showed significant cost reduction using CVD risk-stratification before initiation of treatment in low-resource settings. However, screening costs including the cost of obtaining risk factor information, productivity costs due to work loss, cost of care and travel time were not included in the analysis.²⁹</p> <p>A meta analysis showed that proportional reduction in major CVD events from BP lowering did not differ substantially with the presence or absence of previous cardiovascular disease events, coronary heart disease, or cerebrovascular disease. Hence, the absolute benefit of BP lowering would be greatest in those with highest absolute risk of CVD.³⁰</p>
EQUITY	<p>What would be the impact on health inequities?</p> <p>Increased Probably increased Uncertain Probably reduced Reduced Varies</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>Detailed judgements</p>	<p>Studies show that in high-income countries such as the US, people at lower socioeconomic status (SES) have lower BP control and higher CVD risk over the years, as compared to people at higher SES.³¹ Thus, in low-resource settings, adding one more step before initiating treatment may increase inequities since those patients who have limited access to healthcare services may suffer delays in treatment or even end up not receiving HTN treatment at all.</p>

ACCEPTABILITY	<p>Is the option acceptable to key stakeholders?</p>	<p>No Probably Uncertain Probably Yes Varies No Yes</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/></p> <p style="text-align: center;">Detailed judgements</p>	<p>In low-income settings, information on the availability of resources in health centres has reported their limited capacity to provide care for HTN, and the contribution of the private sector was also described as limited. Moreover, HTN management at district and commune levels is based mainly on measuring BP and rarely takes into account behavioral or metabolic risk factors (e.g. smoking, total blood cholesterol, and the presence or absence of diabetes mellitus).²¹</p>
FEASIBILITY	<p>Is the option feasible to implement?</p>	<p>No Probably Uncertain Probably Yes Varies No Yes</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p style="text-align: center;">Detailed judgements</p>	<p>A study in UK showed that primary care physicians found using chart-based risk stratification easy to use in busy practices.³²</p> <p>Fewer than 30% of cardiologists do formal risk assessment.</p> <p>Depending on the risk stratification approach chosen, it may be more feasible or less feasible to apply this strategy in order to initiate HTN treatment. Another important factor would be the resources available in different settings.</p> <p>In general, especially in low-resource settings, the implementation of this strategy may be challenging.</p> <p>Non lab-based risk assessment is more feasible.</p> <p>Implementation in EMR improves feasibility and adherence.</p>

Recommendation 3: CVD disease risk assessment

Recommendation	WHO suggests CVD risk-stratification at or after the initiation of pharmacological treatment for hypertension, but only where feasible and does not delay treatment.				
Type of recommendation	We recommend against the option or for the alternative	We suggest not to use the option or to use the alternative	We suggest using either the option or the alternative	We suggest using the option	We recommend the option
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Justification	<p>CVD risk stratification prior to initiating BP treatment may improve CVD mortality, especially at higher BP levels of >150/90 mmHg.</p> <p>Indirect evidence from modelling studies shows CVD risk-stratification to not only improve clinical outcomes, but also help with cost benefit. However, in the absence of resources, a delay in initiation of treatments, especially at BP levels >150/90 may be more harmful.</p>				
Subgroup considerations	Risk stratification is more justified with higher levels of BP and in patients with multiple comorbidities				
Implementation considerations	<p>If medications were started based on a threshold of SBP of 140, then risk assessment becomes most important in those with lower SBP (e.g. 130–139)</p> <p>Many CV risk-assessment systems are available.^{33 34} In the absence of a calibrated equation for the local population, the choice should depend of resources available, acceptability and feasibility of application.</p> <p>In any case, whenever risk stratification may threaten timing initiation of HTN treatment and/or patient's follow-up, it should be postponed, and included in the follow-up strategy, rather than taken as a first step to indicate treatment.</p>				
Monitoring and evaluation considerations	In those people with an increased cardiovascular risk, appropriate management should be implemented according to the specific components that are affected, including lifestyle modification, pharmacological treatment, additional tests or referral, if needed.				
Research priorities	Future research in this area should explore key aspects concerning implementation of a risk-based approach to CVD prevention and BP-lowering pharmacological treatment.				