

**NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE**

**Single Technology Appraisal**

**Ticagrelor for secondary prevention of atherothrombotic events after myocardial infarction [ID813]**

**Final scope**

**Remit/appraisal objective**

To appraise the clinical and cost effectiveness of ticagrelor within its marketing authorisation for the prevention of atherothrombotic events in adults who have had a prior myocardial infarction and are at a high risk of developing atherothrombotic events.

**Background**

Atherosclerosis is the build-up of fatty material in artery walls to form a plaque (also known as atheroma) causing narrowing of the artery and disrupted blood flow. If the atheroma ruptures, it can cause a blood clot (thrombus), a condition referred to as atherothrombosis, which may block blood flow to heart muscles causing a heart attack (myocardial infarction). Sometimes blood clots may dislodge and travel in the blood stream (embolism) and block blood flow to the brain causing a stroke.

Risk factors for coronary heart disease include smoking, a diet high in saturated fat, high blood pressure, diabetes, being overweight or obese, lack of exercise, age, gender and family history. In 2012/13 there were approximately 141,000 inpatient episodes recorded for myocardial infarction in England.<sup>1</sup>

After a first myocardial infarction people remain at an increased risk of further atherothrombotic events. Treatment of people who have had a myocardial infarction with oral anti-platelets manages the ongoing risk of having further atherothrombotic events against the increased risk of bleeding associated with treatment.

NICE clinical guideline 172 for the secondary prevention of atherothrombotic events for people following a myocardial infarction recommends exercise, dietary changes and help to stop smoking for people who smoke. It also recommends that everyone who has an acute myocardial infarction should be offered treatment with a combination of an angiotensin-converting enzyme inhibitor, dual antiplatelet therapy (aspirin plus a second antiplatelet agent), a beta-blocker and a statin. The guideline recommends that aspirin should be offered indefinitely after a myocardial infarction. NICE clinical guideline 172 also recommends clopidogrel monotherapy as an alternative for people with aspirin hypersensitivity.

Dual antiplatelet therapy following a myocardial infarction includes aspirin either with clopidogrel, prasugrel or ticagrelor. NICE clinical guidelines 172 (myocardial infarction - secondary prevention), 167 (acute management of myocardial infarction with ST-segment elevation) and 94 (early management of unstable angina and non-ST-segment-elevation myocardial infarction) as well as NICE technology appraisals 210 (Clopidogrel and modified-release dipyridamole for the prevention of occlusive vascular events), 236 (Ticagrelor for the treatment of acute coronary syndromes) and 317 (Prasugrel with percutaneous coronary intervention for treating acute coronary syndromes [review of TA182]) recommend dual antiplatelet therapy for up to 12 months following myocardial infarction, after which a single anti-platelet regimen with aspirin or clopidogrel (only in people with aspirin hypersensitivity) is continued in the long term.

### The technology

Ticagrelor (Brilique, AstraZeneca) is an adenosine triphosphate analogue that binds reversibly to the P2Y12 class of adenosine diphosphate receptors on platelets and inhibits platelet activation and aggregation. It is administered orally.

Ticagrelor in combination with aspirin does not currently have a marketing authorisation in the UK. It has received a positive opinion from the Committee for Medicinal Products for Human Use (CHMP) for the prevention of atherothrombotic events in adult patients with a history of myocardial infarction and a high risk of developing atherothrombotic events.

Ticagrelor co-administered with aspirin, has a marketing authorisation in the UK for “the prevention of atherothrombotic events in adult patients with acute coronary syndromes”.

<b>Intervention(s)</b>	Ticagrelor co-administered with aspirin
<b>Population(s)</b>	Adults who have had a prior myocardial infarction and are at a high risk of developing atherothrombotic events.
<b>Comparators</b>	<ul style="list-style-type: none"> <li>• Aspirin</li> <li>• Clopidogrel in combination with aspirin</li> </ul>

<b>Outcomes</b>	<p>The outcome measures to be considered include:</p> <ul style="list-style-type: none"> <li>• non-fatal myocardial infarction (STEMI and NSTEMI)</li> <li>• non-fatal stroke</li> <li>• urgent coronary revascularisation</li> <li>• bleeding events</li> <li>• mortality</li> <li>• adverse effects of treatment</li> <li>• health-related quality of life.</li> </ul>
<b>Economic analysis</b>	<p>The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective.</p>
<b>Other considerations</b>	<p>If the evidence allows following subgroups will be considered separately:</p> <ul style="list-style-type: none"> <li>• People with or without diabetes</li> <li>• People who have or have not had prior revascularisation</li> </ul> <p>Guidance will only be issued in accordance with the marketing authorisation. Where the wording of the therapeutic indication does not include specific treatment combinations, guidance will be issued only in the context of the evidence that has underpinned the marketing authorisation granted by the regulator.</p>
<b>Related NICE recommendations and NICE Pathways</b>	<p>Related Technology Appraisals:</p> <p>Rivaroxaban for the prevention of adverse outcomes in patients after the acute management of acute coronary syndrome (2015). NICE technology appraisal guidance 335. Review Proposal Date Feb 2018.</p> <p>Prasugrel with percutaneous coronary intervention for treating acute coronary syndromes (review of technology appraisal guidance 182)' (2014). NICE technology appraisal guidance 317. Review Proposal</p>

	<p>Date June 2017.</p> <p>Ticagrelor for the treatment of acute coronary syndromes (2011). NICE technology appraisal guidance 236. Guidance has been incorporated into Clinical Guideline 167 and Clinical Guideline 172.</p> <p>Clopidogrel and modified-release dipyridamole for the prevention of occlusive vascular events (review of technology appraisal guidance 90) (2010). NICE technology appraisal guidance 210. On static list.</p> <p>Related Clinical Guidelines:</p> <p>Secondary prevention in primary and secondary care for patients following a myocardial infarction (2013). NICE clinical guideline 172.</p> <p>Myocardial infarction with ST-segment elevation: The acute management of myocardial infarction with ST-segment elevation (2013). NICE clinical guideline 167.</p> <p>Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin (2010). NICE clinical guideline 95.</p> <p>Unstable angina and NSTEMI: the early management of unstable angina and non-ST-segment-elevation myocardial infarction (2010). NICE clinical guideline 94.</p> <p>Related Public Health Guidelines:</p> <p>Prevention of cardiovascular disease (2010). NICE public health guideline 25. Next review date December 2015.</p> <p>Related NICE Pathways:</p> <p>NICE Pathway: Myocardial infarction secondary prevention, Pathway created Nov 2013:</p> <p><a href="http://pathways.nice.org.uk/pathways/myocardial-infarction-secondary-prevention">http://pathways.nice.org.uk/pathways/myocardial-infarction-secondary-prevention</a></p> <p>Related Quality standards</p> <p>Acute coronary syndromes including myocardial infarction. NICE quality standard 68. (2014)</p>
<b>Related National Policy</b>	<p>NHS England (2013/2014). Manual for prescribed specialised services, Chapter 7 Adult specialist cardiac service:</p> <p><a href="http://www.england.nhs.uk/wp-content/uploads/2014/01/pss-manual.pdf">http://www.england.nhs.uk/wp-content/uploads/2014/01/pss-manual.pdf</a></p> <p>Department of Health, NHS Outcomes Framework</p>

	2014-2015, Nov 2013. Domains 1, 2 and 3: <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf</a>
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## References

1. British Heart Foundation. Cardiovascular disease statistics. Available from: <https://www.bhf.org.uk/research/heart-statistics> [Accessed 24 September 2015]