MSAC application 1796

ADAMTS13 testing for the diagnosis of thrombotic thrombocytopenic purpura (TTP)

Application for MBS eligible service or health technology

HPP Application number:

HPP200247

Application title:

ADAMTS13 testing for the diagnosis of thrombotic thrombocytopenic purpura (TTP)

Submitting organisation:

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA

Submitting organisation ABN:

52000173231

Application description

Succinct description of the medical condition/s:

Thrombotic thrombocytopenic purpura (TTP) is a rare but potentially fatal thrombotic microangiopathy (TMA) characterised by microangiopathic haemolytic anaemia, severe thrombocytopenia, and ischemic end-organ injury due to microvascular platelet-rich thrombi. TTP is caused by a severe deficiency of ADAMTS13 activity allows uncleaved, ultra-large von Willebrand factor multimers to accumulate in the microcirculation, where they bind and activate platelets causing TMA. The most common form of TTP is immune-mediated or acquired (iTTP), presenting in adulthood due to the presence of acquired anti-ADAMTS13 autoantibodies. TTP can also be hereditary or congenital (cTTP) in origin, often detected in childhood or during pregnancy as a result of mutations in the ADAMTS13 gene

Succinct description of the service or health technology:

When a patient presents with symptoms of microangiopathic haemolytic anaemia and/or severe thrombocytopenia, a severe ADAMTS13 activity deficiency can confirm a diagnosis of TTP. ATS13 activity assays detect VWF cleavage products either by ELISAs, fluorescence resonance energy transfer (FRET), or chemiluminescence immunoassay (CLIA). Patients with a severe deficiency of ATS13 activity should undergo testing for ADAMTS13 autoantibodies, and if absent, these patients should undergo genetic testing for variants in the ADAMTS13 gene to identify potential cases of cTTP

Application contact details

Are you the applicant, or are you a consultant or lobbyist acting on behalf of the applicant?

Applicant

Are you applying on behalf of an organisation, or as an individual?

Organisation

Applicant organisation name:

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA

Application details

Does the implementation of your service or health technology rely on a new listing on the Pharmaceutical Benefits Scheme (PBS) and/or the Prescribed List?

No

Is the application for a new service or health technology, or an amendment to an existing listed service or health technology?

New

Relevant MBS items

Please select any relevant MBS items.

MBS item number	Selected reason type

What is the type of service or health technology?

Investigative

Please select the type of investigative health technology:

Clinical and laboratory haematology

PICO sets

Application PICO sets:

PICO set name

Patients presenting with symptoms of thrombotic microangiopathy (TMA)

State the purpose(s) of the health technology for this PICO set and provide a rationale:

Purpose category:

Diagnosis / sub-classification

Purpose description:

To establish a diagnosis or disease (sub)classification in symptomatic or affected patients

What additional purpose(s) could the health technology be used for, other than the purposes listed above for this PICO set?

Purpose category:

Monitoring

Purpose description:

To monitor a condition over time

Rationale:

ADAMTS13 activity assays are essential in confirming the diagnosis of TTP, plasma exchange therapy (PEX) should commence immediately until clinical remission (platelet count >150 × 109/L) is achieved. Once patients have achieved clinical remission they should undergo repeat ADAMTS13 activity testing weekly for the first month, every 3-months for the first year, then every 3-6 months going forward to monitor for a potential relapse.

Population

Describe the population in which the proposed health technology is intended to be used:

Patients presenting with symptoms of microangiopathic haemolytic anaemia and/or severe thrombocytopenia without an alternative clinical explanation.

Select the most applicable Medical condition terminology (SNOMED CT):

Thrombotic microangiopathy

Intervention

Name of the proposed health technology:

ADAMTS13 activity testing for the diagnosis of thrombotic thrombocytopenic purpura (TTP).

Comparator

Nominate the appropriate comparator(s) for the proposed medical service (i.e. how is the proposed population currently managed in the absence of the proposed medical service being available in the Australian health care system). This includes identifying health care resources that are needed to be delivered at the same time as the comparator service:

No comparator - There are many tests that should be conducted when a patient presents; however, many of these are necessary but not sufficient to provide a diagnosis of TTP but rather indicate that the patient may be experiencing a thrombotic microangiopathy

Outcomes

Outcome description – please include information about whether a change in patient management, or prognosis, occurs as a result of the test information:

Safety Outcomes:
Adverse events (AEs) related to ADAMTS13 activity and ant-ADAMTS13 antibody testing
AEs from the change in patient management (appropriate treatment given/not given) – PEX (iTTP) vs plasma (cTTP)
AEs from treatment (if given) e.g. allergic reactions (anaphylaxis), citrate toxicity, transfusion-related acute lung injury, hypotension, arrhythmia, hypocalcaemia, hypokalaemia, vascular access complications (see Table 1 Complications of TPE for iTTP in Picod et al 2019 31)
Clinical Effectiveness Outcomes:
Direct evidence:
Change in patient health outcomes: mortality, morbidity, quality of life: Clinical utility: change in patient management/treatment resulting in change in patient outcomes: mortality, morbidity, quality of life: comparing patients who have ADAMTS13 levels tested and those who do not
Indirect evidence
Clinical utility: change in patient management/treatment resulting in change in patient outcomes: mortality, morbidity, quality of life

Clinical validity: prognostic value: assessment of diagnostic/test accuracy: sensitivity, specificity, number of false positives, number of false negatives, number of inconclusive results

Cost-effectiveness outcomes

Cost per patient diagnosed with TTP based on ADAMTS13activity levels

Cost per patient avoiding PEX

Cost per patient avoiding morbidity, mortality

Cost per quality-adjusted life year (QALY) gained.

Health system resources:

Cost of ADAMTS13 testing vs. treatment saving costs

Total Australian Government healthcare costs

Proposed MBS items

Proposed item:

AAAAA

Proposed category:

PATHOLOGY SERVICES

Proposed group:

Haematology

Proposed item descriptor:

ADAMTS13 activity testing in patients presenting with suspected thrombotic thrombocytopenic purpura (TTP) to be conducted concurrently with BBBB
Once per episode

Proposed MBS fee:

$700.00

Indicate the overall cost per patient of providing the proposed health technology:

$601.30

Please specify any anticipated out of pocket expenses:

$98.70

Provide any further details and explain:

This is the current fee charged by pathology services

Proposed item:

BBBBB

Proposed category:

PATHOLOGY SERVICES

Proposed group:

Haematology

Proposed item descriptor:

Anti-ADAMTS13 antibody testing in patients presenting with suspected thrombotic thrombocytopenic purpura (TTP) to be conducted concurrently with AAAA
Once per episode

Proposed MBS fee:

$1,050.00

Indicate the overall cost per patient of providing the proposed health technology:

$951.30

Please specify any anticipated out of pocket expenses:

$98.70

Provide any further details and explain:

This is the current fee charged by pathology services

Proposed item:

CCCCC

Proposed category number:

PATHOLOGY SERVICES

Proposed group:

GENETICS

Proposed item descriptor:

Characterisation of variant(s) in the ADAMTS13 gene in a patient with symptoms suggestive of thrombotic thrombocytopenic purpura, where testing with AAAA has indicated reduced ADAMTS13 activity and testing with BBBB indicates an absence of anti-ADAMTS13 antibodies, requested by a specialist or consultant physician
Available once per lifetime

Proposed MBS fee:

$1,200.00

Indicate the overall cost per patient of providing the proposed health technology:

$1,101.30

Please specify any anticipated out of pocket expenses:

$98.70

Provide any further details and explain:

This is the current fee charged by pathology services

Proposed item:

DDDDD

Proposed category:

PATHOLOGY SERVICES

Category description:

GENETICS

Proposed item descriptor:

Characterisation of variants in the ADAMTS13 gene in a patient in a first-degree biological relative of a patient found to have a likely pathogenic variant(s) identified by item CCCC, requested by or on behalf of a specialist or consultant physician who manages the treatment of the patient
Available once per lifetime

Proposed MBS fee:

$1,200.00

Indicate the overall cost per patient of providing the proposed health technology:

$1,101.30

Please specify any anticipated out of pocket expenses:

$98.70

Provide any further details and explain:

This is the current fee charged by pathology services

Proposed item:

EEEEE

Proposed category:

PATHOLOGY SERVICES

Proposed group:

Haematology

Proposed item descriptor:

Monitoring ADAMTS13 activity levels in patients with confirmed acquired thrombotic thrombocytopenic purpura (TTP) by item AAAA and BBBB
Weekly for first month after diagnosis, every 3-months for next 12-months, every 3-6 months thereafter

Proposed MBS fee:

$700.00

Indicate the overall cost per patient of providing the proposed health technology:

$601.30

Please specify any anticipated out of pocket expenses:

$98.70

Provide any further details and explain:

This is the current fee charged by pathology services

How is the technology / service funded at present? (For example: research funding; State-based funding; self-funded by patients; no funding or payments):

For patients in the community, private ED/private hospital with a TMA that requires ADAMTS13 testing, the public hospital will currently bill them approximately $800 out of pocket expense for testing. For inpatients, health funds will not pay for any test that doesn't have MBS item.

Claims

In terms of health outcomes (comparative benefits and harms), is the proposed technology claimed to be superior, non-inferior or inferior to the comparator(s)?

Superior

Please state what the overall claim is, and provide a rationale:

Rapid identification of patients presenting with symptoms of TTP enables appropriate treatment to be administered. In the absence of any treatment, patients with undiagnosed TTP have a mortality rate of approximately 90%. Once appropriate (optimal) treatment is received, mortality rates will decrease to approximately 10%. On suspicion of TTP, patients should be administered daily PEX therapy to improve ADAMTS13 activity and decrease anti-ADAMTS13 antibodies. However, for those patients who have congenital TTP (no anti-ADAMTS13 antibodies), PEX therapy should be ceased, and they should receive only plasma infusions to improve ADAMTS13 activity.

Estimated utilisation

Estimate the prevalence and/or incidence of the proposed population:

See attached document for estimates of prevalence

Provide the percentage uptake of the proposed health technology by the proposed population:

Year 1 estimated uptake (%):

100

Year 2 estimated uptake (%):

100

Year 3 estimated uptake (%):

100

Year 4 estimated uptake (%):

100

Estimate the number of patients who will utilise the proposed technology for the first full year:

2,440 YEAR 1

Will the technology be needed more than once per patient?

Yes, multiple times

Over what duration will the health technology or service be provided for a patient? (preferably a number of years):

>3 years

Optionally, provide details:

Initial ADAMTS13 activity and anti-ADAMTA13 antibody testing once per acute clinical episode.
ADAMTS13 activity testing weekly for the first month, every 3 months for the first 3-years, and then every 6 months for the next 2-years to monitor for a potential relapse.
Patients with ADAMTS13 activity below 10% and a negative ADAMTS13 autoantibody testing should undergo genetic testing (once per lifetime) to confirm a potential diagnosis of cTTP.

Consultation

List all entities that are relevant to the proposed service / health technology. The list can include professional bodies / organisations who provide, request, may be impacted by the service/health technology; sponsor(s) and / or manufacturer(s) who produce similar products; patient and consumer advocacy organisations or individuals relevant to the proposed service/health technology.

Entities who provide the health technology/service

Australian Pathology

Public Pathology Australia

The Royal College of Pathologists of Australasia

Entities who request the health technology/service

Thrombosis & Haemostasis Society of Australia and New Zealand

Haematology Society of Australia and New Zealand (HSANZ)

Entities who may be impacted by the health technology/service

LifeBlood Australia

Thrombotic Microangiopathies (TMA) Registry

Patient and consumer advocacy organisations relevant to the proposed service/health technology

Rare Voices Australia

Regulatory information

Would the proposed health technology involve the use of a medical device, in-vitro diagnostic test, radioactive tracer or any other type of therapeutic good?

Yes

Has it been listed or registered or included in the Australian Register of Therapeutic Goods (ARTG) by the Therapeutic Goods Administration (TGA)?

No

Is the therapeutic good classified by the TGA as either a Class III or Active Implantable Medical Device (AIMD) against the TGA regulatory scheme for devices?

Class III

Is the therapeutic good to be used in the service exempt from the regulatory requirements of the Therapeutic Goods Act 1989?

No

Is the therapeutic good classified by the TGA as for Research Use Only (RUO)?

No