EUROPEAN COMMISSION

Expert decision and opinion in the context of the Clinical Evaluation Consultation Procedure (CECP)

Expert panels on medical devices and in vitro diagnostic devices (Expamed)

Contents

Scope of this expert decision

This decision reflects the views of independent experts (MDR Article 106) on the relevance to produce an opinion on the clinical evaluation assessment report (CEAR) of the notified body for this device. The expert decision is provided in the context of the clinical evaluation consultation procedure (CECP), which is an additional element of conformity assessment by notified bodies for specific high-risk devices (MDR Article 54 and Annex IX, Section 5.1).

Scope of this expert opinion

This scientific opinion reflects the views of independent experts (MDR Article 106) on the clinical evaluation assessment report (CEAR) of the notified body. The advice is provided in the context of the clinical evaluation consultation procedure (CECP), which is an additional element of conformity assessment by notified bodies for specific high-risk devices (MDR Article 54 and Annex IX, Section 5.1).

The notified body is obliged to give due consideration to views expressed in the scientific opinion of the expert panel and in particular in case experts find the level of clinical evidence not sufficient or have serious concerns about the benefit-risk determination, the consistency of the clinical evidence with the intended purpose including the medical indication(s) or with the post-market clinical follow-up (PMCF) plan.

Having considered the expert views, the notified body must, if necessary, advise the manufacturer on possible actions, such as specific restrictions of the intended purpose, limitations on the duration of the certificate validity, specific post-market follow-up (PMCF) studies, adaption of instructions for use or the summary of safety and clinical performance (SSCP) or may impose other restrictions in its conformity assessment report.

In accordance with MDR Annex IX, 5.1.g., the notify body shall provide a full justification where it has not followed the advice of the expert panel in its conformity assessment report.

1 ADMINISTRATIVE INFORMATION

Date of reception of the dossier	06/09/2024
Notified Body number	2797
Internal CECP dossier #	**EMA/EX/0000228672**
Medical device type	Shoulder prosthesis
Intended purpose	Shoulder joint arthroplasty
Risk class / type	☒ class III implantable ☐ class IIb active device intended to administer or remove medicinal products(s)
Screening step: medical field / competence area	Orthopaedics

PART 1 – DECISION OF SCREENING EXPERTS: NOTIFICATION OF NB AND COMMISSION REGARDING THE INTENTION TO PROVIDE AN OPINION

1.1 Decision of the screening experts

Table covers all three criteria, intended to support their consistent and conscientious application

Date of decision	01/10/2024
Screening panel decision	
Is there intention to provide a scientific opinion?	☒ **Yes** ☐ **No** ☐ **Insufficient information to reach a conclusion**
In case the information was found insufficient to reach a conclusion: summary of reasons (see MDR Annex IX Section 5.1 point c)	
Not applicable.	
Summary as to why there is intention to provide an opinion	
While changes are oriented to increase the intraoperative adaptation of the implant, which may be foreseen as a potential improvement, they incorporate substantial novelty altogether. This novelty, particularly regarding the unclear performance of the increased modularity, may affect the clinical outcomes of the device and potentially result in early failure requiring revision surgery.	
Summary as to why there is *no* intention to provide an opinion	
Not applicable.	
Any other comments	

1.2 Assessment of the three screening criteria

Criterion 1: Novelty of device under assessment and possible clinical / health impact
1.1 Overall degree of novelty
☐ No novelty: Neither device nor clinical procedure is novel ☐ Low level of novelty ☒ Medium level of novelty ☐ High level of novelty

Short description of the novelty, including main dimension(s) of novelty
The novelty described by the manufacturer is to provide a further personalized restoration of the glenohumeral joint in shoulder arthroplasty. Increased modularity (double adapter) in joint components may achieve a better reconstruction of normal kinematics, but potential disadvantages related to corrosion may apply. Different inclination angles, smaller and larger head sizes, decreased offset, head and socket mismatch, polyethylene changes, are the main dimensions of novelty intended to theoretically improve performance. Specific changes include the head size, the offset, the mismatch, the inclination angle (125º and 135º, vs 135º in the comparator), the number of taper junctions, geometry and size (head and stem adapters assembled together, versus single adapter, where the manufacturer states that "locking strength, fatigue strength and fretting corrosion evaluations" demonstrated "acceptable performance"), the UHMWPE material in the humeral tray liner. Evidence to consistently demonstrate that the incorporated changes do not result in potential risks would be required.
1.2 Possible negative clinical / health impact resulting from novelty
Estimated* possible clinical and/or health impact related to the novel aspects of the device * This can entail uncertainty. Not only *known* clinical / health impacts but also *possible* ones (conceivable uncertainties, hazards, risks) should be taken into account but need to be supported by a scientific, clinical or technical reasoning.
☐ No clinical or health impact ☐ Minor clinical or health impact ☐ Moderate clinical or health impact ☒ Major clinical or health impact
Possible major clinical or health impact related to the novel aspects of the device
Modularity with a double adapter may suffer corrosion or derived mechanical failure, and no adequate data is provided about this potential risk. Increased mismatch with a decreased offset and a change in the inclination angle might be beneficial to facilitate joint congruency and range of motion, but may produce instability, and the threshold for the appropriate mismatch is currently unknown. Also, it is unclear if the modified polyethylene material will tolerate well the design changes, particularly in a retentive bearing. Edge loading, particularly after the modifications, to eventually procure more range of motion, may occur with a polyethylene material sustaining higher pin-on-disk wear than the comparator. The multiple small changes that were incorporated may produce a summed effect which may impair the performance and result in early failure requiring potentially complex revision surgery.

Criterion 2: Scientifically valid health concerns leading to significantly adverse changes in the benefit-risk profile of a specific group / category of devices and relating to **a) Component(s)** **b) Source material(s)** **c) Impact on health in case of failure of the device**	
2.1 Information received from Secretariat:	☐ Yes ☒ No

2.2 Other information available to experts:	☐ Yes ☒ No

Criterion 3: Significant increase of serious incidents of a specific group / category of devices relevant for the device under assessment *(if information is available, it will always be provided by the expert panel secretariat)*	
3.1 Information received from secretariat?	☐ Yes ☒ No

1.3 Indication of appropriate thematic panel in case opinion is required

Indication of appropriate thematic panel and competence area		
	Expert panels	Medical and scientific/technical competence areas (these may correspond to sub-groups)
☒	**Orthopaedics, traumatology, rehabilitation, rheumatology**	☒ 1. Joint replacements (hip, knee, shoulder) ☐ 2. Spinal devices ☐ 3. Non-articulating devices, rehabilitation
☐	**Circulatory system**	☐ 1. Prosthetic heart valves and devices for heart valve repair ☐ 2. Cardiovascular stents (metallic and bio-resorbable) and vascular prostheses ☐ 3. Active implantable cardiac devices and electrophysiological devices ☐ 4. Structural interventions and new devices (e.g. LAA/PFO occluders, heart failure devices) ☐ 5. Cardiac surgery including extracorporeal membrane oxygenation, cardiopulmonary bypass devices, artificial hearts and left ventricular assist devices
☐	**Neurology**	☐ 1. Central and peripheral nervous system devices ☐ 2. Implants for hearing and vision (sensory recovery) ☐ 3. Neurosurgical devices
☐	**Respiratory, anaesthesiology, intensive care**	☐ Respiratory and anaesthetic devices
☐	**Endocrinology and diabetes**	☐ Endocrinology and diabetes devices
☐	**General and plastic surgery Dentistry**	☐ 1. Surgical implants and general surgery ☐ 2. Plastic surgery and wound care ☐ 3. Maxillofacial surgery & Devices for dentistry e.g. oral surgery, implantology, dental materials etc.
☐	**Obstetrics and gynaecology including reproductive medicine**	☐ Devices for obstetrics and gynaecology
☐	**Gastroenterology and hepatology**	☐ Devices for gastroenterology and hepatology
☐	**Nephrology and urology**	☐ Devices for nephrology and urology
☐	**Ophthalmology**	☐ Devices for ophthalmology

PART 2 – SCIENTIFIC OPINION OF THE THEMATIC EXPERT PANEL/SUB-GROUP

2.1 Information on panel and sub-group

Date of opinion	09/11/2024
Expert panel name	Orthopaedics, traumatology, rehabilitation, rheumatology
Sub-group of expert panel (where relevant)	Joint replacements (hip, knee, shoulder)

2.2 Detailed aspects of the opinion as required by MDR Annex IX Section 5.1

Opinion of the expert panel on the specific aspects of the clinical evaluation assessment report of the notified body (CEAR)[1]
1. Overall opinion on the NB's assessment of the manufacturer's clinical evaluation report
The device under evaluation (DUE) is a collection of components designed with the intention of providing the modularity and adaptability necessary to facilitate individual anatomical adjustment and restoration of the glenohumeral joint during shoulder arthroplasty. The device can be used for total shoulder arthroplasty, reverse shoulder arthroplasty, or shoulder hemiarthroplasty. The device in the anatomic configuration is comprised of several individual components such as humeral stem, fixed angle humeral stem adapter, humeral head adapter, and humeral head. This configuration can be used as a hemiarthroplasty with the humeral head articulating against the natural glenoid bone or as an anatomic total shoulder replacement with a compatible glenoid component. The device in the reverse configuration comprises of individual components that include a humeral stem, humeral tray and humeral bearing. This construction is intended to be used with compatible glenosphere/baseplate components. Overall, the NB's CEAR provides a comprehensive assessment of the manufacturer's clinical evaluation. However, the expert panel retains some concerns about specific aspects of the assessment. In particular, there is no clinical evidence presented in the clinical evaluation with the DUE. The clinical evaluation of the DUE is based on clinical data from devices for which the manufacturer is claiming equivalence. The expert panel retains concerns about specific aspects of the equivalence analysis and the lack of clinical evidence with the DUE as detailed below.
2. Opinion on the NB's assessment of the adequacy of the manufacturer's benefit-risk determination
As mentioned above, there is no clinical data presented in the clinical evaluation with the DUE. The benefit risk determination of the DUE is based on safety and performance data from devices for which the manufacturer is claiming equivalence. The equivalent devices provided data from scientific publications, national joint registries and Post Market Clinical Follow-up studies. The acceptance

[1] According to Annex IX Section 5.1 of Regulation (EU) 2017/745 - Assessment procedure for certain class III and class IIb devices.

criteria for safety and performance for the DUE and identified hazards were based on equivalence and SOTA similar benchmark devices. The manufacturer will conduct a PMCF study with the DUE covering all device variants which will collect and evaluate safety and performance data for the 10-year lifetime.

As mentioned above, the expert panel retains concerns about the equivalence analysis. In particular, there are numerous differences between the DUE and the claimed equivalent devices, including differences in the head size, the offset, the mismatch, the inclination angle, the number of taper junctions, geometry and size, the UHMWPE material. The provided evidence is insufficient to support that these changes cumulatively are not clinically significant and do not substantially modify the implant. The expert panel focuses its concerns on an additional adapter of titanium-alloy (stem-adapter), that sits between the humeral head adapter and the stem in the DUE. The increased modularity with a double adapter in the DUE may suffer corrosion or derived mechanical failure. The manufacturer states that 'locking strength, fatigue strength and fretting corrosion evaluations' were performed for the DUE and demonstrated 'acceptable performance'. Pre-clinical biomechanical testing was extensively done by the manufacturer. However, in the context of increased potential corrosion or wear, biomechanical comparisons between the DUE and the claimed equivalent devices could not be identified.

The expert panel recognises that increased modularity in joint components may achieve a better reconstruction of normal kinematics and provide solutions to a variety of glenohumeral pathologies. Through the use of a double-taper, for example, a better reconstruction may be possible, especially in more complex situations like posttraumatic pathologies. However, the expert panel retains its concerns on the equivalence analysis and the lack of clinical evidence with the DUE. If equivalence cannot be demonstrated, clinical data with the DUE should be provided.

3. Opinion on the NB's assessment of the consistency of the manufacturer's clinical evidence with the intended purpose, including medical indication(s)

The DUE is intended for shoulder joint arthroplasty. The device can be used for total shoulder arthroplasty, reverse shoulder arthroplasty, or shoulder hemiarthroplasty for a variety of indications described in the clinical evaluation report. As described above, the clinical data presented are not from the DUE but from devices for which the manufacturer is claiming equivalence. The equivalent devices provided data from scientific publications, national joint registries and Post Market Clinical Follow-up studies. In principle, the expert panel has no concerns about the consistency of the manufacturer's clinical evidence presented with the intended purpose, including the medical indications. However, the expert panel has concerns about the equivalence analysis and the lack of clinical evidence with the DUE as described above. If equivalence cannot be demonstrated, clinical data with the DUE should be provided and their consistency with the intended purpose, including the medical indications should be ensured.

4. Opinion on the NB's assessment of the consistency of the manufacturer's clinical evidence with the PMCF plan

The manufacturer's PMCF plan, includes a PMCF study with the DUE. This is a multi-center, single-arm, non-randomized, non-controlled, prospective study. The objectives of this study are to confirm the safety, performance, and clinical benefits of the device in primary or revision shoulder arthroplasty (anatomical, hemi-arthroplasty, and reverse) and its instrumentation. The primary endpoint is defined as survival of the implant at 10 years. Safety of the system will be assessed by monitoring the frequency and incidence of adverse events. The performance and clinical benefits will be evaluated by assessment of the overall pain and functional performance, survivorship, qualify of life, and

radiographic parameters of all enrolled study subjects. Clinical data collected will include pre-op, operative, 6 weeks, 6 months, 1, 2, 3, 5, 7 and 10 years post-op and revision information, if applicable. The expert panel endorses the PMCF study. It is reminded that the expert panel has concerns about the equivalence analysis and the lack of clinical evidence with the DUE described in previous sections. If equivalence cannot be demonstrated, premarket clinical data with the DUE should be provided and their consistency with the PMCF plan should be ensured.

2.3 Summary of expert panel opinion

Introduction:

The device is a collection of components designed with the intention of providing the modularity and adaptability necessary to facilitate individual anatomical adjustment and restoration of the glenohumeral joint during shoulder arthroplasty. The device in different configurations can be used for total shoulder arthroplasty, reverse shoulder arthroplasty or shoulder hemiarthroplasty.

Overall opinion on the Notified Body's assessment:

Overall, the NB's CEAR provides a comprehensive assessment of the manufacturer's clinical evaluation. However, the expert panel retains some concerns about specific aspects of the assessment. In particular, there is no clinical evidence presented in the clinical evaluation with the DUE. The clinical evaluation of the DUE is based on clinical evidence from devices for which the manufacturer is claiming equivalence. The expert panel retains concerns about specific aspects of the equivalence analysis and the lack of clinical evidence with the DUE.

Adequacy of benefit-risk determination:

In particular, there are numerous differences between the DUE and the claimed equivalent devices, including differences in the head size, the offset, the mismatch, the inclination angle, the number of taper junctions, geometry and size, the UHMWPE material. The provided evidence is insufficient to support that these changes cumulatively are not clinically significant and do not substantially modify the implant. The expert panel focuses its concerns on an additional adapter of titanium-alloy (stem-adapter), that sits between the humeral head adapter and the stem in the DUE. Increased modularity with a double adapter in the DUE may suffer corrosion or derived mechanical failure. The expert panel recognises that increased modularity in joint components may achieve a better reconstruction of normal kinematics and provide solutions to a variety of glenohumeral pathologies. However, the expert panel retains its concerns on the equivalence analysis and the lack of clinical evidence with the DUE. If equivalence cannot be demonstrated, clinical data with the DUE should be provided.

Consistency of clinical evidence with purpose / medical indication(s):

As described above, the clinical data presented are not from the DUE but from devices for which the manufacturer is claiming equivalence. The expert panel has concerns about the equivalence analysis as described in previous sections. If equivalence cannot be demonstrated, clinical data with the DUE should be provided and their consistency with the intended purpose, including the medical indications should be ensured.

Consistency of clinical evidence with PMCF plan:

The manufacturer's PMCF plan, includes a PMCF study with the DUE. The expert panel endorses the PMCF study. The expert panel has concerns about the equivalence analysis as described in previous sections. If equivalence cannot be demonstrated, premarket clinical data with the DUE should be provided and their consistency with the PMCF plan should be ensured.

2.4 Recommendations

In summary the DUE brings novelty to the market, particularly with regard to the additional stem adapter. The expert panel retains concerns about the equivalence analysis and the lack of clinical evidence with the DUE as described in previous sections. Given the expert panel's concerns on the equivalence analysis, premarket clinical evidence with the DUE should be provided.

2.5 Stakeholder information, where available

Relevant information provided by stakeholders, if applicable[2]
Has the Secretariat provided information from stakeholders?
☐ Yes ☒ No
Summary of the information that was taken into account and how it was taken into account.
Not applicable.

2.6 Divergent positions in case no consensus was reached

Please indicate how many of the experts of the panel or sub-group had divergent views
Zero experts.
Summary of divergent positions
Not applicable.

END OF TEMPLATE

[2] According to Article 106.4 of Regulation (EU) 2017/745, expert panels shall take into account relevant information provided by stakeholders including patients' organisations and healthcare professionals when preparing their scientific opinions.