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Policy Perspective

Consensus-Based Recommendations for the Implementation of Health Technology Assessment in the United Arab Emirates

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ABSTRACT

Objectives: Healthcare research and development have accelerated at an unprecedented rate creating a challenge even for high-income countries to finance all new technologies. Health technology assessment (HTA) aims to maximize health gains out of available resources. Our study aimed to provide tailor-made recommendations for HTA implementation in the United Arab Emirates (UAE).

Methods: We conducted a policy survey to explore the gap between the current and preferred future environment of HTA implementation in the UAE. The survey was distributed in 2 workshops discussing the importance of HTA implementation, and results were further aggregated to yield a list of draft recommendations. Recommendations were then assessed for their feasibility in a round table discussion with experts in the field to generate actions for HTA implementation.

Results: Survey results and round table discussion indicated the need to leverage HTA for value-based decision making. Experts confirmed the unmet need for broader coverage of graduate and postgraduate HTA training with the aim of specific PhD programs in the UAE. Public funding for HTA appraisals and expanding the scope of HTA to nonpharmaceuticals was recommended. Furthermore, experts recommended that several HTA bodies should be coordinated centrally and highlighted the importance of having an explicit soft cost-effectiveness threshold for common technologies and a higher threshold for orphan drugs.

Conclusions: Although HTA in the UAE is still in its early stages, strong initiatives are being taken for its implementation. Our survey results served as a step in developing a detailed action plan for HTA implementation that will enhance the sustainability of the healthcare system.

Keywords: health technology assessment implementation, road map, United Arab Emirates.

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Introduction

Health technology assessment (HTA) implementation allows healthcare policy makers to maximize health gain out of limited financial resources by informing decisions of value-based investment in health interventions. HTA is a multidisciplinary process that uses scientific evidence and proven methodologies in an explicit approach to determine the value of health technology at different points in its lifecycle.[1] The purpose is to inform decision making to promote an equitable, efficient, and high-quality health system.[1]

The healthcare system in the United Arab Emirates (UAE) represents a blend of private and public facilities, serving both local citizens and expatriates with a model that mandates health insurance in certain emirates such as Dubai and Abu Dhabi. This system ensures coverage is provided through either government or private insurers therefore minimizing out-of-pocket expenses for individuals.

As of 2017, healthcare expenditure amounted to approximately 4% of the UAE's gross domestic product (GDP), predominantly funded by the government, which contributed nearly 55% of this expenditure.[2,3] Pharmaceutical expenditures account for roughly 30% of the total health spending. Investment in healthcare expenditure surged to 5.2% of the GDP by 2022, reflecting the UAE's focused efforts to improve healthcare quality and accessibility.[4,5]

The UAE is categorized among high-income countries[6] with high standards of healthcare[7] and the highest per capita healthcare expenditure among all Middle East countries.[8] The introduction of innovative health technologies to the UAE market is agile to meet the government agenda of building a world-class healthcare system.[9,10] However, no matter how affluent a country is, no country is expected to provide unlimited access to all innovative health technologies.

Until 2016, there was no official HTA body at the national level in the UAE[11]; reimbursement and pricing decisions were made

either by the Ministry of Health and Prevention, individual emirate health systems, or private insurers. Thereafter the establishment of an HTA unit by the Department of Health (DOH) in Abu Dhabi indicated the will to rely on evidence-informed decision making.[12] Since its establishment, a wide range of new health technologies, including medical devices and medical-surgical procedures, have been evaluated by the HTA unit.[12] Companies can apply for the evaluation of their new technology through an open health technology platform, and the results of HTA evaluation are published on the DOH website. Despite initiatives conducted by the UAE, further efforts are needed to fully implement HTA to cover other health technologies—mainly pharmaceuticals—and expand HTA utilization.

To the best of our knowledge, an HTA implementation road map has not yet been developed for the UAE. A study published in 2023 highlighted the potential opportunities and challenges facing the UAE on its path toward adopting HTA.[13] Given that HTA road maps are not transferrable and can only be locally adjusted, each country should develop its own road map that is aligned with its strategic objectives.[14]

Within this context, our study aimed to provide tailor-made recommendations to implement HTA in the UAE through assessing the gap between the current HTA environment and the long-term objectives of HTA implementation.

Methods

Survey

We conducted a policy survey to describe the current and explore the preferred future environment of HTA implementation in the UAE. The survey uses an HTA implementation scorecard that is designed to support the formulation of HTA road maps in individual countries in 8 areas, including capacity building; HTA funding; HTA legislation; scope of HTA; decision criteria, quality, and transparency of HTA implementation; use of local data; and international collaboration.[14] As such, the scorecard served as gap analysis for advising on the appropriate HTA structure and implementation process.

The survey included single-choice or multiple-choice questions depending on the nature of the investigated domain. Participants consented that their survey responses could be aggregated and used anonymously in scientific publications. The selection of participants for this study was conducted through convenience sampling, ensuring the inclusion of individuals from a diverse range of institutions within the UAE who possess knowledge of HTA. A target sample size of 30 survey respondents (with a bare minimum of 20 respondents) was proposed based on the adaptation of the same survey methodology in other countries.[15,16] This survey was previously implemented in several countries including Jordan, Egypt, Ukraine, Romania, and Turkey.[15–19] It was also implemented across different regions such as Latin America and the Middle East and North Africa (MENA) region.[14,20] Using the same tool allows comparability of preferred future HTA environment from the perspective of local stakeholders across countries.

The survey was distributed during 2 workshops conducted on June 24, 2022, and October 1, 2021, in Dubai aiming to engage as broad a range of experts as possible in discussing the significance of HTA implementation to discuss the importance of HTA implementation. During the workshops, participants were briefed on the survey's content before it was disseminated electronically via a specialized proprietary platform of Syreon by the research team. This platform is purpose built for developing HTA systems, offering a framework to evaluate both the present condition and prospective goals of HTA implementation.

Survey results were then aggregated and preliminary findings with main conclusions were reported as a list of draft recommendations by the research team. The recommendations were based on identified gaps between the current and preferred status of HTA implementation in relation to the 8 aforementioned domains. A cutoff threshold of 50% was applied to include survey responses in the formulation of recommendations. The list of recommendations was not influenced by personal opinions of research team members.

Validation Round Table Discussion

A round table discussion with 6 participants was conducted on June 25, 2022, in Dubai to validate and modify the draft recommendations. Stakeholders participating in the discussions were chosen through convenience sampling, adhering to specific inclusion criteria. These criteria ensured stakeholders had a good understanding of HTA, held influential positions within the emirates' healthcare system, and represented a diverse mix of public entities and the private sector. Stakeholders were affiliated with the Abu Dhabi Health Services Company, Dubai Health Authority, and the Ministry of Health and Prevention, and 1 participant represented the pharmaceutical industry perspective.

At the beginning of the discussion, the research objective was introduced to stakeholders by the international moderator, who designed the survey template and coordinated similar research projects in different countries. The general structure of the survey was presented and the 8 elements of HTA implementation included in the survey were described. Next, recommendations for each domain were assessed by stakeholders for the feasibility of their implementation. Through a consensus-based approach, stakeholders engaged in discussions to finalize the recommendations. This approach did not rely on a predefined cutoff but rather on the collective judgment and expertise of the involved stakeholders. Stakeholders were allowed to propose any additional idea or suggestion and whether they would recommend breaking down the implementation process into phases (short term within 3 years, long-term from 3 to 10 years).

Results

Survey Results and Validation

Demographics of survey respondents

Of the combined total of 31 surveys collected from both workshops, 27 were considered valid. Four survey responses were considered invalid given that 3 participants were from outside the UAE (therefore, they do not represent the UAE) and 1 did not consent to data use. Demographics of survey respondents are presented in Table 1. Survey responses are presented as percentages in Table 2, and the list of draft recommendations based on the survey responses is presented in Table 3.

HTA Survey Domains

Capacity building

Given that HTA implementation requires highly skilled professionals in a multidisciplinary field, capacity building of human resources is a critical element of HTA road maps. Limited current options for HTA training were indicated with project-based HTA workshops and short courses (23%) being the most common form of HTA education in the UAE.

In the future, most respondents (63%) preferred having permanent graduate and postgraduate programs in addition to short courses.

Table 1. Demographics of survey respondents (N = 27).

Main employment	n (%)
Public sector	22 (81)
Private sector	5 (19)
Field of work (public sector)	
Decision maker, policy maker, the public payer (Social Security Institution), Ministry of Health (potential HTA user)	7 (28)
Public healthcare provider (eg, clinician)	16 (64)
Other	2 (8)
Field of work (private sector)	
Healthcare industry (eg, pharmaceutical or medical device company)	2 (40)
Private healthcare provider (eg, clinician)	1 (20)
Private health insurance	1 (20)
Pharmaceutical trade sector (eg, wholesaler, pharmacy)	1 (20)
Major training	
Economics	1 (3.7)
Pharmacy	19 (70.4)
Medicine	5 (18.5)
Other healthcare (eg, nursing, dietetics)	1 (3.7)
Other	1 (3.7)
Age, years	
<30	1 (3.7)
Between 30 and 50	21 (77.8)
>50	5 (18.5)

HTA indicates health technology assessment.

Stakeholders highlighted the importance of hands-on training experience and recommended including health economics in the pharmacy and medical curriculum.

In the short term, they recommended starting with a train-the-trainer program, whereas in the long-term having the country's own health economics PhD programs. Stakeholders also mentioned the presence of a master's program in health economics in Abu Dhabi at Sorbonne University Abu Dhabi; however, they recommended the presence of a much affordable and tailored program to the needs of the UAE.

HTA funding

Sustainable funding is a crucial element of HTA implementation. There are 2 phases for HTA implementation that requires funding. The first one is the assessment phase focusing on the synthesis of scientific evidence and developing cost-effectiveness and budget impact analysis for health technologies. The second phase is the appraisal phase that is concerned with the validation of results obtained after the assessment of the technology. The appraisal phase is responsible for developing policy recommendations based on the main conclusion of the appraisal.

Most survey respondents (68%) indicated that the critical appraisal of HTA evidence is currently not funded but 80% would prefer dominantly public funding in the future. Limited current funding was also reported for the assessment, but 85% preferred dominant or sufficient public funding in the future.

Although sufficient public funding was recommended for both HTA assessment and critical appraisal, stakeholders indicated that public funding is mainly dependent on budgetary commitment that will create a new department and hire more employees from public fund. Stakeholders recommended a mix of private and public funding for both critical appraisal and assessment, with companies continuing to pay a submission fee similar to drug registration, but with public funding being dominant in the long run. They suggested that fees can be collected centrally and delivered to the agency conducting the assessment.

Legislation on HTA

The evaluation of new technologies is only worthwhile if HTA is institutionalized and formally integrated into decision making. Otherwise, the results of the evaluation will be ignored. Survey results reported that 42% of respondents indicate that currently there is no formal role for HTA, whereas half acknowledged that the international HTA evaluation reports are considered. Respondents preferred increasing the role of local HTA evidence or mandating its use in policy decisions.

For the organizational structure, half indicated that no public committee or institute is responsible for the appraisal process, whereas 46% indicated the presence of a committee appointed for the process with or without academic support, such as regulatory medication registration, pricing, and formulary committees. In the future, most (74%) preferred either a national HTA agency with or without academic support (48%) or several HTA agencies with or without central coordination (26%).

In the short term (3-5 years), stakeholders recommended the adoption of global economic models, whereas in the long-term (10 years) they recommended the reliance of HTA agency on local evidence. Regarding the institutionalization of HTA, the presence of several HTA bodies with central coordination and academic support was agreed upon. Stakeholders recommended adopting global economic models in the short term and relying on local evidence in the long term. They agreed on the presence of several HTA bodies with central coordination and academic support and suggested piloting HTA and signing it into law within 5 years. One stakeholder suggested implementing a triple helix model involving collaboration among the public sector, private sector, and academia. It was also stated that there are plans for unified procurement in the UAE that will benefit from the implementation of HTA.

Scope of HTA implementation

Based on the survey results, 41% of the respondents reported that HTA was not applied to any health technologies, whereas 44% reported that it is used for decisions related to pharmaceuticals. In the future, most preferred expanding the scope to different technologies, including pharmaceuticals (59%), medical devices (52%), prevention programs (52%), and surgical interventions (56%).

Almost 40% of the respondents indicated that HTA is currently used only for new technologies with significant budget impact, but 74% believe that its role should be extended to cover all new technologies and to revise previous pricing and reimbursement decisions.

Stakeholders recommended expanding the use of HTA to different technologies and revising previous reimbursement decisions.

Decision criteria

The survey reported that healthcare priority and cost-effectiveness were considered in the policy process by 48% and 33% of respondents, respectively. In the future, respondents preferred considering more categories for decision making, including healthcare priority (63%), therapeutic value (52%), cost-effectiveness (70%), budget impact (63%), and unmet medical need

Table 2. Aggregated results of valid responses from HTA implementation survey (scorecard).

Question	Current (current HTA status), n (%)	Preferred (aspired situation), n (%)
1. HTA capacity building		
a) Education		
No training	10 (38.5)	0 (0.0)
Project-based training and short courses	6 (23.1)	6 (22.2)
Permanent graduate program with short courses	5 (19.2)	4 (14.8)
Permanent graduate and postgraduate program with short courses	5 (19.2)	17 (63.0)
2. HTA funding		
a) Financing critical appraisal of technology assessment		
No funding for critical appraisal of technology assessment reports or submissions	17 (68.0)	1 (3.7)
Dominantly private funding (eg, submission fees) by manufacturers for the critical appraisal of technology assessment reports or submissions	7 (28.0)	4 (14.8)
Dominantly public funding for critical appraisal of technology assessment reports or submissions	1 (4.0)	22 (81.5)
b) Financing HTA (ie, HTA research)		
No public funding for technology assessment; private funding is not needed or expected	12 (50.0)	1 (3.7)
No or marginal public funding for research in HTA; private funding is expected	8 (33.3)	3 (11.1)
Sufficient public funding for research in HTA; private funding is also expected	3 (12.5)	15 (55.6)
HTA research is dominantly funded from public resources.	1 (4.2)	8 (29.6)
3. Legislation on HTA		
a) Legislation on the role of the HTA process and recommendations in the decision-making process		
No formal role of HTA in decision making	11 (42.3)	2 (7.4)
Dominantly international HTA evidence is taken into account in decision making.	13 (50.0)	1 (3.7)
International and additionally local HTA evidence is taken into account in decision making.	1 (3.8)	10 (37.0)
Local HTA evidence is mandatory in decision making.	1 (3.8)	14 (51.9)
b) Legislation on organizational structure for HTA appraisal		
There is no public committee or institute for the appraisal process.	13 (50.0)	1 (3.7)
A committee is appointed for the appraisal process.	9 (34.6)	1 (3.7)
The committee is appointed for the appraisal process with the support of academic centers and independent expert groups.	3 (11.5)	5 (18.5)
A public HTA institute or agency is established to conduct a formal appraisal of HTA reports or submissions.	1 (3.8)	4 (14.8)
Public HTA institute or agency is established to conduct a formal appraisal of HTA reports or submissions with the support of academic centers and independent expert groups.	0 (0.0)	9 (33.3)
Several public HTA bodies are established without central coordination of their activities.	0 (0.0)	2 (7.4)
Several public HTA bodies are established with central coordination of their activities.	0 (0.0)	5 (18.5)
4. Scope of HTA implementation		
a) Scope of technologies (multiple choice)		
HTA is not applied to any health technologies.	11 (40.7)	2 (7.4)
Pharmaceutical products	12 (44.4)	16 (59.3)
Medical devices	5 (18.5)	14 (51.9)
Prevention programs and technologies	1 (3.7)	14 (51.9)
Surgical interventions	3 (11.1)	15 (55.6)
Other scope of technologies	0 (0.0)	1 (3.7)
b) Depth of HTA use in pricing and/or reimbursement decision of health technologies		
HTA is not applied to any health technologies.	10 (38.5)	2 (7.4)
Only new technologies with significant budget impact	10 (38.5)	2 (7.4)
Only new technologies	3 (11.5)	3 (11.1)
New technologies + revision of previous pricing and reimbursement decisions	3 (11.5)	20 (74.1)
5. Decision criteria		
a) Decision categories (multiple choice)		
None of the below categories are applied	8 (29.6)	2 (7.4)
Unmet medical need	6 (22.2)	12 (44.4)

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Table 2. Continued

Question	Current (current HTA status), n (%)	Preferred (aspired situation), n (%)
Healthcare priority	13 (48.1)	17 (63.0)
Assessment of therapeutic value	4 (14.8)	14 (51.9)
Cost-effectiveness	9 (33.3)	19 (70.4)
Budget impact	7 (25.9)	17 (63.0)
Other decision categories	0 (0.0)	0 (0.0)
b) Decision thresholds		
Thresholds are not applied.	12 (44.4)	3 (11.1)
Implicit thresholds are preferred.	12 (44.4)	2 (7.4)
Explicit soft thresholds are applied in decisions.	2 (7.4)	14 (51.9)
Explicit hard thresholds are applied in decisions.	1 (3.7)	8 (29.6)
c) MCDA		
No explicit multicriteria decision framework is applied.	24 (88.9)	3 (11.1)
Explicit multicriteria decision framework is applied.	3 (11.1)	24 (88.9)
6. Quality and transparency of HTA implementation		
a) Quality elements of HTA implementation (multiple choice)		
None of the below quality elements are applied.	15 (55.6)	2 (7.4)
Published methodological guidelines for HTA/economic evaluation	8 (29.6)	7 (25.9)
Regular follow-up research on HTA recommendations	4 (14.8)	8 (29.6)
A checklist to conduct a formal appraisal of HTA reports or submissions exists but not available for public.	2 (7.4)	11 (40.7)
A published checklist is applied to conduct a formal appraisal of HTA reports or submissions.	1 (3.7)	19 (70.4)
b) Transparency of HTA in policy decisions		
Technology assessment reports, critical appraisal, and HTA recommendation are not published.	19 (70.4)	2 (7.4)
HTA recommendation is published without details of technology assessment reports and critical appraisal.	7 (25.9)	3 (11.1)
Transparent technology assessment reports, critical appraisals, and HTA recommendations	1 (3.7)	22 (81.5)
c) Timeliness		
HTA submission and issuing recommendation have no transparent timelines.	20 (76.9)	4 (14.8)
HTA submissions are accepted/conducted after a transparent calendar, but issuing recommendation has no transparent timelines.	5 (19.2)	3 (11.1)
HTA submissions are accepted continuously and issuing recommendation has transparent timelines.	1 (3.8)	20 (74.1)
7. Use of local data		
a) Requirement of using local data in technology assessment		
No mandate to use local data	15 (57.7)	2 (7.4)
The mandate of using local data in certain categories without the need for assessing the transferability of international evidence	9 (34.6)	3 (11.1)
The mandate of using local data in certain categories with the need for assessing the transferability of international evidence	2 (7.7)	22 (81.5)
b) Access and availability of local data		
Limited availability or accessibility to local real-world data	15 (60.0)	3 (11.1)
Up-to-date patient registries are available in certain disease areas, but payers' databases are not accessible for HTA doers.	8 (32.0)	1 (3.7)
Payers' databases are accessible for HTA doers; patient registries are not available or accessible in most disease areas.	1 (4.0)	1 (3.7)
Up-to-date patient registries are available in certain disease areas and payers' databases are accessible for HTA doers.	1 (4.0)	22 (81.5)
8. International collaboration		
a) international collaboration, joint work on HTA (joint assessment reports) and national/regional adaptation (reuse) (multiple choice)		
No involvement in joint work and no reuse of joint work or national/regional HTA documents from other countries	21 (84.0)	2 (7.7)
Active involvement in joint work (eg, EUnetHTA Rapid REA, full Core HTA)	2 (8.0)	11 (42.3)
National/regional adaptation (reuse) of joint HTA documents	3 (12.0)	10 (38.5)

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Table 2. Continued

Question	Current (current HTA status), n (%)	Preferred (aspired situation), n (%)
National/regional adaptation (reuse) of national/regional work performed by other HTA bodies in other countries	1 (4.0)	16 (61.5)
b) International HTA courses for continuous education on HTA		
Limited interest in (1) developing/implementing of and (2) participating at international HTA courses	19 (73.1)	4 (14.8)
Interest only in regular participation at international HTA courses	6 (23.1)	3 (11.1)
High interest in (1) developing/implementing of and (2) participating at international HTA courses	1 (3.8)	20 (74.1)

Note. For each question, each expert chose 1 of the available options for the current status and 1 of the options for preferred status, eg, for question 1a: An expert chose "No training" in the current status and "Permanent graduate program with short courses" for the preferred status; this means he thinks there are currently no training programs and he would prefer that, in 10 years, there will be permanent graduate programs with short courses.
HTA indicates health technology assessment; MCDA, multicriteria decision analysis.

(44%). Approximately 45% indicated that decision thresholds are not currently used, but almost 90% preferred adopting a decision threshold in the long term, with 81% preferring an explicit one. Soft thresholds were preferred by more than 50% to allow for reimbursing exceptional drugs, whereas 30% preferred hard mandatory thresholds. Hard thresholds consider cost-effectiveness as the sole decision criterion for resource allocation.[21] If the incremental cost-effectiveness ratio exceeds the hard threshold, the technology is considered not cost-effective, and therefore, it will not be reimbursed. In contrast, soft cost-effectiveness threshold is a more flexible approach that allows the consideration of context-specific factors (disease burden, budget impact, etc) that may influence the decision-making process.[21] In the case of soft thresholds, if the incremental cost-effectiveness ratio exceeds the threshold, there is also a room for negotiation through managed entry agreements to facilitate the access of the intervention.

Multicriteria decision analysis (MCDA) framework is currently applied only to a few cases, but 89% would like to increase its use. MCDA is a decision-making framework that is used to evaluate health technologies based on multiple criteria.[22] Published examples of MCDA tools include evaluations of out-of-patent pharmaceuticals and medical devices,[23,24] as well as pricing and reimbursement of innovative treatments such as orphan drugs.[25]

Stakeholders recommended using HTA as a rule for negotiation by applying an explicit soft threshold, including more criteria and increasing the use of MCDA tools.

Quality and transparency of HTA implementation

The survey reported that 56% of respondents were unaware of tools to improve HTA quality, but most preferred a publicly available critical appraisal checklist. Seventy percent reported that HTA reports and recommendations are not accessible to the public, but more than 90% preferred changing this practice. Limited transparency for HTA timelines was reported by 77%, but most would like transparent timelines in the future.

Stakeholders recommended a pilot phase for developing critical appraisal methodology and publishing basic information such as the number of patients and cost of care in methodological guidelines. They also recommended setting transparent timelines for the critical appraisal phase.

Use of local data

Most survey respondents indicated that local data were not mandated in the current HTA process. In the future, 81% of respondents preferred mandating the use of local data for HTA evidence and evaluating the transferability of international evidence in the absence of local data. Limited availability or accessibility to local real-world data was currently reported by 60% of respondents. Devoting more resources to building patient registries or payer's databases was desired by 85% of respondents.

Stakeholders highlighted the value of local healthcare data during their discussions. Therefore, short-term outcomes represented the process of recovering existing data from payers' databases, whereas in the long run more patient registries were recommended.

International collaboration

Most respondents reported limited involvement in joint international work. However, active involvement in joint work initiatives, the reuse of HTA materials prepared by international HTA, and participation in international HTA courses were preferred by most respondents.

The reuse of HTA materials does not entail directly adopting the analyses conducted by other countries. Instead, it involves tailoring these materials to fit the specific context of our local healthcare infrastructure, considering variances in healthcare systems, funding mechanisms, payers, and other relevant factors.

Based on stakeholder discussion, collaboration with other countries of the region was highlighted. Currently, Saudis are launching their health economics program. The program is a part of the Gulf Cooperation Council initiative, providing an opportunity for Gulf countries to benefit from the program and strengthening collaboration between them.

Summary of Proposed Recommendations by Stakeholders

Draft recommendations based on the gap analysis between current and future preferred HTA are presented in Table 3. The agreement percentage for each recommendation can be found in Appendix File 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.04.009. Key stakeholders thoroughly debated draft recommendations at the roundtable discussion and concluded an action plan with clear timelines. Specific actions needed in each domain to reach the preferred HTA status in 10 years in the UAE are presented in Table 4.

Discussion

Until 2016, the UAE had no official HTA body at the national or subnational levels. Although the prices of medical technologies are set at national levels, reimbursement decisions are made at

Table 3. Draft recommendations based on major gaps between the current and preferred future status of HTA implementation according to the 8 domains of the scorecard survey.

Domain	Recommendations
Capacity building	More postgraduate HTA programs are recommended based on the UAE needs.
HTA funding	Public funding should be sufficiently increased for HTA research complemented by a modest contribution from private sources. Appraisal should be funded dominantly by public resources.
Legislation on HTA	HTA should have a role in the decision-making process where the utilization of local evidence is mandated to inform decisions. Establishment of a public HTA agency supported by academic centers and independent expert groups with major reliance on local HTA evidence or establishment of multiple HTA agencies with central coordination with major reliance on local HTA evidence or committee is appointed for the appraisal process with support of academic centers and independent expert groups
Scope of HTA implementation	Extending the scope of HTA from pharmaceuticals to nonpharmaceuticals is recommended in addition to revising previous policy decisions on top of evaluating new healthcare technologies.
Decision criteria	For cost-effectiveness, explicit soft thresholds should be used. In addition, several criteria other than cost-effectiveness and budget impact must be considered by applying multicriteria decision analysis (MCDA).
Quality and transparency of HTA implementation	Using published checklists for critical appraisal is recommended to improve HTA work quality. Appraisals, recommendations, and reports should be transparent. In addition, HTA submission should be accepted continuously with clear timelines for recommendations.
Use of local data	Mandate of using local data in certain categories with need for assessing the transferability of international evidence. Developing more patient registries and using local claims data is recommended with the availability of an accessible electronic payer's database.
International collaboration	Organizing and participating in international HTA courses is highly recommended as well as adapting work performed by other HTA bodies.

HTA indicates health technology assessment; UAE, United Arab Emirates.

emirate or organizational levels.[11] According to the National Health Account of the country, the federal and local governments finance 56% of healthcare, whereas health insurance finances 32%.[26] The difference in the financing schemes of healthcare is expected to result in variations in accessibility and quality of care across the country.

The establishment of an HTA unit by the DOH in Abu Dhabi was an important step in facilitating an equitable and high-quality health system in the UAE that could be further improved by the full implementation of HTA.

Despite the existence of multiple HTA frameworks in the scientific literature discussing implementation processes and HTA roles, there is a wide distinction in the objectives, approach, and utilization of HTA when it comes to its implementation across different countries or organizations. With the notion of "no one size fits all," no single HTA road map could fit all countries. HTA road maps are not fully transferrable given that they need to consider factors such as the country size, GDP per capita, public health priorities, social values, political will, disease burden, and healthcare financing systems.[27] The local politics may be the most important driver for change, so health policy experts and HTA professionals should be able to explain the rationale and potential benefits of HTA investment to political leaders.[20] Although HTA road maps may not be directly transferrable, international experiences can provide useful references as starting points in selected areas.

Similar to other countries in the MENA region,[20] initiatives were taken to implement HTA in the UAE. An MCDA tool to support value-based reimbursement of orphan drugs has been recently developed and is currently under publication. Furthermore, the Emirates Health Economics Society annual conference has been organized in Dubai in October in recent years, reflecting the evolution of health economics in the UAE. These initiatives highlight the need for an HTA road map to guide decision makers. Here, we propose a clear road map based on the experts' survey and recommendations of stakeholders.

We used the same HTA scorecard that was previously applied in the MENA during the first MENA regional conference in Dubai, in September 2018 to allow comparability between the results.[20] The survey encompassed several countries within the MENA region, including Saudi Arabia, Egypt, Jordan, Lebanon, Kuwait, the UAE, Tunisia, Oman, Iran, Yemen, and Qatar, garnering a total of 51 responses. The comparison revealed similarities in some major elements of HTA implementation but also some heterogeneity in other aspects.

Comparing UAE's with MENA survey results,[20] responses were quite similar in most domains, except for elements in certain domains, such as transparency. Unlike in the MENA region, UAE's survey respondents had less emphasis on publishing their methodological guidelines for economic evaluations in the future.[20] In addition, there was a reduced focus on pharmaceutical products, medical devices, and certain decision-making criteria, such as unmet medical need, therapeutic value assessment, and budget impact analysis, compared with the MENA region's future focus.[20] In addition, slight differences were noted in views on funding and the role of HTA between the 2 regions.20 A scorecard comparing the preferred status in the UAE and the MENA region is found in Appendix File 2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2023.04.009.

Our study's survey results were compared with those from Jordan, Egypt, Ukraine, Romania, and Turkey.[15-19] This comparison highlights a common theme on enhancing capacity building, notably through the expansion of permanent graduate and postgraduate programs, complemented by short courses. Similarly, increased funding was preferred in all countries, with suggestions pointing toward a blend of public and private financing for HTA

Table 4. Proposed actions for implementing HTA in the UAE.

HTA domains	Action within 3 years	Actions from 3 to 10 years
Capacity building	• Including hands-on training experience to short courses • Inclusion of health economics in the curriculum of pharmacy and medical training	• Train-the-trainer program (highest priority) • Having a PhD program in the UAE taught by local professors • Offering affordable master's program in health economics tailored to the needs of the UAE
HTA funding	• Private funding including submission fees for appraisal • Assessment should be financed mainly by pharmaceutical companies	• Dominant public funding for appraisal • Process of collecting fees involving central fundraising followed by pooling resources to the agency where the assessment will be conducted
Legislation on HTA	• HTA should be first piloted and based on the outcomes; it can be signed into legislation within 5 years • MCDA used for out-of-patent pharmaceuticals procurement. • Cost-effectiveness analysis and budget impact analysis become obligatory for highly priced innovative pharmaceuticals only	• Sign HTA into law after pilot phase • Several HTA bodies with central coordination and academic support • Implementation of a triple helix model that involves the collaboration among the public sector, the private sector, and the academia
Scope of HTA implementation	• Start assessing innovative pharmaceuticals with high budget impact to support reimbursement decisions	• Expand the scope of HTA to cover health programs and medical devices, as well as diagnostics and new interventional therapies for reimbursement • Expand the use of HTA for previous reimbursement decisions
Decision criteria	• Publishing explicit soft threshold • Differential threshold for orphan drugs based on MCDA	
Quality and transparency of HTA implementation	• Start a pilot phase for developing critical appraisal methodology	• Publish critical appraisal methodology • Publish basic information such as number of patients and cost of care in methodological guidelines. • Set timelines for the critical appraisal phase
Use of local data	• Recovering existing data from payers' databases	• More patient registries were recommended • Relying on local evidence in HTA agencies
International collaboration	• International partnership in training programs • Collaboration with countries in the MENA region	• Collaboration with countries in the same HTA implementation phase

HTA indicates health technology assessment; MCDA, multicriteria decision analysis; MENA, Middle East and North Africa; UAE, United Arab Emirates.

research, especially in Ukraine and Romania. In terms of the scope of health technologies, there is a universal desire among these countries to broaden the range of health technologies assessed, with Turkey and Romania placing particular emphasis on evaluating prevention programs. Cost-effectiveness emerged as the most preferred decision-making criterion across all countries, except in Turkey and Egypt. In Egypt, healthcare prioritization took precedence, whereas in Turkey the assessment of therapeutic value was deemed most crucial. As for transparency in policy decisions, there is a unanimous recommendation for the publication of recommendations and critical appraisals, with Egypt being an exception where approximately 30% prefer only to publish the recommendations, excluding the report.

Regarding HTA in the UAE, Ahmad et al[13] highlighted several barriers to the UAE's adoption of HTA, including a fragmented healthcare system with multiple payers and decision makers, data governance issues, the scarcity of local HTA expertise, and awareness of HTA's value. To overcome these challenges, they suggested improving the quality of HTA learning resources, engaging academic institutions, and fostering international collaboration with HTA experts.[13]

Our study aligns with and builds upon these recommendations, proposing the incorporation of health economics into the curriculum for pharmacy and medical training, complemented by practical training experiences and short courses in the short term. In addition, we advocate for the establishment of several HTA entities coupled with centralized coordination to streamline decision-making processes in the presence of multiple payers. Furthermore, we emphasize the importance of international partnerships in training, reflecting Ahmad et al's[13] call for worldwide cooperation. A detailed list of short- and long-term recommendations is presented in Table 4 providing a road map for effective HTA implementation in the UAE.

The summary of our recommended actions with clear timelines (as described in Table 4) is just a step in the HTA implementation. The need for continuous monitoring of actions is recommended to allow for readjustment of timelines or even change certain action items.

HTA implementation will contribute to establishing a balance among equity, quality healthcare, and efficiency of decisions. It will also support resource allocation decisions particularly as the HTA implementation expands to encompass most, if not all, technologies in the future. Establishing a formal system of HTA will facilitate the implementation of the proposed recommendations and monitor for any readjustment.[28]

Limitations

Our study has some limitations including the small sample size; however, this was managed by the involvement of highly knowledgeable experts about the topic. We acknowledge that our sample did not include patients' representatives. In addition, most

survey participants were professionals from the fields of pharmacy and medicine, with minimal representation from other sectors. This is because experts in HTA and health economics often emerge from these disciplines.

Conclusions

Although HTA in the UAE is still in its early stages, strong initiatives are taken for its implementation. An HTA road map is needed to guide decision makers into the right direction and in making evidence-informed decisions. Our survey results served as a step in developing a detailed action plan for HTA implementation. Optimizing HTA process eventually enhances the sustainability of the healthcare system.

Author Disclosures

Author disclosure forms can be accessed below in the Supplemental Material section.

All conclusions expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations.

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