EVALUATION OF THE MEDICAL SCHOOL AT THE TECHNION FACULY OF MEDICINE

INTERNATIONAL QUALITY ASSURANCE REVIEW COMMITTEE ON HIGHER EDUCATION

JUNE 2021

Background and Procedures

1.1 In the academic year 2020-2021, the Council for Higher Education [CHE] put in place arrangements for the evaluation of study programs in the field of Medicine in Israel.

1.2 The Higher Education Institutions [HEIs] participating in the evaluation process were:

Azrieli Faculty of Medicine at Bar Ilan University
Ben Gurion University, Faculty of Medicine
Hebrew University Faculty of Medicine
Technion Faculty of Medicine
Sackler Faculty of Medicine at Tel Aviv University

1.3 To undertake the evaluation, the Vice Chair of the CHE appointed an International Quality Assurance Review Committee (IQARC; 'the evaluation committee'), under the auspices of the CHE's Committee for the Evaluation of Medical Education in Israel[1], consisting of:

- Prof. Mark Tykocinski (Chair)
- Prof. Haim Bitterman
- Prof. Adina Kalet
- Prof. Orit Karnieli-Miller
- Prof. Cees van der Vleuten

Ms. Pe'er Baris-Barnea served as the Coordinator of the IQARC evaluation committee on behalf of the CHE.

1.4 The first review took place from 7 to 14 June 2021, and it dealt with two of the five medical schools: Technion Faculty of Medicine and Azrieli Faculty of Medicine at Bar Ilan University.

1.5 The evaluation process was conducted in accordance with the CHE's *Standards for Medical Education (2021)*. Within this framework the evaluation committee was required to:

- examine the self-evaluation reports submitted by the medical schools in Israel
- conduct on-site visits (physical and/or virtual) at those institutions participating in the evaluation process
- draw conclusions vis-à-vis each of the 11 standards
- submit to the CHE an individual report on each of the medical schools participating in the evaluation
- set forth the committee's findings and recommendations for each school
- submit to the CHE a general report regarding the evaluated field of study within the Israeli system of higher education including recommendations for changes to the standards for Medical Education

1.6 The IQARC evaluation committee examined only the evidence provided by each participating institution — considering this alongside the distinctive mission set out by each institution in terms of its own aims and objectives. This material was further elaborated and explained in discussions with senior management, lecturers, students, and alumni

[1] The committee's letter of appointment is attached as Appendix 1.

during the course of each visit to each of the institutions.

1.7 This report deals with the Technion Faculty of Medicine. Due to travel limitations associated with the coronavirus pandemic, the evaluation committee's deliberations were conducted online, supplemented by an in-person visit of two of the committee members (Prof. Tykocinski and Prof. Orit Karnieli-Miller) to the medical school on June 10. The schedule of the visit is attached as **Appendix 2**. One of the evaluation committee members (Prof. Haim Bitterman) recused himself from this medical school evaluation.

1.8 The IQARC evaluation committee would like to thank the management of the Technion Faculty of Medicine for their self-evaluation report, supportive interactions with the evaluation committee in the course of the evaluation process, and hospitality towards the committee members who visited the institution.

Key findings

Executive Summary

Technion Faculty of Medicine (TFOM), established in 1969, prides itself as the medical school of the Technion Israel Institute of Technology, one of the premier institutes of technology in the world. This connection distinguishes it among Israel's medical schools, and it provides a point of leverage for its educational and research agendas.

The **International Quality Assurance Review Committee (IQARC)**, as charged by the **Council for Higher Education (CHE)**, met in June 2021 to assess TFOM, as part of the **CHE's** quality assurance assessment of Israel's medical schools.

The IQARC framed its deliberations around several core elements:

1) **CHE's directive to focus the evaluation around '*fitness for purpose*' |**
In its quality assurance assessment, the IQARC looked to the medical school's own self-described *purpose*, as reflected in its mission and vision statements, along with its stated aspirations, as articulated in the self-study and IQARC interviews with university and medical school leadership.

2) **Evolving medical education models on the international scene |**
In addition to considering the medical school's self-described purpose and the medical education ecosystem in which it operates, the IQARC also viewed TFOM through the lens of advances in medical education science and their translation across the world into medical school curricula and didactic modalities. This is relevant to the CHE's journey towards **World Federation for Medical Education (WFME)** accreditation status.

3) **Operating and budgetary constraints for Israel's medical schools |**
Evaluation of medical school performance must *per force* factor in the operational environment. TFOM functions within a complex set of operating and budgetary constraints, including: a) national policies and practices vis-à-vis approval of, and budgetary allocations to, the medical school for educational programming, faculty staffing, new program development, and capital expenditures; b) tight university oversight of medical school educational curricula and programming, faculty appointments and promotions, and operating and capital allocations; and c) a complex interplay with its flagship hospital, Rambam Hospital, as well as the rest of its network of geographically-disbursed, functionally diverse clinical affiliates. Navigating this matrix of operating and budgetary relationships is demanding on leadership, constrains degrees of freedom, and in turn, must factor into recommendations.

4) **First evaluation against a new set of CHE standards |**
Subsequent to the 2014 medical school review cycle, the CHE, in its journey to WFME status, set forth for the first time a structured set of standards for medical school quality assurance assessment in Israel. Further, there was a revision of these CHE standards within months of the June 2021 review cycle. Medical schools were given the option of revising their self-

studies at this late stage, and TFOM elected to do so, even as it faced the coronavirus pandemic.

5) **TFOM's performance since the last CHE-directed accreditation review in 2014 |** Notwithstanding a changing medical education landscape in Israel, accompanied by evolving educational evaluation perspectives and the introduction of formal accreditation standards since the last accreditation review, the IQARC nonetheless looked back to that 2014 review and evaluated TFOM's progress in addressing the series of recommendations set forth in it, as well as in achieving internal objectives set forth in the medical school's subsequent strategic planning document of 2015.

The IQARC evaluated TFOM based upon 11 CHE-delineated standards for assessment of medical schools:

The CHE has modelled its standards after those of the United States Liaison Committee for Medical Education (LCME). The CHE adaptation encompasses assessment of:

Goals, Planning, and Organization (Standard 1)
Leadership and Management (Standard 2)
Academic and Educational Environment (Standard 3)
Teaching Staff (Standard 4)
Educational Resources and Infrastructure (Standard 5)
Skills, Learning Outcomes, and Curriculum Development (Standard 6)
Curriculum (Standard 7)
Curriculum Management and Evaluation (Standard 8)
Teaching, Guidance, Assessment and Safety of Students and Patients (Standard 9)
Admission Processes to the Program and Transition from Year to Year (Standard 10)
Student Support and Services (Standard 11)

The CEMEI evaluated TFOM's compliance with these standards, and its top-level findings, commendations, and recommendations follow.

The IQARC's overarching findings are:

1) The TFOM strategic planning document, titled *"Shaping the Future of Medicine: From Strategy to Implementation (2015-2016)"*, does not constitute a well-structured, bona fide strategic plan *per se*—rather a charting of general directions and broad objectives, and even according to TFOM leadership, was '*lost to institutional memory*'. No concrete action plans were set forth in that plan, nor were they formally developed afterwards. Addressing this deficiency, the current dean has recently committed to a formal strategic planning process that is to be completed by the end of 2021. As part of this strategic plan, there will be concrete action plans and deliverables that are set against timelines.

2) There is no structured internal process in place for monitoring the medical school's progress over time in embracing external review panel recommendations and achieving internal strategic goals. **Such a structured internal process is particularly important for preserving**

continuity of objectives and programs in a system where deans transition on a relatively frequent basis.

3) TFOM leadership, at both the university and medical school levels, sets forth a bold vision for the medical school's education and research agendas—one that seeks to leverage Technion's remarkable strengths in the technological realm, along with its outstanding research faculty.

4) Given its location in the north of Israel, one would expect TFOM to embrace a regional social mission to meet a spectrum of healthcare needs of the diverse communities of northern Israel. Such a mission was not explicitly set forth in either the DCI self-study or the interviews. If implicit, by virtue of the patients served by its clinical affiliates and the diversity of its trainees, it should nonetheless be clearly articulated, addressing how a combination of technological opportunities and health service responsibilities are to be balanced in crafting an educational framework and specific goals. **It is essential that all components of TFOM's mission and vision be fully understood and embraced by all sectors of the faculty**, with a common understanding of the types of physicians TFOM seeks to nurture.

5) TFOM leaders further articulate an ambitious goal of offering distinctive, world-class medical education, and even be seen as a front-runner in this realm. Against this high bar, there will clearly be **a need to significantly reform approaches to curriculum and didactics**. The medical school's current pre-clinical curriculum is traditional at its core—discipline-based, lecture-intensive, passive in character, demanding in contact hours, limited in self-study, and modest in its clinical integration into the pre-clinical curriculum. The trend elsewhere has been for decades towards medical education that is characterized by integration among the foundational sciences and is competency-based, small group-intensive, rich in active learning, less demanding in contact hours, open to self-study, and robust in infusing clinical thinking into the pre-clinical years.

   While the current dean seems open to charting a path forward along these lines, via a formal strategic plan that is now in process, it is unclear whether others in his medical school leadership team and the faculty more broadly and uniformly share this receptivity to a fundamental shift away from the status quo, given an undercurrent of self-satisfied *'why change it now if it's working'* attitude that surfaced during the interview process. Terms like '*unique Technion-flavored curriculum'* raise a red flag. Furthermore, to be successful in this endeavour, the dean will require backing from university leadership and controlling national entities. During the interview, the dean alluded to a discussion of active learning at a meeting of the deans of the 18 Technion faculties, where a sentiment was expressed by some deans that it would be reasonable for some areas, but not all. The conversation needs to be shifted away from whether competent physicians are being churned out by TFOM (the answer is unequivocally yes), to instead **whether the exceptionally talented cohort of medical students admitted to TFOM can be cultivated to yet higher levels (e.g., analytic and synthetic thinking capabilities; leadership and communication skills; teamwork skills; higher order human qualities). This orientation toward excellence would align with the institution's mission to be *"world class"*.**

The pace and sequencing of transformation is also an issue. For example, one of the TFOM leaders spoke of piloting flipped classrooms for the American program only. **A more comprehensive and aggressive approach across multiple tracks would be more likely to succeed and be sustained.**

6) To its credit, TFOM has taken first steps towards evolving its curriculum. For example, with a view towards shifting towards small group learning formats, the medical school is addressing critical space constraints by building an impressive *Clinical Skills Center* wing that will include a complement of small group meeting rooms in the first phase, and more planned in a second phase. Other modest steps have been taken in this direction, albeit episodic. The question at hand is whether incrementalism should give way to a quantum leap forward, that is, revolution versus the current incrementalism or evolution.

7) There is a perception among various stakeholders, inside and outside of the medical school, that curricular reform would demand financial resources that are unattainable in the current environment. This perspective should be challenged. For example, increased costs associated with running multiple small groups can be offset by decreasing other costs driven by the current **unusually high load of contact hours (reportedly 30+ hours per week)**. Various other curricular changes could be accomplished within the current financial envelope by simply shuffling resources and prioritizing programming. However, this is not to say that a small group-intensive curriculum will not have a higher baseline cost.

8) There are **opportunities for deepening student assessment** during both pre-clinical and clinical educational components.

9) There is **no prospective longitudinal assessment of outcomes and tracking of TFOM graduates**. Among other things, this would provide evidence to back up the internal confidence that TFOM mints superior physicians. Given the prominence of TFOM in the Israeli medical education ecosystem, such an effort would additionally serve as a data resource outside of the Technion in shaping national health manpower policy.

10) **A majority of physicians taking part in clinical teaching at TFOM's clinical affiliates do not have academic appointments**. Furthermore, one-fifth reportedly receive only '*12.5% appointments'*, which may fall short of fairly compensating some of them for their actual teaching effort. Clearly, this arrangement detracts from their motivation to carve out time to teach, not to mention to attend training sessions geared to improving their didactic skills. This deficiency in cross-subsidization of teaching time may also impact their willingness to serve in tutor roles above and beyond their ongoing obligations.

The IQARC's more specific findings related to the CHE standards are embodied within the series of commendations/good practices and 45 recommendations set forth in detail in the following section. This includes recent major changes and key challenges faced by TFOM, as well as the medical school's performance during the pandemic.

Each of the CHE standards was assessed on a scale of 1 to 6, wherein a score of 6 was deemed *Good Practice*; a score of 5 was deemed *Needs Minor Improvement*; scores of 3 and 4 were deemed *Needs Major Improvement*; and scores of 1 and 2 were deemed *Standard Not Met*. Based on this scoring system, the IQARC came to the overall conclusion that the Technion Faculty of Medicine meets all 11 standards set forth by the Committee on Higher Education. That said, 8 of the 11 standards are categorized as *Needs Major Improvement* (2 'Score 3'; 6 'Score 4), and 3 of the 11 standards as *Needs Minor Improvement* (3 'Score 5').

There are substantial areas of commendation/good practice, and yet there is significant opportunity for elevating TFOM's administrative structures and educational programming, which are captured in the 45 recommendations set forth in the section below.

Conclusions about the Technion Faculty of Medicine

The IQARC evaluation committee reached the following conclusions about the higher education provision at the medical school at the Technion Faculty of Medicine.

Israeli Standards for Medical Education

The Faculty of Medicine at the Technion meets 11 of the 11 Israeli Standards for Medical Education, with needs for improvement on each standard detailed below.

Commendations and Good Practice

The IQARC evaluation committee identified the following areas for commendation and features of good practice at the Technion Faculty of Medicine:

1) The Technion Israel Institute of Technology is a world-class university, with a dedicated faculty and extensive resources in the *exact sciences*. TFOM contributes significantly to this institutional academic excellence. The technology angle distinguishes TFOM within the Israel medical school landscape.

2) TFOM leadership has a clear line of sight to the integration of technology with medicine, and it is now looking to translate this technology-health nexus into distinctive educational offerings and pathways. One example is its goal of expanding the number of dual degree programs (medicine coupled to engineering; computer science; biophysics). The push towards dual degrees is part-and-parcel of TFOM's broader aspiration to individualize educational paths for medical students. This includes an expressed willingness to find ways to shorten and integrate the current curriculum. Significant efforts to increase scholarship support will serve to reduce the need for financially strapped students to juggle their studies with outside jobs, and so free up time for cross-disciplinary studies and educational enrichment.

3) TFOM leaders also speak of combining the sciences and the humanities, which conveys a holistic approach to the physician. The sentiment that '*we can educate different kinds of physicians*', leveraging science/engineering and humanities, is certainly forward-thinking.

4) A dedicated and experienced faculty and enthusiastic students and alumni represents a significant asset of the medical school.

5) The current dean expresses a willingness to undertake curricular reform and evinces a self-awareness of the medical school's weaknesses and opportunities. This is evidenced by his embrace of a strategic planning process and stating that '*accreditation provides us a mirror*'.

6) The medical school has demonstrated its commitment to the educational mission through capital projects. TFOM recently opened a state-of-the-art anatomic dissection suite, and a new *Clinical Skills Center* is under construction (scheduled to be opened in one year). Importantly, in addition to providing clinical skills training facilities, this wing will provide

more small group meeting spaces, making it feasible to expand active learning and state-of-the-art educational assessment. Yet further expansion of educational facilities, with small group meeting spaces, is envisioned on another floor. Facilities and programs require people, and TFOM leadership acknowledges there will be a need for additional investment in an appropriate workforce to optimally take advantage of these new facilities. This will require budgetary support from the university.

7) TFOM has taken positive steps, albeit incremental, towards complying with recommendations of the 2014 accreditation review report. Clinicians have now been infused into pre-clinical studies, and the weekly '*Clinical Tuesday*' program in the pre-clinical years has been popular and fully embraced. There are fewer lectures in the clinical years, and in their place, alternative teaching formats that feature patient problem-based learning. The decision to allocate academic faculty positions to physicians involved in teaching, changing them from 'adjunct clinical teacher' status, also represents a step in the right direction and sets the stage for some of these critical teachers to be promoted. Attention to this important faculty issue sends a positive message that medical school leadership values the educational mission.

8) TFOM introduced effective innovations in its pre-clinical and clinical training when coping with the COVID-19 pandemic, and these innovations can now serve as a springboard for further hybrid flexible innovations in the medical school's didactic methodologies.

9) New pre-clinical faculty appear to receive needed support in their early phase: mentoring, seed money, laboratory space, and reduction in teaching load.

10) There is a new *'Advanced Medical Research'* building under construction on the Bat Galim campus, which will eventually accommodate 20 (10 + 10) new investigators. This will create yet more research opportunities for medical students.

11) The dean described a proactive approach to address the looming wave of faculty retirements, through a deliberate and well thought out faculty recruitment strategy. This includes a shift from a '*recruit the best and most successful*' stance to a more deliberate approach that looks to future trends in biomedical research; areas of established Technion expertise; capabilities in dealing with multi-dimensional data; filling gaps in current faculty expertise; and an openness to true out-of-the-box thinkers. Importantly, the dean also expressed openness to recruiting 1-2 experts in medical education, which would represent a significant advance for the medical school's education mission. The dean also expressed openness to having some faculty be based on the main Technion campus, where they could oversee MD/PhD students.

12) Library resources are very strong.

Recommendations

The IQARC evaluation committee makes the following recommendations to the Technion Faculty of Medicine.

Essential:

1) **Complete the strategic planning process that has been initiated recently.**
To be rigorous, the strategic planning process should include consultation with top tier outside experts in medical education from around the world who are familiar with the latest trends in medical education science. This consultative expertise is an essential complement to the consulting firm that has been engaged for the planning process. The strategic plan should envision comprehensive curriculum reformation and articulate a change management theory which fosters the capacity of faculty to design, implement and continuously improve a learner-centered, active curriculum, with measurable outcomes. In pursuit of this vision, the plan should clearly set forth overall goals, a competency framework, instructional design which integrates foundational and clinical content, and a modern approach to assessment. This must include instructional design support and a faculty development program. Also, the strategic plan should articulate a specific implementation plan and action items, along with metrics and milestones to monitor progress toward clear end goals, with a firm commitment to a timeline. Metrics might include items such as percentage of students seeking dual degrees and increases in class size (to comport with the national imperative for training of more physicians in Israel medical schools). Milestones might include items such as the launch of a *Student Assessment Portfolio* by a defined date. Lastly, the strategic plan might encompass a TFOM point of view on the future role of the physician, as well as the needs of the country vis-à-vis its home-grown physicians.

2) **Lock in clearly articulated mission, vision, and value statements.**
The DCI self-study conflates 'mission' and 'vision', and in essence, there is no mission statement *per se* set forth, nor a formal statement of institutional values. The vision conveyed by the dean at the interview differed from the one set forth in the DCI, and in any case, a listing of goals does not constitute a vision statement. A clear and crisp articulation of mission, vision, and value statements are essential if the medical school is to mobilize its stakeholders towards its defined objectives, and they are most compelling when appropriately tailored to the medical school, speak to its distinctive core strengths and value propositions, and do not have a generic feel. Top-level initiatives and programs, along with 'big ideas', follow naturally from an institution's mission/vision/values.

   A *mission* statement should concisely set forth the medical school's primary purpose. A *vision* statement should convey what the medical school aspires to be and what it intends to look like several years down road. A *values* statement should crisply express the core principles that frame all that medical school does. In turn, specific goals and action plans follow from, and give life to, the mission/vision/values statements.

3) **Develop a TFOM handbook that formally catalogues the medical school's policies, guidelines, and procedures.**
This document would align medical school-specific matters with the university-wide bylaws (as captured in two university-wide documents that serve as bylaws: *Technion Academic Regulations* and *Technion's Constitution and Bylaws*). This TFOM handbook would serve to bring transparency to medical school governance; codify and clarify committee structures and operating procedures; define administrative leader roles and responsibilities; set forth obligations and rights of adjunct faculty; codify policies and procedures related to faculty appointment, advancement, and termination; codify policies and procedures related to student matters; codify policies and procedures dealing with conflict of interest, conflict of commitment, and foreign influence.

4) **Convert the TFOM *Department of Medical Education* into a defined entity that orchestrates the *cluster* organization model, the pre-clinical and clinical curriculum evaluation committees, the relevant vice deans, and various *ad hoc* clinical discipline-specific committees that arise from time to time.**
Viewed from the outside, the various committees and administrative leaders connected to curriculum development and evaluation at TFOM appear as a bit of a labyrinth. At times, it was unclear whether the various administrative leaders and faculty share a common view of the inter-relationships, and indeed, what the 'Department of Medical Education' even means. A Department of Medical Education, when well-structured, serves as an organizing framework for managing the complexities of medical curriculum development and implementation, as well as a catalyst for curricular reform. Given the cascade of university level approvals required for changes in medical education pathways and offerings, a deeply coordinated approach to curriculum management will be essential moving forward.

5) **Recruit faculty with specific expertise in medical education and an interest in education science.**
There are no publications or faculty positions related the field of medical education or social sciences. The medical education department should be expanded to include such expertise, including dedicated education-focused faculty who would be admitted to the tenure track. During the review, there was mention of planned recruitment of a key individual into the Department of Medical Education. Making that recruit a reality, with an empowered role, should be a priority.

6) **Adopt a competency framework at TFOM that will connect content, instruction, faculty development, and student assessment to the outcomes it seeks for its medical education.**
This framework should be used to structure all education and assessment across all years of training. Following international frameworks, this competency framework should also entail the identification of many leadership, communication, interprofessional team-based skills (at times termed *soft skills)*. An *outcomes-based* curriculum, which utilizes *active* instructional designs, would bring TFOM's teaching into synch with the latest findings of medical education science.

Definitions matter, and it will be critical that TFOM's education drivers fully grasp contemporary interpretations of terms like 'competency', 'active learning', 'outcomes assessment', and so on. There will be a need for detailed curricular mapping against competencies, and to think of the pre-clinical and clinical years as an intertwined continuum. While '*Clinical Tuesday'* is a welcome development, it does not reflect a systematic basic science-clinical integrative approach. This journey will demand significant cultural transformation by the educators.

7) **Commit to a fundamental shift in instructional strategy from a lecture-based, high contact-hour approach to one rooted in small group and self-directed learning.**
The trend in medical education is toward small group learning, and the effectiveness of this approach is by now evidence-based and incontrovertible. TFOM has incorporated some episodes of small group learning in various areas. A coordinated approach is now called for, along with a migration away from 30+ contact hours per week to time freed up for self-study. As it stands, the student-centered activities, labs and small group learning hours decrease as the pre-clinical years progress.

8) **Redesign TFOM's pre-clinical years to integrate material so that its application to clinical medicine is constantly reinforced.**
This redesign calls for vertical and horizontal integration of disciplines that are currently taught in independent courses, into meaningful units or blocks; the use of the simulation center to provide longitudinal clinical skills learning that is integrated with clinical application; and a significant reduction in the volume of summative testing as compared to the current curriculum. There will need to be instructional design support and investment in faculty development to make this happen.

9) **Monitor TFOM student progress towards the delineated competencies longitudinally.**
Build and resource a *Program of Learner Assessment* that enhances learning. This should integrate all assessments (e.g., knowledge, skills, capacities, professional identity formation) into a single portfolio organized by a competency framework and reviewed regularly between students and a faculty coach that leads to a learning plan and evidence for the determination of progression. SHAMAYM (an evaluation form developed to ensure that students are exposed to the required skills and clinical experiences as dictated by the national syllabus) could be used as the infrastructure, but it would need additional functions to make it student-centered. Other elements will have to be added, such as more components relating to professionalism and communication, as well as actual practices based on direct observation.

10) **Evolve the electronic dashboard logging clinical activities (SHAMAYM) into a portfolio system that incorporates all preclinical and clinical feedback from learning activities.**
Introduce a system of work-based assessment in which repeated direct observations are used to provide learner feedback. Use the portfolio for a continuous and longitudinal dialogue between learner and teachers. Such a work-based system in the clinical years provides students with great autonomy.

11) **Avoid many transitions in clinical rotations and be careful with short rotations.**
Clinical learning is optimized when students have an active role in the provision of healthcare in a continuous manner and are part of the healthcare team. Longer rotations enable this kind of learning. Short clerkships are less effective since they become largely observational and disjointed.

12) **Develop a plan for training in interprofessional education and collaboration.**
As teamwork becomes ever more important in healthcare delivery, optimizing the interplay among different healthcare providers becomes essential. Interprofessional education—where health profession students learn together—has entered the mainstream in many countries, and TFOM should consider developing programming along these lines. Teachers with degrees in nursing and the social sciences could be helpful along these lines.

13) **Develop a more comprehensive system for monitoring educational effectiveness and program outcomes to drive continuous quality improvement.**
At the present time, this seems to be very basic, diffuse, and uncoordinated, as it is spread across several different entities. There are a variety of forums in which this is discussed (regular end-of-rotation meetings; all-clinical faculty meetings once a year; Faculty Council four times a year), but a more systematic prospective approach is needed. The DCI self-study alludes to a joint request by the 'forum of deans' for a full-time position focused on continuous quality improvement that has been approved recently. However, if that individual is to serve all of Israel's medical schools, it will clearly be inadequate for the task at hand. Broadening the scope of the Department of Medical Education and/or extending the role of the Curriculum Committee could address this need. A defined entity that oversees the full continuum of the curriculum (basic and clinical) is needed to formalize and integrate educational outcomes assessment, approve changes to the curriculum, and address deficiencies in the curriculum in real-time.

14) **Create a database system for longitudinal tracking the career paths of graduates.** TFOM keeps no running demographic database of its graduates and their career paths, precluding meaningful conclusions about its longer-term educational outcomes. This would shed light on questions such as place of practice (e.g., how many stay in Israel); academic v. non-academic career paths; primary v. specialty care preferences, and so on. This could also inform discussions around the sorts of graduates TFOM aspires to mint and if coordinated with other schools could monitor national physician workforce goals.

15) **Address faculty and student diversity.**
Demographic data were not available to the QA Committee with respect to demographic diversity of faculty and students. Of note, there were only a few faculty and student representatives from the Arab population at the interviews. Also, there were no women representatives in the preclinical student session (even though women constitute about 75% of the medical students). This matter merits careful review.

16) **Clarify how the dean coordinates with heads of clinical departments/academic clinical chairs.**

This relates not only to UME, but also GME, CME, and research plans. It is not clear what the lines of accountability for clinical research are to the dean, e.g., for clinical trials and health services research activity. Of note, all chairs appear to be relatively recent appointees, which naturally raises questions about hand-offs and continuity of educational objectives.

<u>Important</u>:

17) **Clarify TFOM's governance structure.**
The DCI self-study indicates that the governing body of the medical school consists of two entities: *Faculty Plenum* and *Faculty Council*. A formal document is needed that delineates the areas of authority for each, respective operating procedures, and the interplay between the two. This is important for transparency and decisive governance.

18) **Develop long-term plans for each of the medical school tracks, including the American program.**
The medical school has several different educational tracks with distinct missions. The level of coordination among these tracks is unclear, as well as whether they are assessed individually, and if so, by what mechanism, and how these leaders of the various tracks work together. Clearly, the strategic plan under development should examine the needs and future paths for each of the educational tracks. In so doing, the special challenges and opportunities for each should be separately addressed and not conflated.

19) **Formulate a *Conflict-of-Commitment* policy including systematic monitoring.**
The DCI does not mention conflict-of-commitment, nor is it clear whether this is dealt with at the university level. There should be a systematic approach, with annual monitoring, to this critical issue. This medical school level monitoring should dovetail with the broader institutional approaches to conflict-of-interest. With respect to conflict-of-interest matters, the DCI self-study associates it with a grouping of various individuals: *"governing body members, university administrators and medical school academic and education leaders, medical school faculty"*. Instead, a dedicated and focused committee, led by a single designated individual and deliberating under confidentiality, should oversee conflict-of-interest matters.

20) **Ensure formal policies to address potential interference with both faculty promotion and student admission decisions.**
The self-study cites an example of a previous dean who recused himself from the appointment committee's discussion of his wife's promotion. It is unclear whether this was a one-off versus hard-wired in policy surrounding the issue of nepotism. There should also be clearly articulated policies ensuring that the dean and other leaders are at arms-length from admissions and promotion decisions.

21) **Develop a central process for monitoring equivalency of education/training at TFOM's various clinical affiliate sites.**

TFOM has affiliation agreements for clinical training at a variety of clinical entities. While there is some evidence for coordination, the oversight is unstructured and appears to be mostly handled at the individual clinical department level. A more structured framework, overseen centrally by the medical school, would help ensure equivalency of training, as well as optimize handling of student issues that may arise at peripheral clinical sites. There should be a clearly designated single individual at each clinical site accountable for the students' educational experience, and these accountable, site-specific education coordinators should come together at least monthly to discuss and assess challenges and plans. This issue is of particular importance when it comes to ensuring educational outcomes at community-based clinics, in the absence of formal affiliation agreements.

22) **Ensure continuity in implementation of strategic plans and priority initiatives across dean terms and transitions.**
There have been three TFOM deans since the last review (Prof. Eliezer Shalev, 2011-2016; Prof. Shimon Marom, 2017-2018; Prof. Elon Eisenberg, 2019-2022). This relatively frequent and irregular turnover, along with a process that calls for each 2-year stint requiring a renewal, can lead to a lack of continuity. Also, progress and continuity in addressing recommendations of IQARC reviews should be diligently monitored.

23) **Develop a more structured mechanism to evaluate the performance of key TFOM administrative leaders.**
As the medical school undertakes challenges of significant curricular reform, new program development, and expansion of educational and research scale, there should be periodic and meaningful assessment of administrative leader skillsets and commitments to the agendas at hand. While the DCI self-study offers an extended consideration of faculty recruitment plans, there is no discussion of administrative leader appointments, tenures, and performance assessment.

24) **Educate the faculty in the latest developments in education science and evidence-based medical education.**
This could be achieved by sending key TFOM educational leaders abroad for immersion experiences to directly observe educational practices at the most forward-thinking medical education institutions abroad. Further, enable TFOM faculty to engage regularly with other medical educators in the country with the goal of developing a cadre of faculty who are informed of the latest developments in active instructional design and competency-based assessment.

25) **Continue to advance opportunities for dual degrees (MD/MSc or MD/PhD).**
TFOM is committed to substantially increasing the percentage of its medical students who seek dual degrees, with a particular focus on bridging medicine to high-dimensional data sciences, medical device innovation/medical technology development, and care delivery system evolution. This is a laudable and differentiating objective, and it should be diligently advanced.

26) **Develop mandatory programs for students in the Israeli track that are directed at fostering well-being and helping their adjustment to the physical and emotional demands of medical school and the medical profession.**
Clinical Tuesday and the *Capsule* represent a good start, but they should be designed more systematically and allow for a continuum between them. Given that most students come to medical school after army service and often have significant family responsibilities, special attention should be directed to those students, and ideally, financial aid should be increased to lighten their financial burden. Ultimately, this will help with equitable access to medical education and address social accountability.

27) **Incorporate early exposure to practice-with-intention, with a focus on communication skills and professionalism, in the pre-clinical years.**
Though communication skills and professionalism issues are discussed in *Clinical Tuesday*, the syllabi do not include clear goals, key literature, nor clear assessment of these basic and advanced skills. The assessment of reflective practice or communication skills should be structured. Students comment that some do not submit their reflection to their instructor, and instructors say they receive feedback without any guidance and specific aims. All communication skills are taught in the pre-clinical years, including how to deliver bad news. Consider more just-in-time learning of these skills, later in the clinics, to help them connect this to real life. Attention should be paid to how communication skills, along with clinical skills and clinical reasoning, are observed (how many, by whom), developed (who provides feedback, when) and evaluated. The skills notebook monitors mostly what students are observing, but not what they are practicing, and includes mainly technical performance without any assessment or mention of a requirement for students' ability to communicate well in the medical interview. In sum, a comprehensive plan should be developed for teaching communication skills across the educational continuum, with defined assessment and expectations.

28) **Evolve the current OSCE-like evaluations into a real OSCE format for direct observation and feedback.**
Space constraints have apparently limited the use of standard OSCE's. This limitation will be addressed once the new educational spaces under development become available. Faculty interviewed were not accurate in their understanding of how an OSCE is distinct from an oral exam with an actual patient.

29) **Infuse more reflective practice, medical ethics, professionalism, and personal and professional development into both pre-clinical and clinical training.**
It is unclear how reflective practice is currently being taught and assessed, in pre-clinical and especially in clinical years. Ethics seems to be limited to the issue of honesty and integrity. More focus on humanities and social sciences is needed. Professionalism evaluation is not included in the scoring of each clinical rotation.

30) **Ensure there are effective remediation processes for students who struggle academically or with clinical competencies.**
There is no mention in the DCI self-study of remediation processes when problems in

competencies arise.

31) **Develop detailed plans for how the new *Clinical Skills Center* will be used throughout the entire course of studies.**

32) **Sign clinical affiliation agreements with community-based clinics.**
While there are uniform agreements in place with the major clinical affiliates, there are apparently none in place for the community-based clinics.

33) **Require all clinicians who interact with students to have a faculty appointment.**
If funding is the barrier, then consider creation of a separate academic appointment pathway that does not require cross-subsidization of teaching time.

34) **Design and implement a robust career advising process for students.**
Such career advising would promotes good career fit, as well as address social accountability of the medical school.

<u>Desirable</u>:

35) **Partner with other Israeli medical schools, perhaps as a coalition, to provide a rational guide to reform/transform the medical curriculum nationally.**
To this end, look to global examples (*Scottish Doctor; CanMEDs; ACGME Core Competencies; AAMC Core EPAs for Entrance into Residency*). Down the road, work collaboratively to establish a national core competency outcomes framework.

36) **Advocate for increasing administrative staffing as appropriate.**
The DCI self-study alludes to the need for more administrative staff in face of increasing teaching responsibilities, e.g., for clinical skills training.

37) **Support faculty in their efforts to secure extramural grant funding.**
A minority of TFOM faculty attain competitive extramural grants. Consider supporting faculty through seed funding via internal and collaborative grants and provide them access to editing services for article and grant writing.

38) **Intensify mentoring and teaching feedback for pre-clinical faculty.**
Consider holding more regular discussions early on with pre-clinical faculty to offer guidance, perhaps on an annual or bi-annual basis, rather than every 3-5 years. The DCI self-study suggests that feedback to teachers only occurs if student satisfaction falls below 75%. It would be worthwhile to instead have observation of and feedback on teaching as a routine across the faculty.

39) **Evaluate the effectiveness of the important PISGA, MAHAR and tutor workshops.**

40) **Promote strong interactions between central TFOM leaders and faculty at the various clinical affiliate sites.**
There is apparently a plan for the dean and other central administrative leaders to visit clinical sites periodically. The DCI self-study also states that key educational/academic

leaders from those clinical sites are involved in TFOM's committee structure. Cultivating these connections and creating formal events to nurture them is important.

41) **Resolve any financial issues relating to the peripheral hospitals.**
The DCI self-study alludes to outstanding issues vis-à-vis financial compensation to peripheral hospitals. Steps should obviously be taken to resolve them and mitigate the risk that they will exit from being a clinical affiliate.

42) **Link *Being a Doctor* course content with the integrative clerkship into a single longitudinal thread.**
This will allow for consistent leadership, a better instructional framework, and progressive assessment.

Recommendations Related to the International IQARC Review Process

43) **Make assessment of performance vis-à-vis CHE standards part of the medical school's operational rhythm.**
Preparation for reaccreditation should be viewed as a continuous process, as opposed to a last-minute sprint as the site visit approaches. TFOM should identify a lead coordinator for overseeing this process—perhaps the Vice Dean for Academics, or else another empowered individual—who can visit exemplary medical schools in the U.S. and observe first-hand how the reaccreditation journey is handled. TFOM might also consider inviting an external review team in mid-way through the reaccreditation cycle to assess status and propose mid-course corrections.

44) **Prepare future DCI self-studies with more attention to detail.**
There should be a better process for writing the DCI self-study, with a view towards clarity, unity, and accuracy. The DCI did not have the most recent mission, organizational structure, and information. In many places, the DCI was vague, using general terms and lacking in numbers.

45) **Provide English translations for key supporting documents in the DCI self-study.**

Explanation of the findings about the Technion Faculty of Medicine

This section expands upon some of the review findings set forth within the recommendations set forth above.

Standard 1: Mission, Planning, Organization, and Integrity

A medical school has a written statement of mission and goals for the medical education program, conducts ongoing planning, and has written bylaws that describe an effective organizational structure and governance process. In the conduct of all internal and external activities, the medical school demonstrates integrity through its consistent and documented adherence to fair, impartial, and effective processes, policies, and practices.

Provide summary of the commendations and good practices relevant to this standard

- TFOM's visioning looks to holistic education and a balancing of sciences and humanities.

Provide summary of the recommendations relevant to this standard

- There is no mission statement *per se*, and what is offered as a vision statement was last reviewed and revised in 2017.

- The most recent 'strategic plan' was in 2016 by Dean Shalev, but there is little evidence that this self-described strategic plan has translated into a definitive articulation of goals and deliverables. There was no follow-up with specifics on short- and long-term actions steps, as noted by the DCI self-study itself. Further, any such goals and plans should be reaffirmed by each new dean so as to engender continuity. Mechanisms should be implemented to assure continuity in the course of dean transitions.

- More timely strategic plan updates are needed, and a more expansive conception of strategic planning should be embraced. This might be framed around a particular Technion-inspired point-of-view on the future role of the technology-powered physician, as well as the needs of the country vis-à-vis its home-grown physicians. Of note, the DCI self-study does acknowledge the need for more diligence in translating strategic goals into concrete short- and long-term action plans, and for monitoring progress in their implementation.

- As part of a larger academic entity that showcases world-class technology innovation, Technion's Faculty of Medicine has the opportunity to lead the way in minting physicians who can bridge medicine with high-dimensional data sciences, medical device innovation/medical technology development, and care delivery system evolution. A unified approach, with appropriate educational pathways, should be explored and implemented over time.

- The DCI self-study states that educational elements of the strategic plan are continuously monitored by various constituents, but critical details on this monitoring process (venues; frequency) are lacking. Educational elements of the strategic plan should be monitored on an ongoing basis. There should be a committee/workgroup charged specifically with this task, rather than expecting it to be done in passing as part of the monthly *heads of education clusters* meetings. It is unclear how frequently outcomes are specifically discussed.

- For future reviews, an English translation of key documents should be provided. For example, there is a pivotal document entitled "*Shaping the Future of Medicine: From Strategy to Implementation (2015-2016)*" appended to the DCI self-study, but it is entirely in Hebrew. Same for other key documentary evidence, such as the Conflict-of-Interest policy.

- The DCI self-study states that two university-wide documents serve as bylaws: *Technion Academic Regulations* and the *Technion's Constitution and Bylaws*. TFOM should develop a set of bylaws, and faculty handbook, specific for the Faculty of Medicine that comports with the university-wide bylaws and addresses medical school-specific matters. By example, such a medical school bylaws document would set forth the key committees within the Faculty of Medicine that oversee the various components of the education, research and clinical care missions.

- Preparation for re-accreditation should be viewed as a continuous process, as opposed to a last-minute sprint as the site visit approaches. TFOM should identify a lead coordinator for overseeing this process—perhaps the Vice Dean for Academics, or else another empowered medical school leader—who can visit exemplary medical schools in the U.S. and observe first-hand how the re-accreditation journey is handled. TFOM might also consider inviting an external review team in mid-way through the re-accreditation cycle to assess status and propose mid-course corrections.

- Develop greater clarity in the Faculty of Medicine governance structure. The dual Faculty Plenum/Faculty Council model is not explained in the DCI self-study. If it is indeed a parallel governance structure, it inherently poses challenges when it comes to decisive governance. This should be addressed. There is no specific description of the areas of authority for the Faculty Plenum, beyond designating the Dean. What are the areas of authority for the Faculty Council? How do these two entities operate (frequency of meeting, leadership of these entities)? Is it clear how these two separate entities coordinate between them, and how are differences resolved?

- It is unclear how the governance of the American program relates to that of the overall Faculty of Medicine.

- The *Conflict-of-Interest* policy should be clearly set forth and systematically monitored. It is unclear if monitoring is merely episodic and it occurs within the Faculty of Medicine, or only at the broader institutional level. There does not appear to be a dedicated committee or single individual overseeing this policy (with a grouping of various individuals cited:

"governing body members, university administrators and medical school academic and education leaders, medical school faculty"). At a technology rich institution such as the Technion, this is particular important given the many challenges undoubtedly posed by interfaces with Israel's start-up ecosystem.

- There is no *Conflict-of-Commitment* policy.

- Foreign influence has emerged as a significant issue in many countries, and if for no other reason, TFOM should deal with this so that it does not introduce barriers for collaboration with those countries.

- There needs to be appropriate walls between the dean/administrative leaders and the admissions committee, as well as the faculty promotion and tenure committee.

- The DCI self-study cites an example of a previous dean who recused himself from the appointment committee's discussion of his wife's promotion. Is this a one-off v. hard-wired policy? There should be a formal policy around nepotism.

- Some of what is needed is out of the budgetary control of the medical school. For instance, if "decreasing … size of study groups and classes" is a strategic goal, where will the money come from to buy back clinical faculty time for education for case-based learning formats.

- Longitudinal tracking of educational outcomes should be embraced as a pressing need and opportunity. For example, if a goal is to build Israel's physician workforce, medical school-specific data as to numbers of graduates practicing in Israel, types of medicine practiced, and kinds of clinical venues are crucial for proper assessment and planning.

- As pointed out in the self-study, affiliation agreements with community-based clinics need to be signed.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 1 is met, albeit *needs major improvement* (Score 4). Mission/vision/goals need to be clearly articulated and then be diligently given life across successive dean administrations. The governance structure lacks crisp clarity, as does the organizational structure. Policies and procedures should be set forth in a medical college set of bylaws and handbook. Issues related to conflicts of interest, commitment, nepotism, and foreign influence must be dealt with in a more systematic fashion.

❖ The score that the institution gave itself in this standard:

Unsatisfactory				Satisfactory	
1	2	3	4	**5**	6

- The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

Standard 2: Leadership and Administration

A medical school has a sufficient number of faculty in leadership roles and of senior administrative staff with the skills, time, and administrative support necessary to achieve the goals of the medical education program and to ensure the functional integration of all programmatic components.

Provide summary of the commendations and good practices relevant to this standard

- There has been an effort to increase the percentage of clinical faculty teaching students who have formal academic appointments, shifting away from 'adjunct' clinical teachers.

- There is a clear commitment to leverage the Technion's technology strengths, and associated faculty, towards interdisciplinary training of medical students. This represents a distinguishing strength of TFOM.

- The current dean intends to be proactive in addressing the looming wave of faculty retirements, through a deliberate and well thought out faculty recruitment strategy.

- The dean further expresses an intention to shift from recruiting the 'best and most successful' to a more deliberate approach towards faculty recruitment that takes into account: future trends in biomedical research; areas of particular Technion expertise; capability of dealing with multi-dimensional data; and the need to fill in gaps in faculty expertise. There is also an interest to recruit true out-of-the-box thinkers, as well as 1-2 experts in medical education.

Provide summary of the recommendations relevant to this standard

- There have been several deans since last review (Eliezer Shalev 2011-2016; Shimon Marom 2017-2018; Elon Eisenberg 2019-2022). This relatively frequent and irregular dean turnover, with 2-year 'stints', creates lack of continuity in terms of addressing review committee recommendations and sustaining action plans and multi-year initiatives.

- Deans at TFOM, as is the case for all Israeli medical school deans, is constrained in his authority around faculty appointments/promotion and budgetary latitude. This raises the core question of whether certain resource-demanding recommendations of an IQARC review panel can actually be implemented.

- By design, the Dean of the Faculty of Medicine is executing the will of the faculty, which further raises the question of whether continuity can be sustained if faculty should end up demanding frequent changes in strategic direction.

- The DCI self-study alludes to a need for more administrative staff in the face of increasing teaching responsibilities, e.g., clinical skills.

- The DCI self-study appropriately points out the need for a more structured mechanism to evaluate performance of administrative leaders within the Faculty of Medicine.

- TFOM should require all clinical faculty who touch students to have academic points. If the barrier is a funding issue, then TFOM should consider creating a separate academic appointment pathway that does not require cross-subsidization of teaching time.

- A table is provided in the DCI self-study that sets forth the key leadership roles in the Faculty of Medicine. However, no organizational charts were provided for the university and for the Faculty of Medicine, making it difficult to assess how these various roles relate to each other. The roles and responsibilities of each of these key leaders should be detailed. Also, detail how the various educational 'clusters' and committees of the medical school inter-relate with each other, and in turn, how the leadership interplays with them.

- It should be made clear how 'clusters' are defined and managed at TFOM, and at what level their work is integrated, and under whose oversight.

- When addressing the question of administrative leaders, the DCI self-study instead offers an extended discussion of faculty recruitment plans. While the latter is certainly of interest, and quite thoughtful as laid out, this still leaves open the question at hand – what are the plans for administrative leadership and streamlining the central administration of the Faculty of Medicine?

- The status of the planned recruitment of a key faculty member in the Department of Medical Education needs to be clarified, along with this individual's job title and description.

- The relationship of heads of clinical departments to the dean vis-à-vis accountability for UME, GME, CME, and research plans and goals seems complex. There does not seem to be sufficient accountability for clinical and health services research to the dean, e.g., for clinical trials and population health research activity. Is it indeed just 'access to'?

- From the organizational chart, it appears that the medical school dean reports directly to a Senior Executive VP, that is, not to the President. The nature of this reporting relationship should be clarified, including frequency of meetings, topics covered, and so on.

- Most of the chairs appear to be relatively recent appointees.

- The list of committees is in Hebrew. English translations should be provided.

- The flow chart of the school's committees (Standard 2, p. 23) does not show the Curriculum Committee, and may be missing others.

- There seems to be a plan for the dean and other central administrative leaders to visit clinical sites periodically. It is also stated that key educational/academic leaders from those clinical sites are involved in the Faculty of Medicine's committee structure. This should be detailed.

- Outstanding issues vis-à-vis financial compensation to peripheral hospitals should be clarified.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 1 is met, albeit *needs major improvement* (Score 4). On the positive side, there seems to be constructive thinking in terms of faculty recruitment and appointments. A primary challenge relates to a system with frequent dean turnover. There is a need for clarifying, and perhaps simplifying, the organizational and operating structures, along with the interrelationships among the various institutional leaders, stakeholders, and the matrix of medical school committees and working groups.

❖ The score that the institution gave itself in this standard:

Unsatisfactory				Satisfactory	
1	2	3	4	**5**	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory			Satisfactory		
1	2	3	**4**	5	6

Standard 3: Academic and Learning Environments

A medical school ensures that its medical education program occurs in professional, respectful, and intellectually stimulating academic and clinical environments, recognizes the benefits of diversity, and promotes students' attainment of competencies required of future physicians.

Provide summary of the commendations and good practices relevant to this standard

- All students in the Israeli and American programs, except MD/PhDs, are required to do a scientifically rigorous MD thesis. Students may elect a *Biodesign* entrepreneurial program as an alternative path.
- The MD/PhD path, which has rigorous entry criteria, is limited to 3 years. Excellent academic standing must be maintained. These students are fully funded. A new postdoctoral/post-residency career support program is planned.
- Resources are available, although it is not clear how many students receive this, to support pre-clinical students who want to pursue biomedical research and entrepreneurship training.
- Tenure track faculty receive generous start-up packages, have formal mentoring relationships, and meet with the dean annually. They are put up for tenure at 5-6 years and promotion and tenure are reviewed every 3 years.
- "Shanghai Meetings" (one so far?) have been initiated to stimulate development of research programs in affiliated hospitals.
- Robust "resident-as-teacher" programs exist across all 5 core clinical clerkship disciplines, plus an additional PISGA program for potential future educational leaders.
- There are rigorous anti-discrimination policies and technical standards for disability accommodations.
- The University has a formal Honor Code and clear disciplinary standards. There are processes to prevent and address sexual harassment (including a specific "commissioner"). How students report mistreatment other than sexual harassment is not specifically described. Many US medical schools have a well-publicized, electronic, confidential student mistreatment reporting system which is monitored by the Dean of Students.

Provide summary of the recommendations relevant to this standard

The following recommendations are largely based on those areas of weakness acknowledged in writing by the faculty:

- Implement a comprehensive research skills program aimed at all medical students. While the thesis process is highly structured, it is not clear what formal curriculum exists to

prepare most students not in the MD/PhD program to conduct scholarly work.

- Streamline the process for approving final theses in order to reduce delays.

- Design and implement a "compliance" process to ensure that all faculty and students understand policies and procedures, rights and duties regarding student mistreatment and sexual harassment.

- Design and implement a faculty mentoring portfolio to incentivize high-quality documentation of the occurrence and impact of regular mentoring meetings.

- Expand financial assistance and scholarships for all medical students.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 3 is met, albeit *needs minor improvement* (Score 5). The IQARC concurs with many elements of TFOM's self-assessment.

❖ The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

Standard 4: Faculty Preparation, Productivity, Participation, and Policies

The faculty members of a medical school are qualified through their education, training, experience, and continuing professional development, to provide the leadership and support necessary to attain the institutions educational, research, and service goals.

Provide summary of the commendations and good practices relevant to this standard

- Clinicians have now been infused into pre-clinical studies, and the weekly '*Clinical Tuesday*' program in the pre-clinical years has been popular and embraced. There are fewer lectures in the clinical years, and in their place, alternative teaching formats have been introduced that feature patient problem-based learning.

- The decision to allocate academic faculty positions to physicians involved in teaching, changing them from 'adjunct clinical teacher' status, also represents a step in the right direction and sets the stage for some of these critical teachers to be promoted. Attention to this important faculty issue sends a positive message that medical school leadership values the educational mission.

- New pre-clinical faculty appear to receive needed support in their early phase: mentoring, seed money, laboratory space, and reduction in teaching load.

- The school supports faculty in submitting external grants.

- PISGA and MAHAR seem to be important initiatives for faculty development.

Provide summary of the recommendations relevant to this standard

- A majority of physicians that take part in clinical teaching at TFOM's clinical affiliates are not faculty members *per se* and do not have academic appointments. Furthermore, one-fifth receive only '*12.5% appointments'*, which may fall short of fairly compensating some of them for their actual teaching effort. Clearly, this arrangement detracts from their motivation to carve out time to teach, not to mention to attend training sessions geared to improving their didactic skills. This deficiency in cross-subsidization of teaching time may also impact their willingness to serve in tutor (clinical instructor) roles, given that tutoring is above and beyond their ongoing obligations.

- Recruit faculty with specific expertise in medical education and an interest in education science. There are no publications or faculty positions from the field of medical education or social sciences. The medical education department should be expanded to include such expertise, including ones eligible for the tenure track. During the review, there was mention of planned recruitment of a key individual into the Department of Medical Education. Making that recruit a reality, with an empowering role should be a priority.

- Develop a plan for training in interprofessional education and collaboration. As teamwork becomes ever more important in healthcare delivery, optimizing the interplay among different healthcare providers becomes essential. TFOM should consider developing interprofessional programs. Teachers with degrees in nursing and the social sciences could be helpful along these lines.

- Address diversity issues vis-à-vis faculty and students. Demographic data were not available to the QA Committee with respect to diversity of faculty and students. Of note, there were only a few faculty and student representatives from the Arab population at the interviews. Also, there were no women representatives in the preclinical student session (despite the fact that women constitute about 75% of the medical students). This matter merits careful review.

- Require all clinicians who touch students to have a faculty appointment. If the barrier is a funding issue, then consider creation of a separate academic appointment pathway that does not require cross-subsidization of teaching time.

- Support faculty in their efforts to attain extramural grant funding. From the DCI it seems that a small minority of TFOM faculty attain competitive extramural grants. Consider supporting faculty through seed funding via internal and collaborative grants and provide them access to editing services for article and grant writing.

- There is a need for clearer and more careful writing of the DCI. There are some points mentioned in the weaknesses and strength that were not clearly mentioned in the description of the standard in the DCI.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 4 is met, albeit *needs major improvement* (Score 4). The IQARC agrees with the faculty's self-assessment that while there are strengths, as noted above, there is a lot of work to be done to provide better medical education.

❖ The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

Standard 5: Educational Resources and Infrastructure

A medical school has sufficient personnel, financial resources, physical facilities, equipment, and clinical, instructional, informational, technological, and other resources readily available and accessible across all locations to meet its needs and to achieve its goals.

Provide summary of the commendations and good practices relevant to this standard

- The medical school has carried out an extensive narrative review of their facilities and resources and conducted a comprehensive student survey, fielded in November 2019. While it is impressive that the faculty has responded in very concrete ways to student concerns, the consistently low survey scores across the array of items is worrisome. It is not possible to determine if this reflects a broad problem with the experience of the students or is a matter of misalignment of expectations between students and the school. Without a sufficient response rate, this data is essentially uninterpretable. On the other hand, in our conversations with faculty, students and Alumni, there were no serious concerns raised about these issues.

- They have been impressively transparent about the identified areas of weakness and provide detailed descriptions of the responses they have already made to those issues highlighted as problematic in the student survey. For instance, they have improved the communication of safety procedures and Wi-Fi access, major renovations are underway to several the lecture halls, and the *Clinical Teaching Center* is currently under construction (as a major investment of the faculty).

- Negotiations of affiliation agreements with the clinical partners are underway.

- There is a great deal of excitement about the new clinical skills center and the potential is great, given the size and plans for 15-25 new small group meeting rooms.

Provide summary of the recommendations relevant to this standard

- Conduct student surveys at regular intervals using the same survey items. To reduce the burden and improve response rate, select a random sample of students to survey each time and incentivize responses. Also, given the dramatic events of the pandemic, a survey from 11/19 is probably no longer relevant. It is recommended repeating this survey (or portions of it) on a regular basis to monitor student perceptions of these issues, especially as changes are made to address the concerns.

- Craft a comprehensive management plan for the use of the new clinical skills space. It is likely that once the renovations and building of new spaces are complete challenges around scheduling and moving toward smaller group work will be alleviated. Use the simulation

centre to train systematically clinical and communication skills in the preclinical curriculum.

- Clarify how much ambulatory care exposure any individual student receives. Exposure to ambulatory care is listed as # of students per site, however, what is more important is the quantity and quality of the experience and the learning that resulted. This information should be collected and used to monitor curriculum quality.

- Create a sense of medical school community in the early years of the curriculum. Lack of contact with students in the first year and lack of a "real campus", as well as the decentralization of clinical centers, makes social cohesion a problem for students in the early years of the curriculum. The renovation of Red and Galeris halls, improving food quality in the cafeteria and expanding the size and hours in the fitness center will also address this. Making information about emergency procedures more available, fixing the emergency announcement system, improving cellular reception in most locations in the faculty building will help as well. There is a need to hold safety courses in English, expand the size and hours of the fitness center, and monitor those who have not passed the safety course.

- Formal affiliation agreements between the Technion Faculty of Medicine and community clinics are needed. This will enable expansion of time students spend in ambulatory clinical training sites. The current Clinical Tuesdays and the Family Medicine Clerkship are excellent experiences for students. However, given it is likely that there will be an expansion in the number of trainees, a rebalancing of clinical placements into ambulatory settings will be needed.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 4 is met, albeit *needs major improvement* (Score 4). There are a range of issues that should be addressed in elevating educational resources and infrastructure.

❖ The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

Standard 6: Competencies, Curricular Objectives, and Curricular Design

The faculty of a medical school define the competencies to be achieved by its medical students through medical education program objectives and is responsible for the detailed design and implementation of the components of a medical curriculum that enable its medical students to achieve those competencies and objectives. Medical education program objectives are statements of the knowledge, skills, behaviours, and attitudes that medical students are expected to exhibit as evidence of their achievement by completion of the program.

Provide summary of the commendations and good practices relevant to this standard

- The Technion Israel Institute of Technology is a world-class university, with a dedicated faculty and extensive resources in the *exact sciences*. TFOM contributes significantly to this institutional academic excellence. The technology angle distinguishes TFOM within the Israel medical school landscape.

- The medical school has demonstrated its commitment to the educational mission through capital projects. TFOM recently opened a state-of-the-art anatomic dissection suite, and a new *Clinical Skills Center* is now under construction as an add-on to the main medical school building (scheduled to be opened in one year). Importantly, in addition to providing clinical skills training facilities, this wing will afford more small group meeting spaces, and so make it feasible to expand active learning and state-of-the-art educational assessment. Yet further expansion of educational facilities, with small group meeting spaces, is envisioned on another floor. Facilities and programs require people, and TFOM leadership acknowledges there will be a need for additional investment in high-quality manpower to optimally take advantage of these new facilities. This will require budgetary support from the university.

- TFOM provides important opportunities for dual degree of MD/MSc or MD/PhD, with special focus on technology and engineering and medicine, that are in line with their mission.

- TFOM invested in adding early exposure to practice with intention to focus on communication skills and professionalism in pre-clinical years.

- Clinical tutors/instructors from all major specialties are required to participate in a preparation workshop.

- TFOM developed an evaluation form to ensure that students are exposed to the required skills and clinical experiences as dictated by the national syllabus and platforms for tracking (e.g., Shamayim and skills note).

- Family medicine skills note is comprehensive and includes patient centered aspects.

- Psychiatry skills note is comprehensive and important. It remains unclear how it is actually evaluated.

Provide summary of the recommendations relevant to this standard

- **Complete the strategic planning process that has been initiated recently.** To be rigorous, the strategic planning process should include consultation with top tier outside experts in medical education from around the world who are familiar with the latest trends in medical education science. This consultative expertise is an essential complement to the consulting firm that has been engaged for the planning process. The strategic plan should envision comprehensive curriculum reformation and articulate a change management theory which fosters the capacity of faculty to design, implement and continuously improve a learner-centered, active curriculum, with measurable outcomes. In pursuit of this vision, the plan should clearly set forth overall goals, a competency framework, instructional design which integrates foundational and clinical content, and a modern approach to assessment. This must include Instructional design support and a faculty development program. Also, the strategic plan should articulate a specific implementation plan and action items, along with metrics and milestones to monitor progress toward clear end goals, with a firm commitment to a timeline. Metrics might include items such as percentage of students seeking dual degrees and increases in class size (to comport with the national imperative for training of more physicians in Israel medical schools). Milestones might include items such as the launch of a *Student Assessment Portfolio* by a defined date.

- **Adopt a competency framework at TFOM that will connect to the outcomes it seeks for its medical education.** This competency framework will involve the identification of many humanistic needed skills (at times termed *soft skills)*. This framework should be used to structure all education and assessment across all years of training. An *outcomes-based* curriculum, which utilizes *active* instructional designs would bring TFOM's teaching into synch with the latest findings of medical education science. There will be a need for detailed curricular mapping against competencies, and to think of the pre-clinical and clinical years as an intertwined continuum.

- While 'Clinical Tuesday' is a welcome development, it is not integrated into a broader, more systematic basic science-clinical integrative approach. This journey will demand significant cultural transformation by the educators.

- **Commit to a fundamental shift in didactic strategy from a lecture-based, high contact-hour approach to one rooted in small group and self-directed learning.** The trend in medical education is small group learning, and the effectiveness of this approach is by now evidence-based and incontrovertible. TFOM has incorporated some small group learning in various areas, but it remains largely episodic. A coordinated approach is now called for, along with a migration away from 30+ contact hours per week to time freed up for self-study. As it stands, the more student-centered activities, labs and small group learning hours actually decrease as the pre-clinical years progress, with almost two-thirds frontal lectures.

- **Redesign TFOM's pre-clinical years into a student-centered educational program using active learning.** This redesign calls for vertical and horizontal integration of disciplines that run in separate units or blocks; the use of the simulation center to provide longitudinal

clinical skills learning that is integrated with the theory of medicine; and an integrated block approach which significantly reduces the volume of summative testing as compared to the current curriculum. There will need to be instructional design support and investment in faculty development to make this happen.

- **Evolve the electronic dashboard logging clinical activities (SHAMAYM) into a portfolio system that incorporates all feedback from learning activities.** Introduce a system of work-based assessment in which repeated direct observations are used to provide learner feedback. Use the portfolio for a continuous and longitudinal dialogue between learner and teachers.

- **Develop mandatory programs for students in the Israeli track that are directed at fostering well-being and help their ongoing adjustment to the physical and emotional demands of medical school and the medical profession.** *Clinical Tuesday* and the *Capsule* represent a good start, but they should be designed more systematically and allow for a continuum between them. Given that most students come after army service and often have significant family responsibilities, special attention should be directed to those students, and ideally, financial aid should be increased to lighten their financial burden. Ultimately, this will help with equitable access to medical education and address social accountability.

- **Incorporate early exposure to practice-with-intention, with focus on communication skills and professionalism, in the pre-clinical years.** Though communication skills and professionalism issues are discussed in *Clinical Tuesday*, the syllabi do not include clear goals, key literature, nor clear assessment of these basic and advanced skills. The assessment of reflective practice or communication skills should be structured. Students comment that some do not submit their reflection to their instructor, and instructors say they write a short feedback without any guidance and specific aims. All communication skills are taught in the pre-clinical years, including delivering bad news. Continue with more just-in-time learning of these skills, later in the clinics, to help them connect this to real life. Attention should be paid to how communication skills, along with clinical skills and clinical reasoning, are observed (how many, by whom), developed (who provides feedback, when) and evaluated. The skills notebook includes mostly students' observing things, not practicing, and it includes mainly technical performance without any assessment or mention of a requirement for students' ability to communicate well in the medical interview. In sum, a comprehensive plan should be developed for teaching communication skills across the educational continuum, with defined assessment and expectations.

- **Evolve the current OSCE-like evaluations into a more standard OSCE format for direct observation and feedback.** Space constraints have apparently limited the use of standard OSCE's, and this limitation should be overcome when the new educational spaces become available.

- **Infuse more reflective practice, medical ethics, professionalism, and personal and professional development into both pre-clinical and clinical training.** It is unclear how reflective practice is currently being taught and assessed, in pre-clinical and especially in clinical years. Ethics seems to be limited to the issue of honesty and integrity. More focus on

humanities and social sciences is needed. Professionalism evaluation is not included in the scoring of each clinical rotation.

- **Ensure there are effective remediation processes for problems with competencies.** There is no mention in the DCI self-study of remediation processes when problems in competencies arise.

- **Develop plans for how the new *Clinical Skills Center* will be used throughout the entire course of studies.**

- **Add community-based clinics.** While there are uniform agreements in place with the major clinical affiliates, there are none in place for the community-based clinics.

- **Partner with other Israeli medical schools, perhaps as a coalition, to provide a rational guide to reform/transform the medical curriculum nationally.** To this end, look to global examples (Scottish Doctor; CanMEDs; ACGME Core Competencies; AAMC Core EPAs for Entrance into Residency). Down the road, work collaboratively to establish a national core competency outcomes framework.

- **Evaluate the effectiveness of the important PISGA, MAHAR and tutor workshops.**

- **Link the Being a Doctor course content with the integrative clerkship into a single longitudinal thread.** This will allow for consistent leadership, a better instructional framework, and progressive assessment. Consider adding academic score to the Capsule course.

- **Prepare future DCI self-studies with more attention to detail.** There should be a better process for writing the DCI, with a view towards clarity, unity, and accuracy. In many places, the DCI was vague, using general terms and lacking in numbers**.**

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 6 is met, albeit *needs major improvement* (Score 3). A major issue is the need to adopt a competency framework that will connect to the outcomes it seeks for its medical education. Develop a better integration between Clinical Tuesday and the Capsule course to allow longitudinal development. Commit to a fundamental shift in didactic strategy from a lecture-based, high contact-hour approach to one rooted in small groups, self-directed, active learning. Develop and systematically structure the assessment of reflective practice or communication skills throughout the entire curriculum. Evolve the current OSCE-like evaluations into a more standard OSCE format for direct observation and feedback, adding more work-based observation and feedback in the clinical years. Infuse more reflective practice, medical ethics, professionalism, and personal and professional development into both pre-clinical and clinical training. Ensure there are effective remediation processes for problems with competencies and add community-based clinics.

That said, the standard is met as there are some positive signs and developments at TFOM, including Clinical Tuesday allowing for early clinical exposure, investment in a state-of-the-art anatomic dissection suite, and development of a new *Clinical Skills Center*. TFOM provides important opportunities for dual degrees and of MD/MSc or MD/Ph.D. Furthermore, concerning faculty

development, clinical tutors/instructors from all major specialties must participate in a preparation workshop, and they have specific evaluation forms to help guide their teaching.

- The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
2	2	3	**4**	5	6

- The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	**3**	4	5	6

Standard 7: Curricular Content

The faculty of a medical school ensures that the medical curriculum provides content of sufficient breadth and depth to prepare medical students for entry into any residency program and for the subsequent contemporary practice of medicine.

Provide summary of the commendations and good practices relevant to this standard

The curriculum for all the Technion programs is extensive and rigorous. Although not ubiquitous, there are several examples of foundational and clinical science integration. These include the Quantitative Methods/Reasoning course in the preclinical phase of the curriculum which combines math, statistics, and bioinformatics in a clinically relevant framework. This is a wonderful example of how this integration can be developed, but it is still course/teacher centered. The 'Being a Doctor-Exposure to Medicine' course which is delivered every Tuesday (thus, "Clinical Tuesdays") is comprehensive and encompasses a great deal of clinical skills, communication, and humanities content. For a full year, every other week (20 sessions), each student is matched with a family physician during routine clinics. Imaging is integrated across multiple courses, as is several other clinical discipline content (EM). Students were very enthusiastic about the integrative course in the clerkship year and described in detail how they learn a systematic approach to the patient.

Provide summary of the recommendations relevant to this standard

While there are excellent examples of "active learning" strategies that have been experimented with, especially during COVID, the bulk of the curriculum is structured such that students have a great deal of "contact hours" and therefore little time for self-directed learning. Because assessment drives learning and the assessment process in the curriculum is heavily based on knowledge testing and a limited amount of direct observation and feedback, students are not incentivized to integrate their learning in a clinically sophisticated way. A number of those we interviewed observed that although the Technion students are very smart and have a great deal of knowledge, they are less impressive in their clinical reasoning and readiness to "put it all together" as residents compared to graduates of other medical schools. Of note, the TeAMS program is planning to move to a heavily case-based curriculum soon. There is no longitudinal mentoring or progress testing. Workplace assessment is too limited. While within clerkships there is cross site coordination, there is limited coordination across the different clinical disciplines.

While there is frequent reference to new software (Shamayim and 145), there isn't yet a comprehensive curriculum map of what content and which learning objectives are addressed and assessed in what part of the curriculum. The curriculum is structured almost entirely by course and discipline and therefore is "teacher-centered". Students do express an understanding of the need to have the key building blocks and that it takes a great deal of time to learn what is needed. They do report that there is little integration, inconsistent mentoring and career coaching, and transitions to residency are challenging.

Given that the university president mentioned that the Technion is seeking to stimulate cross and interdisciplinary collaborations in "Health", it is particularly notable that the section on 7.7 Societal

Problems lacks sophistication. There is no justification for the selection of topics selected and little indication of how this material is addressed. Faculty with expertise in public health, social responsibility and accountability, health systems science or community health could provide any number of socio-ecological frameworks to guide selection of societal issues to address in the curriculum and there are many effective educational practices around this material.

We appreciate that the faculty of the Technion identified the following weaknesses in their self-study: Inter-professional education (actual learning with health professional students) should be strengthened; gender and sexuality are not addressed; there is not enough integration between basic skills (such as communication) and clinical skills and of education between the pre-clinical and clinical years, especially in dealing with ethics, human values, behavioural societal problems, communication skills and cultural competency. They identify that primary care and family medicine need to be more centralized and of longer duration.

Standard 7 is met, albeit *needs major improvement* (Score 4).

- The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

- The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	**4**	5	6

Standard 8: Curricular Management, Evaluation, and Enhancement

The faculty of a medical school engages in curricular revision and program evaluation activities to ensure that the medical education program quality is maintained and enhanced and that medical students achieve all medical education program objectives and participate in required clinical experiences and settings.

Provide summary of the commendations and good practices relevant to this standard

- Efforts are made to map the curriculum and avoid overlap.
- Faculty-students forum initiative is important to allow on-going monitoring and changes.
- Good follow-up in courses, specifically the use of course conduct summary after a new course is integrated.
- Commitment to hear from students and faculty about their experiences following a clerkship.
- Initiating and committing to a strategic plan due to the understanding of the need for changes.
- Self-identifying some of the needs in the report- e.g., the need for a formal mechanism to review the curriculum and adding humanistic aspects.

Provide summary of the recommendations relevant to this standard

- **Complete the strategic planning process that has been initiated recently.** The strategic planning process should include consultation with top tier outside experts in medical education from around the world who are familiar with the latest trends in medical education science. This consultative expertise is an essential complement to the consulting firm that has been engaged for the planning process. The strategic plan should envision comprehensive curriculum reformation and articulate a change management theory which fosters the capacity of faculty to design, implement and continuously improve a learner-centered, active curriculum, with measurable outcomes.
- **Adopt a competency framework at TFOM that will connect to the outcomes it seeks for its medical education.** This framework should be used to structure all education and assessment across all years of training to advance the continuum between the pre-clinical and clinical years as well as between the assessment in different clerkships.
- **Commit to a fundamental shift in didactic strategy from a lecture-based, high contact-hour approach to one rooted in small group and self-directed learning.** TFOM has incorporated some small group learning in various areas, but it remains largely episodic. A coordinated approach is now called for, along with a migration away from 30+ contact hours per week to

time freed up for self-study. As it stands, the more student-centered activities, labs and small group learning hours actually decrease as the pre-clinical years progress, with almost two-thirds frontal lectures.

- **Redesign TFOM's pre-clinical years into a student-centered educational program using active learning.** This redesign calls for vertical and horizontal integration of disciplines that run in separate units or blocks; the use of the simulation center to provide longitudinal clinical skills learning that is integrated with the theory of medicine; and an integrated block approach which significantly reduces the volume of summative testing as compared to the current curriculum. There will need to be instructional design support and investment in faculty development to make this happen.

- **Evolve the electronic dashboard logging clinical activities (SHAMAYM) into a portfolio system that incorporates all feedback from learning activities.** Introduce a system of work-based assessment in which repeated direct observations are used to provide learner feedback. Use the portfolio for a continuous and longitudinal dialogue between learner and teachers.

- **Build and resource a Program of Learner Assessment that enhances learning.** This should integrate all assessments (e.g., knowledge, skills, capacities, professional identity formation) into a single portfolio organized by a competency framework and reviewed regularly between students and a faculty coach that leads to a learning plan and evidence for the determination of progression. SHAMAYM (an evaluation form developed to ensure that students are exposed to the required skills and clinical experiences as dictated by the national syllabus) could be used as the infrastructure, but it would need additional functions to make it student-centered. Other elements will have to be added, such as more relating to professionalism and communication, as well as actual practices based on direct observation.

- **Avoid many transitions in clinical rotations and be careful with short rotations.** Clinical learning is optimized when students have an active role in the provision of healthcare and are part of the healthcare team, and longer rotations enable this kind of learning. Short clerkships are less effective since they are largely observational. Doing it yourself is much more effective.

- **Incorporate early exposure to practice-with-intention, with focus on communication skills and professionalism, in the pre-clinical years.** Though communication skills and professionalism issues are discussed in *Clinical Tuesday*, the syllabi do not include clear goals, key literature, nor clear assessment of these basic and advanced skills. The assessment of reflective practice or communication skills should be structured. Students comment that some do not submit their reflection to their instructor, and instructors say they write a short feedback without any guidance and specific aims. All communication skills are taught in the pre-clinical years, including delivering bad news. Consider more just-in-time learning of these skills, later in the clinics, to help them connect this to real life. Attention should be paid to how communication skills, along with clinical skills and clinical reasoning, are observed (how many, by whom), developed (who provides feedback, when) and evaluated.

- **Infuse more reflective practice, medical ethics, professionalism, and personal and professional development into both pre-clinical and clinical training.** It is unclear how reflective practice is currently being taught and assessed, in pre-clinical and especially in clinical years. Ethics seems to be limited to the issue of honesty and integrity. More focus on humanities and social sciences is needed. Professionalism evaluation is not included in the scoring of each clinical rotation.

- **Identify ways to assess the education process,** as for now it is mainly focused on assessing only through the national exams scores.

- **Develop a structured process to help monitor clinical workload** of medical students during the clinical clerkships.

- **Add to your mandatory clinical instructor/tutor training, observation skills** and a plan to follow-up and continue training to instructors that have more difficulty.

- **Prepare future DCI self-studies with more attention to detail and provision of examples.**

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 8 is met, albeit *needs major improvement* (Score 4). TFOM needs to adopt a competency framework that will connect to the outcomes it seeks for its medical education. Truly commit to a fundamental shift in didactic strategy from a lecture-based to student-centered educational program using active learning and self-directed learning. Evolve the electronic dashboard logging clinical activities (SHAMAYM) developed into a portfolio system incorporating all feedback from learning activities. Integrate all assessments (e.g., knowledge, skills, capacities, professional identity formation) into a single portfolio organized by a competency framework and regularly reviewed between students and a faculty coach. Limit short rotations and increase students' responsibility. Infuse more reflective practice, medical ethics, professionalism, and personal and professional development into pre-clinical and clinical training and identify ways to assess the education process, not only on national exam scores. The standard is met as the TFOM has invested efforts in building clusters for medical education who oversee the process, did invest in software that will help, do have mandatory faculty development as well as specific faculty development workshops, and have incorporated good processes to learn from students and faculty experiences about new courses.

❖ The score that the institution gave itself in this standard:

Unsatisfactory				Satisfactory	
3	2	3	**4**	5	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory				Satisfactory	
1	2	3	**4**	5	6

Standard 9: Teaching, Supervision, Assessment, and Student and Patient Safety

A medical school ensures that its medical education program includes a comprehensive, fair, and uniform system of formative and summative medical student assessment and protects medical students' and patients' safety by ensuring that all persons who teach, supervise, and/or assess medical students are adequately prepared for those responsibilities.

Provide summary of the commendations and good practices relevant to this standard

- Commendable is the assessment support system that provides quality control around test development and psychometric analysis.
- Commendable is the "Clinical Tuesday - Being a Doctor" course that has a qualitative assessment and reflective diaries.
- Commendable is the high standards that are being used for student promotion from the preclinical to the clinical phase.
- Commendable is the initiative to provide mid-term feedback in the clinical rotations.

Provide summary of the recommendations relevant to this standard

- The assessment in the preclinical program follows the course related structure and can be qualified as a summative program using quantitative judgments (grades), very much focusing on knowledge assessment using multiple choice questions. Consider more performance assessment when the simulation center has been introduced. Consider assessing more performance dimensions when an outcome-based curriculum is adopted.
- Due to the modular nature of the curriculum, there many summative assessment moments. The students basically move from hurdle to hurdle.
- Consider more continuous assessment or longitudinal assessment across modules or rotations. When you have formulated competencies or outcomes to be achieved monitor the development of students in relation to those competencies in a longitudinal fashion.
- The clinical assessment program strongly relies on oral examinations. According to Table 9.1-2 of the self-report there are no OSCEs. Consider introducing these performance-based exams. Even better than OSCE would be the introduction of authentic assessments in the workplace using frequent direct observation of clinical performance throughout the rotation and captured as (narrative) feedback moments to stimulate learning.

- The whole assessment program is grade-based. Grades provide little feedback to the learner and are less meaningful for directing future learning. Consider introducing an "assessment-for-learning" approach using rich information for providing feedback to students.

- Find some institutions around the world that have modern assessment programs and see what this entails. There is no need to reinvent the wheels. There are many good examples.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 9 is met, albeit *needs major improvement* (Score 3). The current assessment program is modular and summative. It is strongly focussed on knowledge. There are hardly any longitudinal elements in the assessment program. The program is a clear example of assessment *of* learning with a lack of assessment *for* learning.

❖ The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
4	2	3	**4**	5	6

❖ The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	**3**	4	5	6

Standard 10: Medical Student Selection, Assignment, and Progress

A medical school establishes and publishes admission requirements for potential applicants to the medical education program and uses effective policies and procedures for medical student selection, enrolment, and assignment.

Provide summary of the commendations and good practices relevant to this standard

- There exists a comprehensive system of admission to medical school consisting of cognitive and non-cognitive elements. This is true for both medical programs at Technion. Standard are set highly.

- The assessment center is interesting, though it is not explained in detail. Usually, the number of simulations is too small to be predictive for later school performance.

- Open days and newsletter provide new candidates to orientate themselves to Technion and to admission criteria.

- An admission process is in place for transferring candidates coming in from other programs.

- There is an admission procedure for candidates with special needs.

Provide summary of the recommendations relevant to this standard

- It is not entirely clear what the MOR/MIrkam tests entail.

- Personality tests are administered. There is substantial evidence that these measures are not predictive for medical school performance.

- It is impossible to standardize and calibrate assessors in admission procedures. More training has marginal effects. The alternative is to increase the sample of assessors. This is done in the Multiple Mini-Interview (MMI) meant to assess non-cognitive skills in admission procedures. The MMI rests on the principle that has been demonstrated extensively that many subjective judgments provide a robust judgment. Consider using the MMI process as a last step in the admission procedure (last, because it is costly). The current two interviewers in the American program will yield a very unreliable outcome, simply because the sample size of interviewers is too small.

- A set of weaknesses are formulated around the MOR that were less clear in the DCI description. Again, more sampling of examiners is more important than training of few examiners.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 10 is met, albeit *needs minor improvement* (Score 5). Some smaller elements can be improved. Consider using the MMI.

- The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

- The score that the committee gives the institution in this standard:

Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

Standard 11: Medical Student Academic Support, Career Advising, Educational Records, Financial Aid, and Access to Personal Counselling

A medical school provides effective academic support, student services, financial aid counselling, and career advising to all medical students to assist them in achieving their career goals and the school's medical education program objectives. All medical students have the same rights and receive comparable services

Provide summary of the commendations and good practices relevant to this standard

- There is a good system for monitoring grades. There is sufficient personal assistance for students, including the financial domain. There are academic counselors and there is a peer (senior students) mentoring program.

- Mentoring of freshmen by senior students is a good strategy for providing support. So is having an academic counselor for each year. There is access to psychological support. There is a central (to Technion) unit for providing learning advice, although it is not clear how much that is used.

- The American program has a more intense system of mentorship and personal counselling.

- Students may rotate abroad for a period of 2 months, although it remains unclear how many students take that opportunity. There is a strong selection of institutes where this external rotation is allowed. However, participating in health care in a third world country not appearing in the Shang Hai index can be a transforming experience to students.

- The nomination of a committee for clinical electives and career development is commendable, but the committee has yet to start.

- There is a separate unit for Personal Assistance and Financial Aid and a student loan office.

Provide summary of the recommendations relevant to this standard

- There are some issues with "Clinical years - Availability of Consulting services regarding internship and professional development as a doctor" and "Consulting service regarding elective selection". An alternative to provide facilities for academic advising for some students would be the introduction of a mentoring system for all students. Mentoring also supports self-directed learning and the uptake of feedback in the (assessment) system. A single course with mentoring (Becoming a Doctor) is not sufficient to support students in general for making career choices.

- One of the weaknesses that was formulated in the self-report is that "Qualitative feedback is provided to students only upon request and not automatically". Although this was not evident from the information in the report, this is a serious weakness. Wherever feedback is available, it should be given to students.

- The grade management system has not been computerized yet. Consider using ePortfolios that ready to log much more than grades only. Such portfolio systems are commercially available.

- The opportunity for external clinical rotations is limited (2 weeks).

- The drop-out is rising to a concerning level in the cohort 2019/2020 (Table 11.3-1). Also study duration is markedly increasing. There is no text clarifying why this is happening.

Conclude whether the standard is 'met' or 'not met', and if met, briefly explain reason for score

Standard 11 is met, albeit *needs minor improvement* (Score 5).

- The score that the institution gave itself in this standard:

Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

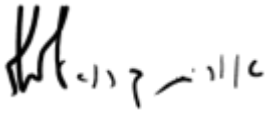
- The score that the committee gives the institution in this standard:

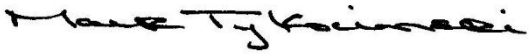
Unsatisfactory					Satisfactory
1	2	3	4	**5**	6

Signed by:

Prof. Haim Bitterman: 

Prof. Adina Kalet: 

Prof. Orit Karnieli-Miller: 

Prof. Mark Tykocinski: 

Prof. Cees Van der Vleuten: 

Appendix 1 – the Committee's Letter of Appointment

Prof. Mark Tykocinski
Provost and Executive Vice President for Academic Affairs
Thomas Jefferson University
USA

Dear Professor,

The Israeli Council for Higher Education (CHE) strives to ensure the continuing excellence and quality of Israeli higher education through a systematic evaluation process. By engaging upon this mission, the CHE seeks: to enhance and ensure the quality of academic studies, to provide the public with information regarding the quality of study programs in institutions of higher education throughout Israel, and to ensure the continued integration of the Israeli system of higher education in the international academic arena.

As part of this important endeavor we reach out to world renowned academicians to help us meet the challenges that confront the Israeli higher education by accepting our invitation to participate in our international evaluation committees. This process establishes a structure for an ongoing consultative process around the globe on common academic dilemmas and prospects.

I therefore deeply appreciate your willingness to join us in this crucial enterprise.

It is with great pleasure that I hereby appoint you to serve as chair of the Council for Higher Education's Committee for the Evaluation of **Faculties of Medicine and Medical Schools in Israel**. In addition to yourself, the composition of the Committee will be as follows: Prof. Haim Bitterman, Prof. Adina Kalet, Prof. Orit Karnieli-Miller and Prof. Cees van der Vlueten.

Ms. Pe'er Baris-Barnea will be the coordinator of the Committee.

Details regarding the operation of the committee and its mandate are provided in the enclosed appendix.

I wish you much success in your role as a member of this most important committee.

Sincerely,

Prof. Ido Perlman
Vice Chair,
The Council for Higher Education (CHE)

Appendix 2 – Visit Schedule

Tuesday, June 10th, 2021

Time	Subject	Participants
16:00-16:30 pm	Opening session with the President of the Technion, the Senior Executive Vice President and the Deputy Senior Vice President	Prof. Uri Sivan, Prof. Oded Rabinovitch, Prof. Anat Fischer, Professor Shimon Marom Executive Vice President for Academic Affairs
16:30-17:00	Meeting with the Dean of Faculty of Medicine and his Deputy*	Prof. Elon Eisenberg, Prof. Ami Aronheim.
17:00-17:15	Break	
17:15-17:45	Presentation by the Dean of Faculty of Medicine*	Prof. Elon Eisenberg
17:45-18:15	Meeting with Heads of Management*	Prof. Ami Aronheim, Galit Stoller, Rafael Alkslasi.
18:15-18:45	Meeting with the Deputy Deans of Teaching (Q&A) *	Associate Prof. Tamar Ben Yosef, Clinical Assoc. Prof. Amir Karban, Clinical Assoc. Prof. Zvi Dwolatzky

Wednesday, June 9th, 2021

Time	Subject	Participants
16:00-17:00	Meeting with senior academic staff *	Clinical Assoc. Prof. Ilana Doweck, Clinical Assoc. Prof. Yael Kopelman, Clinical Prof. Tsila Zuckerman, Prof. Zaid A. Abassi, Dr. Rachel Nave, Assoc. Prof. Omri Barak, Clinical Associate Prof. Salim Raed, Prof. Daniel Kornitzer
17:00-17:15	break	
17:15-17:45	Meeting with Adjunct academic staff *	Dr. Glueck Robert, Dr. Pitashny Milena, Dr. Gila Buskila, Dr. Katya Dolnikov, Dr. Ayman Jubran, Dr. Zohar Ariel, Dr. Haberfeld Ori, Dr. Karen Ginat.
17:15-17:45	Meeting with instructors/Clinical instructors/Clinical center heads (in relevant disciplines) *	Dr. Molad Michal, Dr. Dickstein Jacob, Dr. Erez Sion, Dr. Sudarsky Merav, Dr. Yonatan Sapir, Ben Kaplan, Liat Rotenstreich
17:45-18:00	break	
18:00-18:30	Meeting with pre-clinic students**	Rotem Palmon, Harel Grinstein, Yuval Albar, Ilana Posen, Yonatan Gross, Gal Malckieli, Rita Hayes, Nicola Phaza
18:00-18:30	Meeting with Clinic students**	
18:30-19:00	Meeting with Alumni**	Dr. Christine Safiya, Dr. Jesse Katz, Dr. Annan Abassi, Dr. Yevgeny Golbatz, Dr. Yiftach Gibori, Dr. Asaf Danon, Prof. Dov Hershkovitz
19:00-19:30	Closing Meeting with the Dean	Prof. Elon Eisenberg