



המרכז הישראלי לטכנולוגיות פורצות דרך בבריאות

ICET - The Israeli Center for Emerging Technologies in Healthcare

Description:

The Israeli Center for Emerging Technologies in Healthcare (ICET) is a multidisciplinary center leading research and assessments of medical technologies especially in hospital settings. ICET encourages the enhancement of a knowledge-based framework to facilitate wise targeted effective decision-making regarding the adoption of new and emerging health technologies.

Vision:

- Establishing an interdisciplinary knowledge and research center which reveals new pathways to harness innovative technologies for better healthcare;
- Incorporating a broad spectrum of stakeholders aiming to promote patients' and professionals' interests via technology;
- Connecting the open edged complexities regarding technology in healthcare through interdisciplinary brainstorming synergizing the participants assembling in the healthcare arena.

Building Blocks in the Foundation of ICET:

The identification and analysis of innovative technologies is a window to comprehending the continuous dynamic development of modern health care. The dawn brings with it new medical technologies based on scientific knowledge-intensive breakthroughs, promising

better health and quality of life. However, spiraling development is increasingly dependent on funding to enable the application of these new initiatives, especially in hospitals. This reality means that health care decision-makers need to facilitate/wisely manage/incorporate informed policy-making in the process of adoption of innovative health services and to set priorities, taking into consideration budgetary restrictions and comparative effectiveness. In the absence of a central mechanism to compile, update and analyze the extensive information in this field which is both complex and dynamic, medical administrations are encumbered with this task. In response to this need in Israel an Early Warning/Forecasting Systems (EWS) unit was established within ICTAHC (The Israeli Center for Technology Assessment in Health Care), with activities expanding within the DMTP (Division for Medical Technology Policy) unit at the Ministry of Health and later coordinated at the ICET center.

- **Stages of Development of ICET**

- The field of EWS within the framework of ICTAHC included initial consultations with the National Councils in the health system in order to characterize the needs of physicians and decision-makers in identifying innovative medical technologies and their value.
- Stage 2 involved preparations for development: Literature review and international discussions on the necessary profile of an EWS unit, principles regarding activities and opportunities for success.
- Stage 3 following the development of the DMTP unit, entailed formulating a conceptual vision and work plan, determining aims and desired outputs from the EWS¹ unit.
- Stage 4 involved the formulation of work methodology for gathering knowledge and conducting research, analysis and tracking of developments on promising innovative health technologies for anticipated clinical success.
- In stage 5 the plan focused on finding relevant team partners to nurture and activate the aims of the unit.
- In stage 6 an international workshop was organized for mutual learning and implementation of work methodologies.

- ICET is now a two-forked center with academic activities (identifying technologies) and practical implementation (technology assessment). Since 2012, the knowledge center of ICET identifies novel hospital technologies analyzing the current level of utilization, alongside the perspective for potential effectiveness.
- Knowledge regarding the level of potential influence of the technology in the future, based on multi-dimensional mapping of relative effectiveness, serves as a tool for health care decision-makers to prioritize technologies. Data analysis and evaluation is incorporated in an international database on EWS.
- The ICET work methodology is based on a multi-dimensional model for prioritizing technologies which has a highly sensitive response to a wide range of critical criteria, values and local restraints. While the traditional process of technology assessment is based on the analysis of epidemiological data through mathematical and computerized methodologies, the ICET work concept is an open system model drawing data from its environment/local surroundings, learning to adapt to the unique scenario and the dynamic circumstances characterizing the realm of medicine in general and the Israeli profile in particular.

Goals and Agenda:

- 1) To implement a methodology to assess medical technologies, both emerging and existing, focusing on hospital-based health technologies.
- 2) To strengthen EAA (Early Alert Assessment) activities including approaches for the identification, description and assessment of new or emerging health technologies, and their potential impact on health services and existing health technologies. The actual setting is the hospital environment striving to achieve better more transparent decision-making towards the adoption of medical technologies for the benefit of both patients and caregivers.
- 3) ICET is conducting HTA processes designated to identify and maximize beneficial values via technology. In the contemporary healthcare matrix, the range of potential values attributed to

technologies extends far beyond clinical aspects, enveloping social, environmental, economic, ethical and other issues. Facilitating access to beneficial technologies will naturally impact patients' quality of life.

4) The ICET evaluation processes emphasize the importance of personalized technology and promote concepts such as 'elderly friendly hospital' and '**cultural-tailored technology assessment**', accentuating the individual patient's personally appropriate/suited profile for health care provision.

5) ICET aims to initiate research and education and provide training (in the future) on new and emerging health technologies

6) ICET strives to expand knowledge about HTA impact to assist weighted decision-making among hospital management, caregivers and logistic professionals to maximize beneficial technology adoption. We wish to inspire diffusion on the national and the international level.

7) The basic innovative concept is that the patient and caregivers are both partners in the overall decision-making processes. Therefore, our target is to promote diffusion of innovation among the public especially by providing transparent accessible knowledge bases.

8) We seek additional partners in this process, such as cooperation with industry, professionals to conduct budget impact analysis etc., so that together, merging views from different perspectives and bridging differences at the earliest possible stage, we can achieve the earliest possible timing for safe adoption of the technology.

Topic of interests:

ICET is composed of three viewpoints (prisms). Each professional speaks a language of his/her own reflecting professional backgrounds and jargon, and personal views. The spectrum of outlooks attributes weights to the characteristics of the technologies, prioritizing them respectively. These differing scales raised by the team members, need to be balanced when

determining the overall "value" of the technology. Together, they establish a 3D assessment perspective of innovative medical technologies to be implemented in hospitals.

A. HTA Tasks:

As the criteria for assessing technology in hospitals become more and more diverse, so does the circle of stakeholders, and specialties that are worth considering in the process. The assessment of candidate technologies considered for adoption by hospitals is conducted in professional structured committees composed of physicians, nurses, surgical teams alongside bio-technicians and engineers, safety and quality assurance professionals, as well as economists, social scientists and information specialists. Each of the actors brings unique language and terminology to the assessment task, setting a variety of viewpoints to the question: 'What is value based pricing?'

More than ever, the challenge of technology assessment is to properly allocate the tasks, produce a joint discourse among the different participants and adjust the relative weight of the different actors for varied assessment tasks. ICET research aims to examine how to create the 'HTA dialogue', extracting the maximum scope of benefits in hospitals and transforming data and research to policy and tools for decision-makers.

B. Cycle of Innovation:

The ever changing world of medicine and the increasing needs in healthcare should be balanced with potential value and even benefit - clinical and financial, especially in the western world. In this world of innovation we must identify who needs the technology and promote the diffusion of beneficial scientific accomplishments through development and prototypes, measuring value, predicting future needs.

In order to understand how technologies are emerging, diffused and eventually change into formats or become irrelevant, ICET research aspires to track all stages of the cycle of

innovation. Each technology exhibits natural behavior according to a life span curve, this structured curve has a set of milestones. However, their length and weight might be changed or flexible for each technology due to different settings. Each technology emerges through a scientific "push". Breakthroughs accelerate the diffusion and adoption. The balance of demand versus supply-cost-alternatives will affect the slope, so high demand will cause sharp slopes on the adoption curve.

The definition of innovation is influenced by many factors related to the parameters of the caregiver, the patients, the system and the technology itself. Examples are the clinical field (caregiver), individual references (the patients), regulations (the system) and costs, availability and the mode of utility alternatives (the technology). Forecasting should screen a wide perspective, taking into consideration all stakeholders, challenges, barriers and opportunities, as interfaces of caregivers, patients and the industry may influence the tendency of early adaptors vs. late adopters.

C. Quality Vector:

How can we improve quality of care and outcomes?

We need to focus on:

1. Clinical concepts: The caregiver and his/her tool case stemming from the individual level to the macro environment level. Each level requires appropriate efficient tools and support ranging from coping with burnout and work overload in a risky environment, to sterilization improvement and strides in anti-infection efforts and protocol and process development. Improvement can flow from increasing physician enthusiasm, trust and compassion.
2. Sociological outlook: The patient, community and society highlighting public consultation, patient-centered care and shared decision-making in the medical "home" or care center. With compassion, the caregiver can enable the patient to take part in the

decision-making process as an equal partner. Value and willingness to pay need to be founded on multiple criteria which should be transparent and based on trust to enhance quality of life.

The realm of health technologies assessment is developing nowadays in parallel to the consolidation of the patient-centered percept as the guiding principle for medical caregiving. Due to this trend, technology assessment is expected to address two main questions:

- a) How hospital technologies should provide the best quality vector for patients?
- b) How the public and particularly the patient can participate in the professional evaluation process and have a positive impact on it?

Many new assessment methods, i.e. multiple-criteria decision-making, designated to integrate social, communal and individual ideas into the brainstorming, raise values that are not necessarily related to the traditional cost-effectiveness process of thinking (i.e. solidarity, wellbeing, family and transparency). ICET strives to create dynamic "technology value" maps that can be relentlessly shaped and transformed in the contemporary health environment. Moreover, the mapping work accounts for the fact that the values are often raised from the idiosyncratic public discourse, and aspire to use and develop new techniques to monitor the related knowledge between the public and the decision makers.

Yzchak Shamir (former: Assaf-HaRofeh) Medical Center:

ICET research activity conducted from Shamir (Assaf Harofeh) Medical Center, one of the four leading government hospitals in Israel, has a unique profile of incorporating clinical excellence and innovative technology.

About 600 physicians and 1,300 nurses are dedicated to the implementation of new technologies for the welfare and benefit of both patients and staff. Since this is a medical center constantly striving to achieve excellence, patients gain the advantages of new

groundbreaking technologies that improve care and reduce complication rates and the length of hospitalization.

For more than two decades, AHMC has been a leading hospital in the technology assessment arena, having an active technology committee, and creating the national guidelines for the adoption and reuse concept of health technology. Moreover, since 2012 academic research in HTA has bloomed encouraging teaching in the field with many other governmental and public partners.

The medical personnel at Shamir (Assaf Harofeh) Medical Center are constantly inspired to improve treatment, diagnosis and service by the adoption of less invasive procedures, more advance imaging devices and surgical techniques, and by the utilization of computerized databases, as well as unique and Innovative Technologies ([Link](#))

Part of an International network

ICET is a member of the *EuroScan international network* - the leading collaborative global network on information and knowledge related to innovative technologies in health care.

The EuroScan International Network collects and shares information on innovative technologies in health care to support decision making and the adoption and use of effective, useful and safe health-related technologies. The network is also the principal global forum for the sharing and development of methods for the early identification and early assessment of new and emerging health-related technologies, predicting their potential impact on health services and existing technologies. The EuroScan International Network is committed to work with a high level of transparency and professionalism, and in partnership with researchers, research centers, governments and international organizations to produce high quality information and effective early awareness and alert (EAA) systems for our respective constituencies.

Staff:

Orna Tal, Head of the Center



Academic degrees:

- Doctor of Medicine, Medical Health Administration Specialist and Dermatology Specialist.

Current position:

- Deputy Director of Shamir (Assaf Harofeh) Medical Center, as well as Director of medical administration department, head of safety and quality array and head of hospital accreditation array.
- Director of the School for Quality, Patient Safety, Accreditation and Excellence, at Shamir (Assaf Harofeh) Medical Center.
- Israel representative in EuroScan, for horizon scanning of health innovations.
- Lecturer at Tel Aviv University, Bar Ilan University and Israel Academic College.
- Senior Researcher, Gertner Institute and Tel Aviv University.

Previous positions:

- Director of the Division for Medical Technology Policy, Ministry of Health (2003-2012), leading the mechanism of expanding and funding for the National List of Health Services (including assessment of medical devices and pharmaceuticals).
- Medical assistant of the General Director of the Ministry of Health (2000-2001).
- Assistant of General Director of Sheba Medical Center. Physician, Sheba Medical Center (1983-1997)
- Lieutenant Colonel, Israel Defense Forces, Medical Corps, Head of Medical Classification Branch (1997-1999).

Yaron Connelly, Senior Researcher



As a social researcher in the fields of health policy and sociology of health and medicine, Yaron is accountable for the intersection between academic knowledge and the everyday healthcare ecosystem. Yaron analyzes the inputs which the center receives from the forum members and coordinates the potential future research directions, updating the research methods that would be relevant to the center's ongoing work.

Along with broad research experience in discourse analysis, Yaron works in partnership with many professionals in the healthcare system and serves as consultant on policy planning and design processes.

Associated forum members:

ICET invites a growing group of members from a wide spectrum of fields and topics to expand their interests and deliberations on interactions between medicine, technology assessment, medical administration, epidemiology, medical informatics and health economics. The forum includes members who are first line experts and leading personalities in the field of health care, among them.

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