

## Ambulatory and Hospital-based Quality Improvement Methods in Israel

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**ABSTRACT:** This review article compares ambulatory and hospital-based quality improvement methods in Israel. Data were collected from: reports of the National Program for Quality Indicators in community, the National Program for Quality Indicators in Hospitals, and from the Organization for Economic Cooperation and Development (OECD) Reviews of Health Care Quality.

**KEYWORDS:** Ambulatory Quality Improvement, Hospital Quality Improvement, OECD, Health Care, health services, Quality Indicators Monitoring, Public Health, Israeli health system

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Israel started to monitor and to improve community health care services by running “The National Program for Quality Indicators in Community Healthcare”. In this plan, the data was focused on six major clinical fields in community healthcare (asthma, cancer screening, immunizations for older adults, child and adolescent health, cardiovascular health, and diabetes). The data, provided by the four health plans in Israel, contained improvements and modifications of the healthcare system and promoted public health care in Israel.<sup>1</sup>

In contrast, according to the OECD report there is insufficient and reduced data on the quality of healthcare indicators delivered in Israeli hospitals. This lack of information is particularly concerning because of the high occupancy rate in hospitals in Israel (>96%), well above the average of the 76% in OECD countries.<sup>2</sup> Recently, the Ministry of Health (MOH) decided to develop a new regulation and started to implement a hospital Quality Improvement Initiative plan in order to access hospitals’ quality indicators of healthcare.

### Background

The health system in Israel provides a level of quality care which reflects the potential of the clinical advances that have taken place in recent years. The Israeli governmental health system and the health funds, providers of health services, are committed to invest in the delivery of high quality health care, while monitoring clinical quality indicators. Israeli health care ranks high in Organization for Economic Cooperation and Development’s (OECD). The OECD’s “Better Life Index” ranks Israel in an extremely presentable fifth place on health issues, with a rating of 8.8 out of 10. Only Switzerland, New Zealand, Australia, and Canada rank higher on health issues; and countries such as the United States, Britain, France, Japan, and Germany ranked much lower.<sup>3</sup> The Ministry of Health (MOH) holds numerous roles and is responsible for the development of health policy, operation of the nation’s public health services, and management of the governmental health care budget. MOH owns and operates many of the nation’s larger hospitals. MOH licenses the medical and paramedical professions and initiates and



oversees implementation of all health-related legislation passed by the “Knesset” Israel’s parliament, located in Jerusalem.<sup>4</sup> Medical services are also provided through four health funds (insurance companies): “Clalit”,<sup>5</sup> “Maccabi Healthcare Services”,<sup>6</sup> “Meuhedet”<sup>7</sup> and the fourth is “Leumit” Health Fund.<sup>8</sup> The public debate on reform of the health system focused on formulating of a national health insurance (NHI) law. Reform was spurred by recommendations of the “Netanyahu Commission” (1990), a National Committee headed by Shoshana Netanyahu that examined restructuring of the health care system. Its recommendations served as a catalyst for passage of the “National Health Insurance Law” which came into effect on January 1, 1995.<sup>9</sup>

Health status of the Israeli population—Israel is well ahead of many western nations in life expectancy.<sup>10</sup> An Israeli man has the second highest life expectancy in developed countries (Switzerland above it with 80.3 years) 79.7 years on average, which is higher than Britain, 78.6, Germany and France, 78, and the United States, 76.2 years old. For women, the life expectancy is 84 years (eighth place) but still very close to the top.<sup>11</sup> Israel is well ahead among many western nations in infant mortality rate (low rate of 3.60).<sup>12</sup> The mortality rate in a population is an important indicator of its health and well-being. Measures of mortality like life expectancy at birth or infant mortality rate have long been used as measures of socio-economic development or as indices of the quality of life.<sup>13</sup> The public health care offers universal coverage, immunization coverage, standards of medical knowledge, and care. In Israel, 45.5% of men and 39.3% of women think that their health is “very good” based on data of the Central Bureau of Statistics. Israel is in the eleventh place with 3.5 doctors per thousand residents, but the number of nurses is very low (graded in the twentieth place out of 22).<sup>2</sup> National expenditure on health as percent of the Gross Domestic Product in Israel (7.7%) was lower than in 27 OECD countries, especially compared to the USA (17.6%).

### Improving Performance Through Measuring Performance

Measurement of performance requires an explicit framework defining the goals of a health system against which outcomes can be judged and performance quantified.<sup>14–18</sup> During the past two decades, financial resources were limited and policy makers in health organizations were obliged to search for ways of promoting efficacy, effectiveness, appropriateness, and care, while at the same time attempting to contain costs and ensure quality of care. The necessity for quality and safety improvement initiatives facilitated international organizations to establish a well-developed system for monitoring the quality of health services and care. Most of them were developed by the WHO, OECD, EU, and by the Common Wealth countries (USA, Australia, and Canada).<sup>19</sup> The OECD’s Health Care Quality Indicators’ Project (HCQI) in OECD countries and the National Healthcare

Quality Report of the US Agency for Health Research and Quality (AHRQ) are focusing on healthcare outcomes, such as survival rates from cancer and myocardial infarction.<sup>20,21</sup> Also, in Israel, the performance of health systems had been a major concern for policy makers in the last two decades.<sup>22</sup> The need for quality medical care is required from the core tenets of the NHI law of “*justice, equality, and mutual assistance*”, in which “*healthcare services included in the basket of medical services will be offered based on medical considerations, with reasonable quality, in a reasonable timeframe, and at a reasonable distance from the place of residence of the insured person*”. The MOH supervises the implementation of the law and also external organizations “The Health Council” and the “Israel National Institute for Health Policy and Health Services Research” collaborating to evaluate the effect of the NHI law on health services in Israel, as well as their quality, efficiency, and expenditure.

### Ambulatory Quality Indicators Monitoring in Israel

In Israel, clinics are held accountable through extensive data collection and management of their performance by health funds. Data are collected by the community health facilities, based on the electronic patient records designed as well to monitor the quality of health services delivered through its four competing health plans. A data set called the “Quality Indicators in Community Health Care (QICH) program” includes basic patient demographics and thirty-five measures across six key areas: asthma, cancer screening, immunization for the elderly, children’s health, cardiovascular health, and diabetes. The QICH is one of the most comprehensive programs for monitoring the quality of primary care among OECD countries today. Previous institute studies have found that this monitoring system has led the health plans to undertake a wide range of quality improvement measures and that performance on the quality measures has improved rapidly, faster than in the US, whose monitoring system served as the model for the Israeli system.<sup>22</sup> The program began in 1999 as a research project by Avi Porath, Gad Rabinovitch, and Anat Raskin-Segal from Ben-Gurion University. The program began as a research project involving the four health funds, and in 2004 was adopted by the government as the National Program for QICH. It has since been used to monitor and improve the quality of preventive, diagnostic, and therapeutic primary care services in Israel. Many of the QICH indicators are based on definitions from existing international measures, such as those in the Healthcare Effectiveness Data and Information Set (HEDIS) of the National Committee for Quality Assurance (NCQA) in the United States, and with the intention of international comparison.<sup>23–27</sup> Primary care in Israel is relatively accessible, geographically and financially in central districts<sup>28</sup> but peripheral areas in the north and south of Israel are disadvantaged relative to the central districts in terms of the availability of primary care.<sup>29</sup> All the funds have comprehensive electronic medical records (EMRs) in community



care, which support the sharing of information among physicians, laboratories, diagnostic centers, and patients.<sup>19</sup> The program is not mandated, but it is delivered voluntarily by the funds unlike other OECD countries, where quality monitoring of health care is defined by the hospital sector.

The six major clinical fields in community healthcare that have been followed in Israel are asthma, cancer, immunization, child care, and cardiovascular prevention. The prevalence of *asthma* was 0.7% among individuals aged 5–44 years. In 2010, as in previous years, substantial differences in rates of persistent asthma were observed between the low socio-economic status and high socio-economic status populations. Persistent asthma was more common among boys aged 5–17 years. *Breast cancer screening* using mammography for women 51–74 years in 2010 was 68%. This rate is consistent from 2009 and slightly higher than the rate in 2008 (65%). Mammography rate was significantly lower among low socio-economic classes than the general population. *Immunizations for older adults*: In 2010, influenza vaccination rate among adults aged 65+ years was 57%. Influenza vaccination rate was lower among low socio-economic classes compared with the general population (57 vs. 60%, respectively). In 2010, pneumococcal vaccination rate among adults aged 65–71 years remained stable at 71%. *Child health*—anemia screening (hemoglobin testing) rate for infants was 77% in 2010, a 6% increase over the three years observation period. BMI assessment for children—height and weight documentation rate for children 7 years old increased from 44% in 2008 to 63% in 2010. A dramatic improvement was observed in documentation of BMI among adolescents from 47% in 2008 to 62% in 2010. Cardiovascular health primary prevention: Over 77% of the population had documented cholesterol levels in their medical records. Documentation rate was improved over time for middle-aged adults (35–54 years) and remained stable for older adults (55–74 years). BMI assessment continued to increase over the measured period. In 2008, the documentation rate of BMI for adults 20–64 years old was 57% and in 2010 it was 78%. For those aged 65–74 years, documentation rates increased from 71% in 2008 to 76% in 2010. Documentation of blood pressure in adults was 86% in 2010. There was an improvement in the documentation rate over time, especially among young adults (absolute increase of 11% from 2008). In 2010, the rate of type 2 diabetes mellitus (based on the purchase of medication) for all ages was 5.0%. This rate represented a 0.25% annual increase since 2008. The rate of documentation of glycosylated hemoglobin (HbA<sub>1c</sub>) testing at least once during the measurement year among patients with diabetes mellitus remained high (93%) in 2010. The proportion of patients with type 2 diabetes mellitus with LDL documentation remained stable over the three-year measurement period at approximately 90%. In 2010, 65% of patients with diabetes mellitus underwent an annual eye examination. In 2010, 92% of patients with diabetes mellitus had blood pressure documentation. Among this group, 70% achieved the targeted blood

pressure control (less than or equal to 130 mmHg systolic or less than or equal to 80 mmHg diastolic). These rates represented a slight improvement over the measurement period. Detailed findings of quality indicators were published in the report of the “Ministry of Health”, the “Health Council”, and the “Israel National Institute for Health Policy and Health Services Research” in June 2012.<sup>27</sup>

### Hospital Quality Indicators Monitoring in Israel

“OECD Reviews of Health Care Quality” that was published by the Secretary-General of the OECD (On April 2013) specified that Israel’s hospitals ought to improve the quality of care and to expand monitoring of the level of service delivered. To achieve this goal, data must be widely available and portable across care settings. Making the data collected publicly available enhances the scope for competition between funds and providers on the basis of quality. Also, information exchange and co-ordination between ambulatory-primary care and hospitals is surprisingly weak and ought to be improved. Quality of primary care monitoring does not spread out to Israel’s hospitals.

The first initiation of “Quality Assurance Program into Hospitals” in Israel as a concerted action program on quality assurance was done in Israeli hospitals in 1990–1993. Only 14 hospitals completed the evaluation phases; the latter represented 52% of general hospitals in the country. It was an episodic and temporary endeavor.<sup>30</sup> Recent years have been characterized by considerable momentum on codifying the legal foundation for quality in medicine.

Israel’s hospital performance on two key measures was better than the average among OECD countries: myocardial infarction—4.5 deaths per 100 patients in 2009, the in-hospital case fatality rate for acute myocardial infarction in Israel was lower than the OECD average of 5.4 deaths per 100 patients. Ischemic stroke—in-hospital case fatality rate was 3.5 deaths per 100 patients, lower than the OECD average of 5.2 deaths per 100 patients. However, other countries (Italy, Iceland, Norway, and Denmark) managed to achieve better outcomes. The data showed a severe problem of structure and infrastructure in the hospital system.

Generally, Israel is graded very low in the number of hospital beds (twenty-seventh place out of 30) with only 1.93 hospital spaces per 1,000 people. Israel has the highest rate of hospital occupancy (98.8% annually). Britain has 84.3%, Germany 76.1%, and the United States 64.6%. Despite the overcrowding, or possibly because of it, the average stay in an Israeli hospital is one of the shortest among developed nations: Israel is in twenty-ninth place out of 30 with an average hospitalization stay of only 4 days. This compares to 18.5 days in Japan, 7.5 days in Germany, 6.8 in Britain, 5.4 in the United States and 5.2 in France. Only Mexico has shorter hospital stays than in Israel, 3.9 days on average.

The interface with hospital care and co-ordination of care across services has received inadequate attention (42% of the



respondents reported the absence of a coordinating physician for all the medical information on their treatment). About one-third of the chronically ill and elderly responded that they had no physician fulfilling this function. The poorly coordinated and fragmented care in Israel caused by services operating independently of each other can lead to poor patient outcomes, inefficient services and wasted resources. With an ageing population, growing prevalence of chronic disease, and the rising costs of hospital care, co-ordination and integration are increasingly important for improving the quality, seamlessness, and experience of care for patients, and for containing health care costs.<sup>31</sup> According to MOH data, in the first quarter of 2010 official occupancy rates in the internal medicine wards of Israel's hospitals ranged from 104 to 115%. According to the Knesset Research and Information Center's calculations, this percentage was even higher, between 112 and 119%. Data collected from the hospitals in the winter of 2011 indicate that the overload in the internal medicine wards has increased. Occupancy rates exceeded 100% in nearly all hospitals in the Hillel Yaffe, Poriya, Haemek, and Barzilai Medical Centers, overload is especially high, exceeding 130%.<sup>32,33</sup> It is significantly higher than the average of 76% among the 25 OECD countries which reported data, and higher than the 85% level that is broadly considered to be the limit of safe occupancy in the United Kingdom, Australia, and Ireland. The general ICUs in most hospitals report 100% occupancy or more (the highest acute care bed occupancy rate among OECD countries). Owing to the overload in the general ICU's, the hospitals are compelled to admit respirator patients to various wards other than the emergency wards, thus putting their lives at risk.<sup>34</sup> In January 2011, only 278 of the 787 patients who were mechanically ventilated on a respirator in hospitals were kept in ICUs. The rest were admitted into various wards, mostly internal medicine. This implies that over 500 patients were hospitalized at a heightened risk of death due to shortage of beds in the ICU.<sup>35</sup>

### Development and Implementation of a Hospital Quality Improvement Initiative in Israel

After the Institute of Medicine's landmark reports revealed widespread incidence of medical errors in U.S. hospitals, there has been a great deal of effort to measure and improve the quality of hospital care all over the world.<sup>36–41</sup> In Israel, it is difficult to find public information on the quality of care that patients are receiving in hospitals. The extent to which data is collected varies dramatically by hospital. Monitoring and improvement activities are more likely to be led by motivated individuals rather than be part of a system-wide approach to raising performance. In the absence of data, there have been regular reports of crowded hospitals and instances of beds located in corridors.<sup>42</sup>

OECD report provided constructive advice and currently, facilitates the MOH in Israel, which implemented a Hospital

Quality Improvement Initiative. Recently, the NHI regulations ("quality indicators and data disclosure 5772–2012") were endorsed, and some achievements have been made on quality measurements within general hospitals, creation of an infrastructure enabling information sharing within the health system and securing the activity on matters of safety of care within the health system.<sup>43</sup> A national program for monitoring quality indicators based on computerized data repositories available at the general hospitals has been inaugurated, and at the same time data are actively being collected to monitor effect indicators and an organizational culture of monitoring clinical quality indicators is being assimilated in all the hospitals in Israel.<sup>44</sup>

The government has just started a project requiring all the Israeli hospitals to collect and report data regarding the quality of care in order to provide information about the quality of hospital care to the public and to strengthen efforts to improve quality. Since, August 6, 2012 a national program was established to monitor quality indicators based on computerized databases.<sup>45</sup>

The following indicators will be followed:

1. Medical treatment outcomes including treatment, complications, and side effects;
2. Medical procedures—including medical documentation, accuracy of diagnosis, medication, medical interventions, and compliance with regulations;
3. Common medical diagnoses, results of tests, and diagnostic level quality;
4. Level of investment in safety, adverse events reporting, management committees, conducting investigations of unusual events, learning how to manage an exceptional event, investment in infrastructures and structure;
5. Presence and use of medical infrastructure and personnel resources, equipment, medical technologies, medical equipment, and computers;
6. Use of technology to improve service and the patient experience and patient satisfaction.

In the future hospitals in Israel will develop better processes for quality of care and will be accountable for common quality measures (such as infection rates, patient safety, and indicators of clinical quality). This recent plan is implemented alongside the government's current path of rolling out the Joint Commission International-based accreditation model, as it provides scope to actively support hospitals in developing better processes for quality of care than the "inspectorate" model used today. Currently, Israel is trying to overcome information barriers, to integrate care between the ambulatory care and hospital sectors, and to assess the quality of care. Improving care co-ordination across providers and services became a policy priority, and the government, health funds, and providers were actively engaged with this agenda. These efforts have focused on avoiding unnecessary deaths and poor





health, while also encouraging better quality and value for health care spending. In the current environment, the quality of health care is increasingly recognized as a product of systems, not individuals, and there is widespread agreement that systematic measurement, monitoring, and reporting are needed to make meaningful advances in improving quality.<sup>46</sup>

## Summary

In our review article, we described the ambulatory and the hospital-based quality improvement methods in Israel. While many OECD countries are currently striving to improve ambulatory care, Israel's efforts over the past decade have developed one of the most sophisticated programs to monitor the quality of ambulatory care. On the other hand, quality of ambulatory care monitoring does not spread out to Israel's hospitals. OECD report specified certain essential issues which required attention from the Israeli MOH that is now trying to narrow the gap between ambulatory and hospital quality monitoring. Recently, the MOH decided to develop new regulations and started to implement a hospital quality Improvement Initiative plan in order to access hospitals' quality of healthcare indicators. It is possible that in the future it will allow monitoring medical treatment outcomes, medical procedures, patient satisfaction, and the level of investment in safety quality measures that will be used to update improvements in hospitals care. The hope is that in a few years, the development of a national data set will allow hospitals to compare their performance relative to other hospitals in Israel and worldwide and may be used to direct improvement in care.<sup>47</sup>

## Author Contributions

Conceived the concept: NB. Analyzed the data: NB. Wrote the first draft of the manuscript: NB. Contributed to the writing of the manuscript: NB, DH, YM. Agree with manuscript results and conclusions: NB, DH, YM. Jointly developed the structure and arguments for the paper: NB, DH, YM. Made critical revisions and approved final version: NB. All authors reviewed and approved of the final manuscript.

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