

CURRICULUM VITAE**1. Personal Details**

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2. Higher Education**A. Undergraduate and Graduate Studies**

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1991-1995	Tel Aviv University- Industrial Management	B.Sc. in Industrial Management	1995
2001-2002	Northwestern University and Tel Aviv University. Kellogg School of management.	MBA	2002
2011-2012	Ben-Gurion University of the Negev Department of Health Systems Management, Guilford-Glazer Faculty of Business and Management and Faculty of Health Sciences.	Masters Dissertation	2012
2012-2014	Ben-Gurion University of the Negev Department of Health Systems Management, Guilford-Glazer Faculty of Business and Management and Faculty of Health Sciences.	PhD	2014

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
2012 -	Ben-Gurion University of the Negev- Department of Health Systems Management.	Adjunct Lecturer
2014 - 2018	Israeli Academic College at Ramat Gan - Department of Health Systems Management.	Lecturer
2014-	Sapir College - Technology Marketing Department.	Lecturer

4. Offices in Academic Administration

2014 - 2016 Liaison of final projects, industrial management department, Sapir college.

2015 - 2016 Head, biomed specialty, technology marketing department, Sapir college.

2015 - 2016 Discipline Committee, Sapir college.

2016 - Chair, Technology Marketing department, Sapir college.

2018 - Steering Committee, Sapir Center for Innovation and Entrepreneurship

5. Participation in Scholarly Conferences

a. Active Participation- International Conferences- abroad

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
2011	14 th Annual European Congress of the International Society for Pharmacoeconomics and Outcomes Research.	Madrid, Spain	Using a population-based, budget-constrained, cost-effectiveness model to assess the health and economic impacts of using statins for primary prevention.	Presenter
2011	14 th Annual European Congress of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR).	Madrid, Spain	Diffusion of innovations in health care; does the dual market phenomenon exist?	Presenter
2013	ISPOR 16th Annual European Congress.	Dublin, Ireland	Using lower cost, lower efficacy interventions can improve population health outcomes under budget constraints.	Presenter
2015	ISPOR 20th International Congress.	Philadelphia, PA, USA	Rethinking Cost effectiveness in the Era of Zero Healthcare Budget Growth	Presenter
2016	ISPOR Asia Bi-Annual Congress.	Singapore	PCSK9 inhibitors may improve cardiovascular outcomes—Can we afford them?	Presenter
2017	American Heart Association QCOR scientific meeting.	Washington DC, USA.	Maximizing Sacubitril/Valsartan Clinical Benefit Under Budget Constraints.	Presenter
2017	American Heart Association annual scientific meeting.	LA, California, USA	Direct Oral Anticoagulation Significantly Reduces Mortality in Atrial Fibrillation.	Presenter

b. Active Participation- national and international conferences in Israel

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
2012	Annual Conference of the Israeli Society for Pharmacoeconomics and Outcomes Research	Herzlia	The Dual Market Phenomenon in Diffusion of Health Care Innovations. Presented at the 5 th	Presenter
2013	The 5 th International Jerusalem Conference on Health Policy	Jerusalem	Maximizing health outcomes under budget constraints: the case of using statins for primary prevention of adverse cardiovascular events	Presenter
2018	6th World Congress on Controversies to Consensus in Diabetes, Obesity and Hypertension (CODHy).	Tel Aviv	Empagliflozin vs. Liraglutide for cardiovascular mortality prevention in high risk patients with type 2 diabetes	Presenter
2018	11th Annual Health Policy Conference	Tel Aviv	Maximization of population health outcomes under a restricted budget.	Presenter

6. Research Grants

a. Grants Awarded

Year	Role	Co-Researchers	Topic	Funded by/ Amount
2013	Co-PI	Prof. Dan Greenberg, PhD.	Maximization of population health outcomes under a restricted budget.	NIHP*/ 120,000 NIS
2014	Associate -PI	Prof. Dan Greenberg, PhD; Prof. Eitan Lunenfeld, MD	An economic evaluation of public funding of in vitro fertilization (IVF) in Israel.	NIHP* 90,000 NIS
2015	PI	None.	Avoiding Delays in electives surgeries in Israel Public Hospitals.	MOH CS** 100,000 NIS
2017	PI	Eti Samama, PhD. Simone Zareski, MD Orna Tal, MD.	Developing and validating a model for adoption of innovative medical technologies in Israeli hospitals.	NIHP* 291,000 NIS

* NIHP: Israel National Institute for Health Policy Research

** MOH CS – Ministry of Health Chief Scientist

b. Submission of Research Proposals – Not Funded

Year	Role	Co-Researchers	Topic	Funded by
2018	PI	Joseph Azuri, MD	Evaluating the effect of optimal medical therapy on longevity of diabetic and cardiac patients.	NIHP/ 300,000 NIS
2017	PI	Shai Faitelzon, DVM	Modeling the effect of personal financial Incentives on lifestyle changes, improvement of health.	NIHP
2016	PI	Ariel Hammerman, PhD	Analysis of the Economic Implications of Adopting High Cost Breakthrough Technologies- PCSK9 Inhibitors as a Case Study.	NIHP

7. Teaching – Courses taught in recent years

Year	Name of Course	Type of Course	Academic Institution	Degree	# Students
2012 -	Focused Operations in Healthcare.	Lecture	Ben-Gurion University of the Negev	BA, HC management.	30
2014	Advanced Models in high-tech marketing.	Lecture/ Workshop	Federal Institute of Education, Science and Technology of Ceará, Brazil.	MBA, innovation specialty	30
2014 - 2016	Advanced Management Models.	Lecture/ PBL	Sapir College	BA- Industrial management.	60
2014 - 2016	Advanced management methods.	Lecture/ PBL	Sapir College	BA- HR ** management	70
2014- 2017	Healthcare Operations.	Lecture/ PBL	The Israel Academic College in Ramat Gan	BA in HC management.	60
2014- 2018	Healthcare Logistics.	Lecture/ PBL	The Israel Academic College in Ramat Gan	BA in HC management.	50
2014 - 2018	Project management in Healthcare.	Lecture/ PBL	The Israel Academic College in Ramat Gan	BA in HC management.	40
2016 -	Models in marketing innovation.	Lecture/ PBL	Sapir College	BA in Economics	50
2016 -	International Healthcare Marketing.	Workshop/ PBL	Sapir College	BA- Tech Mkt.***	20
2016 -	Pricing strategies and business models.	Lecture/ PBL	Sapir College	BA- Tech Mkt.	65
2016 -	Marketing Foundations.	Lecture/ PBL	Sapir College	BA- Tech Mkt.	80
2018 -	Technologies of the Future	Lecture/ PBL	Sapir College	BA- Tech Mkt.	65

*HC mgmt. – Healthcare management; **HR- Human Resources;

***Tech Mkt. – Technology Marketing; PBL – Project Based Learning.

8. Professional Experience

1998 – 2001 **VISIONIX Ltd.**

*The company is a leader of **ophthalmic testing equipment**,*

VP and Chief Operations Officer

- During my tenure at Visionix, the company tripled its sales, fulfilled 100% of customer orders for 10 consecutive quarters and **went public** in Frankfurt.

2003 -2010 **Founder, SPIROCOR Ltd.**

SPIROCOR developed and marketed an innovative cardiac stress test.

2008– 2010 ***Lead – US market***

- Lead extensive US market research, including 8 rounds of market focus groups.
- Negotiated and agreed with FDA on intended use, regulatory path and trial design.
- Screened, recruited and initiated 30 leading US cardiology clinics for a pivotal trial.

2003– 2008 ***Chief Executive Officer***

- Built the company from scratch
- Raised over \$10M, in 3 rounds of finance, from private and VC investors
- Received patent approvals in the US and Europe, as lead inventor

PUBLICATIONS

A. Ph.D. Dissertation

"Modeling the effect of budget-constrained market access to therapy on the health outcomes."

Submitted in English in 2013 and approved in June 2014. 110 pages.

Department of Health Systems Management, Guilford-Glazer Faculty of Business and Management and Faculty of Health Sciences, Ben-Gurion University of the Negev. (Advisor: Prof. Dan Greenberg). The dissertation resulted in 2 publications- items B1 and B3.

B. Articles in Refereed Journals

Published

Note: My role in all the publications is the lead and corresponding author.

1. **Arbel, R.** & Greenberg, D. (2016). Rethinking cost-effectiveness in the era of zero healthcare spending growth. *International Journal for Equity in Health*, 15, 1-7.
(5-year Impact factor: 2.400; ranked Q1 in Health Policy; 3 citations;)
2. **Arbel, R.**, Hammerman A., Triki N. & Greenberg, D. (2016) PCSK9 inhibitors may improve cardiovascular outcomes—can we afford them? *International Journal of Cardiology*, 220, 242–245. (Impact Factor: 6.189; ranked Q1 in Cardiology; 5 citations.)
3. **Arbel, R.** & Greenberg, D. (2017). Using lower cost statins improves outcomes for normal cholesterol non-diabetic patients. *Expert Review of Pharmacoeconomics & Outcomes Research*. 17, 495-501. (Impact Factor: 1.797; Ranked Q2 in health policy).
4. **Arbel, R.**, Hammerman, A., & Azuri, J. (2018). Usefulness of empagliflozin versus liraglutide for prevention of cardiovascular mortality. *American Journal of Cardiology* 122, 981-984.
(Impact Factor: 3.171; Ranked Q1 in Cardiology).

C. Articles in Conference Proceedings

Published abstracts

1. **Arbel, R.**, Yogev, G. & Greenberg, D. Diffusion of innovations in health care: does the dual market phenomenon exist? *Value in Health* 2011; 14, A338.
2. **Arbel, R.** & Greenberg, D. Using a population-based, budget-constrained, cost-effectiveness model to assess the health and economic impacts of using statins for primary prevention. *Value in Health* 2011; 14, A389.
3. **Arbel, R.** & Greenberg, D. Using lower cost lower efficacy interventions can improve population health outcomes under budget constraints. *Value in Health* 2013; 16, A617.
4. **Arbel, R.** & Greenberg, D. Rethinking cost-effectiveness in the era of zero healthcare spending growth. *Value in Health* 2015; 18, A37. (See Publication B1).
5. **Arbel, R.**, Hammerman A., Triki N. & Greenberg, D. Prompt value assessment of breakthrough interventions with limited outcome data. *Value in Health* 2016; 19, A473.
6. **Arbel, R.**, Hammerman A., Triki N., Greenberg, D. & Weinstein, JM. Maximizing sacubitril/valsartan clinical benefit under budget constraints. *Circulation: Cardiovascular Quality and Outcomes* 2017; 10 (Suppl 3), A073-A073.
7. **Arbel, R.**, Sergienko R., Hammerman, A., Greenberg-Dotan, S, Batat E., Avnery O., Greenberg, D. & Ellis, MH. Direct oral anti-coagulation significantly reduces mortality in atrial fibrillation. *Circulation* 2017; 136 (Suppl 1), A11584-A11584

Submitted abstracts -accepted

8. **Arbel, R.**, Hammerman, A. & Azuri, J. Evolocumab versus ezetimibe in addition to statins for secondary prevention of major adverse cardiovascular events in patients with type 2 diabetes and hypercholesterolemia. *Circulation* 2018;

D. Other scientific publications - patents

1. **Arbel, R**, Tal, Y., Ortenberg, M. Method and system for cardiovascular system diagnosis. 2007. US Patent App. 11/489,721. (102 citations).
2. **Arbel, R**, Tal, Y., Ortenberg, M. "Method and system for cardiovascular system diagnosis". US Patent 7,771,364. (18 citations).
3. **Arbel, R**, Tal, Y., Ortenberg, M. Method and system for cardiovascular system diagnosis. 2008. US Patent App. 11/892,256. (14 citations)
4. Ortenberg, M., **Arbel, R.**, Tal Y. "Method, apparatus and system for detection of arterial stiffness and artery tonus by pulse curve geometry analysis ", US patent application 2010 – 0198088. (3 citations)
5. **Arbel, R**, Tal, Y., Ortenberg, M. "Apparatus, system and method for automated coronary artery disease testing and analysis", US patent application 2009 -0132677. (2 citations)

E. Submitted Publications

1. **Arbel, R.**, Sergienko R., Hammerman, A., Greenberg-Dotan, S, Batat E., Avnery O., Greenberg, D. & Ellis, MH. Direct anticoagulation and mortality in atrial fibrillation. Under review in *JACC* (IF: 16.834)
2. **Arbel, R.**, Hammerman, A., & Azuri, J. Evolocumab versus ezetimibe as add-on therapy for secondary prevention of major adverse cardiovascular events in patients with type 2 diabetes; a cost-minimization analysis. Under review in *Lancet diabetes and endocrinology*. (IF: 19.313).
3. Arbel, R., Hammerman, A., & Azuri, J. "Cost Needed to Treat": A prompt measure for evaluating value of health technologies. Under review in *Value in Health*. (IF: 5.5).

F. Summary of my Activities and Future Plans

Summary of Activities

Research areas

The focus of my research is on the evaluation of clinical and economic outcomes of innovative healthcare interventions, primarily cardiovascular medications. For this purpose a research lab was founded and named Maximizing health Outcomes under Constrained Budgets Research Lab (MaxCor).

Research groups

To promote the lab research, 3 multi-disciplinary research groups were established. The first group includes the research department of Clalit Health services (CHS), and the hematology center of Meir MC. The group focuses on direct anti-coagulant (DOAC) medications. The second group includes the drug evaluation department of CHS, and leading physicians in heart failure and diabetology from CHS and Maccabi Health Services. The group focuses on medications for type 2 diabetes and heart failure. The third group includes the technology evaluation department in the Ministry of Health (MOH), and top management at a leading hospital. This group focuses on adoption of innovative technologies in hospitals.

Publications and research grants

By Sep. 2018, 4 of my manuscripts were published in peer-reviewed journals (with impact factors ranging between 1.8 to 6.2) and a 4th manuscript was accepted for publication. Additional 2 manuscripts are being evaluated by leading journals, and 2 more are under preparation. In all manuscripts my role is the lead and corresponding author.

4 research grants were secured from the Israel National Institute for Health Policy Research (NIHP), and the MOH chief scientist, totaling the sum of 600,000 NIS.

Future plans for research projects and publications – organized by research groups

Group 1- Primary partners: Prof. Martin Ellis, MD, Head of the Meir Hematology center, Sari Greenberg-Dotan, PhD, Head of CHS research department.

1. The effect of low dose DOAC on clinical outcomes (manuscript under preparation)
2. Comparison of DOACs – clinical outcomes (Database available).
3. Comparison of DOACs – economic evaluation (Database available).
4. DOAC continuation vs discontinuation (Database available).
5. DOAC- MACE- economic evaluation (Database available).
6. DOAC- Dosage- economic evaluation (Database available).
7. DOACs comparison- clinical outcomes (Database available).
8. DOACs comparison- economic evaluation (Database available).
9. DOAC- 85 yrs- clinical outcomes (Database available).
10. DOAC- 85 yrs- economic evaluation (Database available).
11. DOAC vs warfarin - clinical outcomes (Database available).
12. DOAC vs warfarin - economic evaluation (Database available).

Group 2 - Primary partners: Ariel Hammerman, PhD, Head of technology assessment at Clalit; Joseph Azuri, MD, Maccabi Health Services, Diabetics Expert.

13. Empagliflozin Vs. Entresto for patients with Heart Failure and type 2 diabetes.
14. Jardiance vs. Entresto for HF – clinical outcomes.
15. Jardiance vs. Entresto for HF – economic evaluation.
16. Optimal medical therapy (OMT) for cardiovascular patients- clinical outcomes (grant proposal submitted).
17. OMT for cardiovascular patients- economic outcomes (grant proposal submitted).

Group 3- Primary partners: Etti Samama, PhD, Head of Technology Policy, Ministry of Health, and Orna Tal, MD, deputy director of Assaf Harofe Medical Center.

18. Adoption of innovative medical technologies in Israeli hospitals. (grant approved).
19. Effect of surgery delays on patient experience (manuscript in preparation).
20. Avoiding delays in elective surgeries (manuscript in preparation).