

Contents

Part I Exploring Trends and Strategies in PHM

1	Evolving Public Health from Population Health to Population Health Management.....	3
1.1	Defining Population Health.....	3
1.2	Defining Population Health Management.....	4
1.3	Mechanisms for Coordinated Care	5
1.4	The Current Health-Care Environment.....	6
1.5	Challenges in Implementation	6
1.6	Strategic Imperatives for Development, Implementation, and Evaluation of Population Health Management Programs for Chronic Conditions	7
1.7	Electronic Health Records	8
1.7.1	HIT and Coordination	8
1.7.2	Meaningful Use.....	9
1.7.3	Problems with HER	9
1.8	Data-Driven Orientation	10
1.8.1	Utilizing Big Data to Inform Population Health Management.....	10
1.8.2	County Health Records.....	10
1.8.3	Data Sharing and Distribution	11
1.8.4	Patient Privacy Concerns with Big Data.....	11
1.8.5	Social Media and Digital Applications for Health Education and Promotion	12
1.8.6	Social Media	12
1.8.7	Mobile Applications.....	12
1.9	Current Policies in Place for Population Health Management	13
1.10	Concluding Remarks.....	13
1.10.1	Prospects for Population Health Management Research....	13
1.10.2	Global Application	14
	References.....	14

2	Cost-Containment Strategies for Population Health Management and How They Relate to Poly Chronic Conditions	17
2.1	Prospective Payment (Diagnosis-Related Group) System.....	19
2.1.1	DRGs in the United States	19
2.1.2	Impact of DRGs in the United States.....	20
2.1.3	Adoption of DRGs Internationally.....	20
2.1.4	Impact of DRGs Internationally.....	20
2.2	Pay-for-Performance System	21
2.2.1	P4P In the United States	22
2.2.2	P4P and Chronic Conditions in the United States	22
2.3	P4P in Countries Under the Beveridge Model.....	23
2.3.1	The United Kingdom	23
2.3.2	Portugal	24
2.4	P4P in Countries Under the Bismarck Model.....	25
2.4.1	The Netherlands	25
2.4.2	France.....	26
2.5	P4P in Countries Under a National Health Insurance Model	26
2.5.1	Taiwan.....	27
2.6	Value-Based Payment System as an Alternative Strategy	28
2.7	Concluding Remarks.....	28
	References.....	29
3	Integration of Principles in Population Health Management.....	33
3.1	Contextual Domains or Ecological Parameters: Macrolevel Factors Influencing Population Health	35
3.1.1	Population Identification, Risk Assessment, and Segmentation: The First Parameter	35
3.1.2	Organizational Resource Identification and Allocation: The Second Parameter.....	36
3.1.3	Environment or Geographical Milieu: The Third Parameter	37
3.1.4	Technological Innovation and Use: The Fourth Parameter	39
3.2	Individual Personalized Care Domains: Microlevel Factors Influencing Population Health	40
3.2.1	Engagement and Communication	40
3.2.2	Patient-Centered Interventions.....	41
3.2.3	Technology Adoption and Use Behavior	43
3.3	Outcome Evaluation and Improvement	44
3.4	Integration and Coordination of Care	45
3.5	Conclusions and Implications	47
	References.....	48

4 Strategies to Optimize Population Health Management: Implications for Elder Care with Poly Chronic Conditions.....	51
4.1 Transdisciplinary Framework	52
4.2 Strategies for Optimizing Population Health Management	53
4.2.1 First Strategy: Develop a Coordinated Elder Care Health-FINDER System.....	53
4.2.2 Second Strategy: Impart Knowledge and Skills for Integrated Care for High-Risk Elders	54
4.2.3 Third Strategy: Provide Health Information Technology (HIT) Integration Service for Primary Care Physicians and Staff for Evidence-Based Care Management	57
4.2.4 Fourth Strategy: Design and Implement Quality Improvement Initiatives via HIE for Elders.....	57
4.2.5 Fifth Strategy: Prevent and Divert Inappropriate Hospitalization and Institutionalization	58
4.2.6 Sixth Strategy: Assist Providers with Health-FINDER to Promote Population Health Management.....	58
4.2.7 Seventh Strategy: Engage in Interdisciplinary Health-Care Informatics Research by Partnering with Universities and Community Stakeholders.....	59
4.2.8 Eighth Strategy: Leverage the Local Community, State, and Federal Resources of Partners to Optimize Success of a Community-Based Integrated Delivery System	60
4.3 Evaluation of the Proposed Patient-Centered Care for Elders	61
4.4 Concluding Remarks.....	61
References.....	64

Part II Identifying Evidence-Based Approaches to PHM

5 Poly Chronic Disease Epidemiology: A Global View	69
5.1 Descriptive Chronic Disease Epidemiology	69
5.1.1 Time	70
5.1.2 Person.....	71
5.1.3 Place.....	71
5.2 Epidemiological Triad or Etiology.....	72
5.2.1 Agent.....	72
5.2.2 Host	72
5.2.3 Environment.....	73
5.2.4 Interactions of Agent, Host, and Environment	73
5.3 Epidemiology of Poly chronic Conditions Associated with Metabolic Syndrome.....	74
5.4 Preventive Strategies of Poly chronic Conditions.....	77
5.4.1 Primary Prevention	77
5.4.2 Secondary Prevention	80

5.4.3	Tertiary Prevention.....	80
5.4.4	Multilevel Strategy.....	81
5.5	Concluding Remarks.....	81
	References.....	82
6	Strategies to Modify the Risk for Heart Failure Readmission: A Systematic Review and Meta-analysis.....	85
6.1	Introduction.....	85
6.2	Materials and Methods.....	86
6.2.1	Data Sources and Searches	86
6.2.2	Study Selection, Data Extraction, and Quality Assessment	87
6.2.3	Data Synthesis and Analysis.....	87
6.3	Results of Systematic Review.....	89
6.3.1	Education and Assessment.....	89
6.3.2	Exercise.....	89
6.3.3	Interpersonal Relationships.....	91
6.3.4	Outlook	91
6.3.5	Dietary Recommendations.....	91
6.3.6	Education and Assessment Combined with Exercise	91
6.3.7	Education and Assessment Combined with Interpersonal Relationships	92
6.3.8	Education and Assessment Combined with Outlook.....	92
6.3.9	Education and Assessment Combined with Dietary Recommendations.....	92
6.3.10	Rest and Relaxation Combined with Outlook	93
6.3.11	Exercise Combined with Outlook.....	93
6.3.12	Education and Assessment Combined with Exercise and Interpersonal Relationships.....	93
6.3.13	Education and Assessment Combined with Exercise and Dietary Recommendations.....	94
6.3.14	Education and Assessment Combined with Interpersonal Relationships and Dietary Recommendations	94
6.3.15	Education and Assessment Combined with Outlook and Dietary Recommendations.....	95
6.3.16	Education and Assessment Combined with Rest and Relaxation, Exercise, and Dietary Recommendations.....	95
6.3.17	Education and Assessment Combined with Exercise, Interpersonal Relationships, and Dietary Recommendations.....	95
6.3.18	Education and Assessment Combined with Exercise, Outlook, and Dietary Recommendations.....	96
6.3.19	Education and Assessment Combined with Exercise, Interpersonal Relationships, Outlook, and Dietary Recommendations.....	96

6.3.20 Education and Assessment Combined with Rest and Relaxation, Exercise, Interpersonal Relationships, Outlook, and Dietary Recommendations.....	97
6.4 Results of Meta-analysis	97
6.5 Concluding Remarks.....	97
Appendix 1: Characteristics of Included Studies.....	100
References.....	105
7 Contextual, Organizational, and Ecological Factors Influencing the Variations in Heart Failure Hospitalization in Rural Medicare Beneficiaries in Eight Southeastern States.....	113
7.1 Introduction.....	113
7.2 Related Research.....	115
7.2.1 Contextual Determinants	115
7.2.2 Organizational Determinants	116
7.2.3 Aggregate Patient Population Characteristics or Ecological Variables	117
7.3 Analytical Framework.....	117
7.4 Research Methodology	118
7.4.1 Design and Data Sources	118
7.4.2 Measurements	119
7.4.3 Analytical Methods.....	120
7.5 Research Results	121
7.5.1 RHC Year as the Unit of Analysis.....	121
7.5.2 State Variations in Race-Specific Risk-Adjusted Rates for HF Hospitalization	122
7.5.3 Trends of Risk-Adjusted HF Hospitalization Rates in African-American and White American Medicare Patients Served by RHCs.....	122
7.5.4 Race-Specific Risk-Adjusted HF Hospitalization Rates by Rurality	123
7.5.5 Latent Growth Curve Modeling of Risk-Adjusted HF Hospitalization Rates (2007 Through 2013) for RHCs Serving White and African-American Medicare Patients.....	123
7.5.6 Generalized Estimating Equation (GEE) Analysis of Risk-Adjusted HF Hospitalization Rates for White and African-American Medicare Patients	124
7.6 Implications and Discussion	127
7.7 Concluding Remarks.....	127
Appendix 1: The Study Variables and Their Operational Definitions.....	130
References.....	131

Part III Implementing and Optimizing the Use of Health Information Technology in PHM Practice and Research

8 Health Informatics Research and Innovations in Chronic Care Management: An Experimental Prospectus for Adopting Personal Health Records	137
8.1 Introduction.....	137
8.2 Background and Significance	138
8.2.1 Conceptual Formulation of Patient-Centric Care Management Technology.....	139
8.2.2 Methodological Rigor and Measurement of Health-Care Outcomes	139
8.2.3 Evidence-Based Knowledge and Best Practices in Patient-Centered Care	140
8.2.4 Population Health Policy Consideration.....	140
8.3 Review of HIT Impacts on Population Health Management.....	141
8.4 Research Design and Evaluation.....	141
8.4.1 The Study Design: A Complex Factorial Design with Two Interventions	142
8.4.2 Measurement of the Study Variables	142
8.4.3 Description of the Interventions. Experimental Protocol: Educational Training for the PHR.....	143
8.4.4 Electronic PHR CapMed Personal Health Record.....	145
8.4.5 Description of the Technical Architecture	145
8.4.6 Data Import/Export.....	145
8.4.7 Adherence to Technical Standards ASC X12, HL7, and CCR.....	146
8.4.8 Upload from Medical (Biometric) Devices	147
8.4.9 Images (e.g., Radiology).....	147
8.4.10 Interface with EMR Applications	147
8.4.11 Flow for Participants in the Research Project.....	148
8.4.12 Participants.....	148
8.4.13 Ambulatory Clinics as the Study Site	148
8.4.14 Evaluation	149
8.4.15 Use of Decision Support Systems or Software in PHM	149
8.5 Human Subject Protection	149
8.5.1 Inclusion Criteria	149
8.5.2 The Role of Health-Care Providers/Clinicians	150
8.5.3 Privacy and Security	150
8.5.4 Protection of Human Subjects	150
8.5.5 Data Safety and Monitoring Plan.....	150
8.5.6 Criteria for Termination of the Research Study	151
8.5.7 Sustainability of the Intervention.....	151
8.6 Concluding Remarks.....	151
References.....	152

9 Design of Integrated Care and Expansion of Health Insurance for the Underserved and Medically Indigent Population	155
9.1 Introduction.....	155
9.2 Background.....	156
9.3 Purpose.....	157
9.4 Principles of an Integrated Care Management Plan.....	157
9.5 Managed Care Plan Objectives and Plan	158
9.5.1 Objectives.....	158
9.5.2 Plan	159
9.5.3 Expected Outcomes	161
9.6 Concluding Remarks.....	163
References.....	163
10 Reduction of Readmissions of Patients with Chronic Conditions: A Clinical Decision Support System Design for Care Management Interventions	165
10.1 Introduction.....	165
10.2 Qualitative Aspects of Risk Reduction Strategies and Interventions in Population Health Management (PHM)	167
10.3 Quantitative Aspects of Risk Reduction Strategies and Interventions in PHM.....	167
10.4 Development and Implementation of a Clinical Decision Support System for Reducing Hospital Readmissions for Chronic Conditions: An Artificial Intelligence Approach.....	169
10.4.1 Heart Failure Readmission Study: Preliminary Results with Logistic Regression.....	169
10.4.2 Main Effect Model	170
10.4.3 Interaction Effects.....	171
10.4.4 A Cloud-Based Data Design and Application	173
10.4.5 Web-Based Data Security and Management Plan for the Interactive Data Collection Design	173
10.5 Concluding Remarks.....	176
References.....	177
Epilogue	179
Index.....	183

Population Health Management for Poly Chronic
Conditions

Evidence-Based Research Approaches

Wan, Th.T.H.

2018, XXVII, 186 p. 20 illus., 16 illus. in color., Hardcover

ISBN: 978-3-319-68055-2