## Contents

Pa	rt 1	Curriculum	1
1	Tran	scending the Barriers of Interprofessional Collaboration:	
	Our	Continuing Journey as Educators in Medical Imaging	3
	Teres	a Van Deven and Kathryn M. Hibbert	
	1.1	Introduction	3
	1.2	A View of the Teaching Profession	3
	1.3	Establishing a Partnership	2
	1.4	Crossing Borders	4
	1.4.1	The First Step	4
	1.4	What Are Some of the Barriers?	e
	1.4.1	Different Cognitive Values	6
	1.5	Recognizing the Limitations	8
	1.6	Final Thoughts	ç
	Refer	ences	9
2	Curr	iculum Matters! Designing Curriculum	
	for R	adiology Resident Rotations	1
	P. An	drea Lum and Witek Zaleski	
	2.1	The Evolution	1
	2.2	Components of Radiology Teaching	12
	2.2.1	Rotations	12
	2.2.2	Rounds or Small Group Case Based Learning	14
	2.2.3	Academic Afternoons	10
	2.3	Components of Radiology Assessment and Evaluation	10
	2.3.1	Resident Assessment and Evaluation	10
	23.2	Radiologist and Rotation Assessment and Evaluation by Residents	19
	233	Reflection Last But Not Least	1
	2.3.5	Summary	1
	Refer	ences	1
	reich	914 V 05	1

3	Applying CanMEDS to Academic Afternoons Karen Finlay and Linda Probyn		
	3.1	Theory and Principle	
	3.2	Challenge 1: What Are the CanMEDS Roles and What Do	
		They Mean for Radiology?	
	3.2.1	Medical Expert	
	3.2.2	Communicator	
	3.2.3	Collaborator	
	3.2.4	Manager	
	3.2.5	Health Advocate	
	3.2.6	Scholar	
	3.2.7	Professional	
	3.3	Challenge 2: How Do I Implement the CanMEDS Framework	
		into Formal Radiology Curriculum?	
	3.4	Practical Implementation	
	3.4.1	CanMEDS Academic Half-Day Presentations	
	3.4.2	Idea 1: Small-Group Presentation of CanMEDS Topics:	
		Format and Description	
	3.4.3	Examples: Sample Small-Group Sessions	
	3.4.4	Idea 2: CanMEDS Retreat Day: Format and Description	
	3.4.5	Sample Retreats	
	3.5	Wrap Up: Where Do I Go from Here? Implications for Mobilizing	
		Conflict Resolution Strategies During Residency Training	
	3.6	Summary	
	3.7	Taking CanMEDS Beyond the Academic Half-Day	
	3.8	Take Home Message	
	3.9	Final Tips	
	Refere	nces	
4	Build for Ra Stepho	ing a Teaching Module in Clinical Inquiry adiology Residents en James Karlik	
	4.1	Overview	
	4.1.1	Evaluating a Diagnostic Test	
	4.1.2	Radiology-Specific Questions	
	4.1.3	Hierarchy of Research	
	4.2	Barriers to Evidence-Based Radiology and Critical Inquiry	
	4.3	Defining the Critical Inquiry Agenda and Resources	
	4.3.1	Teaching ROC: An Example of a Critical Inquiry Module	
	4.3.2	ROC Didactic Component	
	4.3.3	Analysis of a Paper Which Uses ROC Methodology	
	4.3.4	Performing an ROC Study: Diet from Regular Soda?	
	4.4	Conclusion	
	Refere	ences	

CONCINC
---------

The I Jamie	Medical Radiation Technologist: A Valuable Resource Kueneman and Mark Hunter
5.1	Why this Topic?
5.2	Who Are the People Behind the Aprons, "Shooting the Pictures"?
	(And What Do All of Those Letters Mean?)
5.2.1	Radiological (X-Ray) Technologists
5.2.2	Nuclear Medicine Technologists
5.2.3	Radiation Therapist
5.2.4	Magnetic Resonance Technologists
5.3	What Education Is Required to Become a Medical
	Radiation Technologist?
5.3.1	Radiological Technologists
5.4	How Does a Person Become Credentialed as a Medical
	Radiation Technologist?
5.5	Are Medical Radiation Technologists Regulated?
5.6	Are MRTs Required to Demonstrate Ongoing Competency?
5.7	Do MRTs Have Expanded Practice Roles?
5.8	In What Ways Can a Medical Radiation Technologist
	Be Utilized as Resource?
5.9	MRTs and Radiologists Have Been Working Together for Years,
	What Has Changed?
5.10	A Case to Illustrate the Role of the MRT
5.11	Some Concluding Thoughts
Refer	ences
Schol	arship as a Foundation for Health
Kath	yn M. Hibbert, Teresa Van Deven, Rethy K. Chhem, and Kyra Harris
6.1	Introduction
6.2	Methods and Materials
6.3	Results
6.4	Discussion
6.5	Differential Diagnosis
6.5.1	Recognition
6.5.2	Curriculum
6.5.2 6.5.3	Curriculum
6.5.2 6.5.3 6.5.4	Curriculum Faculty Development Role-Modeling and Mentorship
6.5.2 6.5.3 6.5.4 6.6	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx
5.5.2 5.5.3 5.5.4 5.6 5.6 1	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship.
5.5.2 5.5.3 5.5.4 5.6 5.6.1 5.6.2	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship Implementing Well-developed Curriculum
6.5.2 6.5.3 6.5.4 6.6 6.6.1 6.6.2 6.6.3	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship Implementing Well-developed Curriculum Embracing Interdisciplinary Collaborations
6.5.2 6.5.3 6.5.4 6.6 6.6.1 6.6.2 6.6.3 6.6.3	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship Implementing Well-developed Curriculum Embracing Interdisciplinary Collaborations Improving Communication
6.5.2 6.5.3 6.5.4 6.6 6.6.1 6.6.2 6.6.3 6.6.4 6.6.5	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship Implementing Well-developed Curriculum Embracing Interdisciplinary Collaborations Improving Communication Generating a Culture of Role-Modelling and Mentorship
6.5.2 6.5.3 6.5.4 6.6 6.6.1 6.6.2 6.6.3 6.6.4 6.6.5 6.7	Curriculum Faculty Development Role-Modeling and Mentorship Recommendation for Rx Increasing Recognition and Rewards for Scholarship Implementing Well-developed Curriculum Embracing Interdisciplinary Collaborations Improving Communication Generating a Culture of Role-Modelling and Mentorship Prognosis

7	An In Penelo	tegrated Curriculum in Medical Imaging ppe Engel-Hills and Christine Winberg	99	
	7.1 Theory and Principle: Why an Integrated Curriculum			
		in Medical Imaging	99	
	7.1.1	Definitions	99	
	7.1.2	Knowledge in Professional and Academic Contexts	100	
	7.2	Practical Issues	101	
	7.2.1	Planning an Integrated Curriculum	102	
	722	Implementing an Integrated Curriculum	102	
	73	Take Home Message	105	
	Refere	nces	105	
_			100	
Pa	rt2 I	Programs and Trainees	109	
8	Reside the Le Andre	ent Case Review: Working Smarter to Optimize earning Experience w Leung	111	
	8.1	Introduction	111	
	8.2	Case Review: Current Problems	112	
	83	Volume of Cases	113	
	84	Variety of Pathology	116	
	8.5	Quality of Teaching	117	
	8.6	Summers/	118	
	Refere	nces	118	
			110	
9	Redes	igning A National Training Program in Radiology:		
	The Australian-New Zealand Experience 1			
	Shih-Chang Ming Wang, Joan Burns, Liane Walters, and John Slavotinek			
	9.1 Theory and Principles			
	911	Old Faithful	123	
	912	A Great Lean Forward	123	
	012	If It Isn't Broken	124	
	9.1.5 0 1 A	Change We Had to Have	124	
	9.1.4	Starting with the Fact in Mind	125	
	9.1.5	Starting with the End in Mind	120	
	9.2	Practical Implementation	126	
	9.2.1	Curriculum Development	126	
	9.2.2	Who Are We?	127	
	9.2.3	What Should We Do?	127	
	9.2.4	How Should We Do It?	130	
	9.2.5	Planning the Delivery	137	
	9.2.6	Stakeholder Engagement	138	
	9.3	Take Home Messages	140	
	9.3.1	Change Is the Only Constant	140	
	9.3.2	A Single Step	140	
	References			

10	Traini	ng Musculoskeletal Ultrasound Specialists:European Education	
	and Cl	inical Guidelines:Work in Progress	143
	Andrea	Klauser, Eugene McNally, and Rethy K. Chhem	
	10.1	Introduction	143
	10.2	ESSR (European Society of Musculoskeletal Radiology)	143
	10.3	Work in Progress	144
	10.3 1	Technical Guidelines	144
	10.3.1	Clinical Indications	144
	10.3.2	Annual FSSR Meeting: US Course	144
	10.3.5	Module Systems	145
	10.5.4	ESP (European Society of Radiology): Appual Meeting	140
	10.4	List (Luropean Society of Radiology). Annual Meeting	148
	10.5	EFSUMB (European Federation of Societies for Ultrasound	140
	10.5	in Medicine and Biology)	148
	10.6	EIII AP (European League Against Phoumatism)	155
	10.0	Challenges in MSK US	155
	10.7	LIS Creided Interventions	155
	10.0	US-Guided Interventions	150
	10.9 D.C	Summary	157
	Referen	1Ces	157
	and Suv	vipaporn Siripornpitak	
	11.1	Introduction	161
	11.2	Radiology Residency Training Programs: General Radiology	161
	11.3	Lack of Radiologists	162
	11.4	Applications for Residency: Language Challenges	162
	11.5	Length of Residency Training	163
	11.6	Training Schemes	164
	11.7	Additional Curriculum	165
	11.8	E-Learning for Postgraduate Education	165
	11.8.1	Self-Assessment Test	166
	11.8.2	Self-Learning Materials	166
	11.9	Research	166
	11.10	Final Examination	166
	11.11	Subspecialties in Radiology	167
	11.12	Closing Thoughts	167
	Referen	nces	168
12	<b>Buildi</b> Mauriz	ng Scientific Capacity in PET/CT for Global Health	169
	12.1	Introduction	169
	12.2	The Challenge	169
	12.3	The Educational Framework	171
	12.4	Coordinated Research Projects (CRPs)	171
	•		

	12.4.1	An Example of a Doctoral CRP	172
	12.5	Curriculum Design and Teaching Materials	172
	12.6	Examples of Publications	173
	12.6.1	Appropriate Use of FDG-PET for the Management of Cancer	
		Patients in the Asia-Pacific Region. IAEA Recommendations	173
	12.6.2	Quality Assurance for PET and PET/CT Systems	173
	12.7	Educational and Training Activities Through the Technical	
		Cooperation Programme (TCP)	173
	12.7.1	Example of TC National Project	174
	12.7.2	Examples of TC Regional Projects	175
	12.7.2	Conclusion	175
	Referer		176
	Itererer		170
13	Buildi	ng Capacity in Medical Physics for Radiological Imaging:	
	Role of	the International Atomic Energy Agency (IAEA)	177
	Ahmed	Megzifene, Donald McLean, and Rethy K. Chhem	
	13.1	What Is the Role of the Medical Physicist in Imaging?	177
	13.2	What are the Educational Tools at the Disposal of the IAEA?	178
	13.3	Strategies for Building Medical Physicist Capacity in Imaging	179
	13.3.1	Advocacy for Professional Recognition	179
	13.3.2	Strengthening the Standard of Academic Education	180
	13.3.3	Clinical Curriculum Design and Implementation	181
	13.3.4	Development of Standards of Practice	181
	13.3.5	Continuing Professional Development	183
	13.4	Conclusion	183
	Referen	1ces	184
_			
Par	t 3 Lea	dership and Resources	185
14	Challes	nees and Professional Developments for a New Chair/Chief	197
14	David	nges and r rolessional Developments for a New Chair/Cinei	107
	David	4. K011	
	14.1	Introduction	187
	14.2	Problem-Based Learning (PBL)	188
	14.3	Back to the Interview	190
	14.4	Undergraduate Program	190
	14.5	Postgraduate Program	192
	14.6	Fellowship Program	193
	14.7	Continuing Education	194
	14.8	Research	195
	14.8.1	MIIRCAM	196
	14.9	Evaluation	197
	14.9.1	Annual Review and Monitoring Tools	197
	14.10	Conclusion	197
	Referer	DCeS.	198
		· · · · · · · · · · · · · · · · · · ·	

Со	ntei	nts
~~		

15	Fosteri	ing a Translational Research Attitude Among Residents	
	in Rad	iology/Nuclear Medicine	199
	Aaron Fenster and Rethy K. Chhem		
	15.1	Introduction	199
	15.2	Transdisciplinarity and Professional skills	200
	15.2.1	From Trainee to Team Leader	200
	15.3	Innovation and Flexibility	200
	15.4	Platform 1: Integrated Research Projects	201
	15.5	Platform 2: Transdisciplinary Learning	202
	15.5.1	On-Line Foundation Courses	202
	15.5.2	Research Seminars	203
	15.5.3	Scientific Communications	203
	15.6	Platform 3: Professional Skills	204
	15.6.1	Bi-Weekly Professional Skills Seminar Series	204
	15.7	Platform 4: Translation of Knowledge	204
	15.8	Conclusion	205
16	Fosteri	ing Research in a Canadian Radiology	
	Traini	ng Program: A Residency Research Director's Perspective	207
	Matthi	as H. Schmidt	
	16.1	Introduction	207
	16.2	A Proficient Resident Research Project	208
	16.3	Ensuring the Success of Resident Research	209
	16.3.1	Responsibilities of the Program	209
	16.3.2	Responsibilities of the Resident	211
	16.4	Conclusion	212
	Referen	1ces	212
17	Deside	-+ Descuttment and Selection	212
17	Reside	AD Condermon Lois A Shumon and Louis Maara	215
	Nicharo	B. Gunderman, Lois A. Shuman, and Louis Moore	
	17.1	Introduction	213
	17.2	Role of Residents in the Radiology Department	213
	17.3	Issues Surrounding Resident Recruitment and Selection	214
	17.4	The Phases of Resident Recruitment and Selection	214
	17.5	Conclusion	217
	Referen	1ces	217
18	Buildi	ng Canacity Within a Residency Program	219
10	Justin	Amann. Teresa Van Deven, Kathryn M. Hibbert.	
	and Jac	kie Windsor	
	18.1	The Chief Resident Role	219
	18.2	Radiology Call Preparation	222
	18.2.1	Introduction	222

	18.2.2	Formal Didactic Lecture Series	222
	18.2.3	Early PGY2 Rotations	223
	18.2.4	Formal Buddy Call	223
	18.2.5	Core Knowledge	223
	18.2.6	Rookie Call Practice Sessions	227
	18.2.7	Precall Exam	227
	18.2.8	Summary	228
	18.3	Resident Selection Strategies	228
	18.4	Differentiated Instruction	230
	18.4.1	Let Us Consider this Within the Context of the Residency	
		Training Program	233
	18.4.2	Planning for Differentiated Instruction	233
	18.5	Conclusion	236
	Referen	1ces	237
19	Philoso	ophy in Radiology: The Ontological Challenge	239
	Cesare	Romagnoli, James A. Overton, and Rethy K. Chhem	
	19.1	Introduction	239
	19.2	Universal Language	240
	19.2.1	Failures of Language	240
	19.2.2	Biomedical Ontologies	241
	19.3	The "Structure" of the Report	243
	19.4	Applications to Education	245
	19.5	Conclusion	247
	Referen	1ces	248
20	Practio	cal Rules of Engagement: Responding	• •
	to Lean	rners Experiencing Difficulty	249
	Salvato	re M. Spadafora and John G. Fuller	
	20.1	In-Training Evaluation Guidelines	249
	20.2	Appeal of a "Failure" of a Rotation	250
	20.3	No Appeal of Failure: The Way Forward	251
	20.4	Writing Remediation Plans	252
	20.5	Probation	253
	20.6	Dismissal	256
	20.7	Emergency Situations, Special Circumstances of Learners	
		in Difficulty	257
	20.8	Summary	257
	Referer	Ices	258
Epi	logue		259

## Index

261