

Contents

1 Introduction.....	1
Consultants.....	4
Defining the Project	4
Development of the Study Record	4
Research Plan	4
General Considerations	5
Standard Operating Procedures.....	5
Regulatory Performance.....	6
Data Recording.....	6
Analysis of the Data	7
Reporting of Results and Conclusions	7
Types of Data	7
Raw Data	8
Other Types of Data	9
Computerized Data Collection.....	10
Statistical Data	10
Results and Conclusions	11
Development of Study Data.....	12
Quality Characteristics	12
Recording Raw Data	12
General Requirements for Raw Data Recording.....	12
Error Correction in Data Recording.....	14
Formats for Recording Data.....	15
Laboratory Notebooks.....	16
Forms and Worksheets	18
Automated Data Collection Systems (Laboratory Information Management Systems)	19
Computer-Generated Raw Data	20
Electronic Signatures	22
Spreadsheets	23

Reporting the Data	23
Distinguishing Essential from Negotiable Study Elements	24
Designating the Study Monitor	24
Shifting Paradigms	25
References	25
Additional Reading	26
2 Pharmaceutical Development	27
Safety	30
Pharmaceutical Development	33
Pharmacology	34
Analytical	34
Clinical	35
Regulatory	35
Putting It All Together	37
References	37
3 Medical Device Development	39
Biocompatibility	42
Fundamentals of Biocompatibility Tests	44
Clinical Testing	45
Market Characteristics	47
Changing Focus, Changing Oversight	48
The Review Speed Problem	50
References	52
4 Functions and Types of CROs	53
Hole in the Virtual Model: General Contractor	55
Determining Outsourcing Needs	56
Establishing the Scope of the Project	56
Selecting an Outsource Partner	57
Protecting Intellectual Property	59
Managing the Project	60
Reference	60
5 Selection of CRDOs	61
The Trend Towards Outsourcing	61
Rapid Growth	62
The Buying of R&D	63
Sources of Information on CROs	64
Identifying Competent Laboratories	64
The Middle Tier	67
Key Considerations in Selecting a Lab	69
Site Visits of Prospective Contract Laboratories	73
The Contract	77
The Study Protocol	78

Other Terms	79
Authorship.....	79
Reports	79
Inspections by the Sponsor.....	79
References.....	80
6 CROs in China, India, and Elsewhere in the Broader World:	
Outsourcing Science Gone Global.....	81
China.....	82
Beyond Chemistry to Toxicology	82
Why NOT Use a Chinese CRO? The #1 Response.....	83
Good Laboratory Practice	84
GLP in India.....	85
India	85
Other New Entrants.....	86
Problems and Solutions.....	86
References.....	87
7 Contracting, Pricing, and Cost of Works Performed by CROs.....	89
Costing/Pricing	90
The Contract.....	92
Purpose and Description of Work	94
Time Frame	95
Regulatory and Judicial Proceedings	95
Reports	96
Innocent Mistakes and Culpable Tampering.....	98
Communications	99
Proprietary Rights	100
Confidentiality.....	100
Ethical and Legal Problems of Regulatory Disclosure	101
8 Monitoring Ongoing Studies and Work.....	103
The General Rule	103
Study-Specific Monitoring.....	104
In-Progress Monitoring.....	104
The Study Report	106
Subcontracted Services	107
Ongoing Contracts or Master Service Agreement.....	108
References.....	108
9 Common Problems and Solutions	109
Changes in Key Personnel	109
Client Signing Protocols	110
Time Slippage	110
Regulatory Noncompliance	111
Quality Control/Assurance Failures.....	112
Inappropriate Technology	112
Facility Shutdown	113

Acts of Nature	113
CROs May Stretch the Truth.....	113
Silent Subcontractors	114
Alliances	114
Too Many Eggs in a Basket	114
Extraneous Event	115
Appendix A Toxicology Labs	117
Appendix B Medical Device Labs	137
Appendix C Phase I Labs	145
Appendix D Analytical Labs	147
Appendix E GMP Contract Facilities	153
Appendix F Formulation	161
Appendix G Dosage Forms.....	167
Appendix H Clinical Testing	171
Appendix I Regulatory Services	181
Appendix J Contract Laboratory Audit Check List.....	187
Appendix K Contract Manufacturer Audit Check List	193
Appendix L Contract Laboratory Audit Check List (GCP)	199
About the Author.....	205
Index.....	207



<http://www.springer.com/978-1-4614-0048-6>

Contract Research and Development Organizations
Their Role in Global Product Development

Gad, S.C.; Spainhour, C.B.

2011, XII, 212 p., Hardcover

ISBN: 978-1-4614-0048-6