



# Non-opioid Pain Treatment: *Global Markets to 2022*

March 2018

*Melissa Elder*

Report Code: HLC206A

# Table of Contents

<b>Chapter 1: Introduction</b> .....	<b>1</b>
Study Goals and Objectives.....	1
Reasons for Doing This Study.....	1
Scope of Report.....	1
Information Sources.....	2
Methodology.....	3
Geographic Breakdown.....	3
Analyst’s Credentials.....	8
Related BCC Research Reports.....	8
<b>Chapter 2: Summary and Highlights</b> .....	<b>10</b>
Market Overview .....	10
Regional Market Summary .....	12
Drivers and Restraints.....	13
<b>Chapter 3: Market Overview and Background</b> .....	<b>16</b>
History of Pain and Pain Treatment.....	16
Types of Pain .....	17
Physiological Pain Classifications .....	18
How Pain is Diagnosed .....	18
How Pain is Treated.....	19
Opioid vs. Non-opioid Pain Control.....	24
Alternative Methods of Pain Management .....	40
Alternative Non-opioid Therapies for Treating Pain.....	41
Medical Cannabis .....	41
Capsaicin-derived Compound .....	42
Menthol-containing Compound.....	42
Omega 3 Fatty Acid-containing Supplements.....	43
Botulinum Toxins (OnabotulinumtoxinA/RimabotulinumtoxinB).....	43
Others.....	44
Growing Trend in Cannabis Treatment for Pain .....	46
Adoption of Medical Cannabis: A Global Analysis.....	47
Laws and Legalization Trends.....	47
Claims in Effectiveness .....	52
Potency and Validation Testing Trends.....	53
Access to Palliative Care Around the World .....	58
Assessing the Need for Palliative Care .....	59
Market Influences and Indicators of Growth .....	61
<b>Chapter 4: Market Breakdown by Product Segment</b> .....	<b>71</b>
Overview .....	71
Medical Cannabis.....	74
Capsaicin-derived Therapies.....	79
Menthol-containing Therapies .....	82
Omega-3 Fatty Acid-containing Therapies.....	85
Botulinum Toxin Treatments .....	89
<b>Chapter 5: Market Breakdown by Therapeutic Application</b> .....	<b>95</b>

Overview .....	95
Alternative Non-opioid Cancer Pain Treatment .....	97
Alternative Non-opioid Neuropathic Pain Treatment .....	101
Alternative Non-opioid Orthopedic/Musculoskeletal Pain Treatments .....	105
Other Alternative Non-opioid Pain Treatments.....	109
<b>Chapter 6: Market Breakdown by Region .....</b>	<b>114</b>
Overview .....	114
Regional Groupings .....	117
North America.....	118
Canada.....	120
United States.....	122
EMEA.....	123
France.....	125
Germany.....	127
Italy.....	128
Russia.....	130
Spain.....	131
United Kingdom.....	133
Asia-Pacific .....	134
Australia/New Zealand.....	136
China.....	138
Japan.....	139
Latin America .....	141
Argentina.....	143
Brazil.....	144
Mexico.....	146
<b>Chapter 7: Patent Analysis .....</b>	<b>150</b>
Patent Analysis Overview .....	150
Non-opioid Pain Relief Categories .....	151
Medical Cannabis.....	152
Technologies.....	153
Cannabis Patent Review by Year.....	155
Patent Review by Company.....	155
Patent Review by Major Country .....	157
Patent Review by Assignee.....	158
<b>Chapter 8: Company Profiles .....</b>	<b>164</b>
<b>Appendix: Terminology and Sources of Information .....</b>	<b>184</b>
<b>About BCC Research.....</b>	<b>188</b>
About BCC Research.....	189
BCC Membership .....	189
BCC Custom Research .....	189

# List of Tables

Table A Major Countries, by Region .....	4
Summary Table Global Market for Non-opioid Pain Treatments, by Product Segment, Through 2022 (\$ Millions) .....	11
Table 1 Physiological Effects of Pain .....	18
Table 2 United States Opioid Addiction and Abuse Statistics.....	30
Table 3 Global Opioid Addiction and Abuse Statistics .....	30
Table 4 List of Brand Name Extended-release and Long-acting Opioid Products Required to be Included in Opioid REMS (Updated May 2017) .....	32
Table 5 List of Generic Extended-release and Long-acting Opioid Products Required to be Included in Opioid REMS (Updated May 2017) .....	33
Table 6 List of Transmucosal Immediate-release Fentanyl Products Required to be Included in the TIRF REMS Access Program.....	35
Table 7 Adoption of Medical Cannabis, by Select Country (Age 15 and Over), 2017 (%/Thousands).....	47
Table 8 Medical Cannabis Programs, by U.S. State.....	48
Table 9 Top Five U.S. States with Medical Cannabis Applications/Registrations (No./%).....	52
Table 10 Effectiveness of Fibromyalgia Treatments: Cannabis vs. Pharmaceutical Therapies (%) .....	52
Table 11 Hospice Statistics, Patient Characteristics, 2009-2014 (Total in Thousands; % of Total) .....	56
Table 12 Hospice Statistics, Patients, by Primary Diagnosis, 2009-2014 (Total in Thousands; % of Total) .....	57
Table 13 Global Population, by Select Country, 2017 and 2022 (Millions of Population).....	61
Table 14 Global Population, Age 65+, by Select Country, 2017 and 2022 (Thousands of Population) .....	63
Table 15 Global Life Expectancy at Birth, by Select Country, 1980, 2010 and 2020 Projections (Both Genders Combined) (Years).....	65
Table 16 Global Non-opioid Pain Treatment Market, by Product Segment, Through 2022 (\$ Millions) ...	72
Table 17 Global Market Shares of Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	73
Table 18 Selected Cannabis Clinical Trials for Pain Treatment (Current Through Nov. 30, 2017) .....	76
Table 19 Global Medical Cannabis Pain Treatment Market by Indication, Through 2022 (\$ Millions).....	77
Table 20 Global Market Shares of Medical Cannabis Pain Treatments, by Indication, 2017 (%).....	78
Table 21 Selected Capsaicin-derived Clinical Trials for Pain Treatment (Current Through Nov. 30, 2017) .....	79
Table 22 Global Capsaicin-derived Pain Treatment Market, by Indication, Through 2022 (\$ Millions).....	80
Table 23 Global Market Shares of Capsaicin-derived Pain Treatments, by Indication, 2017 (%).....	81
Table 24 Selected Menthol-containing Clinical Trials for Pain Treatment (Current Through Nov. 30, 2017) .....	83
Table 25 Global Menthol-containing Pain Treatment Market, by Indication, Through 2022 (\$ Millions) ..	83
Table 26 Global Market Shares of Menthol-containing Pain Treatments, by Indication, 2017 (%) .....	84
Table 27 Selected Omega-3 Fatty Acid-containing Clinical Trials for Pain Treatment (Current Through Nov. 30, 2017).....	86
Table 28 Global Omega-3 Fatty Acid-containing Pain Treatment Market, by Indication, Through 2022 (\$ Millions) .....	87
Table 29 Global Market Shares of Omega-3 Fatty Acid-containing Pain Treatments, by Indication, 2017 (%) .....	88
Table 30 U.S. Market for Allergan’s Botox, by Treatment Area, 2016 (\$ Millions/%) .....	89
Table 31 U.S. Market for Allergan’s Botox, by Treatment Area, 2017 (\$ Millions/%) .....	89
Table 32 Selected Botulinum Toxin Clinical Trials for Pain Treatment (Current Through Nov. 30, 2017) ..	90
Table 33 Global Botulinum Toxin Pain Treatment Market, by Indication, Through 2022 (\$ Millions).....	91
Table 34 Global Market for Botulinum Toxin Pain Treatments, by Indication, 2017 (%) .....	92
Table 35 Global Non-opioid Pain Treatment Market, by Therapeutic Application, Through 2022 (\$ Millions) .....	95

Table 36 Global Market Shares of Non-opioid Pain Treatments, by Therapeutic Application, 2017 (%)... 96	96
Table 37 Global Non-opioid Cancer Pain Treatment Market, by Product Segment, Through 2022 (\$ Millions) .....	98
Table 38 Global Market Shares of Non-opioid Cancer Pain Treatments, by Product Segment, 2017 (%) .99	99
Table 39 Global Market Shares of Non-opioid Cancer Pain Treatments, by Cancer Type, 2017 (%) .....	100
Table 40 Global Non-opioid Neuropathic Pain Treatment Market, by Product Segment, Through 2022 (\$ Millions) .....	102
Table 41 Global Market Shares of Non-opioid Neuropathic Pain Treatments, by Product Segment, 2017 (%) .....	103
Table 42 Global Market Shares of Non-opioid Neuropathic Pain Treatments, by Disease/Disorder Type, 2017 (%) .....	104
Table 43 Global Non-opioid Orthopedic/Musculoskeletal Pain Treatment Market, by Product Segment, Through 2022 (\$ Millions).....	106
Table 44 Global Market Shares of Non-opioid Orthopedic/Musculoskeletal Pain Treatments, by Product Segment, 2017 (%) .....	107
Table 45 Global Market Shares of Non-opioid Orthopedic/Musculoskeletal Pain Treatments, by Disease/Disorder Type, 2017 (%).....	108
Table 46 Global Market for Other Non-opioid Pain Treatments, by Product Segment, Through 2022 (\$ Millions) .....	110
Table 47 Global Market Shares of Other Non-opioid Pain Treatments, by Product Segment, 2017 (%) .111	111
Table 48 Global Market Shares of Other Non-opioid Pain Treatments, by Disease/Disorder Type, 2017 (%) .....	112
Table 49 Global Non-opioid Pain Treatment Market, by Region, Through 2022 (\$ Millions) .....	114
Table 50 Global Market Shares of Non-opioid Pain Treatments, by Region, 2017 (%) .....	115
Table 51 Regional Grouping: Countries, by Region .....	117
Table 52 North American Non-opioid Pain Treatment Market, by Country, Through 2022 (\$ Millions) .119	119
Table 53 EMEA Non-opioid Pain Treatment Market, by Country, Through 2022 (\$ Millions) .....	124
Table 54 Asia-Pacific Non-opioid Pain Treatment Market, by Country, Through 2022 (\$ Millions).....	135
Table 55 Latin American Non-opioid Pain Treatment Market, by Country, Through 2022 (\$ Millions)... 141	141
Table 56 U.S. Patents Related to Medical Cannabis, by Type, Through 2017 (Number/% Share of Total) .....	152
Table 57 U.S. Patents on Medical Cannabis Technologies, by Type, Through 2017 (Number/% Share of Total) .....	154
Table 58 Notable U.S. Patents Related to Medical Cannabis, by Company, Through 2017 (Number) ....	157
Table 59 List of U.S. Patents Related to Medical Cannabis, July 2017-Nov. 2017 .....	158
Table 60 Notable Developments in Non-opioid Pain Relief, Through 2017 .....	161
Table 61 Glossary of Terms Used in Non-opioid Pain Treatment.....	161
Table 62 Global Pain Societies and Organizations .....	184
Table 63 Report Sources .....	186

# List of Figures

Summary Figure Global Market for Non-opioid Pain Treatments, by Product Segment, 2016-2022 (\$ Millions) .....	12
Figure 1 Non-opioid Pain Management Market Drivers and Restraints .....	14
Figure 2 Pain Management Techniques.....	19
Figure 3 Total Hospice Patients Served, by Year, 2009-2014 (No. of Patients) .....	56
Figure 4 Distribution of Causes of Mortality and Potential Need for Palliative Care, 2017 (Millions) .....	60
Figure 5 Global Population, by Country, 2017 and 2022 (Millions).....	62
Figure 6 Global Population Age 65+, by Country, 2017 and 2022 (Millions).....	64
Figure 7 Global Life Expectancy at Birth, by Select Country, 1980, 2010 and 2020 Projections (Years)....	66
Figure 8 Global Non-opioid Pain Treatment Market, by Product Segment, 2016-2022 (\$ Millions) .....	72
Figure 9 Global Market Shares of Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	73
Figure 10 Global Market Shares of Medical Cannabis: Pain vs. All Other Uses, 2017 (%).....	75
Figure 11 Global Medical Cannabis Pain Treatment Market, by Indication, 2016-2022 (\$ Millions).....	77
Figure 12 Global Market Shares of Medical Cannabis Pain Treatments, by Indication, 2017 (%).....	78
Figure 13 Global Capsaicin-derived Pain Treatment Market, by Indication, 2016-2022 (\$ Millions).....	80
Figure 14 Global Market Shares of Capsaicin-derived Pain Treatments, by Indication, 2017 (%) .....	82
Figure 15 Global Menthol-containing Pain Treatment Market, by Indication, 2016-2022 (\$ Millions) .....	84
Figure 16 Global Market Shares of Menthol-containing Pain Treatments, by Indication, 2017 (%).....	85
Figure 17 Global Omega-3 Fatty Acid-containing Pain Treatment Market, by Indication, 2016-2022 (\$ Millions) .....	87
Figure 18 Global Market Shares of Omega-3 Fatty Acid-containing Pain Treatments, by Indication, 2017 (%) .....	88
Figure 19 Global Botulinum Toxin Pain Treatment Market, by Indication, 2016-2022 (\$ Millions).....	92
Figure 20 Global Market Shares of Botulinum Toxin Pain Treatments, by Indication, 2017 (%) .....	93
Figure 21 Global Non-opioid Pain Treatment Market, by Therapeutic Application, 2016-2022 (\$ Millions) .....	96
Figure 22 Global Market Shares of Non-opioid Pain Treatments, by Therapeutic Application, 2017 (%) .	97
Figure 23 Global Non-opioid Cancer Pain Treatment Market, by Product Segment, 2016-2022 (\$ Millions) .....	99
Figure 24 Global Market Shares of Non-opioid Cancer Pain Treatments, by Product Segment, 2017 (%) .....	100
Figure 25 Global Market Shares of Non-opioid Cancer Pain Treatments, by Cancer Type, 2017 (%) .....	101
Figure 26 Global Non-opioid Neuropathic Pain Treatment Market, by Product Segment, 2016-2022 (\$ Millions) .....	103
Figure 27 Global Market Shares of Sales of Non-opioid Neuropathic Pain Treatments, by Product Segment, 2017 (%) .....	104
Figure 28 Global Market Shares of Non-opioid Neuropathic Pain Treatments, by Disease/Disorder Type, 2017 (%) .....	105
Figure 29 Global Non-opioid Orthopedic/Musculoskeletal Pain Treatment Market, by Product Segment, 2016-2022 (\$ Millions).....	106
Figure 30 Global Market Shares of Non-opioid Orthopedic/Musculoskeletal Pain Treatments, by Product Segment, 2017 (%).....	107
Figure 31 Global Market Shares of Non-opioid Orthopedic/Musculoskeletal Pain Treatments, by Disease/Disorder Type, 2017 (%).....	108
Figure 32 Global Market for Other Non-opioid Pain Treatments, by Product Segment, 2016-2022 (\$ Millions) .....	110
Figure 33 Global Market Shares of Other Non-opioid Pain Treatments, by Product Segment, 2017 (%)	111

Figure 34 Global Market Shares of Other Non-opioid Pain Treatments, by Disease/Disorder Type, 2017 (%) .....	112
Figure 35 Global Non-opioid Pain Treatment Market, by Region, 2016-2022 (\$ Millions) .....	115
Figure 36 Global Market Shares of Non-opioid Pain Treatments, by Region, 2017 (%) .....	116
Figure 37 North American Non-opioid Pain Treatment Market, by Country, 2016-2022 (\$ Millions) .....	119
Figure 38 North American Market Shares of Alternative Non-opioid Pain Treatments, by Country, 2017 (%) .....	120
Figure 39 Canadian Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	121
Figure 40 Canadian Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	121
Figure 41 Canadian Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	122
Figure 42 Canadian Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	123
Figure 43 EMEA Non-opioid Pain Treatment Market, by Country, 2016-2022 (\$ Millions) .....	124
Figure 44 EMEA Market Shares of Alternative Non-opioid Pain Treatments, by Country, 2017 (%) .....	125
Figure 45 French Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	126
Figure 46 French Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	126
Figure 47 German Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	127
Figure 48 German Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	128
Figure 49 Italian Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	129
Figure 50 Italian Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	129
Figure 51 Russian Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	130
Figure 52 Russian Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	131
Figure 53 Spanish Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	132
Figure 54 Spanish Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	132
Figure 55 U.K. Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	133
Figure 56 U.K. Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	134
Figure 57 Asia-Pacific Non-opioid Pain Treatment Market, by Country, 2016-2022 (\$ Millions) .....	135
Figure 58 Asia-Pacific Market Shares of Alternative Non-opioid Pain Treatments, by Country, 2017 (%) .....	136
Figure 59 Australia/New Zealand's Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	137
Figure 60 Australia/New Zealand's Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	137
Figure 61 Chinese Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	138
Figure 62 Chinese Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	139
Figure 63 Japanese Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	140

Figure 64 Japanese Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	140
Figure 65 Latin American Non-opioid Pain Treatment Market, by Country, 2016-2022 (\$ Millions) .....	142
Figure 66 Latin American Market Shares of Alternative Non-opioid Pain Treatments, by Country, 2017 (%) .....	142
Figure 67 Argentinean Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	143
Figure 68 Argentinean Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	144
Figure 69 Brazilian Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	145
Figure 70 Brazilian Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	146
Figure 71 Mexican Market Shares of Alternative Non-opioid Pain Treatments, by Product Segment, 2017 (%) .....	147
Figure 72 Mexican Market Shares of Alternative Non-opioid Pain Treatments, by Application, 2017 (%) .....	148
Figure 73 Total U.S. Patents on Non-opioid Pain Treatments, by Type, Through 2017 (Number/% Share of Total) .....	151
Figure 74 Shares of U.S. Patents Related to Medical Cannabis, by Type, Through 2017 (%) .....	153
Figure 75 Shares of U.S. Patents on Medical Cannabis Technologies, by Type, Through 2017 (%) .....	154





*About BCC Research*

## *About BCC Research*

With our unparalleled 45-year history, BCC Research provides comprehensive analyses of global market sizing, forecasting and industry intelligence, covering markets where advances in science and technology are improving the quality, standard and sustainability of businesses, economies and lives.

## *BCC Membership*

From market sizing and forecasts, to opportunity assessments and competitive analyses, our ever-expanding library gives you the data, insights and intelligence required to ensure your project is a success. Members benefit from ongoing, unlimited access to the category or collections of their choice, and most membership packages pay for themselves within two to three reports being accessed.

Did you buy this report? You may qualify to apply your purchase price towards a full membership. Call 866/285-7215 or e-mail [info@bccresearch.com](mailto:info@bccresearch.com) to request a demo.

## *BCC Custom Research*

Our experts provide custom research projects to those working to identify new markets, introduce new products, validate existing market share, analyze competition and assess the potential for products to impact existing markets. With impressive academic credentials and broad and deep knowledge of global industrial markets, our independent analysts and consultants develop the facts, figures, analysis and assessments to inform the decisions that will move your company ahead. Confidential inquiries to: [custom@bccresearch.com](mailto:custom@bccresearch.com) or 781/205-2429.

## DISCLAIMER

The information developed in this report is intended to be as reliable as possible at the time of publication and is of a professional nature. This information does not constitute managerial, legal or accounting advice, nor should it be considered as a corporate policy guide, laboratory manual or an endorsement of any product, as much of the information is speculative in nature. BCC Research and the author assume no responsibility for any loss or damage that might result from reliance on the reported information or from its use.

ISBN: 978-1-62296-650-9  
March 2018