Mapping the Patient Journey: Harnessing the power of big data and analytics

A FirstWord ExpertViews Dossier Report
Mapping the Patient Journey:
Harnessing the power of big data and analytics

Published July 2016
© Copyright 2016 Doctor’s Guide Publishing Limited

All rights reserved. No part of this publication may be reproduced or used in any form or by any means graphic, electronic or mechanical, including photocopying, recording, taping or storage in information retrieval systems without the express permission of the publisher.

This report contains information from numerous sources that Doctor’s Guide Publishing Limited believes to be reliable but for which accuracy cannot be guaranteed. Doctor’s Guide Publishing Limited does not accept responsibility for any loss incurred by any person who acts or who fails to act as a result of information published in this document. Any views and opinions expressed by third parties and reproduced in this document are not necessarily the views and opinions of Doctor’s Guide Publishing Limited. Any views and opinions expressed by individuals and reproduced in this document are not necessarily the views and opinions of their employers.

Cover image: © vege/Argus | AdobeStock
# Contents

**Executive Summary** .......................................................................................................................... 1

**Research Objectives** .......................................................................................................................... 3

**Research Methodology** ....................................................................................................................... 5

- Experts interviewed ............................................................................................................................. 5
- Definitions ............................................................................................................................................... 6

**The growing role of Big Data in pharma** ........................................................................................... 8

**The importance of Big Data in mapping the patient journey** ............................................................. 12

- Key insights .......................................................................................................................................... 12
- A wealth of clinical opportunity ......................................................................................................... 14
- A commercial revolution ...................................................................................................................... 16
- The data needed to successfully map the patient journey ................................................................. 17

**From knowing the data needed to being able to use them successfully** ........................................ 23

- Key insights .......................................................................................................................................... 23
- Creating a data strategy ....................................................................................................................... 26
- Sources of data ..................................................................................................................................... 30
- Harmonising data from multiple sources .......................................................................................... 31
  - The pros and cons of different data sources ...................................................................................... 32
- Complementing data sources ............................................................................................................. 33
- Outsourcing and partnerships ............................................................................................................. 34

www.fwreports.com
Mapping the Patient Journey: Harnessing the power of big data and analytics

Modelling and simulation to extract business insights from Big Data

Key insights

Modelling the stages of the patient journey

Stages 1 and 2: Awareness/screening and diagnosis
Stages 3 and 4: Treatment landscape and disease management
Stage 5: Health outcomes

Performance-based research networks
Selecting and leveraging multiple databases
Mapping the major stages of the patient journey
The impact of mapping the patient journey

A mapped journey leads to improved awareness and diagnosis
A mapped journey leads to improved and more targeted treatments
A mapped journey leads to improved adherence

Bringing patients on board
A caveat about digitally sourced patient data
Targeted marketing strategies and sales messages: Big Data's competitive advantage

The challenges of handling patient-related data

Key insights

Fragmented internal and cross-organisation data
Cloud computing to accommodate Big Data
Security of data
Cloud-based solutions for reduced data vulnerability
Organisational structure, talent and maturity for Big Data
A data-driven organisation and culture
Mapping the Patient Journey: Harnessing the power of big data and analytics

New talent ................................................................................................................................. 72
Maturity ....................................................................................................................................... 75

The best future opportunities for the use of Big Data in patient engagement .................................................. 80

Key insights .................................................................................................................................... 80
Genome-based precision medicine ................................................................................................. 81
Using predictive analysis .................................................................................................................. 84
Expanding the continuum of care and focusing on preventive care .................................................... 85
Transforming drug development ....................................................................................................... 88
Clinical trial design ........................................................................................................................ 91
Pricing ............................................................................................................................................ 92
Commercial launch ........................................................................................................................ 93
Maintaining the virtuous circle of trust between patients and industry .............................................. 95

Conclusion ..................................................................................................................................... 99

Appendix ....................................................................................................................................... 102
Biographies .................................................................................................................................... 102
Research Objectives

This FirstWord Dossier report provides a qualitative analysis of the power of Big Data and analytics in mapping the patient journey. It examines how Big Data and analytics are enabling the pharmaceutical industry to develop a deeper understanding of patients — and how companies are using these insights to create competitive advantage. It also delves into how pharma could improve its management and use of the vast amount of patient data available. Pharma’s commitment to, and investment in, Big Data and analytics is also explored.

Key questions posed as part of the research include:

1. Exactly which data are needed to successfully map the patient journey?
2. What modelling and simulation are required to extract business insight from Big Data in relation to mapping the patient journey?
3. How does pharma bring patients on board with this?
4. How do companies pull together and harmonise data from multiple sources?
5. Does pharma have the skills to harness Big Data?
6. How can pharma get from knowing what data is needed to being able to use it successfully?
7. How can data be stored?
8. What are the data privacy and security implications?
9. Where will patient-generated data from wearables and mobile software fit in to all this?
10. How can insights from Big Data create a competitive advantage?
11. Who in pharma, specifically, is doing well when it comes to harnessing Big Data and analytics to map the patient journey?
12. What structural changes have pharma teams needed to undergo to accommodate Big Data?
13. What are the best future opportunities for the use of Big Data in patient engagement?

14. What are the greatest challenges faced by companies in handling patient-related data and how are they planning to overcome these challenges?

15. In the next five years, how are companies planning to use Big Data for understanding patients, and are there any plans to increase investment?

Case studies and examples of best practice are included within the report to exemplify the benefits of Big Data in evaluating patient needs.
Research Methodology

The information within this report was gathered from primary and secondary sources, including a comprehensive literature review and in-depth interviews (n=13) with individuals employed at leading pharma, consulting, marketing and healthcare-associated companies in roles that have responsibilities for data and analytics. The interviews were conducted in May and June 2016 and explored: how Big Data and analytics are enabling pharma to develop a deeper understanding of patients; how companies are using these insights to create competitive advantage; future trends; best practice; and case studies.

Experts interviewed

- **Dr Andree Bates**: President of Eularis – Pharma Analytics
- **Carl Bilbo**: Corporate Vice President at Novo Nordisk
- **David Coleiro**: Partner at Strategic North
- **Dr Susan Dorfman**: Chief Commercial Officer at CMI/Compas
- **Clement François**: Vice President US HEOR, Lundbeck LLC
- **Rajeev Gangal**: Programme Director at Saama Technologies, Inc.
- **Nigel Hughes**: Director of Integrative Healthcare Informatics, The Janssen Pharmaceutical Companies of Johnson & Johnson
- **Usman Iqbal**: Senior Medical Affairs Leader – Neuroscience, Global Medical Affairs at AstraZeneca
- **Andrew Maric**: Business Information Manager, Chugai Pharmaceuticals
- **Priya Sapra**: Chief Product Officer at SHYFT Analytics
- **Ramon Vega**: Senior Director at Pfizer UK
- **Abhimanyu Verma**: Head of Real World Evidence and Big Data Solutions at Novartis
- **James Woodland**: Chief Operating Officer, CMI/Compas

See Appendix (page 102) for further information about the contributors.
A commercial revolution

Manufacturers can use Big Data to gain a better understanding of patients at a level that traditional market research could not do in the past. Patients can be understood at an individual level, and this has many marketing implications.

Dr Andree Bates, President of Eularis – Pharma Analytics, adds to this and says that with traditional approaches to customer insight analysis, “You couldn’t really look at the interactions between channels in terms of revenue. You could say, ‘This channel gives roughly this much revenue’, but not about the customer interactions.”

She believes that by using Big Data analytics the interaction effect can be uncovered and have a powerful impact on the quality of customer insights gained, as well as providing better understanding of the individual customer journey.

“From a market access perspective,” explains Sapra, “we have Big Data as part of value-based contracting discussions that are going on between market access and pharmaceutical companies, to understand which drugs really should have what formulary status — should be tier 1, tier 2, tier 3, so on — because now we have evidence of which drugs are optimally used in what kind of therapy. So looking at those optimal treatment algorithms as well as cost of care, we can create that alignment for value-based contracting for market access.”

Furthermore, some of the more revolutionary individuals on the sales side are aligning patient outcomes with incentive compensation for their sales representatives so that a correlation exists between the product that’s been sold and the product that’s best for the patient.

According to Carl Bilbo, Corporate Vice President at Novo Nordisk, “If integrated well within a patient’s daily routine, real-time data has the potential to enhance their treatment experience, disease self-management and health outcomes. Clearly, the companies that deliver best on this potential will have a competitive edge in the form of an enhanced, superior product.” This suggests that those pharma companies that are able to harness Big Data stand to make more money by delivering better outcomes.
Selecting and leveraging multiple databases

The five major stages of the patient journey constitute the ‘what’ of the patient journey. Selecting the databases to use constitutes the ‘how’ of patient journey mapping. A mixture of traditional and non-traditional sources can contribute to mapping the patient journey, which include one-on-one interviews with patients and physicians, feedback from patient foundations and advocacy groups, traditional market research, evidence synthesis from publications such as Medline and PubMed, social media outlets and RWE. 43

AstraZeneca embarked on mapping the journey of patients with Tourette’s syndrome, which at the time was a relatively new disease area for the company. It leveraged a number of databases, including social media, RCT and observational data from pharma, EMRs, pharmacy data, mortality rates and others, to expand its knowledge and insights about the condition during diagnosis, treatment and health outcomes for the US and five EU markets.

Clement François also reveals, “We [at Lundbeck] also developed novel indicators using data mining techniques to inform on the health status of depressed patients based on information available in electronic record databases. We are now in the process of developing further Big Data analysis techniques and visualisation tools.”

Mapping the major stages of the patient journey

With the major stages of the patient care pathway mapped (along with the specific data types that inform each stage) and with the data sources to pool knowledge from identified, the patient journey can be mapped in its entirety.

A map enables a company to integrate its knowledge and apply it in developing a product profile and making commercial decisions. It is able to identify barriers in the patient journey and pinpoint issues such as having low awareness among patients or caregivers, poor diagnosis rates despite high prevalence at the population level, or low adherence to treatment plans. A map provides an evidence-based account of the real patient’s experience, which enables pharma to identify the areas where there are unmet patient needs, potential drug launch issues or 43 Ibid.
FirstView
Unique insight into current and future pharma market dynamics through quantitative surveys with physicians, providing essential data in major disease areas and on key industry issues.

FirstWord PHARMA PLUS
A personalised and comprehensive intelligence service delivering up-to-the-minute pharma news, insight, analysis, and expert views of importance to your company's success.

FirstWord THERAPY TRENDS
Critical and unbiased intelligence derived from in-depth interviews with the world’s foremost thought leaders on the current and future treatment landscapes in major disease areas. Reports include three quarterly updates to ensure insights remain current.

FirstWord MEDTECH PLUS
A personalised and comprehensive intelligence service reporting on the latest news and developments for the medical technology and diagnostic industries.

FirstWord DOSSIER
Unbiased and concise analysis based on interviews with leading industry experts on important trends and challenging issues affecting the pharma industry today.

FirstWord delivers timely, need-to-know intelligence about your products, your competitors and your markets.