MDGuidelines® and ODG®:

Analysis of the Evidence Behind Evidence-Based Return-To-Work and Treatment Guidelines

Prepared by Heidi Chial, Ph.D., BioMed Bridge®, LLC
heidichial@biomedbridge.com

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Study Information

This study was requested by a major health system that currently uses both MDGuidelines® and ODG®; the goal of this study was to objectively compare the two products, validate product claims, and identify key product strengths and weaknesses. Reed Group provided an outline of the major points for comparison and funded the study, but they did not direct or guide the research process. An initial analysis was conducted using information provided to registered users on the MDGuidelines and ODG product websites. Based on this initial analysis, a detailed set of questions was sent via e-mail to both groups. Reed Group provided complete answers to the questions. In contrast, WLDI refused to provide answers without assurance that the information would not be shared with Reed Group, despite being told that no proprietary, confidential, or sensitive information was being sought, that the questions were based solely on information provided on the ODG website, and that a similar set of questions had been put forward to Reed Group. In the end, WLDI did not provide answers to the questions, and the claims on their website could not be verified. This response shows a clear lack of transparency with regard to ODG and its underlying methods and data.

Executive Summary

Return-to-Work and Treatment Guidelines help inform decisions that have far-reaching impacts on many sectors of the population, including workers, employers, patients, health care providers, case workers, health care administrators, governments, insurance providers, and policymakers. Given the significance of these decisions and their potential effects on both individuals and groups, a detailed analysis and comparison of the guidelines available for purchase is needed. Currently, guidelines from two companies — MDGuidelines® published by Reed Group and Official Disability Guidelines (ODG®) published by Work Loss Data Institute (WLDI) — remain leaders in the marketplace and are the focus of this investigation. Reed Group acquired the American College of Occupational and Environmental Medicine's (ACOEM's) Occupational Medicine Practice Guidelines in 2013, allowing for the integration of ACOEM's treatment guidelines into MDGuidelines. Therefore, the term MDGuidelines as used herein also encompasses ACOEM's Occupational Medicine Practice Guidelines, which serve as the foundation for its treatment guidelines and formulary. Further, this investigation is focused on the new MDGuidelines website, which has an entirely new user interface.

Both MDGuidelines and ODG are marketed as providing "evidence-based" guidelines for return-to-work, treatment, and rehabilitation. Indeed, this evidence serves as the foundation for the guidelines developed by each group. Therefore, transparency at every step in the process by which this evidence is collected, analyzed, and used to establish guidelines is of utmost importance. This analysis compares and contrasts MDGuidelines and ODG with regard to: 1) the data sources that serve as the basis for their return-to-work guidelines; 2) the methodologies they employ to establish their return-to-work guidelines, treatment guidelines, rehabilitation guidelines, and formularies; and 3) the accessibility and ease of use of each product. Comparisons of the data sets and methodologies between MDGuidelines and ODG highlights the overall transparency and strengths of MDGuidelines and raises many questions about the transparency and approaches employed by ODG.

Trusted guidelines for treatment, return-to-work, rehabilitation, and formularies should be developed by experts in the field. MDGuidelines clearly articulates the qualifications of its staff team members

involved in the early steps of guideline development. In contrast, ODG fails to disclose the qualifications of its staff team members, despite their involvement in key steps in the guideline development process (i.e., reviewing the literature, summarizing important findings, and drafting recommendations). Without proper credentials, experience, and a reproducible process, ODG staff team members may not be adequately trained to capture and grade key literature, provide accurate summaries, or draw sound conclusions from the literature to draft appropriate recommendations, and this deficiency could potentially misguide the direction of the review board.

Proprietary data sets provide the essential foundation for establishing the return-to-work guidelines of both groups. Data sets for the return-to-work guidelines established by MDGuidelines include extensive case numbers, diverse cases with regard to industry and geographic location, established grounds for exclusion, valid ICD codes for diagnoses, and methods of screening for outlying data. Although ODG claims to have twice as many cases in its return-to-work guidelines data set, it does not describe established standards for exclusion, it fails to provide information about diversity with regard to industry or geographic location, and it cites the use of public databases (i.e., CDC NHIS and OSHA) for which diagnoses and ICD codes are likely questionable or unavailable. Indeed, ODG asserts that it is so comprehensive that its guidelines cover every reportable condition and procedure, including over 10,000 ICD-9 codes, 65,000 ICD-10 codes, and 11,000 CPT procedure codes. Rather than screening these codes and providing information about conditions that affect working-age individuals, ODG's website provides return-to-work summary guidelines for conditions not relevant to the return-to-work population, such as instantaneous death (ICD-9 code 798.1), fussy infant/baby (ICD-9 code 780.91), and infant botulism (ICD-9 code 040.41). Oddly, a search of ODG's website using the term "infant" pulls up a plethora of conditions for which return-to-work guidelines are entirely inappropriate and calls into question the source(s) of the numbers provided in the summary guidelines tables. Further, ODG describes the use of client claims data, but fails to provide details about how client data has been collected, classified, and utilized to establish its return-to-work guidelines. In the absence of a clearly defined database, the basis of the ODG return-to-work guidelines, which includes infants and deceased individuals, is questionable at best and unreliable at worst.

The return-to-work guidelines, rehabilitation guidelines, treatment guidelines, and formularies are only as reliable as their underlying methodologies. Each step in the process used to establish the guidelines should be described and accessible. Indeed, the expectations derived from guidelines for return-to-work, rehabilitation, or treatment are defensible only when the steps used to establish them are known. MDGuidelines and ACOEM provide detailed step-by-step descriptions of the methodologies used to establish the return-to-work guidelines, rehabilitation guidelines, treatment guidelines, and soon-to-be-released formulary guidelines. The return-to-work guidelines of MDGuidelines are based on clearly established data sets, and the rehabilitation, treatment, and formulary guidelines of MDGuidelines are based on independent literature searches and include their own sets of review board members. As discussed above, the data set that serves as the basis for ODG's return-to-work guidelines remains questionable with regard to valid ICD diagnostic codes, and the use of client data. ODG's treatment guidelines are based on an independent literature review and recommendations of a review board. However, ODG's rehabilitation guidelines and formulary appear to be based on information extracted from its treatment guidelines, rather than on independent literature searches and separate review boards with expertise in these areas. Unlike the clear step-by-step protocols described for the methodologies employed by MDGuidelines, gaps exist in the steps described by ODG and in the internal

and external review processes described for all four of its guidelines (return-to-work, rehabilitation, treatment, and formulary).

The user experience is entirely different between MDGuidelines and ODG. Whereas MDGuidelines has a recently updated user interface that is user-friendly and modern, ODG has a user interface that is user-unfriendly and archaic. The MDGuidelines site is easy to navigate with a robust search engine and well-organized search output. In contrast, the ODG site is a struggle to navigate with an unimpressive and difficult to use search tool and oddly displayed search output. Simply put, MDGuidelines provides a modern experience with output that can be tailored to an individual user, and ODG provides a difficult and time-consuming user experience with an output that employs Excel spreadsheets and HTML requiring the user to scroll at length to access the desired information.

Some have argued that MDGuidelines and ODG are essentially the same product. To begin to address this assertion in the context of the return-to-work and rehabilitation guidelines, ten different conditions were selected at random and their corresponding return-to-work tables and rehabilitation visits were compared between MDGuidelines and ODG. MDGuidelines provides minimum, optimal, and maximal return-to-work durations for each of five job classifications, usually for different types of treatment (e.g., medical, surgical), in its return-to-work guidelines. ODG provides a single return-to-work duration for as many as three job categories, usually for different types of treatment (e.g., medical, surgical), in its return-to-work best practices guidelines. The return-to-work duration values were different between MDGuidelines and ODG for each of the ten conditions examined, and they did not match up in any sort of predictable manner. The rehabilitation guidelines for MDGuidelines and ODG include the number of recommended visits within a given number of weeks. Similar to the return-to-work durations, the number of recommended rehabilitation visits differed between MDGuidelines and ODG for each of the ten conditions examined. This analysis also uncovered a validity issue with one of the conditions, which is described below. The results of this analysis showed that the products are clearly different in terms of their recommended return-to-work durations and rehabilitation visits. Given these different numbers, a strong focus on the transparency of the methods and data sources used to derive them is warranted.

The results of this study show that MDGuidelines outperformed ODG in every comparison requested as part of this analysis. It is possible that tools provided in the products of one source or another from ODG may be superior to those of MDGuidelines, but they were not within the scope of this analysis and were not identified in this study. The relatively recent partnership with ACOEM complements the Reed Group return-to-work guidelines by incorporating highly researched and respected treatment guidelines. MDGuidelines and ODG are different products and they provide different data output for their return-to-work and rehabilitation guidelines. As such, users must have the utmost confidence in the methods used to derive both the data and evidence behind the guidelines they use. The findings presented herein show MDGuidelines to be generally superior to ODG in terms of its transparent and comprehensive methodologies, clearly defined data set, robust search engine, and modern and accessible user interface.

Introduction

Return-to-Work and Treatment Guidelines help inform decisions that have far-reaching impacts on many sectors of the population, including workers, employers, patients, health care providers, case workers, health care administrators, governments, insurance providers, and policymakers. Given the significance of these decisions and their potential effects on both individuals and groups, a detailed analysis and comparison of the guidelines available for purchase is needed. Currently, guidelines from two companies — MDGuidelines® published by Reed Group and Official Disability Guidelines (ODG®) published by Work Loss Data Institute (WLDI) — remain leaders in the marketplace and are the focus of this investigation. Reed Group acquired the American College of Occupational and Environmental Medicine's (ACOEM's) Occupational Medicine Practice Guidelines in 2013, allowing for the integration of ACOEM's treatment guidelines into MDGuidelines. Therefore, the term MDGuidelines as used herein also encompasses ACOEM's Occupational Medicine Practice Guidelines, which serve as the foundation for its treatment guidelines and formulary. Further, this investigation is focused on the new MDGuidelines website, which has an entirely new user interface.

Analysis

This study was requested by a major health system that currently uses both MDGuidelines and ODG; the goal of this study was to objectively compare the two products, validate product claims, and identify key product strengths and weaknesses. Reed Group provided an outline of the major points for comparison and funded the study, but they did not direct or guide the research process. This analysis compares and contrasts MDGuidelines and ODG with regard to:

1) The data sources that serve as the basis for their return-to-work guidelines.
2) The methodologies they employ to establish their return-to-work guidelines, treatment guidelines, rehabilitation guidelines, and formularies.
3) The accessibility and ease of use of each product.

Both MDGuidelines and ODG are marketed as providing "evidence-based" guidelines for return-to-work, treatment, and rehabilitation. Indeed, this evidence serves as the foundation for the guidelines developed by each group. Therefore, transparency at every step in the process by which this evidence is collected, analyzed, and used to establish guidelines is of utmost importance.

Findings

Overall Transparency

An initial analysis was conducted using information provided to registered users on the MDGuidelines and ODG product websites. Based on this initial analysis, a detailed set of questions was sent via e-mail to both groups. Reed Group provided complete answers to the questions. In contrast, WLDI refused to provide answers without assurance that the information would not be shared with Reed Group, despite being told that no proprietary, confidential, or sensitive information was being sought, that the questions were based solely on information provided on the ODG website, and that a similar set of questions had been put forward to Reed Group. In the end, WLDI did not provide answers to the questions, and the claims on their website could not be verified. This response shows a clear lack of transparency with regard to ODG and its underlying methods and data.

Qualifications of Staff Team Members

Trusted guidelines for treatment, return-to-work, rehabilitation, and formularies should be developed by experts in the field. MDGuidelines clearly articulates the qualifications of its staff team members involved in the early steps of guideline development (i.e., M.S., Ph.D., and M.D. degrees). In contrast, ODG fails to disclose the qualifications of its staff team members, despite their involvement in key steps in the guideline development process (i.e., reviewing the literature, summarizing important findings, and drafting recommendations). Without proper credentials, experience, and a reproducible process, ODG staff team members may not be adequately trained to capture and grade key literature, provide accurate summaries, or draw sound conclusions from the literature to draft appropriate recommendations, and this deficiency could potentially misguide the direction of the review board.

Comparison of Return-To-Work and Rehabilitation Data Output

Some have argued that MDGuidelines and ODG are essentially the same product. To begin to address this question in the context of the return-to-work and rehabilitation guidelines, ten different conditions were selected at random and their corresponding return-to-work tables and rehabilitation visits were compared between MDGuidelines and ODG. The ten conditions included spinal stenosis, chronic pain syndrome, carpal tunnel syndrome, hip dysplasia, clavicle fracture, cervical disc disorder with myelopathy, fibromyalgia, plantar fasciitis, proximal radius fracture, and patella fracture.

MDGuidelines provides minimum, optimal, and maximal return-to-work durations for each of five job classifications (sedentary, light, medium, heavy, and very heavy), usually for different types of treatment (e.g., medical, surgical), in its return-to-work guidelines. However, sometimes MDGuidelines provides only a single job classification (“Any Job”) with minimum, optimal, and maximal return-to-work durations. ODG provides a single return-to-work duration for up to three job categories (clerical/modified, manual work, and heavy manual work), usually for different types of treatment (e.g., medical, surgical), in its return-to-work best practices guidelines. However, sometimes ODG provides a single return-to-work duration without any job categories, and other times ODG provides return-to-

work durations for only two job categories. The return-to-work duration values were different between MDGuidelines and ODG, and they did not match up in any sort of predictable manner or pattern. The rehabilitation guidelines for MDGuidelines and ODG include the number of recommended visits within a given number of weeks. Similar to the return-to-work durations, the number of recommended rehabilitation visits also differed between MDGuidelines and ODG. The results of this analysis showed that the products are clearly different in terms of their recommended return-to-work durations and rehabilitation visits. Given these different numbers, a strong focus on the transparency of the methods and data sources used to derive them is warranted.

Of note, this analysis uncovered a validity issue with ODG's return-to-work best practice guidelines for "hip dysplasia," which falls under ICD-9 codes 754.30 (Congenital Dislocation of Hip, Unilateral; Congenital Dislocation of Hip NOS), 754.31 (Congenital Dislocation of Hip, Bilateral), 754.32 (Congenital Subluxation of Hip, Unilateral; Congenital Flexion Deformity, Hip or Thigh; Predislocation Status of Hip at Birth; Preluxation of Hip, Congenital), 754.33 (Congenital Subluxation of Hip, Bilateral), and 754.35 (Congenital Dislocation of One Hip with Subluxation of Other Hip). ODG's website provides identical return-to-work summary guidelines tables for all five of these ICD-9 codes, and then tells the user to see ICD-9 code 754.0 for the corresponding best practices return-to work guidelines. Notably, ICD-9 code 754.0 refers to "of skull, face, and jaw," and the best practices return-to-work table provides durations for "Rhinoplasty (NoseJob)" and "Facelift" procedures. This finding invites further enquiry into the cross-referencing employed by these guidelines.

Comparison of Data Sources for Return-To-Work Guidelines

Proprietary data sets provide the essential foundation for establishing the return-to-work guidelines of both groups. Data sets for the return-to-work guidelines established by MDGuidelines include extensive case numbers, diverse cases with regard to industry and geographic location, established grounds for exclusion, valid ICD diagnostic codes, and methods of screening for outlying data. Although ODG claims to have twice as many cases in its return-to-work guidelines data set, it does not describe established standards for exclusion, it fails to provide information about diversity with regard to industry or geographic location, and it cites the use of public databases (i.e., CDC NHIS and OSHA) for which diagnoses and ICD codes are likely questionable (based upon self-reports) or unavailable. Further, ODG describes the use of client claims data, but fails to provide details about how client data has been collected, classified, and utilized to establish its return-to-work guidelines.

Notably, ODG asserts that it is so comprehensive that its guidelines cover every reportable condition and procedure, including over 10,000 ICD-9 codes, 65,000 ICD-10 codes, and 11,000 CPT procedure codes. However, it appears as if ODG may be overly comprehensive. Rather than screening through the codes and providing information about conditions that affect working-age individuals, ODG®'s website provides return-to-work summary guidelines for conditions that are not relevant to the return-to-work population, such as instantaneous death (ICD-9 code 798.1), fussy infant/baby (ICD-9 code 780.91), and infant botulism (ICD-9 code 040.41). Oddly, a search of ODG's website using the term "infant" pulls up a plethora of conditions for which return-to-work guidelines are entirely inappropriate and calls into question the source(s) of the numbers provided in the summary guidelines tables. One might even suspect that at least some of the information in the return-to-work summary guidelines is automatically

populated and never reviewed, since such irrelevant information would undoubtedly be removed if discovered during the review process.

Table 1 provides a summary of information about the data sources of the return-to-work guidelines. The information in this table was provided by Reed Group for MDGuidelines and found on the MDGuidelines and ODG websites for registered users. The information found on the ODG website raised many questions, most of which are described above. As discussed, answers to these questions were not provided by ODG. In the absence of a clearly defined database, the basis of the ODG return-to-work guidelines, which includes infants and deceased individuals, remains questionable

Comparison of Methodologies for Return-To-Work Guidelines

MDGuidelines provides minimum, optimal, and maximal return-to-work durations for each of five job classifications (sedentary, light, medium, heavy, and very heavy), often for different types of treatment (e.g., medical, surgical), in its return-to-work guidelines. However, sometimes MDGuidelines provides only a single job classification ("Any Job") with minimum, optimal, and maximal return-to-work durations. ODG provides a single return-to-work duration for up to three job categories (clerical/modified, manual work, and heavy manual work), often for different types of treatment (e.g., medical, surgical), in its return-to-work best practices guidelines. However, sometimes ODG provides a single return-to-work duration without any job categories, and other times ODG provides return-to-work durations for only two job categories. As described above, a search of ten different conditions followed by a comparison of their corresponding return-to-work tables and rehabilitation visits showed that the return-to-work duration values were different between MDGuidelines and ODG for each of the ten conditions examined, and that they did not match up in any sort of predictable manner or pattern. Given these differences, a careful analysis of the underlying methodologies and data sources is needed with a special focus on transparency.

Table 2 provides a summary and comparison of the methodologies used by MDGuidelines and ODG to establish their return-to-work guidelines. The information in this table was provided by Reed Group for MDGuidelines and found on the MDGuidelines and ODG websites for registered users. As discussed above, questions remain about ODG's data sources. And our analysis of the methodologies underlying the return-to-work guidelines of ODG also raises questions for which answers were not provided. For example, it is unclear whether suspect records are excluded from ODG's data, and on what basis. Similarly, it is unclear whether ODG screens for outlying data. For example, in the case of an illness that is usually resolved within a few days (e.g., throat pain, headache), how is the number obtained when the elimination period of many plans would include only outliers? Please refer to Appendix A for questions about ODG's methodologies for return-to work guidelines that remain unresolved.

Comparison of Methodologies for Treatment Guidelines

As discussed, Reed Group acquired the American College of Occupational and Environmental Medicine's (ACOEM's) Occupational Medicine Practice Guidelines in 2013, allowing for the integration of ACOEM's treatment guidelines into MDGuidelines. As a result, ACOEM complements the MDGuidelines return-to-work guidelines by incorporating highly researched and respected treatment guidelines. As discussed earlier, the term MDGuidelines encompasses ACOEM's Occupational Medicine Practice Guidelines.

Table 3 provides a summary and comparison of the methodologies described by MDGuidelines and ODG for their treatment guidelines. The information in this table was provided by Reed Group for MDGuidelines and found on the MDGuidelines and ODG websites for registered users. Whereas MDGuidelines/ACOEM provides clear step-by-step descriptions of the methodologies it uses to establish its treatment guidelines, several unanswered questions remain about ODG.

Both MDGuidelines and ODG use their treatment guidelines to help inform their formularies. However, MDGuidelines uses an independent review process and review board for its formulary, whereas ODG does not describe its process or its panel members, and appears to simply extract information from its treatment guidelines to inform its formulary. Similarly, ODG appears to rely on the literature searches and review board it uses for its treatment guidelines to inform its rehabilitation guidelines. In contrast, MDGuidelines conducts independent literature searches and uses an independent review board for its rehabilitation guidelines. Please refer to Appendix A for questions about ODG's methodologies for treatment guidelines that remain unresolved.

Comparison of Methodologies for Rehabilitation Guidelines

The rehabilitation guidelines for MDGuidelines and ODG include the number of recommended visits within a given number of weeks. As described above, a search of ten different conditions followed by a comparison of their recommended rehabilitation visits showed that MDGuidelines and ODG provided different numbers of visits and weeks for each of the ten conditions examined. As for the return-to-work methodologies, a careful analysis of the underlying methodologies and data sources for the rehabilitation guidelines is needed with a special focus on transparency. MDGuidelines conducts independent literature searches and uses an independent review board to establish its rehabilitation guidelines. In contrast, ODG does not describe its process or its panel members, and appears to rely on the same literature searches and review board it uses for its treatment guidelines to inform its rehabilitation guidelines.

Table 4 provides as summary and comparison of the rehabilitation guidelines for MDGuidelines and ODG. The information in this table was provided by Reed Group for MDGuidelines and found on the MDGuidelines and ODG websites for registered users. Our analysis of the methodologies underlying the rehabilitation guidelines of ODG raised questions for which answers were not provided. Please refer to Appendix A for questions about ODG's methodologies for rehabilitation guidelines that remain unresolved.

Comparison of Methodologies for Formularies

Both MDGuidelines and ODG use their treatment guidelines to help inform their formularies, but MDGuidelines uses an independent review process and review board for its formulary. ODG, on the other hand, does not describe its process or its panel members, and appears to rely on the same literature searches and review board it uses for its treatment guidelines to inform its formulary guidelines.

Table 5 provides a summary and comparison of the methodologies described by MDGuidelines and ODG for their formularies. The information in this table was provided by Reed Group for MDGuidelines and

found on the MDGuidelines and ODG websites for registered users. Several outstanding questions remain for ODG with regard to the methodologies underlying its formulary. Please refer to Appendix A for questions about ODG's methodologies for its formulary that remain unresolved.

Comparison of Accessibility and Ease of Use

The user experience is entirely different between MDGuidelines and ODG. Whereas MDGuidelines has a recently updated user interface that is user-friendly and modern, ODG has a user interface that is user-unfriendly and archaic. The MDGuidelines site is easy to navigate with a robust search engine and well-organized search output. In contrast, the ODG site is a struggle to navigate with an unimpressive and difficult to use search tool and oddly displayed search output.

When conducting a search for return-to-work and rehabilitation guidelines for ten conditions, described earlier, the process was extremely fast and easy using MDGuidelines where entry of the search term immediately pulled up the appropriate page and a single click displayed all of the relevant information. In contrast, the same ten searches were both frustrating and time-consuming using ODG's search tool where the user cannot simply type in a search term and press enter, but must instead wait for terms to drop down below and then scroll through them until the correct term appears. Oftentimes during these searches, the corresponding ICD-9 codes were obtained from MDGuidelines and pasted into ODG's search box to allow quicker access to the information. It was tempting to set a timer to record the inordinate amount of time required to search for relevant information about each of the ten conditions using ODG.

Simply put, MDGuidelines provides a modern experience with output that can be tailored to an individual user, and ODG provides a difficult and time-consuming user experience with an output that employs Excel spreadsheets and HTML requiring the user to scroll at length to access the desired information.

Additional Questions and Points for Further Investigation

- ODG states that it conducts quarterly and continuous updates. A continuous updating process seems problematic for users, as recommendations and content could change from one day to the next or mid-project. Are change reports or versions available to ODG users?
- ODG provides a link to MedLine Plus Connect as its Description for a given condition. It should be noted that MedLine Plus Connect is a publicly available website developed by the NIH U.S. National Library of Medicine to educate the general public about a wide spectrum of medical conditions; it was not developed by experts in disability management or care. On the other hand, MDGuidelines provides originally authored overviews and supporting content. ACOEM also has original authored content to supports its recommendations as well as educational Foundations Chapters.
- ODG content appears relatively silent with regard to the treatment of conflicts of interest. This is an important topic that MDGuidelines/ACOEM address extensively and with documentation.

- Prevention/follow-up and patient education content is available in MDGuidelines, but not available in ODG.
- Demographic content should be further investigated.
- What type of case data is being collected from clients (long-term disability, short-term disability, workers' comp)?
- The use of paid (incentivized) and unpaid (volunteer) reviewers and the overall transparency of the review process should be further investigated.
- Compare/contrast the MDGuidelines' predictive model tool with ODG's comorbidity calculator.

Summary

The results of this study show that MDGuidelines outperformed ODG in every comparison requested as part of this analysis. It is possible that tools provided in the products of one source or another from ODG may be superior to those of MDGuidelines, but they were not within the scope of this analysis and were not identified in this study. Notably, the relatively recent partnership with ACOEM complements the Reed Group return-to-work guidelines by incorporating highly researched and respected treatment guidelines. MDGuidelines and ODG are different products and they provide different data output for their return-to-work and rehabilitation guidelines. As such, users must have the utmost confidence in the methods used to derive both the data and evidence behind the guidelines they use. The findings presented herein show MDGuidelines to be generally superior to OD in terms of its transparent and comprehensive methodologies, clearly defined data set, robust search engine, and modern and accessible user interface.

Table 1: Data Sources of Return-to-Work Guidelines

	MDGuidelines	ODG
Number of Cases	Over 5 million cases	Around 10 million cases
Types of Cases	Most cases are short-term disability, supplemented with workers' compensation and long-term disability	Cases include 3.5 million workers' compensation claims and 7 million integrated disability cases (not all claims) from disability insurance carrier claims, TPAs, large employers, and the CDC National Health Interview Survey (NHIS).
Diversity of Cases	Database is made up of actual workplace absence data from many different industries and geographic locations. The data is derived from a variety of different case management styles, and, in some cases, non-management.	Disability duration data have been "validated and enhanced" by actual client claims data since 2003, and this information is provided in the Return-To-Work Summary Guidelines, Return-To-Work Claims Data, and Return-To-Work Post Surgery. *Details about how this data is validated and enhanced could not be found.* Data from large employers and the CDC NHIS include incidental absence cases that never became claims, but provide useful information for understanding evidence-based disability durations. *Additional details about this data could not be found.*
Grounds for Exclusion	Family medical leave cases, disqualified cases, cases without a start or end date, cases with incomplete days or incomplete clinical information, and cases without a valid ICD-9-CM diagnosis or procedure code. Screening for outliers was also used to identify and prevent atypical cases from shifting the data.	Not found.
Marketing Claims	Disability duration tables (based on normative data and clinical expertise). MDGuidelines recommends to benchmark against the data	Return-to-Work Best Practice Guidelines (based on actual experience data) and Return-to-Work Summary Guidelines (based on national norms).

	that drives the predictive model, and manage against the disability duration tables.	ODG claims to use four government databases to provide data to oversee employee productivity: 1) ICD-CM (current Official ICD-9 and ICD-10 publications); 2) CDC NCHS NHIS (data from every year beginning in 1987 to current); 3) OHSA BLS OII (data from the latest available year); and 4) HCUP, Healthcare Cost and Utilization Project and Agency for Healthcare Research and Quality (AHRQ) national information resource of patient-level health care data to facilitate research on cost, quality, practice patterns, access to health care programs, and treatment outcomes (data from the latest available year). *Notably, the use of ICD information is assumed, and none of the other three data sources include specific ICD diagnoses, with the exception of HCUP, which only lists hospital stay information that is not relevant for predicting recovery or return to work durations.*

Table 2: Summary of Return-To-Work Guidelines Methodologies

	MDGuidelines	ODG
Types of Guidelines	Disability duration tables (based on normative data and clinical expertise).	Return-to-Work Best Practice Guidelines (based on actual experience data) and Return-to-Work Summary Guidelines (based on national norms).
Information Displayed	Disability duration tables show the minimum, optimum, and maximum disability duration expectations, specified according to the US Dept. of Labor job classifications (i.e., sedentary, light, medium, heavy, very heavy). These duration tables offer a physiological basis for return-to-work expectations, and they provide expectancy figures for normal recovery, rather than simply reflecting actuarial experience.	The Best Practices Guidelines show variables that may affect the expected disability duration for each diagnosis, including the type of therapy or procedure, job type, and severity indicators. When possible, modified duty durations are shown. The Summary Guidelines show the estimated number of days out of work based on national norms. It uses the previously established ODG "decile table" (The Return To Work Claims Data – Calendar days away from work by decile) and shows the 50% value as the "mid-range" number of days and the 90% value as the "at-risk" number of days. Two separate rows are shown: "claims" data only includes cases that were out of work for more than seven days (lost time or indemnity claims), and "all absences" data also includes cases that were out of work seven or less days (all cases with lost work time, including indemnity claims, medical-only, incidental absence, and sick leave).
Guidance on Interpretation	The physiological basis of these recommendations combined with the emphasis that each case requires individualized attention serves as an important strength for this approach. The values are not absolute or rigid, but rather provide important markers to indicate when further evaluation is needed if a full recovery has not	The Best Practices Guidelines recognize that individual cases differ, and that strict adherence to an overall median/average duration would allow some cases to be out of work for too long and others to return to work too early. Best Practice disability duration data is used to show what can be accomplished when a disability case

	yet been achieved.	is managed and is based on the analysis of raw data with comparisons to findings from Work Loss Data Institute (WLDI) clients. The Summary Guidelines were developed for retrospective benchmarking of claims that require only a diagnosis and a disability duration. With the addition of the shorter duration data, the number of days shown in the "All absences" row will typically be shorter than the number of days shown in the Claims Data row.
Description of Methodology	The development of the disability duration tables is not only guided by rigorous statistical analyses, but also by the clinical experience and judgment provided by its Medical Advisory Board. The review process is considered a modified-Delhi approach in which the dual input of statistical data and medical experience provide the protective "blinds." First, a panel identifies and corrects disability durations based upon recent normative data, while taking into account outside factors that require consideration (e.g., selection bias). Second, the "corrected" durations are reviewed by a different set of members who rely solely on their clinical expertise, each member making suggestions initially in isolation (i.e., the Delphi aspect), and finally discussing and resolving any discrepancies as a group.	ODG states that its Return-to-Work "Best Practice" Guidelines are based on actual experience data, making them scientifically valid and outcome-based. Instead of examining the average or median values for all cases of a particular condition, the Best Practice Guidelines provides comparisons between similar cases. The Best Practice Guidelines are also approved by the members of the ODG Editorial Advisory Board, which is made up of around 80 medical professionals, often in leadership roles, who review the Best Practice Guidelines annually to identify new return-to-work pathways and compare the proposed durations to their own experience. The Summary Guidelines use the previously established ODG "decile table" (The Return To Work Claims Data – Calendar days away from work by decile) and show the 50% value as the "mid-range" number of days and the 90% value as the "at-risk" number of days.

Table 3: Summary of Treatment Guidelines Methodologies

	MDGuidelines	ODG
Types of Guidelines	ACOEM has developed a rigorous evidence-based methodology for establishing its Treatment Guidelines. This approach is designed to yield treatment recommendations that are valid, reliable/reproducible, clinically applicable, clinically flexible, clear and easily understood by users, developed using a multidisciplinary approach, documented at each step in the process, transparent, subject to panel review, and undergo scheduled reviews and updates.	The recommendations provided in ODG's Treatment Guidelines are based on a set of nine Guiding Principles: 1) evidence-based; 2) total body of evidence taken into consideration; 3) benefits and harms of alternative care options are assessed; 4) clarity achieved by summarizing the entire body of medical evidence, instead of using an alphanumeric rating system for the body of evidence; 5) recommended treatments should improve function, not just improve symptoms; 6) return-to-work orientation; 7) requires stronger evidence of efficacy for more invasive tests or procedures; 8) requires stronger evidence of efficacy for more expensive tests or procedures; and 9) informed patient consent through collaboration with physician with full disclosure of risks/benefits.
Information Displayed	As stated in the ACOEM Guidelines, the recommendations will ultimately include the following information: ▪ Diagnoses or problems for which the test or treatment is indicated; ▪ Specific indications for the test or treatment; ▪ Prior similar treatments or tests (that might be appropriate, and how many would be appropriate); ▪ Point in the time course of the problem for which the test or treatment is appropriate; ▪ Conservative treatment that should be carried out prior to use of the test and	ODG Treatment is divided into the following sections: Treatment Planning (non-rigid recommendations); Codes for Automated Approval; and Procedure Summary. The Procedure Summary is an alphabetical listing of all possible therapies, including surgeries, physical medicine approaches, diagnostic tests, imaging tests, and any other treatment or procedure that may be used for each condition or body part. Each entry includes recommendations for appropriate use and a summary of the medical information. The Procedure Summary also includes: Summaries of Medical Studies (using an undefined 30-step alphanumeric

	treatment; ▪ Reasonable or necessary concurrent treatments; ▪ Relative and absolute contraindications to the test or procedure; ▪ Number of tests or procedures that are appropriate at a given time in the time course of the problem; ▪ Potential benefits of the test or procedure; ▪ Potential harms, including effects on disability and return to work; ▪ Relative costs [low (<$100), medium ($100-500), or high (>$500)]; ▪ Level of confidence (certainty regarding) in the evidence supporting the recommendations [low, moderate, or high]; and ▪ Conflicts of interest (starting in 2014).	rating system); Indications for Surgery; Physical Therapy/Chiropractic Guidelines; Indications for Imaging; and Activity Modifications for Restricted Work.
Description of Methodology	Research Team members conduct comprehensive, systematic searches of the literature to identify and critically evaluate treatment-related studies. The search terms, strategies, methods, databases searched, number of studies identified, and search results are all documented. Specific bibliographic search criteria are employed, and an established set of databases is searched. Abstracts are reviewed to determine relevance and whether established inclusion criteria are met. When inclusion criteria are met for a given study, the study is first given an evidence ranking based on the study design and its theoretical robustness. In the next step, reviewers evaluate the study and provide a numerical quality score based on 11 criteria. The	Rather than using a simple alphanumeric system for the body of evidence, ODG uses a 30-step alphanumeric rating system for each individual study, *which is not described*, but then provides a description and summary of the entire body of medical evidence for a given Procedure Summary topic. The procedure used by ODG is described as follows. First, an ODG staff member conducts a literature review for each Procedure Summary (PS) topic to identify high quality original research studies. Databases searched include: Medline, Cochrane, EBM Online, CINAHL, EMBASE, and PEDro. Abstracts are reviewed and full-text articles

scores are used to determine whether the evidence is high, moderate, or low quality and reported in a combined quality assessment table. Researchers with a graduate degree (Master's degree, PhD, MD) score each study for quality, and critique them based on strengths/weaknesses in methodology, robustness, and validity of conclusions, and the overall body of evidence is graded. Draft initial treatment recommendations are submitted to the evidence-based practice panel (EBPP). Each study undergoes a secondary review by a physician member of the Research Team to evaluate clinical relevance and logic, and the Panels may also conduct additional quality reviews.

In the next step, Panel members evaluate and modify the draft recommendations from the Research Team. Panel members establish a strength of evidence rating for each topic and finalize their recommendations. The evidence ratings are: (A) strong evidence-base (i.e., two or more high quality studies); (B) moderate evidence-base (i.e., at least one high quality study or multiple moderate quality studies relevant to the topic and working population); (C) limited evidence-base (i.e., at least one moderate quality study); and (I) insufficient evidence (i.e., evidence is insufficient or irreconcilable). The recommendation categories and their associated evidence ratings are: Strongly Recommended (A); Moderately Recommended (B); Recommended (C); Insufficient – Recommended (I); Insufficient – No Recommendation (I); Insufficient – NOT Recommended (I); NOT

retrieved. Reviewers grade each article using an alpha-numeric quality score based on the JBJS system. When inclusion criteria are not met, the articles are kept in a separate list. For articles that meet inclusion criteria, ODG staff members summarize key information and draft recommendations. ODG Editorial Advisory Board contributors review and modify the recommendations developed by the staff. Each Procedure Summary recommendation starts with Recommended, Not recommended, or Under study. In the absence of unanimous agreement for a given recommendation, a majority vote is used; to reverse a previous recommendation, a unanimous vote is required.

ODG recommendations undergo an external peer review process by leading organizations, authors, and experts in the field to ensure that they are appropriate and consistent. Peer reviews are subsequently reviewed by ODG® Board Members, who then incorporate suggested changes.

The ODG® Helpdesk also receives ongoing feedback from clinicians, healthcare systems, workers/patients, employers, utilization reviewers, case managers, insurers and third party administrators, attorneys, regulators and policy makers.

ODG Treatment Guidelines are updated at least quarterly on the web.

	Recommended (C); Moderately NOT Recommended (B); and Strongly NOT Recommended (A). Although full consensus among Panel members is sought, it is not always achieved and a voting process is used. The Treatment Guidelines are also subject to external peer review to ensure that all relevant literature has been included and that key evidence from the literature has been correctly interpreted and reported, to receive feedback about whether the recommendations are appropriate and consistent, and to gain additional information relevant to the overall recommendations and topics covered from experts in the field. Panel members review the feedback from the external peer reviewers and make the necessary modifications to the Guidelines. ACOEM also seeks input from stakeholders, including clinicians, healthcare systems, workers/patients (through labor representatives and the International Association of Industrial Accident Boards and Commissions, IAIABC), employers, utilization reviewers, case managers, insurers and third party administrators, attorneys, regulators, and policy makers. Finally, the Guideline Methodology Committee (GMC) and the ACOEM Board of Directors review the Treatment Guidelines. The Treatment Guidelines are regularly updated, with new evidence and revised recommendations provided every 3–5 years.	*Notably, the ODG® website also states that ODG is "continuously updated" as part of a list of 13 unique and major advantages of ODG.*

Table 4: Summary of Rehabilitation Guidelines Methodologies

	MDGuidelines	ODG
Types of Guidelines	MDGuidelines has developed evidence-based Rehabilitation Guidelines for around 185 of the most commonly occurring musculoskeletal conditions.	ODG provides Physical Therapy Guidelines and Chiropractic Care Guidelines.
Information Displayed	These guidelines include "Frequency of Rehabilitation" tables showing the number, frequency, and duration of visits to rehabilitation specialists for uncomplicated cases for individuals returning to work with light-to-medium demands. The frequency tables are also compared to the disability duration content to provide both surgical and non-surgical guidelines, when possible. It is important to note that age, physical condition, and co-morbidities may impact healing and recovery.	The Physical Therapy Guidelines and Chiropractic Care Guidelines provide evidence-based benchmarks for the recommended frequency and duration of visits with a physical therapist, occupational therapist, or chiropractor for a given medical condition that requires such therapy.
Guidance on Interpretation	The rehabilitation content was developed by a group of physicians and rehabilitation specialists affiliated with the Occupational and Industrial Orthopaedic Center (OIOC). The overall goal of the partnership between MDGuidelines and OIOC was to systematically search, review, and compile the rehabilitation literature for a select set of musculoskeletal conditions; establish evidence-based musculoskeletal rehabilitation guidelines when rehabilitation evidence exists and best clinical practice guidelines when evidence is not available; evaluate frequency-duration tables; and provide references for managing the condition.	The guidelines do not detail the therapy type, and they do not account for physical therapy the patient would practice at home or at work once they are trained.
Description of Methodology	To develop the Rehabilitation Guidelines, OIOC followed	The Physical Therapy Guidelines and Chiropractic Care Guidelines are

	established steps. A core team, consisting of a basic scientist, a librarian, a physiatrist, and two physical therapists, used an established search strategy to search professional association guidelines and three databases, including PubMed, Evidence Based Medicine Reviews Full Text Multifile (ACP Journal Club, Cochrane Database of Systematic Reviews, and Database of Abstracts of Reviews of Effects), and Rand Corporation publications. A consultant network, which included physicians, chiropractors, occupational therapists, physical therapists, ergonomists, and a psychologist, was assembled to provide expert input and opinions about current clinical and case management practices in musculoskeletal expertise and rehabilitation. This consultant network carefully reviewed the guidelines, including the frequency tables, before it was distributed to the separate MDGuidelines Rehabilitation Board. Criteria applied to identify articles for review included: 1) studies published in the past five years, or in the last 10 years if data is lacking; 2) English language articles; and 3) research conducted on living human subjects. A hierarchical approach was used to determine which of the research studies that met the first three criteria should be included in further substantive content reviews. The strongest studies were randomized controlled trials, followed by case controlled studies and large cohorts. If a search of the literature did not yield high quality publications, the OIOC core team	based on relevant medical literature and actual experience data together with a consensus-based review by experts. ODG notes that the key sources of data for both sets of guidelines include the high caliber medical studies cited in the Treatment Guidelines (ODG Treatment in Workers' Comp) within the Procedure Summaries of each chapter summarized under the Physical Therapy entry. ODG states that if effectiveness is demonstrated in a clinical trial for a given therapy, the required number of visits is taken from each study and combined with similar information from other studies with successful outcomes to determine the benchmark number of visits shown in ODG. For the Chiropractic Guidelines, ODG notes that the Guidelines for Chiropractic Quality Assurance and Practice Parameters, Proceedings of the Mercy Center Consensus Conference ("Mercy Guidelines"), which is a consensus document developed by the American Chiropractic Association together with the Congress of State Chiropractic Associations, serve as a major source. The Mercy Guidelines have been replaced by the Council on Chiropractic Guidelines and Practice Parameters (CCGPP).

	then used medical education textbooks, clinical practice protocols for that condition, and existing treatment guidelines from healthcare professional organizations. A highly skilled medical librarian optimized the search strategies. OIOC core team members independently reviewed the identified references, with approximately 20 articles per condition, and each member provided a literature synthesis. The Rehabilitation Guidelines for each condition were written based on the literature synthesis and a consensus of the multidisciplinary team members, including the core team and the consultant network. And three final steps were followed: editorial review, reassessment of editorial changes by the core team, and external review by the independent MDGuidelines Rehabilitation Board.	

Table 5: Summary of Formulary Methodologies

	MDGuidelines	ODG
Types of Guidelines	Although not currently available to subscribers, MDGuidelines is developing a Drug Formulary for release in August 2015. The Formulary is based on ACOEM's Treatment Guidelines. The overall scope of the Formulary is to provide guidance in selecting suitable medication therapy for work-related injuries. The Formulary will provide medication recommendations using ACOEM's Treatment Guidelines and will be based on established measures of safety, tolerability, effectiveness, price, and simplicity.	ODG's Drug Formulary originates from the evidence-based recommendations in the "ODG Treatment in Workers' Comp" chapters, where hyperlinks are included from the formulary entries to the supporting text in the Procedure Summaries in each corresponding chapter in "ODG Treatment."
Information Displayed	The Drug Formulary's medication recommendations will be searchable by ICD-9 and ICD-10 classification and will be established according to: 1) treatment phase (acute vs. chronic); 2) drug class; 3) drug name (generic and brand names provided); and 4) ACOEM's Treatment Guidelines recommendations. The Drug Formulary will include the following information for each potential medication used to treat a given disorder: a) ICD-9 code; b) ICD-10 code; c) phase; d) drug class; e) drug name, generic; f) drug name, brand; g) recommendation; h) note to claims professional (e.g., duration, etc.); i) note to prescriber (e.g., duration, etc.); j) national average cost per unit; and k) reference information.	Table Columns: a) drug class; b) generic name; c) brand name; d) generic equivalency; e) status; f) cost; and g) general guidelines. The ODG website identifies the "status" column as the "most important," since it shows a "Y" if a drug is a preferred drug (i.e., first-line treatment in ODG) and is listed on the formulary, or an "N" if a drug is not listed on the formulary (i.e., not recommended as a first-line treatment in ODG).

Description of Methodology	The methodology underlying the Formulary involves a series of carefully established steps that mirror the methodology used for the ACOEM Treatment Guidelines. Each chapter and body part included in the ACOEM Treatment Guidelines was reviewed to ensure complete coverage. The recommendations are based on strength of evidence ratings established to determine the quality and amount of evidence for a particular guideline recommendation when all relevant evidence from a literature search is taken into account. The evidence ratings are: (A) strong evidence-base (i.e., two or more high quality studies); (B) moderate evidence-base (i.e., at least one high quality study or multiple moderate quality studies relevant to the topic and working population); (C) limited evidence-base (i.e., at least one moderate quality study); and (I) insufficient evidence (i.e., evidence is insufficient or irreconcilable). The recommendation categories and their associated evidence ratings are: Strongly Recommended (A); Moderately Recommended (B); Recommended (C); Insufficient – Recommended (I); Insufficient – No Recommendation (I); Insufficient – NOT Recommended (I); NOT Recommended (C); Moderately NOT Recommended (B); and Strongly NOT Recommended (A). The Formulary will not include dose, frequency, or morphine equivalent dose (MED)	A detailed description of the methodology was not found. Information provided states that the Drug Formulary originates from the evidence-based recommendations in the "ODG Treatment in Workers' Comp" chapters, where hyperlinks are included from the formulary entries to the supporting text in the Procedure Summaries in each corresponding chapter in "ODG Treatment."

	information in its medication recommendations. Current evidence provided in ACOEM's Treatment Guidelines will serve as the information source, but supplemental evidence will be obtained if necessary. The Formulary guidelines will undergo a collaborative peer review process, including an internal review conducted by a partnering organization and an external review conducted by leaders in the field.	

Appendix A: Outstanding Questions About ODG

Questions about ODG's Methodologies for Return-To-Work Guidelines:
How is the accuracy of diagnoses and ICD codes confirmed by ODG for CDC NHIS cases, which are self-reported by the patients?
Do patients accurately recall their diagnoses and know their proper ICD codes? Which, if any, of the four public databases described by ODG — ICD-CM, CDC NCHS NHIS, OHSA BLS OII, and HCUP — contribute data to the ODG database?
How is HCUP data used by ODG to evaluate employee productivity when it measures hospital stay duration, which is not related to recovery time or time to return to work?
How is OHSA BLS OII data utilized by ODG when it is classified according to body part? It is included in the ODG database?
What are the previously established decile tables that are used to produce ODG's Summary Guidelines, and how are the decile tables derived? Is decile table information updated? Do the decile tables utilize all 10 million cases in the ODG database? Do the decile tables alone establish the national norms used for ODG's Summary Guidelines?
How are cases determined to be "similar" by ODG and how are similar cases "compared" to produce its Return-To-Work Best Practices Guidelines?
What are the "raw data" sources? How is raw data compared to WLDI client data to establish Best Practice Guidelines?
What are the sources of WLDI's client data that is used to establish ODG's Best Practice Guidelines? How many cases are in WLDI's client dataset? How is WLDI client data verified and classified (e.g., MD-determined diagnosis, ICD-coded)? Are all conditions widely represented? If not, how are comparisons made? How is client data collected, classified, and utilized? What methodology is used to compare raw data to WLDI's client data?
How are additional factors (e.g., job type, therapy type, severity, co-morbidities) considered and factored into the analysis?
What are the sources of the "all absences" and "all claims" values shown in the ODG's Summary Guidelines. How are they related to the national norms and decile table values?
In what way do incidental absence cases that never became claims provide useful data to ODG?
What specific steps are taken by the Editorial Advisory Board to establish ODG's Best Practice Guidelines? Is there an established methodology?

Questions about ODG's Methodologies for Treatment Guidelines:
What are the qualifications of ODG staff members who conduct the literature searches?
What search criteria are used by ODG for the literature reviews?
What is the "30-step alphanumeric rating system" used by ODG to evaluate each individual study?
How is information from individual studies integrated by ODG?
What are the qualifications of the reviewers who score the individual studies for ODG?
Are stakeholders actively recruited to pilot-test the Treatment Guidelines and provide feedback, or does ODG rely solely on feedback from the Helpdesk for this purpose?

Questions about ODG's Methodologies for Rehabilitation Guidelines:
What are the specific steps in the methodology used by ODG to establish its Rehabilitation Guidelines?
Does ODG conduct independent searches of the rehabilitation literature, or does the content rely solely on the literature searches performed for its treatment guidelines?
Who conducts the literature searches for ODG, if done separately from the treatment guidelines, and what are their qualifications?
Who are the experts that evaluate the literature and use their experience to come to a consensus?
Is ODG's group of rehabilitation guidelines experts separate from its treatment guidelines experts?
Does the team of experts for the rehabilitation guidelines include physicians, chiropractors, occupational therapists, physical therapists, ergonomists, and psychologists?
How is a consensus reached?

Questions about ODG's Methodologies for its Formulary:
Are ODG's formulary guidelines subject to both an internal and an external review?
Does ODG conduct independent searches for its formulary, or does the formulary content rely solely on the Treatment Guidelines references? If not, are supplementary searches performed?
Who conducts ODG's literature searches, if done separately from the treatment guidelines, and what are their qualifications? What criteria are applied to identify relevant references?
Are pain management experts involved in the development of ODG's formulary? If so, what types of experts are involved?
How are ODG's drug costs determined? (Note: the source website www.mosbydrugconsult.com is no longer active.)
How are drug doses determined when they are not associated with a specific condition?
Are treatment phases (acute vs. chronic) considered with regard to recommendations and/or doses? If so, how?
What is the definition of "ODG Class" that is used as one of the methods to search for formulary drugs?
What is the utility of the NDC Code Inquiry for the user?

About BioMed Bridge®, LLC

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Heidi Chial, Ph.D., is the President and Chief Scientific Officer of BioMed Bridge, LLC. She received her BA degree in Chemistry, Biochemistry and Molecular Biology from Gustavus Adolphus College in Minnesota and her PhD degree in Molecular, Cellular, and Developmental Biology from the University of Colorado at Boulder. She has more than 13 years of hands-on research experience—including nearly seven years of postdoctoral research training. She engaged in postdoctoral research at Stanford University School of Medicine, Wake Forest University School of Medicine, and the Mayo Clinic College of Medicine. She was also a postdoctoral student in the Marine Biological Laboratory (MBL) Summer Neurobiology Course in Woods Hole, MA. Her research spans model organisms, such as yeast, to humans, and cancer biology to Alzheimer's disease. She has worked on nearly every type of NIH grant application and a wide range of other federal and private grant applications, edited hundreds of manuscripts and review articles for all types of scientific and medical journals and books, and managed numerous large-scale writing and editing projects. She was an Assistant Professor of Biology and Chemistry at St. Olaf College, and she also has experience as a Technical Specialist for the Biotechnology and Pharmaceutical Practice Groups of Finnegan, one of the world's largest intellectual property law firms. Her diverse training and hands-on experience in biomedical research, biotech patent law, science education, technical writing and editing, and project management make her uniquely qualified to evaluate complex biomedical information and effectively communicate her findings.