

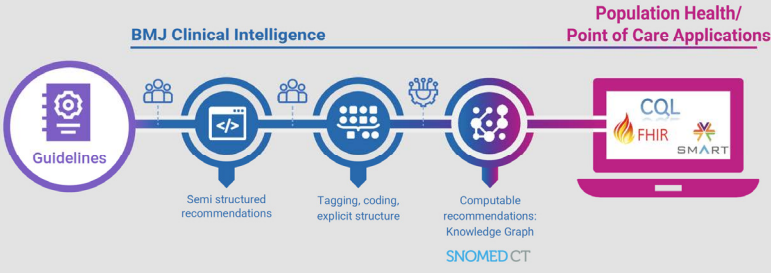
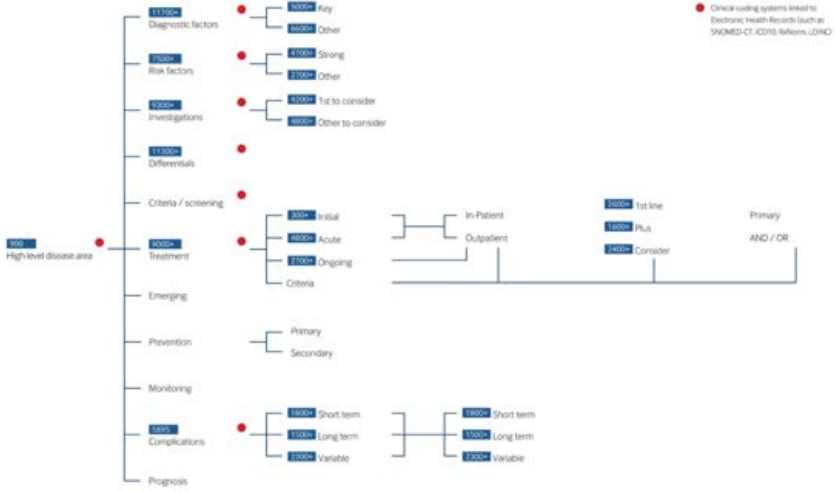
# EXHIBIT P

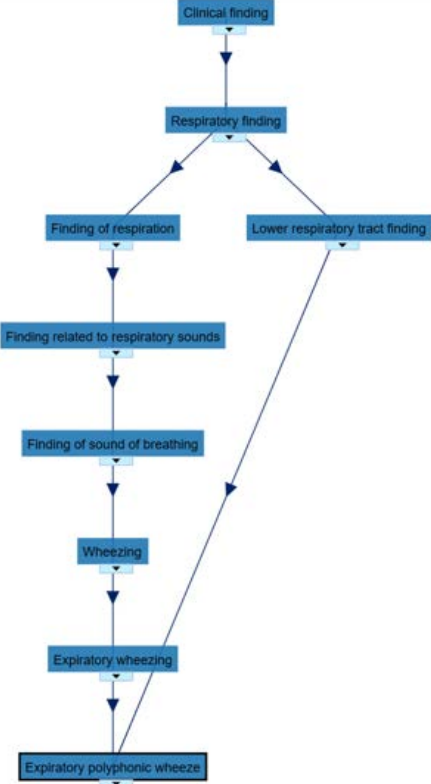
| #   | '882 Patent Claim                                                                                                             | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| 21e | wherein said diagnostic factor entries and said medical condition entries originate in at least one medical evidence journal, | <p>In BMJ Clinical Intelligence, said diagnostic factor entries and said medical condition entries originate in at least one medical evidence journal.</p> <p> BMJ Journals<br/> <a href="https://journals.bmj.com">https://journals.bmj.com</a></p> <p><b>BMJ Journals: Home</b></p> <p>Our <b>peer reviewed journals</b> include high impact, selective titles that publish innovative research, comprehensive reviews, educational content and case studies.</p> <p>(Website: BMJ Journals.)</p> <p>From the title of BMJ Journals website, BMJ operates a number of journals.</p> <p>The three medical publication examples are published by BMJ Open. It is an “online, open access journal,” which is one of the examples of a published journal.</p> <p></p> <p></p> <p>BMJ Open is an online, open access journal, dedicated to publishing medical research from all disciplines and therapeutic areas.</p> <p>(Website: BMJ Open.)</p> |

| #   | '882 Patent Claim                                                                                                                                                                                                           | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 21f | wherein said at least one medical evidence journal provides different taxonomies that arrange one or more of said diagnostic factors entries and/or one or more of said medical condition entries in different hierarchies, | <p>In BMJ Clinical Intelligence, the said at least one medical evidence journal provides different taxonomies that arrange one or more of said diagnostic factors entries and/or one or more of said medical condition entries in different hierarchies</p> <p>Below are two examples of medical evidence sources that are used by BMJ which have different taxonomies that arrange “wheezing” in different hierarchies. While “wheezing” is used as an example, BMJ’s Clinical Intelligence uses many different diagnostic factors and medical conditions that will equally meet this claim element.</p> <p>The first example of a medical evidence source is Publication 1.</p> <p>The first medical evidence source puts “wheezing-ill” in a first taxonomy that is based on the hierarchy of “classification of consultation.” See Figure 1 at the bottom of the screen capture.</p> |

| # | '882 Patent Claim | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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|   |                   | <div> <div>6</div> <div>Open Access</div> </div> <p>analysis of the data and development of the methodology. Challenges identified within the exploratory analysis were discussed among the entire research team and consensus was achieved.</p> <p><b>Creating the respiratory condition categories</b></p> <p>A hierarchical classification system was developed (figure 1). The first level of the hierarchy divided all consultations into either 'respiratory' or 'not respiratory'. The 'not respiratory' category included consultations for conditions such as injury or gastroenteritis, as well as consultations in which the respiratory system was examined as a screening test, but no signs, symptoms or diagnoses were recorded. These screening consultations were excluded so that the burden of respiratory illness estimate was not inflated by consultations that did not result from a respiratory illness.</p> <p>The second level of the hierarchy subclassified consultations into one or more specific respiratory conditions. When selecting these conditions, consideration was given to the degree to which these could be mapped to conditions of high prevalence (those that are common) and/or conditions responsible for significant morbidity and hospitalisation (those that are important). Initially 14 categories were selected; however, exploratory analysis indicated that the prevalence of some of these conditions was very low (&lt;4%), and insufficient to effectively train an algorithm. Consequently, conditions with low individual prevalence were combined within categories based on anatomical proximity (eg, pharyngitis and tonsillitis).</p> <p>Ultimately, six condition categories were created: (1) upper respiratory tract infections; (2) lower respiratory tract infections; (3) wheeze-related illness; (4) throat infections; (5) otitis media; and (6) other respiratory conditions. The main conditions included within each category are presented in table 1.</p> <p><b>Methodological decisions</b></p> <p>Inclusion of both practice nurse and GP consultations was initially planned as these both contribute to the primary care burden, however, during exploratory analysis, it was found that many nursing clinical records were created as a result of telephone calls (including messages left), immunisation visits and general health and development checks. It was not possible to cross reference clinical records with appointment bookings to differentiate between clinical consultations and other non-consultation records because many nurses did not keep appointments in the same manner as did GPs. Consequently, nurse-only clinical records were excluded. If a nurse and GP both consulted the same child on the same day, PROSAIC merged these clinical records so that important information was not omitted (GPs often did not re-record information already captured within the nursing notes).</p> <p>When interpreting the content of individual consultations, the following methodological decisions were made: (1) any directly declared and diagnosed condition by the GP was accepted at face value, even if the clinical experts within the research team disagreed with the GP's impression; (2) when the GP's clinical impression regarding symptoms differed from that of the child's (or their parent's) report, the GP's assessment was accepted at face value; (3) signs and symptoms reported within the consultation were deemed to be part of the current episode unless these were clearly delineated as being historical (ie, 'pneumonia 3 years ago') or absent (ie, 'no wheeze').</p> <p><b>Algorithm development and training</b></p> <p>The Child Respiratory Algorithm ('the Algorithm') was created to classify each consultation, based on the respiratory condition or conditions that were assessed or managed during the consultation, using PROSAIC software. The PROSAIC system was chosen: (1) as it had been successfully used previously to solve similar problems of classifying acute general practice presentations from clinical narrative; and (2) as the research team had expertise with this software; and also, (3) because it had been developed by the local PHO involved in the</p> <div> <pre> graph TD     A[Child-GP consultation] --&gt; B[Not respiratory]     A --&gt; C[Respiratory]     B --&gt; D[URTIs]     B --&gt; E[LRTIs]     C --&gt; F[Wheeze-ill]     C --&gt; G[Throat infections]     C --&gt; H[Otitis media]     C --&gt; I[Other respiratory] </pre> <p><b>Figure 1</b> Hierarchy for classification of consultations, using free text notes, diagnostic Read codes and medication prescription. GP, general practitioner; URTI, upper respiratory tract infection; LRTI, lower respiratory tract infection; Wheeze-ill, wheeze-related illness.</p> </div> <p>MacRae J. et al. <i>BMJ Open</i> 2015;5:e008160. doi:10.1136/bmjopen-2015-008160</p> <p>(Publication 1 at 3.)</p> <p>The first medical evidence source also puts “wheeze” and wheeze-related conditions into another taxonomy, which is a Table 1 that is based on the hierarchy of respiratory classification categories.</p> |

| #                                  | '882 Patent Claim                                                                                                                                                                                                                                                                                                                                                                                      | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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|                                    |                                                                                                                                                                                                                                                                                                                                                                                                        | <div><p>Table 1 Respiratory classification categories and the conditions included in each</p><table><tr><th>Classification category</th><th>Respiratory conditions included within category*</th></tr><tr><td>Upper respiratory tract infections</td><td><ul style="list-style-type: none"><li>▶ Cold</li><li>▶ Croup</li><li>▶ Influenza-like illness</li><li>▶ Viral influenza in the absence of associated signs or symptoms indicative of lower respiratory tract infection</li><li>▶ Scarlet fever</li><li>▶ Tracheitis</li><li>▶ Cough in the absence of associated signs or symptoms indicative of asthma or lower respiratory tract infection</li></ul></td></tr><tr><td>Lower respiratory tract infections</td><td><ul style="list-style-type: none"><li>▶ Bronchitis</li><li>▶ Bronchopneumonia</li><li>▶ Chest infection</li><li>▶ Chronic lung disease</li><li>▶ Cystic fibrosis</li><li>▶ Lung abscess/bronchiectasis</li><li>▶ Pertussis</li><li>▶ Pleurisy</li><li>▶ Pneumonia</li><li>▶ Tuberculosis</li><li>▶ Whooping cough</li></ul></td></tr><tr><td>Wheeze-related illness</td><td><ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul></td></tr><tr><td>Throat infections</td><td><ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul></td></tr><tr><td>Otitis media</td><td><ul style="list-style-type: none"><li>▶ Acute otitis media</li><li>▶ Chronic suppurative otitis media</li><li>▶ Otitis media with effusion</li><li>▶ Glue ear</li></ul></td></tr><tr><td>Other respiratory</td><td><ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul></td></tr></table></div> <p>(Publication 1 at 4.)</p> <p>The second example of a medical evidence source is SNOMED CT, which is used by BMJ Clinical Intelligence as shown in the graph below.</p> | Classification category | Respiratory conditions included within category* | Upper respiratory tract infections | <ul style="list-style-type: none"><li>▶ Cold</li><li>▶ Croup</li><li>▶ Influenza-like illness</li><li>▶ Viral influenza in the absence of associated signs or symptoms indicative of lower respiratory tract infection</li><li>▶ Scarlet fever</li><li>▶ Tracheitis</li><li>▶ Cough in the absence of associated signs or symptoms indicative of asthma or lower respiratory tract infection</li></ul> | Lower respiratory tract infections | <ul style="list-style-type: none"><li>▶ Bronchitis</li><li>▶ Bronchopneumonia</li><li>▶ Chest infection</li><li>▶ Chronic lung disease</li><li>▶ Cystic fibrosis</li><li>▶ Lung abscess/bronchiectasis</li><li>▶ Pertussis</li><li>▶ Pleurisy</li><li>▶ Pneumonia</li><li>▶ Tuberculosis</li><li>▶ Whooping cough</li></ul> | Wheeze-related illness | <ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul> | Throat infections | <ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul> | Otitis media | <ul style="list-style-type: none"><li>▶ Acute otitis media</li><li>▶ Chronic suppurative otitis media</li><li>▶ Otitis media with effusion</li><li>▶ Glue ear</li></ul> | Other respiratory | <ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul> |
| Classification category            | Respiratory conditions included within category*                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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| Wheeze-related illness             | <ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul>                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
| Throat infections                  | <ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul>                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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| Other respiratory                  | <ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |

| # | '882 Patent Claim | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|   |                   | <p><b>Getting evidence into analysis and decision support</b></p>  <p>(BMJ Presentation at 20.)</p> <p>SNOMED-CT is also explicitly mentioned in BMJ's Clinical Intelligence website regarding the knowledge graph architecture as being linked to clinical coding systems.</p>  <p>(BMJ Website: Knowledge Graph Architecture.)</p> <p>The second medical evidence source, SNOMED CT, puts “wheezing” in another taxonomy that is based on the hierarchy of respiratory sounds. The link below reveals a screen capture of the “Visualization” tab that illustrates this hierarchy.</p> |

| #   | '882 Patent Claim                                                                                                                                                      | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                                                                                        |  <pre> graph TD     A[Clinical finding] --&gt; B[Respiratory finding]     B --&gt; C[Finding of respiration]     B --&gt; D[Lower respiratory tract finding]     C --&gt; E[Finding related to respiratory sounds]     E --&gt; F[Finding of sound of breathing]     F --&gt; G[Wheezing]     G --&gt; H[Expiratory wheezing]     H --&gt; I[Expiratory polyphonic wheeze]     D --&gt; I   </pre> <p>(Website: Bioportal).</p> <p>In the two medical evidence sources above, wheezing is arranged in different hierarchies based on different concepts and is associated with different other diagnostic factors and/or medical conditions such as “throat infection” in the first medical evidence source (Publication 1), and “expiratory polyphonic wheeze” in the second medical evidence source (SNOMED).</p> |
| 21g | and wherein a first diagnostic factor entry is discussed in part of said at least one medical evidence journal as being indicative of a first medical condition entry; | <p>In BMJ Clinical Intelligence, a first diagnostic factor is discussed in part of said medical evidence journal as being indicative of a first medical condition entry.</p> <p>In Publication 1, the authors discussed that “wheeze” is indicative of “Asthma,” which is a medical condition.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

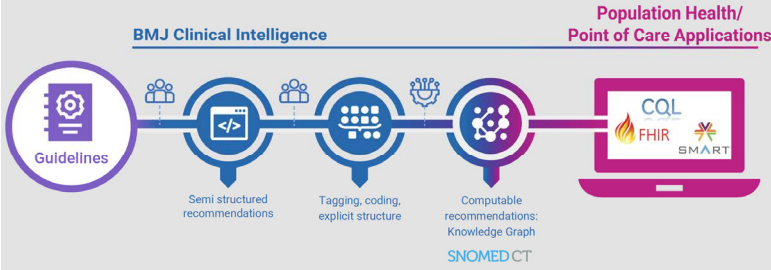
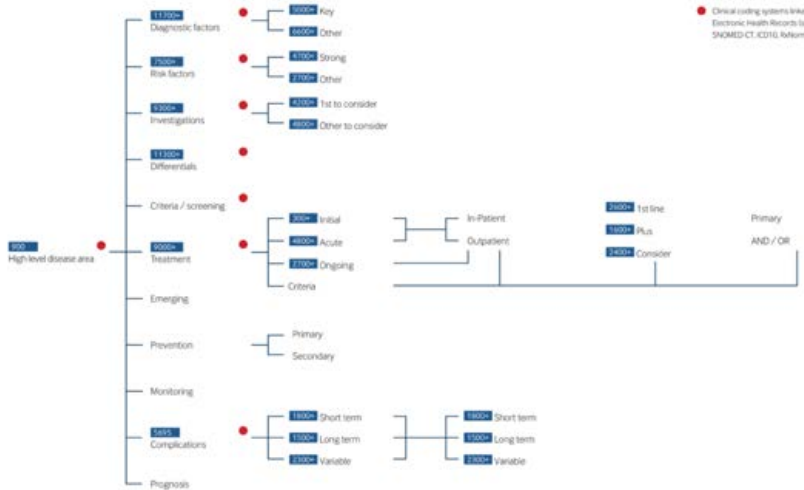
| #   | '882 Patent Claim                                                                                                                                                                                                                                                                                                                       | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                         | <p>Wheeze-related illness</p> <ul style="list-style-type: none"> <li>▶ Bronchiolitis</li> <li>▶ Virus-induced transient wheeze</li> <li>▶ Persistent wheeze (non-atopic or atopic)</li> <li>▶ Asthma</li> </ul> <p>(Publication 1 at 4.)</p> <p>While in this claim chart “wheeze” is used as an example of “first diagnostic factor” recited in the claim and “asthma” is used as “first medical condition” recited in the claim, BMJ’s Clinical Intelligence uses many more examples of diagnostic factors and medical conditions that will meet the claim element.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 21h | <p>establish one or more application programming interfaces (APIs) for said graph database, said one or more APIs allowing an application to integrate with said graph database to access said diagnostic factor entries and said medical condition entries in said graph database in order to generate a healthcare determination;</p> | <p>BMJ establishes one or more application programming interfaces (APIs) for said graph database, said one or more APIs allowing an application to integrate with said graph database to access said diagnostic factor entries and said medical condition entries in said graph database in order to generate a healthcare determination.</p> <p>As shown in the Presentation, BMJ has established one or more APIs (e.g., CQL, FHIR, and SMART) for its graph database that allow software applications to integrate with the graph database to access its nodes and generate a healthcare determination.</p> <div> <p><b>Getting evidence into analysis and decision support</b></p> </div> <p>(BMJ Presentation at 20.)</p> <p>BMJ indicates that the use cases of Clinical Intelligence include “directing care,” and “support[ing] next best clinical action.” (BMJ Presentation at 21.) This shows that the APIs enables software to generate “a healthcare determination,” as recited in the claim.</p> |

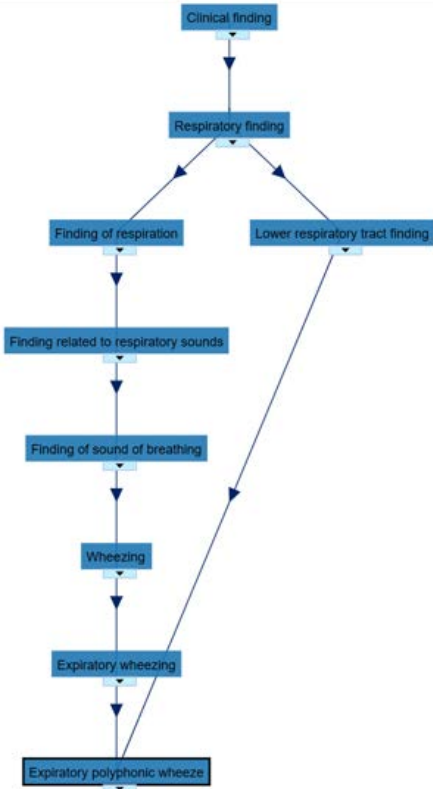
| #   | '882 Patent Claim                                                                                                                             | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|     |                                                                                                                                               | <p>system identifies factor entries linked to a medical condition but not in the current patient record. (BMJ Presentation at 43.)</p> <p><b>BMJ Clinical Intelligence then analyses the patient record and shows when concepts match. It also highlights areas where a match is expected based on guidelines, but does not appear in the record</b></p> <p>(BMJ Presentation at 43.)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 32e | wherein said known and unknown diagnostic factor entries and said medical condition entry originate in at least one medical evidence journal, | <p>In BMJ Clinical Intelligence, said known and unknown diagnostic factor entries and said medical condition entry originate in at least one medical evidence journal.</p> <p> BMJ Journals<br/> <a href="https://journals.bmj.com">https://journals.bmj.com</a> :</p> <p><b>BMJ Journals: Home</b></p> <p>Our <b>peer reviewed journals</b> include high impact, selective titles that publish innovative research, comprehensive reviews, educational content and case studies.</p> <p>(Website: BMJ Journals.)</p> <p>From the title of BMJ Journals website, BMJ operates a number of journals.</p> <p>The three medical publication examples are published by BMJ Open. It is an “online, open access journal,” which is one of the examples of a published journal.</p> |

| #   | '882 Patent Claim                                                                                                                                                                                                                     | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|     |                                                                                                                                                                                                                                       | <br><br><p>BMJ Open is an online, open access journal, dedicated to publishing medical research from all disciplines and therapeutic areas.</p> <p>(Website: BMJ Open.)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 32f | wherein said at least one medical evidence journal provides different taxonomies that arrange one or more of said known and unknown diagnostic factors and/or one or more of said medical condition entries in different hierarchies, | <p>In BMJ Clinical Intelligence, the said at least one medical evidence journal provides different taxonomies that arrange one or more of said diagnostic factors entries and/or one or more of said medical condition entries in different hierarchies</p> <p>Below are two examples of medical evidence sources that are used by BMJ which have different taxonomies that arrange “wheezing” in different hierarchies. While “wheezing” is used as an example, BMJ’s Clinical Intelligence uses many different diagnostic factors and medical conditions that will equally meet this claim element.</p> <p>The first example of a medical evidence source is Publication 1.</p> <p>The first medical evidence source puts “wheezing-ill” in a first taxonomy that is based on the hierarchy of “classification of consultation.” See Figure 1 at the bottom of the screen capture.</p> |

| # | '882 Patent Claim | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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|   |                   | <p><b>6</b> <span style="float: right;">Open Access</span></p> <p>analysis of the data and development of the methodology. Challenges identified within the exploratory analysis were discussed among the entire research team and consensus was achieved.</p> <p><b>Creating the respiratory condition categories</b></p> <p>A hierarchical classification system was developed (figure 1). The first level of the hierarchy divided all consultations into either 'respiratory' or 'not respiratory'. The 'not respiratory' category included consultations for conditions such as injury or gastroenteritis, as well as consultations in which the respiratory system was examined as a screening test, but no signs, symptoms or diagnoses were recorded. These screening consultations were excluded so that the burden of respiratory illness estimate was not inflated by consultations that did not result from a respiratory illness.</p> <p>The second level of the hierarchy subclassified consultations into one or more specific respiratory conditions. When selecting these conditions, consideration was given to the degree to which these could be mapped to conditions of high prevalence (those that are common) and/or conditions responsible for significant morbidity and hospitalisation (those that are important). Initially 14 categories were selected; however, exploratory analysis indicated that the prevalence of some of these conditions was very low (&lt;4%), and insufficient to effectively train an algorithm. Consequently, conditions with low individual prevalence were combined within categories based on anatomical proximity (eg, pharyngitis and tonsillitis).</p> <p>Ultimately, six condition categories were created: (1) upper respiratory tract infections; (2) lower respiratory tract infections; (3) wheeze-related illness; (4) throat infections; (5) otitis media; and (6) other respiratory conditions. The main conditions included within each category are presented in table 1.</p> <p><b>Methodological decisions</b></p> <p>Inclusion of both practice nurse and GP consultations was initially planned as these both contribute to the primary care burden, however, during exploratory analysis, it was found that many nursing clinical records were created as a result of telephone calls (including messages left), immunisation visits and general health and development checks. It was not possible to cross reference clinical records with appointment bookings to differentiate between clinical consultations and other non-consultation records because many nurses did not keep appointments in the same manner as did GPs. Consequently, nurse-only clinical records were excluded. If a nurse and GP both consulted the same child on the same day, PROSAIC merged these clinical records so that important information was not omitted (GPs often did not re-record information already captured within the nursing notes).</p> <p>When interpreting the content of individual consultations, the following methodological decisions were made: (1) any directly declared and diagnosed condition by the GP was accepted at face value, even if the clinical experts within the research team disagreed with the GP's impression; (2) when the GP's clinical impression regarding symptoms differed from that of the child's (or their parent's) report, the GP's assessment was accepted at face value; (3) signs and symptoms reported within the consultation were deemed to be part of the current episode unless these were clearly delineated as being historical (ie, 'pneumonia 3 years ago') or absent (ie, 'no wheeze').</p> <p><b>Algorithm development and training</b></p> <p>The Child Respiratory Algorithm ('the Algorithm') was created to classify each consultation, based on the respiratory condition or conditions that were assessed or managed during the consultation, using PROSAIC software. The PROSAIC system was chosen: (1) as it had been successfully used previously to solve similar problems of classifying acute general practice presentations from clinical narrative; and (2) as the research team had expertise with this software; and also, (3) because it had been developed by the local PHO involved in the</p> <div style="text-align: center;"> <pre> graph TD     A[Child-GP consultation] --&gt; B[Not respiratory]     A --&gt; C[Respiratory]     B --&gt; D[URT]     B --&gt; E[LRT]     C --&gt; F[Wheeze-ill]     C --&gt; G[Throat infections]     C --&gt; H[Otitis media]     C --&gt; I[Other respiratory] </pre> </div> <p><b>Figure 1</b> Hierarchy for classification of consultations, using free text notes, diagnostic Read codes and medication prescription. GP, general practitioner; URTI, upper respiratory tract infection; LRTI, lower respiratory tract infection; Wheeze-ill, wheeze-related illness.</p> <p>MacRae J, et al. <i>BMJ Open</i> 2015;5:e008160. doi:10.1136/bmjopen-2015-008160</p> <p>(Publication 1 at 3.)</p> <p>The first medical evidence source also puts “wheeze” and wheeze-related conditions into another taxonomy, which is a Table 1 that is based on the hierarchy of respiratory classification categories.</p> |

| #                                  | '882 Patent Claim                                                                                                                                                                                                                                                                                                                                                                                      | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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|                                    |                                                                                                                                                                                                                                                                                                                                                                                                        | <div><p>Table 1 Respiratory classification categories and the conditions included in each</p><table><tr><th>Classification category</th><th>Respiratory conditions included within category*</th></tr><tr><td>Upper respiratory tract infections</td><td><ul style="list-style-type: none"><li>▶ Cold</li><li>▶ Croup</li><li>▶ Influenza-like illness</li><li>▶ Viral influenza in the absence of associated signs or symptoms indicative of lower respiratory tract infection</li><li>▶ Scarlet fever</li><li>▶ Tracheitis</li><li>▶ Cough in the absence of associated signs or symptoms indicative of asthma or lower respiratory tract infection</li></ul></td></tr><tr><td>Lower respiratory tract infections</td><td><ul style="list-style-type: none"><li>▶ Bronchitis</li><li>▶ Bronchopneumonia</li><li>▶ Chest infection</li><li>▶ Chronic lung disease</li><li>▶ Cystic fibrosis</li><li>▶ Lung abscess/bronchiectasis</li><li>▶ Pertussis</li><li>▶ Pleurisy</li><li>▶ Pneumonia</li><li>▶ Tuberculosis</li><li>▶ Whooping cough</li></ul></td></tr><tr><td>Wheeze-related illness</td><td><ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul></td></tr><tr><td>Throat infections</td><td><ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul></td></tr><tr><td>Otitis media</td><td><ul style="list-style-type: none"><li>▶ Acute otitis media</li><li>▶ Chronic suppurative otitis media</li><li>▶ Otitis media with effusion</li><li>▶ Glue ear</li></ul></td></tr><tr><td>Other respiratory</td><td><ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul></td></tr></table></div> <p>(Publication 1 at 4.)</p> <p>The second example of a medical evidence source is SNOMED CT, which is used by BMJ Clinical Intelligence as shown in the graph below.</p> | Classification category | Respiratory conditions included within category* | Upper respiratory tract infections | <ul style="list-style-type: none"><li>▶ Cold</li><li>▶ Croup</li><li>▶ Influenza-like illness</li><li>▶ Viral influenza in the absence of associated signs or symptoms indicative of lower respiratory tract infection</li><li>▶ Scarlet fever</li><li>▶ Tracheitis</li><li>▶ Cough in the absence of associated signs or symptoms indicative of asthma or lower respiratory tract infection</li></ul> | Lower respiratory tract infections | <ul style="list-style-type: none"><li>▶ Bronchitis</li><li>▶ Bronchopneumonia</li><li>▶ Chest infection</li><li>▶ Chronic lung disease</li><li>▶ Cystic fibrosis</li><li>▶ Lung abscess/bronchiectasis</li><li>▶ Pertussis</li><li>▶ Pleurisy</li><li>▶ Pneumonia</li><li>▶ Tuberculosis</li><li>▶ Whooping cough</li></ul> | Wheeze-related illness | <ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul> | Throat infections | <ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul> | Otitis media | <ul style="list-style-type: none"><li>▶ Acute otitis media</li><li>▶ Chronic suppurative otitis media</li><li>▶ Otitis media with effusion</li><li>▶ Glue ear</li></ul> | Other respiratory | <ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul> |
| Classification category            | Respiratory conditions included within category*                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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| Wheeze-related illness             | <ul style="list-style-type: none"><li>▶ Bronchiolitis</li><li>▶ Virus-induced transient wheeze</li><li>▶ Persistent wheeze (non-atopic or atopic)</li><li>▶ Asthma</li></ul>                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
| Throat infections                  | <ul style="list-style-type: none"><li>▶ Infectious mononucleosis</li><li>▶ Laryngitis</li><li>▶ Pharyngitis</li><li>▶ Pharyngotonsillitis</li><li>▶ Tonsillitis</li></ul>                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |
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| Other respiratory                  | <ul style="list-style-type: none"><li>▶ Conditions with very low prevalence) for which there are not individual categories<ul style="list-style-type: none"><li>– Allergic rhinitis</li><li>– Hay fever</li><li>– Rhinitis</li><li>– Sinusitis</li></ul></li><li>▶ Consultations in which respiratory symptoms are present but there is insufficient</li></ul>                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                                  |                                    |                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                                                                                                                                                                                                                                                                                                             |                        |                                                                                                                                                                              |                   |                                                                                                                                                                           |              |                                                                                                                                                                         |                   |                                                                                                                                                                                                                                                                                                                                                                |

| # | '882 Patent Claim | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|   |                   | <p><b>Getting evidence into analysis and decision support</b></p>  <p>(BMJ Presentation at 20.)</p> <p>SNOMED-CT is also explicitly mentioned in BMJ’s Clinical Intelligence website regarding the knowledge graph architecture as being linked to clinical coding systems.</p>  <p>(BMJ Website: Knowledge Graph Architecture.)</p> <p>The second medical evidence source, SNOMED CT, puts “wheezing” in another taxonomy that is based on the hierarchy of respiratory sounds. The link below reveals a screen capture of the “Visualization” tab that illustrates this hierarchy.</p> |

| #   | '882 Patent Claim                                                                                                                                                      | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|     |                                                                                                                                                                        |  <pre> graph TD     A[Clinical finding] --&gt; B[Respiratory finding]     B --&gt; C[Finding of respiration]     B --&gt; D[Lower respiratory tract finding]     C --&gt; E[Finding related to respiratory sounds]     E --&gt; F[Finding of sound of breathing]     F --&gt; G[Wheezing]     G --&gt; H[Expiratory wheezing]     H --&gt; I[Expiratory polyphonic wheeze]     D --&gt; I   </pre> <p>(Website: Bioportal).</p> <p>In the two medical evidence sources above, wheezing is arranged in different hierarchies based on different concepts and is associated with different other diagnostic factors and/or medical conditions such as “throat infection” in the first medical evidence source (Publication 1), and “expiratory polyphonic wheeze” in the second medical evidence source (SNOMED).</p> |
| 32g | and wherein a first diagnostic factor entry is discussed in part of said at least one medical evidence journal as being indicative of a first medical condition entry; | <p>In BMJ Clinical Intelligence, a first diagnostic factor is discussed in part of said medical evidence journal as being indicative of a first medical condition entry.</p> <p>In Publication 1, the authors discussed that “wheeze” is indicative of “Asthma,” which is a medical condition.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| #   | '882 Patent Claim                                                                                                                                                                                                                                                                                                                                                      | Accused Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Wheeze-related illness</b></p> <ul style="list-style-type: none"> <li>▶ Bronchiolitis</li> <li>▶ Virus-induced transient wheeze</li> <li>▶ Persistent wheeze (non-atopic or atopic)</li> <li>▶ Asthma</li> </ul> <p>(Publication 1 at 4.)</p> <p>While in this claim chart “wheeze” is used as an example of “first diagnostic factor” recited in the claim and “asthma” is used as “first medical condition” recited in the claim, BMJ’s Clinical Intelligence uses many more examples of diagnostic factors and medical conditions that will meet the claim element.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 32h | <p>establish one or more application programming interfaces (APIs) for said graph database, said one or more APIs allowing an application to integrate with said graph database to access said known and unknown diagnostic factor entries that are linked to said medical condition entry in said graph database in order to generate a healthcare determination;</p> | <p>BMJ establishes one or more application programming interfaces (APIs) for said graph database, said one or more APIs allowing an application to integrate with said graph database to access said diagnostic factor entries and said medical condition entries in said graph database in order to generate a healthcare determination</p> <p>As shown in the Presentation, BMJ has established one or more APIs (e.g., CQL, FHIR, and SMART) for its graph database that allow software applications to integrate with the graph database to access its nodes and generate a healthcare determination.</p> <div> <p><b>Getting evidence into analysis and decision support</b></p> </div> <p>(BMJ Presentation at 20.)</p> <p>BMJ indicates that the use cases of Clinical Intelligence include “directing care,” and “support[ing] next best clinical action.” (BMJ Presentation at 21.) This shows that the APIs enables software to generate “a healthcare determination,” as recited in the claim.</p> |