

Online Resource 3 collected study items for all included studies

Title: Moving from bytes to bedside: a systematic review on the use of artificial intelligence in the intensive care unit  
 Intensive Care Medicine  
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| Lead author              | Year | Country         | Study design                  | Algorithm name | Effect on health-related outcomes        | Study aim (categorized)                         | Study aim description                                | Dataset size 1 (categorized) | Dataset size 1 | Dataset size 2 (categorized)* | Dataset size 2* | Use of MIMIC   | Level of validation                        | Level of clinical readiness | Overall risk of bias |
|--------------------------|------|-----------------|-------------------------------|----------------|--|---|--|------------------------------|----------------|-------------------------------|-----------------|----------------|--|-----------------------------|----------------------|
| Yu, K et al.             | 2020 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 10,000-100,000               | 22,049         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Roimi, M et al.          | 2020 | Israel          | Retrospective                 | no information | NA                                       | Predicting complications                        | Blood Stream Infection                               | 1,000-10,000                 | 2,351          | 1,000-10,000                  | 1,021           | yes External   | 5. Model validation                        | High                        |                      |
| Lin, Y et al.            | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting readmissions                         | Readmission  | 10,000-100,000               | 35,334         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Zheng, W et al.          | 2020 | United States   | Retrospective                 | no information | NA                                       | Predicting medication administration            | Adaptive medication monitoring from EEG signals      | 100-1,000                    | 172            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Raghuj, S et al.         | 2020 | The Netherlands | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Epileptic Seizure Detection                          | 0-100                        | 60             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Azizmandi, C et al.      | 2014 | Colombia        | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Optimizing Time of Extubation                        | 0-100                        | 66             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Maharlou, H et al.       | 2018 | Iran            | Retrospective                 | no information | NA                                       | Predicting length of stay                       | Length of stay after cardiac surgery                 | 100-1,000                    | 311            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Reamaron, N et al.       | 2019 | United States   | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Automated ARDS detection                             | 100-1,000                    | 401            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Unclear                     |                      |
| Kiao, G et al.           | 2019 | China           | Retrospective                 | no information | NA                                       | Predicting complications                        | Hypotension  | 1,000-10,000                 | 2,866          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Yamamura, S et al.       | 2003 | Japan           | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Identifying severely ill patients                    | 100-1,000                    | 150            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Celi, L et al.           | 2008 | United States   | Retrospective                 | no information | NA                                       | Determining physiological thresholds            | Fluid requirement                                    | 1,000-10,000                 | 3,014          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Liu, V et al.            | 2013 | United States   | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Detection of pneumonia in radiograph reports         | 100,000+                     | 194,615        | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Barret, L et al.         | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | One-year mortality                                   | 1,000-10,000                 | 5,436          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Komorowski, M et al.     | 2018 | United Kingdom  | Retrospective                 | AI Clinician   | NA                                       | Predicting complications                        | Sepsis   | 10,000-100,000               | 17,083         | 10,000-100,000                | 79,073          | yes External   | 5. Model validation                        | High                        |                      |
| Ghosh, S et al.          | 2016 | Australia       | Retrospective                 | no information | NA                                       | Predicting complications                        | Hypotension  | 100,000+                     | 143,038        | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Barro, S et al.          | 2001 | Spain           | Retrospective                 | no information | NA                                       | Assessing videos and images                     | Patients supervision systems                         | no information               | no information | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Unclear                     |                      |
| Angelotti, G et al.      | 2018 | Italy           | Retrospective                 | no information | NA                                       | Predicting complications                        | Hypotension  | 0-100                        | 86             | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Adlassnig, K et al.      | 2009 | Austria         | Retrospective                 | MONI-ICU       | NA                                       | Predicting complications                        | Hospital acquired infections surveillance            | no information               | no information | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Unclear                     |                      |
| Koller, W et al.         | 2010 | Austria         | Prospective Observational     | MONI-ICU       | NA                                       | Predicting complications                        | Hospital acquired infections surveillance            | 0-100                        | 99             | NA                            | NA              | no Prospective | 6. Real-time model testing                 | NA                          |                      |
| De Bruin, S et al.       | 2013 | Austria         | Prospective Observational     | MONI-ICU       | NA                                       | Predicting complications                        | Hospital acquired infections surveillance            | 100-1,000                    | 106            | NA                            | NA              | no Prospective | 6. Real-time model testing                 | NA                          |                      |
| Mariazi, Z et al.        | 2000 | Poland          | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Intracranial Pressure                                | 0-100                        | 61             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Feretakis, G et al.      | 2019 | Greece          | Retrospective                 | no information | NA                                       | Predicting medication administration            | Antibiotic therapy decisions                         | 10,000-100,000               | 23,067         | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Hsieh, M et al.          | 2018 | United States   | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Optimizing Time of Extubation                        | 100-1,000                    | 3,602          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Holmgren, G et al.       | 2019 | Sweden          | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Improving SAPS 3                                     | 100,000+                     | 217,289        | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Sun, H et al.            | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting complications                        | Level of consciousness and delirium tracking         | 100-1,000                    | 174            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Sheng, C et al.          | 2009 | China           | Retrospective                 | no information | NA                                       | Assessing videos and images                     | Automated radiography tube detection                 | 100-1,000                    | 107            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Roumani, Y et al.        | 2018 | United States   | Retrospective                 | no information | NA                                       | Predicting readmissions                         | Readmission to ICU                                   | 1,000-10,000                 | 2,308          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Lin, S et al.            | 2006 | China           | Retrospective                 | no information | NA                                       | Predicting mortality                            | Survival prediction                                  | 1,000-10,000                 | 1,496          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Hsieh, M et al.          | 2018 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality after unexpected extubation                | 100-1,000                    | 341            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Nagao, S et al.          | 2016 | United States   | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of sedation levels                    | 0-100                        | 60             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Manna, T et al.          | 2019 | India           | Retrospective                 | no information | NA                                       | Alarm reduction                                 | Arrhythmia alarm reduction                           | no information               | no information | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Shickel, B et al.        | 2019 | United States   | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | DeepSOFA   | 10,000-100,000               | 36,216         | 10,000-100,000                | 48,948          | yes External   | 5. Model validation                        | High                        |                      |
| Amorim, R et al.         | 2020 | Brazil          | Retrospective                 | no information | NA                                       | Predicting mortality                            | Early TBI Mortality                                  | 100-1,000                    | 517            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Abojkhail, A et al.      | 2008 | United States   | Retrospective                 | no information | NA                                       | Alarm reduction                                 | Arrhythmia alarm reduction                           | 100-1,000                    | 496            | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Cho, L et al.            | 2013 | Korea           | Non-Randomized Clinical Trial | NA             | Significantly reduced prevalence of HAPU | Predicting complications                        | Hospital acquired pressure ulcers                    | 100-1,000                    | 865            | NA                            | NA              | no Clinical    | 8. Clinical outcome evaluation             | NA                          |                      |
| Anand, R et al.          | 2018 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality in diabetic icu patients                   | 1,000-10,000                 | 4,111          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Au-Yeung, W et al.       | 2019 | United States   | Retrospective                 | no information | NA                                       | Alarm reduction                                 | Arrhythmia alarm reduction                           | 1,000-10,000                 | 1,250          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Schurink, C et al.       | 2007 | The Netherlands | Retrospective                 | no information | NA                                       | Predicting complications                        | Ventilator associated pneumonia                      | 100-1,000                    | 672            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Kannathal, M et al.      | 2003 | Singapore       | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of cardiac patient states             | 100-1,000                    | 800            | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Goehans, B et al.        | 2017 | The Netherlands | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of sepsis patients                    | 100-1,000                    | 522            | 100-1,000                     | 522             | yes Internal   | 5. Model validation                        | Low                         |                      |
| Chiofalo, C et al.       | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting complications                        | Acute Kidney Injury                                  | 1,000-10,000                 | 6,530          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Liu, Q et al.            | 2011 | China           | Retrospective                 | no information | NA                                       | Predicting mortality                            | Brain death prediction                               | no information               | no information | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Yee, C et al.            | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting complications                        | Septic shock   | 1,000-10,000                 | 9,165          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Ribas Ripoll, V et al.   | 2019 | Spain           | Retrospective                 | no information | NA                                       | Determining physiological thresholds            | Blood pressure prediction                            | 10,000-100,000               | 35,188         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Wong, J et al.           | 1999 | United Kingdom  | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 1,000-10,000                 | 8,786          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Giraldo, B et al.        | 2006 | Spain           | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of weaning trials                     | 0-100                        | 64             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Giraldo, B et al.        | 2006 | Spain           | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of weaning trials                     | 100-1,000                    | 146            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Sun, H et al.            | 2018 | United States   | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of sedation levels                    | 100-1,000                    | 154            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Kaji, A et al.           | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting complications                        | Sepsis   | 10,000-100,000               | 56,841         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| De Bruijn, N et al.      | 1999 | The Netherlands | Retrospective                 | no information | NA                                       | Predicting medication administration            | Antibiotic therapy decisions                         | 0-100                        | 12             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Zhang, F et al.          | 2011 | Singapore       | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Intracranial Pressure                                | 0-100                        | 53             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Tran, N et al.           | 2019 | United States   | Retrospective                 | no information | NA                                       | Predicting complications                        | Acute Kidney Injury in severely burned patients      | 0-100                        | 50             | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Venugopalan, J et al.    | 2017 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 10,000-100,000               | 32,331         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Struck, A et al.         | 2017 | Australia       | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Epileptic Seizure Detection                          | 1,000-10,000                 | 7,716          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Nguyen, P et al.         | 2017 | Australia       | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 1,000-10,000                 | 4,000          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Flechet, M et al.        | 2019 | Belgium         | Prospective Observational     | NA             | NA                                       | Predicting complications                        | Acute Kidney Injury                                  | 100-1,000                    | 252            | NA                            | NA              | no Prospective | 6. Real-time model testing                 | NA                          |                      |
| Branch-Ellman, W et al.  | 2015 | United States   | Prospective Observational     | no information | NA                                       | Predicting complications                        | Catheter associated urinary tract infection          | 10,000-100,000               | 43,609         | NA                            | NA              | no Prospective | 6. Real-time model testing                 | NA                          |                      |
| Clermont, G et al.       | 2001 | United States   | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 1,000-10,000                 | 1,647          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Dauvin, A et al.         | 2019 | United States   | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Classification of baseline hemoglobin and creatinine | 10,000-100,000               | 21,476         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Davood, R et al.         | 2018 | Iran            | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 10,000-100,000               | 10,972         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| De Bruin, J et al.       | 2013 | Austria         | Retrospective                 | MONI-ICU       | NA                                       | Predicting complications                        | Central venous catheter related infections           | 1,000-10,000                 | 2,429          | NA                            | NA              | no Internal    | 3&4. Model validation                      | NA                          |                      |
| Koller, W et al.         | 2015 | Austria         | Retrospective                 | MONI-ICU       | NA                                       | Predicting complications                        | Hospital acquired infections surveillance            | 1,000-10,000                 | 2,105          | NA                            | NA              | no External    | 5. Model validation                        | NA                          |                      |
| De Bruin, J et al.       | 2016 | Austria         | Retrospective                 | MONI-ICU       | NA                                       | Predicting complications                        | Detecting borderline infections                      | 1,000-10,000                 | 4,120          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | Low                         |                      |
| Awad, A et al.           | 2019 | United Kingdom  | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 1,000-10,000                 | 4,000          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Awad, A et al.           | 2017 | United Kingdom  | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality <6 h of admission                          | 10,000-100,000               | 11,722         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Calcedo-Torres, W et al. | 2019 | New Zealand     | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality  | 10,000-100,000               | 22,413         | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Cherifa, M et al.        | 2020 | France          | Retrospective                 | no information | NA                                       | Predicting complications                        | Hypotension  | 1,000-10,000                 | 1,276          | 0-100                         | 65              | yes External   | 5. Model validation                        | High                        |                      |
| Chen, T et al.           | 2019 | China           | Retrospective                 | no information | NA                                       | Predicting complications                        | Extubation Failure                                   | 1,000-10,000                 | 3,636          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Van Steenkiste, T et al. | 2019 | Belgium         | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Blood culture outcomes                               | 1,000-10,000                 | 2,177          | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Miao, F et al.           | 2010 | China           | Retrospective                 | no information | NA                                       | Determining physiological thresholds            | Blood pressure prediction                            | 1,000-10,000                 | 1,711          | 1,000-10,000                  | 1,342           | yes External   | 5. Model validation                        | High                        |                      |
| Santos, J et al.         | 2020 | Brazil          | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | 30-day quality adjusted survival in cancer patients  | 1,000-10,000                 | 808            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Garcia-Gallo, J et al.   | 2020 | Colombia        | Retrospective                 | no information | NA                                       | Predicting mortality                            | 1-year mortality in ICU sepsis patients              | 1,000-10,000                 | 5,650          | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Kim, S et al.            | 2016 | South Korea     | Retrospective                 | HeartCast      | NA                                       | Predicting complications                        | Hypotension  | 100-1,000                    | 947            | NA                            | NA              | yes Internal   | 3&4. Model prototyping & Model development | High                        |                      |
| Kang, M et al.           | 2020 | Korea           | Retrospective                 | no information | NA                                       | Predicting mortality                            | Mortality in CRRT patients                           | 1,000-10,000                 | 157            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Yuan, K et al.           | 2020 | Taiwan          | Retrospective                 | no information | NA                                       | Predicting complications                        | Sepsis   | 100-1,000                    | 434            | NA                            | NA              | no Internal    | 3&4. Model prototyping & Model development | High                        |                      |
| Ruedel, J et al.         | 2020 | Germany         | Retrospective                 | no information | NA                                       | Improving prognostic models/risk scoring system | Detecting lung infection on supine chest radiographs | 100-1,000                    | 166            | NA                            | NA              | no External    | 5. Model validation                        | NA                          |                      |
| Xu, Z et al.             | 2020 | United States   | Retrospective                 | no information | NA                                       | Classifying sub-populations                     | Identifying sub-phenotypes of AKI                    | 1,000-10,000                 | 7,657          | NA                            | NA              | yes Internal   | 3  |                             |                      |



|                             |      |                 |                               |                |    |   |  |                |                |                |                |                |  |         |
|-----------------------------|------|-----------------|-------------------------------|----------------|----|---|--|----------------|----------------|----------------|----------------|----------------|--|---------|
| Pappada, S et al.           | 2013 | United States   | Retrospective                 | no information | NA | Determining physiological thresholds            | Glycemic prediction  | 0-100          | 19             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Wojtusik, J et al.          | 2018 | United States   | Retrospective                 | C-ACE2         | NA | Predicting mortality                            | 30-day post-hospital discharge mortality                       | 10,000-100,000 | 19,994         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Shi, Y et al.               | 2013 | China           | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of apium sounds in mechanically ventilated pts. | 100-1,000      | 595            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Miao, F et al.              | 2018 | China           | Retrospective                 | no information | NA | Predicting mortality                            | Mortality in heartfailure ICU patients                         | 10,000-10,000  | 8,059          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| LaFaro, R et al.            | 2015 | United States   | Retrospective                 | no information | NA | Predicting length of stay                       | Length of stay after cardiac surgery                           | 100-1,000      | 185            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Bloch, E et al.             | 2019 | Israel          | Retrospective                 | no information | NA | Predicting complications                        | Sepsis   | 1,000-10,000   | 4,534          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Haveman, M et al.           | 2019 | The Netherlands | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Neurological outcome in TBI patients                           | 0-100          | 57             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Günzler, H et al.           | 2013 | Belgium         | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Intracranial Pressure prediction                               | 100-1,000      | 2,239          | NA             | NA             | yes External   | 5. Model validation                        | High    |
| Nemati, S et al.            | 2018 | United States   | Retrospective                 | no information | NA | Predicting complications                        | Sepsis   | 10,000-100,000 | 27,527         | no information | no information | yes External   | 5. Model validation                        | High    |
| Delahanty, R et al.         | 2018 | United States   | Retrospective                 | RIPD           | NA | Predicting mortality                            | In-hospital mortality risk adjustment                          | 100,000+       | 237,173        | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Lados-Martin, M et al.      | 2020 | Spain           | Prospective Observational     | no information | NA | Predicting complications                        | Hospital acquired pressure ulcers                              | 1,000-10,000   | 4,277          | 1,000-10,000   | 2,417          | no Prospective | 6. Real-time model testing                 | High    |
| Koestier, A et al.          | 2013 | The Netherlands | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of subgroups with poor outcome                  | 10,000-100,000 | 21,464         | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ge, W et al.                | 2018 | United States   | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 1,000-10,000   | 4,496          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Ishii, R et al.             | 2012 | United States   | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Modeling patient severity states                               | 1,000-10,000   | 9,999          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Parreco, J et al.           | 2018 | United States   | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 1,000-10,000   | 3,838          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Fong, A et al.              | 2014 | United States   | Retrospective                 | no information | NA | Alarm reduction                                 | False alarm reduction  | 10,000-100,000 | 41,278         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Chacon, M et al.            | 2003 | Chile           | Retrospective                 | no information | NA | Classifying sub-populations                     | Patients classification by risk                                | 1,000-1,000    | 294            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Vermassen, J et al.         | 2020 | Belgium         | Retrospective                 | no information | NA | Predicting complications                        | Septic shock diagnosis using EHR notes                         | 1,000-10,000   | 8,911          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Noorbakhs, S et al.         | 2020 | China           | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Improving mortality risk scores                                | 1,000-10,000   | 4,000          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Junqueira, A et al.         | 2019 | New Zealand     | Retrospective                 | no information | NA | Predicting readmissions                         | Readmission  | 10,000-100,000 | 31,749         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Moridani, M et al.          | 2015 | Iran            | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 0-100          | 90             | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Zhang, Z et al.             | 2019 | China           | Retrospective                 | no information | NA | Improving mechanical ventilation                | Determining optimal ventilator settings                        | 10,000-10,000  | 5,159          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Gao, Y et al.               | 2017 | United States   | Retrospective                 | no information | NA | Improving mechanical ventilation                | Improving weaning decision making                              | 100-1,000      | 1,336          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| McCoy, A et al.             | 2017 | United States   | Non-Randomized Clinical Trial | Insight        | NA | Predicting complications                        | Severe sepsis  | 1,000-10,000   | 1,328          | NA             | NA             | no Clinical    | 8. Clinical outcome evaluation             | High    |
| Gao, J et al.               | 2020 | China           | Retrospective                 | Dr. Agent      | NA | Predicting mortality                            | Mortality  | 10,000-100,000 | 33,678         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Lin, K et al.               | 2019 | China           | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 10,000-100,000 | 19,044         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Ma, X et al.                | 2020 | China           | Retrospective                 | no information | NA | Predicting length of stay                       | Length of stay   | 1,000-1,000    | 40             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Liu, Y et al.               | 2009 | United States   | Retrospective                 | no information | NA | Predicting health improvement                   | Heart rate recovery after spontaneous breathing trials         | 0-100          | 20             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Kwok, H et al.              | 2004 | United States   | Retrospective                 | no information | NA | Determining physiological thresholds            | Predicting optimal FiO2  | 0-100          | 60             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Meyfroidt, G et al.         | 2011 | Belgium         | Retrospective                 | no information | NA | Predicting length of stay                       | Length of stay after cardiac surgery                           | 100-1,000      | 960            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Goodwin, T et al.           | 2019 | United States   | Retrospective                 | PRO-NTD        | NA | Predicting complications                        | Predicting risk of pneumonia                                   | 1,000-10,000   | 1,476          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Crogriff, C et al.          | 2019 | United States   | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Clinical severity risk scores                                  | 100,000+       | 134,946        | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Nakamura, K et al.          | 2020 | Japan           | Retrospective                 | no information | NA | Classifying sub-populations                     | CRP clustering to clarify PHIC                                 | 1,000-1,000    | 539            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Tsai, T et al.              | 2019 | Taiwan          | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Predicting optimal timing of extubation                        | 100-1,000      | 359            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Kaewprag, P et al.          | 2015 | United States   | Retrospective                 | no information | NA | Predicting complications                        | Hospital acquired pressure ulcers                              | 1,000-10,000   | 7,171          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ghosh, S et al.             | 2016 | Australia       | Retrospective                 | no information | NA | Predicting complications                        | Hypotension  | 100-1,000      | 110            | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Sanchez-Hernandez, F et al. | 2019 | Spain           | Retrospective                 | no information | NA | Predicting complications                        | Hospital acquired infections                                   | 1,000-10,000   | 4,616          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Weissman, G et al.          | 2019 | United States   | Retrospective                 | CoreNLP        | NA | Assessing clinical notes                        | Assessing clinical notes                                       | 10,000-100,000 | 41,283         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Claesens, J et al.          | 2019 | United States   | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Improving prognostic detection in acute brain injury patients  | 100-1,000      | 104            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Sottile, F et al.           | 2018 | United States   | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Ventilator asynchrony detection                                | 0-100          | 62             | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Mesin, L et al.             | 2014 | Italy           | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Prognostic value of EEG indexes                                | 0-100          | 13             | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Lee, H et al.               | 2016 | Korea           | Retrospective                 | no information | NA | Predicting complications                        | Prediction of ventricular tachycardia                          | 100-1,000      | 220            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Zhang, X et al.             | 2012 | China           | Retrospective                 | no information | NA | Predicting length of stay                       | Length of stay   | 0-100          | 96             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ruyssink, J et al.          | 2016 | Belgium         | Retrospective                 | no information | NA | Predicting length of stay                       | Predicting bed occupancy                                       | 10,000-100,000 | 14,460         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Zhang, Z et al.             | 2019 | China           | Retrospective                 | no information | NA | Predicting health improvement                   | Predicting volume responsiveness                               | 1,000-10,000   | 6,682          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Myers, R et al.             | 2016 | United States   | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Intracranial Pressure prediction                               | 100-1,000      | 817            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Nagaraj, S et al.           | 2017 | United States   | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of sedation levels                              | 0-100          | 70             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Van Looy, S et al.          | 2007 | Belgium         | Retrospective                 | no information | NA | Determining physiological thresholds            | Tacrolimus levels in liver transplant patients                 | 0-100          | 50             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ador, Z et al.              | 2019 | Canada          | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of patient states                               | 10,000-100,000 | 36,390         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Lee, S et al.               | 2020 | Canada          | Retrospective                 | no information | NA | Detecting spurious recorded values              | Eliminating artifacts from ICP and ABP signals                 | 100-1,000      | 309            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Sheikhalshahi, S et al.     | 2020 | Italy           | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 10,000-100,000 | 73,718         | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ghaffari, A et al.          | 2010 | Iran            | Retrospective                 | no information | NA | Predicting complications                        | Hypotension  | no information | no information | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Rouhman, Y et al.           | 2013 | United States   | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of imbalanced icu data                          | 1,000-10,000   | 2,080          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Vanduit, J et al.           | 2007 | The Netherlands | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Biomarkers in sepsis associated with early renal injury        | 0-100          | 70             | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Kale, D et al.              | 2015 | United States   | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of phenotypes                                   | no information | no information | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Nanayakkara, S et al.       | 2018 | Australia       | Retrospective                 | no information | NA | Predicting mortality                            | Mortality in icu admissions following cardiac arrest           | 10,000-100,000 | 39,566         | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Mamandipoor, B et al.       | 2020 | Italy           | Retrospective                 | no information | NA | Determining physiological thresholds            | Predicting blood lactate levels                                | 10,000-100,000 | 13,464         | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Gajowiczek, K et al.        | 2020 | Poland          | Retrospective                 | no information | NA | Alarm reduction                                 | Arrhythmia alarm reduction                                     | no information | no information | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Unclear |
| Reyes-Garcia, J et al.      | 2018 | Mexico          | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Predicting patient deterioration                               | 100-1,000      | 459            | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Shieh, J et al.             | 2004 | Taiwan          | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Intracranial Pressure prediction                               | 0-100          | 6              | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Nielsen, A et al.           | 2019 | Denmark         | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Predicting ICU survival (derived from mortality)               | 10,000-100,000 | 10,368         | 1,000-10,000   | 1,528          | no External    | 5. Model validation                        | Low     |
| Thorsen-Meyer, H et al.     | 2020 | Denmark         | Retrospective                 | no information | NA | Predicting mortality                            | Predicting ICU survival (derived from mortality)               | 10,000-100,000 | 11,492         | 1,000-10,000   | 6,748          | no External    | 5. Model validation                        | Low     |
| Atoui, H et al.             | 2010 | France          | Retrospective                 | no information | NA | Predicting relevance of clinical information    | Deriving 12 lead ECG from serial 3 lead ECG                    | 100-1,000      | 120            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Bojan, T et al.             | 2015 | Australia       | Retrospective                 | no information | NA | Predicting complications                        | Characterising bacterial transmission in the ICU               | 0-100          | 69             | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Pappada, S et al.           | 2020 | United States   | Retrospective                 | no information | NA | Predicting medication administration            | Optimizing Glycemic Control                                    | 100-1,000      | 127            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Bejan, C et al.             | 2013 | United States   | Retrospective                 | no information | NA | Classifying sub-populations                     | Pneumonia phenotype prediction                                 | 100-1,000      | 426            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Ngufor, C et al.            | 2016 | United States   | Retrospective                 | no information | NA | Predicting length of stay                       | Prolonged stay due to transfusion                              | 1,000-10,000   | 1,233          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Wang, Y et al.              | 2015 | United States   | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 10,000-100,000 | 26,870         | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Wang, X et al.              | 2018 | China           | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | Automated diagnosis f  | 1,000-10,000   | 7,000          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Silva, S et al.             | 2017 | France          | Retrospective                 | no information | NA | Improving prognostic models/risk scoring system | MRB morphology for neuroprognostication after CA               | 100-1,000      | 196            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Lopez-Martinez, D et al.    | 2019 | United States   | Retrospective                 | no information | NA | Predicting medication administration            | Optimizing pain management                                     | 10,000-10,000  | 6,843          | NA             | NA             | yes Internal   | 384. Model prototyping & Model development | High    |
| Chbat, N et al.             | 2012 | United States   | Retrospective                 | no information | NA | Predicting complications                        | Acute lung injury  | no information | no information | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Unclear |
| Jan, S et al.               | 2017 | United States   | Retrospective                 | no information | NA | Classifying sub-populations                     | Classification of sepsis patients                              | 100-1,000      | 444            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Unclear |
| Li, S et al.                | 2009 | United States   | Retrospective                 | no information | NA | Predicting complications                        | Outcome prediction for TBI patients                            | 1,000-10,000   | 1,589          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Unclear |
| Cevenini, G et al.          | 2007 | Italy           | Retrospective                 | no information | NA | Predicting mortality                            | Mortality in ICU after cardiac surgery                         | 1,000-10,000   | 1,090          | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Unclear |
| Taggart, M et al.           | 2018 | United States   | Retrospective                 | no information | NA | Predicting complications                        | Detection of bleeding through clinical notes                   | 100-1,000      | 990            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | Low     |
| Guler, H et al.             | 2018 | Turkey          | Retrospective                 | no information | NA | Improving mechanical ventilation                | Improving weaning decision making                              | 0-100          | 20             | NA             | NA             | no Non         | 384. Model prototyping & Model development | High    |
| Yeung, S et al.             | 2019 | United States   | Retrospective                 | no information | NA | Assessing videos and images                     | Detecting patient mobilization activities                      | 100-1,000      | 563            | NA             | NA             | no Internal    | 384. Model prototyping & Model development | High    |
| Kim, S et al.               | 2011 | United States   | Retrospective                 | no information | NA | Predicting mortality                            | Mortality  | 10,000-100,000 | 23,446         | NA             | NA             | no Internal    | 384. Model prototyping                     |         |



|                            |      |                 |                           |                |   |   |  |                |                |    |           |     |             |  |                     |      |
|----------------------------|------|-----------------|---------------------------|----------------|---|---|--|----------------|----------------|----|-----------|-----|-------------|--|---------------------|------|
| Amer, A et al.             | 2019 | Belgium         | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | no information | no information | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Sierra, B et al.           | 2001 | Spain           | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 1,210          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Crump, B et al.            | 2009 | United States   | Retrospective             | no information | NA  | Predicting health improvement                   | Patient state prediction                                     | 0-100          | 52             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Ma, J et al.               | 2019 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 3,763          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Pourmahad, S et al.        | 2019 | Iran            | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Outcome prediction for TBI patients                          | 100-1,000      | 741            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Shi, P et al.              | 2020 | China           | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 7,537          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Maslou, D et al.           | 2013 | United States   | Retrospective             | no information | NA  | Determining physiological thresholds            | Discretization of continuous data                            | 10,000-100,000 | 12,538         | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Bhattacharya, S et al.     | 2018 | India           | Retrospective             | no information | NA  | Classifying sub-populations                     | Classification of risk of hypertension                       | 1,000-10,000   | 4,593          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Zubler, F et al.           | 2017 | Switzerland     | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Prognosis after cardiac arrest                               | 0-100          | 94             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Udelsman, B et al.         | 2020 | United States   | Retrospective             | no information | NA  | Assessing clinical notes                        | Identification of care preferences from clinical notes       | 1,000-10,000   | 1,350          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Derishi, A et al.          | 2017 | Germany         | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Deterioration of the cardiorespiratory function              | 1,000-10,000   | 2,809          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Rehm, G et al.             | 2019 | United States   | Retrospective             | no information | NA  | Classifying sub-populations                     | Classification of ventilator settings                        | 100-1,000      | 103            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Westman, M et al.          | 2018 | United States   | Retrospective             | no information | NA  | Predicting length of stay                       | Predicting length of stay                                    | 10,000-100,000 | 43,426         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Tzazars, A et al.          | 2011 | Greece          | Retrospective             | no information | NA  | Improving mechanical ventilation                | Identifying key variables for optimal ventilation management | 0-100          | 8              | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Savin, I et al.            | 2018 | Russia          | Retrospective             | no information | NA  | Predicting complications                        | Hospital associated ventilator or meningitis                 | 1,000-10,000   | 2,286          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| De Pasquale, M et al.      | 2017 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Hemorrhage   | 1,000-10,000   | 3,766          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Vranas, K et al.           | 2017 | United States   | Retrospective             | no information | NA  | Classifying sub-populations                     | Subgroups of ICU patients by clinical trajectories           | 1,000-10,000   | 5,000          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Ganter, S et al.           | 2002 | Germany         | Retrospective             | no information | NA  | Classifying sub-populations                     | Classification of pressure volume curves                     | 0-100          | 49             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Chriet, J et al.           | 2006 | France          | Retrospective             | no information | NA  | Assessing clinical notes                        | Building medical ontologies from clinical texts              | no information | no information | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Tsien, C et al.            | 2000 | United States   | Retrospective             | no information | NA  | Alarm reduction                                 | Reducing false alarms  | no information | no information | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Zampieri, F et al.         | 2019 | Brazil          | Retrospective             | no information | NA  | Predicting mortality                            | 28 day mortality   | 1,000-10,000   | 1,010          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Ghose, S et al.            | 2015 | Australia       | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 4,000          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Emmett, C et al.           | 2004 | Canada          | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Length of mechanical ventilation                             | 100-1,000      | 883            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Bachman, T et al.          | 1994 | United States   | Retrospective             | no information | NA  | Predicting length of stay                       | Length of stay after cardiac surgery                         | 100-1,000      | 491            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Morik, K et al.            | 1999 | Germany         | Retrospective             | no information | NA  | Predicting medication administration            | Predicting medication administration                         | 0-100          | 147            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Lei, C et al.              | 2020 | China           | Retrospective             | no information | NA  | Determining physiological thresholds            | Predicting plasma albumin levels                             | 0-100          | 1              | NA | NA        | no  | Non         | 3&4. Model prototyping & Model development | High                |      |
| Conroy, B et al.           | 2016 | United States   | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Hemodynamic instability                                      | 10,000-100,000 | 40,883         | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Fu, C et al.               | 2019 | China           | Retrospective             | no information | NA  | Improving mechanical ventilation                | Optimizing ventilator settings                               | 100-1,000      | 707            | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Fialho, A et al.           | 2016 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality in sepsis patients                                 | 0-100          | 823            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Ghosh, S et al.            | 2017 | Australia       | Retrospective             | no information | NA  | Predicting complications                        | Septic shock   | 1,000-10,000   | 1,310          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Yamamura, S et al.         | 1998 | Japan           | Retrospective             | no information | NA  | Determining physiological thresholds            | Predicting levels of antibiotics                             | 0-100          | 30             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Huang, L et al.            | 2019 | China           | Retrospective             | no information | NA  | Classifying sub-populations                     | Clustering to improve mortality prediction                   | 10,000-100,000 | 28,000         | NA | NA        | no  | Non         | 3&4. Model prototyping & Model development | Unclear             |      |
| Pirrachio, R et al.        | 2016 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 10,000-100,000 | 24,508         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Rawat, N et al.            | 2019 | United States   | Prospective Observational | no information | NA  | Assessing videos and images                     | Detecting patient mobilization                               | 0-100          | 6              | NA | NA        | no  | External    | 5. Model validation                        | Low                 |      |
| Ma, A et al.               | 2017 | United States   | Retrospective             | NIMS           | NA  | Assessing videos and images                     | Detecting patient mobilization                               | 0-100          | 8              | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Suka, M et al.             | 2004 | Japan           | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 10,000-100,000 | 11,796         | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Radhakrishnan, S et al.    | 2019 | India           | Retrospective             | no information | NA  | Determining physiological thresholds            | Analysis of parameters affecting FIO2                        | 0-100          | 40             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Bonetti, S et al.          | 2011 | United States   | Prospective Observational | no information | NA  | Improving mechanical ventilation                | Optimizing ventilator settings                               | 0-100          | 76             | NA | NA        | no  | Prospective | 6. Real-time model testing                 | NA                  |      |
| Grado, J et al.            | 2013 | Spain           | Retrospective             | no information | NA  | Classifying sub-populations                     | Classification of the respiratory pattern                    | 0-100          | 20             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Behar, J et al.            | 2013 | United Kingdom  | Retrospective             | no information | NA  | Alarm reduction                                 | Arrhythmia alarm reduction                                   | 10,000-100,000 | 30,000         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Kongburan, W et al.        | 2019 | Thailand        | Retrospective             | no information | NA  | Classifying sub-populations                     | Clustering to improve improve prediction accuracy            | 10,000-100,000 | 23,310         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Kongburan, W et al.        | 2019 | Thailand        | Retrospective             | no information | NA  | Classifying sub-populations                     | Clustering to improve improve prediction accuracy            | 10,000-100,000 | 23,310         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Behar, J et al.            | 2013 | United Kingdom  | Retrospective             | no information | NA  | Alarm reduction                                 | Arrhythmia alarm reduction                                   | 10,000-100,000 | 30,000         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Kongburan, W et al.        | 2019 | Thailand        | Retrospective             | no information | NA  | Classifying sub-populations                     | Clustering to improve improve prediction accuracy            | 10,000-100,000 | 23,310         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Kongburan, W et al.        | 2019 | Thailand        | Retrospective             | no information | NA  | Classifying sub-populations                     | Clustering to improve improve prediction accuracy            | 10,000-100,000 | 23,310         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Perar, P et al.            | 2017 | Israel          | Retrospective             | no information | NA  | Assessing clinical notes                        | Automatic generated discharge letters                        | 0-100          | 31             | NA | NA        | no  | External    | 5. Model validation                        | NA                  |      |
| Goldstein, A et al.        | 2010 | France          | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Outcome prediction in traumatic and anoxic coma              | 0-100          | 47             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Wolke, R et al.            | 2006 | Australia       | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 4,014          | NA | NA        | yes | Internal    | 5. Model validation                        | High                |      |
| Gonzalez-Robledo, M et al. | 2017 | Spain           | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Outcome prediction for TBI patients                          | 100-1,000      | 497            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Pirrachio, R et al.        | 2015 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 10,000-100,000 | 24,508         | NA | 100-1,000 | 200 | yes         | External                                   | 5. Model validation | NA   |
| Blonds, B et al.           | 2015 | United States   | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Secondary insults in TBI patients                            | 100-1,000      | 132            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Hever, S et al.            | 2020 | Israel          | Retrospective             | no information | NA  | Alarm reduction                                 | Alarm reduction  | 1,000-10,000   | 7,688          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Hoozemans, M et al.        | 2016 | The Netherlands | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 2,500          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Legrand, M et al.          | 2013 | France          | Retrospective             | no information | NA  | Predicting complications                        | Acute Kidney Injury in cardiac surgery patients              | 100-1,000      | 202            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Lehman, L et al.           | 2012 | United States   | Retrospective             | no information | NA  | Classifying sub-populations                     | Discovery of dynamical patterns within a patient cohort      | 100-1,000      | 480            | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Lin, P et al.              | 2019 | Taiwan          | Retrospective             | no information | NA  | Determining physiological thresholds            | Urine output after fluid administration                      | 10,000-100,000 | 19,275         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Fraser, D et al.           | 2020 | Canada          | Retrospective             | no information | NA  | Classifying sub-populations                     | Characterising inflammatory profile in COVID-19 patients     | 0-100          | 20             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Davidou, A et al.          | 2018 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Predicting delirium from autonomous monitoring               | 0-100          | 22             | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Scherpf, M et al.          | 2019 | Germany         | Retrospective             | no information | NA  | Predicting complications                        | Sepsis   | 10,000-100,000 | 46,520         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Jiang, D et al.            | 2017 | China           | Retrospective             | no information | NA  | Predicting complications                        | Hypotension  | 1,000-10,000   | 2,892          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Nguyen, E et al.           | 2013 | United States   | Retrospective             | no information | NA  | Classifying sub-populations                     | Classification of VAP using proteomics on BALF               | 0-100          | 35             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Gajownik, K et al.         | 2019 | Poland          | Retrospective             | no information | NA  | Alarm reduction                                 | Alarm reduction  | 1,000-10,000   | 750            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Leite, C et al.            | 2011 | Brazil          | Retrospective             | no information | NA  | Classifying sub-populations                     | Improving classification of vital signs                      | 0-100          | 74             | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Gholipour, C et al.        | 2015 | Iran            | Retrospective             | no information | NA  | Predicting mortality                            | Survival prediction  | 100-1,000      | 125            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Zhao, C et al.             | 2020 | China           | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 5,663          | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Cramer, E et al.           | 2019 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Hospital acquired pressure ulcers                            | 10,000-100,000 | 50,851         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Huang, J et al.            | 2019 | United States   | Retrospective             | no information | NA  | Classifying sub-populations                     | ICD-9 code assignment based on clinical notes                | 10,000-100,000 | 46,520         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Pearl, A et al.            | 2019 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Ventilator associated pneumonia                              | 100-1,000      | 685,793        | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Van Wyk, F et al.          | 2019 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Sepsis   | 1,000-10,000   | 1,161          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Xu, Z et al.               | 2019 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality in AKI patients                                    | 10,000-100,000 | 58,976         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Li, Q et al.               | 2012 | China           | Retrospective             | no information | NA  | Alarm reduction                                 | Arrhythmia alarm reduction                                   | 100-1,000      | 182            | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | Low                 |      |
| Morid, M et al.            | 2020 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Acute Kidney Injury  | 10,000-100,000 | 22,542         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Chaffari, A et al.         | 2010 | Iran            | Retrospective             | no information | NA  | Predicting complications                        | Hypotension  | 0-100          | 15             | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Ghah, G et al.             | 2018 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality  | 1,000-10,000   | 7,863          | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Nemoto, T et al.           | 1999 | Canada          | Retrospective             | no information | NA  | Improving mechanical ventilation                | Optimizing ventilator settings in COPD patients              | 0-100          | 13             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Su, L et al.               | 2020 | China           | Retrospective             | no information | NA  | Predicting medication administration            | Predicting and optimizing heparin doses                      | 1,000-10,000   | 2,789          | NA | 100-1,000 | 575 | yes         | External                                   | 5. Model validation | High |
| Hyun Lee, D et al.         | 2020 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Acute organ failure  | 10,000-100,000 | 36,487         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Jian, F et al.             | 2018 | United States   | Retrospective             | no information | NA  | Predicting mortality                            | Mortality using nursing notes                                | 10,000-100,000 | 27,477         | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Liou, Y et al.             | 2019 | Taiwan          | Retrospective             | no information | NA  | Predicting complications                        | Ventilator associated pneumonia                              | 0-100          | 24             | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Li, Q et al.               | 2016 | China           | Retrospective             | no information | NA  | Alarm reduction                                 | Alarm reduction  | 100-1,000      | 182            | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Liu, C et al.              | 2018 | Taiwan          | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Allorgraft rejection after LTX                               | 100-1,000      | 525            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Hsu, J et al.              | 2013 | Taiwan          | Randomized Clinical Trial | no information | Significantly reduced days on mechanical ve | Improving mechanical ventilation                | Predicting outcomes for wearing trials                       | 100-1,000      | 380            | NA | NA        | no  | Clinical    | 8. Clinical outcome evaluation             | NA                  |      |
| Dickerson, R et al.        | 2005 | United States   | Retrospective             | no information | NA  | Determining physiological thresholds            | Predicting urea nitrogen                                     | 100-1,000      | 125            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Perera, S et al.           | 2015 | Portugal        | Retrospective             | no information | NA  | Improving prognostic models/risk scoring system | Predicting impaired left ventricle ejection fraction         | 1,000-10,000   | 926            | NA | NA        | yes | Internal    | 3&4. Model prototyping & Model development | High                |      |
| Van Wyk, F et al.          | 2019 | United States   | Retrospective             | no information | NA  | Predicting complications                        | Sepsis   | 1,000-10,000   | 586            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | Unclear             |      |
| Paetz, J et al.            | 2003 | Germany         | Retrospective             | no information | NA  | Predicting complications                        | Septic shock   | 100-1,000      | 874            | NA | NA        | no  | Internal    | 3&4. Model prototyping & Model development | High                |      |

|                       |      |               |               |                |    |   |  |                |                |       |    |              |  |         |
|-----------------------|------|---------------|---------------|----------------|----|---|--|----------------|----------------|-------|----|--------------|--|---------|
| Chaparro, J et al.    | 2012 | Colombia      | Retrospective | no information | NA | Improving mechanical ventilation                | Predicting outcomes for weaning trials                       | 100-1.000      | 153            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| McNamee, R et al.     | 2005 | United States | Retrospective | no information | NA | Determining physiological thresholds            | Predicting heart rate variability                            | no information | no information | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Unclear |
| King, A et al.        | 2019 | United States | Retrospective | no information | NA | Predicting relevance of clinical information    | Highlighting clinically relevant patient data                | 100-1.000      | 178            | 0-100 | 18 | no External  | 5. Model validation                        | Unclear |
| Schamoni, S et al.    | 2019 | Germany       | Retrospective | no information | NA | Predicting complications                        | Sepsis   | 100-1.000      | 620            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Spencer, R et al.     | 1997 | United States | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Predicting hemodynamic instability                           | no information | no information | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Cismondi, F et al.    | 2013 | United States | Retrospective | no information | NA | Detecting spurious recorded values              | Determining importance of missing data                       | 10.000-100.000 | 19,695         | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Low     |
| Hauskrecht, M et al.  | 2013 | United States | Retrospective | no information | NA | Detecting spurious recorded values              | Detecting outliers and errors in EHR systems                 | 1.000-10.000   | 4,486          | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Hergliandke, T et al. | 2010 | Belgium       | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Predicting need for dialysis                                 | 100-1.000      | 830            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Low     |
| Iuarez, J et al.      | 2011 | Spain         | Retrospective | T-CARE         | NA | Predicting mortality                            | Survival as a function of mortality                          | 100-1.000      | 375            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Kuo, H et al.         | 2015 | Taiwan        | Retrospective | no information | NA | Improving mechanical ventilation                | Predicting outcomes for weaning trials                       | 100-1.000      | 121            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Aldana, R et al.      | 2019 | Cuba          | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Detecting nonconvulsive epileptic seizures                   | 0-100          | 14             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Paetz, J et al.       | 2002 | Germany       | Retrospective | no information | NA | Predicting complications                        | Septic shock   | 100-1.000      | 138            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Hilssa, M et al.      | 2007 | Finland       | Retrospective | no information | NA | Assessing clinical notes                        | Classification of nursing notes                              | 1.000-10.000   | 1,363          | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Low     |
| Demšar, J et al.      | 2001 | Slovenia      | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Outcome prediction for trauma patients                       | 0-100          | 68             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Gholami, B et al.     | 2018 | United States | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Patient ventilator asynchrony                                | 0-100          | 11             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Suominen, H et al.    | 2010 | Finland       | Retrospective | no information | NA | Classifying sub-populations                     | Classification of nursing notes                              | 1.000-10.000   | 549            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Hauskrecht, M et al.  | 2016 | United States | Retrospective | no information | NA | Detecting spurious recorded values              | Detecting outliers and errors in EHR systems                 | 10.000-100.000 | 24,658         | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Low     |
| Wong, P et al.        | 2019 | Hong Kong     | Retrospective | no information | NA | Alarm reduction                                 | Arrhythmia alarm reduction                                   | 100-1.000      | 310            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Low     |
| Ordóñez, P et al.     | 2016 | Puerto Rico   | Retrospective | no information | NA | Predicting complications                        | Hypotension  | 0-100          | 68             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Chen, S et al.        | 2016 | China         | Retrospective | no information | NA | Assessing videos and images                     | Improving mobile CXR imaging                                 | 0-100          | 20             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Dandala, B et al.     | 2020 | United States | Retrospective | no information | NA | Assessing clinical notes                        | Detecting adverse drug events form clinical notes            | 100-1.000      | 505            | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |
| Zaqqoo, A et al.      | 2014 | United States | Retrospective | no information | NA | Improving prognostic models/risk scoring system | Outcome prediction for blunt trauma patients                 | 0-100          | 42             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Ryan, A et al.        | 2008 | Australia     | Retrospective | CDAL           | NA | Classifying sub-populations                     | Classification of nursing notes                              | no information | no information | NA    | NA | no Non       | 2. Proposal of model/solution              | NA      |
| Lojan, S et al.       | 2010 | United States | Retrospective | SoosTexter     | NA | Classifying sub-populations                     | Classification of resuscitation codes from nursing notes     | 10.000-100.000 | 20,392         | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |
| King, A et al.        | 2018 | United States | Retrospective | no information | NA | Assessing videos and images                     | Tracking information seeking behaviour by eye movement       | 0-100          | 23             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Huang, L et al.       | 2020 | China         | Retrospective | LoadBoost      | NA | Improving prognostic models/risk scoring system | Improving prediction accuracy                                | 10.000-100.000 | 30,000         | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |
| Wu, Y et al.          | 2016 | Greece        | Retrospective | no information | NA | Predicting health improvement                   | Predicting patient deterioration                             | 100-1.000      | 110            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | Unclear |
| Chouvarda, I et al.   | 2015 | United States | Retrospective | no information | NA | Assessing clinical notes                        | Neural word embeddings                                       | no information | no information | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |
| Laipala, V et al.     | 2009 | Finland       | Retrospective | FinWOL         | NA | Classifying sub-populations                     | Classification of nursing notes                              | no information | no information | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Kock, K et al.        | 2018 | Brazil        | Retrospective | no information | NA | Predicting mortality                            | Mortality  | 100-1.000      | 190            | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Chasin, R et al.      | 2014 | United States | Retrospective | ClearNLP       | NA | Assessing clinical notes                        | Classification of nursing notes                              | 10.000-100.000 | 27,059         | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |
| Stein, D et al.       | 2012 | United States | Retrospective | no information | NA | Determining physiological thresholds            | Microarray gene profiling for physiological threshold in TBI | 0-100          | 52             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Ganzert, S et al.     | 2012 | Germany       | Retrospective | no information | NA | Determining physiological thresholds            | Determining lung compliance                                  | 0-100          | 20             | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Pereira, T et al.     | 2020 | United States | Retrospective | no information | NA | Alarm reduction                                 | Arrhythmia alarm reduction                                   | 1.000-10.000   | 3,777          | NA    | NA | no Internal  | 3&4. Model prototyping & Model development | High    |
| Wang, S et al.        | 2017 | Australia     | Retrospective | no information | NA | Classifying sub-populations                     | ICD-9 code prediction  | 10.000-100.000 | 23,379         | NA    | NA | yes Internal | 3&4. Model prototyping & Model development | High    |

\*The dataset size was separately noted in case a model was developed and externally validated within the same study. NA= not applicable.